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BIOMEDICAL ENGINEERING SOCIETY

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October 17–20, 2018
Atlanta, Georgia

October 16–19, 2019
Philadelphia, Pennsylvania

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http://submissions.mirasmart.com/bmes2017/itinerary
Copies are also available at the Registration Desk.

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www.bmes.org/industry

State of Arizona

Senate Proclamation

WHEREAS, Arizona's bioscience industry is committed to discovering, developing and delivering innovative medicines, medical devices and healthcare technologies that make life better for people in Arizona and around the world; and

WHEREAS, Arizonans in our private and university research centers, in collaboration with our life science companies, are working on new solutions to improve health and the quality of life in Arizona and around the globe; and

WHEREAS, Arizona's medical professionals and hospital systems are employing these innovations in the form of high quality care and the opportunity to participate in clinical trials that offer hope to our residents and the visitors who travel to Arizona in search of better health; and

WHEREAS, the work of these researchers, innovators, and healthcare professionals is supported by Arizona investors and philanthropists who have a shared purpose for creating valuable products and services that improve health and make the delivery of healthcare more affordable by keeping people healthy and offering solutions when care is needed; and

WHEREAS, on October 11, 2017, the Arizona Bio-industry Association will assemble this vibrant community to celebrate the achievements of these life science innovators and to drive growth in the discovery, development and delivery of life-saving and life-changing innovations here in Arizona; and

WHEREAS, on October 11, 2017, the Biomedical Engineering Society (BMES) will assemble 4,000 people from across the United States – academic researchers, students, industry professionals, government officials and clinicians to drive and communicate engineering advances and technological inventions focused on advancing human health and wellbeing; and

WHEREAS, Arizona's life science and healthcare communities can leverage these opportunities within Arizona Bioscience Week to demonstrate to leaders at home and across the country the ways that Arizona innovators and Arizona innovation makes life better.

THEREFORE, BE IT RESOLVED BY THE SENATE OF THE STATE OF ARIZONA,

1. That the Members of the Senate recognize the individuals who have committed their lives and their careers to discovering, developing, and delivering life science innovations here in Arizona.
2. That the Members of the Senate recognize the importance of finding the cause of and cure for the diseases and health conditions that impact the lives of people in Arizona and in supporting the researchers, entrepreneurs and investors who together make it possible.
4. That the Members of the Senate proclaim October 8 through 14, 2017 as Arizona Bioscience Week and encourage all citizens to learn more about how their fellow Arizonans are working to discover, develop and deliver the life-changing and life-saving innovations that will benefit the people of Arizona today and for generations to come.

Dated this 22nd day of March 2017

STEVEN B. YARBROUGH
President of the Senate

50th 1968-2018 Anniversary BMES Biomedical Engineering Society
Celebrating the Past, Transforming the Future

BMES 50th Anniversary 1968–2018

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Lori Setton, PhD

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Washington University in St Louis
St. Louis, Missouri

Welcome to Phoenix and the 2017 Annual Meeting of the Biomedical Engineering Society (#BMES2017)! With this large number of attendees, sold-out exhibitor space and countless sponsors, this is an exciting time to be a part of BMES and the biomedical engineering community. As you navigate the BMES #BMES2017, I encourage you to use every opportunity to exchange ideas and information, network for professional development, take on new learning, and interact with old and new colleagues.

The theme of this year's meeting is "Engineering personalized medicine and therapies." Cleverly constructed by our co-chairs, Kevin Otto and Shelly Sakiyama-Elbert, and dedicated BMES staff, the scientific and professional development program reflects our individual and collective goals that our work, in research, education and in practice, should improve the health and well-being of others.

Over the next four days, give special attention to our impressive line-up of the keynote speakers. Things kick-off Thursday morning with Gordana Vunjak-Novakovic delivering the Robert A. Pritzker Distinguished Lecture. A BMES Fellow, Dr. Vunjak-Novakovic is a leading expert in engineering of human tissues for regenerative medicine, stem cell research and study of disease. BMES is delighted to collaborate with NIH to recognize the pioneering on CRISPR-Cas work of Dr. Feng Zhang, speaking as the NIBIB Lecturer on Thursday afternoon. On Friday, we have Bonnie Anderson, chairman and CEO of Veracyte, delivering the Wallace H. Coulter Award for Healthcare Innovation Award Lecture and Dr. Manu O. Platt, for the BMES Diversity Award Lecture. Stick around for Saturday morning to see Dr. Craig J. Goergen receive the Rita Schaffer Young Investigator Award, and deliver this important lecture.

Just a glance at our tracks shows how diverse is the research in the BME field, but also the breadth of our pursuits and interests. We have programs tailored to support education for our undergraduate and graduate engineering students, and even for visiting high school students who come with curiosity and questions. We have programming options for junior researchers trying to navigate the complex world of research funding, job applications, and career advancement. And the programming for career professionals in corporate and start-up sectors has grown exponentially in recent years, with sessions highlighting entrepreneurship, project management, regulatory developments, and engineering solutions for health care disparities, to name just a few. Look for programs hosted by our Special Interest Groups (SIGs) and affiliate bodies, including ABET.

When you walk around the meeting for the next four days, take note of the diversity of our attendees. With membership exceeding 45% women, we are already the most diverse discipline in engineering, and BMES has been committed to expanding both representation and inclusion. The NIH and NSF, as well as Coulter Minority Network, are supporting programming for and participation of diverse engineers in BME, and we can celebrate increased participation from industry representatives in meeting attendance and in our BMES leadership. From its inception, BMES has been committed to diversity and research, and we are partnering with these agencies and the National Society of Black Engineers to achieve our goals.

This year's meeting also marks the kickoff of celebratory activities for the Society's 50th Anniversary in 2018. Everyone attending this year's meeting should take pride in the growth and strength of our community after 50 years of BMES. BMES is successful and now embraced by our national and professional community due to your efforts. The work you do in design, research, and product development, the time you spend mentoring and educating, and your volunteer work in supporting the Society locally and globally is why BMES remains relevant today. Make sure you stop by the BMES booth to get one of the 50th Anniversary giveaways and to participate in the sponsorship and contest opportunities.

I hope you will benefit from the many learning opportunities that we've designed for BMES #BMES2017, and the expert talks in all the platform sessions and poster presentations. The ambitious work being conducted across the entire field of BME, as well as that by our brilliantly creative students, will both energize you and leave you with new thinking.

Join me in thanking our Conference Co-Chairs Shelly Sakiyama-Elbert and Kevin Otto, BMES Staff, NSF, NIH, our sponsors and our meeting attendees. Let's make it an enjoyable and productive meeting!

PRESIDENT'S WELCOME LETTER

Shelly Sakiyama-Elbert, PhD

Annual Meeting Co-Chair

Professor and Chair
Department of Biomedical Engineering

The University of Texas at Austin
Austin, Texas

Kevin J. Otto, PhD

Annual Meeting Co-Chair

Associate Professor
J. Crayton Pruitt Family Department of Biomedical Engineering

University of Florida
Gainesville, Florida

Welcome to the 2017 Annual Meeting of the Biomedical Engineering Society in Phoenix, Arizona. We are excited to host you in this rapidly growing bioscience and healthcare technology hub in the Valley of the Sun. Arizona is a land of opportunity for Bioscience and Health Care innovation. The state has invested over $1 billion in local biomedical research and development, including the Biodesign Institute at Arizona State University and the BIO5 Institute at the University of Arizona. We hope that you will take advantage of the local industry tours, which include Medtronic, Abbott, and Project C.U.R.E., as part of the BMES meeting. Enjoy your time in the 5th largest city in the United States and our largest state capitol.

This year's meeting theme is Engineering Personalized Medicine and Therapies. To showcase this theme, our two plenary speakers will highlight cutting edge technologies in genome engineering and diagnostics. Feng Zheng, from MIT/Broad Institute, will deliver the BMES-NIBIB Plenary Lecture on Thursday evening. Dr. Zheng is well known for his role in developing optogenetics technology and for demonstrating that the CRSPR-Cas9 system could be used for genome editing of mammalian cells. The following morning Bonnie Anderson, Chair of the Board and CEO of Veracyte, will receive the Wallace H. Coulter Award for Healthcare Innovation and deliver a Plenary Lecture. Veracyte is a pioneering genome diagnostics company that focuses on reducing the diagnostic ambiguity in health care. Ms. Anderson co-founded the company in 2008, and their tests are now the standard of care for thyroid and lung cancer diagnosis. We are very excited and honored to host both of these leaders in biomedical engineering and we look forward to hearing their perspective on engineering personalized medicine and therapies.

We are excited to include several member initiated special sessions from the BMES community. These include topics on training such as: Training new leaders in healthcare innovation and Defining educational goals of bioengineering for the 21st Century on Thursday, as well as Curricular Innovation on Friday. We will also feature internationally focused sessions including the 5th US-Korea Joint BMES Workshop and the International Symposium on Biomedical Engineering. We will have several sessions on how to prepare research proposals for NSF including CAREER Awards and Graduate Research Fellowships.

We have an outstanding program for Students and Early Career Engineers that includes a pre-meeting orientation on Wed. afternoon and mentoring sessions. Thursday and Friday, there are sessions on networking and careers in academia, industry and entrepreneurship. Our Industry Committee has done a wonderful job putting together tours of local industry, as well as sessions on project management, validation of medical devices, and entrepreneurship. We have expanded the university receptions to Thursday and Friday night to accommodate more networking opportunities. Join us for the BMES Bash at the Arizona Science Center on Friday night. Enjoy some dessert, networking and over 300 interactive exhibits. The Science Center is just a short 6 minute walk from the Phoenix Convention Center.

In recognition of the diversity within BMES, we will have two celebration luncheons and a dessert banquet. All of these events welcome all BMES community members who wish to support diversity and all require a ticket. The Celebration of Minorities in BME Luncheon on Thursday features a keynote lecture by Antonio Garcia on creating more inclusive environments in engineering. On Friday, the Celebration of Women in BME Luncheon will feature a keynote by Christopher Loving on "moving from the urgent to the important". On Wednesday evening, The LGBT Dessert Social will feature a talk from Naomi Chesler on Being an Ally.

Together with our 36 track chairs, who represent a diverse set of BMES members, we are excited to bring you a record number of 929 oral and 1899 poster presentations over the 4 days of the meeting. We are grateful for efforts of the track chairs in coordinating the review of a record number 3054 of abstracts. Thank you to the session chairs for helping to keep our many concurrent sessions running smoothly. We also have a record-breaking number of exhibitors (125) who will showcase the breadth and enthusiasm of biomedical engineering training and industry.

We are indebted to the tireless work of Debby Tucker behind the scenes to keep all the administrative aspects of the meeting running. Thank you also to Michele Ciapa and Lori Setton for their grant writing and funding raising efforts to support many of the special events throughout the meeting and to support our trainees.

We look forward to seeing you all in Phoenix and participating in what will be an outstanding meeting of Biomedical Engineers!

Robert A. Pritzker Distinguished Lecture

Gordana Vunjak-Novakovic, PhD

University Professor

The Mikati Foundation Professor of Biomedical Engineering and Medicine

Director, Laboratory for Stem Cells and Tissue Engineering
Columbia University in the City of New York

Thursday, October 12, 2017
10:15 am–11:30 am
North Ballroom BCD
Phoenix Convention Center

Engineering Human Tissues for Regenerative Medicine and Study of Disease

Tissue engineering is becoming increasingly successful with authentically representing the actual environmental milieu of the development, regeneration and disease. A classical paradigm of tissue engineering is related to the integrated use of human cells, biomaterial scaffolds (structural and logistic templates for tissue formation) and bioreactors (culture systems providing environmental control, molecular and physical signaling) in regenerative medicine. Living human tissues can be bioengineered from the autologous stem cells, and tailored to the patient and the medical condition being treated. More recently, the same principles are being successfully applied to the patient-specific "organs on a chip" platforms designed to recapitulate some aspects of human physiology. This talk will discuss some recent advances in regenerative engineering of whole organs (lung, heart, bone) and the modeling of systemic pathologies using functional human tissues grown in lab.

Gordana Vunjak-Novakovic is the University Professor (Columbia University highest rank held by only eight active professors), and The Mikati Foundation Professor of Biomedical Engineering and Medicine. She is a leading expert in engineering of human tissues for regenerative medicine, stem cell research and study of disease. With over 35,000 citations and h=109, she is one of the most highly cited individuals of all times, in all disciplines. She founded three biotech companies (epibone.com, tarabiosystems.com, eastriverbio.com). Among her recognitions, she is a Fellow of AAAS and BMES, and an elected member of the Academia Europaea, National Academy of Engineering, National Academy Medicine, and National Academy of Inventors.

NIH NIBIB Lecture

Photo Courtesy of Stan Grazier

Feng Zhang, PhD

W.M. Keck Center Development Professor of Biomedical Engineering

Department of Brain and Cognitive Sciences
Department of Biological Engineering

Massachusetts Institute of Technology
Cambridge, Massachusetts

Thursday, October 12, 2017
5:30 pm–6:30 pm
North Ballroom BCD
Phoenix Convention Center

From Microbial Immunity to Genome Editing

The microbial CRISPR-Cas adaptive immune systems provide archaea and bacteria with a programmable defense against invading nucleic acids. Several years ago, we and others reported that the effector module from Streptococcus pyogenes CRISPR-Cas9 (SpCas9) could be harnessed for genome editing. Following this work, we have discovered, characterized, and engineered additional Cas enyzmes for use as molecular biology tools. These include a novel class of CRISPR-Cas systems that use RNA-guided RNases, such as Cas13a (C2c2) and Cas13b. Leveraging the natural properties of Cas13a, we developed a single-molecule nucleic acid sensing platform termed SHERLOCK, which can be used for rapid pathogen detection and genotyping. We are continuing to explore microbial diversity to identify novel enzymes and systems that could serve as the basis for development of additional molecular biology tools and applying these tools to tackle complex biological questions.

Feng Zhang obtained his A.B. degree in Chemistry and Physics from Harvard University and his Ph.D. degree from the Department of Bioengineering at Stanford University, where he worked in the lab of Karl Deisseroth on the development of optogenetics. In 2011, Zhang began his own lab at the Massachusetts Institute of Technology (MIT), pioneering the use of CRISPR-Cas systems as genome editing tools. He and his team successfully harnessed the RNA-guided nuclease Cas9 for mammalian genome editing. Following this, the Zhang lab has continued to expand and refine Cas-based approaches, helping to create a robust genome engineering toolbox that is accelerating research around the world. He is currently a Core Member of the Broad Institute of MIT and Harvard, an Investigator of the McGovern Institute for Brain Research at MIT, a James and Patricia Poitras Professor of Neuroscience, an Associate Professor in the Departments of Brain and Cognitive Sciences and Biological Engineering at MIT, and a New York Stem Cell Foundation-Robertson Investigator.

The Wallace H. Coulter Award for Healthcare Innovation Award Lecture

Bonnie Anderson

Chairman and Chief Executive Officer
Veracyte

Friday, October 13, 2017
10:15 am–11:15 am
North Ballroom BCD
Phoenix Convention Center

The Journey from an Idea to Transforming Patient Care with Genomic Diagnostics

Recent advances in our understanding of the human genome, along with new developments in sequencing technologies and data analytics, are fueling the imagination about what is possible in diagnosing, treating and preventing cancer and other diseases. Yet among the wealth of patient-health data that can be extracted from the genome through diagnostic tests, what matters most to physicians, patients and health plans is finding clinically useful information that changes patient care and improves outcomes.

Using that simple framework, Bonnie Anderson founded Veracyte and, in less than 10 years, has built it into one of the most successful genomic diagnostics companies in the space today. Veracyte's three commercialized tests have saved tens of thousands of patients from risky, expensive and often-unnecessary surgery just to get a diagnosis and collectively target a $2 billion market opportunity. The company is setting new standards for successfully obtaining health plan reimbursement for its tests – which has traditionally been the biggest hurdle to moving genomic tests into clinical use.

Bonnie will describe how she started Veracyte with just an idea and a business plan – rather than with a technology, which is how most diagnostics companies begin. She focused on identifying specific clinical questions that could be answered with a genomic test and that, when answered, would change what happened next for the patient. Veracyte's team of bioengineers and other scientists utilize advanced genomic and machine learning technologies to develop the company's novel genomic tests and have been crucial to the company's success.

Bonnie will provide an overview of her journey with Veracyte, including how the wealth of diverse, hands-on experience she gained in her 18 years at Beckman Coulter prepared her to build and lead a company that is uniquely transforming patient care.

Bonnie H. Anderson is Chief Executive Officer and Chairman of the Board of Veracyte, a pioneering genomic diagnostics company that is fundamentally improving patient care by reducing diagnostic uncertainty – without the need for risky, costly and often-unnecessary surgery. Her career spans over 30 years in regulated diagnostics and life science markets. Ms. Anderson cofounded Veracyte in 2008 and served as the company's President and Chief Executive Officer until 2016, when she was also appointed Chairman of the Board. She took the company public in 2013 and has spearheaded Veracyte's commercialization successes to date.

Prior to Veracyte, Ms. Anderson provided strategic consulting services to venture capital firms and early-stage businesses following 18 years in leadership positions at Beckman Coulter. She serves on the board of Castle Biosciences and on the steering committee for the Coalition for 21st Century Medicine and is a trustee emeritus of the Keck Graduate Institute of Applied Life Sciences. She graduated from Indiana University of Pennsylvania with a Bachelors of Science degree in Medical Technology and in 2012 was honored with a "Distinguished Alumni" award. In 2015, Fast Company magazine named Ms. Anderson to its "100 Most Creative People in Business" list. She was named one of the "Most Influential Women in Bay Area Business" (2013) and one of the "Bay Area's Most Admired CEOs" (2014) by the San Francisco Business Times, and has also received the Silicon Valley Business Journal's "Women of Influence" award (2013).

The Wallace H. Coulter Award for Healthcare Innovation recognizes an outstanding individual who has demonstrated a lifetime commitment to and made important contributions to patient healthcare.

BMES Diversity Award Lecture

Manu O. Platt, PhD

Associate Professor, Diversity Director, STC on Emergent Behaviors of Integrated Cellular Systems (EBICS), GRA Distinguished Scholar

Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech and Emory
Atlanta, Georgia

Friday, October 13, 2017
5:15 pm–6:15 pm
North Ballroom BCD
Phoenix Convention Center

The Danger of Acting Now

Dr. Platt's lecture will address the fear of waiting for the perfect time to be impactful in diversity and inclusion. As a member of an underrepresented group, the opportunity for impact is magnified, as is the visibility, responsibility, perceived consequences of failure, and ultimately, the perceived danger of acting now. Sage professional mentors and family elders may advise "going along to get along" and "not making waves" to be successful. Dr. Platt will challenge this assumption of the "safe" path to success. Often, if you are the first or the only of a particular demographic category, the path is neither well paved, nor well lit, and GPS does not seem to recognize your location. Dr. Platt will discuss the power and the payoff of being unapologetic about identity, and being intentional in diversifying the workforce. Now, not waiting until it is safe.

"Change will not come if we wait for some other person or some other time. We are the ones we've been waiting for. We are the change that we seek." – Barack Obama

Dr. Manu Platt, earned his B.S. in Biology from Morehouse College in 2001 and Ph.D. from Georgia Tech/Emory joint program in biomedical engineering in 2006, and post-doctoral training at MIT. Then he returned to Georgia Tech/Emory in January 2009 to start his independent tenure track career, and was promoted and tenured in 2015.

Dr. Platt's research focuses on proteolytic mechanisms of tissue remodeling using experimental and computational approaches. These diseases of focus are health disparities in the U.S., but global health concerns: sickle cell disease, breast cancer, and HIV-mediated cardiovascular disease, which has taken him to South Africa and Ethiopia for to find solutions for low resource settings. His work has been funded by NIH Director's New Innovator Award, International AIDS Society, Georgia Cancer Coalition, and the National Science Foundation, and he trains a diverse cadre of students and postdocs to complete this work. He is also a co-investigator and the Diversity Director for the NSF Science and Technology Center on Emergent Behaviors of Integrated Cellular Systems (EBICS), a joint center between Georgia Tech, MIT, and UIUC. Integrated with his research program are his mentoring goals of changing the look of the next generation of scientists and engineers to include all colors, genders, and backgrounds. Aligned with that goal, Dr. Platt, with Bob Nerem, co-founded and co-directs Project ENGAGES (**E**ngaging the **N**ext **G**eneration **A**t **G**eorgia Tech in **E**ngineering and **S**cience), a program for African-American high school students in the Atlanta Public School system, trained and paid well above minimum wage, to be researchers in Georgia Tech labs.

Dr. Platt was named an Emerging Scholar by Diverse: *Issues in Higher Education* magazine in 2015 and chosen for "Atlanta 40 under 40" by the *Atlanta Business Chronicle* in 2016 for his activities at Georgia Tech and his outreach activities in the broader Atlanta community.

Rita Schaffer Young Investigator Lecture

Craig J. Goergen, Ph.D.

Principal Investigator,
Cardiovascular Imaging Research Laboratory
Purdue University

Saturday, October 14, 2017
10:30 am–11:45 am
North Ballroom BCD
Phoenix Convention Center

Small Animal Cardiovascular Imaging for Engineers

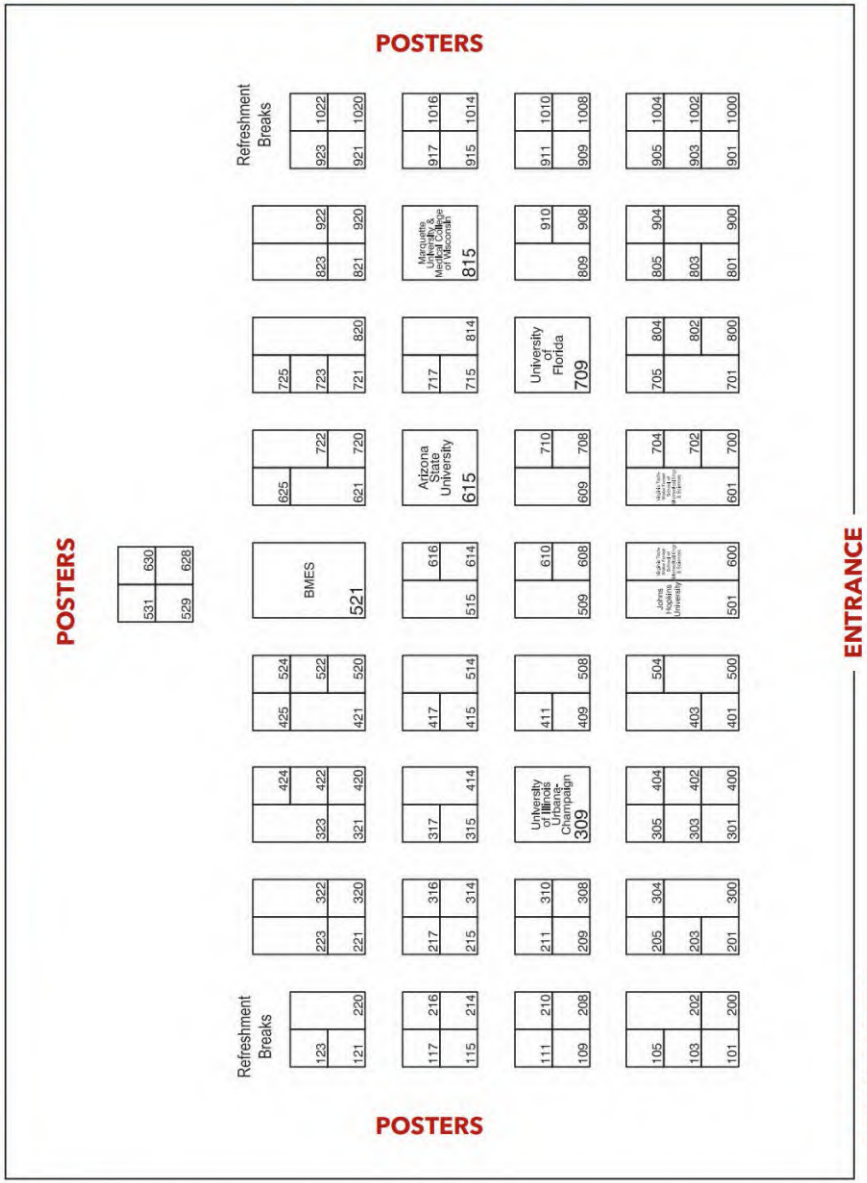
Cardiovascular disease is the leading cause of death and disability in the world. Non-invasive imaging has become vital for the detection and monitoring of disease progression, aiding in the development of therapeutics and devices. The research highlighted in this talk describes advancements at the interface of engineering and medicine in order to develop and use multiple imaging modalities to better understand cardiac and vascular disease. For example, conventional ultrasound measurements are commonly based on azZZgeometric assumptions from 2D images, often yielding inaccurate results with large variability. Because of this, we have developed a respiratory- and cardiac-gated 3D echocardiography technique to reconstruct ultrasound volumes. We imaged 1) the left ventricles of healthy and infarcted wild-type mice and 2) the abdominal aortas of hyperlipidemic mice with angiotensin II-induced dissecting aneurysms using a position-controlled ultrasound transducer. ECG-gated cine loops at 1000 frames-per-second were acquired at sequential positions and temporally concatenated, generating 4D datasets. Nonlinear image registration was then utilized to calculate deformation fields and project segmented masks across the cardiac cycle and from aneurysmal vessels. Volume renderings of left-ventricular masks yielded ejection fractions of 73±6% and stroke volumes of 31±6μL. In the abdominal aorta, Green-Lagrange circumferential cyclic strain decreased significantly from healthy to aneurysmal regions. The dissecting aneurysm datasets were also used to run detailed hemodynamic simulations over large portions of the abdominal vasculature that include small branching vessels. The results suggest that differences in morphology, kinematics, and hemodynamics play crucial roles in determining the evolution of both ischemic heart disease and dissecting abdominal aortic aneurysms.

Dr. Craig Goergen is the Principal Investigator of the Cardiovascular Imaging Research Laboratory at Purdue University. His work combines advanced engineering, imaging, and biological approaches to study a variety of cardiac and vascular diseases. With funding from the NIH, NSF, AHA, and industry, Dr. Goergen and his team are working to improve cardiovascular disease diagnosis, treatment, and prevention, ultimately providing patients with longer and more fulfilling lives. Dr. Goergen received a bachelor's degree in biomedical engineering from Washington University in St. Louis and master's and doctoral degrees in bioengineering from Stanford University. In graduate school, Dr. Goergen worked with the Biomedical Imaging Group at Genentech to study abdominal aortic aneurysm formation in multiple mouse models. His postdoctoral training in molecular optical imaging at Harvard Medical School focused on cardiac disease and left ventricular remodeling. He joined the faculty at Purdue University in December of 2012 and is passionate about research, education, and student mentorship.

BMES established this award in 2000 to honor Rita M. Schaffer, former BMES Executive Director. Rita's gift of her estate, along with contributions from her family, friends, and associates, has enabled BMES to create the Rita Schaffer Young Investigator Award, which includes the Rita Schaffer Memorial Lecture.

2017 EXHIBITORS

Exhibit Hall Floorplan



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Booth #921

Arizona Bioindustry Association (AzBio)

107 S. Southgate Drive
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AZBio is Arizona's statewide champion for the biomedical industry. AZBio Members include leading universities, hospital systems, municipalities, global industry leaders, exciting entrepreneurial ventures, patient advocates and a community committed to discovering, developing and delivering innovations that make life better by leveraging Arizona's Collaborative Gene.

Booth #615

Arizona State University

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The mission of the School of Biological and Health Systems Engineering at ASU is to create novel solutions to improve human health through research, education, and service to the community. The faculty in SBHSE has a wide range of research expertise with strengths in the following research areas: imaging, biosensors and instrumentation, molecular, cellular and tissue engineering, neural and rehabilitation engineering, synthetic biology and systems bioengineering.

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Booth #911

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The Department of Biomedical Informatics (BMI) upholds a strong partnership among academic researchers, clinical practitioners, and regional health care providers in the advancement of research and education in biomedical informatics. We offer a Bachelors, Masers and PhD in Biomedical Informatics, as well as a MAS in Health Informatics (100% Online).

Booth #315

Binghamton University Department of Biomedical Engineering

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The Binghamton University Department of Biomedical Engineering provides a state-of-the-art, affordable education. We train the next generation of biomedical engineers, cultivate leaders, and foster entrepreneurship through the integration of engineering principles, medical science, and biology towards an improved understanding of biophysical phenomena, healthcare systems, disease prevention, diagnostics, and treatment.

Booth #630

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Booth #700

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Email: info@biopac.com
Web: www.biopac.com

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Booths #421/423

Boston University Biomedical Engineering

44 Cummington Mall, Room 220
Boston, MA 02215
Phone: 617-353-5759
Email: christen@bu.edu
Web: www.bu.edu/bme

Boston University's Department of Biomedical Engineering is one of the largest and oldest departments of its kind in the country. We attract exceptional students to our BS, MEng, MS and PhD degree programs, which are known for their highly quantitative approach. We have strengths in numerous research areas including Biomechanics and Mechanobiology, Molecular, Cellular and Tissue Engineering, Neural Engineering, Synthetic and Systems Bioengineering, Biomedical Imaging, Nanotechnology and Sensing, Computational Modeling and Data Sciences, and Biomaterials. We boast a wealth of research resources and have strong ties with the BU School of Medicine as well as other top medical research centers in the Boston area.

Booth #320

Brown University

171 Meeting Street, Box GB3
Providence, RI 02912
Phone: 401-863-3262
Email: bme@brown.edu
Web: www.brown.edu/bme

The Center for Biomedical Engineering at Brown University features an interdisciplinary approach in three complementary research areas: Mechanobiology, Regenerative Engineering, and Neuroengineering. The program offers BS, MS, and PhD degrees and is distinguished by its research and strong collaborative connections between academic science/ engineering, clinical medicine, and industry.

Booth #520

Bruker Nano, Inc.

9625 West 76th St.
Minneapolis, MN 55344
Phone: 952-835-6366
Email: info.NI@bruker.com
Web: www.bruker.com/nanomechanical-testing

Through its recent acquisition of nanomechanical testing leader Hysitron, Bruker now proudly offers the Hysitron© BioSoft™ In-Situ Indenter, a mechanical test instrument specifically designed for multiscale quantitative mechanical testing of biological materials and soft matter such as hydrogels. The BioSoft interfaces with existing inverted optical microscopes, synchronizing powerful mechanical and optical testing techniques to achieve a comprehensive understanding of the mechanics of biomaterials.

Booth #904

Cambridge University Press

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Booth #524

Carnegie Mellon University

5000 Forbes Avenue
Pittsburgh, PA 15213
Phone: 412-268-6222
Email: bme-purchasing@andrew.cmu.edu
Web: www.bme.cmu.edu

The Department of Biomedical Engineering at Carnegie Mellon is built upon a long tradition of interdisciplinary research across departmental borders. Its decades-old research program emphasizes a collaborative network that balances four synergistic areas: basic engineering principles of living cells and tissues, engineering tools for biomedical research, interface between living and artificial materials, and clinical applications of biomedical engineering. Training programs encourage students to expand their vision and prepare them for a wide range of careers from academic research in basic sciences, to engineering entrepreneurship, to medical care.

Booth #401

Case Western Reserve University

10900 Euclid Avenue
Cleveland, OH 44106
Phone: 216-368-4094
Email: bmedept@case.edu
Web: http://bme.case.edu/

The Department of Biomedical Engineering at Case Western Reserve University offers distinctive programs ranging from the B. S. degree through the Ph.D. degree, including our innovative M.D./Ph.D. degree, M.D./M.S. degree, and our Biomedical Entrepreneurship program. Cutting-edge research thrusts include: biomaterials and tissue engineering, neural engineering and neuroprostheses, biomedical imaging and sensing, transport and metabolic engineering, biomechanics, and targeted therapeutics.

Booth #301

Case Western Reserve University CWRU Center for Multimodal Evaluation of Engineered Cartilage

10900 Euclid Avenue
Millis Building Room 118
Cleveland, OH 44106
Phone: 216-368-1333
Email: ccmeec@case.edu
Web: http://ccmeec.case.edu/

The Center provides a nexus of capabilities where academic and industrial researchers from local, national, and international labs can access information, obtain assistance and training with planning and methods, and utilize specialized facilities to evaluate their engineered tissues. The Center provides "one-stop shopping" of technologies for comprehensive, multimodal evaluation of engineered tissue with emphasis on the following areas:

- Imaging, cell biology and metabolism, and mechanical characterization.
- Non-contact, non-destructive longitudinal testing.
- Exhaustive destructive testing for validation purposes.

EXHIBITOR BOOTHS AND INFORMATION

Booth #702

CELLINK

2000 Kraft Drive, Suite 2125
Blacksburg, VA 24060
Phone: 650-515-5566
Email: eg@cellink.com
Web: www.cellink.com

CELLINK is a world leader in 3D Bioprinting and provider of cost effective, high quality 3D Bioprinters, Bioinks, and introductory bioprinting packages and kits for educational and laboratory use. CELLINK's technology can be used for 3D tissue engineering, cell culturing, and biofabrication of tissue models. CELLINK is an energetic startup that will help you get started with 3D Bioprinting at a minimal cost and ensure that you find a solution that fits your needs. CELLINK currently has products in hundreds of labs in more than 30 countries word wide. Please visit us at www.cellink.com for more information and we look forward to seeing you at our booth.

Booth #214

The City College of New York Biomedical Engineering

160 Convent Avenue
New York, NY 10031
Phone: 212-650-6707
Email: pcupid@ccny.cuny.edu
Web: bme.ccny.cuny.edu

The City College of New York – the founding college of CUNY. Founded in 1847, it has produced nine Nobel Prize winners and ranks seventh in the number of alumni who have been elected to the National Academy of Sciences. The Biomedical Engineering Department was established in 2002. BME at CCNY: Biomaterials/nanotechnology; Cardiovascular Engineering; Musculoskeletal Biomechanics; and Neural Engineering.

Booth #708

Clemson University Department of Bioengineering

301 Rhodes Hall
Clemson, SC 29670
Phone: 864-656-7276
Email: mariam@clemson.edu
Web: www.clemson.edu/ces/bioe

With research labs, classrooms and innovation space for business partnerships at Clemson, Greenville, and Medical University of South Carolina, Clemson BIOE abounds with opportunities for personalized education, transformative research, networking with life sciences companies and investors and bold entrepreneurship that turns innovation into goods that are now improving health care in the US and abroad.

Booths #809/811

Columbia University Department of Biomedical Engineering

351 Engineering Terrace
500 West 120th Street
New York, NY 10027
Phone: 212-854-4460
Email: bme@columbia.edu
Web: www.bme.columbia.edu

The Department of Biomedical Engineering at Columbia University offers biomedical engineering education and research through B.S., M.S., Ph.D., and M.D./Ph.D. degree programs. Our department provides a surprising mix of the intellectual atmosphere of an Ivy League institution and the sense of community of a small college enriched by the diversity of New York City.

Booths #500/502

Cornell University

103 Weill Hall
Ithaca, NY 14853
Phone: 607-255-2573
Email: bh42@cornell.edu
Web: www.bme.cornell.edu

The Meinig School of Biomedical Engineering at Cornell University focuses on interdisciplinary research to achieve a quantitative understanding of human biology at all spatial and temporal scales with the goal of improving human health. The school has a close relationship with the Weill Cornell Medicine medical school and its associated hospitals in New York City, including an "Immersion Term", during which all BME Ph.D. students spend 7 weeks in a clinical experience at Weill Cornell Medicine. Cornell University is a comprehensive university with outstanding programs of teaching and research in all areas of human inquiry, which has its main campus at Ithaca in the beautiful Finger Lakes Region of upstate New York. The Meinig School has close collaborations with other departments on campus. For more information, please visit http://www.bme.cornell.edu/.

Booth #917

Engineering in Medicine at Dartmouth

14 Engineering Drive
Hanover, NH 03755
Phone: 503-650-1913
Email: sally.m.hull@dartmouth.edu
Web: engineering.dartmouth.edu

Engineering in Medicine research programs at Dartmouth will be exhibiting info on biomedical engineering internships and PhD programs, existing between unique programs in both engineering and medical schools. Located in Hanover, New Hampshire, Dartmouth's unique brand of biomedical engineering is within the engineering science education program, to foster cross-disciplinary innovation.

Booth #121

Drexel University School of Biomedical Engineering, Science & Health Systems

3141 Chestnut Street, Bossone 718
Philadelphia, PA 19104
Phone: 215-895-2307
Email: ltw22@drexel.edu
Web: biomed.drexel.edu

The School of Biomedical Engineering, Science and Health Systems is a nationally recognized center of research and education. Areas of specialization include biomechanics, human performance, biomaterials, tissue engineering, biomedical imaging, bioinformatics and drug delivery. Multidisciplinary research is carried out through collaborations with clinical institutions in the Philadelphia area.

Booth #215

Duke University Department of Biomedical Engineering

101 Science Drive
1427 Fitzpatrick (CIEMAS) Building
Durham, NC 27708
Phone: 919-660-5131
Email: Kristen.rivers@duke.edu
Web: http://bme.duke.edu

The mission of the Department of Biomedical Engineering has its foundation in that of Duke University. We work closely with researchers, of various disciplines, to identify important problems that impact human health and solve them using our technical expertise. We engage motivated and talented students in the classroom, laboratory and clinic, imparting to them the spirit of our mission as we prepare them for future careers as effective, knowledgeable, and ethical leaders in corporate, professional, and academic communities.

Booth #303

Duquesne University Biomedical Engineering

600 Forbes Avenue
307 Libermann Hall
Pittsburgh, PA 15282
Phone: 412-396-2662
Email: babinsack@duq.edu
Web: www.duq.edu/bme

The Biomedical Engineering Program and Duquesne University is offering a graduate program, beginning in the fall of 2018. The program offers a thesis or non-thesis degree in biomedical engineering. The curriculum is 32 credits and covers coursework in various fields of biomedical engineering. Research facilities are available for thesis work covering biomedical optics, biomaterials, medical imaging and other areas.

Booth #704

Edwards Lifesciences

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Phone: 949-756-4258
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Booth #800

Elsevier

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As a leading provider of online books, eBooks and Journals in Biomedical Engineering, Elsevier is committed to bringing you the latest, most ground-breaking biomedical books in the field. Our list includes topics from biomaterial science, medical device technologies, to biofluid mechanics.

Booth #710

Engineering World Health

151 E. Rosemary St, Suite 201
Chapel Hill, NC 27514
Phone: 984-234-3686
Email: jessicabaker@ewh.org
Web: www.ewh.org

Engineering World Health inspires, educates, and empowers the biomedical engineering community to improve health care delivery in the developing world. In partnership with universities, ministries of health, and others, EWH builds local capacity to maintain medical equipment, make repairs, and design low-cost medical technologies. Visit us to learn about EWH's Summer Institute and how you can make a lasting impact on healthcare in low-resource communities!

Booth #304

EnvisionTEC
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Dearborn, MI 48120
Phone: 313-436-4300
Email: northamerica@envisiontec.com
Web: http://envisiontec.com

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Booth #1022

Florida International University
10555 West Flagler Street
Miami, FL 33174
Phone: 305-348-7292
Email: smanjarr@fiu.edu
Web: www.bme.fiu.edu

Booth #628

Food and Drug Administration CDRH/Office of Device Evaluation
10903 New Hampshire Avenue
Building 66 – Room 1659
Silver Spring, MD 20993
Phone: 301-796-2690
Email: tara.smith@fda.hhs.gov
Web: https://www.FDA.gov/MedicalDevices/default.htm

Booth #415

George Mason University Department of Bioengineering
4400 University Drive, MS 165
Fairfax, VA 22030
Phone: 703-993-5769
Email: tmcgowa2@gmu.edu
Web: www.bioengineering.gmu.edu

Located in the Washington DC metropolitan area, George Mason University's Department of Bioengineering offers unique research and educational experience with collaborative opportunities with nearby national laboratories, institutes, and clinical facilities. The BS program offers three concentrations: Biomedical Signals & Systems, Bioengineering Healthcare Informatics, and Bioengineering Prehealth; it has grown very rapidly since its inception in 2010 to over 220 undergraduate students and earned accreditation from ABET in 2012.
The Bioengineering PhD program started in Spring 2015, has already over 20 graduate students, and is currently accepting new applications from outstanding prospective students with full tuition and stipend support.
The department has 16 primary faculty members with approximately $20M of active research in multidisciplinary areas of bioengineering ranging from biomaterials, biomechanics, biomedical imaging, nanomedicine, and neural engineering.

Booth #203

The George Washington University

800 22nd Street NW, Suite 2885
Washington, DC 20052
Phone: 202-944-1802
Email: engineering@gwu.edu
Web: www.graduate.seas.gwu.edu

The George Washington University's School of Engineering & Applied Science offers graduate degrees and certificates in 11 fields of study within engineering and computer science, including biomedical engineering and regulatory biomedical engineering. All courses are held on the main campus in downtown Washington, D.C.

Booths #614/616

Georgia Tech/Emory University Wallace H. Coulter Department of Biomedical Engineering

313 Ferst Drive
Atlanta, GA 30332
Phone: 404-385-0124
Email: gradstudies@bme.gatech.edu
Web: www.bme.gatech.edu

The PhD Program has an emphasis on applications to human health. Research areas include: Biomechanics & Mechanobiology; Biomedical Imaging & Optics; Cellular, Molecular & Biomaterials Engineering; Computational Biomedical Systems Analysis; and Healthcare Informatics & Technology. The BioID Master's Program in Biomedical Innovation and Development focuses on needs-finding, engineering development, regulatory requirements, and commercialization of medical devices. It is a one-of-a-kind academic and clinical experience.

Booth #314

Illinois Tech–BME

3205 S. Dearborn Street
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Phone: 312-567-5790
Email: jgeorgia@iit.edu
Web: www.iit.edu

Booth #905

Imperial College London Department of Bioengineering

South Kensington Campus
London SW7 2AZ UK
Phone: +44 (0) 20 7594 5179
Email: bioengineering@imperial.ac.uk
Web: imperial.ac.uk/bioengineering

Imperial College London is consistently one of the top 10 universities worldwide. The Department of Bioengineering at Imperial is the leading Department in the UK. Our research spans the breadth of bioengineering and we offer a range of academic and research opportunities for undergraduate (MEng) and postgraduate (MSc, MRes and PhD).

Booth #210

IOP Publishing

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Booths # 501/503/505

Johns Hopkins University

720 Rutland Avenue, Traylor 406
Baltimore, MD 21205
Phone: 410-614-4280
Email: hlan1@jhmi.edu
Web: www.bme.jhu.edu

Faculty and students in the Department of Biomedical Engineering have been breaking new ground in biomedical research for over 50 years, and we strive to continue this history of innovation and discovery every day. Ph.D. Program–an intellectually stimulating environment and the nurturing spirit of collegiality extend throughout the program which is consistently ranked #1 in the U.S. Research areas include Biomedical Imaging; Cell and Tissue Engineering; Computational Biology and Medicine; Molecular and Cellular Systems Biology; and Neuroengineering. MSE Program – prepares students to pursue careers in research and development, or as a step toward PhD or MD/PhD education. CBID MSE Program – an intensive twelve-month program that focuses on development and commercialization of medical devices. Applied Biomedical Engineering MS Program – provides practicing engineers and scientists the opportunity to enhance their skills in engineering so that they can solve today's most critical problems in biology and medicine.

Booths #220/222

Korea Institute of Science and Technology (KIST)

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Seoul 02792 Republic of Korea
Phone: +82-2-958-6142
Email: alberto@kist.re.kr
Web: www.kist.re.kr

The Biomedical Research Institute at KIST is Korea's leading medical research agency. Making important discoveries that improve health and save lives, we invite you to learn more about our institute and research accomplishments. We will also be providing interviewing opportunities to prospective students, postdocs, and scientists through our research staff.

Booth #1014

Lawrence Technological University

21000 West Ten Mile Road
Southfield, MI 48075
Phone: 248-204-2660
Email: glecarpen@ltu.edu
Web: www.ltu.edu/bme

As a biomedical engineering student at Lawrence Tech, you're exposed to the University's signature "Theory and Practice" approach to learning. Extensive laboratory work and opportunities for co-ops and internships in hospitals, health care institutions, and the medical equipment industry provide valuable hands-on experiences, and dedicated faculty bring current industry knowledge and cutting-edge research to the classroom. In addition to the ABET-accredited BS program, the university now offers a graduate degree. All student must complete 30 credit hours, which include either a design project or a research thesis. The core coursework focuses on a range of topic like bioelectric physics, biomechanics, mechanobiology and advanced biomaterials, while the elective can be tailored to students interests.

Booth #721

Lehigh University Bioengineering

111 Research Drive, Room D325
Bethlehem, PA 18015
Phone: 610-758-4091
Email: inbioe@lehigh.edu
Web: www.lehigh.edu/~inbioe

The Bioengineering Program continues Lehigh's tradition of world-class excellence in education and research. We offer a full range of opportunities, from nanoscale to systems, for BS, MS and PhD students, focusing on advancement of knowledge of biological systems, generation of new diagnostic tools, medical therapy improvement and medical device innovation.

Booth #310

Louisiana Tech University Biomedical Engineering

P.O. Box 10157
818 Nelson Avenue
Ruston, LA 71272
Phone: 318-257-4420
Email: ahill@latech.edu
Web: coes.latech.edu/cbers/biomedical-engineering-research

Are you looking for a graduate program in a research university with small classes and friendly students and faculty? Please talk to us! Our research areas include neural engineering/ neuroscience; nanotechnology/applied biotechnology; biosensors; biosignal processing, microfluidic chip/biomarker discovery, advanced optical imaging; and cell, molecular and tissue engineering. Plus, we have clinical partners in epilepsy, anesthesia, traumatic brain injury, and cancer treatment

Booth #815

Marquette University Medical College of Wisconsin

8701 Watertown Road
Milwaukee, WI 53226
Phone: 414-955-8671
Email: bme@mcw.marquette.edu
Web: www.mcw.marquette.edu/biomedical-engineering

The Marquette University and Medical College of Wisconsin Department of Biomedical Engineering features innovative programs in the following research areas: cardiovascular and pulmonary; imaging; medical device innovation; analytics, informatics and software engineering; computational biology and systems biology; molecular systems and modeling; orthopaedics and orthopaedic rehabilitation; neurosystems and neurorehabilitation.

Booths #514/516

Mayo Clinic Graduate School of Biomedical Sciences Biomedical Engineering & Physiology

200 First Street, SW
SMH JO 4-184
Rochester, MN 55905
Phone: 507-255-8544
Email: kingsleyberg.shirley@mayo.edu
Web: www.mayo.edu/gs/programs/phd/biomedical-engineering

The Graduate Program in Biomedical Engineering & Physiology at Mayo Clinic Graduate School of Biomedical Sciences has a long, rich history with a tradition of research that spans interdisciplinary boundaries and routinely connects the engineering and physical sciences to the biological sciences and clinical practice. The Mayo Graduate School offers graduate programs in various fields leading to PhD and MD/PhD degrees. The Graduate Program in Biomedical Engineering & Physiology offers a wide range of research opportunities from basic discovery science to clinical and translational research. Students are provided the necessary quantitative tools to become leaders in diverse fields of biomedical sciences.

Booth #424

McGill University Department of Bioengineering

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Montreal, Quebec H3A 0C3 Canada
Phone: 514-398-7138
Email: adminoffice.bioeng@mcgill.ca
Web: www.mcgill.ca/bioengineering

Booth #1020

MDPI AG (Multidisciplinary Digital Publishing Institute)

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CH-4020 Basel, Switzerland
Phone: +41 61 683 77 34
Email: bioengineering@mdpi.com
Web: www.mdpi.com

MDPI (Multidisciplinary Digital Publishing Institute) is an academic open-access publisher with headquarters in Basel, Switzerland. Additional offices are located in Beijing and Wuhan (China), Barcelona (Spain) as well as in Belgrade (Serbia). MDPI publishes 177 diverse peer-reviewed, scientific, open access, electronic journals, more than 216,400 individual authors have already published with MDPI.

Booth #402

Michigan State University Department of Biomedical Engineering

775 Woodlot Drive
4000 Bio Engineering Building
East Lansing, MI 48824
Phone: 517-884-6976
Email: princeme@egr.msu.edu
Web: www.egr.msu.edu/bme/

The new Department of Biomedical Engineering at Michigan State University is devoted to basic and applied research at the interface of life sciences and engineering. The department is housed in a brand new 130,000-square-foot building that brings together interdisciplinary investigators to solve the world's greatest biomedical challenges.

Booth #317

Michigan Technological University Department of Biomedical Engineering

1400 Townsend Drive
Houghton, MI 49931
Phone: 906-487-2772
Email: slsedar@mtu.edu
Web: www.mtu.edu/biomedical

Located in the beautiful Upper Peninsula of Michigan, the Department of Biomedical Engineering at Michigan Technological University conducts world-class research at the interface of medicine, biology, and engineering, while educating the next generation of biomedical engineers by offering B.S., M.S., and Ph.D. degrees. The BME Department at MTU leverages the University's strong and rich history of engineering education and research. We create the future of medicine.

Booth #109

Midwestern University

19555 N. 59th Avenue
Glendale, AZ 85383
Phone: 623-806-7658
Email: acarma@midwestern.edu
Web: www.mwuihi.com

Midwestern University Institute for Healthcare Innovation (IHI) was established in 2014 to facilitate clinical and translational research with Midwestern University Colleges of Veterinary Medicine, Osteopathic Medicine, Dental Medicine, Pharmacy, Optometry and Health Sciences. The IHI can assist external collaborators and industry sponsors in evaluating pharmaceuticals, biologics, diagnostics and devices by performing basic research, and human and veterinary studies. The IHI is staffed by personnel with industry, research and clinical experience

Booth #804

Nanoscience Instruments

10008 S. 51st Street
Suite 110
Phoenix, AZ 85044
Phone: 480-758-5400
Email: info@nanoscience.com
Web: www.nanoscience.com

For 15 years, Nanoscience Instruments has delivered a variety of analytical solutions to academia and industry, specializing in nanoscale microscopy instrumentation, and nanofiber and nanoparticle manufacturing. Our line includes benchtop electrospinning equipment, benchtop SEMs, portable AFMs & STMs, 3D optical profilers and micro/nanomanipulation systems. More information is available on www.nanoscience.com

Booth #717

National Institute of Biomedical Imaging and Bioengineering/ National Institutes of Health

31 Center Drive
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Bethesda, MD 20892
Phone: 301-496-9208
Email: coneyjohnsons@mail.nih.gov
Web: http://www.ribib.nih.gov

Booth #1010

National Society of Black Engineers

205 Daingerfield Road
Alexandria, VA 22314
Phone: 703-837-9919
Email: ywatson@nsbe.org
Web: www.nsbe.org

With more than 500 chapters and more than 17,000 active members in the U.S. and abroad, the National Society of Black Engineers (NSBE) is one of the largest student-governed organizations based in the United States. NSBE, founded in 1975, supports and promotes the aspirations of collegiate and pre-collegiate students and technical professionals in engineering and technology. NSBE's mission is "to increase the number of culturally responsible black engineers who excel academically, succeed professionally and positively impact the community." www.nsbe.org

Booth #103

National Science Foundation (NSF) Division of Chemical, Bioengineering, Environmental and Transport Systems (CBET)

2415 Eisenhower Avenue
Alexandria, VA 22314
Phone: 703-292-5111
Email: tbattle@nsf.gov
Web: www.nsf.gov

The NSF Division of Chemical, Bioengineering, Environmental, and Transport Systems (CBET) supports innovative research and education primarily in the fields of chemical, mechanical, and civil/environmental engineering, and bioengineering. The CBET program director from the Engineering of Biomedical Systems and Disability and Rehabilitation Engineering programs will be available to answer questions about proposals, areas for funding, timelines and expectations while writing, and common author mistakes. Attendees can also gain tips on how to create and develop a proposal while incorporating key features requested by NSF.

Booth #123

New Jersey Institute of Technology (NJIT) Department of Biomedical Engineering

University Heights
Newark, NJ 07102
Phone: 973-596-5476
Email: rocha@njit.edu
Web: http://biomedical.njit.edu

NJIT's Biomedical Engineering Department (BME) is among the top producers of BME degrees in the region with over 300 undergraduate, 100 master's and 50 doctoral students. Our Ph.D. program is delivered jointly with the Graduate School of Biomedical Science at Rutgers New Jersey Medical School. In 2010, the National Research Council ranked our Ph.D. program 26 out of 76 nationally for curriculum quality and student accomplishments. Our popular master's degree program can be customized providing you the opportunity to meet your academic and professional goals. Our undergraduate program is ABET accredited and attracts a diverse student body with the highest GPA and SAT scores at NJIT. We are a research-active department in areas of head injury biomechanics, neuro-rehabilitation, direct brain interfacing, biomedical imaging, neural signal processing, cellular/molecular tissue engineering and biomaterials.

Bioengineering graduate programs with an interdisciplinary research experience

Oregon State University is home to the state's only graduate program in bioengineering, with three tracks culminating in M.Eng., M.S., or Ph.D. degrees. Core curriculum areas include biomaterials, biomedical devices and instrumentation, human performance engineering, medical imaging, and systems and computational biology.

For more information, please visit **cbee.oregonstate.edu**, phone **1-877-257-5182** or email **cbee@oregonstate.edu**.

Oregon State University

Booth #316

Nihon Kohden America

15353 Barranca Parkway
Irvine, CA 92618
Phone: 949-268-7189
Email: jeannie_callahan@nihonkohden.com
Web: http://us.nihonkohden.com

Nihon Kohden America offers a complete Enterprise Monitoring Solution focusing on quality and reliability. Our products include a full feature set that come standard with every monitor and our 5-year warranty on parts and labor allows us to have the best Total Cost of Ownership in the industry.

Booth #117

Northern Arizona University Doctoral Degree in Bioengineering

617 S. Beaver Street
Building 21, Box 4185
Flagstaff, AZ 86011
Phone: 928-523-0634
Email: megan.coe@nau.edu
Web: www.nau.edu/cbi

EXHIBITOR BOOTHS AND INFORMATION

Booth #404

Northwestern University

2145 Sheridan Road
Evanston, IL 60026
Phone: 773-547-7899
Email: s-olds@northwestern.edu
Web: www.bme.northwestern.edu

With cutting-edge research in Biomaterials and Regenerative Medicine, Imaging and Biophotonics, and Neural Engineering and Rehabilitation, Northwestern University BME attracts top faculty and students alike. Research takes place on the main campus in Evanston and on the medical school campus in downtown Chicago.

Booths #922/924

The Ohio State University Department of Biomedical Engineering

270 Bevis Hall
1080 Carmack Road
Columbus, OH
Phone: 614-292-7152
Email: senitko.1@osu.edu
Web: www.bmeosu.edu

Offering B.S., M.S., Ph.D., and M.D./Ph.D. degrees with research programs in 7 different biomedical engineering domains in state-of-the-art facilities and with strong collaborations with the OSU Wexner Medical Center, Davis Heart and Lung Research Institute, Nationwide Children's Hospital and the OSU Comprehensive Cancer Center featuring the 3rd largest Cancer Hospital in the nation.

Booths #920

Oregon Health & Science University Department of Biomedical Engineering

3303 SW Bond Avenue • CH13B
Portland, OR 97239
Phone: 503-418-9331
Email: radaslic@ohsu.edu
Web: www.ohsu.edu/bme

The BME graduate curriculum is designed to provide both breadth and depth in human (patho)physiology and the use and development of measurement and data science and computational biology approaches to address unmet clinical needs. The curriculum is tailored for each student based upon their background, research direction and career goals.

Booths #209

Oregon State University School of Chemical, Biological and Environmental Engineering

105 SW 26th Street
Johnson Hall 116
Corvallis, OR 97331
Phone: 541-737-2491
Email: cbee-gradinfo@oregonstate.edu
Web: www.bioengineering.oregonstate.edu

Oregon State University's offers M.Eng., M.S., and Ph.D. degrees via its new interdisciplinary graduate program in bioengineering administered by the School of Chemical, Biological, and Environmental Engineering. Faculty from across the university participate. The program provides broad exposure through coursework and seminars, as well as a focused research experience.

BIOMEDICAL ENGINEERING FACULTY POSITION, SYSTEMS BIOLOGY (NEURAL REGENERATION AND TISSUE ENGINEERING)

The Penn State Department of Biomedical Engineering (College of Engineering) and Department of Neurosurgery (College of Medicine) jointly seek to co-hire, along with other Penn State interdisciplinary institutes, a full-time tenure-track or tenured faculty member starting 2018-19.

To Apply: http://tinyurl.com/ycr63sel

PennState College of Engineering | BIOMEDICAL ENGINEERING
www.bme.psu.edu

Booth #520

The Pennsylvania State University

205 Hallowell Building
University Park, PA 16802
Phone: 814-865-1407
Email: glm108@psu.edu
Web: www.bme.psu.edu

The Penn State Department of Biomedical Engineering and the Intercollege Graduate Degree Program in Bioengineering are proud to offer B.S., M.S. and Ph.D. degrees. Our mission is to educate students to become world-class engineers who contribute to biomedical engineering development through innovative solutions to problems in biotechnologies, medicine and the life sciences. The graduate program offers strong integration with many other disciplines to increase the breadth of our uniquely trained faculty and specialized facilities, enable cutting-edge research in fundamental bioengineering, biomaterials, physical, medical and life sciences with a goal to translate discovery from academia to society. Come by for a visit. We look forward to meeting you!

Booth #217

Phoenix Analysis and Design Technologies

7155 S. Research Drive
Suite 110
Tempe, AZ 85284
Phone: 480-813-4884
Email: john.williams@padtinc.com
Web: http://www.padtinc.com/

Phoenix Analysis and Design Technologies is an engineering product and services company that focuses on helping customers who develop physical products by providing Numerical Simulation, Product Development, and 3D Printing solutions. Since its establishment in 1994, companies have relied on PADT because "We Make Innovation Work.

Booths #509/511

Purdue University Weldon School of Biomedical Engineering

206 S. Martin Jischke Drive
West Lafayette, IN 47907-2032
Phone: 765-494-2995
Email: WeldonBMEGrad@purdue.edu
Web: www.purdue.edu/bme

The Weldon School of Biomedical Engineering at Purdue recruits exceptional MS and PhD students for nationally-funded graduate programs in four signature areas of expertise: imaging, instrumentation, engineered biomaterials and biomechanics, and quantitative cellular and systems engineering. We are continuing to grow our diverse faculty and clinical partnerships that distinguish us in biomedical entrepreneurship, regulatory science, and translational impact.

Booth #715

Rensselaer Polytechnic Institute

110 8th Street
BMED JEC7049
Troy, NY 12180
Phone: 518-276-6548
Email: bme@rpi.edu
Web: www.bme.rpi.edu

Rensselaer Polytechnic Institute is the nation's oldest technological research university educating outstanding academics, industry leaders and research scientists. Stop by and learn about graduate programs (MS and PhD) as well as opportunities for graduate students (NIH Predoctoral Training Program, NSF iCORPs site) and Undergraduates (REU in Bioengineering and Biomanufacturing) (bme.rpi.edu).

Booths #300 / 302

Rice University Department of Bioengineering

6100 Main Street
Houston, TX 77005-1892
Phone: 713-348-5869
Email: bioeng@rice.edu
Web: www.bioengineering.rice.edu

Rice University's Department of Bioengineering is a top-tier teaching and research institution with graduate programs that lead to an MBE, PhD, or a joint MD/PhD with Baylor College of Medicine. Situated next to the Texas Medical Center, we offer education and research opportunities in biomaterials and drug delivery, biomedical imaging and diagnostics, cellular and bimolecular engineering, computational and theoretical bioengineering, systems and synthetic biology, and tissue engineering and biomechanics.

Booths #820/822/824

Rutgers, The State University of New Jersey

599 Taylor Road
Piscataway, NJ 08854
Phone: 848-445-4500
Email: shreiber@soe.rutgers.edu
Web: http://bme.rutgers.edu

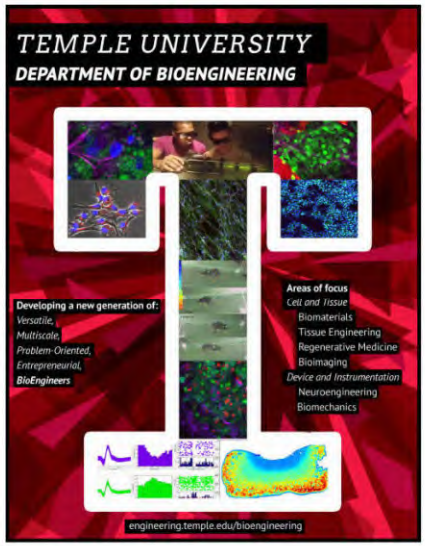
The Rutgers Department of Biomedical Engineering (BME) is a vibrant and dynamic enterprise of scholarship, learning, and technology development. Located in the heart of New Jersey's "Cure Corridor", BME offers a remarkably diverse array of opportunities for undergraduate, graduate, and postgraduate training and research in molecular systems bioengineering, biomaterials and tissue engineering, bionanotechnology, biomechanics, rehabilitation engineering, and biomedical imaging. The program offers a BS degree at the undergraduate level, and PhD, MS, and MEng degrees at the graduate level, the last of which is also offered 100% online. The program also offers joint Masters of Business and Science (MBS) and MD-PhD degrees, as well as a certificate in Medical Device Design and Development.

Booth #115

S-E-A, Ltd.

7001 Buffalo Parkway
Columbus, OH 43229
Phone: 800-872-6851
Email: avaldevit@sealimited.com
Web: www.sealimited.com

S-E-A is a multi-disciplined forensic, testing and evaluation team of licensed/registered professionals who are experts in their specialty. With services in biomechanical, materials, microscopy and medical visualization/illustration, S-E-A offers our clients laboratory services for pre-market/in vitro evaluations along with the confidence of knowing S-E-A's advanced analytical and testing tools are employed.



Booth #208

Sony Healthcare Solutions

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Email: Brian.Zimmer@sony.com
Web: www.sony.com/medical

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Booth #200

Stevens Institute of Technology

1 Castle Point on Hudson
Hoboken, NJ 07030
Phone: 201-216-5000
Email: mgray@stevens.edu
Web: www.stevens.edu

Booth #417

Stony Brook University Biomedical Engineering Department

101 Bioengineering Building
Stony Brook, NY 11794-5281
Phone: 631-632-1480
Email: david.rubenstein@stonybrook.edu
Web: www.bme.stonybrook.edu

The mission of the BME department at Stony Brook University is to fully integrate the cutting edge of engineering and physical sciences with state-of-the-art biology to advance our understanding of biomedical problems, and to drive the development of therapeutics, diagnostics and medical devices. Areas of research expertise include biomechanics, bioelectricity, tissue engineering, bioinstrumentation, cellular and molecular bioengineering, and bioimaging.

Booth #901

Syracuse University Department of Biomedical and Chemical Engineering

329 Link Hall
Syracuse, NY 13244
Phone: 315-443-1931
Email: topgrads@syr.edu
Web: http://eng-cs.syr.edu/our-departments/biomedical-and-chemical-engineering/

Prospective graduate students and faculty can learn about our graduate programs that offer cutting edge, multidisciplinary research and education in biomedical engineering in a truly collaborative setting within the Syracuse Biomaterials Institute. Interact with our faculty and graduate students on a one-to-one basis and learn about financial aid opportunities.

Booth #725

Temple University College of Engineering, Department of Bioengineering

1947 North 12th Street
Philadelphia, PA 19122
Phone: 215-204-3404
Email: doreen.aiello@temple.edu
Web: http://engineering.temple.edu/bioengineering

In the Department of Bioengineering at Temple University. our faculty aim to help our undergraduate and graduate students sculpt their ideas, we teach and train them to understand health-related problems, to develop possible solutions through fundamental, knowledge-based paths, and to implement those solutions through translational methods. Our students are equally versed in quantitative, engineering approaches to cellular-based natural sciences (biology, physiology, chemistry) and in devices-based skills (programming, data science, instrumentation). Through education and research, we will prepare new generations of versatile, problem oriented, multiscale, entrepreneurial engineers, who can easily step out of their expertise to integrate skill sets with information from other fields.

Booths #701/703

BME@TAMU

3120 TAMU
College Station, TX 77843
Phone: 979-845-2312
Email: bmen@tamu.edu
Web: http://engineering.tamu.edu/biomedical

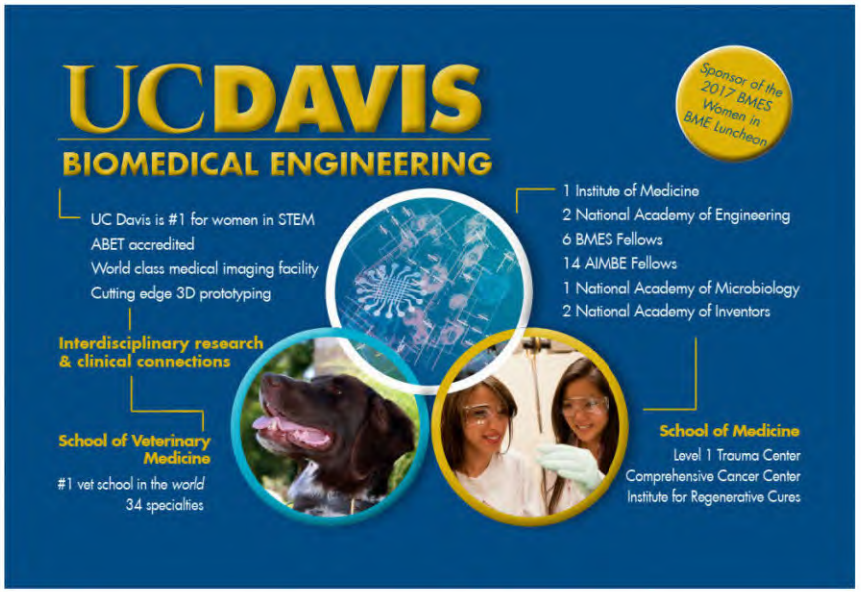
The Department of Biomedical Engineering at Texas A&M University offers allows students to impact health outcomes in the areas of sensing and imaging, optics, orthopedic biomechanics, biomaterials, tissue engineering, biomolecular and cellular engineering, and more. The department's award-winning faculty have strong collaborations with medical and veterinary schools as well as industry. Offering graduate degrees at the master's and doctoral levels, this program provides an exceptional academic experience

Booths #722/724

Tufts University Biomedical Engineering

4 Colby Street
Medford, MA 02155
Phone: 614-627-2580
Email: bme@tufts.edu
Web: www.engineering.tufts.edu/bme

Biomedical Engineering at Tufts University draws from core disciplines such as engineering, biology, computer science, physics, chemistry, and physiology emphasizing an interdisciplinary approach to research and education. Strong emphasis is placed on interactions with faculty in Arts and Sciences and the professional schools. The Tissue Engineering Resource Center (TERC) was initiated in August of 2004 as a Resource Center supported through the National Institutes of Health P41 program. The core themes in the Center focus on functional tissue engineering achieved through a systems approach – integrating cells, scaffolds and bioreactors to control the environment *in vitro* for translation *in vivo*.



Booth #205

Tulane University Department of Biomedical Engineering

500 Lindy Boggs Bldg.
New Orleans, LA 70118
Phone: 504-865-5897
Email: bmen-info@tulane.edu
Web: www.bmen.tulane.edu

Tulane's Biomedical Engineering Department is located in the diverse cultural mecca of New Orleans and has been established since 1977. Degrees offered range from B.S. to Ph.D., and research includes biomechanics, biotransport, regenerative medicine, biomaterials and devices. Collaboration with the School of Medicine and numerous other centers are available and abounding.

Booth #923

The University of Akron Department of Biomedical Engineering

235 Carroll Street
ASEC Rm. 275
Akron, OH 44325-0302
Phone: 330-972-6977
Email: bmegrad@uakron.edu
Web: www.uakron.edu/engineering/BME

The University of Akron offers BS, MS and PhD degree programs in BME. These programs have an individualized curricular approach, designed in coordination with each student's career plans. BME faculty are engaged in both basic and translational research areas, including, but not limited to, optics, microtechnology, biomaterials, biomechanics, and regenerative medicine.

Booths #414/416

The University of Alabama at Birmingham

1690 University Boulevard, VH G094
Birmingham, AL 35233
Phone: 205-996-6936
Email: minrob@uab.edu
Web: www.uab.edu/bme

The BME department at The University of Alabama at Birmingham offers BS, MS, and PhD degrees. The MS program offers an optional Certificate in Life Sciences Entrepreneurship. The primary interdisciplinary research programs include tissue engineering, biomechanics, and cardiac electrophysiology. The department currently includes 20 primary and 60 secondary faculty members. UAB BME is ranked 4th in the U.S. in NIH funding to joint departments of biomedical engineering by the Blue Ridge Institute for Medical Research.

Booth #211

The University of Arizona Biomedical Engineering

P.O. Box 210020
Tucson, AZ 85721
Phone: 520-626-9134
Email: bmegidp@email.arizona.edu
Web: www.bme.arizona.edu

Booth #101

University of Arkansas Biomedical Engineering

790 West Dickson Street • Room 120
Fayetteville, AR 72701
Phone: 479-575-4786
Email: kkarsted@uark.edu
Web: www.biomedical-engineering.uark.edu

The Biomedical Engineering Program at the University of Arkansas offers MS and PhD degrees. Our active faculty has research programs in: Organ Regeneration; Cell and Molecular Imaging; Nanobiotechnology; Molecular Genetics and Cell Biology in Disease Prevention; Biomaterials; Tissue Engineering; and Vaccine and Immunotherapy Delivery Systems. Stop by our booth and learn how well qualified students can earn $10,000 to $20,000 per year on top of standard assistantship stipends!

Booth #422

University of Calgary

2500 University Drive NW
Calgary, Alberta T2N 1N4 Canada
Phone: 403-220-4818
Email: bioengineering@ucalgary.ca
Web: www.ucalgary.ca/bme

Booth #610

University of California, Berkeley

306 Stanley Hall
Berkeley, CA 94720-1762
Phone: 510-642-5833
Email: bioeng@berkeley.edu
Web: http://bioeng.berkeley.edu/

The Department of Bioengineering at the University of California, Berkeley will be showcasing its novel research and academic programs, including the bachelor, Master of Engineering, Master of Translational Medicine, and PhD degrees. Come visit the UC Berkeley booth to speak with representatives and learn more about the department

Booth #201

The University of California, Davis Department of Biomedical Engineering

One Shields Ave, GBSF 2303
Davis, CA 95616
Phone: 530-752-1033
Email: bme@ucdavis.edu
Web: www.bme.ucdavis.edu

With 35 primary faculty and a graduate group of 64 faculty, BME at UC Davis combines exceptional teaching with state-of-the-art research to prepare students for careers in academics and industry. We are ABET accredited and home to a world class medical imaging center and cutting edge 3D prototyping facility. One of our core values is the belief that biomedical engineers should learn by doing. At UC Davis we emphasize translation through our close relationships with clinicians, both at the UC Davis Medical Center and at the School of Veterinary Medicine. The success of our faculty at attracting funding generates many opportunities for graduate student research and partnerships with industry. We offer BS, MS, and PhD degrees. Visit our website or drop by our booth to learn about our programs in bioinformatics, biomechanics, cellular and molecular systems, imaging, synthetic biology, and tissue engineering and regenerative medicine. Keep up with the latest news by liking our Facebook page.

Booths #814/816

University of California, Irvine

3120 Natural Sciences II
Irvine, CA 92697-2715
Phone: 949-824-3494
Email: bme@uci.edu
Web: www.eng.uci.edu/dept/bme

The goal of the UCI biomedical engineering program is to train students for 21st century jobs in the biomedical and biotechnology industries, healthcare professions and academia. Located at a world-class research university deep in the heart of the nation's biomedical device and technology capital, we are uniquely positioned to build upon our existing research strengths.

Booth #908

UC San Diego

9500 Gilman Drive
San Diego, CA 92093
Phone: 858-822-3441
Email: gmoreira@ucsd.edu
Web: http://be.ucsd.edu/

Booth #625

University of California, Riverside Department of Bioengineering

900 University Avenue
205 Materials Science and Engineering
Riverside, CA 92521
Phone: 951-827-4303
Email: big@engr.ucr.edu
Web: www.bioeng.ucr.edu

The mission of the Department of Bioengineering at the University of California, Riverside focuses on two interrelated themes:

1. Advancing bioengineering research, and,
2. Preparing future leadership in bioengineering and related fields.

Our unique interdisciplinary graduate program and ABET-accredited undergraduate program both combine building a solid fundamental foundation in biological sciences and engineering while, simultaneously, developing diverse communication skills for our students. Bioengineering Interdepartmental Graduate Program (BIG) provides additional training in analytical, computational and laboratory skills in the most advanced quantitative bioengineering research. The result is a rigorous, but exceptionally interactive and welcoming educational training for Bioengineering students leading towards B.S., M.S. and Ph.D. degrees.

Booth #420

University of Chicago Institute for Molecular Engineering

5640 South Ellis Avenue, ERC 299
Chicago, IL 60637
Phone: 773-834-2290
Email: ime@uchicago.edu
Web: http://ime.uchicago.edu

The IME PhD program equips students with engineering principles to analyze and design molecules for emerging applications, taking research beyond the boundaries of traditional engineering fields. Students work closely with faculty and peers in combining problem-solving skills with broad scientific expertise to build useful systems from the molecular level up.

Booth #105

University of Cincinnati

P.O. Box 210012
Cincinnati, OH 45221
Phone: 513-556-0088
Email: michelle.montoya@uc.edu
Web: www.uc.edu

Booth #915

University of Colorado Denver Department of Bioengineering

12705 E. Montview Avenue
Suite 100
Aurora, CO 80045
Phone: 303-724-5893
Email: bioengineering@ucdenver.edu
Web: www.ucdenver.edu/bioengineering

The Bioengineering program at CU Denver welcomes undergraduate, master and PhD students. Our students learn and perform research or medical device design in world-class hospitals and clinical research labs.
Our research focus areas: tissue engineering, neuroscience, assistive technology, biomedical device design, entrepreneurship, regulatory affairs and clinical imaging.

Booth #720

University of Delaware

161 Colburn Lab
150 Academy Street
Newark, DE 19716
Phone: 302-831-4578
Email: azych@udel.edu
Web: www.bme.udel.edu

University of Delaware's Biomedical Engineering Department welcomes undergraduate and graduate students who are intellectually motivated, creative, and diverse individuals to join us. Our research focus areas: Musculoskeletal and Neural Engineering; Cancer Diagnosis and Therapy; Disease Modeling; Tissue and Regenerative Engineering.

Booth #709

University of Florida

1275 Center Drive
Biomedical Sciences Building JG-56
Gainesville, FL 32611
Phone: 352-273-9222
Email: info@bme.ufl.edu
Web: www.bme.ufl.edu

The J. Crayton Pruitt Family Department of Biomedical Engineering at the University of Florida (UF BME) is dedicated to developing innovative and clinically translatable biomedical technologies, educating future generations of biomedical engineers, and cultivating leaders, by nurturing integration of engineering, science, and healthcare in a collaborative and dynamic educational and research environment. UF BME is one of only a few departments nationally to be co-located with a top-ranked medical school, veterinary school, and dental school, along with having a strong culture of entrepreneurship and commercialization.

Booth #1002

University of Georgia School of Chemical, Materials and Biomedical Engineering

Driftmier Engineering Center
597 D.W. Brooks Drive
Athens, GA 30602
Phone: 706-542-0870
Email: james.warnock@uga.edu
Web: http://engineering.uga.edu/schools/cmbe

The newly formed School of Chemical, Materials and Biomedical Engineering at the University of Georgia is focused on translational research in the areas of Bio-manufacturing, Bio-based materials and Next-gen advanced therapeutics. The school offers several graduate programs, including PhD programs in Biochemical Engineering, Biomedical Engineering and Biological & Agricultural Engineering.

Booth #821

University of Illinois at Chicago

851 S. Morgan Street
Room 218
Chicago, IL 60607
Phone: 312-996-2335
Email: bioe@uic.edu
Web: www.bioe.uic.edu

One of the first degree granting and accredited Bioengineering programs in the nation, since 1965 UIC Bioengineering offers B.S., M.S., Ph.D., M.D./M.S. and M.D./Ph.D. programs that emphasize translational research and innovative training that can include clinical immersion and industry-linked interdisciplinary medical product development. The Richard and Loan Hill Department of Bioengineering is led by 30 core and more than 100 affiliate faculty who collaborate with researchers in five major academic medical centers in Chicago - including UIC, home of the largest medical school in the country.

Booth #309

University of Illinois @ Urbana-Champaign Bioengineering

1304 W. Springfield Avenue
1270 DCL
Urbana, IL 61801
Phone: 217-333-1867
Email: bioengineering@illinois.edu
Web: bioengineering.illinois.edu

With strengths in bioimaging at multi-scale; bio-micro and nanotechnology; computational and systems biology; molecular, cellular and tissue engineering; synthetic bioengineering; and research in BME education, the Department of Bioengineering at Illinois is addressing grand challenges in human health and sustainability. Come join a top-ranked engineering school and one of the fastest-growing, innovative bioengineering departments. We are committed to providing the best experience for our students and training future bioengineering leaders by incorporating diverse topics of science, engineering, technology and medicine into our teaching. We offer BS, MS, MEng, and PhD degrees and are driving the development of the new Carle Illinois College of Medicine, one of the nation's first engineering-based medical schools, with its first cohort expected to begin in Fall 2018.

Booth #409

University of Illinois @ Urbana-Champaign Master of Engineering (Professional Master's Program)

1304 W. Springfield Avenue
1270 Digital Computer Lab, MC-278
Urbana, IL 61801
Phone: 217-333-8163
Email: bioe-meng@illinois.edu
Web: www.bioemeng.illinois.edu

Illinois' Master of Engineering in Bioengineering is a one-year, non-thesis degree program designed for industry-bound professionals who seek to advance their technical breadth and depth in fields related to bioengineering, while developing a big-picture business perspective. The program offers a choice from one of three transcript-able concentrations: bioinstrumentation (medical devices), computational genomics (big data genome sequencing) and general bioengineering. At Illinois, you'll gain the hands-on experience, leadership ability, and unparalleled skills needed to be successful in your chosen career.

Booth #531

University of Louisville

2301 South Third Street
Louisville, KY 40208
Phone: 502-852-7485
Email: nahans01@louisville.edu
Web: http://louisville.edu/speed/bioengineering

Booth #308

The University of Kansas

1520 West 15th Street
Lawrence, KS 66045
Phone: 785-864-5258
E-mail: bioe@ku.edu
Web: http://bio.engr.ku.edu/

KU Bioengineering is an exciting and dynamic place. Our curriculum is broad and flexible, embracing the inter-disciplinary nature of the field. With six tracks; Bioimaging, Bioinformatics, Biomolecular, Biomedical Product Design & Development, Biomechanics & Neural, and Biomaterials & Tissue; and a collaboration with the University of Kansas Medical Center, students customize their education and create a niche of research before they enter the job market.

Booth #221

University of Kentucky Department of Biomedical Engineering

522 Robotics and Manufacturing Building
143 Graham Avenue
Lexington, KY 40506
Phone: 859-257-8101
Email: jennifer.hart@uky.edu
Web: www.bme.uky.edu

Booths #323/325

Fischell Department of Bioengineering University of Maryland

8228 Paint Branch Drive
2330 Jeong H. Kim Engineering Building
College Park MD 20742
Phone: 301-405-8268
Email: bioe@umd.edu
Web: bioe.umd.edu

The Fischell Department of Bioengineering at UMD is committed to making a difference in human health care through education, research, and invention. We offer programs leading to the B.S., M.Eng., M.S., M.S./M.D., M.D./Ph.D. and Ph.D. degrees. This year, we welcomed four new faculty, while launching an Institute for Biomedical Devices, and the Center for Engineering Complex Tissues.

Booths #223/225

University of Miami Department of Biomedical Engineering

1251 Memorial Drive
MEA 219
Coral Gables, FL 33146
Phone: 305-284-2445
Email: bme.coe@miami.edu
Web: www.miami.edu/bme

Our undergraduate and graduate programs leading to the B.S., 5 year B.S./M.S, M.S and Ph.D. degrees provide graduates with the analytical and design skills required to solve problems at the interface of engineering and life sciences. Special features of our program include small class size, very strong ties with the University of Miami Miller School of Medicine, high level of student-faculty interaction, and a high percentage of undergraduate student participation in research and professional activities. The research areas of our Faculty include imaging, optics and lasers; neural engineering, signals and instrumentation; and biomechanics, biomaterials and tissue engineering.

Booth #400

University of Michigan Department of Biomedical Engineering

1125 Carl A. Gerstacker Building
2200 Bonisteel Blvd.
Ann Arbor, MI 48109-2099
Phone: 734-764-9588
E-mail: um-bme@umich.edu
Web: http://bme.umich.edu

U-M BME is celebrating over 50 years of U-M Bioengineering, 20 years as a department, and 5 years of partnership as a joint department between Michigan Engineering and the U-M Medical School, fostering collaboration between engineers and clinicians to solve challenges in healthcare. U-M BME is a leader in regenerative medicine, imaging & biophotonics, micro- and nanotech & molecular engineering, neural engineering, biomechanics, engineering education and computation & modeling. We reach across disciplines and translate technologies from the lab to patients and healthcare providers. Our newly reimagined curriculum and pioneering design program give students the tools necessary to invent the next generation solutions in healthcare and beyond.

Booths #515/517

University of Minnesota Department of Biomedical Engineering

312 Church St. SE
7-105 Nils Hasselmo Hall
Minneapolis, MN 55455
Phone: 612-624-8396
E-mail: bmengp@umn.edu
Web: http://bme.umn.edu

The Department of Biomedical Engineering at the University of Minnesota is physically located at the intersection of the medical school, engineering, and physical sciences, and in the heart of Medical Alley (home to Medtronic, Boston Scientific, Abbott, plus 500 other FDA-registered medtech companies). Research conducted by the faculty spans the full spectrum, with particular depth in cardiovascular engineering, neural engineering, cell/tissue engineering, cancer bioengineering, and biomedical imaging/optics.

Booth #910

University of Missouri Department of Bioengineering

254 Agr. Engineering Bldg.
Columbia, MO 65211
Phone: 573-882-7044
E-mail: HowardLB@missouri.edu
Web: http://bioengineering.missouri.edu/

The mission of the Department of Bioengineering is to educate engineering leaders in the field of bioengineering We offer both undergraduate and graduate degrees. Our emphasis on Biomedical Innovations is an interdisciplinary approach that exposes our students to cutting edge research opportunities. We are a Tier I research institution and member of the prestigious Association of American Universities.

Booth #111

University of Nebraska – Lincoln

114 Othmer Hall
P.O. Box 880642
Lincoln, NE 68588-0642
Phone: 402-472-3181
Email: engfrontdesk@unl.edu
Web: www.engineering.unl.edu/biomedical-engineering

The University of Nebraska – Lincoln (UNL) offers an interdepartmental and flexible curriculum for students interested in obtaining a PhD in engineering, with specialization in biomedical engineering. Collaboration occurs among students and faculty from many UNL engineering departments, as well as with the University of Nebraska Medical Center.

Booths #403/405

University of North Carolina at Chapel Hill

137 MacNider Hall
Chapel Hill, NC 27599
Phone: 919-445-6051
Email: vberg@email.unc.edu
Web: www.bme.unc.edu

The Joint Department of Biomedical Engineering was founded in 2003 and is co-located at the University of North Carolina at Chapel Hill and NC State University. Linking the School of Medicine and College of Arts and Sciences at UNC-CH to the College of Engineering at NC State, the graduate program offers joint MS and PhD degrees in Biomedical Engineering in five core research areas including Rehabilitation Engineering, Regenerative Medicine, Medical Imaging, Biomedical Microdevices and Pharmacoengineering. With over 30 tenured and tenure track core faculty members, our graduate program embraces interdisciplinary collaborations spanning the basic sciences through to clinical and translational applications.

Booth #1016

University of North Texas Department of Biomedical Engineering

3940 North Elm Street B131
Denton, TX 76207
Phone: 940-565-3338
Email: vijay.vaidyanathan@unt.edu
Web: http://biomedical.engineering.unt.edu

Booth #903

University of Oklahoma

202 W Boyd Street
Norman, OK 73019
Phone: 405-325-2144
Email: bme@ou.edu
Web: www.sbme.ou.edu

The Stephenson School of Biomedical Engineering was founded in 2016, absorbing established M.S. and Ph.D. programs and beginning a new B.S. program in BME. Located in a vibrant research and startup community with the nearby Oklahoma Health Sciences Center (OUHSC), the Oklahoma Medical Research Foundation, and various entrepreneurial entities, BME students and faculty work in a translational environment with physicians and companies. Faculty candidates are invited to visit us and inquire about Endowed Chair and Professorship positions, and students are encouraged to ask about Stephenson Graduate Fellowships and translational research partnerships with the OUHSC.

Booths #900/902

University of Pittsburgh Department of Bioengineering

306 CNBIO
300 Technology Drive
Pittsburgh, PA 15219
Phone: 412-624-6445
Email: ngm8@pitt.edu
Web: engineering.pitt.edu

The University of Pittsburgh Department of Bioengineering conducts world-class research and is home to faculty and students at both the graduate and undergraduate level who have won both nationally and internationally recognized awards. The department also has a close affiliation with the renowned University of Pittsburgh School of Medicine.

Booth #608

University of Rochester

204 Robert E. Georgen Hall
Rochester, NY 14627
Phone: 585-275-3891
Email: donna.porcelli@rochester.edu
Web: www.bme.rochester.edu

The Graduate Program in Biomedical Engineering at the University of Rochester provides training at the Masters and Doctoral level. Multiple active centers and affiliated groups offer collaborative research in Biomedical Optics; Neuroengineering; Biomechanics; Medical Imaging; Biomaterials, Nanotechnology and Cell & Tissue Engineering. With access to over 50 laboratories on the River Campus and the adjacent Medical Center, students can tailor their own interdisciplinary and translational training experience. We also offer an MS program focused on Medical Technology & Innovation, including a clinical practicum and full-year design experience.

Booth #802

University of St. Thomas/ Houston Methodist Research Institute

6670 Bertner, R2-216
Houston, TX 77030
Phone: 713-441-7267
Email: aswright@houstonmethodist.org
Web: www.stthommedu/mctm

Master in Clinical Translation Management. Learn how to turn basic discoveries that occur in laboratories to usable drugs, medical devices or clinical processes through our MCTM program. Our one-year, online program, will help you integrate the fundamental concepts of science and business, apply that knowledge to the biotech industry, and evaluate opportunities and issues facing biotech organizations.

Booth #1004

University of South Dakota

4800 N. Career Avenue
Sioux Falls, SD 57109
Phone: 605-275-7424
Email: bme@usd.edu
Web: usd.edu/bme

USD BME works at the interface of engineering and medicine. As an anchor for the USD Discovery District, the BME Department fosters collaboration focused on research, product development, and commercialization. Offering undergraduate and graduate degrees, the BME Department also houses a pilot-scale cGMP facility, shared equipment facilities, and biotech incubator space.

Booth #705

University of Southern California Viterbi School of Engineering

3650 McClintock Ave, OHE 106
Los Angeles, CA 90089-1455
Phone: 213-740-0119
Email: fujioka@usc.edu
Web: http://viterbi.usc.edu/gapp

A consistently top-ranked graduate engineering school by *U.S. News & World Report*, the University of Southern California is a leading private research university. Our Biomedical Engineering department is in the top tier for research funding per faculty and hosts six internationally recognized research centers. Located in L.A., USC offers extensive opportunities for study and research.

Booths #823/825

University of Tennessee–Knoxville

1512 Middle Drive • 414 Dougherty Engineering Bldg
Knoxville, TN 37996
Phone: 865-974-5115
Email: mabeinfo@utk.edu
Web: http://mabe.utk.edu

The department of biomedical engineering at the University of Tennessee-Knoxville, offers BS, MS, and PhD programs in biomedical engineering. We have the expertise and resources to offer students the experiences they need to succeed. Our program prepares students for careers in a variety of health care related professions including work for medical device manufacturers and regulatory governmental agencies. Our state-of-the-art facilities include a Syndaver Laboratory, the first of its kind in an engineering department. Through our programs, students and faculty have opportunities to work with the University of Tennessee Medical Center and Graduate School of Medicine in Knoxville.

Booth #305

The University of Texas Arlington Bioengineering Department

500 UTA Blvd
Suite 226
Arlington, TX 76019
Phone: 817-272-2249
Email: cbradfield@uta.edu
Web: www.uta.edu/bioengineering

The Bioengineering Department at The University of Texas Arlington offers several research and scholarship opportunities for students interested in Biomaterials & Regenerative Tissue Engineering, Bioinstrumentation, Biomechanics, and Biomedical Imaging. Graduate students also have the option of earning a joint graduate degree with The University of Texas Southwestern Medical Center at Dallas. Those interested in our programs are strongly encouraged to visit Booth 305 at the exhibit to learn more!

Booths #621/623

The University of Texas at Austin Department of Biomedical Engineering

107 W. Dean Keeton, C0800
Austin, TX 78712
Phone: 512-471-3604
Email: sbixby@mail.utexas.edu
Web: www.bme.utexas.edu

The University of Texas at Austin's Biomedical Engineering Department educates the next generation of biomedical engineers by offering B.S., M.S., and Ph.D. degrees. Scholars and students build interdisciplinary knowledge in areas such as bioinformatics, biomechanics, biomedical imaging and instrumentation, cellular and biomolecular engineering, and computational biomedical engineering, among others.

Booth #411

University of Texas at Dallas

2850 Rutford Avenue
Richardson, TX 75080
Phone: 972-883-5155
Email: ben.porter@utdallas.edu
Web: www.be.utdallas.edu

The University of Texas at Dallas presents their Biomedical Engineering Degree programs to future students and the highly competitive Eugene McDermott Graduate Fellowship for outstanding PhD applicants. Information about UT Dallas' research programs in bioinformatics, biomaterials, biomechanics, biomedical imaging and optics, biosensors, and neural engineering will also be available.

Booth #1000

University of Texas at San Antonio

One UTSA Circle AET 1.102
San Antonio, TX 78249
Phone: 210-458-8529
Email: teja.guda@utsa.edu
Web: www.engineering.utsa.edu/BME/

The Department of Biomedical Engineering at the University of Texas at San Antonio showcases their undergraduate program and Joint Graduate Programs offering MS and PhD degrees in conjunction with UT Health San Antonio. Information about cutting edge research in biomaterials, tissue engineering, biomechanics, nanomaterials, bioimaging and collaborative disciplines will be available.

Booth #425

University of Toronto Institute of Biomaterials & Biomedical Engineering

164 College Street
Room 407
Toronto, Ontario M5S 3G9 Canada
Phone: 416-978-4841
Email: jeffrey.little@utoronto.ca
Web: www.ibbme.utoronto.ca

The Institute of Biomaterials & Biomedical Engineering (IBBME) at the University of Toronto is located in the heart of Canada's largest health-care research network. We offer four graduate degrees in biomedical and clinical engineering. Our multidisciplinary approach across the disciplines of engineering, medicine and dentistry address global challenges in human health.

Booth #803

University of Vermont

33 Colchester Avenue
Burlington, VT 05405
Phone: 802-656-9544
Email: oldinski@uvm.edu
Web: www.uvm.edu

Booth #504

University of Virginia

P.O. Box 800759 UVA
Charlottesville, VA 22908
Phone: 434-924-5101
Email: bme-dept@virginia.edu
Web: http://bme.virginia.edu

Using our perspective as engineers, we make groundbreaking discoveries in fields like systems biology and biomedical data sciences, medical imaging, and cellular and tissue engineering. We are co-located in the medical school, and our department's remarkable tendency toward collaboration reflects a culture of cooperation that has been essential to UVA going all the way back to Thomas Jefferson.

Booth #801

University of Washington Department of Bioengineering

3720 15th Avenue NE, N107
Seattle, WA 98195
Phone: 206-685-2000
Email: bioeng@uw.edu
Web: http://depts.washington.edu/bioe/index.html

University of Washington Bioengineering is a world leader in bioengineering research, education, clinical applications, technology transfer, and service. Please visit booth 801 to discover how we are inventing the future of medicine. Our faculty and students are eager to talk to you!

Booth #723

University of Wisconsin-Madison Biomedical Engineering Department

1550 Engineering Drive
Madison, WI 53706
Phone: 608-263-4660
Email: info@bme.wisc.edu
Web: www.engr.wisc.edu/bme/bme.html

Please visit our booth to learn more about the B.S., M.S., and Ph.D. programs in Biomedical Engineering at the University of Wisconsin-Madison. Staff, students, and faculty will be available to answer your questions and provide information on admissions, curriculum, and our world-class facilities and institution-wide research centers and institutes.

Booths #609/611

Vanderbilt University

5824 Stevenson Center Drive
Nashville, TN 37235
Phone: 615-343-1099
Email: tina.shaw@vanderbilt.edu
Web: www.vanderbilt.edu

VU BME bridges Vanderbilt's engineering, basic science departments, and a Top 10 School of Medicine, and is located in a vibrant, destination city. Research strengths include biomaterials and drug delivery, bioMEMS and organs-on-a-chip, biophotonics, image-based technologies and modeling, mechanobiology, and nanomedicine. VU BME stimulates high impact research and provides unique educational opportunities, and in 2018 will be celebrating its 50th anniversary as a department.

Booths #202/204

Virginia Commonwealth University

401 W. Main Street
Richmond, VA 23284
Phone: 804-828-7958
Email: biomedicalengr@vcu.edu
Web: www.biomedical.engr.vcu.edu

VCU Biomedical Engineering has strong ties with the VCU Schools of Medicine, Dentistry, and Pharmacy and Massey Cancer Center, and offers Bachelor's, Master's, and Doctoral degrees. Research specialties include mechanobiology, regenerative medicine, biomechanics, rehabilitation engineering, biomaterials and computational medicine. The department is actively recruiting junior and senior level faculty.

Booths #600/601/602/603/604/605

Virginia Tech-Wake Forest University School of Biomedical Engineering & Science

VT-WFU SBES: 317 Kelly Hall
325 Stanger Street
Mail Code 0298
Blacksburg, VA 24061
Phone: 540-231-8191
E-mail: kristie@vt.edu
Web: www.sbes.vt.edu

The Virginia Tech – Wake Forest University, School for Biomedical Engineering and Sciences offers MS, PhD, MD/PhD, and DVM/PhD degrees. We have 76 biomedical engineering faculty with active research programs in tissue engineering, biomedical imaging, biomechanics, nano-medicine, & nanobioengineering, neuroengineering, translational cancer research, cardiovascular engineering, and other emerging fields.

Booths #508/510

Washington University in St. Louis

One Brookings Drive
Box 1097
St. Louis, MO 63131
Phone: 314-935-6164
Email: teasdalek@wustl.edu
Web: http://bme.wustl.edu/

In partnership with our world-class medical school and as part of a $550M research enterprise in life sciences and biomedical research, the Department of Biomedical Engineering at Washington University is a gateway to interdisciplinary, basic science and translational research training at the BS, MS and PhD level. More than 90 research mentors support over 120 BME PhD students in studies of regenerative medicine, imaging, cell and molecular systems, cardiovascular, neural, orthopedic, and cancer engineering. With adjacency to the largest public park in the USA, and over 75,000 sq ft of state-of-the-art facilities, the BME Department at Washington University provides the ideal intellectual, physical and collaborative climate to pursue a BS, MS, MEng, MS/MA, PhD or MD/PhD degree.

Booth #522

Wayne State University

818 W. Hancock
Detroit, MI 48201
Phone: 313-577-1345
Email: nmurthy@wayne.edu
Web: www.bme.wayne.edu

The Biomedical Engineering Department at Wayne State University offers BS(including dual degree options with Mechanical Engineering and Electrical Engineering), Bridge Certificate in Injury Biomechanics, MS, PhD and MD/PhD degrees. It is involved in some of the most advanced research in the field. Our faculty have made significant contributions in automotive safety and the prevention of sports-related and military injuries. Groundbreaking research is also being conducted in the development of tissue-engineered nerves and heart valves as well as imaging techniques for improved diagnosis of brain injury and cancer. Our research has led to improvement in the standards of the automotive industry, better protective equipment for our soldiers and athletes, new techniques to repair damaged tissue and improved diagnostic imaging of trauma and disease.

Booth #1008

Woodrow Wilson National Fellowship Foundation

5 Vaughn Drive
Suite 300
Princeton, NJ 08540
Phone: 609-945-7852
Email: ndiba@woodrow.org
Web: www.woodrow.org

Booths #322/324

Worcester Polytechnic Institute (WPI)

100 Institute Road
Worcester, MA 01609
Phone: 508-831-5301
Email: grad@wpi.edu
Web: www.grad.wpi.edu

Graduate students in WPI's Biomedical Engineering (BME) Department collaborate with scientists and engineers across disciplines, seeking breakthroughs in injury and rehabilitative biomechanics, innovations in regenerative medicine and quantitative microscopy, and major steps forward in healthcare. Whether in the classroom or the lab, the focus is on making an impact and solving real-world problems. WPI's BME graduates have gone on to rewarding careers at major medical and biomedical research centers across academia, government, and the medical device industry.

Booth #321

Yale University

Malone Engineering Center
55 Prospect Street
New Haven, CT 06511
Phone: 203-432-4262
Email: deanna.lomax@yale.edu
Web: www.seas.yale.edu/departments/biomedical-engineering

The booth will be staffed with graduate representatives and faculty from the department of Biomedical Engineering at Yale. The faculty and graduate representative will aim to describe the program to interested visitors and answer any questions regarding the program requirements and admissions process.

EXHIBITOR BOOTHS AND INFORMATION

Meeting Location | Registration | Exhibits | Poster Presentations

Meeting Location

Phoenix Convention Center
100 North 3rd Street
Phoenix, Arizona 85004
602.262.6225

Sheraton Grand Phoenix Hotel
340 North 3rd Street
Phoenix, Arizona 85004
602.262.2500

Registration

Paid registration is required for admission to all meeting functions including scientific sessions, posters, exhibits, breaks and the BMES BASH on Friday evening. BMES cancellation policy may be found on any registration form. Any applicable refunds will be issued post-meeting. Substitutions are permitted with written permission from the original registrant. Additional social event tickets including the Celebration of Minorities in BME Luncheon, and the Women in BME Luncheon are separate and above BMES meeting registration.

On-Site Registration Hours

Wednesday, October 11	12:00 pm – 7:00 pm
Thursday, October 12	7:00 am – 6:00 pm
Friday, October 13	7:00 am – 6:00 pm
Saturday, October 14	7:00 am – 2:00 pm

Exhibits

North Exhibition Hall 300 Level,
Phoenix Convention Center
Exhibits will be open:

Thursday, October 12	9:30 am – 5:00 pm
Friday, October 13	9:30 am – 5:00 pm
Saturday, October 14	9:30 am – 1:30 pm

Medical Device Company Tours

Wednesday, October 11
12:30 pm-3:30 pm
Advance registration required
Buses will depart from the convention center entrance.

BMES Presenter Information

Platform Presentations

Each technical session room will be equipped with a PC-compatible computer with a USB port and PowerPoint along with an LCD projector, screen and a lectern with microphone.

During the half hour before your session begins, please upload your presentation onto the computer using a memory stick or flash drive. Because of the potential difficulty transferring some Mac files to PC format, we encourage you to avoid use of animation if there is a question about transferability.

Please do not try to connect your own laptop. Please note, it will not be possible to provide special equipment. Any additional equipment will need to be supported by the presenter. Although BMES has paid for WiFi throughout the convention center during the Annual Meeting, there will not be specific dedicated hard-wired internet access in the meeting rooms.

Sessions chairs should keep sessions on the listed schedule so attendees can move back and forth among sessions. In most cases, presentations should be done in twelve minutes, allowing three minutes for questions and answers and transition to the next speaker.

Poster Presentations

Posters will be presented Thursday, Friday and Saturday. Posters are to be displayed all day on assigned day. Authors must be present during specified viewing with authors as listed in the Scientific Program:

Thursday	9:30 am–10:15 am and 3:00 pm–3:45 pm
Friday	9:30 am–10:15 am and 2:45 pm–3:30 pm
Saturday	9:30 am – 10:30 am

All posters will be in the Exhibit Hall 300 Level in the Phoenix Convention Center. Posters are numbered with a card corresponding to the numbers assigned in the program.

Speaker Ready Room

Registration Area, Exhibition Hall 300 Level of the Phoenix Convention Center

In the BMES Speaker Ready Room you will find cables, LCD projector and screen to practice your presentation. Please bring your own laptop.

Wednesday, October 11	1:00 pm – 5:00 pm
Thursday, October 12	7:00 am – 5:00 pm
Friday, October 13	7:00 am – 5:00 pm
Saturday, October 14	7:00 am – 2:30 pm

Program Highlights–Don't Miss These Events!

Wednesday, October 11

Meet the Faculty Candidate Forum

3:30 pm–5:30 pm **Exhibit Hall 300 Level**

The "Meet-the-Faculty Candidate" poster session provides a great opportunity for faculty, recruiters, and Department Chairs to speak directly with recent PhD grads and post-doctoral researchers who are seeking faculty positions.

The BMES 2017 Annual Meeting ***Meet The Faculty Candidate Forum*** was only open to those who are actively on the market for the 2017–2018 recruiting cycle. Candidates submitted for consideration in August. The accepted candidates' CVs can be viewed at www.bmes.org.

Wednesday, October 11

Welcome Reception

5:30 pm–7:00 pm **300 Level Foyer**

Light refreshments will be served. All registrants are invited to attend.

Welcome Reception sponsored by:

JOHNS HOPKINS BIOMEDICAL ENGINEERING

Wednesday, October 11

LGBT Dessert Social

8:00 pm–9:00 pm **Paradise Valley Room, Sheraton Grand Phoenix Hotel**

**additional registration and $10 ticket required*

Naomi Chesler, PhD, Professor at the University of Wisconsin-Madison, and, Kelly Stevens, PhD, Assistant Professor at the University of Washington, will lead a conversation about "Being an Ally." Speakers' talk will be followed by dessert and a cash bar.

LGBT Social sponsored by:

W
DEPARTMENT OF BIOENGINEERING
UNIVERSITY of WASHINGTON

Thursday, October 12

BMES State of the Society Address & Pritzker Award Lecture

10:15 am **North Ballroom BCD**

Please join us for a dialogue with BMES President Lori Setton and other leaders of the Society.

Friday, October 13

BMES Dessert Party Bash at the Arizona Science Center

8:30 pm–11:00 pm

Join us for a Dessert Party this year to celebrate the 2017 BMES Annual Meeting. Cap off the evening with some dessert and networking.

Designed by renowned architect Antoine Predock, the Arizona Science Center is a unique landmark nestled in the picturesque setting of Heritage and Science Park where history and innovation collide.

The Arizona Science Center has over 300 hands-on, interactive exhibits that span four levels. Explore the human body, experience the forces of nature, be fascinated by physics, discover digital communications and investigate sustainability and renewable resources.

Don't forget to turn your BMES BASH ticket in for a wristband at the information or registration booths before Friday afternoon

Refreshment Breaks

Please note your meeting registration includes morning and afternoon refreshments breaks on Thursday, Friday and Saturday. All refreshment breaks will be in the Exhibit Hall.

Refreshment Breaks are sponsored by:

University of CINCINNATI | LEHIGH UNIVERSITY | DEPARTMENT OF BIOENGINEERING

Celebration of Minorities in BME Luncheon

Thursday, October 12

Celebration of Minorities in BME Luncheon*

11:45 am–1:15 pm **West Ballroom A**

**additional registration and $35 ticket required*

This event is hosted by the BMES Diversity Committee to create a community and network within the Society fostering support and professional development of minorities in BMES at all levels. Everyone is invited to attend, as diversity only increases when all groups play a part. The luncheon complements the Diversity Award lecture and the Women in BME Luncheon on Friday.

Reframing the Engineering Academic Environment to Expand Opportunities for All Students

Antonio Garcia, PhD

Foundation Professor of Bioengineering Associate Director, Hispanic Research Center Chair, Biological Design Graduate Program
Arizona State University

Engineering is a profession focused on enriching lives through the creation of new technology. In the U.S., there are many entrepreneurs, companies, programs, and educators that are actively promoting engineering's importance in our society and have made great strides in attracting young people to pursue engineering degrees. However, while the general public and students of all ages are fascinated by new technology and advances in engineering, enthusiasm for engineering as a career, especially among traditionally underrepresented groups, can be dampened by our educational system and culture at large. Should more programs promoting engineering be created? Will government and educational institutions need to continue to focus on deficit models or on ending disparities in order to enhance engineering as a profession available to all segments of society?

This talk is intended to generate a discussion on a different approach that is specifically aimed at maintaining enthusiasm for engineering across the higher education student population. For nearly three decades, my colleagues have been partnering with faculty and administrators to create a mentored environment intended to expand student opportunities within STEM. Recently, we have taken on the challenge of changing the current academic culture of a low context or individuated approach to defining a student's ability or level of success through a new model called Context Diversity which encourages reframing academic cultures to meet the needs of all populations, and especially underrepresented groups.

The challenges before us are myriad and include the following. How can we promote change, especially in engineering education which has external constraints and considers itself as doing a great deal to promote diversity and the value of engineering? Can we create a high context or integrated approach to teaching and learning? Can we establish a flexible learning environment that appreciates multicontextuality and serves all students?

Dr. García is the Associate Director of the Hispanic Research Center, Foundation Professor of Bioengineering, and Director of the Biological Design Graduate Program in the Ira A. Fulton Schools of Engineering at Arizona State University where he has focused on surface and colloid chemistry for diagnostics, drug delivery, and biomolecule identification and purification. He obtained a doctorate in Chemical Engineering (College of Chemistry) from the University of California, Berkeley and a baccalaureate in Chemical Engineering from Rutgers University, New Brunswick.

Dr. García is very active in research and technology transfer as a professor of bioengineering while also working on education and human resource development as an administrator in the College of Humanities. As Associate Director, he has worked for 27 years on education and human resource projects aimed at improving math, science, and engineering education as well as meeting the demand for a skilled and diverse U.S. technological workforce.

His research work with colleagues in engineering and sciences on combining surface chemistry and fractal texturing in order to move water drops using light was featured in Science News (August 2004). Most recently, he has been developing nanoparticle technology, portable opto-thermal devices for drug delivery, and nanostructures for sensor development and diagnostics for Pre-Surveillance of infectious diseases. Some of his work has been featured on the covers of the journals Analyst (May 2007), Advanced Materials (November 2008), and Macromolecules Rapid Communications (February 2010). With colleagues from the UNED and UCM (Madrid, Spain) the work on digital magnetofluidics was also featured in ScienceDaily (2006), and the work on "nanojewels" with colleagues from North Carolina State University was featured again in ScienceDaily (2008). Presently, he is working on several technology transfer projects in the U.S. and Mexico, that are slated to begin clinical investigations in 2017 and 2018.

Women in BME Luncheon

Friday, October 13

Women in BME Luncheon*

11:30 am–1:00 pm **West Ballroom A**

**additional registration and $35 ticket required*

Quadrant 2 Living: Moving from the Urgent to the Important

We live in a world where there are pressures, deadlines, a sense of urgency and many roles to play. These forces can be created by ourselves, those around us, unforeseen circumstances and events, and by the institutions in which we sojourn.

Indeed, while our lunch time is brief instead of lingering, we will explore 2 concepts/tools, that if implemented, will enhance our ability to live the life we envision everyday.

Christopher J. Loving has over 25 years of experience developing and teaching new models of leadership. He has worked with hundreds of organizations (educational, Fortune 500, nonprofit) in the United States and in Europe and is frequently invited to partner with a wide range of audiences through training programs, keynote addresses and coaching relationships. Past and current partnerships include the University of Michigan, University of Washington, Northwestern University, Washington University in St. Louis, The Ohio State University, Case Western Reserve University, Brandeis University, Deloitte Touche Tohmatsu, Anheuser-Busch Companies, Inc., Associated Press, National Conference for Community and Justice, and many others.

In the educational sector over the last 20 years, Chris has coached and advised leaders throughout the academy including trustees, presidents, provosts, students, faculty, deans, department chairs, directors, and administrators. In addition, he has developed and facilitated a series of leadership conversations that have improved the climate and effectiveness of academic organizations and designed and presented brief and long-term programs that feature a courageous and compassionate leadership curriculum for department chairs, faculty, postdoctoral associates and graduate students. Chris has also created and presented diversity programs for over 20 years, advised diversity organizations and trained trainers and faculty on how to more effectively develop and teach diversity-training and additional programs in a variety of settings.

Women in BME Luncheon is Sponsored by:

UCDAVIS
BIOMEDICAL ENGINEERING

Additional Meetings

Most of these meetings/events are invitation only. Please check with the organizer.

Wednesday, October 11

BMES Board of Directors Meeting
8:30 am–4:30 pm — **Room 126C**
Organizer: **Lori Setton**

AIMBE Board of Directors Meeting
Affiliate Event
1:00 pm–4:00 pm — **Room 127C**
Organizer: **Milan Yager**

AIMBE Academic Council
Affiliate Event
4:00 pm–5:00 pm — **Room 127C**
Organizer: **Milan Yager**

Council of Chairs Dinner & Meeting
Invitation Only
6:30 pm–9:00 pm — **Deer Valley Room Sheraton Grande Phoenix Hotel**
Organizer: **Robert Kirsch**

Industry Committee Planning Meeting
Invitation Only
7:30 pm–8:30 pm — **Laveen A Room Sheraton Grande Phoenix Hotel**
Organizer: **Ben Noe**

Thursday, October 12

Council of Industry Chapter Presidents–
Invitation Only
7:00 am–8:00 am — **Room 126A**
Organizer: **Ben Noe**

Diversity Committee Meeting
7:00 am–8:00 am — **Room 127B**
Organizer: **Debra Auguste and Guillermo Ameer**

National Meetings Committee Meeting
8:00 am–9:30 am — **Room 126BC**
Organizers: **Cynthia Reinhart-King and Shelly Sakiyama-Elbert**

Student Affairs Committee
8:30 am–9:30 am — **Room 127C**
Organizer: **Art Ritter**

Thursday, October 12

Ethics Subcommittee Meeting
9:30 am–10:30 am — **Room 127A**
Organizer: **Subrata Saha**

50th Anniversary Committee Meeting
1:15 pm–3:00 pm — **Room 127A**
Organizer: **Martine LaBerge**

Friday, October 13

Industry Advisory Board
Invitation Only
7:00 am–8:00 am — **Room 126A**
Organizer: **Ben Noe**

Education Committee Meeting
7:00 am–8:00 am — **Room 127B**
Organizer: **Donald Gaver**

2018 Annual Meeting Planning Committee Meeting
8:00 am–10:00 am — **Room 126BC**
Organizer: **John Tunnell and John Fisher**

International Committee
8:00 am–9:00 am — **Room 127C**
Organizer: **Damir Khismatullin**

Membership Committee Meeting
3:00 pm–4:00 pm — **Room 127C**
Organizer: **Kristen Billiar**

Design Competition Judges Meeting
3:30 pm–4:30 pm — **Room 126A**
Organizer: **Liz DaSilva**

Saturday, October 14

BMES Board of Directors Meeting
12:30 pm–3:30 pm — **Room 126BC**
Organizer: **Lori Setton**

Receptions located at the Sheraton Grande Phoenix Hotel

Thursday, October 12

Clemson Bioengineering
Camelback B

Cornell University
Valley Overlook

Georgia Tech / Emory
Ecanto B

Johns Hopkins University Biomedical Engineering
Valley of the Sun C

Lehigh University
Estrella

Mayo Clinic Graduate School of Biomedical Sciences
Oculus

Rensselaer Polytechnic Institute
Ahwatukee A

Rice University
Ahwatukee B

The Ohio State University
Ecanto A

The University of Texas - Dept. of BME
Maryvale A

UCLA Bioengineering
Valley of the Sun D

University of California Irvine
District Wine Room

University of California San Diego
Laveen B

University of Florida
Camelback A

University of Maryland
Valley of the Sun B

University of Michigan
Deer Valley

University of Pennsylvania
Maryvale B

University of Utah
South Mountain

University of Virginia
North Mountain

University of Washington
Valley of the Sun E

University of Wisconsin-Madison
Alhambra

Vanderbilt University
Paradise Valley

Washington University in St. Louis
Laveen A

Friday, October 13

Boston University
Deer Valley

Duke University
Valley of the Sun D

Florida International University
Paradise Valley

George Washington University
Valley of the Sun A

University of Pittsburgh
North Mountain

UC Berkeley
Ahwatukee A

University of Southern California
Ahwataukee B

Student and Early Career Programs

Programs take place in the Convention Center, unless otherwise noted

Wednesday, October 11

3:00 pm–4:30 pm **Room 129AB**

Mentor Match-Up *(preregistration required)*

The Mentor Match-Up program session connects mentors and mentees based on their common interests. This workshop provides members the opportunity to connect with a student member to help them in their professional development and to establish a mentor/mentee relationship beyond the annual meeting.

4:30 pm–5:30 pm **Room 129AB**

Perfecting the First-time Student and Early Career Attendee Experience

Welcome to your first BMES Annual Meeting! You are about to embark on a wonderful experience. Attend this special session designed for the First Time Student and Early Career Attendee, and hear how to take advantage of all that is offered. This session will provide you with information and insight to easily navigate the annual meeting in order for you to make the most out of your time in Phoenix.

Thursday, October 12

10:00 am–11:30 am **Room 124AB**

Networking: A Required Life Skill in a Diverse 21st Century

To succeed in today's competitive world, who you know can be as critical as what you know. Successfully networking–developing and utilizing contacts–is an essential skill. Networking involves: 1) making contacts, 2) establishing cordial relationships, and 3) foraging mutual bonds to share information, knowledge, and expertise. This session explores skills and techniques germane to successful networking.

1:00 pm–4:30 pm **Room 129AB**

Coop/Intern and Industrial Relations Workshop–Part II *(by invitation)*

The industrial relations workshop is for BME faculty, administrators and staff to collectively discuss challenges and share best practices for engaging industry and promoting students for hire (coop/intern and full-time positions). The workshop includes an industry panel, an update on BMES industry activities, and group discussion time. Participants will work in groups based on geographical regions to foster regional collaboration and program engagement.

1:15 pm–2:15 pm **Room 128AB**

BME Careers in Academia

Hear about the various career paths and opportunities in academia. Representatives from academia share their career paths, educational training, and suggestions for current students and recent graduates

1:30 pm–2:45 pm **Room 124AB**

BME Careers in Industry I

Explore the various industry options for BME professionals. Representatives from industry share their career paths, educational training, insight into the hiring market, and suggestions for current students and recent graduates.

2:30 pm–3:30 pm **Room 128AB**

Talk to the Industry Executive

Stan Rowe, Corp. VP, & Chief Scientific Officer, Edwards Lifesciences

Join us for an informative and interactive mix of presentations and discussions with industry executive Stan Rowe of Edwards Lifesciences. In this session you will have the opportunity to network with Stan as he shares his career pathway, highlights and tips for navigating and succeeding in the BME industry field from entry level to executive.

3:00 pm–4:30 pm **Exhibit Hall 300 Level**

Rapid Resume Review

Experienced BME professionals will review an electronic or hard copy of your resume and work with you to make improvements.

4:00 pm–5:15 pm **Room 124AB**

BME Entrepreneurship Careers

Entrepreneurs discuss the translational path; how to take an idea from concept to commercial product, resources available to students interested in translating their technologies both within and outside the university, and licensing and start-up options.

4:00 pm–5:15 pm **Room 128AB**

BME Alternative Careers

BME alumni and representatives share their career paths, educational training, and insight into working in the government, law, healthcare information technology and medicine. Suggestions for current students and recent graduates who want to pursue these career paths will be presented.

STUDENT AND EARLY CAREER PROGRAMS

Student and Early Career Programs

Programs take place in the Convention Center, unless otherwise noted

Friday, October 13

8:30 am–9:30 am **Room 128AB**

BMES Student Chapter Session–Outstanding Chapter Best Practices

Outstanding Student Chapter awardee University of California, San Diego will provide their chapter best-practices along with the Commendable Achievement awardee Arizona State University. During this workshop each chapter will have the opportunity to present their chapter's goals and accomplishments. This will allow new and current student chapters an opportunity to ask questions, exchange ideas and implement new goals for their upcoming year.

9:30 am–10:45 am **Room 128AB**

BMES Student Chapter Session–Mentoring, Outreach and Chapter-Industry Best Practices

Outstanding Mentoring awardee Clemson University will provide their chapter best-practices along with the Outreach Program awardee University of Pennsylvania; each will discuss their goals and the success of their programs. Following their presentations Chapter-Industry awardee University of Maryland will present their chapter-industry best practices. During this workshop, students will have the opportunity to ask questions, exchange ideas and implement new goals for their upcoming year.

9:00 am–10:00 am **Room 124AB**

Graduate School Part I: Navigating the Graduate School Application/Financial Aid Process

Advanced degree level training has emerged as a key requirement for garnering positions of leadership in academia, government, and industry and for careering in today's workplace. Beyond this, an advanced degree signals scholarship, maturity, and the capacity to do rigorous work; all attributes that can provide an edge in today's world. This session is designed to provide information on strategies germane to: 1) developing and implementing a successful graduate school admission application; and 2) securing graduate student financial aid support.

1:15 pm–2:15 pm **Room 124AB**

Graduate School Part II: Surviving, Thriving, and Succeeding

Succeeding as a graduate student is all about achieving one's purpose–personal dreams and aspirations for pursuing an advance degree. An individual's graduate school venture can take many different turns, but nearly all of them present unique opportunities for growing and developing in areas of knowledge acquisition, personal development, performance management, professionalism, and leadership. This session explores the language, philosophy, and critical strategies applicable to setting the bar high to survive, thrive, achieve, excel, and succeed as a graduate student.

1:45 pm–3:15 pm **Room 128AB**

BMES Undergraduate Student Design Competition

During this session we will bring together the top 6 winning design teams that were selected. The top 6 include Florida Institute of Technology, Johns Hopkins University, Purdue University, Stevens Institute of Technology, University of Maryland and Virginia Commonwealth University. This competition allows each design team to orally present their projects and students to ask questions after each presentation.

Upon completion of all presentations, the judges will select and announce the top 3 winners. Winners will receive first, second and third place prize money during the awards ceremony on Saturday, October 14th at the plenary session.

2:45 pm–4:00 pm **Room 124AB**

BMES Careers in Industry II

Explore the various industry options for BME professionals. Representatives from industry share their career paths, educational training, insight into the hiring market, and suggestions for current students and recent graduates.

Student Chapter Tables

Alpha Eta Mu Beta, The National Biomedical Engineering Honor Society
San José State University
University of California, San Diego
University of Maryland
University of Oklahoma
University of Southern California

Alpha Eta Mu Beta (AEMB) Programs

Thursday, October 12

1:00 pm–3:00 pm **Room 123**

Alpha Eta Mu Beta, Mentoring for INnovative Design Solutions (MINDS) Workshop

Session Co-chairs: Teresa A. Murray, PhD, Alicia Fernandez-Fernandez, PhD, DPT, Marcia A. Pool, PhD, Kerri A. Green, MS, Jeffrey LaMack, PhD, Bhavit Bora, MS and Walter Lee Murfee, PhD and Dominic E. Nathan PhD.

Participation in this workshop is by invitation after successfully competing for a spot on a design team to address this year's design/research topic (please see http://www.alpha-etamubeta.org/ for application instructions). Students will work in teams of 4 based on similar interests. Each team will have a mentor who will assist the team in creating a potentially marketable innovation. The mentor will help students incorporate key design considerations, including (i) market considerations for commercialization, (ii) design development and testing, (iii) quality control, (iv) regulatory strategy, and (v) intellectual property protection. After the workshop, students will meet virtually (e.g., via Skype) for up to 8 months to further refine their innovation. They will also be required to produce a more extensive presentation of their product, such as a video for a Kickstarter campaign, or a PowerPoint presentation for a group of potential investors. We will alert participants about opportunities for design contests, investment, and grant programs to further promote and develop their innovations. This program requires an 8 month commitment.

4:00 pm–5:00 pm **Room 123**

Alpha Eta Mu Beta Annual Grand Meeting

Session Co-chairs: Teresa A Murray PhD, Bahar Dhowan, Sara Mohamed, Lauren Pruett, Shyanthony Synigal, Alicia Fernandez-Fernandez, PhD, DPT, Kerri A. Green, MS and Marcia A. Pool, PhD, Dominic E. Nathan PhD

At this annual grand meeting, members representing chapters nationwide will come together to discuss important contemporary events relating to AEMB. (Attendance is mandatory for all AEMB members). If you would like to learn more about AEMB or start a new chapter at your school, please consider attending this session and speaking to any of the national officers, or stop by our table for more information.

Alpha Eta Mu Beta- Annual Ethics Session

Friday, October 13

9:00 am–10:15 am **Room 123**

Charting the Landscape of For-Profit Stem Cell Clinics in the US

Session Co-chairs: Emma Frow, PhD, Sara Mohamed, Bahar Dhowan, Dominic E. Nathan, PhD

For decades, stem cell researchers and bioengineers have been enthusiastic about the therapeutic promise of stem cells. They argue that the capacity of stem cells to self-renew and differentiate into different cell types can help replenish damaged cells and tissues, and therefore holds great clinical potential for a wide range of medical conditions. This promise has found strong support in the public sphere, helping to underpin significant public investments in stem cell research. In practice though, the development and successful translation of stem cell therapies into the market has proven challenging. In the US, this translational gap is being colonized by for-profit clinics offering stem cell treatments that have not been reviewed or even submitted to the US Food and Drug Administration (FDA) for regulatory approval. The rise of these clinics has been a quick and recent development. The exact number is unclear; one estimate in 2014 suggested over 100 US-based clinics, but a recent study has identified 570 in the US1. There is active debate underway about the legitimacy of the stem cell treatments offered by these for-profit clinics. We see some academic stem cell scientists and bioethicists petitioning the FDA to take action. They portray these clinics as snake oil merchants, offering unproven treatments that are, at best, ineffective but expensive for patients and, at worst, dangerous procedures that put patient health and safety at risk. Many of the for-profit clinics openly acknowledge in their marketing materials that their treatments have not been approved by the FDA. Moreover, they often suggest that FDA approval is not needed for the types of treatments they offer. They argue that the research community has been too slow in developing effective stem cell treatments for patients, and that the traditional research and clinical translation process is too bureaucratic to facilitate real innovation in stem cell therapies. For its part, the FDA has not taken a clear stance regarding for-profit stem cell clinics. Over the past few years, it has investigated a small number of these clinics, but it does not seem to be taking systematic action. This emerging landscape of unregulated stem cell treatments is raising serious challenges to existing modes of clinical practice, scientific methodology, and jurisdiction over medical treatments. It raises timely and important questions for us to discuss, for example about patient rights, the politics of expertise in the face of uncertain knowledge, and professional responsibility in contemporary biomedicine.

1 Turner, L. & Knoepfler, P. (2016) Selling stem cells in the USA: Assessing the direct-to-consumer industry. Cell Stem Cell 19: 1-4

Alpha Eta Mu Beta (AEMB), the National Biomedical Engineering Honor Society, is committed to promoting ethics in the field of biomedical engineering. This year, AEMB is honored to host Dr. Emma Frow, PhD. Dr. Frow re-ceived her BA in Natural Sciences (Neuroscience) and her PhD in biochemistry from the University of Cambridge, UK. She spent two years working as a subeditor for the journal Nature in London, and then re-trained in the social scien-ces, gaining an MSc in Science & Technology Studies from the University of Edinburgh. She completed post-doctoral research at the ESRC Genomics Policy & Research Forum at the University of Edinburgh and at Harvard's Kennedy School of Government, and was an Assistant Professor in Science, Technology & Innovation Studies at the University of Edinburgh before moving to Arizona State University
(ASU) in 2015. At ASU, Dr. Frow is an Assistant Professor with a joint appointment in the School of Biological & Health Systems Engineering (SBHSE) and the School for the Future of Innovation in Society (SFIS). She is also a Lincoln Professor with ASU's Lincoln Center for Applied Ethics. At ASU, Dr. Frow runs the Bioengineering, Policy & Society laboratory, which uses qualitative social science research methods to explore key questions concerning the gover-nance of emerging biotechnologies. Current projects in the lab focus on experimental stem cell treatments, the emerging field of synthetic biology, and the future of engineering education.

11:30 am–1:00 pm **Marjele's Sports Grill**
24 North 2nd Street
Phoenix, AZ 85004)

Alpha Eta Mu Beta Reception

Session Co-chairs: Dominic E. Nathan PhD, Bahar Dhowan, Sara Mohamed, Lauren Pruett, Shyanthony Synigal, Teresa A Murray PhD, Alicia Fernandez-Fernandez, PhD, DPT, Kerri A. Green, MS and Marcia A. Pool, PhD

The Annual AEMB reception will be held at the convention center. New charters and national awards will be pre-sen-ted at this session. Furthermore, this session will serve as a networking opportunity to meet with other fellow mem-bers from AEMB chapters, representatives from industry and academia. This session is open to all AEMB student and faculty members. For tickets, please contact aemb@ alphaetamubeta.org

Alpha Eta Mu Beta

Saturday, October 14

9:00 am–10:00 am **Room 123**

How to Advocate for Biomedical Research Funding: Alpha Eta Mu Beta Public Policy Session

Session Co-chairs: Teresa A. Murray, PhD

Discover three secrets to making a winning case for federal funding for medical and biological research. Learn practical steps to successfully getting your point across to a member of Congress. Find out how to brand your university lab as a leader in the race to cure cancer, reverse neurodegeneration, or other important field of biomedical research. Arm yourself with the strategies for changing to-day's policy landscape; it might provide the key to funding for your next discovery.

Long-time Washington political insider, former lobbyist and Administration appointee, and the Executive Director of the American Institute for Medical and Biological Engineering, Milan Yager, will explain Congressional funding of biomedical research. We will have a lively discussion after the presentation. We particularly encourage students and early career members to | participate, but all are welcome to attend.

STUDENT AND EARLY CAREER PROGRAMS

The Society takes great pleasure in honoring and recognizing the significant accomplishments and contributions its members have made in the diverse field of Biomedical Engineering.

On behalf of the Awards Committee we would like to thank all the members who submitted nominations and provided letters of support for all award nominees.

Congratulations to the following Award Winners:

Robert A. Pritzker Distinguished Lecture Award

Presented at the Thursday morning plenary session at 10:15 am in the North Building, Ballroom BCD

Gordana Vunjak-Novakovic, PhD
Columbia University

The Wallace H. Coulter Award for Healthcare Innovation

Presented at the Friday morning plenary session at 10:15 am in the North Building, Ballroom BCD

Bonnie H. Anderson
Chairman and CEO, Veracyte

Diversity Lecture Award

Presented at the Friday evening plenary session at 5:15 pm in the North Building, Ballroom BCD

Manu O. Platt, PhD
Georgia Institute of Technology & Emory University School of Medicine

Rita Schaffer Young Investigator Award

Presented at the Saturday morning plenary session at 10:30 am in the North Building, Ballroom BCD

Craig J. Goergen, PhD
Purdue University

BMES Extended Abstracts: Design and Research Awards

Presented at the Friday morning plenary session at 10:15 am in the North Building, Ballroom BCD

Graduate Students

Ziye Dong
Texas Tech University

Taylor Kavanaugh
Vanderbilt University

Yiqiu Xia
Pennsylvania State University

Megan Sperry
University Of Pennsylvania

Chrissy O'Keefe
Johns Hopkins University

Undergraduate Students

Karen Xu
Duke University

Dora Obodo
George Mason University

Jane Wei
Cornell University

Jodi Finlay
University of Illinois at Chicago

Rosa Hamalainen
Stanford University

Patrick Mannion
Colorado State University

BMES Student Chapter Awards

Presented at the Saturday morning plenary session at 10:30 am in the North Building, Ballroom BCD

2017 Outstanding Achievement Award

University of California, San Diego

2017 Commendable Achievement Award

Arizona State University

2017 Outstanding Outreach Program Award

University of Pennsylvania

2017 Outstanding Mentoring Program Award

Clemson University

2017 Outstanding Chapter Industry Program Award

University of Maryland

BMES Journal Paper Awards

Presented at the Friday evening plenary session at 5:15 pm in the North Building, Ballroom BCD

Annals of Biomedical Engineering (ABME)

The Annals of Biomedical Engineering, the BMES flagship journal, offers an Editor's Choice Award and a Most Cited Article Award. This year's awards go to:

Editor's Choice Award

In Vivo Evaluation of Wearable Head Impact Sensors

Lyndia C. Wu, Vaibhav Nangia, Kevin Bui, Bradley Hammoor, Mehmet Kurt, Fidel Hernandez, Calvin Kuo, David B. Camarillo.
Annals of Biomedical Engineering 2016 Apr;44(4):1234-45.

Most Cited

Advanced Bioinks for 3D Printing: A Materials Science Perspective.

David Chimene, Kimberly K. Lennox, Roland R. Kaunas, Akhilesh K. Gaharwar
Annals of Biomedical Engineering. 2016 Jun;44(6):2090-102.

Award of Editorial Excellence

Jennifer L. West, PhD
Annals of Biomedical Engineering

Cardiovascular Engineering and Technology

Most Downloaded

Crossing Total Occlusions: Navigating Towards Recanalization

Authors: Aimée Sakes, Evelyn Regar, Jenny Dankelman, Paul Breedveld
2016 Jun; 7(2):103-17. DOI: 10.1007/s13239-016-0255-0.

Most Cited

Mitral Valve Patient-Specific Finite Element Modeling from Cardiac MRI: Application to an Annuloplasty Procedure

Authors: Marco Stevanella, Francesco Maffessanti, Carlo A. Conti, Emiliano Votta, Alice Arnoldi, Massimo Lombardi, Oberdan Parodi, Enrico G. Caiani, Alberto Redaelli
2011 Jun; 2(2): 66-76. DOI:10.1007/s13239-010-0032-4.

Cellular and Molecular Bioengineering

Most Downloaded

Fibronectin Mechanobiology Regulates Tumorigenesis

Karin Wang, Bo Ri Seo, Claudia Fischbach, Delphine Gourdon
CMBE Volume 9, Issue 1, pp 1-11 (2016)

Editor's Choice Award

Targeted Programming of the Lymph Node Environment Causes Evolution of Local and Systemic Immunity

James I. Andorka, Joshua M. Gammon, Lisa H. Tostanoski, Qin Zeng, Christopher M. Jewell
CMBE Volume 9, Issue 3, pp 418-432 (2016)

Congratulations to all the 2017 BMES Career Development Award, BMES-NSBE (National Society of Black Engineers) Travel Award, and BMES Student Travel Award winners. You may pick up your award check at registration.

CONGRATULATIONS!
BMES 2017 CLASS OF FELLOWS

BMES Fellow status is a distinguished honor awarded to members with outstanding qualifications and experience, who have demonstrated exceptional achievement in the field of biomedical engineering. Recipients have also maintained a consistent record of membership and participation within the Society.

FELLOW RECIPIENTS

Treena Livingston Arinzeh, PhD	**Stefan M. Duma, PhD**	**David F. Meaney, PhD**
Gang Bao, PhD	**Andrew K. Dunn, PhD**	**Ellis Meng, PhD**
Danny Bluestein, PhD	**C. Ross Ethier, PhD**	**Michael I. Miller, PhD**
Thomas Boland, PhD	**Robert D. Frisina, PhD**	**Cynthia Reinhart-King, PhD**
Stephen A. Boppart, MD, PhD	**Steven Carl George, MD, PhD**	**Martin L. Yarmush, MD, PhD**
Juan Carlos Briceño Triana, PhD	**Bin He, PhD**	**Fan Yuan, PhD**
Michael S. Detamore, PhD	**Andre Levchenko, PhD**	

Fellows will receive Awards at the plenary session on Thursday, October 12, 2017 at 5:30pm in North Building, Ballroom BCD.

2017 BMES AWARD RECIPIENTS

Industry Programs

Wednesday, October 11

12:30 pm–3:30 pm — **Departs from Convention Center (CC)**

Industry Tours
pre-registration required

7:30 pm–8:30 pm — **Sheraton Grand Phoenix, Laveen A Room**

Industry and Clinical Committee Meeting
By Invitation Only

Thursday, October 12

7:00 am–8:00 am — **Room 126A**

Council of Industry Chapter Presidents
By Invitation Only

8:00 am–9:00 am — **Room 125AB**

Principles of Project Management
Chair: Christopher Basciano, BD
Speakers: John C. Baley, PMI Phoenix Chapter, Tom Thorn, PMI Phoenix Chapter
See page 85

9:00 am–10:00 am — **Room 125AB**

Verification and Validation of Medical Devices
Chair: Christopher Basciano, BD
Speakers: Brandon Lurie, WL Gore & Associates, Sudeep Sastry, WL Gore & Associates, Andy Sloan, WL Gore & Associates
See page 85

1:00 pm–2:00 pm — **Room 125AB**

BMES Special Interest Group Overview
Chair: Christopher Basciano, BD
See page 85

2:00 pm–5:00 pm — **Room 125AB**

Entrepreneur Workshop
Ticket Purchase Required
Chair: Clark Wilson, Merchant and Gould P.C.
See page 95

7:00 pm–9:00 pm — **The Duce**

Industry and Clinical Mixer
Ticket Purchase Required
Co-chairs: Alec Thomas, University of Colorado, and Stephanie Mansfield, Brooks Kushman
Hosted at The Duce, this event is an opportunity for industry professionals and clinicians attending the conference to network in a fun setting. Hors d'oeuvres and one free drink will be provided for those in attendance.

Industry and Clinical Mixer sponsored by

BK BROOKS KUSHMAN
INTELLECTUAL PROPERTY AND TECHNOLOGY LAW

Friday, October 13

7:00 am–8:00 am — **Room 126A**

BMES Industry Advisory Board
By Invitation Only

8:00 am–10:00 am — **Room 125AB**

Tech Transfer Innovation Challenge
Chair: Stephanie Mansfield, Brooks Kushman P.C.
See page 157

1:00 pm–3:00 pm — **Room 125AB**

Clinical Innovators Spotlight
Co-chairs: Jonathan Gunn, Briteseed, and Omid Veiseh, Sigilon
See page 166

3:00 pm–5:00 pm — **Room 125AB**

Investment Pitches and Partnering
Chair: Clark Wilson, Merchant and Gould P.C.
See page 175

Industry Program sponsored by

A&M BIOMEDICAL ENGINEERING
TEXAS A&M UNIVERSITY

Special Sessions

Thursday, October 12

8:00 am–9:30 am — **Room 122B**

Training New Leaders in Healthcare Innovation: Graduate Training Programs Linking Engineering and Medicine
Chairs: Jennifer Amos, Jeffrey Garanich
See page 85

1:30 pm–3:00 pm — **Room 122C**

ABET Criteria Workshop
See page 93

1:30 pm– 3:00 pm — **Room 121ABC**

NIH Funding Panel Session
See page 94

1:30 pm–3:00 pm — **Room 122B**

Defining Educational Goals of Bioengineering in the 21st century
Chair: Jennifer Amos
See page 94

2:30 pm–5:30 pm — **Room 122A**

The 5th US-Korea Joint BMES Workshop
Chair: Hanjoong Jo, PhD
See page 94

3:45 pm–5:15 pm — **Room 122C**

Vascular Mechanobiology and Nanotherapeutics
Chair: Rita Alevriadou
See page 103

3:45 pm–5:15 pm — **Room 121ABC**

2017 DEBUT Awards Presentation
Chair: Zeynep Erim
See page 103

3:45 pm–5:15 pm — **Room 122B**

Engineering Solutions to Address Healthcare Disparities
Chair: Gilda Barabino
See page 103

Friday, October 13

8:00 am–9:30 am — **Room 122C**

Career Options for the BME Graduate Students and Postdoctoral Fellows
Chair: Rita Alevriadou
See page 157

1:15 pm–2:45 pm — **Room 122C**

Curricular Innovation: Highlighting Your Most Unique or Innovative Course Offerings
Chair: Terry Johnson
See page 166

1:15 pm–2:45 pm — **Room 122A**

Minisymposium on International Research Collaborations and Funding Opportunities in Biomedical Engineering
Chair: Damir Khismatullin
See page 166

1:30 pm–4:30 pm — **Room 121ABC**

BMES-NSF Special Session on CAREER and UNSOLICITED Awards
Chair: Michele Grimm
**additional registration and $10 ticket required*
See page 166

3:30 pm–5:00 pm — **Room 122A**

Symposium in honor of Dr. and Mrs. Athanasiou
Chair: Michael Detamore
See page 175

Saturday, October 14

8:00 am–9:30 am — **Room 121ABC**

BMES-NSF Special Session on Graduate Research Fellowships Program
Chair: Michele Grimm
See page 229

Bioinformatics and Systems Biology
Tamara Kinser-Ursem
Purdue University
Pam Kreeger
University of Wisconsin

Biomaterials
Ben Keselowsky
University of Florida
Angela Pannier
University of Nebraska

Biomechanics
Brent Hoffman
Duke University
Jessica Wagenseil
Washington University in St. Louis

Biomedical Engineering Education
Michael Caplan
Arizona State University
Jean-Michel Maarek
University of Southern California

Biomedical Imaging and Optics
Andrew Dunn
University of Texas at Austin
Ramin Pashaie
University of Wisconsin Millwaukee

Cancer Technologies
Claudia Fischbach
Cornell University
Shannon Stott
Mass General/Harvard Medical School

Cardiovascular Engineering
Adam Feinberg
Carnegie Mellon University
Elizabeth Lipke
Auburn University

Cellular and Molecular Bioengineering
Stacey Finley
University of Southern California
Jordan Green
Johns Hopkins University

Device Technologies and Biomedical Robotics
Levi Hargrove
Northwestern University
Richard Weir
University of Colorado

Drug Delivery
Evan Scott
Northwestern University
Ankur Singh
Cornell University

Nano and Micro Technologies
Matt Kinsella
McGill University
Jonathan Viventi
Duke University

Neural Engineering
Matt Johnson
University of Minnesota
Sarah Stabenfeldt
Arizona State University

Orthopedic and Rehabilitation Engineering
Bolu Ajiboye
Case Western Reserve University
Sarah Calve
Purdue University

Respiratory Bioengineering
James Abbas
Arizona State University
Dan Tschumperlin
Mayo Clinic Graduate School of Biomedical Sciences

Stem Cell Engineering
Randy Ashton
University of Wisconsin
Ben Cosgrove
Cornell University

Tissue Engineering
Aaron Baker
University of Texas at Austin
Cherie Stabler
University of Florida

Translational Biomedical Engineering
Pedro Irazoqui
Purdue University
Walter Voit
University of Texas Dallas

Undergraduate Research, Design & Leadership
Jeff LaBelle
Arizona State University
Michael Rust
Western New England University

Thank you to our Reviewers for their Time and Effort

Bioinformatics, Computational and Systems Biology
Kelly Arnold
Rodney Averett
Patrick Cahan
Li Cai
Sriram Chandrasekaran
Benjamin Cosgrove
Ranjan Dash
Tara Deans
Mohammad Fallahi-Sichani
Keith Gooch
Thoams Hund
Princess Imoukhuede
Kevin Janes
Papin Jason
Matthew Lazzara
Megan McClean
Kristen Naegle
David Odde
Elsje Pienaar
Justin Pritchard
Shah Priya
Amanda Randles
Will Richardson
Victor Rodgers
Rajib Saha
Casim Sarkar
Seth Weinberg

Biomaterials
Daniel Alge
Josephine Allen
Alejandro Almarza
Jorge Almodovar
Thomas Angelini
Shyam Aravamudhan
Brendon Baker
Vince Beachley
Bahareh Behkam
Katie Bratlie
Elizabeth Brisbois
Ashley Brown
Jason Burdick
Mary Caldorera-Moore
Gulden Camci-Unal
Jeffrey Capadona
Lesley Chow
Eun Ji Chung
Benoit Danielle
Tara Deans
Bin Duan
Craig Duvall
Akhilesh Gaharwar
Daniel Gallego-Perez
Debadyuti Ghosh
Sheila Grant
Donald Griffin
Yong Huang
Greg Hudella
Nicole Iverson
Jeffrey Jacot
Christopher Jewell
Neha Kamat
Benjamin Keselowsky
Srivatsan Kidambi
Forrest Kievit
Ryan Koppes
Kent Leach
Yuguo Lei
Jamal Lewis
Wei Li
Jung Yul Lim
Kristyn Masters
Kara McCloskey
Peter McFetridge
Rene Olivares-Navarrete
Angela Pannier
Edward Phelps
Shreyas Rao
Cynthia Reinhart-King
Carlos Rinaldi
Jai Rudra
Krishanu Saha
Stephanie Seidlits
Ariella Shikanov
Ankur Singh
Sarah Stabenfeldt
Gregory Szeto
Omid Veiseh
Rebecca Wachs
William Wagner
Antonio Webb
John Wilson
Ruiguo Yang
Donghui Zhu
Silviya Zustiak

Biomechanics
Vinay Abhyankar
Taby Ahsan
B. Rita Alevriadou
Kyle Allen
Alejandro Almarza
Rouzbeh Amini
Kunze Anja
Ali Azadani
Adam Bartsch
Janet Barzilla
Babak Bazrgari
Kristen Billiar
Dwight Bronson
Ashley Brown
Justin Brown
Deva Chan
Weiqiang Chen
Rhima Coleman
Daniel Conway
Jennifer Currey
Dennis Discher
Zachary Dooley
Adele Doyle
Stefan Duma
Yu Feng
Stephen Fening
Alicia Fernandez-Fernandez
Ronald Fijalkowski
Matthew Fisher
Jessica Fritz
Stephanie George
Penney Gilbert
Esther Gomez
Keith Gooch
Josa Hanzlik
Michael Harris
Chun-Yuh Huang
Shadow Huang
Jeffrey Jacot
Songbai Ji
Srivatsan Kidambi
Dong-Hwee Kim
Taeyoon Kim
Ryan Koppes
Chung-Hao Lee
Lik Chuan Lee
Yuan Lin
Margaret Lowder
Jason Luck
Derek Lura
Maureen Lynch
Sundararajan Madihally
Karen May-Newman
David Meaney
Mohammad Mofrad
Baljit Moonga
Amrinder Nain
Ruth Ochia
Grace O'Connell
Mark Palmer
Amit Pathak
Robert Peattie
Ferris Pfeiffer
Raj Prabhu
Christopher Price
Yi-Xian Qin
Kyle Quinn
Elaheh Rahbar
Amanda Randles
Harcharan Singh Ranu
Manuel Rausch
Cynthia Reinhart-King
Will Richardson
Steve Rowson
Jonathan Rylander
Giuliano Scarcelli
Nathan Schiele
Ibrahim Seven
Vivek Shenoy
Jae-Won Shin
Andrew Siefert
Joao Soares
Jonathan Song
Amber Stern
Robert Steward Jr.
Kimberly Stroka
Yubing Sun
Paul Sundaram
Lucas Timmins
Michael Torry
Jillian Urban
Daniela Valdez-Jasso
Jiandi Wan
Leo Wan
Vincent Wang
Ashley Weaver
Ruiguo Yang

Biomedical Engineering Education
Asem Aboelzahab
Animesh Agarwal
Daniel Alge
Rouzbeh Amini
Jenny Amos
Kunze Anja
Casey Ankeny
Kristen Billiar
Dwight Bronson
Gary Brooking
Joel Bumgardner
Daniel Cavanagh
Judy Cezeaux
Ting Chen
Hansang Cho
Alisa Clyne
Olivia Coiado
Jennifer Currey
Lizanne DeStefano
Adele Doyle
Colin Drummond
Thomas Everett
Paul Fagette
John Fisher
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Stephanie George
Bilal Ghosn
Matthew Glucksberg
Craig Goergen
Jay Goldberg
Richard Goldberg
Cheryl Gomillion
William Guilford
Shelly Gulati
Eileen Haase
Connie Hall
Princess Imoukhuede
Russell Jamison
Dean Johnson
Brittany Kay
Dawn Kilkenny
Amy Lerner
Jacqueline Linnes
Margaret Lowder
Derek Lura
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Sundararajan Madihally
Christina Marasco
Joseph Martel-Foley
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Kunal Mitra
Teresa Murray
Ashwin Nair
Tanya Nocera
Michael Nowak
Ruth Ochia
Ferris Pfeiffer
George Pins
Brian Plouffe
Marcia Pool
John Puccinelli
Harcharan Singh Ranu
Monty Reichert
Katherine Reuther
Samhita Rhodes
Will Richardson
Sarah Rooney
Mark Ruegsegger
Michael Rust
Alisha Sarang-Sieminski
Ann Saterbak
Rachael Schmedlen
Steven Schreiner
Erkin Seker
Scott Sell
Ariella Shikanov
Kathleen Sienko
C. LaShan Simpson
Anita Singh
Mary Staehle
Jeannie Stephens
Laura Suggs
Michaelann Tartis
Karissa Tilbury
Joe Tranquillo
Mark Van Dyke
Conrad Zapanta
Jason Zara
Silviya Zustiak

Thank you to our Reviewers for their Time and Effort

Biomedical Imaging & Optics

Mohammad Abedin Nasab
Bahman Anvari
Jennifer Barton
Muyinatu Bell
Deva Chan
Nawarathna Dharmakeerthi
Wawrzyniec Dobrucki
Amber Doiron
Andrew Dunn
Kevin Eliceiri
Daniel Elson
Samuel Grant
Ilker Hacihaliloglu
Song Hu
Nicole Iverson
Jeremy Jarrett
Songbai Ji
Srinivas Kota
Hualou Liang
Lan Luan
Srivalleesha Mallidi
Elizabeth Meyerand
Mohammadreza Nasiriavanaki
Ashwin Parthasarathy
Ramin Pashaie
Galit Pelled
Evan Perillo
Christopher Price
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2017 PROGRAM

THURSDAY'S SCHEDULE HIGHLIGHTS

PLATFORM SESSIONS-THURS-1

8:00 am–9:30 am — **Convention Center**

See pages 77-85

Special Session

8:00 am–9:30 am — **Room 122B**

Training New Leaders in Healthcare Innovation: Graduate Training Programs Linking Engineering and Medicine

Industry Session

8:00 am–9:00 am — **Room 125AB**

Principles of Project Management

Industry Session

9:00 am–10:00 am — **Room 125AB**

Verification and Validation of Medical Devices

Exhibit Hall Open

9:30 am–5:00 pm — **300 Level Exhibition Hall**

Poster Session

9:30 am–5:00 pm — **300 Level Exhibition Hall**

Poster Viewing with Authors & Refreshment Break

9:30 am–10:15 am — **300 Level Exhibition Hall**

Plenary Session

10:15 am–11:15 am — **North Ballroom BCD**

State of Society
Lori Setton

Pritzker Lecture
Gordana Vunjak-Novakovic, PhD
Engineering Human Tissues for Regenerative Medicine and Study of Disease

Celebration of Minorities in BME Luncheon

11:45 am–1:15 pm — **West Ballroom**

Industry Session

1:00 pm–2:00 pm — **Room 125AB**

BMES Special Interest Group Overview

PLATFORM SESSIONS-THURS-2

1:30 pm–3:00 pm — **Convention Center**

See pages 86-95

Special Sessions

1:30 pm–3:00 pm — **Room 122C**

ABET Criteria Workshop

1:30 pm–3:00 pm — **Room 121ABC**

NIH Funding Panel Session

1:30 pm–3:00 pm — **Room 122B**

Defining Educational Goals of Bioengineering in the 21st Century

Industry Session

2:00 pm–5:00 pm — **Room 125AB**

Entrepreneur Workshop *(Ticket Purchase Required)*

Special Session

2:30 pm–5:30 pm — **Room 122A**

The 5th US-Korea Joint BMES Workshop

Poster Viewing with Authors & Refreshment Break

3:00 pm–3:45 pm — **300 Level Exhibition Hall**

PLATFORM SESSIONS-THURS-3

3:45 pm–5:15 pm — **Convention Center**

See pages 95-103

Special Sessions

3:45 pm–5:15 pm — **Room 121ABC**

2017 DEBUT Awards Presentation

3:45 pm–5:15 pm — **Room 122B**

Engineering Solutions to Address Healthcare Disparities

3:45 pm–5:15 pm — **Room 122C**

Vascular Mechanobiology and Nanotherapeutics

Plenary Session: NIH NIBIB Lecture

5:30 pm–6:30 pm — **North Ballroom BCD**

From Microbial Immunity to Genome Editing
Feng Zhang, PhD

Hosted Receptions–Sheraton Grand Phoenix

See page 61 for list

Industry and Clinical Mixer

7:00 pm–9:00 pm — **The Duce**

(Ticket Purchase Required)

Thursday, October 12 | 8:00 am–9:30 am | Platform Session 1

OP-Thurs-1-1 — Room 224A

Track: Biomaterials

Biomaterials for Immunoengineering I

Chairs: Angela Pannier, Evan Scott

8:00 am
Expansion of T Cells via Poly(Dimethyl Siloxane)-based Fibrous Meshes with Tunable Rigidities
Alex Dang[1], Danielle Bogdanowicz[1], Stacey M. Fernandes[2], Jennifer R. Brown[2], Helen H. Lu[1], and Lance C. Kam[1]
[1]Columbia University, New York, NY, [2]Dana Farber Cancer Institute, Harvard Medical School, Boston, MA

8:15 am
***In Vitro* Platform for Characterization of a Immunological Responses to Encapsulated Cells**
Anthony Frei[1], Ying Li[1], Ethan Yang[2], Allison Bayer[2], and Cherie Stabler[1]
[1]University of Florida, Gainesville, FL, [2]University of Miami, Miami, FL

8:30 am
Combined Cancer Chemoimmunotherapy for Elimination of Established Tumors
James Moon[1], Rui Kuai[1], Wenmin Yuan[1], Yao Xu[1], Yuchen Fan[1], and Anna Schwendeman[1]
[1]University of Michigan, Ann Arbor, MI

8:45 am
Alpha-helical Peptide Nanofibers as Non-inflammatory Self-adjuvanting Vaccines
Yaoying Wu[1] and Joel Collier[1]
[1]Duke University, Durham, NC

9:00 am
Modified Chitosan-Zein Nano-in-Microparticles For Oral DNA Vaccination
Eric Farris[1], Austin Helmink[1], Anna Lampe[1], Amanda Ramer-Tait[1], Deborah Brown[1], and Angela Pannier[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

9:15 am
Targeted Extracellular Indoleamine 2,3-Dioxygenase Suppresses Immune Responses *In Vitro* and *In Vivo*
Evelyn Bracho-Sanchez[1], Azadeh Hassanzadeh[1], Kevin Koenders[1], Antonietta Restuccia[1], Margaret Fettis[1], Mark Wallet[1], Fernanda Rocha[1], Shannon Wallet[1], Gregory Hudalla[1], and Benjamin Keselowsky[1]
[1]University of Florida, Gainesville, FL

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OP-Thurs-1-2 — Room 224B

Track: Biomaterials

3D Printing and Advanced Biomaterial Manufacturing I

Chairs: Donald Griffin, Adam Feinberg

8:00 am
Patient-Specific 3D-Printed Molds for the Fabrication of Cryogel Scaffolds in the Treatment of Pediatric Cleft-Craniofacial Defects
Alexa Melvin[1], Katherine Hixon[1], Alexander Lin[2], Scott Sell[1], and Andrew Hall[1]
[1]Saint Louis University, Saint Louis, MO, [2]Saint Louis University School of Medicine, Saint Louis, MO

8:15 am
Mass Production of Shaped Particles Through Vortex Ring Freezing
Duo An[1], Dan Luo[1], and Minglin Ma[1]
[1]Cornell University, Ithaca, NY

8:30 am
Designing Shear-thinning Nanoengineered Ink for 3D Bioprinting
Charles Peak[1], Jean Stein[1], and Akhilesh Gaharwar[1]
[1]Texas A&M University, College Station, TX

8:45 am
Mechanically Functional 3D-Printed Bioresorbable Vascular Scaffolds
Banu Akar[1], Henry Oliver Ware[1], Adam C Farsheed[1], Chongwen Duan[1], Xiangfan Chen[1], Cheng Sun[1], and Guillermo Ameer[1]
[1]Northwestern University, Evanston, IL

9:00 am
Fabrication of 3D Fiber:Cell-laden Collagen Composites using 3D Near-Field Electrospinning
Pouria Fattahi[1], Jordan Dover[2], and Justin Brown[1]
[1]Pennsylvania State University, University Park, PA, [2]Pennsylvania State University, Ephrata, PA

9:15 am
3D Printing Bioactive PLGA Cartilaginous Scaffolds
Ting Guo[1], Casey Lim[1], and John Fisher[1]
[1]University of Maryland, College Park, MD

***Biomaterials Track sponsored by:**

ACS Biomaterials SCIENCE & ENGINEERING

Thursday, October 12 | 8:00 am–9:30 am | Platform Session 1

OP-Thurs-1-3 — Room 229A

Track: Biomechanics

Head Injury Biomechanics I

Chairs: Steve Rowson, Jillian Urban

8:00 am
Head Impact Exposure Measured During Youth Football Games
Barret Zimmerman[1], Mireille Kelley[2], Joel Stitzel[2], and Jillian Urban[2,3]
[1]*Wake Forest School of Medicine, Winston Salem, NC,* [2]*Virginia Tech–Wake Forest University, Winston Salem, NC,* [3]*Wake Forest School of Medicine, Clinical and Translational Science Institute, Winston Salem, NC*

8:15 am
Characterizing High Magnitude Head Impact Exposure in Youth Football
Eamon Campolettano[1], Ryan Gellner[1], and Steven Rowson[1]
[1]*Virginia Tech, Blacksburg, VA*

8:30 am
Evaluation of Brain Response Following Head Impact in Youth Female Soccer Athletes Using an Atlas-Based Finite Element Model
Logan Miller[1], Lyndia Wu[2], David Camarillo[2], Jillian Urban[1], and Joel Stitzel[1]
[1]*Wake Forest University School of Medicine, Winston Salem, NC,* [2]*Stanford University, Stanford, CA*

8:45 am
Head Center of Rotation: How the Neck Constrains Head Motion Following External Loads *In Vivo*
Calvin Kuo[1], Michael Fanton[1], Lyndia Wu[1], and David Camarillo[1]
[1]*Stanford University, Stanford, CA*

9:00 am
Effects of Headform and Neck on Dynamic Response during Reconstruction of Cyclist Head Impacts
Megan Bland[1], Craig McNally[1], and Steven Rowson[1]
[1]*Virginia Tech, Blacksburg, VA*

9:15 am
The Effect of Neck Musculature on Brain Tissue Strain In High-speed Sagittal Impacts
Michael Fanton[1], Calvin Kuo[1], Fidel Hernandez[1], and David Camarillo[1]
[1]*Stanford University, Stanford, CA*

OP-Thurs-1-4 — Room 229B

Track: Biomechanics

Current Topics in Biomechanics

Chairs: Yubing Sun, Shadow Huang

8:00 am
The Muscle Mechanical Basis of Freeman-Sheldon Syndrome
Kaylyn Bell[1], William Kronert[2], Yimming Guo[2], Deepti Rao[2], Alice Huang[1], Sanford Bernstein[2], and Douglas Swank[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*San Diego State University, San Diego, CA*

8:15 am
Optomechanical Characterization of Intercellular Lipid Droplets in Adipocytes
Ali Mehrnezhad[1], Katie M. Hamel[1], Jangwook P. Jung[1], and Kidong Park[1]
[1]*Louisiana State University, Baton Rouge, LA*

8:30 am
Biaxial Mechanical Characterization and Constitutive Modeling of Rat Vagina
Alyssa Huntington[1], Emanuele Rizzuto[1], Steven Abramowitch[2], Maiti Spandan[2], Zaccaria Del Prete[1], and Raffaella De Vita[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*University of Pittsburgh, Pittsburgh, PA,* [3]*La Sapienza University, Rome, Italy*

8:45 am
Normal and IUGR Normal and IUGR Placental Chorionic Arteries' Distensibility and Constitutive Modeling
Shier Nee Saw[1], Dawn Chia[2], Citra Nurfarah Zaini Mattar[2], Arijit Biswas[2], and Choon Hwai Yap[2]
[1]*National University of Singapore, Singapore, Singapore,* [2]*National University of Singapore, National University Health System, Singapore, Singapore*

9:00 am
Quantitative Differences Between Probabilistically and Deterministically Predicted Fractures vs. Experimentally Observed Rib Fractures
Berkan Guleyupoglu[1], Bharath Koya[1], Ryan Barnard[1], and Scott Gayzik[1]
[1]*Wake Forest University School of Medicine, Winston Salem, NC*

9:15 am
Validation of a Finite Element Human Body Model for Spaceflight Testing Configurations
Xin Ye[1,2], Derek Jones[1,2], James Gaewsky[1,2], Bharath Koya[1,2], Kyle McNamara[1,2], Mona Saffarzadeh[1,2], Scott Gayzik[1,2], Ashley Weaver[1,2], and Joel Stitzel[1,2]
[1]*Wake Forest University, Winston-Salem, NC,* [2]*Virginia Tech-Wake Forest Center for Injury Biomechanics, Winston-Salem, NC*

OP-Thurs-1-5 — Room 221A

Track: Cardiovascular Engineering

Angiogenesis and Engineered Vascularization

Chairs: Young-sup Yoon, Kara McCloskey

8:00 am
Regulating Inflammation-biased Angiogenesis by Harnessing Macrophage Plasticity
Xin Cui[1], Renee Morales[1], Matija Snuderl[2], Raymond Lam [3], and Weiqiang Chen[1]
[1]*New York University, Brooklyn, NY,* [2]*New York University Langone Medical Center, New York, NY,* [3]*City University of Hong Kong, Kowloon, Hong Kong*

8:15 am
Collagen Density Interfaces Promote Angiogenesis Through Increased Guidance Cues
Matthew Zanotelli[1,2], Francois Bordeleau[2], and Cynthia Reinhart-King[1,2]
[1]*Cornell University, Ithaca, NY,* [2]*Vanderbilt University, Nashville, TN*

Thursday, October 12 | 8:00 am–9:30 am | Platform Session 1

8:30 am
Alginate-Chitosan Hydrogels Provide a Sustained Gradient of S1P for Therapeutic Angiogenesis
Priscilla Williams[1] and Eduardo Silva[1]
[1]*University of California, Davis, Davis, CA*

8:45 am
Optimization of MSC/iPSC-EC Vascular Network Formation in Fibrin Scaffolds Using Statistical Design of Experiments
Brianna Roux[1,2], Ali Cinar[1], and Eric Brey[1,2]
[1]*Illinois Institute of Technology, Chicago, IL,* [2]*Edward Hines, Jr. VA Hospital, Hines, IL*

9:00 am
Diabetes Impairs Vessel Arterio-Venous Specification in Engineered Vascular Tissues in a Perivascular Cell-dependent Manner
Wafa Altalhi[1] and Sara Nunes Vasconcelos[2]
[1]*University of Toronto, Toronto, ON, Canada,* [2]*University Health Network, Toronto, ON, Canada*

9:15 am
Restoring the Vasculogenic Potential of Diabetic Endothelial Cells Through Spheroid Formation
Charlotte Vorwald[1], Kaitlin Murphy[1], and J. Kent Leach[1,2]
[1]*University of California, Davis, Davis, CA,* [2]*UC Davis Health, Sacramento, CA*

OP-Thurs-1-6 — Room 221B

Tracks: Cardiovascular Engineering, Tissue Engineering

Cardiovascular Tissue Engineering I

Chairs: Marsha Rolle, Megan McCain

8:00 am
Developmental Biomimicry for Maturation of Engineered Human Cardiac Tissue
Cassady Rupert[1] and Kareen Coulombe[1]
[1]*Brown University, Providence, RI*

8:15 am
Bovine Vein Extracellular Matrix Scaffolds for Use In Coronary Artery Bypass
Manuela Lopera Higuita[1] and Leigh Griffiths[2]
[1]*Mayo Clinic Graduate School of Biomedical Science, Rochester, MN,* [2]*Mayo Clinic College of Medicine, Rochester, MN*

8:30 am
3D Bioprinting of a Multi-Composition Stem Cell Patch Using Tissue-Specific Bioinks
Jinah Jang[1], Seok-Won Kim[1], Ju Young Park[1], Sung Won Kim[2], Sang-Mo Kwon[3], Hun Jun Park[2], and Dong-Woo Cho[1]
[1]*POSTECH, Pohang, Korea, Republic of,* [2]*The Catholic University of Korea, Seoul, Korea, Republic of,* [3]*Pusan National University, Yangsan, Korea, Republic of*

8:45 am
Extracellular Matrix Composition Impacts Regenerative Potential and Immune Response in 3D Grafts Designed for Cardiac Tissue Engineering
Whitney L Stoppel[1,2], Breanna M Duffy[1], Gladys A Argueta Xiloj[1], Kelly E. Sullivan[1,3], Elizabeth C Porter[1,4], Jonathan M Grasman[1], David L. Kaplan[1], and Lauren D Black, III[1,4]
[1]*Tufts University, Medford, MA,* [2]*University of Florida, Gainesville, FL,* [3]*Amgen INC, Cambridge, MA,* [4]*Tufts Sackler School of Graduate Biomedical Sciences, Boston, MA*

9:00 am
Stromal Contributions Promote Maturation of Human PSC-Derived Cardiomyocytes in Engineered Cardiac Microtissues
Tracy Hookway[1], Jessica Sepulveda[1], Nik Mendoza-Camacho[2], and Todd McDevitt[2,3]
[1]*Gladstone Institute, San Francisco, CA,* [2]*Gladstone Institutes, San Francisco, CA,* [3]*University of California San Francisco, San Francisco, CA*

9:15 am
Valvular Endothelial Cells Exacerbate Interstitial Cell Matrix-Remodeling and Calcification under Mechanical Constraint Co-Culture Conditions
Terence Gee[1] and Jonathan Butcher[1]
[1]*Cornell University, Ithaca, NY*

OP-Thurs-1-7 — Room 221C

Tracks: Tissue Engineering, Biomechanics

Biomechanics and Mechanobiology in Tissue Engineering

Chairs: Chung-Hao Lee, Dong-Hwee Kim

8:00 am
Mechanical Stretch Alters Corneal Stromal Stem Cell Extracellular Matrix Production
Andrew P. Voorhees[1], Martha L. Funderburgh[1], Bin Yang[1], Bryn Brazile[1], Yi Hua[1], Rachelle N. Palchesko[2], James L. Funderburgh[1], and Ian A. Sigal[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Carnegie Mellon University, Pittsburgh, PA*

8:15 am
Total Cervical Disc Replacement with Tissue-Engineered Intervertebral Discs Assisted by Resorbable Stabilization System in a Canine Spine Model
Jorge Mojica Santiago[1], Ibrahim Hussain[2], Gernot Lang[2,3], Rodrigo Navarro Ramirez[2], Cristoph Wipplinger[2], Roger Hartl[2], and Lawrence Bonassar[1]
[1]*Cornell University, Ithaca, NY,* [2]*Weill Cornell Medical College, New York, NY,* [3]*Freiburg University Medical Center, Freiburg, Germany*

8:30 am
Finding the Mechanical Properties of De Novo Engineered Tissue in Needled-Nonwoven Scaffolds
Joao Soares[1], Will Zhang[1], and Michael Sacks[1]
[1]*University of Texas at Austin, Austin, TX*

Thursday, October 12 | 8:00 am–9:30 am | Platform Session 1

8:45 am
How Endothelialization Enhances Solute Drainage in Engineered Lymphatics
Joe Tien[1], Rebecca Thompson[1], Emily Margolis[1], Tyler Ryan[1], Brent Coisman[1], Gavrielle Price[1], and Keith Wong[1]
[1]*Boston University, Boston, MA*

9:00 am
The Influence of Graft Alignment On Recovery From Muscle Injury
John Kim[1], Benjamin Kasukonis[1], Sydney Spradlin[1], Grady Dunlap[1], Tyrone Washington[1], and Jeffrey Wolchok[1]
[1]*University of Arkansas, Fayetteville, AR*

9:15 am
In Vitro 3D System Replicates Tumor-Stroma Crosstalk In Pancreatic Cancer
Andres Rubiano[1], Steven Hughes[1], and Chelsey Simmons[1]
[1]*University of Florida, Gainesville, FL*

OP-Thurs-1-8 — Room 222A

Tracks: Stem Cell Engineering, Cellular and Molecular Bioengineering

Engineering Stem Cell Differentiation and Dedifferentation

Chairs: Yuguo (Leo) Lei, Stephanie Willerth

8:00 am
Notch Signaling Coordinates with Cell Contractility to Drive Biliary Differentiation of Liver Progenitor Cells
Kerim Kaylan[1], Ian Berg[1], and Gregory Underhill[1]
[1]*University of Illinois at Urbana–Champaign, Urbana, IL*

8:30 am
Stem Cell Mechanotransduction, Differentiation and Migration on Linear Stiffness Gradient Hydrogels
William Hadden[1], Jennifer Young[2], Andrew Holle[2], Joachim Spatz[2], Adam Engler[3], and Yu Suk Choi[4]
[1]*Sydney Medical School, Sydney, Australia,* [2]*Max Planck Institute for Intelligent Systems, Stuttgart, Germany,* [3]*University of California, San Diego, San Diego, CA,* [4]*University of Western Australia, Perth, Australia*

8:45 am
Optical Control of Gene Expression for Neuronal Fate Specification
Monica Setien-Grafals[1], Nathan Blanke[1], Kylie Smith[1], Marie-Claude Senut[1], Steve Suhr[1], and Erin Purcell[1]
[1]*Michigan State University, East Lansing, MI*

9:00 am
Engineering Neural Tissue Using the Novel Functionalized Transcription Factor IASCL1
Meghan Robinson[1], Sarah Douglas[1], Ranjani Vaidyanathan[2], and Stephanie Willerth[1]
[1]*University of Victoria, Victoria, BC, Canada,* [2]*iProgen Biotech, Richmond, BC, Canada*

9:15 am
Progenitor T-cell Differentiation from Stem Cells Using Niche Engineering
Shreya Shukla[1], Roger Y. Tam[1], Matthew A. Langley[1], Jastaranpreet Singh[1], John M. Edgar[1], Mahmood Mohtashami[1], Molly S. Shoichet[1], Juan Carlos Zúñiga-Pflücker[1], and Peter W. Zandstra[1]
[1]*University of Toronto, Toronto, ON, Canada*

OP-Thurs-1-9 — Room 222B

Tracks: Biomechanics, Cellular and Molecular Bioengineering

Substrate Effects in Mechanobiology I

Chairs: Jae-Won Shin, Esther Gomez

8:00 am
DNA Damage in Constricted Migration Impairs Differentiation
Lucas Smith[1], Jerome Irianto[1], Yuntao Xia[1], and Dennis Discher[1]
[1]*University of Pennsylvania, Philadelphia, PA*

8:15 am
Modeling the Two-way Feedback Between Contractility and Matrix Realignment Reveals a Non-linear Mode of Cancer Cell Invasion
Hossein Ahmadzadeh[1], Marie Webster[2], Ashani Weeraratna[2], and Vivek Shenoy[1]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*The Wistar Institute, Philadelphia, PA*

8:30 am
Nanofiber Mechanotransduction is Diameter Dependent through Vinculin, RhoA, and CDC42
Daniel Bowers[1] and Justin Brown[1]
[1]*The Pennsylvania State University, University Park, PA*

8:45 am
Fluid Flow Increases Expression of WNT/β-catenin Agonists and Antagonists in Osteocytes
Yue Zhang[1], Christopher Brunkhorst[1], Rene Olivares-Navarrete[1], and Henry Donahue[1]
[1]*Virginia Commonwealth University, Richmond, VA*

9:00 am
Investigating Valve Interstitial Cell Mechanics Using A Synthetic Poly(ethylene glycol) Hydrogel
Alex Khang[1], Andrea Gonzalez-Rodriguez[2], Megan Schroeder[2], Kristi Anseth[2], and Michael Sacks[1]
[1]*The University of Texas at Austin, Austin, TX,* [2]*The University of Colorado at Boulder, Boulder, CO*

9:15 am
Matrix Tension Directs Cell Migration Through Minimizing Cellular Energy Requirement
Matthew Zanotelli[1-2], Joseph Miller[1], Francois Bordeleau[2], Zachary Goldblatt[1], Adam Munoz[1-2], and Cynthia Reinhart-King[1-2]
[1]*Cornell University, Ithaca, NY,* [2]*Vanderbilt University, Nashville, TN*

Thursday, October 12 | 8:00 am–9:30 am | Platform Session 1

OP-Thurs-1-10 — Room 223

Tracks: Device Technologies and Biomedical Robotics

Wearable Sensors I

Chairs: Marissa Gray, Alessandro Bellofire

8:00 am
A Textile Dressing for Temporal and Dosage Controlled Drug Delivery
Pooria Mostafalu[1], Gita Kiaee[1], Giorgio Giatsidis[2], Akbar Khalilpour[3], Mahboobeh Nabavinia[1], Sameer Sonkusale[4], Dennis P. Orgill[5], Ali Tamayol[3], and Ali Khademhosseini[6]
[1]*Harvard-MIT Division of Health Science and Technology, Medford, MA,* [2]*Brigham and Women's Hospital, Harvard Medical School, Boston, MA,* [3]*Harvard-MIT Division of Health Science and Technology, Cambridge, MA,* [4]*Tufts University, Medford, MA,* [5]*Harvard Medical School, Boston, MA,* [6]*Harvard Medical School, Cambridge, MA*

8:30 am
Consumer Wearable Devices Reveal Health Status Through Individual Activity Habits and Physiological Responses to Exercise
Jessilyn Dunn[1], Ryan Runge[1], Xiao Li[1], Denis Salins[1], and Michael Snyder[1]
[1]*Stanford University, Palo Alto, CA*

8:45 am
Pressure Validation of Navy SEAL Personal Flotation Device
Christopher Sinatra[1], Aditya Bhalla[1], Sydney Jacobson[1], John Martinez[1], Mark Youssef[1], Michael Marnell[1], and Marissa Gray[1]
[1]*Stevens Institute of Technology, Hoboken, NJ*

9:00 am
Wearable Formaldehyde Sensor for Pediatric Asthma Study
Quan Dong[1], Baichen Li[1], and Zhenyu Li[1]
[1]*The George Washington University, Washington, DC*

9:15 am
Kick: A Smarter Watch for Overcoming Drug Addiction
Orlando Hoilett[1] and Jacqueline Linnes[1]
[1]*Purdue University, West Lafayette, IN*

OP-Thurs-1-11 — Room 225A

Tracks: Biomedical Imaging and Optics, Neural Engineering

Imaging in Neuroscience and Brain Initiatives

Chairs: Justin Williams, Andrew Dunn

8:00 am
Accelerated Brain Perfusion Imaging via Spatio-Temporal Super-Resolution
Yao Xiao[1] and Ruogu Fang[1]
[1]*Florida International University, Miami, FL*

8:15 am
Wide-field Fast-scanning Photoacoustic Microscopy of Brain Functions in Action
Junjie Yao[1]
[1]*Duke University, Durham, NC*

8:30 am
A Gigapixel-scale Microscope to Monitor the Behavior and Neural Activity of Model Organisms
Roarke Horstmeyer[1]
[1]*Charite Berlin/Duke University, Berlin, Germany*

8:45 am
Advanced Techniques for Characterizing Rodent Brains With Diffusion MRI
Loi Do[1], Adam Bernstein[1], Pradyumna Bharadwaj[1], Gene Alexander[1], Carol Barnes[1], and Theodore Trouard[1]
[1]*University of Arizona, Tucson, AZ*

9:00 am
Graph-Based Semi-Supervised Learning Outperforms Supervised Learning Algorithms in a Small fMRI Dataset
Fatemeh Mokhtari[1], Yingying Zhu[2], Jonathan Burdette[3], Guorong Wu[2], Jack Rejeski[4], and Paul Laurienti[3]
[1]*Virginia Tech–Wake Forest University School of Biomedical Engineering and Sciences, Winston Salem, NC,* [2]*University of North Carolina at Chapel Hill, Chapel Hill, NC,* [3]*Wake Forest School of Medicine, Winston Salem, NC,* [4]*Wake Forest University, Winston Salem, NC*

9:15 am
Conductivity Tensor Reconstruction Using DT-MREIT *In-Vivo* Imaging in a Human TACS Recipient
Munish Chauhan[1], Aprinda Indahlastari[1], Aditya Kumar Kasinadhuni[2], Christopher Saar[1], Bakir Mousa[1], Kevin Castellano[2], Thomas Mareci[2], and Rosalind Sadleir[1]
[1]*Arizona State University, Tempe, AZ,* [2]*University of Florida, Gainesville, FL*

OP-Thurs-1-12 — Room 225B

Track: Drug Delivery & Intelligent Systems

Targeted or Responsive Delivery Systems

Chairs: Ankur Singh, Sarah Stabenfeldt

8:00 am
Multivalent Binding of Antibody-Functionalized Nanoparticles Enables Potent Wnt Signaling Inhibition in Triple Negative Breast Cancer Cells
Rachel Riley[1] and Emily Day[2]
[1]*University of Delaware Biomedical Engineering, Newark, DE,* [2]*University of Delaware, Newark, DE*

8:15 am
A Method for Directly Comparing the Therapeutic Efficacies Of Drug-loaded Nanoparticles Targeting Internalizing and Non-internalizing Surface Receptors
Shihan Khan[1] and Tarek Fahmy[1]
[1]*Yale University, New Haven, CT*

8:30 am
Neutrophil Elastase Responsive Nano-in-Micro Multi Stage Particles for Pulmonary Delivery
Joscelyn Mejias[1], Osric Forrest[2], Rabindra Tirouvanziam[2], and Krishnendu Roy[1]
[1]*Georgia Institute of Technology and Emory University, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

PLATFORM SESSIONS–THURSDAY–1–8:00 AM–9:30 AM

Thursday, October 12 | 8:00 am–9:30 am | Platform Session 1

8:45 am
Shear-Targeted Anti-Thrombotic Drug Delivery Using DNA-Origami Nano-Carriers
Oren Rotman[1], Ruojie Sha[2], Shmuel Einav[1], Nadrian Seeman[2], and Danny Bluestein[1]
[1]Stony Brook University, Stony Brook, NY, [2]New York University, New York, NY

9:00 am
In Vivo Efficacy of Targeted Antibiotic Prodrug Polymers Against Francisella Infections
Daniel Ratner[1]
[1]University of Washington, Seattle, WA

9:15 am
Orally Deliverable Poly(bile acid) Nanocarriers with High Pancreatic Bioavailability for Treatment of Type 1 Diabetes
Jung Seok Lee[1], Patrick Han[1], Shihan Khan[1], and Tarek Fahmy[1]
[1]Yale University, New Haven, CT

OP-Thurs-1-13 **Room 228A**

Track: Translational Biomedical Engineering

Translational Biomedical Engineering

Chairs: Thomas Everett, Colin Drummond

8:00 am
Electrical Impedance Sensing Biopsy Needle for Real-time Prostate Cancer Detection
Alicia Everitt[1], Jason Pettus[2], Elias Hyams[2], and Ryan Halter[1]
[1]Dartmouth College, Hanover, NH, [2]Dartmouth Hitchcock Medical Center, Lebanon, NH

8:15 am
3D-Bioprinted Breast Cancer Models for Toxicological Screening
Salvador Flores Torres[1], Tao Jiang[1], Jacqueline Kort Mascort[1], Joyce Jang[1], and Joseph M Kinsella[1]
[1]McGill University, Montreal, QC, Canada

8:30 am
Quantifying Oxygen-Dependent Blood Flow in Sickle Cell Trait in a Microfluidic Platform
Xinran Lu[1], John Higgins[2,3], and David Wood[1]
[1]University of Minnesota, Minneapolis, MN, [2]Massachusetts General Hospital, Boston, MA, [3]Harvard Medical School, Boston, MA

8:45 am
Hollow Microcarrier for Large Scale Culture of Anchorage-dependent Cells in a Stirred Bioreactor
Ashkan YekrangSafakar[1], Aylin Acun[2], Pinar Zorlutuna[2], and Kidong Park[1]
[1]Louisiana State University, Baton Rouge, LA, [2]University of Notre Dame, Notre Dame, IN

9:00 am
Ex Vivo Perfusion of Non-Transplanted Human Organs: A New Platform for Quantitative Pre-Clinical Evaluation of Targeted Nanomedicine
Gregory Tietjen[1], Sarah Hosgood[2], Nancy Kirkiles-Smith[1], Jiajia Cui[1], Alexandra Piotrowski-Daspit[1], Deeksha Deep[1], Eric Song[1], Jenna DiRito[1], Rafia Al-Lamki[2], J. Andrew Bradley[2], Kourosh Saeb-Parsy[2], John Bradley[2], Michael Nicholson[2], W. Mark Saltzman[1], and Jordan Pober[1]
[1]Yale University, New Haven, CT, [2]University of Cambridge, Cambridge, United Kingdom

9:15 am
Image-guided LED Based Photodynamic Therapy System for Early Oral Cancer Lesions in Global Health Setting
Hui Liu[1], Amjad Khan[2], Srivalleesha Mallidi[2], Tayyaba Hasan[2], and Jonathan Celli[1]
[1]University of Massachusetts Boston, Boston, MA, [2]Harvard Medical School, Boston, MA

OP-Thurs-1-14 **Room 228B**

Track: Cancer Technologies

Cancer Immunoengineering

Chairs: Biju Parekkadan, Keyue Shan

8:00 am
Eliciting Immunogenic Cell Death Using Prussian Blue Nanoparticle-Based Photothermal Therapy and the Implications for Cancer Therapy
Elizabeth Sweeney[1], Juliana Cano-Mejia[1], Rachel Burga[1], and Rohan Fernandes[1]
[1]Children's National Health System, Washington, DC

8:15 am
Biomimetic Biodegradable Artificial Antigen Presenting Cells for Enhanced "Off-The-Shelf" Melanoma Immunotherapy
Randall Meyer[1], John Hickey[1], Alyssa Kosmides[1], Kelly Rhodes[1], Alison Bartkowski[1], Jonathan Schneck[1], and Jordan Green[1]
[1]Johns Hopkins University, Baltimore, MD

8:30 am
Synthetic Nanoparticle Antibodies for Target Cell Depletion: A Flexible New Tool for Cancer Immunotherapy
Jiaying Liu[1,2], Shohini Ghosh-Choudhary [1], Pallab Pradhan[1], Randall Toy[1], and Krishnendu Roy[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

8:45 am
Utilizing Protein Carriers to Engineer More Potent Cancer Vaccines
Naveen Mehta[1], Roma Pradhan[1], Kelly Moynihan[1], Kavya Rakhra[1], Adrienne Rothschilds[1], Darrell Irvine[1], and K. Dane Wittrup[1]
[1] Massachusetts Institute of Technology, Cambridge, MA

9:00 am
Intratumoral Activation of Dendritic Cells Promotes Systemic Anti-tumor Immunity
Lauren Milling[1,2], Nitasha Bennett[2], Talar Tokatlian [2], Nikki Thai[2], and Darrell Irvine[1,2,3]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Koch Institute for Integrative Cancer Research, Cambridge, MA, [3]Howard Hughes Medical Institute, Chevy Chase, MD

Thursday, October 12 | 8:00 am–9:30 am | Platform Session 1

9:15 am
Recombinase-Based Genetic Circuits for Adoptive T Cell Therapy
Deboki Chakravarti[1] and Wilson Wong[1]
[1]Boston University, Boston, MA

OP-Thurs-1-15 **Room 227C**

Track: Cancer Technologies

Cancer Mechanobiology I

Chairs: Ian Wong, Maureen Lynch

8:00 am
Nuclear Deformability and Expression of Lamin A/C as Predictors of Metastatic Potential in Breast Cancer Cells
Emily Bell[1], Pragya Shah[1], Alexandra McGregor[1], Philipp Isermann[1], Dongsun Kim[1], Marcus Smolka[1], and Jan Lammerding[1]
[1]Cornell University, Ithaca, NY

8:15 am
Induction of Malignant Phenotypes by Enhanced Matrix Stiffness is Mediated by Broad Changes in the Epigenome
Ryan Stowers[1], Johnny Israeli[1], Omer Hazon[1], Michael Snyder[1], Anshul Kundaje[1], and Ovijit Chaudhuri[1]
[1]Stanford University, Stanford, CA

8:30 am
Cancer-Associated Fibroblast Mechano-transduction Drives Blood Vessel Growth in 3D *In Vitro* Assay
M.K. Sewell-Loftin[1], Samanthan Van Hove[1], B. Taylor Hughes[1], Elizabeth Crist[1], Sofia Joison[1], Gregory Longmore[2], and Steven George[1]
[1]Washington University in St. Louis, St. Louis, MO, [2]Washington University School of Medicine in St. Louis, St. Louis, MO

8:45 am
Dynamically Stiffening Hydrogels Promote Malignant Transformation via Collective Mechanical Signaling
Matthew Ondeck[1], Jesse Placone[1], Aditya Kumar[1], Daehwan Kim[1], Laurent Fattet[1], Jing Yang[1], and Adam Engler[1]
[1]University of California, San Diego, La Jolla, CA

9:00 am
Solid Stress and Elastic Energy as Measures of Tumor Mechanopathology
Hadi Nia[1], Hao Liu[1], Gio Seano[1], Meenal Datta[1], Dennis Jones[1], Nuh Rahbari[1], Joao Incio[1], Vikash Chauhan[1], Kaehoon Jung[1], John Martin[1], Vasileios Askoxylakis[1], Tim Padera[1], Dai Fukumura[1], Yves Boucher[1], Francis Hornicek[1], Alan Grodzinsky[2], James Baish[3], Lance Munn[1], and Rakesh Jain[1]
[1]Harvard Medical School, Boston, MA, [2]MIT, Cambridge, MA, [3]Bucknell University, Lewisburg, PA

9:15 am
Protein-Crystal Interface Mediates Adhesion and Proangiogenic Secretion of Breast Cancer Cells
Fei Wu[1,2], Weisi Chen[1], Maryam Asadishekari[3], Claudia Fischbach[1,4], Lara Estroff[1,4], and Delphine Gourdon[1,3]
[1]Cornell University, Ithaca, NY, [2]Icahn School of Medicine at Mount Sinai, New York, NY, [3]University of Ottawa, Ottawa, ON, Canada, [4]Kavli Institute at Cornell for Nanoscale Science, Ithaca, NY

OP-Thurs-1-16 **Room 226A**

Track: Bioinformatics, Computational and Systems Biology

Genomics, Proteomics, and Metabolics

Chairs: Rajib Saha, Sriram Chandrasekaran

8:00 am
Time Varying Causal Network Reconstruction of Mouse Cell Cycle using Temporal Gene Expression Data
Maryam Masnadi-Shirazi[1], Mano Maurya[1], Gerald Pao[2], Eugene Ke[2], Inder Verma[2], and Shankar Subramaniam[1]
[1]University of California, San Diego, La Jolla, CA, [2]Salk Institute for Biological Studies, La Jolla, CA

8:15 am
Genome Scale Metabolic Models use Multiple Omics Data to Predict and Characterize Hepatocyte Toxicity
Kristopher Rawls[1], Edik Blais[1], Bonnie Dougherty[1], Glynis Kolling[1], Anders Wallqvist[2], and Jason Papin[1]
[1]University of Virginia, Charlottesville, VA, [2]Department of Defense Biotechnology High Performance Computing Software Applications Institute, Fort Detrick, MD

8:30 am
A DNA-Encoding Strategy for Integrated Single-Cell Transcriptomics and Proteomics
Alexander Xu[1], Sarah Jeoung[1], Kaitlyn Takata[1], Kelly Liu[1], and James Heath[1]
[1]California Institute of Technology, Pasadena, CA

8:45 am
Peripheral Blood Proteome of IPF Differs from Normal and Gives Insight into Immunological Processes
Katy Norman[1], David O'Dwyer[1], Meng Xia[1], Stephen Gurczynski[1], Shanna Ashley[1], Eric White[1], Kevin Flaherty[1], Fernando Martinez[2], Susan Murray[1], Bethany Moore[1], and Kelly Arnold[1]
[1]University of Michigan, Ann Arbor, MI, [2]Weill Cornell Medical College, New York, NY

9:00 am
Fatty Acid Uptake Drives Production of an Inflammatory TH17 Cytokine Signature in Type 2 Diabetes
Elizabeth Proctor[1], Dequina Nicholas[2], Forum Raval[2], Leenalitha Panneerselan-Bharath[2], Chloe Habib[2], Caroline Apovian[3], Barbara Corkey[2], Douglas Lauffenburger[1], and Barbara Nikolajczyk[2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Boston University, Boston, MA, [3]Boston Medical Center, Boston, MA

9:15 am
Antibiotic Resistant *Pseudomonas aeruginosa* Exhibit Differential Metabolic Profiles
Laura J Dunphy[1], Phillip Yen[1], and Jason A Papin[1]
[1]University of Virginia, Charlottesville, VA

PLATFORM SESSIONS–THURSDAY–1–8:00 AM–9:30 AM

Thursday, October 12 | 8:00 am–9:30 am | Platform Session 1

OP-Thurs-1-17 — Room 226B

Track: Neural Engineering

Neural Cell Model Systems

Chairs: Abigail Koppes, Kyle Lampe

8:00 am

Improved Neuromuscular Junction-in-a-dish Function Using Mechanically Patterned Substrates

Cassandra Happe[1], Kevin Tenerelli[1], Anastasia Gromova[1], Frederic Kolb[1], and Adam Engler[1,2]
[1]University of California, San Diego, La Jolla, CA, [2]Sanford Consortium for Regenerative Medicine, La Jolla, CA

8:15 am

Recapitulating Emergence of Neuromuscular Junctions in a Physiologically Relevant Co-Culture Platform

Onur Aydin[1], Mohamed Elhebeary[1], Gelson Pagan Diaz[1], Rashid Bashir[1], and Taher Saif[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

8:30 am

Gut-Brain-Axis on a Chip: A Microfluidic Model of the Enteroendocrine-Enteric Interface

Minhal Ahmed[1], Marissa Puzan[1], and Abigail Koppes[1]
[1]Northeastern University, Boston, MA

8:45 am

Axonal Communication Between Cultured Hippocampal Neurons Through Microtunnels

Daniele Poli[1], Andres Ruiz[1], Thomas DeMarse[2], Gregory Brewer[1], and Bruce Wheeler[3,4]
[1]University of California Irvine, Irvine, CA, [2]University of North Carolina, Chapel Hill, NC, [3]University of Florida, Gainesville, FL, [4]University of California San Diego, La Jolla, CA

9:00 am

Mechanotransduction Signaling in Astrocyte Reactivity to High Rate Mechanical Insult

Nora Hlavac[1] and Pamela VandeVord[1,2]
[1]Virginia Tech, Blacksburg, VA, [2]Salem Veterans Affairs Medical Center, Salem, VA

9:15 am

Oligodendrocyte Precursor Cell Maturation in a 3D Hydrogel System through the Incorporation of Drug Delivery Nanoparticles and Topographical Cues

Lauren Russell[1], Meghan Pinezich[1], and Kyle Lampe[1]
[1]University of Virginia, Charlottesville, VA

OP-Thurs-1-18 — Room 227C

Tracks: Orthopedic and Rehabilitation Engineering, Device Technologies and Biomedical Robotics

Devices and Approaches for Neural and Rehabilitation Engineering

Chairs: Alicia Fernandez-Fernandez, Harcharan Singh Ranu

8:00 am

Whitlockite Derived Peripheral Nerve System Development in Skeletal Tissue

Hae Lin Jang[1,2,3], Yafeng Yang[1,2], Wei Zhu[1,2], and Ali Khademhosseini[1,2,3,4,5]
[1]Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, [2]Harvard-MIT Health Science & Technology, Cambridge, MA, [3]Wyss Institute for Biologically Inspired Engineering, Harvard University, Cambridge, MA, [4]Konkuk University, Seoul, Korea, Republic of, [5]King Abdulaziz University, Jeddah, Saudi Arabia

8:15 am

***In Vivo* Biomechanics of Porous PEEK and Plasma-sprayed Titanium Coating on PEEK**

Brennan Torstrick[1], Angela Lin[1], Ken Gall[2], and Robert Guldberg[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Duke University, Durham, NC

8:30 am

Effect of Elbow Reconstruction on Rotator Cuff Forces During Weight-Relief Lift in Tetraplegia

Carrie Peterson[1], Michael Bednar[2,3], and Wendy Murray[3,4,5]
[1]Virginia Commonwealth University, Richmond, VA, [2]Loyola University, Chicago, IL, [3]Edward Hines Jr. VA Hospital, Hines, IL, [4]Shirley Ryan AbilityLab, Chicago, IL, [5]Northwestern University, Evanston, IL

8:45 am

Restoring Thought-Controlled Movements After Paralysis: Artifact Reduction Techniques for iBCI Control of FES Actuated Movements

Daniel Young[1,2], Frank Willett[1,2], William D. Memberg[1], Brian Murphy[1], Benjamin Walter[3,4], Jennifer Sweet[3,4], Jonathan Miller[3,4], Leigh R. Hochberg[5,6,7], Robert F. Kirsch[1,2], and A. Bolu Ajiboye[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]FES Ctr. of Excellence, Cleveland, OH, [3]UH Case Med, Cleveland, OH, [4]CWRU Sch. of Med., Cleveland, OH, [5]Brown Univ., Providence, RI, [6]Mass. Gen. Hosp., Bostom, MA, [7]Harvard Med. Sch., Boston, MA

9:00 am

Design and Neuromotor Evaluation of a Low-Cost and Lightweight Hip Flexion Assistive Device in Individuals with and Without Multiple Sclerosis

Ross Neuman[1], Adrian Allegre[2], Olufunto Faweya[2], Michael Theisen[2], Matthew Pelto[1], Minh Nguyen[1], Nicholas P. Fey[1,2,3], Staci Shearin[3], and Karen McCain[3]
[1]The University of Texas at Dallas, Richardson, TX, [2]University of Texas at Dallas, Richardson, TX, [3]UT Southwestern Medical Center, Dallas, TX

9:15 am

Continuous Monitoring of Blood Flow In A Spinal Cord Distraction Model

David R. Busch[1,2], Wei Lin[3], Alissa Cutrone[4], Brandon J. Koverovic[3], Jakub Tatka[3], Arjun G. Yodh[1], James Barsi[3], and Thomas F. Floyd[3]
[1]University of Pennsylvania, Philadelphia, PA, [2]Children's Hospital of Philadelphia, Philadelphia, PA, [3]Stony Brook University, Stony Brook, NY, [4]Northeastern, Boston, MA

Thursday, October 12 | 8:00 am–9:30 am | Platform Session 1

SPECIAL SESSION

8:00 am–9:30 am — **Room 122B**

Training New Leaders in Healthcare Innovation: Graduate Training Programs Linking Engineering and Medicine

Chairs: Jennifer Amos, Jeffrey Garanich

Speakers:

- Soumyadipta Acharya, M.D., M.S.E., Ph.D., Graduate Program Director, CBID, Johns Hopkins University
- Jennifer Amos, Ph.D., Teaching Associate Professor, University of Illinois at Urbana-Champaign
- Jeffrey S. Garanich, Ph.D., Director, Master's in Translational Medicine (MTM) Program, The City College of New York
- Beena George, Ph.D., Dean and Cameron School of Business Professor, University of St. Thomas
- Michael "Moose" O'Donnell, Ph.D., Executive Director, Master of Translational Medicine (MTM) Program, UC Berkeley – UC San Francisco

Healthcare innovations hold great promise for improving patient outcomes while improving the clinical value proposition. Bringing new concepts from early idea to eventual clinical use requires interdisciplinary efforts combining skills of engineers, PhD-level researchers, clinicians, and entrepreneurs. A variety of training programs are emerging to help individuals integrate these disparate skill sets. These include traditional MD/PhD/MSTP programs as well as more recent developments such as masters' degrees in medical innovation or translational medicine. These programs provide pathways for engineers, life scientists, and MDs to amplify each other's efforts in developing new innovations in medicine.

The workshop will include a series of "Best Practices" snapshots, looking at various modes of integrating engineering and clinical medicine. Snapshots will span a range of student archetypes, including engineers pivoting to medical school, doctors returning for master's training, life scientists learning engineering skills, many backgrounds seeking specialized business training, and PhD candidates desiring practical training in innovation. These will help participants find strategies for training innovators to transform medical and engineering practice. This session will build on the Graduate Medical Innovation (GMI) Program Workshop held at the 2016 BMES Annual meeting.

INDUSTRY SESSIONS

8:00 am–9:00 am — **Room 125AB**

Principles of Project Management

Chair: Christopher Basciano, BD

Speakers:

- John C. Baley, PMI Phoenix Chapter
- Tom Thorn, PMI Phoenix Chapter

Project management principles are valuable to many roles within professional companies. The current session will introduce Project Management Institute, which offers recognized certifications, standards and education for professionals interested in Project Management. Principles and fundamentals of project management will be discussed by local leadership and professionals of the Phoenix Chapter of Project Management Institute.

9:00 am–10:00 am — **Room 125AB**

Verification and Validation of Medical Devices

Chair: Christopher Basciano, BD

Speakers:

- Brandon Lurie, WL Gore & Associates
- Sudeep Sastry, WL Gore & Associates
- Andy Sloan, WL Gore & Associates

The terms verification and validation can be interpreted in multiple ways. Professionals from WL Gore & Associates will discuss their perspectives and definitions of verification and validation in regards to medical device development. Specific focus will be directed toward discussing the work completed by multiple disciplines (e.g., engineering, regulatory, and quality) in order to meet current and future medical device industry standards of verification and validation.

1:00 pm–2:00 pm — **Room 125AB**

BMES Special Interest Group Overview

Chair: Christopher Basciano, BD

BMES currently has three special interest groups that focused program organization and technical depth to the broad spectrum of disciplines covered by biomedical engineering. The session will allow representatives from each of the three special interest groups (Medical Devices, Cellular and Molecular Engineering, and Advanced Biomanufacturing) to discuss each group's current focus, future activities, and recent contributions to the expanding field of biomedical engineering.

***Industry Track sponsored by:**

TAMU BIOMEDICAL ENGINEERING TEXAS A&M UNIVERSITY

PLATFORM SESSIONS–THURSDAY–1–8:00 AM–9:30 AM

Thursday, October 12 | 1:30 pm–3:00 pm | Platform Session 2

OP-Thurs-2-1 — Room 224A

Track: Biomaterials

Biomaterials for Immunoengineering II

Chairs: Christopher Jewell, John Wilson

1:30 pm
Mechanism of Adjuvant Action of Supramolecular Peptide Nanofibers
Jai Rudra[1], Arshad Khan[2], and Chinnaswamy Jagannath[2]
[1]*University of Texas Medical Branch, Galveston, TX,* [2]*University of Texas Health Science Center, Houston, TX*

1:45 pm
A Novel "Anti-Vaccine" for the Treatment of Rheumatoid Arthritis
Riley Allen[1], Jeff Ma[1], and Jamal Lewis[1]
[1]*UC Davis, Davis, CA*

2:00 pm
Biphasic Response of T Cell Activation to Substrate Rigidity
Dennis Jinglun Yuan[1] and Lance Kam[1]
[1]*Columbia University, New York, NY*

2:15 pm
Hydrophilic Titanium Instructs T-cell Populations and MSC Recruitment through Macrophage Activation
Kelly Hotchkiss[1], Nicholas Clark[1], and Rene Olivares-Navarrete[1]
[1]*Virginia Commonwealth University, Richmond, VA*

2:30 pm
A STING-Activating Nanovaccine for Cancer Immunotherapy
Min Luo[1] and Zhaohui Wang[1]
[1]*UT Southwestern, Dallas, TX*

2:45 pm
Supramolecular Peptide Nanofibers as an Active Immunotherapy for TNFa Mediated Inflammation
Yi Wen[1], Carolina Mora-Solano[2], and Joel Collier[1]
[1]*Duke University, Durham, NC,* [2]*University of Chicago, Chicago, IL*

***Biomaterials Track sponsored by:**

ACS Biomaterials SCIENCE & ENGINEERING

OP-Thurs-2-2 — Room 224B

Track: Biomaterials

3D Printing and Advanced Biomaterial Manufacturing II

Chairs: Andrew Hall, Silviya Zustiak

1:30 pm
Design of Electrohydrodynamic Sprayed Polyethylene Glycol Hydrogel Microspheres for Cell Encapsulation
Anisa Qayyum[1], Era Jain[1], Grant Kolar[1], Scott Sell[1], and Silviya Zustiak[1]
[1]*Saint Louis University, St Louis, MO*

1:45 pm
3-Dimensional Additively Manufactured Ti6Al4V Constructs Enhance Osteoblastic Response
Michael Berger[1], Sharon Hyzy[1], Barbara Boyan[1,2], and Zvi Schwartz[1,3]
[1]*Virginia Commonwealth University, Richmond, VA,* [2]*Georgia Institute of Technology, Atlanta, GA,* [3]*University of Texas Health Science Center at San Antonio, San Antonio, TX*

2:00 pm
3D Bioprinting with an Engineering Elastin Like Protein (ELP)
Daniel Meador[1], Meghan Hefferon[1], Bruce Corliss[1], Edi Meco[1], Michaela Rikard[1], Shayn Peirce[1], and Kyle Lampe[1]
[1]*University of Virginia, Charlottesville, VA*

2:15 pm
Direct 3D Bioprinting of Vascular Network with Smooth Muscle and Endothelium
Haitao Cui[1] and Lijie Grace Zhang[1]
[1]*The George Washington University, Washington, DC*

2:30 pm
The Composition of Alginate/Gelatin Composite Hydrogel Bioinks Direct the Formation of Tumor Spheroids
Tao Jiang[1], Jose Gil Munguia-Lopez[2], Maeva Melody Bavoux[3], Kevin Gu[1], Salvador Flores Torres[1], Jacqueline Kort Mascort[1], Joel Grant[1], Sanahan Vijayakumar[1], Antonio De Leon-Rodriguez[2], and Joseph Matthew Kinsella[1]
[1]*McGill University, Montreal, QC, Canada,* [2]*Instituto Potosino de Investigación Científica y Tecnológica, A.C. (IPICyT), San Luis Potosi, Mexico,* [3]*Ecole Polythechnique Federale de Lausanne (EPFL), Lausanne, France*

2:45 pm
Development of Complex 3D-printed Microchannels within Biodegradable Hydrogels
Kwanghoon Song[1], Christopher Highley[1], Andrew Rouff[1], and Jason Burdick[1]
[1]*University of Pennsylvania, Philadelphia, PA*

***Biomaterials Track sponsored by:**

ACS Biomaterials SCIENCE & ENGINEERING

Thursday, October 12 | 1:30 pm–3:00 pm | Platform Session 2

OP-Thurs-2-3 — Room 229A

Track: Biomechanics

Head Injury Biomechanics II

Chairs: Songbai Ji, Stefan Duma

1:30 pm
Movement of Human Tympanic Membrane under Blast Exposure Measured by Laser Doppler Vibrometers
Shangyuan Jiang[1], Kyle Smith[1], and Rong Gan[1]
[1]*University of Oklahoma, Norman, OK*

1:45 pm
3D Finite Element Modeling of Blast Wave Transmission from the External Ear to the Cochlea
Marcus Brown[1], Xaio Ji[1], and Rong Gan[1]
[1]*University of Oklahoma, Norman, OK*

2:00 pm
Blast-induced Traumatic Brain Injury Displays a Unique Pattern of Spatial Resolution of Brain NADPH oxidase
Namas Chandra[1], K V Rama Rao[1], Stephanie Iring[1], Daniel Younger[1], Aswati Aravind[1], Bryan Pfister[1], and Maciej Skotak[1]
[1]*New Jersey Institute of Technology, Newark, NJ*

2:15 pm
Effect of Blast Direction on Shockwave Propagation in the Study of Primary Blast-induced TBI
Hesam Sarvghad Moghadam[1], Ashkan Eslaminejad[2], Mariusz Ziejewski[2], and Ghodrat Karami[2]
[1]*Harvey Mudd College, Claremont, CA,* [2]*North Dakota State University, Fargo, ND*

2:30 pm
Quantifying 3D Whole Brain Deformation Using Sonomicrometry During Dynamic Head Rotational Loading and Preliminary Assessment of Brain Finite Element Models
Ahmed Alshareef[1], J. Sebastian Giudice[1], Jason Forman[1], and Matthew B. Panzer[1]
[1]*University of Virginia, Charlottesville, VA*

2:45 pm
A Multi-scale Submodeling Technique to Enhance the Spatial Resolution of Simulated Brain Responses
Wei Zhao[1] and Songbai Ji[1]
[1]*Worcester Polytechnic Institute, Worcester, MA*

OP-Thurs-2-4 — Room 229B

Track: Biomechanics

Computation and Multiscale Modeling in Biomechanics I

Chairs: Lucas Timmins, Rouzbeh Amini

1:30 pm
Modeling Tribological Rehydration and Pressure-Driven Fluid Flux in Articular Cartilage
Margot Farnham[1], Brian Graham[1], David Burris[1], and Christopher Price[1]
[1]*University of Delaware, Newark, DE*

1:45 pm
Fiber Orientation and Structural Model of Tendon-to-Bone Insertion
Sergey Kuznetsov[1], Sandhya Chandrasekaran[1], and Hsiao-Ying Shadow Huang[1]
[1]*North Carolina State University, Raleigh, NC*

2:00 pm
An Augmented Iterative Method for Identifying a Stress-free Reference Configuration in Image-based Biomechanical Modeling
Manuel Rausch[1], Martin Genet[2], and Jay Humphrey[3]
[1]*University of Texas at Austin, Austin, TX,* [2]*LUniversite Paris-Saclay, Paris, France,* [3]*Yale University, New Haven, CT*

2:15 pm
CFD Analysis of Avian Embryonic Heart With Ultrasound Imaging
Sheldon Ho[1], Germaine Xin Yi Tan[1], Toon Jin Foo[1], Phan Thien Nhan[1], and Choon Hwai Yap[1]
[1]*National University of Singapore, Singapore, Singapore*

2:30 pm
Modeling 3D Hemodynamics from 2D Angiography Data in Coronary Artery Diseases
Madhurima Vardhan[1], John Gounley[1], S. James Chen[2], Andrew Kahn[3], Jane A. Leopold[4], and Amanda Randles[1]
[1]*Duke University, Durham, NC,* [2]*University of Colorado AMC, Aurora, CO,* [3]*University of California San Diego, San Diego, CA,* [4]*Brigham and Women's Hospital, Boston, MA*

2:45 pm
Development of a Non-Newtonian, Three-Dimensional Computational Model for Device-Induced Thrombosis
Ling Yang[1], Joshua Taylor[1], Steven Deutsch[1], and Keefe Manning[1]
[1]*Penn State University, University Park, PA*

OP-Thurs-2-5 — Room 221A

Track: Cardiovascular Engineering

Cardiac Electrophysiology

Chairs: Abhijit Patwardhan, Markad Kamath

1:30 pm
Measurement of Conduction Velocity in Engineered Human Myocardium Expressing Mutant Desmoplakin (R451G)
Ronald Ng[1] and Stuart Campbell[1]
1Yale, New Haven, CT

1:45 pm
Human Cardiac Tissue Slices - A Novel Platform to Test Cardiotoxicity Of Cancer Drugs.
Sharon George[1], Sofian Obaid[1], Tatiana Efimova[1], and Igor Efimov[1]
[1]*The George Washington University, Washington, DC*

2:00 pm
Electrophysiological Effects of Sympathetic Stimulation in Human Organotypic Cardiac Tissue Slices
Jaclyn Brennan[1], Chaoyi Kang[1], John Qiao[1], and Igor Efimov[1]
[1]*The George Washington University, Washington, DC*

PLATFORM SESSIONS–THURSDAY–2–1:30 PM–3:00 PM

Thursday, October 12 | 1:30 pm–3:00 pm | Platform Session 2

2:15 pm
Spatiotemporal Control of Human Cardiac Tissue Using an Optogenetic Platform
Stephen Ma[1], Olaia Vila[1], Jinho Kim[1], Harry Chiang[1], Masayuki Yazawa[1], and Gordana Vunjak-Novakovic[1]
[1]*Columbia University, New York, NY*

2:30 pm
Geometric Regulation of Conduction Velocity in Engineered Cardiac Tissues
Andrew P. Petersen[1], Davi M. Lyra-Leite[1], Nethika R. Ariyasinghe[1], Nathan Cho[1], Celeste M. Goodwin[1], Joon Young Kim[1], and Megan L. McCain[1,2]
[1]*Laboratory for Living Systems Engineering, Department of Biomedical Engineering, USC Viterbi School of Engineering, University of Southern California, Los Angeles, CA,* [2]*Department of Stem Cell Biology and Regenerative Medicine, Keck School of Medicine of USC, University of Southern California, Los Angeles, CA*

2:45 pm
A Novel Method for Simultaneous Measurement of Cytosolic and Mitochondrial Calcium in Excitable Cells
Ningning Xu[1], Patrick Ernst[1], Kah Yong Goh[1], Lufang Zhou[1], and Margaret Liu[1]
[1]*The University of Alabama at Birmingham, Birmingham, AL*

OP-Thurs-2-6 **Room 221B**

Tracks: Tissue Engineering, Cardiovascular Engineering

Cardiovascular Tissue Engineering II

Chairs: Jeffrey Jacot, Guohao Dai

1:30 pm
Mitochondrial Transplantation through Co-incubation into Cardiomyocyte
Paria Ali Pour[1], Ramin Zareian[1], and Arash Kheradvar[1]
[1]*University of California-Irvine, Irvine, CA*

1:45 pm
Tissue-engineered Ventricle Contraction Evaluated by Pressure-Volume Catheterization
Luke MacQueen[1], Sean Sheehy[1], Christophe Chantre[1], Andrew Capulli[1], Sung-Jin Park[1], Josue Goss[1], Patrick Campbell[1], John Ferrier[1], and Kevin Kit Parker[1]
[1]*Disease Biophysics Group, Wyss Institute for Biologically-Inspired Engineering, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA*

2:00 pm
Role of Microfiber Anisotropy and Intercellular Interaction with Endothelial Cells on the Pluripotent Stem Cell-Derived Cardiomyocytes
Maureen Wanjare[1,2,3], Luqia Hou[1,2,3], Karina Nakayama[1,2,3], Joseph Kim[1,2,3], Nicholas Mezak[3], Oscar Abilez[1,2], Evangeline Tzatzalos[1,2], Joseph Wu[1,2], and Ngan Huang[1,2,3]
[1]*Stanford Cardiovascular Institute, Palo Alto, CA,* [2]*Stanford University, Palo Alto, CA,* [3]*Veterans Affairs Palo Alto Health Care System, Palo Alto, CA*

2:15 pm
Exercise-Induced Disease Modeling of Familial Cardiomyopathy
Zhen Ma[1], Sangmo Koo[1], Nathaniel Huebsch[1], Mohammed Mandegar[2], Brian Siemons[1], Costas Grigoropoulos[1], Bruce Conklin[2], and Kevin Healy[1]
[1]*University of California, Berkeley, Berkeley, CA,* [2]*Gladstone Institute of Cardiovascular Disease, San Francisco, CA*

2:30 pm
Comparison of Candidate Cell Populations for TEHV Recellularization
Mitchell VeDepo[1,2], Eric Buse[1], Richard Hopkins[1], and Gabriel Converse[1]
[1]*Children's Mercy Hospital, Kansas City, MO,* [2]*University of Kansas, Lawrence, KS*

2:45 pm
3D Bioprinting of Vascularized Cardiac Patch with Anisotropy for Cardiac Tissue Regeneration
Haitao Cui[1] and Lijie Grace Zhang[1]
[1]*The George Washington University, Washington, DC*

OP-Thurs-2-7 **Room 221C**

Tracks: Tissue Engineering, Stem Cell Engineering

Stem Cells in Tissue Engineering

Chairs: Janet Zoldan, Chandra Kothapalli

1:30 pm
Nanosilicates for Sustained Therapeutic Delivery to Direct Stem Cell Fate
Lauren Cross[1], James Carrow[1], Madyson Muscarello[1], and Akhilesh Gaharwar[1]
[1]*Texas A&M University, College Station, TX*

1:45 pm
Low-Intensity Ultrasound Extends Lifetimes of Transplanted Mesenchymal Stromal Cells In Murine Muscle
Scott Burks[1], Matthew Nagle[1], Saejeong Kim[1], and Joseph Frank[1]
[1]*NIH Clinical Center, Bethesda, MD*

2:00 pm
Dynamics of Intrinsic Kinetics of Glucose Uptake During Chondrogenesis
Mostafa Motavalli[1], Yi Zhong[1], Arnold Caplan[1], Jean Welter[1], and Harihara Baskaran[1]
[1]*Case Western Reserve University, Cleveland, OH*

2:15 pm
Material-Directed Chondrogenic Differentiation Under Dynamic Culture Conditions
Madeline Smerchansky[1], Kirsten Parratt[1], and Krishnendu Roy[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

2:30 pm
Regulatory Influence of Ultrasound on MSC Chondrogenesis and Directed SOX9 Signaling Pathways
Anu Subramanian[1] and Neety Sahu[1]
[1]*University of Nebraska, Lincoln, NE*

Thursday, October 12 | 1:30 pm–3:00 pm | Platform Session 2

2:45 pm
Development of A PDGF-BB Delivery System To Enhance Adipose-Derived Stem Cell-Mediated Bone Regeneration
Alexandra Rindone[1,2] and Warren Grayson[1,2]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Johns Hopkins University School of Medicine, Baltimore, MD*

OP-Thurs-2-8 **Room 222A**

Tracks: Nano and Micro Technologies, Tissue Engineering

Organ-on-Chip Models for Study of Disease and Drug Discovery I

Chairs: Min-Ho Kim, Domenech Maribella

1:30 pm
Fibrotic Lung Microtissue Array to Predict Anti-fibrosis Drug Efficacy
Mohammadnabi Asmani[1], Sanjana Velumani[1], Yan Li[1], and Ruogang Zhao[1]
[1]*University at Buffalo, Buffalo, NY*

1:45 pm
Detecting the Endothelial Conditional Response to Oscillatory Shear Stress
Yoshitaka Sei[1], Song Ih Ahn[1], Theodore Virtue[1], and YongTae Kim[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

2:00 pm
Microengineering of Vascularized 3D Glial Network for the Development of a Neurovascular Unit
Song Ahn[1], Jiwon Yom[1], Candice Hovell[1], and YongTae Kim[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

2:15 pm
3D Lymphatics-on-a-Chip to Reconstitute Lymphatic Drainage Function and Lymphedema
Esak Lee[1,2] and Christopher Chen[1]
[1]*Wyss Institute for Biologically Inspired Engineering at Harvard University, Boston, MA,* [2]*Department of Biomedical Engineering at Boston University, Boston, MA*

2:30 pm
The Influence of Patient-Derived Fibroblasts on Breast Cancer Invasion Profile Within a Microfluidic Platform
Danh Truong[1], Harpinder Saini[1], Alexander Kratz[1], Eric Barrientos[1], Toan Nguyen[1], Barbara Pockaj[2], and Mehdi Nikkhah[1]
[1]*Arizona State University, Tempe, AZ,* [2]*Mayo Clinic, Phoenix, AZ*

2:45 pm
3D Nanosensors for Electrical Interrogations of Engineered Micro-tissues
Anna Kalmykov[1], Changjin Huang[1], Arif Abdullah[1], Elnatan Mataev[1], K Jimmy Hsia[1], and Tzahi Cohen-Karni[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

OP-Thurs-2-9 **Room 222B**

Tracks: Cellular and Molecular Bioengineering, Biomechanics

Substrate Effects in Mechanobiology II

Chairs: Daniel Alge, Caliari Steven

1:30 pm
Effects of Cell Contractility on Dynamic Movement of YAP in Living Cells
Newsha Koushki[1], Rosa Kaviani[1], and Allen J. Ehrlicher[1]
[1]*McGill University, Montreal, QC, Canada*

1:45 pm
Mouse Embryonic Fibroblasts Maintain Tensional Homeostasis at the Single Cell Level
Alicia Zollinger[1], Han Xu[1], Dimitrije Stamenovic[1], and Michael Smith[1]
[1]*Boston University, Boston, MA*

2:00 pm
Sculptured Thin Films Alter Cellular Actin Features and Transfection Efficacy
Amy Mantz[1], Charles Rice[1], Derek Sekora[1], Mathias Schubert[1], Eva Franke-Schubert[1], and Angela K Pannier[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE*

2:15 pm
Tissue Constructs Stiffen Globally and Locally During Sprouting Angiogenesis
Benjamin Juliar[1], Mark Keating[2], Yen Kong[1], Elliot Botvinick[2], and Andrew Putnam[1]
[1]*University of Michigan, Ann Arbor, MI,* [2]*University of California, Irvine, Irvine, CA*

2:30 pm
Nanopatterned Conductive PEG/Graphene Hybrid Scaffolds for Cardiac Tissue Engineering
Alec Smith[1], Hyok Yoo[1], Hyunjung Yi[2], Eun-Hyun Ahn[1], Justin Lee[1], Guozheng Shao[1], Ekaterina Nagornyak[1], Michael Laflamme[3], Charles Murry[3], and Deok-Ho Kim[1]
[1]*University of Washington, Seattle, WA,* [2]*Korea Institute of Science and Technology, Seoul, Korea, Republic of,* [3]*University of Toronto, Toronto, ON, Canada*

2:45 pm
Hydrogel Interfaces with Controlled Rigidity for *Ex Vivo* T Cell Activation and Expansion
Derfogail Delcassian[1,2,3], Xinyong Chen[2], Sajjad Jaffer[4], Octave Edard[4], and Iain Dunlop[4]
[1]*MIT, Cambridge, MA,* [2]*University of Nottingham, Nottingham, United Kingdom,* [3]*Boston Children's Hospital, Harvard Medical School, Boston, MA,* [4]*Imperial College London, London, United Kingdom*

PLATFORM SESSIONS–THURSDAY–2–1:30 PM–3:00 PM

Thursday, October 12 | 1:30 pm–3:00 pm | Platform Session 2

OP-Thurs-2-10 — Room 223

Track: Device Technologies and Biomedical Robotics

Wearable Sensors II

Chairs: Reece Burns, Ruya Li

1:30 pm
The Design and Application of an Anthropometric Biosensor to Aid in Detecting Spacesuit Fit and Body Position
Reece Burns[1], Jessica Aldrich[1], Jacob Griffith[1], Bernardo Villafana[1], and Kim Cluff[1]
[1]*Wichita State University, Wichita, KS*

1:45 pm
Supercapacitive Iontronic Nanofabric Sensing for Health Monitoring
Ruya Li[1], Yang Si[1], Zijie Zhu[1], Yaojun Guo[1], Yingjie Zhang[1], Ning Pan[1], Gang Sun[1], and Tingrui Pan[1]
[1]*University of California, Davis, Davis, CA*

2:00 pm
Detection of Intracranial Fluid Volume Shifts By a Non-invasive Electromagnetic Skin Patch Sensor
Jacob Griffith[1], Brandon Eckerman[1], Jessica Aldrich[1], Ryan Becker[1], Ryan Amick[1], Jeremy Patterson[1], and Kim Cluff[1]
[1]*Wichita State University, Wichita, KS*

2:15 pm
Improving Gait Symmetry in Post-Stroke Patients via Biofeedback Device
Katherine Leyba[1], I-Hung Khoo[1], Panadda Marayong[1], and Vennila Krishnan[1]
[1]*California State University, Long Beach, Long Beach, CA*

2:30 pm
Wearable Sweat Alcohol Sensor
Baichen Li[1], Quan Dong[1], and Zhenyu Li[1]
[1]*The George Washington University, Washington, DC*

2:45 pm
Electrical Double Layer Modulated Flexible Biosensor for Sweat Based Alcohol Sensing
Ashlesha Bhide[1], Sriram Muthukumar[2], and Shalini Prasad[1]
[1]*University of Texas at Dallas, Richardson, TX,* [2]*Enlisense LLC, Allen, TX*

OP-Thurs-2-11 — Room 225A

Track: Biomedical Imaging and Optics

Optical Coherence Tomography and Adaptive Optics

Chairs: Chao Zhou, Andrew Dunn

1:30 pm
An Automated Approach for Early Detection of Diabetic Retinopathy Using SD-OCT Images
Ahmed ElTanboly[1,2], Mohammed Ghazal[1,3], Ahmed Shalaby[1], Magdi El-Azab[2], Omar Helmy[4], Andy Switala[1], Shlomit Schaal[4], and Ayman El-Baz[1]
[1]*University of Louisville, Louisville, KY,* [2]*Mansoura University, Mansoura, Egypt,* [3]*Abu Dhabi University, Abu Dhabi, United Arab Emirates,* [4]*University of Massachusetts, Boston, MA*

1:45 pm
Human Retinal Imaging by Visible-Light Optical Coherence Tomography
Xiao Shu[1], Siyu Chen[1], Amani Fawzi[2], and Hao Zhang[1,2]
[1]*Northwestern University, Evanston, IL,* [2]*Northwestern University, Chicago, IL*

2:00 pm
Measure Flow Velocity Using Optical Coherence Microscopy Based Particle Image Velocimetry
Siyu Ma[1], Joseph Busher[1], Richard Goodwin[2], Roger Markwald[3], Thomas Borg[3], Raymond Runyan[4], and Bruce Gao[1]
[1]*Clemson University, Clemson, SC,* [2]*University of South Carolina-School of Medicine, Greenville, SC,* [3]*Medical University of South Carolina, Charleston, SC,* [4]*University of Arizona, Tucson, AZ*

2:15 pm
High Throughput Drug Screening of Multicellular Tumor Spheroids Using Optical Coherence Tomography
Qiongyu Guo[1], Yongyang Huang[1], Steven Titus[2], Molly Boutin[2], Marc Ferrer[2], and Chao Zhou[1]
[1]*Lehigh University, Bethlehem, PA,* [2]*National Institutes of Health, Bethesda, MD*

2:30 pm
Visualization and Deep Learning from Human Cardiac OCT Atlas
Yu Gan[1], Theresa Lye[1], Xinwen Yao[1], and Christine Hendon[1]
[1]*Columbia University, New York, NY*

2:45 pm
18F-EF5 PET Imaging Can Detect Hypoxia in the TMJ That Later Exhibit Cartilage Degradation
Megan Sperry[1], Vanessa Moody[1], Jessie Frank[1], Eric Granquist[1], and Beth Winkelstein[1]
[1]*University of Pennsylvania, Philadelphia, PA*

OP-Thurs-2-12 — Room 225B

Track: Drug Delivery & Intelligent Systems

Delivery Systems for Proteins and Vaccines

Chairs: Jai Rudra, Jamal Lewis

1:30 pm
Modular Programming of TLR Signaling Using Immune Polyelectrolyte Multilayers Assembled Entirely from Tumor Antigens and TLR Agonists
Qin Zeng[1] and Christopher Jewell[1,2]
[1]*University of Maryland, College Park, College park, MD,* [2]*University of Maryland Medical School, Baltimore, MD*

1:45 pm
Developing Lymph Node Targeting Amphiphile-Vaccines that Promote Mucosal Immune Protection Against HIV
Brittany Hartwell[1], Tyson Moyer[1], Kelly Moynihan[1], and Darrell Irvine[1,2,3]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Ragon Institute of MGH, MIT, and Harvard, Cambridge, MA,* [3]*Howard Hughes Medical Institute, Cambridge, MA*

Thursday, October 12 | 1:30 pm–3:00 pm | Platform Session 2

2:00 pm
Pulsatile-Release Microparticles for Single-Injection Vaccination Against Cysticercosis
Kevin McHugh[1], Sviatlana Rose[1], Allison Linehan[1], Stephany Tzeng[1], Adam Behrens[1], Zachary Tochka[1], Stephanie Tomasic[1], Robert Langer[1], and Ana Jaklenec[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

2:15 pm
Tunable Delivery of Single or Multiple Antigens in Tolerogenic Nanoparticles Using Peptide-polymer Bioconjugates
Liam Casey[1], Ryan Pearson[1], Kevin Hughes[1], Leon Wang[1], Madeline North[1], Daniel Getts[2], Stephen Miller[2], and Lonnie Shea[1]
[1]*University of Michigan, Ann Arbor, MI,* [2]*Northwestern University, Chicago, IL*

2:30 pm
Novel Immunotherapy for Systemic Lupus Erythematosus Using siRNA Therapeutics Delivered by Polymeric Nanoparticles
Kyung-Ho Roh[1], Pallab Pradhan[2], Randall Toy[2], and Krishnendu Roy[2]
[1]*University of Alabama in Huntsville, Huntsville, AL,* [2]*Georgia Institute of Technology, Atlanta, GA*

2:45 pm
Engineered Galectin-1 for Immunomodulation
Margaret Fettis[1] and Gregory Hudalla[1]
[1]*University of Florida, Gainesville, FL*

OP-Thurs-2-13 — Room 228A

Track: Respiratory Bioengineering

Modeling of the Respiratory System

Chairs: Donald Gaver, Yu Feng

1:30 pm
Validating CFD Predictions of Metered Dose Inhaler Aerosol Deposition with *In Vitro* Data
Geng Tian[1], Anubhav Kaviratna[1], Xiaofei Liu[1], Renishkumar Delvadia[1], Sau (Larry) Lee[1], and Changning Guo[1]
[1]*Food and Drug Administration, Silver Spring, MD*

1:45 pm
A Computational Model of a Dynamically Contracting Airway
Jason H.T. Bates[1] and Vignesh Rajendran[1]
[1]*University of Vermont, Burlington, VT*

2:00 pm
A Multiscale Computational Model of Pulmonary Airway Acoustics
Brian Henry[1] and Thomas Royston[1]
[1]*University of Illinois at Chicago, Chicago, IL*

2:15 pm
Linking the Pressure-Volume Curve to Tissue and Fiber Stresses for Optimization of Mechanical Ventilation
Samer Bou Jawde[1] and Béla Suki[1]
[1]*Boston University, Boston, MA*

2:30 pm
Finding Meaningful Metrics for Predicting Ventilator-Induced Lung Injury
Michelle M Mellenthin[1], Siyeon A Seong[2], Gregory S Roy[2], Katharine L Hamlington[2], Jason H T Bates[2], and Bradford J Smith[1]
[1]*University of Colorado Denver, Aurora, CO,* [2]*University of Vermont, Burlington, VT*

2:45 pm
Could Effects of Sleep and Obesity on Lung Volume Lead to the Emergence of Nocturnal Ventilation Defects (VDefs) in Asthma?
Tilo Winkler[1]
[1]*Massachusetts General Hospital & Harvard University, Boston, MA*

OP-Thurs-2-14 — Room 228B

Track: Cancer Technologies

Tumor Microenvironment I

Chairs: Jennifer Munson, Scott Verbridge

1:30 pm
Implantable Tissue Isolation Chambers for *In Vivo* Tumor Dynamics Analysis
Gabriel Gruionu[1], Despina Bazou[2], Nir Maimon[1], Mara Onita Lenco[1], Lucian Gruionu[3], Peigen Huang[1], and Lance Munn[1]
[1]*Harvard Medical School and Massachusetts General Hospital, Boston, MA,* [2]*Mater Misericordiae University Hospital, Dublin, Ireland,* [3]*University of Craiova, Craiova, Romania*

1:45 pm
Matrix Stress Relaxation Regulates Tumor Growth in Three Dimensional Microenvironments through Control Over p27
Sungmin Nam[1], Vivek Gupta[1], Hongpyo Lee[1], Ciara Davis[2], and Ovijit Chaudhuri[1]
[1]*Stanford University, Stanford, CA,* [2]*University of Maryland, Baltimore, MD*

2:00 pm
Tunable Biomaterials to Identify Mechanisms of ECM-Mediated Drug Resistance in Breast Cancer
Alyssa Schwartz[1], Lauren Barney[1], Lauren Jansen[1], Thuy Nguyen[1], Christopher Hall[1], Aaron Meyer[2], and Shelly Peyton[1]
[1]*University of Massachusetts Amherst, Amherst, MA,* [2]*Koch Institute for Integrative Cancer Research at MIT, Cambridge, MA*

2:15 pm
A Patient-Designed Glioblastoma Micro-environment Model to Examine Therapeutic Response And Intercellular Signaling Mechanisms
Jessica Yuan[1], Benjamin Purow[1], and Jennifer Munson[1]
[1]*University of Virginia, Charlottesville, VA*

2:30 pm
Understanding Resistance to EGFR-Targeted Therapy in an Engineered Hypoxic Tumor Model
Yuta Ando[1], Sang Sin Lee[1], Bethany M. Jarvis[1], and Keyue Shen[1,2,3]
[1]*Department of Biomedical Engineering, University of Southern California, Los Angeles, CA,* [2]*Department of Stem Cell Biology and Regenerative Medicine, University of Southern California, Los Angeles, CA,* [3]*Norris Comprehensive Cancer Center, University of Southern California, Los Angeles, CA*

PLATFORM SESSIONS–THURSDAY–2–1:30 PM–3:00 PM

Thursday, October 12 | 1:30 pm–3:00 pm | Platform Session 2

2:45 pm
Implications of Ultra-Low Dose LPS on Vascular Sprouting Dynamics in the Tumor Microenvironment
Megan Cox[1], Liwu Li[1], and Scott Verbridge[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

OP-Thurs-2-15 **Room 227C**

Track: Cancer Technologies

Cancer Mechanobiology II

Chairs: Amit Pathak, Jan Lammerding

1:30 pm
Substratum Stiffness Modulates Proliferation Downstream of Wnt3a by Regulating Integrin-Linked Kinase and Frizzled-1
Siyang Han[1], Mei-Fong Pang[1], and Celeste Nelson[1]
[1]*Princeton University, Princeton, NJ*

1:45 pm
Obesity-Associated Changes in the Extracellular Matrix Promote Cancer Stem Cell Characteristics
Adrian Shimpi[1], Katharina Wittmann[1], Bo Ri Seo[1], Nora Springer[1], Marshall Colville[1], Ofer Reizes[2], Claudia Fischbach[1], and Matthew Paszek[1]
[1]*Cornell University, Ithaca, NY,* [2]*Cleveland Clinic, Cleveland, OH*

2:00 pm
Biomechanical Regulation of Breast Cancer Metastasis
Adrianne Spencer[1], Jason Lee[1], and Aaron Baker[1]
[1]*University of Texas at Austin, Austin, TX*

2:15 pm
Probing the Role of Tissue Mechanics in Early Metastasis
Jack Staunton[1], Alexus Devine[1], King Leung Fung[1], and Kandice Tanner[1]
[1]*National Cancer Institute, National Institutes of Health, Bethesda, MD*

2:30 pm
Fluid Shear Stress Induces Chemoresistance, Metastasis, Invasion, and Mechanotransduction Phenotypes in MCF7 Breast Cancer Cells
Caymen Novak[1], Shreya Raghavan[1], Eric Horst[1], and Geeta Mehta[1]
[1]*University of Michigan, Ann Arbor, MI*

2:45 pm
Material-Derived Alterations in FAK-ROCK Signaling Control Breast Cancer Motility and Growth
Alyssa Schwartz[1], Christopher Hall[1], Sarah Duquette[1], and Shelly Peyton[1]
[1]*University of Massachusetts Amherst, Amherst, MA*

OP-Thurs-2-16 **Room 226A**

Tracks: Bioinformatics, Computational and Systems Biology, Cancer Technologies

Computational Modeling of Cancer

Chairs: Mohammad Fallahi-Sichani, Kristen Naegle

1:30 pm
The CXCL12/CXCR7 Signaling Axis, Isoforms, Circadian Rhythms, and Tumor Cellular Composition Dictate Gradients in Tissue
Phillip Spinosa[1], Kathryn Luker[2], Gary Luker[1,2], and Jennifer Linderman[1]
[1]*University of Michigan, Ann Arbor, MI,* [2]*University of Michigan Medical School, Ann Arbor, MI*

1:45 pm
Sprouty2 Regulates Signaling and Phenotypic Responses of Glioblastoma Cells to DNA Damaging Agents and Receptor Kinase Inhibitors
Nisha G. Sosale[1] and Matthew J. Lazzara[1]
[1]*University of Virginia, Charlottesville, VA*

2:00 pm
Proteomic Profiling of Signaling Pathway Adaptation in Ovarian Cancer Patient-Derived Xenografts to Design Effective Combination Therapies
Ioannis Zervantonakis[1], Claudia Iavarone[2], Hsing-Yu Chen[1], Laura Selfors[1], Sangeetha Palakurthi[2], Joyce Liu[2], Ronny Drapkin[3], Ursula Matulonis[2], Joel Leverson[4], Deepak Sampath[5], Gordon Mills[4], and Joan Brugge[1]
[1]*Harvard Medical School, Boston, MA,* [2]*Dana Farber Cancer Institute, Boston, MA,* [3]*University of Pennsylvania, Philadelphia, PA,* [4]*AbbVie, North Chicago, IL,* [5]*Genentech, San Francisco, CA,* [6]*MD Anderson Cancer Center, Houston, TX*

2:15 pm
Rare Cell Variability and Drug-Induced Reprogramming as a Mode of Cancer Drug Resistance
Sydney Shaffer[1], Margaret Dunagin[1], Stefan Torborg[1], Clemens Krepler[2], Meenhard Herlyn[2], and Arjun Raj[1]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*The Wistar Institute, Philadelphia, PA*

2:30 pm
Vascular Normalization Improves Metronomic Chemotherapy
Fotios Mpekris[1], James Baish[2], Triantafyllos Stylianopoulos[1], and Rakesh Jain[3]
[1]*University of Cyprus, Nicosia, Cyprus,* [2]*Bucknell University, Lewisburg, PA,* [3]*Massachusetts General Hospital and Harvard Medical School, Boston, MA*

2:45 pm
Systems Biology Model Predicts the Impact of Heterogeneity on the Response to Combination Anti-angiogenic Tumor Therapy
Ding Li[1] and Stacey Finley[1]
[1]*University of Southern California, Los Angeles, CA*

Thursday, October 12 | 1:30 pm–3:00 pm | Platform Session 2

OP-Thurs-2-17 **Room 226B**

Track: Neural Engineering

Neural Injury and Disease Model Systems

Chairs: David Meaney, Bonnie Firestein

1:30 pm
Cortical-subcortical Network Dynamics in Parkinson's Disease
Kevin O'Neill[1], Cody Barton[1], Denise Oswalt[1], Zaman Mirzadeh[2], Francisco Ponce[2], and Bradley Greger[1]
[1]*Arizona State University, Tempe, AZ,* [2]*Barrow Neurological Institute, Phoenix, AZ*

1:45 pm
Interictal Localization of the Epileptogenic Focus by High and Low Frequency GPDC Analysis of iEEG
Omar Alamoudi[1], Diana Pizarro[2], Christopher Mondragon[1], Bharat Karumuri[1], Sandipan Pati[2], and Leon Iasemidis[1]
[1]*Louisiana Tech University, Ruston, LA,* [2]*University of Alabama, Birmingham, AL*

2:00 pm
Modulation of Neural Activity in Sleep in *C. elegans*
Daniel Lawler[1], Yee Lian Chew[2], William Schafer[2], and Dirk Albrecht[1]
[1]*Worcester Polytechnic Institute, Worcester, MA,* [2]*MRC Laboratory of Molecular Biology, Cambridge, United Kingdom*

2:15 pm
In Vitro Model for Traumatic Brain Injuries
Volha Liaudanskaya[1], Grace G Ingalls[1], Alison M Brack[1], Sevda Lule[2], Michael J Whalen[2], and David L Kaplan[1]
[1]*Tufts University, Medford, MA,* [2]*Neuroscience Center at Massachusetts General Hospital, Charlestown, MA*

2:30 pm
Traumatic Brain Injury Induces a Temporal and Severity Dependent Release of Tight Junction Proteins in Extracellular Microvesicles (eMVs)
Allison Andrews[1], Evan Lutton[1], Lee Anne Cannella[1], Steven Merkel[1], Matthew Seasock[1], Winston Kung[1], Marquis Maynard[1], Steven Kaspin[1], Roshanak Razmpour[1], and Servio Ramirez[1,2]
[1]*Lewis Katz School of Medicine at Temple University, Philadelphia, PA,* [2]*The Shriners Hospitals Pediatric Research Center, Philadelphia, PA*

2:45 pm
Reorganization of Modular Brain Networks Following Cognitive Training for Chronic Traumatic Brain Injury
Kihwan Han[1], Sandra Chapman[1], and Daniel Krawczyk[1,2]
[1]*University of Texas at Dallas, Dallas, TX,* [2]*University of Texas Southwestern Medical Center, Dallas, TX*

OP-Thurs-2-18 **Room 227C**

Track: Orthopedic and Rehabilitation Engineering

Orthopedic Mechanobiology

Chairs: Nathan Schiele, Yi-Xian Qin

1:30 pm
Lysyl Oxidase Expression Patterns of Developing Embryonic Tendon
Xuan Pan[1], Jiewen Li[1], and Catherine K. Kuo[1,2]
[1]*University of Rochester, Rochester, NY,* [2]*University of Rochester School of Medicine, Rochester, NY*

1:45 pm
Multi-scale Structure and Mechanics of Plantaris Tendon
Andrea Lee[1] and Dawn Elliott[1]
[1]*University of Delaware, Newark, DE*

2:00 pm
Overload Damage to Tendon Collagen Makes It Susceptible to MMP-9: Evidence from AFM
Sam Baldwin[1], Laurent Kreplak[1], and Michael Lee[1]
[1]*Dalhousie University, Halifax, NS, Canada*

2:15 pm
Age-Dependence of Collagen Stability and Fracture Mechanics in a High-Load Human Tendon
Sara Sparavalo[1], Sam Veres[1,2], Sarah Wells[1], and Michael Lee[1]
[1]*Dalhousie University, Halifax, NS, Canada,* [2]*Saint Mary's University, Halifax, NS, Canada*

2:30 pm
Mitigating Articular Cartilage Strains Through Regular Activity
Brian Graham[1], Axel Moore[1], David Burris[1], and Christopher Price[1]
[1]*University of Delaware, Newark, DE*

2:45 pm
Impact Force Alters Exracellular miRNA Release by Porcine Articular Cartilage
Kristin Cilluffo[1], Vikesh Patel[1], Thomas Best[1], Lee Kaplan[1], and Chun-Yuh Huang[1]
[1]*University of Miami, Coral Gables, FL*

SPECIAL SESSION

1:30 pm–3:00 pm **Room 122C**

ABET Criteria Workshop

A panel of experienced BME ABET program evaluators present and discuss the current status and trends in BME undergraduate program accreditation. Topics will include the accreditation process and BME specific criteria, challenges, and experiences. The target audience includes current and new program evaluators, faculty members in departments preparing for or considering an ABET evaluation, and educators and industry and government representatives interested in the BME accreditation process.

PLATFORM SESSIONS–THURSDAY–2–1:30 PM–3:00 PM

Thursday, October 12 | 1:30 pm–3:00 pm | Platform Session 2

SPECIAL SESSION

1:30 pm–3:00 pm **Room 121ABC**

NIH Funding Panel Session

The session will provide an overview of NIH funding opportunities and resources particularly well-suited to the BMES research community. NIH Program Officers and awardees will offer insights and "lessons learned" from the perspective of winning these NIH awards as well as in serving on NIH review panels. The session will explore how researchers may develop strategies to align their research interests with NIH opportunities and priorities.

SPECIAL SESSION

1:30 pm–3:00 pm **Room 122B**

Defining Educational Goals of Bioengineering in the 21st century

Chairs: Jennifer Amos

Speakers:

- Andrew Smith, Associate Head and Assistant Professor of Bioengineering, University of Illinois at Urbana-Champaign
- Daniel A. Fletcher, Bioengineering & Biophysics, UC Berkeley
- Alisha Sarang-Sieminski, Associate Professor of Bioengineering, Franklin W. Olin College of Engineering
- Ross Venook, Lecturer Bioengineering Department and BioDesign, Stanford University

Engineers design and create tools, products, and systems that change society and improve the lives of people. The most impactful products are ones that address profound societal and personal needs. We speak of engineering as grand challenges because engineering is essential for addressing urgent societal issues such as combatting global climate change, ensuring a secure food supply, or providing sustainable and effective medical care. For our engineering students to be effective at addressing the societal needs posed by these grand challenges, our students must understand the "needs" that require engineering solutions as well as the science and technologies that make engineering effective.

This session will highlight how 3 institutions are approaching this balance of social needs integration and into BME Curricula. Following the talks, we will guide discussion on three main discussion points to engage the BIOE community: 1) Is it possible to redesign the curriculum so that societal needs for healthcare and medicine drive the technical content, 2) Can we integrate co-curricular experiences providing insight to the clinical needs and challenges from the freshmen year, 3) How do we develop our faculty's teaching skills to meet these new challenges to foster more project-based and clinically focused curricula.

SPECIAL SESSION

2:30 pm–5:30 pm **Room 122A**

The 5th US-Korea Joint BMES Workshop

Chair: Hanjoong Jo, PhD

Speakers:

- Hanjoong Jo, Georgia Tech & Emory University
- Hun Kuk Park, Kyung Hee University
- David Mooney, Harvard University
- Dae Hyeong Kim, Seoul National University
- Dong-Hwee Kim, Korea University
- Kuiwon Choi, KIST-Europe
- Darrel Irvine, MIT
- Hongki Yoo, Hanyang University
- Seulki Lee, Johns Hopkins University
- Kwangmeyung Kim, KIST
- James Moon, University of Michigan

The goal of the 5th Annual US-Korea Joint BMES Workshop is to promote cooperation, collaboration, and networking between the members of Korean Society of Medical and Biological Engineering (KOSOMBE) and BMES. The Workshop will continue to provide an important venue and serve as bridge for a long-term relationship and mutual benefit for both Society members in US and Korea.

INDUSTRY SESSION

1:00 pm–2:00 pm **Room 125AB**

BMES Special Interest Group Overview

Chair: Christopher Basciano, BD

BMES currently has three special interest groups that focused program organization and technical depth to the broad spectrum of disciplines covered by biomedical engineering. The session will allow representatives from each of the three special interest groups (Medical Devices, Cellular and Molecular Engineering, and Advanced Biomanufacturing) to discuss each group's current focus, future activities, and recent contributions to the expanding field of biomedical engineering.

***Industry Track sponsored by:**

TAMU BIOMEDICAL ENGINEERING TEXAS A&M UNIVERSITY

Thursday, October 12 | 3:45 pm–5:15 pm | Platform Session 3

INDUSTRY SESSION

2:00 pm–5:00 pm **Room 125AB**

Entrepreneur Workshop

Ticket purchase required

Chair: Clark Wilson, Merchant and Gould P.C.

The session will include a panel discussion where the individuals will cover one or more of the below areas. It is up to the individual as to which he/she feels they have expertise in. The second half of the session will include an open round table whereby the startups in the room can interact with you individually to address specific questions they might have.

- US Regulatory strategy
- OUS Regulatory strategy
- Verification/Validation
- Pre-clinical trials
- Feasibility Studies
- Clinical trials
- Design
- Manufacturing
- Quality Management System
- Risk Management
- Reimbursement
- Corporate Governance
- Financial Modeling
- Marketing/Sales
- Fundraising Strategy
- IP Strategy
- Launch
- Post-market surveillance
- Post-market studies
- Company growth
- Exit strategy

***Industry Track sponsored by:**

TAMU BIOMEDICAL ENGINEERING TEXAS A&M UNIVERSITY

OP-Thurs-3-1 **Room 224A**

Track: Biomaterials

Biomaterials for Immunoengineering III

Chairs: James Moon, Ankur Singh

3:45 pm

Immunologically Active Cryogels for Breast Cancer Therapy

Sidi A. Bencherif[1,2,3]
[1]*Northeastern University, Boston, MA,* [2]*Harvard University, Cambridge, MA,* [3]*The National Center for Scientific Research, Sorbonne Universités, Université de Technologie of Compiègne (UTC), Compiègne, France*

4:00 pm

Biomimetic Design of Artificial Lymph Nodes for T Cell Immunotherapy

John Hickey[1], Jae Wook Chung[1], Hai-Quan Mao[1], and Jonathan Schneck[1]
[1]*Johns Hopkins University, Baltimore, MD*

4:15 pm

An Acellular Polymeric Particle-Based Platform for The Highly Efficient Activation and Expansion Of Natural Killer Cells

Kelly Rhodes[1], Randall Meyer[1], and Jordan Green[1]
[1]*Johns Hopkins University, Baltimore, MD*

4:30 pm

Role of Integrins in Macrophage Activation to Biomaterial Properties

Kelly Hotchkiss[1], Andy Vo[1], Emily Burtch[1], and Rene Olivares-Navarrete[1]
[1]*Virginia Commonwealth University, Richmond, VA*

4:45 pm

The Role of Geometry in T-Cell Stimulation for Adoptive Cell Therapy: An Initial Assessment of Porous, Flat Substrates Presenting Key Signals for Enhanced *Ex Vivo* T-cell Expansion

Rabib Chaudhury[1], Christopher Kong[1], and Tarek Fahmy[1]
[1]*Yale University, New Haven, CT*

5:00 pm

Intra-Lymph Node Delivery of Tolerogenic Microparticles Reverses Disease and Prevents Relapse in an Autoimmune Model of Multiple Sclerosis

Emily A. Gosselin[1], Lisa H. Tostanoski[1], and Christopher M. Jewell[1,2,3,4]
[1]*Fischell Department of Bioengineering, University of Maryland-College Park, College Park, MD,* [2]*Department of Microbiology and Immunology, University of Maryland Medical School, Baltimore, MD,* [3]*Marlene and Stewart Greenebaum Cancer Center, Baltimore, MD,* [4]*United States Department of Veterans Affairs, Baltimore, MD*

***Biomaterials Track sponsored by:**

ACS Biomaterials SCIENCE & ENGINEERING

Thursday, October 12 | 3:45 pm–5:15 pm | Platform Session 3

OP-Thurs-3-2 — Room 224B

Track: Biomaterials

Advanced Characterization and Imaging of Biomaterial Environments

Chairs: Nicole Iverson, Greg Hudalla

3:45 pm
Direct Imaging of Protein Stability and Folding Kinetics In Hydrogels
Lydia Kisley[1], Deborah Leckband[1], Martin Gruebele[1], Kali Serrano[1], Drishti Guin[1], and Xinyu Kong[1]
[1]*University of Illinois, Urbana, IL*

4:00 pm
Upstream Platelet Priming Effects on Transient Downstream Platelet-Surface Interactions
Alexandra Zudova[1], Elizabeth Pumford[1], and Vladimir Hlady[1]
[1]*University of Utah, Salt Lake City, UT*

4:15 pm
Fabrication of Aligned Collagen Fibers via Microfluidic Device for Observing Keratocyte Behavior
Kevin Lam[1], Pouriska Kivanany[2], Kyle Grose[2], Nihan Tanyeri[3], Matthew Petroll[2], and David Schmidtke[1]
[1]*UT Dallas, Dallas, TX,* [2]*UT Southwestern, Dallas, TX,* [3]*Istanbul Medipol University, Istanbul, Turkey*

4:30 pm
Microstructure of Laminin Networks Affects Adhesion to Dystroglycan Null Cells and Downstream Signaling
Claire Robertson[1], Ariel Kent[1], Nasima Mayer[1], and Mina Bissell[1]
[1]*Lawrence Berkeley National Lab, Berkeley, CA*

4:45 pm
Flow Induced Liposome Rupture into a Lipid Bilayer on Solid Surfaces using QCM-D
Christina Bailey[1], Anubhav Tripathi[1], and Anita Shukla[1]
[1]*Brown University, Providence, RI*

5:00 pm
The Effects of Spatial Confinement on Metastatic Cancer Cell Migration in 3D Collagen Microtracks
Aniqua Rahman[1,2], Aadhar Jain[1], Andres Larraza[1], David Erickson[1], and Cynthia Reinhart-King[1,2]
[1]*Cornell University, Ithaca, NY,* [2]*Vanderbilt University, Nashville, TN*

***Biomaterials Track sponsored by:**

ACS Biomaterials SCIENCE & ENGINEERING

OP-Thurs-3-3 — Room 229A

Track: Biomechanics

Brain Biomechanics and Mechanobiology

Chairs: Raj Prabhu, Adam Bartsch

3:45 pm
Viscoelastic Characterization of the White Matter Brain Tissue via Indentation: An Experimental and Theoretical Study
Aref Samadi-Dooki[1] and George Voyiadjis[1]
[1]*Louisiana State University, Baton Rouge, LA*

4:00 pm
Solid Stress from Tumors Impairs the Surrounding Brain Vascular Perfusion and Neuronal Function
Giorgio Seano[1], Hadi T. Nia[1], Kyrre E. Emblem[2], Meenal Datta[1,3], Jun Ren[1], Jonas Kloepper[1], Shanmugarajan Krishnan[1], Mitrajit Ghosh[1], Vasileos Askoxylakis[1], Gino B. Ferraro[1], Lars Riedemann[1], Elisabeth R. Gerstner[4], Tracy T. Batchelor[4], Dai Fukumura[1], Peigen Huang[1], Lance L. Munn[1], James W. Baish[5], Timothy P. Padera[1], and Rakesh K. Jain[1]
[1]*Edwin L. Steele Laboratory for Tumor Biology, Harvard Medical School, Massachusetts General Hospital, Boston, MA,* [2]*The Intervention Centre, Oslo University Hospital-Rikshospitalet, University of Oslo, Oslo, Norway,* [3]*Department of Chemical and Biological Engineering, Tufts University, Medford, MA,* [4]*Stephen E. and Catherine Pappas Center for Neuro-Oncology, Department of Neurology, Massachusetts General Hospital, Harvard Medical School, Boston, MA,* [5]*Department of Biomedical Engineering, Bucknell University, Lewisburg, PE*

4:15 pm
Mechanical Properties of Glial Cells in 3D Scaffolds
Amy Dagro[1], KT Ramesh[1], Laochan Rajbhandari[2], Arun Venkatesan[2], Santiago Orrego[1], and Sung Hoon Kang[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Johns Hopkins Medical Inst, Baltimore, MD*

4:30 pm
Astrocyte Mechanobiology and Regulation of the Extracellular Matrix Environment
Gabriel Compton[1], Addison Walker[1], Abby Terlouw[1], Jacob Schluns[1], Ethan Echols[1], Kartik Balachendran[1], and Jeffrey Wolchok[1]
[1]*University of Arkansas, Fayetteville, AR*

4:45 pm
On the Appropriateness of Biphasic Poroelastic Constitutive Models for Estimating Brain Biomechanics Under Surgical Load
Saramati Narasimhan[1], Jared A. Weis[1,2], Reid C. Thompson[3], and Michael I. Miga[1,2,3]
[1]*Vanderbilt University, Nashville, TN,* [2]*Vanderbilt University Institute for Surgery and Engineering, Nashville, TN,* [3]*Vanderbilt University Medical Center, Nashville, TN*

5:00 pm
Three-dimensional Human Brain Models under Mild Angular Acceleration using Material Point Method
Yuan-Chiao Lu[1], Nitin Daphalapurkar[1], Kaliat Ramesh[1], Andrew Knutsen[2], Dzung Pham[2], Philip Bayly[3], and Jerry Prince[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Henry M. Jackson Foundation, Bethesda, MD,* [3]*Washington University in St. Louis, St. Louis, MO*

Thursday, October 12 | 3:45 pm–5:15 pm | Platform Session 3

OP-Thurs-3-4 — Room 229

Track: Biomechanics

Computational and Multiscale Modeling in Biomechanics II

Chairs: Will Richardson, Taeyoon Kim

3:45 pm
Coarse-Grained Model of SNARE Shows that Partial Assembly is Required for Quick Zippering and Determines the Number of SNAREs Required for Docking
Nicole Fortoul[1], Maria Bykhovskaia[2], and Anand Jagota[1]
[1]*Lehigh University, Bethlehem, PA,* [2]*Wayne State University of Medicine, Detroit, MI*

4:00 pm
The Versatile Micromechanical Model of Cell Migration
Abdel-Rahman Hassan[1], Thomas Biel[1], and Taeyoon Kim[1]
[1]*Purdue University, West Lafayette, IN*

4:15 pm
Application of Filopodial Mechanosensing of Surrounding ECM Stiffness to Modeling of Directed Cancer Cell Invasion Dynamics into 3D ECM
Min-Cheol Kim[1], Rohan Abeyaratne[1], Roger D. Kamm[1,2], and H. Harry Asada[1,2]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Singapore MIT Alliance Research Technology, Singapore, Singapore*

4:30 pm
A Coupled Chemo-Mechanical Cell-Matrix Model to Predict Mechanical Feedback Between Cells and Extracellular Matrices
Farid Alisafaei[1], Matthew Hall[2], Mingming Wu[2], and Vivek Shenoy[1]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*Cornell University, Ithaca, NY*

4:45 pm
A Multiscale Model of Leukocyte Transendothelial Migration During Atherogenesis
Rita Bhui[1] and Heather Hayenga[1]
[1]*University of Texas at Dallas, Richardson, TX*

5:00 pm
A Coupled Agent Based Model-Finite Element Analysis Model of Vascular Adaptation
Maziyar Keshavarzian[1], Clark Meyer[1], and Heather Hayenga[1]
[1]*University of Texas, Dallas, Richardson, TX*

OP-Thurs-3-5 — Room 221A

Track: Cardiovascular Engineering

Heart Valve Structure, Function, and Disease

Chairs: Kartik Balachandran , Rouzbeh Amini

3:45 pm
Stable Flow Prevents Inflammation of Aortic Valve Endothelial Cells By Increasing Expression of a Novel Flow-Sensitive MiR-483, Which In Turn Downregulates Ash2L and Ube2c
Joan Fernandez[1], Jack Heath[2], Sandeep Kumar[2], Marwa Mahmoud[2], and Hanjoong Jo[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

4:00 pm
A Non-invasive Method to Estimate *In Vivo* Strains of the Mitral Valve
Bruno Rego[1], Amir Khalighi[1], Andrew Drach[1], Joseph Gorman[2], Robert Gorman[2], and Michael Sacks[1]
[1]*University of Texas at Austin, Austin, TX,* [2]*University of Pennsylvania, Philadelphia, PA*

4:15 pm
Label-Free Metabolic Biomarkers for Assessing Calcific Aortic Valve Disease Progression
Ishita Tandon[1], Olivia Kolenc[1], Kyle Quinn[1], and Kartik Balachandran[1]
[1]*University of Arkansas, Fayetteville, AR*

4:30 pm
Targeting Cadherin-11 Prevents Notch1-mediated Calcific Aortic Valve Disease
Cyndi Clark[1], Meghan Bowler[1], J. Caleb Snider[1], and W. David Merryman[1]
[1]*Vanderbilt University, Nashville, TN*

4:45 pm
Investigating Effects of the 3D Extracellular Environment on Aortic Valve Cell Calcification Using Filter Paper Platform
Madeline Monroe[1], Rebecca Nikonowicz[1], Matthew Sapp[1], and K. Jane Grande-Allen[1]
[1]*Rice University, Houston, TX*

5:00 pm
The Three-Dimensional Microenvironment of the Mitral Valve: Insights into the Effects of Physiological Loads
Salma Ayoub[1], Karen Tsai[1], Amir Khalighi[1], and Michael Sacks[1]
[1]*The University of Texas at Austin, Austin, TX*

OP-Thurs-3-6 — Room 221B

Tracks: Tissue Engineering, Cardiovascular Engineering

Cardiovascular Tissue Engineering III

Chairs: Eno Ebong, Bin Duan

3:45 pm
A Flexible Wireless Passive Stimulator for Engineered Cardiac Tissue Construct
Shiyi Liu[1], Ali Navaei[1], Medhi Nikkhah[1], and Junseok Chae[1]
[1]*Arizona State University, Tempe, AZ*

4:00 pm
Cellular Interactions in Cardiac Tissue Engineering
Spencer Marsh[1] and Agneta Simionescu[1]
[1]*Clemson University, Seneca, SC*

4:15 pm
Using Extracellular Matrix Peptides to Increase Endothelialization of Poly(Vinyl Alcohol) Vascular Grafts Without Increasing Thrombosis
Deirdre Anderson[1], Katie Truong[1], Evelyn Yim[2], and Monica Hinds[1]
[1]*Oregon Health & Science University, Portland, OR,* [2]*University of Waterloo, Waterloo, ON, Canada*

PLATFORM SESSIONS–THURSDAY–3–3:15 PM–4:45 PM

Thursday, October 12 | 3:45 pm–5:15 pm | Platform Session 3

4:30 pm
Diabetes Resistant Tissue Engineered Vascular Grafts
Jhilmil Dhulekar[1], Paige Urig[1], Zoltan Hajdu[1], Christopher Wright[2], John Bruch[2], Dan Simionescu[1], and Agneta Simionescu[1]
[1]*Clemson University, Clemson, SC,* [2]*Greenville Health System, Greenville, SC*

4:45 pm
Tissue Engineered Vascular Graft for Use in Vascular and Reconstructive Surgeries
Elizabeth Varghese[1], Gurtej Singh[2], Miriam Rafailovich[1], Duc Bui[2], Marcia Simon[1], Sami Khan[2], Richard Clark[1], and Alexander Dagum[2]
[1]*Stony Brook University, Stony Brook, NY,* [2]*Stony Brook School of Medicine, Stony Brook, NY*

5:00 pm
Enhancing Decellularized Vascular Grafts Using Self-Assembling Multidomain Peptides
Peter Nguyen[1], Rohit Premkumar[1], and Vivek Kumar[1]
[1]*New Jersey Institute of Technology, Newark, NJ*

OP-Thurs-3-7 **Room 221C**

Track: Tissue Engineering

Engineering Replacement Tissues

Chairs: Maureen Lynch, David Rubenstein

3:45 pm
Extensively Passaged Human Auricular Chondrocytes Retain the Capacity to Generate Auricular Cartilage *In Vivo*
Benjamin Cohen[1], Jaime Bernstein[2], Alice Harper[2], Jason Spector[2], and Lawrence Bonassar[1]
[1]*Cornell University, Ithaca, NY,* [2]*Weill Cornell Medical College, New York, NY*

4:00 pm
Perfusion Directed 3D Bone Mineral Formation
Kairui Zhang[1], Stephen Sawyer[1], Lucas Albrecht[1], Andrew Ramos[1], Alex Filip[1], Jason Horton[2], and Pranav Soman[1]
[1]*Syracuse university, Syracuse, NY,* [2]*SUNY Upstate Medical University, Syracuse, NY*

4:15 pm
Custom 3D-Printed External Biocompatible Cage Mitigates Contraction During Maturation of Human Auricular Cartilage Scaffolds
Jaime Bernstein[1], Benjamin Cohen[2], Julia Jin[1], Alice Harper[1], Lawrence Bonassar[2], and Jason Spector[1]
[1]*Weill Cornell Medical College, New York, NY,* [2]*Cornell University, Ithaca, NY*

4:30 pm
Flexible Shape-memory Scaffold for Minimally Invasive Delivery of Functional Tissues
Miles Montgomery[1], Samad Ahadian[1], Locke Davenport Huyer[1], Mauro Lo Rito[1,2], Robert Civitarese[1], Rachel Vanderlaan[2], Jun Wu[3], Lewis Reis[3], Abdul Momen[3], Saeed Akbari[1], Aric Pahnke[1], Ren-Ke Li[3], Christopher Calderone[2], and Milica Radisic[1,3]
[1]*University of Toronto, Toronto, ON, Canada,* [2]*The Hospital For Sick Children, Toronto, ON, Canada,* [3]*Toronto General Research Institute, Toronto, ON, Canada*

4:45 pm
Rapid Anastomosis of Scaffold Free Prevascular Endothelial-Fibroblast Constructs
Sanket Pattanaik[1], Chase Arbra[1], Heather Bainbridge[1], J. Matthew Rhett[1], Stephen Fann[1], and Michael Yost[1]
[1]*Medical University of South Carolina, Charleston, SC*

5:00 pm
An *In Vitro* Chondro-Osteo-Vascular Triphasic Model of the Osteochondral Complex
Alessandro Pirosa[1], Riccardo Gottardi[1,2], Peter Alexander[1], Dario Puppi[3], Federica Chiellini[3], and Rocky Tuan[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Ri.MED Foundation, Palermo, Italy,* [3]*University of Pisa, Pisa, Italy*

OP-Thurs-3-8 **Room 222A**

Tracks: Nano and Micro Technologies, Tissue Engineering

Organ-on-Chip Models for Study of Disease and Drug Discovery II

Chairs: Eun Ji Chung, Gretchen Mahler

3:45 pm
Networked Concave Microwell Arrays for Constructing 3D Cell Spheroids
Geonhui Lee[1], Jaeseo Lee[1], Joong Yull Park[2], and Dong-Hwee Kim[1]
[1]*Korea University, Seoul, Korea, Republic of,* [2]*Chung-Ang University, Seoul, Korea, Republic of*

4:00 pm
Development of Human-on-a-Chip Systems for Understanding Disease and for Preclinical Drug Discovery
James Hickman[1,2]
[1]*University of Central Florida, Orlando, FL,* [2]*Hespseros, Inc, Orlando, FL*

4:15 pm
Rapid and Facile Fabrication Of Organs-on-Chips: Toward a Patient Derived Intestine-On-A-Chip
Sanjin Hosic[1], Shashi Murthy[1], David Breault[2,3,4], and Abigail Koppes[1]
[1]*Northeastern University, Boston, MA,* [2]*Harvard Medical School, Boston, MA,* [3]*Boston Children's Hospital, Boston, MA,* [4]*Harvard Stem Cell Institute, Boston, MA*

4:30 pm
High Throughput Optimisation of Differentiation from Human Pluripotent Cells To Kidney Lineages Using Microbioreactors Arrays
Nicholas Glass[1], Minoru Takasato[1,2], Drew Titmarsh[1], Pei Xuan Er[1,2], Ernst Wolvetang[1], Melissa Little[1,2,3], and Justin Cooper-White[1,4]
[1]*The University of Queensland, Brisbane, Australia,* [2]*Murdoch Children's Research Institute, Melbourne, Australia,* [3]*The University of Melbourne, Melbourne, Australia,* [4]*CSIRO, Melbourne, Australia*

4:45 pm
Development of a Near Equipment-free, Self-contained HIV Drug Resistance Test
Nuttada Panpradist[1], David McIntyre[1], Annie Wong-On-Wing[1], Annapurni Sriram[1], Ingrid Beck[2], Lisa Frenkel[1,2], and Barry Lutz[1]
[1]*University of Washington, Seattle, WA,* [2]*Seattle Children's Research Institute, Seattle, WA*

5:00 pm
Long-term Microfluidic Human Liver Co-cultures For Drug Development
Brenton Ware[1,2] and Salman Khetani[1]
[1]*University of Illinois at Chicago, Chicago, IL,* [2]*Colorado State University, Fort Collins, CO*

Thursday, October 12 | 3:15 pm–4:45 pm | Platform Session 3

OP-Thurs-3-9 **Room 222B**

Tracks: Cellular and Molecular Bioengineering, Biomechanics

Cellular and Molecular Mechanobiology

Chairs: Ashley Brown, Kristen Mills

3:45 pm
A Chemogenetic Tool for Controlling Chondrocyte Activity *In Vitro*
Ryan McDonough[1], Janty Shoga[1], and Chistopher Price[1]
[1]*University of Delaware, Newark, DE*

4:00 pm
Computational and Experimental Analysis of ECM Remodeling Dynamics by Cell-Generated Forces
Michael Mak[1], Andrea Malandrino[2], and Roger Kamm[2]
[1]*Yale University, New Haven, CT,* [2]*Massachusetts Institute of Technology, Cambridge, MA*

4:15 pm
A Stochastic Motor-Clutch Model Describes Mechanical Regulation of Cellular Morphology
Benjamin Scandling[1] and Keith Gooch[1]
[1]*The Ohio State University, Columbus, OH*

4:30 pm
A Novel Mechanism for Shear Mechano-transduction and Regulation of Barrier Function in 3D Biomimetic Microvessels
William Polacheck[1,2], Matthew Kutys[1,2], Jinling Yang[2], Jeroen Eyckmans[2], and Christopher Chen[1,2]
[1]*Harvard University, Boston, MA,* [2]*Boston University, Boston, MA*

4:45 pm
Cadherin-11's Mechanical and Inflammatory Role in Fibroblasts
Meghan Bowler[1], Matthew Bersi[1], Rachel Jerrell[1], Aron Parekh[1], and W. David Merryman[1]
[1]*Vanderbilt University, Nashville, TN*

5:00 pm
Epidermial Growth Factor Receptor is a Key Effector in Intercellular Force Transduction in Epithelia
Deborah Leckband[1], Poonam Sehgal[1], Xinyu Kong[1], and Jun Wu[1]
[1]*University of Illinois, Urbana, IL*

OP-Thurs-3-10 **Room 223**

Tracks: Device Technologies and Biomedical Robotics, Orthopedic and Rehabilitation Engineering

Prosthetics and Orthotics

Chairs: Tyler Clites, Tara Johnson

3:45 pm
Movement of a Paralyzed Hand with a Mechanical Gear Orthosis
Edward Austin[1], Karim Khattab[2], Jin-Woo Choi[2], Charles Kearney[2], Young Ho Shin[2], Pedro Chacon Dominguez[2], and Mitchell St. Pierre[2]
[1]*Baton Rouge General Medical Center/Louisiana State University, Baton Rouge, LA,* [2]*Louisiana State University, Baton Rouge, LA*

4:00 pm
Validation of Gait Analysis Pro App for 10m Walk Test
Lara Weed[1] and Ryan McGinnis[1]
[1]*University of Vermont, Burlington, VT*

4:15 pm
A Caprine Model of a Novel Amputation Paradigm for Bi-directional Neural Control of an Osseointegrated Bionic Limb
Tyler Clites[1], Matthew Carty[1], Rickard Braanemark[2], and Hugh Herr[1]
[1]*MIT Center for Extreme Bionics, Cambridge, MA,* [2]*University of California, San Francisco, San Francisco, CA*

4:30 pm
Soft-Inflatable Exosuit For Knee Rehabilitation
Saivimal Sridar[1], Pham Huy Nguyen[1], Mengjia Zhu[2], Quoc Lam[1], and Panagiotis Polygerinos[1]
[1]*Arizona State University, Mesa, AZ,* [2]*Arizona State University, Tempe, AZ*

4:45 pm
A Novel Orthopedic Robot Design for Femoral Fracture Alignment
Mohammad Abedin Nasab[1], Matthew Goldner[1], Nathaniel Hoffman[1], Daniel Infusino[1], Nicholas Silva[1], and Caroline Smith[1]
[1]*Rowan University, Glassboro, NJ*

5:00 pm
Designing A Novel Spill-proof Cup for Individuals with Cerebral Palsy
Kathleen Brady[1], Yu Xu[2], Alexander de la Vega[2], Alexander Hoon[1], Mary Lashno[1], Andrea Sharar[1], Angela Lane[3], Elaine Stashinko[1], and Tara Johnson[1,2]
[1]*Kennedy Krieger Institute, Baltimore, MD,* [2]*Johns Hopkins University, Baltimore, MD,* [3]*Unified Community Connections, Baltimore, MD*

OP-Thurs-3-11 **Room 225A**

Tracks: Biomedical Imaging and Optics, Cancer Technologies

Imaging Strategies and Molecular Profiling in Cancer

Chairs: Srivalleesha Mallidi, Raiyan Zaman

3:45 pm
Optical Detection of Early Changes in a Transgenic Model of Ovarian Cancer
Jen Koevary[1], Caitlin Howard[1], Joceline Dominguez Cooks[1], Photini Faith Rice[1], Setsuko Chambers[1], Denise Connolly[2], Patricia Hoyer[1], and Jennifer Barton[1]
[1]*University of Arizona, Tucson, AZ,* [2]*Fox Chase Cancer Center, Philadelphia, PA*

4:00 pm
A Non-Invasive Analysis of the Tumor Microenvironment in a Novel Stem-Like Cancer Cell Xenograft Model
Christian Konopka[1,2,3], Jamila Hedhli[1,3], Junmin Lee[1], Than Huynh[1], Iwona Dobrucki[3], Kristopher Kilian[1], and Lawrence Dobrucki[1,3]
[1]*University of Illinois, Urbana, IL,* [2]*University of Illinois College of Medicine, Chicago, IL,* [3]*Beckman Institute for Advanced Science and Technology, Urbana, IL*

Thursday, October 12 | 3:15 pm–4:45 pm | Platform Session 3

4:15 pm
3D Mesoscopic Fluorescence Tomography for Imaging Micro-distribution of Antibody-photon Absorber Conjugates during Photoimmunotherapy *In Vivo*
Qinggong Tang[1], Tadanobu Nagaya[2], Yi Liu[1], Jonathan Lin[1], Hannah Horng[1], Hisataka Kobayashi[2], and Yu Chen[1]
[1]*University of Maryland-College Park, College Park, MD*
[2]*National Cancer Institute, Bethesda, MD*

4:30 pm
Optical Imaging of Field Cancerization in the Oral Cavity
Dakory Lee[1], Olivia Kolenc[1], Jake Jones[1], Kyle Quinn[1], and Narasimhan Rajaram[1]
[1]*University of Arkansas, Fayetteville, AR*

4:45 pm
Optical Metabolic Imaging of Colorectal Cancer-derived Organoids to Quantify Heterogeneous Response to 5-Fluorouracil
Haley James[1] and Timothy Muldoon[1]
[1]*University of Arkansas, Fayetteville, AR*

5:00 pm
Small Molecule FAP-á Inhibitors For Targeted Molecular Imaging Of Tumor Microenvironment
Stephanie Slania[1], Ala Lisok[1], Steven Rowe[1], Polina Sysa Shah[1], Yong Du[1], Martin Pomper[1], Sridhar Nimmagadda[1], and Xing Yang[1]
[1]*Johns Hopkins University School of Medicine, Baltimore, MD*

OP-Thurs-3-12 **Room 225B**

Track: Drug Delivery & Intelligent Systems

Multi-scale Strategies for Therapeutic Delivery

Chairs: Mary Caldorera-Moore, Amber Doiron

3:45 pm
Engineered Multi-Scale Control of Drug Delivery using Palladium Nanotherapeutics
Miles Miller[1] and Ralph Weissleder[1]
[1]*Massachusetts General Hospital / Harvard Medical School, Boston, MA*

4:00 pm
Combinatorial and Cancer-Specific siRNA Delivery via Polymeric Nanoparticles Reduces Tumor Burden in Human Glioblastoma-Bearing Mice
Kristen Kozielski[1], Alejandro Ruiz-Valls[1], Yuan Rui[1], Yuxin Li[1], Hannah Vaughan[1], Marisa Gionet-Gonzalez[1], Casey Vantucci[1], Hugo Guerrero-Cazares[1,2], Paula Schiapparelli [1,2], Alfredo Quinones-Hinojosa[1,2], and Jordan Green[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Mayo Clinic, Jacksonville, FL*

4:15 pm
Protein Nanocages that Penetrate Airway Mucus and Tumor Tissue
Xinglu Huang[1], Jane Chisholm[1], Justin Hanes[1], and Jung Soo Suk[1]
[1]*Johns Hopkins University School of Medicine, Baltimore, MD*

4:30 pm
pH Modulation Increases Aqueous Solubility of Quisinostat to Improve Loading in PLA-PEG Nanoparticles for the Treatment of Intracranial Glioblastoma
Kyle Householder[1,2], Danielle DiPerna[1], Eugene Chung[1], Shwetal Mehta[1], and Rachael Sirianni[1,2]
[1]*Barrow Neurological Institute, Phoenix, AZ,* [2]*Arizona State University, Tempe, AZ*

4:45 pm
Hyperbranched Bioreducible Poly(β-amino ester) for Efficient Delivery of siRNA
Yuan Rui[1], David Wilson[1], Katie Sanders[1], and Jordan Green[1]
[1]*Johns Hopkins University School of Medicine, Baltimore, MD*

5:00 pm
Dual Carrier-Cargo Hydrophobization and Optimized Zwitterionic Surface Chemistry Improve *In Vivo* Pharmacokinetics and Reduce Cytotoxicity of Polymeric siRNA Nano-polyplexes
Meredith Jackson[1], Thomas Werfel[1], Elizabeth Curvino[1], Fang Yu[1], Taylor Kavanaugh[1], Samantha Sarett[1], Mary Dockery[1], Kameron Kilchrist[1], Ayisha Jackson[1], Todd Giorgio[1], and Craig Duvall[1]
[1]*Vanderbilt University, Nashville, TN*

OP-Thurs-3-13 **Room 228A**

Tracks: Respiratory Bioengineering, Biomedical Imaging and Optics

Imaging and Translational Respiratory Engineering

Chairs: Jimmy Abbas, Tilo Winkler

3:45 pm
Frequency-Selective CT Image Registration for Assessment of Regional Periodic Lung Deformation
Jacob Herrmann[1], Wei Shao[1], Joseph Reinhardt[1], Eric Hoffman[1], Gary Christensen[1], and David Kaczka[1]
[1]*University of Iowa, Iowa City, IA*

4:00 pm
Machine-Vision Guided Spatially Targeted Drug Delivery in the Lungs
Jinho Kim[1], Brandon Guenthart[1], John O'Neill[1], Stephen Ma[1], Meera Cheerharan[1], Matthew Bacchetta[1], and Gordana Vunjak-Novakovic[1]
[1]*Columbia University, New York, NY*

4:15 pm
Super Clusters in Emphysema: A 3D Power Law and Fractal Analysis of Disease Distribution
Jarred Mondoñedo[1], Harikrishnan Parameswaran[2], Shigeo Muro[3], Susumu Sato[3], Toyohiro Hirai[3], and Béla Suki[1]
[1]*Boston University, Boston, MA,* [2]*Northeastern University, Boston, MA,* [3]*Kyoto University, Kyoto, Japan*

Thursday, October 12 | 3:45 pm–5:15 pm | Platform Session 3

4:30 pm
Validation of Elastic Image Registration for Estimation of Regional Lung Expansion
Gabriel Motta Ribeiro[1,2], Tilo Winkler[1], and Marcos Vidal Melo[1]
[1]*Massachusetts General Hospital and Harvard Medical School, Boston, MA,* [2]*Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil*

4:45 pm
Next Generation Airway Suction System for First Responders in Military and Civilian Emergencies
Forhad Akhter[1], Michael Lasch[1], Eric Liu[1], Ricardo Pescador[1], Brenton Clark[1], David Berard[1], Nidia Sanchez [1], Adrian Alapag[1], Robert DeLorenzo[2], Bruce Adams[2], Lyle Hood[1], and Yusheng Feng[1]
[1]*University of Texas at San Antonio, San Antonio, TX,* [2]*University of Texas Health Science Center at San Antonio, San Antonio, TX*

5:00 pm
A Neuromorphic System for Adaptive Closed-Loop Control of Ventilation After Spinal Cord Injury
Ricardo Siu[1], James Abbas[2], Brian Hillen[1], and Ranu Jung[1]
[1]*Florida International University, Miami, FL,* [2]*Arizona State University, Tempe, AZ*

OP-Thurs-3-14 **Room 228B**

Track: Cancer Technologies

Tumor Microenvironment II

Chairs: Shilpa Sant, Caliari Steven

3:45 pm
PTEN Deletion in Pancreatic Cancer Associated Fibroblasts Decreases Hydraulic Permeability Through Hyaluronan and AKT Signaling in a 3D Microfluidic Tumor Stroma Model
Alex Avendano[1], Jonathan Chang[1], Christina Ennis[2], Jason Pitarresi[3], Michael Ostrowski[1], and Jonathan Song[1]
[1]*The Ohio State University, Columbus, OH,* [2]*Kenyon College, Gambier, OH,* [3]*University of Pennsylvania, Philadelphia, PA*

4:00 pm
Hyaluronic Acid-Based, Brain-Mimetic Hydrogel Platform to Study Glioblastoma Resistance to EGFR Inhibition
Weikun Xiao[1], Rongyu Zhang[1], Alireza Sohrabi[1], Songping Sun[1], Arshia Ehsanipour[1], Chris Walthers[1], Jesse Liang[1], Lisa Ta[1], David Nathanson[1], and Stephanie Seidlits[1]
[1]*University of California, Los Angeles, Los Angeles, CA*

4:15 pm
Modeling Breast Cancer Metastasis Mechanisms in a Tissue Engineered Organo-Typic Model
Julia Jin[1], Jaime Bernstein[1], Matthew Zanotelli[2], Yoshiko Toyoda[1], Andrew Abadeer[1], Sarah Karinja[1], Omer Kaymakcalan[1], Alexandra Lin[1], Peter Torzilli[3], John Morgan[1], and Jason Spector[1,2]
[1]*Weill Cornell Medical College, New York, NY,* [2]*Cornell University, Ithaca, NY,* [3]*Hospital for Special Surgery, New York, NY*

4:30 pm
Increase in ECM Stiffness Results in a More Mesenchymal Phenotype in Murine Epithelial Cells
Shane Allen[1], Viktoriya Rybalko[1], and Laura Suggs[1]
[1]*The University of Texas at Austin, Austin, TX*

4:45 pm
Changes in Extracellular Matrix Structure Due to Fibroblast Genotype Direct Cancer Cell Behavior
Caitlin Jones[1], Edna Cukierman[2], Anisha Hammer[1], Michael Ostrowski[1], and Jennifer Leight[1]
[1]*The Ohio State University, Columbus, OH,* [2]*Fox Chase Cancer Center, Philadelphia, PA*

5:00 pm
Bone-Homing Versus Primary Breast Cancer Cells Differentially Alter Osteocyte Function in 3D
Blayne Sarazin[1], Mary Hagen[1], Annie Burton[1], and Maureen Lynch[1]
[1]*University of Massachusetts, Amherst, Amherst, MA*

OP-Thurs-3-15 **Room 227C**

Track: Cancer Technologies

Metastasis, Dormancy & Treatment Response

Chairs: Manu Platt, Jungwoo Lee

3:45 pm
In Vivo, Multi-Organ Examination of Cancer Cell Trafficking and Extravasation in Early Metastatic Dissemination
Colin Paul[1], Kevin Bishop[2], Alexus Devine[1], Nicole Morgan[3], Elliott Paine[1], Lisa Jenkins[1], Raman Sood[2], and Kandice Tanner[1]
[1]*National Cancer Institute, Bethesda, MD,* [2]*National Human Genome Research Institute, Bethesda, MD,* [3]*National Institute of Biomedical Imaging and Bioengineering, Bethesda, MD*

4:00 pm
Single Cell Dynamic Transcription Factor Programs Driving Colonization of the Metastatic Niche
Matthew Hall[1], Joseph Decker[1], Robert Oakes[1], and Lonnie Shea[1]
[1]*University of Michigan, Ann Arbor, MI*

4:15 pm
Enhanced Radiation Response of Head and Neck Tumor Xenografts Using Novel Trimodal Optical/MR/X-ray Contrast Nanoconstructs
Gayatri Sharma[1], Abdul Parchur[1], Jaidip M. Jagtap[1], Brian Fish[2], Bergom Carmen[2], Meetha M Medhora[2], Michael J. Flister[2], and Amit Joshi[1]
[1]*Department of Biomedical Engineering, Medical College of Wisconsin, Milwaukee, WI,* [2]*Department of Radiation Oncology, Medical College of Wisconsin, Milwaukee, WI,* [3]*Department of Physiology, Medical College of Wisconsin, Milwaukee, WI*

4:30 pm
Effects of HDAC Inhibitors on Breast Cancer Cell Phenotype in a Microengineered 3D Invasion Assay
Eric Barrientos[1], Nitish Peela[1], Danh Truong[1], Toan Nguyen[1], Ghassan Mouneimne[2], and Mehdi Nikkhah[1]
[1]*Arizona State University, Tempe, AZ,* [2]*University of Arizona, Tucson, AZ*

PLATFORM SESSIONS–THURSDAY–3–3:45 PM–5:15 PM

Thursday, October 12 | 3:45 pm–5:15 pm | Platform Session 3

4:45 pm
Single-cell Analysis of Rituximab Sensitivity and Anti-tumor Activity in Microfluidic Droplets
Saheli Sarkar[1], Pooja Sabhachandani[1], and Tania Konry[1]
[1]*Northeastern University, Boston, MA*

5:00 pm
Myeloid-Targeted Immunotherapies Act in Synergy to Induce a Subpopulation of Inflammatory Tumor-Associated Macrophages and Anti-Tumor Immunity
Andres Munoz-Rojas[1], Curtis Perry[1], Susan Kaech[1], and Kathryn Miller-Jensen[1]
[1]*Yale University, New Haven, CT*

OP-Thurs-3-16 — Room 226A

Track: Bioinformatics, Computational and Systems Biology

Computational Modeling of Cell Motility and Proliferation

Chairs: Keith Gooch, Seth Weinberg

3:45 pm
Adhesive Dynamics Simulations of Hemodynamic Transport and Adhesion Probability of Multicellular Aggregates in Circulation
Kevin Anderson[1] and Michael King[1]
[1]*Vanderbilt University, Nashville, TN*

4:00 pm
Computational Model of Wound Healing Optimizes Dosing Regimen for Pharmacologic Agent
Michaela Rikard[1] and Shayn Peirce[1]
[1]*University of Virginia, Charlottesville, VA*

4:15 pm
Mathematical Modeling of Nonmuscle Myosin Dependent Cortical Stability During Cytokinesis
Matthew Bersi[1], Nilay Taneja[1], Aidan Fenix[1], J. Caleb Snider[1], Dylan Burnette[1], and W. David Merryman[1]
[1]*Vanderbilt University, Nashville, TN*

4:30 pm
Three-dimensional Computational Modeling of Pseudopod-driven Motility of Amoeboid Cells
Eric Campbell[1] and Prosenjit Bagchi[1]
[1]*Rutgers University, Piscataway, NJ*

4:45 pm
Predicting Tumor Malignancy based on Stochastic Variations in Cell Stiffness and Spatial Clustering within Tissue Environments
Zibah Mirzakhel[1] and Parag Katira[1]
[1]*San Diego State University, San Diego, CA*

5:00 pm
Development of Adaptive Spatiotemporal Spectrum Decomposition and Clustering for Cellular Morphodynamic Profiling
Xiao Ma[1], Onur Dagliyan[2], Klaus Hahn[2], and Gaudenz Danuser[1]
[1]*University of Texas Southwestern Medical Center, Dallas, TX,*
[2]*University of North Carolina at Chapel Hill, Chapel Hill, NC*

OP-Thurs-3-17 — Room 226B

Track: Neural Engineering

Peripheral Repair

Chairs: Rebecca Wachs, Mario Romero-Ortega

3:45 pm
A Microfluidic Platform to Study the Effects of GDNF on Neuronal Axon Entrapment
Ze Zhong Wang[1], Matthew D. Wood[2], Susan E. Mackinnon[2], and Shelly E. Sakiyama-Elbert[1]
[1]*Washington University in St. Louis, St.Louis, MO,* [2]*Washington University School of Medicine, St.Louis, MO,* [3]*University of Texas at Austin, Austin, TX*

4:00 pm
Application of Lysophosphatidylcholine and Nerve Growth Factor for Nerve Regeneration
Alonzo Cook[1], Ryan Wood[1], Keaton Karlinsey[1], Austin Thompson[1], Mark Rigby[1], Sarah Coffin[1], William Pitt[1], Beverly Roeder[1], and Scott Steffensen[1]
[1]*Brigham Young University, Provo, UT*

4:15 pm
Gelatin/Tropoelastin Hydrogel Composites for Peripheral Nerve Repair
Jonathan Soucy[1], Ehsan Shirzaei Sani[1], David Diaz Vera[1], Roberto Portillo Lara[1], Abigail Koppes[1], Ryan Koppes[1], and Nasim Annabi[1,2]
[1]*Northeastern University, Boston, MA,* [2]*Harvard-MIT HST, Cambridge, MA*

4:30 pm
Improving Nerve Growth Conduits with Aligned Nanofibers, Growth Factors, and Physical Therapy
Tonya Whitehead[1], Elizabeth Mays[1], Jean Peduzzi[1], Assadollah Mazhari[1], Chaoyang Chen[1], John Cavanaugh[1], and Harini Sundararaghavan[1]
[1]*Wayne State University, Detroit, MI*

4:45 pm
Microparticle Release of Sema3A Selectively Blocks Pain Fibers, While Allowing Other Fiber Types to Grow Towards Molecular Attractants
Brian Hedden[1], Sanjay Anand[1], and Mario Romero-Ortega[1]
[1]*University of Texas at Dallas, Richardson, TX*

5:00 pm
Uptake of Cholera Toxin B Modified Protocells in Phrenic Motoneurons
Maria Gonzalez Porras[1], Jeffrey Brinker[2], Gary Sieck[1], and Carlos Mantilla[1]
[1]*Mayo Clinic, Rochester, MN,* [2]*University of New Mexico, Albuquerque, NM*

Thursday, October 12 | 3:45 pm–5:15 pm | Platform Session 3

OP-Thurs-3-18 — Room 227C

Track: Orthopedic and Rehabilitation Engineering

Spine, Bone and Associated Tissue

Chairs: Jennifer Currey, Christopher Price

3:45 pm
Engineered Substrates Regulate Nucleus Pulposus Cell Phenotype of the Intervertebral Disc Through Mechano-Sensing Pathways
Bailey V. Fearing[1], Savannah E. Est[1], Liufang Jing[1], Michael P. Kelly[2], Jabob M. Buchowski[2], Lukas P. Zebala[2], Munish C. Gupta[2], and Lori A. Setton[1]
[1]*Washington University in St. Louis, St. Louis, MO,*
[2]*Washington University School of Medicine, St. Louis, MO*

4:00 pm
Mitigation of Pin-tract Infections via Monolaurin Coating
Alexey Vertegel[1], Dmitry Gil[1], Anastasia Frank-Kamenetskii[1], Nikoley Borodinov[1], Vladimir Reukov[1], Christopher Gross[2], and Igor Luzinov[1]
[1]*Clemson University, Clemson, SC,* [2]*Medical University of South Carolina, Charleston, SC*

4:15 pm
Cell-Laden Annulus Fibrosus Repair in an *In Vivo* Ovine Lumbar Spine Model
Stephen Sloan, Jr.[1], Ibrahim Hussain[2], Rodrigo Navarro-Ramirez[2], Micaella Zubkov[2], Gernot Lang[2], Roger Hartl[2], and Lawrence Bonassar[1]
[1]*Cornell University, Ithaca, NY,* [2]*Weill Cornell Medical College, New York, NY*

4:30 pm
Degenerative IVDs Sensitize Sensory Neurons to Mechanical Loading at Physiological Strain Levels
Joshua Stover[1], Brandon Lawrence[1], Corban Bethell[1], Jared Zitnay[1], Jeffrey Weiss[1], and Robby Bowles[1]
[1]*University of Utah, Salt Lake City, UT*

4:45 pm
RANKL Expression as a Measure of Osteocyte Apoptotic Signaling in Confined Space
Sean McCutcheon[1], Robert Majeska[1], Mitchell Schaffler[1], and Maribel Vazquez[1]
[1]*City College of New York, New York, NY*

5:00 pm
Multiphase Osteogenic and Vasculogenic Microtissues Support Endothelial Cell Network Formation and Enhance the Mineralization Potential of Mesenchymal Stem Cells
Ramkumar Tiruvannamalai Annamalai[1], Nicholas Schott[1], Adeline Hong[1], Gopinath Tiruchinapally[1], Benjamin Levi[1], and Jan Stegemann[1]
[1]*University of Michigan, Ann Arbor, MI*

SPECIAL SESSIONS

3:45 pm–5:15 pm — Room 122C

Vascular Mechanobiology and Nanotherapeutics

Chair: Rita Alevriadou

Speakers:

- Yun Fang, PhD, *Department of Medicine (Pulmonary and Critical Care), University of Chicago, Chicago, IL*
- Kaustabh Ghosh, PhD, *Department of Bioengineering, University of California, Riverside, CA*
- Hanjoong Jo, PhD, *Department of BME, Georgia Tech/Department of Medicine, Emory University, Atlanta, GA*
- Craig Duvall, PhD, *Department of BME, Vanderbilt University, Nashville, TN*
- James Dahlman, PhD, *Department of BME, Georgia Tech, Atlanta, GA*
- B. Rita Alevriadou, PhD, *Department of BME, The Ohio State University, Columbus, OH*

This session is jointly sponsored by Cardiovascular Engineering and Biomaterials/Drug Delivery tracks, and its focus is on translational aspects of vascular mechanobiology, in particular how to prevent and treat cardiovascular disease using nanotechnology approaches that target gene/protein markers of vascular dysfunction.

3:45 pm–5:15 pm — Room 121ABC

2017 DEBUT Awards Presentation

Chairs: Zeynip Erim

The National Institute of Biomedical Imaging and Bioengineering (NIBIB) and VentureWell have come together to support and expand the Design by Biomedical Undergraduate Teams (DEBUT) challenge, which recognizes undergraduate excellence in biomedical design and innovation. This special session will feature presentations from the 2017 winning teams followed by an award ceremony. A former award winner will also share their perspective of the DEBUT Challenge and the role it played in their success in commercializing a design. The is a unique opportunity for aspiring design engineers, future DEBUT applicants, and future entrepreneurs to be inspired and learn more about the Challenge competition and its impact.

3:45 pm–5:15 pm — Room 122B

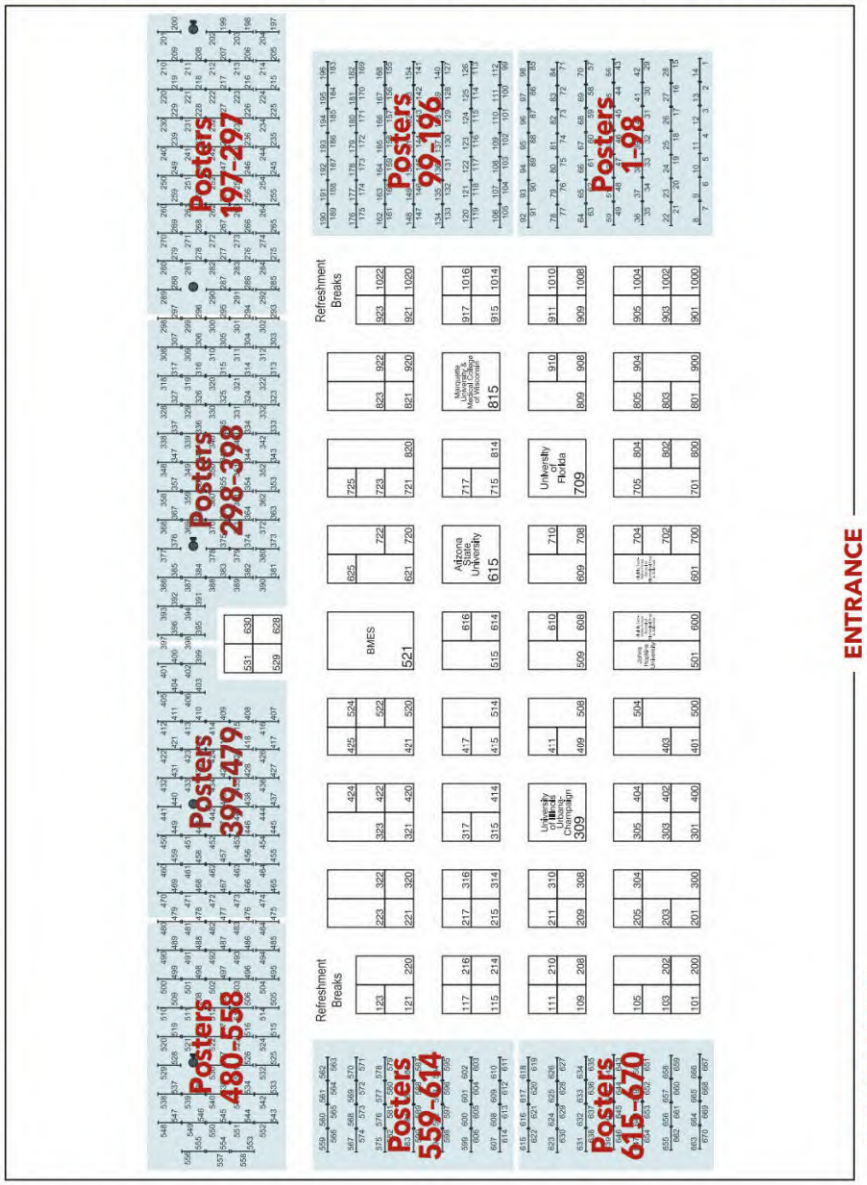
Engineering Solutions to Address Healthcare Disparities

Chair: Gilda Barabino

Health and health care disparities remain a costly and burdensome challenge in the U.S. and pose a serious threat to continued improvement in overall quality of care and population health. Biomedical engineers are well positioned to employ novel biodesign strategies toward the elimination of these disparities. This interactive session will explore approaches for research and education related to the application of biomedical technologies and engineering designs to solve health disparities. The session will highlight designs developed in the 2017 BMES Coulter College with a focus on health disparity solutions.

PLATFORM SESSIONS–THURSDAY–3–3:45 PM–5:15 PM

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North



Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

Track: Biomaterials

3D Printing and Advanced Biomaterial Manufacturing

TH-1
Collagen Type-1 Hybrid Bioink for 3D Printed Microenvironments
Andrea Mazzocchi[1,2], Shay Soker[1,2], and Aleksander Skardal[1,2]
[1]*Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC,* [2]*Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC*

TH-2
Incorporation of Growth Factor Mimetic Peptides into GelMA Bioinks
Jimmy Su[1], Patrick Thayer[2], and Hector Martinez[2]
[1]*Northwestern University, Evanston, IL,* [2]*CELLINK LLC, Blacksburg, VA*

TH-3
Meniscus Guided Printing of Collagen Fiber Patterns Capable of Controlling Cell Morphology
Justyn Jaworski[1]
[1]*University of Texas, Arlington, Arlington, TX*

TH-4
Synthesis and Characterization of Microparticles for Templating Porous Shape Memory Polymer Scaffolds
Kedar Balakrishna[1], Grace Fletcher[1], Mary Beth Monroe[1], and Duncan Maitland[1]
[1]*Texas A&M University, College Station, TX*

TH-5
Development of a Scaffold-Free, Three Dimensional Bioprinter that Utilizes Cellular Spheroids
Wesley LaBarge[1], Saidulu Mattapally[1], Joel Berry[1], and Jianyi Zhang[1]
[1]*University of Alabama at Birmingham, Birmingham, AL*

TH-6
Muscle Cell Driven Graphene Transfer on the Three Dimensional Printed Hydrogel
Yongdeok Kim[1], Gelson Pagan-Diaz[1], and Rashid Bashir[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

Track: Biomaterials

Natural and Bioinspired Biomaterials

TH-7
Hydrophilic Topcoat on NO-Releasing Surfaces for Enhanced Antibacterials and Antifouling Properties
Christina Workman[1], Priyadarshini Singha[1], Jitendra Pant[1], Marcus Goudie[1], and Hitesh Handa[1]
[1]*University of Georgia, Athens, GA*

TH-8
Engineering Biomimetic Magnetic Liposome Inspired from Red Blood Cell
Colin Ferrel[1], Tuyen Nguyen[1], Arunkumar Pitchaimani[1], and Santosh Aryal[1]
[1]*Kansas State University, Manhattan, KS*

TH-9
Investigative Studies of a AuNP Viscoelastic Collagen for Disc Degeneration
Jenae Bradley[1], Sheila Grant[1], and David Grant[1]
[1]*University of Missouri, Columbia, MO*

TH-10
Novel Size Sieving Materials for the Target Protein Purification
Kaiguang Yang[1], Senwu Li[1], Lukuan Liu[1], Lihua Zhang[1], and Yukui Zhang[1]
[1]*Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian, China, People's Republic of*

TH-11
Do Insect Tracheal Tubes Collapse Under Pressure as Thin-walled Cylinders?
Khaled Adjerid[1], Raffaella De Vita[1], and Jake Socha[1]
[1]*Virginia Tech, Blacksburg, VA*

TH-12
New Approaches to Engineering Anti-biofilm Surfaces
Nicolas Lavielle[1], Dalal Asker[1], and Benjamin Hatton[1]
[1]*University of Toronto, Toronto, ON, Canada*

Track: Biomaterials

Biomaterials - Other / Non-Specified

TH-13
Corrosion of Compressive- and Tensile-Stressed Medical Grade Ti-6Al-4V Corrosion Under Static Load
Devin Mahon[1], Melinda Harman[1], and Amir Poursaee[1]
[1]*Clemson University, Clemson, SC*

TH-14
Improving the Activity of Cellulolytic Enzymes by Modifying Molecular Interactions
Hengameh Shams[1], Abigail A. Landers[1], and Mohammad R. K. Mofrad[1]
[1]*University of California, Berkeley, Berkeley, CA*

TH-15
Characterizing Biomaterials Using Vibrating Glass Tube Mass Sensors
Heran Bhakta[1], Shirin Mesbah-Oskui[1], Huinan Liu[1], and William Grover[1]
[1]*University of California, Riverside, Riverside, CA*

TH-16
Biomineralization of Calcium Oxalate Mimicking Kidney Stones with Citrate-Induced Inhibition: Changes in Crystal Structure and Hydration State
Jodi K. Finlay[1], David J. Banner[2], Emre Firlar[3], Reza Shahbazian Yassar[3], and Tolou Shokuhfar[3]
[1]*University of Illinois at Chicago, Plainfield, IL,* [2]*University of Illinois at Chicago, Urbana, IL,* [3]*University of Illinois at Chicago, Chicago, IL*

TH-17
Evaluation of the Antimicrobial Activity of Glycerol Monolaurate-Coated Hernia Repair Meshes
Mikhail Bredikhin[1], Dmitry Gil[1], William Cobb[2], and Alexey Vertegel[1]
[1]*Clemson University, Clemson, SC,* [2]*Greenville Health Center, Greenville, SC*

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

TH-18
Novel Titania-Incorporated Bioactive Glass Coating for Surgical Implants: Mechanical Characterization
Omar Rodriguez[1,2], Ali Matinmanesh[1,2], Sunjeev Phull[1], Emil Schemitsch[2], Paul Zalzal[3,4], Owen Clarkin[5], Marcello Papini[1], and Mark Towler[1,2]
[1]*Ryerson University, Toronto, ON, Canada,* [2]*St. Michael's Hospital, Toronto, ON, Canada,* [3]*McMaster University, Hamilton, ON, Canada,* [4]*Oakville Trafalgar Memorial Hospital, Oakville, ON, Canada,* [5]*Dublin City University, Dublin, Ireland*

TH-19
Study of Interactions Between Carbon Nanotubes and a Flagellin-Specific Library of Tripeptides
Shrishti Singh[1], Ishita Choudhury[1], Prabir Patra[1], and Isaac Macwan[1]
[1]*University of Bridgeport, Bridgeport, CT*

TH-20
Evaluation of In Vitro Biocompatibility of PMMA Cements During the Curing Phase of Polymerization using a Mouse MC3T3-E1 Preosteoblastic Cell Line
Weiping Ren[1], Wei Song[1], and David Markel[2]
[1]*Wayne State University, Detroit, MI,* [2]*Providence Hospital, Southfield, MI*

Tracks: Stem Cell Engineering, Tissue Engineering

Advanced Biomanufacturing and Translation of Stem Cell-Derived Therapies and Tissues

TH-21
Stem Cell-Derived Matrices Generated in Suspension Culture for Bone Repair
Candice Sears[1], Eoin McNeill[1], Bret Clough[1], Sravani Jaligama[1], Jun Kameoka[1], Carl Gregory[1], and Roland Kaunas[1]
[1]*Texas A&M University, College Station, TX*

TH-22
Enhanced Production of Therapeutic Mesenchymal Stem Cell Extracellular Vesicles via Control of Cell Culture Parameters
Divya Patel[1], Kelsey Gray[1], Yasasvhinie Santharam[1], Tek Lamichhane[1], Max Lerman[1], John Fisher[1], Kimberly Stroka[1], and Steven Jay[1]
[1]*University of Maryland, College Park, MD*

TH-23
Islet Organoid Biofabrication
Kaiming Ye[1], Sha Jin[1], and Huanjing Bi[1]
[1]*Binghamton University, SUNY, Binghamton, NY*

TH-24
Oxygenation Enabled 3D Stem Cell Differentiation for Generating Islet-like Tissues
Soujanya Sathyanarayana Karanth[1], Huanjing Bi[1], Xiaofei Li[2], Jianjun Guan[2], Kaiming Ye[1], and Sha Jin[1]
[1]*Binghamton University- State University of New York, Binghamton, NY,* [2]*The Ohio State University, Columbus, OH*

TH-25
Developing a Novel Dual-Chambered Bioreactor to Facilitate the Development of Stratified Tissue Grafts
Jay Swayambunathan[1], Javier Navarro[1], and John Fisher[1]
[1]*University of Maryland, College Park, MD*

Track: Bioinformatics, Computational and Systems Biology

Analysis of Multi-Cellular Systems

TH-26
A Mechanism-free Approach to Determine Mutualistic Coexistence
Feilun Wu[1], Allison Lopatkin[1], Daniel Needs[1], Sayan Mukherjee[1], Charlotte Lee[1], and Lingchong You[1]
[1]*Duke University, Durham, NC*

TH-27
Global Metabolic Interaction Network of the Human Gut Microbiota for Context-Specific Community-Scale Analysis
Jaeyun Sung[1]
[1]*Mayo Clinic, Rochester, MN*

TH-28
Immunology Modelling via StarCraft 2 Engine
Luke O'Donnell[1]
[1]*Marquette University, Milwaukee, WI*

TH-2
Computational Modeling of Tuberculosis Granuloma Activation
Steve Ruggiero[1], Minu Pilvankar[1], and Ashlee Ford Versypt[1]
[1]*Oklahoma State University, Stillwater, OK*

TH-30
Automatic Characterization of Complex Cell Shapes and Patterns in Biological Data
William Pilcher[1] and Denis Tsygankov[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

Track: Nano and Micro Technologies

Applications of Nanopores and Nanoparticles

TH-33
Developing Cadmium-Free, Near Infrared-Emitting Quantum Dots for Molecular Phenotyping of Tumors
Alexander Saeboe[1], Thuy Nguyen[1], Reyhaneh Toufanian[1], Shwan Javdan [1], Margaret Chern[1], and Allison Dennis [1]
[1]*Boston University, Boston, MA*

TH-34
Fabrication of Novel and High Performance Graphene Quantum Dot-Polypyrrole (GQD-Ppy) Nanocomposites for Hybrid Supercapacitor Electrodes
Ankarao Kalluri[1], Devon Leighton[1], Shrishti Singh[1], Isaac Macwan[1], and Prabir Patra[1]
[1]*University of Bridgeport, Bridgeport, CT*

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

TH-35
Hyperthermia-Inducing Nanoparticles as Adjuvant Therapy for Oxaliplatin-based Chemotherapy in Colorectal Cancer
Bryce McCarthy[1], Ravi Singh[1], and Nicole Levi-Polyachenko[1]
[1]*Wake Forest University, Winston-Salem, NC*

TH-36
Colorimetric Biochip Sensor in Protein Detection Utilizing Gold Nanocluster and Gold Nanorods
David Zhang[1] and Liang Tang[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

TH-37
Nanowarming Using Stable Magnetic Vitrification Solutions
Eman Shreteh[1], Andreina Chiu Lam[1], and Carlos Rinaldi[1]
[1]*University of Florida, Gainesville, FL*

TH-38
Lipid Acyl Chain Length Improves Stability of Nano-sized Ultrasound Contrast Agents *In Vitro*
Gabriella Fioravanti[1], Christopher Hernandez[1], and Agata Exner[1]
[1]*Case Western Reserve University, Cleveland, OH*

TH-39
Detection of Methylation in DNA using Nanopores in MoS2 Membrane
Jiwook Shim[1], Shouvik Banerjee[2], Hu Qiu[3], Kirby Smithe[4], David Estrada[3], Julian Bello[1], Eric Pop[4], and Rashid Bashir[2]
[1]*Rowan University, Glassboro, NJ,* [2]*University of Illinois, Urbana, IL,* [3]*Nanjing University of Aeronautics and Astronautics, Nanjing, China, People's Republic of,* [4]*Stanford University, Stanford, CA,* [5]*Boise State University, Boise, ID*

TH-40
Nanoparticle Contrast Agents for Photoacoustic Imaging and Photothermal Ablation of Ovarian Cancer
Joel Lusk[1], Christopher Miranda[2], and Barbara Smith[2]
[1]*Arizona State University, Mesa, AZ,* [2]*Arizona State University, Tempe, AZ*

TH-41
Enriching Nanoparticles via Acoustofluidics
Joseph Rufo[1], Zhangming Mao[2], Peng Li[2], Mengxi Wu[2], Francesco Costanzo[2], and Tony Huang[1]
[1]*Duke University, Durham, NC,* [2]*The Pennsylvania State University, University Park, PA*

TH-42
Synthesis and Anti-tumor Properties of Silver-coated Gold Nanorods
Junyan Zhang[1], Mian Wang[1], Di Shi[1], and Thomas J. Webster[1]
[1]*Northeastern University, Boston, MA*

TH-43
The Effect of Magnetic Nanoparticle Hyperthermia on the Antibiotic Susceptibility of *Staphylococcus Aureus* Biofilm
Layla Almutairi[1], Bing Yu[1], Mitchell Filka[1], and Min-Ho Kim[1]
[1]*Kent State University, Kent, OH*

TH-44
Particle Entrapment by an Integrative Insulator-Based Dielectrophoresis (iDEP) and Nanopore Device
Leilei Shi[1], Ankit Rana[1], and Leyla Esfandiari[1]
[1]*University of Cincinnati, Cincinnati, OH*

TH-45
Superparamagnetic Magnetite Nanocrystal Clusters Enable Sensitive Biomarker Detection
Linlin Zhang[1], Sheng Tong[1], Qingbo Zhang[2], Vicki Colvin[2], and Gang Bao[1]
[1]*Rice University, Houston, TX,* [2]*Brown University, Providence, RI*

TH-46
Sequence-Specific Electrical Purification of Nucleic Acids with Nanoporous Gold Electrodes
Pallavi Daggumati[1], Sandra Appelt[1], Zimple Matharu[1], Maria Marco[1], and Erkin Seker[1]
[1]*University of California, Davis, Davis, CA*

TH-47
Optimizing Magnetic Fluid Heating by Tuning the Magnetic Relaxation through Ordered Clustering
Sheng Tong[1], Qingbo Zhang[2], Linlin Zhang[1], Vicki Colvin[2], and Gang Bao[1]
[1]*Rice University, Houston, TX,* [2]*Brown University, Providence, RI*

TH-48
Nano Ink Materials for Four Dimensional (4D) Printing of Biomedical Scaffolds
shida miao[1], Haitao Cui[1], Margaret Nowicki[1], Se-jun Lee[1], Xuan Zhou[1], Wei Zhu[1], and Lijie Grace Zhang[1]
[1]*George Washington University, Washington, DC*

TH-49
Automated SERS-based Malaria DNA Detection: A Prototype
Shuja Rayaz[1], Hoan Ngo[1], and Tuan Vo-Dinh[1]
[1]*Duke University, Durham, NC*

Track: Respiratory Bioengineering

Bioengineering Approaches to Lung Development, Regeneration, Repair and Replacement

TH-50
An Improved Double-Chamber Bioreactor for De-epithelialization and Re-epithelialization of Tracheal Scaffolds
Hankyu Lee[1], Alba Marin[1], Fabio Gava[1], Ratna Varma[1], Golnaz Karoubi[1], David Romero[1], Aimy Bazylak[1], Thomas K. Waddell[1], and Cristina Amon[1]
[1]*University of Toronto, Toronto, ON, Canada*

TH-51
Micro-CT Study of Mouse Lung Vasculature: A Foundation for Modelling Lung De- and Recellularization
Michael G. George[1], Takaya Suzuki[2], Eric Chadwick[1], Golnaz Karoubi[2], David Romero[1], Cristina Amon[1], Thomas K. Waddell[2], and Aimy Bazylak[1]
[1]*University of Toronto, Toronto, ON, Canada,* [2]*University Health Network, Toronto, ON, Canada*

POSTER SESSION–THURSDAY

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

TH-52
Nanoparticles Derived from Lung Extracellular Matrix Induce Epithelial Cell Proliferation and Pro-regenerative Macrophage Phenotype
Patrick Link[1], Gabrielle Cotman[1], Alexandria Ritchie[1], and Rebecca Heise[1]
[1]Virginia Commonwealth University, Richmond, VA

TH-53
Bioengineered Lung Scaffolds to Repair PAH-induced Lung Damage
Snehal Raut[1]
[1]Texas Tech Health Sciences Center, Amarillo, TX

TH-54
Multifunctional Properties of Pentagalloyl Glucose Polyphenol–A Possible Pathway For Emphysema Treatment
Vaideesh Parasaram[1], Nasim Nosoudi[2], and Naren Vyavahare[1]
[1]Clemson University, Clemson, SC, [2]Wright State University, Dayton, OH

Tracks: Translational Biomedical Engineering, Tissue Engineering

Tissue/Organoid Biofabrication (*ABioM SIG)

TH-55
Growing Vascularized Tissues *In Vitro* with an Autonomous Tissue Cartridge
John Morgan[1] and Jason Spector[1]
[1]Cornell University Medical College, New York, NY

TH-56
Hypoxic 3D Cellular Network Construction Preserves Ex vivo the Phenotype of Primary Human Osteocytes
Saba Choudhary[1], Qiaoling Sun[1], Ciaran Mannion[2], Yair Kissin[2], Jenny Zilberberg[2], and Woo Lee[1]
[1]Stevens Institute of Technology, Hoboken, NJ, [2]Hackensack University Medical Center, Hackensack, NJ

Track: Biomechanics

Biofluid Mechanics

TH-57
Two-Photon Excitation Based Velocimeter for Blood Flow Measurement with Ultrahigh Spatial Resolution
Audrey Wang[1] and Guiren Wang[1]
[1]University of South Carolina, Columbia, SC

TH-58
Effects of Physiology on Blood Rheology
Jeffrey Horner[1], Antony Beris[1], Norman Wagner[1], and Donna Woulfe[1]
[1]University of Delaware, Newark, DE

Track: Biomaterials

Biomaterials for Immunoengineering

TH-60
Design of Degradable PEG Hydrogels To Deliver CCL21 and β Cell Autoantigens to Induce Peripheral Tolerance in Type 1 Diabetes
Aaron Stock[1], Stephen Bell[1], and Alice Tomei[1]
[1]University of Miami, Miami, FL

TH-61
Direct Irradiation Synthesis of Titanium Alloys to Develop Immunomodulatory Implants for Hard Tissue Applications
Alethia Barnwell[1], Ana Civantos Fernandez[1], Sandra Arias[1], Akshath Shetty[1], and Jean-Paul Allain[1]
[1]University of Illinois Urbana-Champaign, Urbana, IL

TH-62
A Helical Capping System for Controlling the Aspect Ratios of Peptide Nanofibers
Chelsea Fries[1] and Joel H. Collier[1]
[1]Duke University, Durham, NC

TH-63
CD200-coated PLGA Nanoparticles Inhibit Macrophage Activation
Esther Chen[1] and Wendy Liu[1]
[1]University of California, Irvine, Irvine, CA

TH-64
A Combined Carrier-Adjuvant System of Peptide Nanofibers and Toll-like Receptor Agonists Potentiates Robust CD8+T Cell Responses
Jai Rudra[1] and Gregg Milligan[1]
[1]University of Texas Medical Branch, Galveston, TX

TH-65
Mechanochemical Regulation of Macrophage Inflammatory Activation by Fibrinogen
Jessica Y. Hsieh[1,2], Yoon Kyung Kim[1,2], and Wendy F. Liu[1,2]
[1]University of California, Irvine, Irvine, CA, [2]Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA

TH-66
Utilizing Magnetic Iron Oxide Nanoparticles for Tracking Activated T Cells *In Vivo*
Rodrigo Vinluan[1] and Gang Bao[1]
[1]Rice University, Houston, TX

TH-67
Peptide Amphiphile Vaccine for Cocaine Addiction
Tara Clover[1], Aida G. Walker[1], and Jai S. Rudra[1]
[1]University of Texas Medical Branch, Galveston, TX

TH-68
Inhibitor Loaded Micelles for Suppression of MPS Clearance of Therapeutic Nanocarriers
Trevor Stack[1] and Evan Scott[1]
[1]Northwestern University, Evanston, IL

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

Track: Biomaterials

Biomaterials for Regenerative Medicine

TH-69
Directed Irradiation Synthesis on Porous Titanium for Enhanced Biocompatibility
Akshath Shetty[1], Ana Civantos[1], Sandra Arias[1], and Jean Paul Allain[2]
[1]University of Illinois at Urbana Champaign, Urbana, IL, [2]University of Illinois at Urbana Champaign, urbana, IL

TH-70
Bioreactor Conditioning of Tissue-Engineered Vascular Grafts for Diabetic Patients
Anna Carter[1], James Chow[1], and Agneta Simionescu[1]
[1]Clemson University, Clemson, SC

TH-71
A Study of Porous Polycaprolactone (PCL) Scaffolds with Different Porogen Amount and Size Ranges for Bone Tissue Engineering
Carolina Leynes[1], Marco A. Arriaga[1], and Sue Anne Chew[1]
[1]University of Texas Rio Grande Valley, Brownsville, TX

TH-72
Novel Healing Strategy for Chronic Wounds
Heather Bainbridge[1], Sarah Grace Dennis[1,2], Grant Kahley[1], Stephen Fann[1], and Michael Yost[1]
[1]Medical University of SC, Charleston, SC, [2]Clemson University, Charleston, SC

TH-73
Cytocompatibility Evaluation of Injectable Bone Substitutes of Carrageenan and Nano Hydroxyapatite
Jazmín González[1,2], Claudia Ossa[2], and Thomas Webster[1]
[1]Northeastern University, Boston, MA, [2]University of Antioquia, Medellín, Colombia

TH-74
Biocompatible Ferromagnetic Polyurethane Nanofibers for Tissue Engineering
Joshua Choe[1], Brandon Tefft[1], Susheil Uthamaraj[1], Gurpreet Sandhu[1], Amir Lerman[1], and Dan Dragomir-Daescu[1]
[1]Mayo Clinic, Rochester, MN

TH-75
Elucidating the Antibacterial Functionality of a Novel Zn-bioactive Glass in Craniofacial Applications
Kapil Raghuraman[1], Emily Krull[1], and Aisling Coughlan[1]
[1]The University of Toledo, Toledo, OH

TH-76
The Antibacterial Potential of an Ag-Containing Bone Void Filler
Lawrence Sanders[1], Richard Olekanma[1], Emily Krull[1], and Aisling Coughlan[1]
[1]The University of Toledo, Toledo, OH

TH-77
Crosslinkable Amine Coating of Poly(L-lactic acid) for Bone Tissue Engineering Scaffolds
Nathan Richbourg[1], Cortes Williams[1], and Vassilios Sikavitsas[1]
[1]University of Oklahoma, Norman, OK

TH-78
Effects of Polymerized Hemoglobin on Macrophage Response
Paulina Krzyszczyk[1], Kishan Patel[1], Kristopher Richardson[2], Rene Schloss[1], Martin Yarmush[1], Andre Palmer[2], and Francois Berthiaume[1]
[1]Rutgers University, Piscataway, NJ, [2]Ohio State University, Columbus, OH

TH-79
The Accelerating Effect of Gallium-Containing Mesoporous Bioactive Glass On The Platelet Activation
Sara Pourshahrestani[1], Ehsan Zeimaran[1], Nahrizul Adib Kadri[1], and Mark R. Towler[1,2]
[1]University of Malaya, Kuala Lumpur, Malaysia, [2]Ryerson University, Toronto, ON, Canada

TH-80
Injectable Thermoresponsive and Biodegradable Hydrogels for Stem Cell Based Dental Tissue Engineering
Sri Chandana Reddy Damera[1] and Tao L. Lowe[1]
[1]University of Tennessee Health Science Center, Memphis, TN

Track: Biomaterials

Biomaterials Scaffolds

TH-81
In Vivo Regenerative Potential of Soft Polymeric Scaffolds in Osteochondral TMJ Defects
Adam Chin[1], Juan Taboas[1], Jin Gao[1], and Alejandro Almarza[1]
[1]University of Pittsburgh, Pittsburgh, PA

TH-82
Electrospinning of Hybrid Scaffolds to Mimic the Tumor Microenvironment
Ashok Williams[1], Rachel Dass[1], and Kristen Mills[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

TH-83
A Comparison between Cortical and Spinal Cord Astrocyte Response to Electrospun Topography
Devan Puhl[1], Anthony D'Amato[1], Christopher Johnson[1], Amanda Vespermann[1], and Ryan Gilbert[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

TH-84
Poly (1, 8-Octanediol Citrate)/Bioglass Scaffolds for Osteogenic Differentiation of Stem Cells
Ehsan Zeimaran[1], Sara Pourshahrestani[1], Nahrizul Adib Kadri[1], Belinda Pingguan-Murphy[1], and Mark R. Towler[1,2]
[1]University of Malaya, Kuala Lumpur, Malaysia, [2]Ryerson University, Toronto, ON, Canada

POSTER SESSION–THURSDAY

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

TH-85
Layer-by-Layer Gelatin Coating on Hydrolyzed PCL Nanofibrils for Cell Cultivation
Jiun Shin[1], Hye Sung Kim[1], Young Ju Son[1], Wei Mao[1], Myun Koo Kang[1], Sol Lee[1], and Hyuk Sang Yoo[1]
[1]Kangwon National University, Chuncheon, Korea, Republic of

TH-86
Electrospun Collagen Scaffold for Peripheric Nerve Regeneration
Jorge Almodovar[1], Janet Mendez[1], and Carol Rivera Martinez[2]
[1]University of Puerto Rico Mayaguez, Mayaguez, PR, Puerto Rico, [2]University of Puerto Rico Mayaguez, Puerto Rico, Puerto Rico

TH-87
Evaluation of Heparin-Collagen Layer-by-Layer Films as Nerve Growth Factor Reservoirs.
Luis Pinzon Herrera[1] and Jorge Almodovar[1]
[1]University of Puerto Rico, Mayaguez, PR

TH-88
Characterization of Electrospun Nanofiber Scaffold for Wound Healing Applications
Meghan Friske[1]
[1]Michigan Technological University, Houghton, MI

TH-89
A Bio-inspired Hybrid Nanosack for Islet Transplantation in the Omentum
Patrick Hwang[1], Dong-Jin Lim[1], Grant Alexander[1], Dishant Shah[1], Jacob Garcia[1], David Cooper[1], Anath Shalev[1], Wanxing Cui[2], Shawn Gilbert[1], Jeong-a Kim[1], and Ho-Wook Jun[1]
[1]University of Alabama at Birmingham, Birmingham, AL, [2]Medstar Georgetown University Hospital, Washington, DC

TH-90
Visible Light-Induced Gelatin Methacrylate Hydrogels as 3D Biomimetic Matrices for *In Vitro* Monitoring of Invasion and Chemotactic Behavior of Glioblastoma Multiforme (GBM)
Pelin Erkoc[1], Fidan Seker[1], Tugba Bagci-Onder[1], and Seda Kizilel[1]
[1]Koc University, Istanbul, Turkey

TH-91
Coaxial Electrospun Cellulose Acetate/ Polyvinylpyrrolidone Nanofibers for Sustained Release of Growth Factors
Ramakrishna Sharma[1], Lifeng Zhang[1], and Shyam Aravamudhan[1]
[1]North Carolina A&T State University, Greensboro, NC

TH-92
Highly Aligned Electrospun Nanofibers for Orthopedic Tissue Engineering
Raymond Tindell[1] and Julianne Holloway[1]
[1]Arizona State University, Tempe, AZ

TH-93
Template-free Electrospinning of Honeycomb Patterned Electroactive Scaffolds
Samerender Nagam Hanumantharao[1], Meghan Friske[1], and Smitha Rao[1]
[1]Michigan Technological University, Houghton, MI

TH-94
Biofabrication of Collagen-Alginate Membranes with Spatial Resolution in Microfluidics
Santiago Correa[1], Manal Alsamiri[1], Christopher Raub[1], and Xiaolong Luo[1]
[1]Catholic University of America, Washington, DC

TH-95
Effect of Fe in the Mechanical and Biological Properties of the Alloy Ti-Nb-Zr
Sergio Montelongo[1], Crescencio Rodríguez[2], Víctor Hugo Baltazar Hernández[2], Omar Jiménez Alemán[3], Teja Guda[1], Joo Ong[1], and Francisco Alvarado Hernández[2]
[1]University of Texas at San Antonio, San Antonio, TX, [2]Universidad Autónoma de Zacatecas, Zacatecas, Mexico, [3]Universidad de Guadalajara, Guadalajara, Mexico

TH-96
The Effects of Piezoelectric Nanoparticle/ polymer Scaffolds on Orthopedic Applications
Yuan Li[1], Linlin Sun[1,2], and Thomas Webster[1,2,3]
[1]Northeastern University, Boston, MA, [2]Wenzhou Medical University, Wenzhou, China, People's Republic of, [3]King Abdulaziz University, Jeddah, Saudi Arabia

Tracks: Biomechanics, Tissue Engineering
Biomechanics in Cell and Tissue Engineering

TH-97
Magnetic Nanoparticle-loaded Alginate Beads for Force Loading of *In Vitro* Tissue Constructs
Awatef Alshehri[1], Otto Wilson, Jr.[1], Xiaolong Luo[1], and Christopher B. Raub[1]
[1]The Catholic University of America, Washington, DC

TH-98
Effects of Red Blood Cell on Wall Shear During Flow
Ascânio Araújo[1] and Béla Suki[2]
[1]Federal University of Ceara, Fortaleza, Brazil, [2]Boston University, Boston, MA

TH-99
Microstructural Finite Element Model of Left Ventricular Passive Mechanics
Ce Xi[1] and Lik Chuan Lee[2]
[1]Michigan State University, East Lansing, MI, [2]Michigan State University, East Lansing, MI

TH-100
Differential Establishment of MCF7 Cancer Cells' Polarity *In Vitro* 3D Culture System
Daehyun Kim[1], Youngbin Cho[1], and Jennifer Hyunjong Shin[1]
[1]Korea Advanced Institute of Science and Technology, Daejeon, Republic of Korea, Korea, Republic of

TH-101
Biophysical Cues Modulate the Morphology and Contractility of Cultured Corneal Fibroblasts
Daniel Maruri[1], Miguel Miron Mendoza[2], Kyle Grose[2], David Schmidtke[1], Matthew Petroll[2], and Victor Varner[1]
[1]The University of Texas at Dallas, Richardson, TX, [2]University of Texas Southwestern Medical Center, Dallas, TX

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

TH-102
In Vitro Validation of Asymptotic Smoluchowski Model Using Subpopulations of Electropores
Daniel Sweeney[1] and Rafael Davalos[1]
[1]Virginia Tech, Blacksburg, VA

TH-103
Mechanical Correlations in Collective Cell Migration
Hyuntae Jeong[1], Younbin Cho[1], Unghyun Ko[1], and Jennifer Shin[1]
[1]KAIST, Daejeon, Korea, Republic of

TH-104
Dissemination of Cellular Spheroids
Jiwon Kim[1], Youngbin Cho[1], and Jennifer Shin[1]
[1]KAIST, Daejeon, Korea, Republic of

TH-105
Investigation for the Effect of Shear Stress on Angiogenesis using On-chip 3D Vasculature
Masamune Nakayama[1], Yuakako Teraoka[1], Yuji Nashimoto[1], Akiko Nakamasu[2], Sanshiro Hanada[3], Yuichiro Arima[3], Yu-suke Torisawa[1], Hidetoshi Kotera[1], Koichi Nishiyama[3], Takashi Miura[2], and Ryuji Yokokawa[1]
[1]Kyoto University, Kyoto, Japan, [2]Kyushu University, Fukuoka, Japan, [3]Kumamoto University, Kumamoto, Japan

TH-106
Live-cell Rheometry to Study Dynamics of Cell-matrix Tension in 3D
Matthew Fiori[1], Hannah Bowers[1], and Peter Galie[1]
[1]Rowan University, Glassboro, NJ

TH-107
Investigating the Effect of Substrate Stiffness on Mechanical Coupling and Propagation of Contractile Force in Myocardial Cells
Neerajha Nagarajan[1], Trung Dung Nguyen[1], and Pinar Zorlutuna[1]
[1]University of Notre Dame, South Bend, IN

TH-108
Structural and Mechanical Characterization of Split Thickness Skin Autografts
Samar Tarraf[1], Holly Sparks[1], Elena Di Martino[1], and Jeff Biernaskie[1]
[1]University of Calgary, Calgary, AB, Canada

TH-109
Bone Notcher Device Design for Fracture Toughness Testing
Talia D'Ambruoso[1], Edwin Floyd[1], Luc Pierre-Louis[1], Nengi Charles-Ogan[1], Mekides Mezgebu[1], and Lamya Karim[1]
[1]University of Massachusetts Dartmouth, North Dartmouth, MA

Tracks: Biomechanics, Biomaterials
Biomechanics of Biomaterials

TH-110
Acceptance Criteria for Nanoindentation of Bone
Alan Eberhardt[1] and Ryan Doud[1]
[1]University of Alabama at Birmingham, Birmingham, AL

TH-111
The Relationship between Stiffness and Strength in the Proximal Femur is Sex- and Age-Dependent
Daniella Patton[1], Erin Bigelow[1], Stephen Schlecht[1], Todd Bredbenner[2], and Karl Jepsen[1]
[1]University of Michigan, Ann Arbor, MI, [2]Southwest Research Institute, San Antonio, TX

TH-112
Mechanical Impedance of the Organ of Corti
Jessica Huhnke[1], Wenxiao Zhou[1], Jonathan Becker[1], and Jong-Hoon Nam[1]
[1]University of Rochester, Rochester, NY

TH-113
In Vivo Bone Strain and Response to Mechanical Loading in the Chukar Partridge Tibiatarsus
Kari Verner[1] and Russell Main[1]
[1]Purdue University, West Lafayette, IN

TH-114
3D Tissue Model with Reversible Tunable Stiffness
Kiarash Rahmani Eliato[1], Harpinder Saini[2], Yang Xu[2], Purbasha Nandi[3], Mehdi Nikkhah[2], Nicholas Stephanopoulos[3], and Robert Ros[1]
[1]Center for Biological Physics and Department of Physics, Arizona State University, Tempe, AZ, [2]School of Biological and Health Systems Engineering (SBHSE), Arizona State University, Tempe, AZ, [3]School of Molecular Sciences and Center for Molecular Design and Biomimetics, The Biodesign Institute, Arizona State University, Tempe, AZ

TH-115
A Multi-scale Approach for Characterizing Mesh Mechanical Properties
Mathew Stanford[1], Xinyue Lu[1], Brittney Cotton[1], and Melinda Harman[1]
[1]Clemson University, Clemson, SC

TH-116
Characterization of Material Properties and Advanced Glycation End-products (AGE) in Non-obese Type 2 Diabetic Mouse Model
Matthew Tice[1], Stacyann Bailey[1], Emily Gallagher[2], and Deepak Vashishth[1]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Icahn School of Medicine at Mount Sinai, New York City, NY

TH-117
Characterization of Human Female Breast Skin Anisotropy using Bulge Test
Mazen Diab[1,2], Nishamathi Kumaraswamy[1,2], Gregory Reece[2], Michelle Fingeret[2], Mia Markey[1,2], and Krishnaswamy Ravi-Chandar[1]
[1]The University of Texas at Austin, Austin, TX, [2]The University of Texas MD Anderson Cancer Center, Houston, TX

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TH-118
General Approach for Determination of Poroelastic Properties of Articular Cartilage and Other Tissues Subjected to Unconfined Compression
Meleha Yousaf[1], Fatoumata Camara[1], and Gaffar Gailani[1]
[1]*New York City College of Technology, Brooklyn, NY*

TH-119
Mechanical Behavior of Skin under Cyclic Uniaxial Loading
Nazanin Afsar Kazerooni[1], Arun Srinivasa[1], and John Criscione[1]
[1]*Texas A&M University, College station, TX*

TH-120
Model-Driven Design of Softening Intracortical Electrodes For Decreased Chronic Tissue Response
Allison Stiller[1], Vindhya Danda[1], Walter Voit[1], Victor Varner[1], and Joseph Pancrazio[1]
[1]*University of Texas at Dallas, Richardson, TX*

TH-121
Natural Silk Casts: Mimicking the Tensile Biomechanics of Heart Valves
Bradley Hoffmann[1], Long Jiang[1], and Amanda Brooks[1]
[1]*North Dakota State University, Fargo, ND*

TH-122
Wettability of a Novel Biofilm-Resistant Surface Modification Process for Metallic Implants
Caroline Bales[1], Sarah Helms[1], and John DesJardins[1]
[1]*Clemson University, Clemson, SC*

TH-123
Pneumatic Air Muscle Material Analysis
Cheyenne Andrew[1], Brittany White[1], and Ha Vo[1]
[1]*Mercer University, Macon, GA*

TH-124
The Effects of Low Dose Radiation on Porcine Articular Cartilage
Hannah Cash[1], Delphine Dean[1], and Jeffrey Willey[2]
[1]*Clemson University, Clemson, SC,* [2]*Wake Forest School of Medicine, Winston-Salem, NC*

Tracks: Cancer Technologies, Cellular and Molecular Bioengineering

Cancer Cell Motility and Migration

TH-126
Unjamming at the Breast Tumor Boundary to Collectively Migrate in a Spheroidal Model System
Karin Wang[1] and Jeffrey Fredberg[1]
[1]*Harvard University, Boston, MA*

TH-127
A Stochastic Model for Chemotaxis of Breast Cancer Cells under EGF Gradient
Seongjin Lim[1] and Jessie Sungyun Jeon[1]
[1]*Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of*

TH-128
Does Inkjet Printing Help Improve 3D Tumor Tissue Modeling for *In Vitro* Studies?
Aleli Campbell[1], Thomas Boland[1], and Karla Parra[1]
[1]*The University of Texas at El Paso (UTEP), El Paso, TX*

TH-129
24R,25(OH)2D3 Regulation of Tumorigenesis in Breast Cancer Cells is Dependent on Estrogen Receptor
Anjali Verma[1], Barbara Boyan[1], and Zvi Schwartz[1]
[1]*Virginia Commonwealth University, Richmond, VA*

TH-130
Fluid Shear and Metastatic Potential Regulate Breast Cancer Cell Migration
Brandon Riehl[1], Jeong Soon Lee[1], and Jung Yul Lim[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE*

TH-131
Proteolytic Regulation of Cancer Metastasis at the Tumor-Stromal Interface
Hoang Ta[1] and Keyue Shen[1,2,3]
[1]*Department of Biomedical Engineering, University of Southern California, Los Angeles, CA,* [2]*Department of Stem Cell Biology and Regenerative Medicine, University of Southern California, Los Angeles, CA,* [3]*Norris Comprehensive Cancer Center, University of Southern California, Los Angeles, CA*

TH-132
Cadherin-11 Regulates the Invasion Of Mesenchymal Glioblastoma-initiating Cells
Joseph Chen[1], Cyrene Arputhasamy[1], Kelsey Springer[1], and Sanjay Kumar[1]
[1]*UC Berkeley, Berkeley, CA*

TH-133
A Nanotextured Platform to Quantitatively and Sensitively Measure Cancer Invasion into Stroma Reveals the Molecular Determinants of Stromal Invasion
Kshitiz Kz[1]
[1]*Yale University, West Haven, India*

TH-134
Experimental and Modeling Approaches to Quantify Migration Dynamics of Pediatric Glioblastoma Cells and Human Neural Progenitor Cells within Cocultures
Kurt Farrell[1], Parthasarathy Srinivasan[1], Moo-Yeal Lee[1], and Chandra kothapalli[1]
[1]*Cleveland State University, Cleveland, OH*

TH-135
Proteomic Changes of Cancer Cells during their Migration in Physical Confinement
Loan Bui[1], Qionghua Shen[1], Tamara Hill[1], Sayem Bhuiyan[1], Vanessa Saavedra[1], Calvin Kong[1], Young-tae Kim[1], and James Battiste[2]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*University of Oklahoma Health Science Center, Oklahoma City, OK*

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

TH-136
Microtubule-Targeting Agents Alter Glioma Cell Traction and Migration by Distinct Drug-Specific Mechanisms
Louis Prahl[1], Patrick Bangasser[1], Mahya Hemmat[1], Steven Rosenfeld[2], and David Odde[1]
[1]*University of Minnesota, Minneapolis, MN,* [2]*Cleveland Clinic, Cleveland, OH*

TH-137
Quantifying Epithelial-mesenchymal Plasticity through an Integrated Computational-experimental Approach
Mohit Kumar Jolly[1], Dongya Jia[1], Jason George[1], Satyendra Tripathi[2], Shengnan Xu[3], Muge Celiktas[2], Jason Somarelli[3], Samir Hanash[2], and Herbert Levine[1]
[1]*Rice University, Houston, TX,* [2]*MD Anderson Cancer Center, Houston, TX,* [3]*Duke University, Durham, NC*

TH-138
Metastatic Breast Cancer Detection from Image Analysis of Aptamer-mediated Captured Tumor Cells
Nuzhat Mansur[1], Francisco J. Villarreal[1], Mohammad R. Hasan[1], Young-Tae Kim[1,2], and Samir M. Iqbal[1,2]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*University of Texas Southwestern Medical Center at Dallas, Dallas, TX*

TH-139
A Platform of Collagen Hydrogel for Investigation of Glioblastoma Cell Migration and the Differential Effects of Pharmaceutical Inhibition
Pranita Kaphle[1] and Li Yao[1]
[1]*Wichita State University, Wichita, KS*

TH-140
The Effect of Chemokine Gradients on Directional Collective Migration of Breast Tumor Cells
Priscilla Hwang[1], Ashley King[1], Audrey Brenot[1], Venktesh Shirure[1], Gregory Longmore[1], and Steven George[1]
[1]*Washington University in St Louis, St Louis, MO*

TH-141
Guiding Tumor Cell Invasion using Non-soluble Cues in the Tumor Microenvironment
Vasudha Shukla[1], Lizbeth Negron Irizzary[1], Daniel Gallego-Perez[1], and Samir Ghadiali[1]
[1]*The Ohio State University, Columbus, OH*

TH-142
CCL-21 Releasing Cancer Trap for Capturing Metastatic Prostate Cancer
Yihui Huang[1], Amirhossein Hakamivala[1], Minsyuan Huang[1], Shuxin Li[1], Jun Zhou[1], Ashwin Nair[1], Jer-Tsong Hsieh[2], and Liping Tang[1]
[1]*The University of Texas at Arlington, Arlington, TX,* [2]*The University of Texas Southwestern Medical Center, Dallas, TX*

Tracks: Cancer Technologies, Biomechanics

Cancer Mechanobiology

TH-143
An Engineered Platform for Investigating Fluid Shear Stress Effects on Ovarian Cancer Cell Malignancy
Alexandra R. Hyler[1], Nicolaas C. Baudoin[1], Mark A. Stremler[1], Daniela Cimini[1], Rafael V. Davalos[1], and Eva M. Schmelz[1]
[1]*Virginia Tech, Blacksburg, VA*

TH-144
3D Microchannels for Analyzing Confined Cancer Cell Invasion and Cell-Cell Interactions
Andrew Holle[1], I-Hsuan Wang[2,3], Ralf Kemkemer[3,4], and Joachim Spatz[1,5]
[1]*Max Planck Institute for Medical Research, Stuttgart, Germany,* [2]*University of Ulm, Ulm, Germany,* [3]*Max Planck Institute for Intelligent Systems, Stuttgart, Germany,* [4]*Reutlingen University, Reutlingen, Germany,* [5]*University of Heidelberg, Heidelberg, Germany*

TH-145
Oscillatory Tensile Forces as a Mediator of Breast Cancer Epithelial Cell Behavior
Joel Berry[1], Derek Van Vessem[1], Paige Severino[1], Tess Vessels[1], and Andra Frost[1]
[1]*The University of Alabama at Birmingham, Birmingham, AL*

TH-146
The Biomechanics Contributing to Tumor Behavior Within Lymphatic Vessels
Jonathan Kulwatno[1], Ruth Griswold[2], Mihaela Skobe[2], and Kristen Mills[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*Icahn School of Medicine at Mount Sinai, New York, NY*

TH-147
Combining Interferometric Phase, Amplitude and Frequency to Measure the Loss Tangent of Single Adherent Colon Cancer Cells
Olaoluwa Adeniba[1] and Rashid Bashir[1]
[1]*University of Illinois, Urbana Champaign, Urbana, IL*

TH-148
Comparative Study of Non-thermal Atmospheric Pressure Plasma Treatment Effects on Cell Viability and Cell Cycle on Lung Cancer Cells and Lung Fibroblast Cells within 3D Collagen Model
Surya Karki[1] and Halim Ayan[1]
[1]*University of Toledo, Toledo, OH*

TH-149
Tunable Hyaluronan Hydrogels for Studying Biomechanically Induced EMT of Breast Cancer
Tanaya Walimbe[1], Juan Martin Silva Garcia[1], Alyssa Pantich[2], Sarah Calve[1], and Luis Solorio[1]
[1]*Purdue University, West Lafayette, IN,* [2]*UC Davis, Davis, CA*

TH-150
Differential Effects of Compressive Stress on Single Cell Invasion and Collective Cell Migration in Lung Adenocarcinoma Cells
Vasudha Shukla[1], Christopher Bobba[1], and Samir Ghadiali[1]
[1]*The Ohio State University, Columbus, OH*

POSTER SESSION–THURSDAY

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TH-151
High Throughput Studies of Tumor Shape Development

Xiangyu Gong[1,2] and Kristen Mills[1,2]
[1]*Department of Mechanical, Aerospace, and Nuclear Engineering, Rensselaer Polytechnic Institute, Troy, NY,* [2]*Center for Biotechnology and Interdisciplinary Studies, Rensselaer Polytechnic Institute, Troy, NY*

TH-152
Cyclic Mechanical Strain Modulates Lung Adenocarcinoma Cell Proliferation and Erlotinib Resistance

YouJin Cho[1], Christoper Bobba[1], Vasudha Shukla[2], Joshua Englert[2], and Samir Ghadiali[1,2]
[1]*The Ohio State University, Columbus, OH,* [2]*Ohio State University Wexner Medical Center, Columbus, OH*

Track: Cellular and Molecular Bioengineering

Cell Migration

TH-153
Microfluidic Platform to Decode and Modulate Neutrophil Migration Phenotypes in Sepsis

Brittany Boribong[1], Mark Lenzi[1], Liwu Li[1], and Caroline Jones[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

TH-154
Utilizing Genetics and Microfluidics to Examine Neural Cell Migration in Retinogenesis of a Drosophila Model

Caroline Pena[1], Stephanie Zhang[1], Mildred Kamara[1], Tadmiri Venkatesh[1], and Maribel Vazquez[1]
[1]*City College of New York, New York, NY*

TH-155
A Biomimetic Assay for Predicting the Response of Novel Anti-inflammatory Therapeutics in Humans

Fariborz Soroush[1], Yuan Tang[1], Laurie Kilpatrick[1], and Mohammad Kiani[1]
[1]*Temple University, Philadelphia, PA*

TH-156
Porous Substrates Influence Early Endothelial Migration and the Associated Fibronectin Fibrillogenesis

Henry Chung[1], Spencer Perry[1], Stephanie Casillo[1], and Thomas Gaborski[1]
[1]*Rochester Institute of Technology, Rochester, NY*

TH-157
Laser Ablation of the Cell Cortex Reveals a Pressure-Induced Nuclear Transit Mechanism

Jeremy Keys[1], Philipp Isermann[1], and Jan Lammerding[1]
[1]*Cornell University, Ithaca, NY*

TH-158
Invasive Cancer Cells Take Turns in Leading Collective Migration

Jian Zhang[1], Francois Bordeleau[1], and Cynthia Reinhart-King[1]
[1]*Vanderbilt University, Nashville, TN*

TH-159
Studying the Effect of Fibroblast Growth Factor 23 on Neutrophil Chemotaxis using Microfluidic Devices

Ke Yang[1,2,3], Hagit Peretz-Soroka[2], Jiandong Wu[2], Ling Zhu[1], Xueling Cui[4], Michael Zhang[5], Claudio Rigatto[6], Yong Liu[1], and Francis Lin[2]
[1]*Institute of Applied Technology, Hefei Institutes of Physical Science, Chinese Academy of Sciences, Hefei, China, People's Republic of,* [2]*University of Manitoba, Winnipeg, MB, Canada,* [3]*University of Science and Technology of China, Hefei, China, People's Republic of,* [4]*Jilin University, Jilin, China, Peopie's Republic of,* [5]*Seven Oaks General Hospital, Winnipeg, MB, Carada*

TH-160
A Dual-Docking Microfluidic Device for Studying Immune Cell Migration and Chemotaxis

Ke Yang[1,2,3], Jiandong Wu[2], Guoqing Xu[4], Dongxue Xie[2,5], Hagit Peretz-Soroka[2], Susy Santos[6,7], Murry Alexander[4], Ling Zhu[1], Michael Zhang[8], Xiaoou Ren[2], Yong Liu[1], and Francis Lin[2]
[1]*Institute of Applied Technology, Hefei Institutes of Physical Science, Chinese Academy of Sciences, Hefei, China, People's Republic of,* [2]*University of Manitoba, Winnipeg, MB, Canada,* [3]*University of Science and Technology of China, Hefei, China, People's Republic of,* [4]*University of Winnipeg, Winnipeg, MB, Canada,* [5]*Jilin University, Jilin, China, People's Republic of,* [6]*Victoria General Hospital and River Heights/Fort Garry Community areas, Winnipeg, MB, Canada,* [7]*South Winnipeg Integrated Health & Social Services, Winnipeg, MB, Canada,* [8]*Seven Oaks General Hospital, Winnipeg, MB, Canada*

TH-161
Fiber Stiffness Influences Cell Migration into Dense Fiber Networks

Kwanghoon Song[1], Su-Jin Heo[1], Mu-Huan Lee[1], Robert Mauck[1], and Jason Burdick[1]
[1]*University of Pennsylvania, Philadelphia, PA*

TH-162
The Role of Neutrophil-Endothelial Interactions in Neutrophil Extravasation and Migration using Organotypic Microvessels

Laurel Hind[1], Patrick Ingram[1], David Beebe[1], and Anna Huttenlocher[1]
[1]*University of Wisconsin-Madison, Madison, WI*

TH-163
Cell Division Induces and Switches Coherent Angular Motion Within Bounded Cellular Collectives

Michael Siedlik[1], Sriram Manivannan[1], Ioannis Kevrekidis[1], and Celeste Nelson[1]
[1]*Princeton University, Princeton, NJ*

TH-164
Electrochemotactic Stimulation to Enhance Retinal Progenitor Cell Migration and Integration into Damaged Retinas

Shawn Mishra[1], Stephen Redenti[2], and Maribel Vazquez[1]
[1]*City College of New York, New York, NY,* [2]*Lehman College, New York, NY*

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Tracks: Cellular and Molecular Bioengineering, Biomechanics

Cellular and Molecular Biomechanics: Mechanobiology

TH-165
Characterization of Ca2+ Oscillations in Endothelial Cells Exposed to Pulsatile vs. Oscillatory Flow

Akshar Patel[1], Alexander Cetnar[1], and B. Rita Alevriadou[1]
[1]*The Ohio State University, Columbus, OH*

TH-166
Tunable Molecular Tension Sensors Reveal Extension-Based Control of Vinculin Loading

Andrew LeCroix[1], Andrew Lynch[1], and Brenton Hoffman[1]
[1]*Duke University, Durham, NC*

TH-167
Measurement of Nuclear Force and Deformation in MDCK Cells Under Biaxial Strain

Carl Mayer[1], Paul Arsenovic[1], and Daniel Conway[1]
[1]*Virginia Commonwealth University, Richmond, VA*

TH-168
In Vitro Evaluation of Hydrostatic Pressure on ATP Release and Purinergic Regulated Caspase-1 Activation in Rat Urothelial Cells

Cody Dunton[1], F. Monty Hughes[1,2], J. Todd Purves[1,2], and Jiro Nagatomi[1]
[1]*Clemson University, Clemson, SC,* [2]*Duke University, Durham, NC*

TH-169
The Role of Nuclear Lamin A/C In Nuclear Mechanotransduction

Dong-Hwee Kim[1], Jeong-Ki Kim[1], Geonhui Lee[1], and Denis Wirtz[2]
[1]*Korea University, Seoul, Korea, Republic of,* [2]*Johns Hopkins University, Baltimore, MD*

TH-170
YAP-mediated Stretch Mechanotransduction in Controlling MSC Adipogenesis

Eunju Kim[1] and Jung Yul Lim[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE*

TH-171
***In Silico* Analyses of Protein Function in Osteolytic Cells Exposed to Fluid Flow**

Graeme Murray[1], Fanchi Meng[2], Lukasz Kurgan[1], and Henry Donahue[1]
[1]*Virginia Commonwealth University, Richmond, VA,* [2]*University of Alberta, Edmonton, AB, Canada*

TH-172
Simulated Microgravity Decreases LINC Complex Expression in MSCs

Hallie Touchstone[1], Richard Beard[1], Brian Hoettels[1], and Gunes Uzer[1]
[1]*Boise State University, Boise, ID*

TH-173
Site-specific E-cadherin Mutations Affect Gastric Cancer Cell Tensional Homeostasis

Han Xu[1], Joana Figueiredo[2], Joana Paredes[2], Raquel Seruca[2], Michael Smith[1], and Dimitrije Stamenovic[1]
[1]*Boston University, Boston, MA,* [2]*Institute of Molecular Pathology and Immunology of the University of Porto, Porto, Portugal*

TH-174
The Role of Age in Shear-Induced Platelet Activation: Comparison of Neonatal Cord and Adult Platelets

Jawaad Sheriff[1], Lisa Malone[1], Wenguo Gao[1], Nikol Palomino[1], Amanda Zigomalas[1], Wadie Bahou[1], and Danny Bluestein[1]
[1]*Stony Brook University, Stony Brook, NY*

TH-175
Determination of Magnetic Bead Pulling Forces Using Traction Force Microscopy

Joshua Bush[1] and Venkat Maruthamuthu[1]
[1]*Old Dominion University, Norfolk, VA*

TH-176
Spatial Patterning of Epithelial-Mesenchymal Transition is Regulated by Fibronectin Fibrillogenesis

Lauren Griggs[1], Jiten Narang[1], and Christopher Lemmon[1]
[1]*Virginia Commonwealth University, Richmond, VA*

TH-177
3D Traction Generation Measured from Neutrophils Confined to Micropatterned Stripes

Lauren Hazlett[1], Mohak Patel[1], Michael Harman[1], Jonathan Reichner[1], and Christian Franck[1]
[1]*Brown University, Providence, RI*

TH-178
Biomechanics of Axonal Microtubules under Various Loading Conditions

Mohammad Soheilypour[1], Mohaddeseh Peyro[1], Steve Peter[1], Carole Lazarus[1], and Mohammad Mofrad[1]
[1]*University of California, Berkeley, Berkeley, CA*

TH-179
Evaluation of the Role of Cross-Links on Microtubule Mechanics Using a Corotational Finite Element Simulation

Neda Abdollahi[1] and Jason Halloran[1]
[1]*Cleveland State University, Cleveland, OH*

TH-180
Traction Force Microscopy Using Embedded Marker Arrays with an Implied Zero-Displacement State

Omar Banda[1], Ryan Taitano[1], and John Slater[1]
[1]*University of Delaware, Newark, DE*

TH-181
Quantifying Forces Required to Rupture the Nuclear Membrane

Qiao Zhang[1], Jan Lammerding[2], and Tanmay Lele[1]
[1]*University of Florida, Gainesville, FL,* [2]*Cornell University, Ithaca, NY*

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TH-182
A New *In Situ* Method to Measure Area-per-lipid Fluctuations in Cell Membranes using Time - Resolved Fluorescence of DiI
Seoyoung Son[1], Hari Muddana[1], and Peter Butler[1]
[1]*Penn State University, University Park, PA*

TH-183
Low-Frequency, Low-Intensity Ultrasound as a Potential Novel Treatment for Type 2 Diabetes
Tania Singh[1], Bogdan Balteanu[1], Ivan Suarez Castellanos[1], Aleksandar Jeremic[1], and Vesna Zderic[1]
[1]*The George Washington University, Washington, DC*

TH-184
Mechanical Control of Adipokine Secretion and Insulin Sensitivity
Tasneem Bouzid[1], Eunju Kim[1], and Jung Yul Lim[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE*

TH-185
Passage Dependent Changes in Nuclear and Cytoskeleton Structures of Endothelial Cells under Laminar Shear Stress or Cyclic Stretch
Yizhi Jiang[1] and Julie Ji[2]
[1]*Indiana University Purdue University Indianapolis, Indianapolis, IN,* [2]*Indiana University-Purdue University Indianapolis, Indianapolis, IN*

TH-187
Rotational Bias of Mesenchymal Stem Cells Exhibit a Lineage Dependence
Yuanye Bao[1] and Ting-Hsuan Chen[1]
[1]*City University of Hong Kong, Hong Kong, Hong Kong*

TH-188
STIM1-induced Conformational Transition of Orai1 Leads to Channel Activation
Zainab Haydari[1], Hengameh Shams[1], and Mohammad Mofrad[1]
[1]*University of California Berkeley, Berkeley, CA*

TH-189
Mechanical Interactions between Groups of Muscle Myosin Motors and Actin Cross-Linkers
Zsombor Balassy[1], Lennart Hilbert[2], Linda Kachmar[1], Nedjma B. Zitouni[1], Apolinary Sobieszek[1], and Anne-Marie Lauzon[1]
[1]*McGill University, Montreal, QC, Canada,* [2]*Max Planck Institute, Dresden, Germany*

Tracks: Nano and Micro Technologies, Cellular and Molecular Bioengineering

Micro/Nano Tools in Molecular Biology (Genomics, Proteomics)

TH-190
Dependence of Negative Dielectrophoresis Spectrum on the Length of Single-Stranded DNA
Fleming Gudagunti[1], Logeeshan Velmanickam[1], Dharmakeerthi Nawarathna[1], and Ivan Lima[1]
[1]*North Dakota State University, Fargo, ND*

TH-191
XY Plotting System for High Resolution, Rapid Protein Pattern Production for Cell Culture
J. Wesley Garrett[1], Daniel Stewart[1], and Chelsey Simmons[1]
[1]*University of Florida, Gainesville, FL*

TH-192
Detecting Antigens in Biological Samples without ELISA
Logeeshan Velmanickam[1], Michael Fondawiski[1], and Dharmakeerthi Nawarathna[1]
[1]*North Dakota State University, Fargo, ND*

TH-193
Ultra-Sensitive Detection of Circulating microRNA with Quantum Dots
Lucas Smith[1], Andrew Smith[1], Yang Liu[1], Brian Cunningham[1], and Manish Kohli[2]
[1]*University of Illinois, Urbana, IL,* [2]*Mayo Clinic, Rochester, MN*

TH-194
Microfluidic Assembly and Simultaneous Interrogation of Networks of Asymmetric Synthetic Membranes
Mary-Anne Nguyen[1], Graham Taylor[1], and Stephen A. Sarles[1]
[1]*University of Tennessee, Knoxville, TN*

TH-195
Biosynthesis of Calcium Oxide Nanoparticles from Rabbit Bone Using Moringa oleifera Leaves Extract
O. Philip Gbenebor[1], S. O. Adeosun[1], E. I. Akpan[2], T.O. Alade[1], Kay A. Basheeru[1], and A.A. Osuntoki[1]
[1]*University of Lagos, Lagos, Nigeria,* [2]*Institut für Verbundwerkstoffe GmbH, Kaiserslautern, Germany*

TH-196
Parameters for DNA Hybridization Detection for a CNT based Bionanosensor
Shawn McGinley[1], Franzel Pena[1], Sethan Kumar Jasti[1], and Saion Sinha[1]
[1]*University of New Haven, West Haven, CT*

TH-197
Microfluidic Trapping, Transformation, and Monitoring of Gene Expression of Individual Soybean (Glycine max) Protoplasts
Tayler Schimel[1], Mary-Anne Nguyen[1], Stephen Sarles[1], and Scott Lenaghan[1]
[1]*University of Tennessee, Knoxville, TN*

TH-198
Signaling of Mating Yeast Cells Revealed with Biofabrication in Microfluidics
Thanh Vo[1], John Choy[1], and Xiaolong Luo[1]
[1]*Catholic University of America, Washington, DC*

TH-199
Characterization of DNA Hybridization Kinetics in Solution Using 3D Single-Molecule Tracking Technique
Yuan-I Chen[1], Cong Liu[1], Yen-Liang Liu[1], Yu-An Chen[1], and Tim Yeh[1]
[1]*University of Texas at Austin, Austin, TX*

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TH-200
Bacterial Micro-patterning on Hydrophobic Micropillars
Zeinab Jahed[1], Hamed Shahsavan[2], Mohit S. Verma[2], Jacob L. Rogowski[2], Brandon B. Seo [2], Boxin Zhao[2], Ting Y. Tsui[2], Frank X. Gu[2], and Mohammad R.K. Mofrad[1]
[1]*University of California Berkeley, Berkeley, CA,* [2]*University of Waterloo, Waterloo, ON, Canada*

TH-201
Deploying Synthetic Biology to Study Quorum Sensing in a Biomimetic Microfluidic Biofilm
Ming-Cheng Chen[1], Sung-Ho Paek[1], and Warren C. Ruder[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

Tracks: Stem Cell Engineering, Cellular and Molecular Bioengineering

Reprogramming/Direct Differentiation in Stem Cell Engineering

TH-202
Tethered Jagged-1 Synergizes with Matrix Stiffness to Modulate Notch-induced Myogenic Progenitor Differentiation
Helia Safaee[1,2], Mohsen Bakooshli[3], Richard Cheng[3], Haijiao Liu[4,5,6], Sadegh Davoudi[3], Aditya Martowirogo[3], Craig Simmons[4,5,6], and Penney Gilbert[1,7,8]
[1]*Stanford University, Stanford, CA,* [2]*Department of Chemical Engineering, University of Toronto, Toronto, ON, Canada,* [3]*Institute of Biomaterials and Biomedical Engineering, Toronto, ON, Canada,* [4]*The Ted Rogers Centre for Heart Research, Toronto, Canada,* [5]*Department of Mechanical & Industrial Engineering, University of Toronto, Toronto, ON, Canada,* [6]*Faculty of Dentistry, University of Toronto, Toronto, ON, Canada,* [7]*Department of Biochemistry, University of Toronto, Toronto, Canada,* [8]*Terrence Donnelly Centre for Cellular and Biomolecular Research, Toronto, ON, Canada*

TH-203
Micropatterned Substrates to Promote and Dissect Reprogramming of Human Somatic Cells
Ty Harkness[1,2], Jared Carlson-Stevermer[1,2], Ryan Prestil[1], Stephanie Seymour[1], Gavin Knight[1,2], Kaivalya Molugu[1,3], Randolph Ashton[1,2], and Krishanu Saha[1,2,3]
[1]*Wisconsin Institute for Discovery, University of Wisconsin-Madison, Madison, WI,* [2]*Department of Biomedical Engineering, University of Wisconsin-Madison, Madison, WI,* [3]*Department of Biophysics, University of Wisconsin-Madison, Madisen, WI*

TH-204
Genome Engineering in Human Pluripotent Stem Cells
Xiaojun Lian[1]
[1]*Penn State University, University Park, PA*

TH-205
Engineering Human Pluripotent Stem Cells for Inducible Live Cell Imaging Using CRISPR/Cas9
Xiaoping Bao[1], Douglas Clark[1], and David Schaffer[1]
[1]*UC Berkeley, Berkeley, CA*

TH-206
Tissue Specific Environment Facilitate Direct Reprogramming for the Generation of Highly Therapeutic Neurons
Yoonhee Jin[1], Jung Seung Lee[1], and Seung-Woo Cho[1]
[1]*Yonsei University, Seoul, Korea, Republic of*

TH-207
Dynamic Interactions between Cancer Microvesicles and Stem Cells
Johana Uribe [1], Han-Yuan Liu[1], Claudia Fischbach[1], and Susan Daniel[1]
[1]*Cornell University, Ithaca, NY*

TH-208
Design and Develop an Active Fluorescently-tagged CK2.3 Peptide, to Characterize its Osteogenic Property *In Vitro* and *In Vivo*
Vrathasha Vrathasha[1], Anja Nohe[1], Jenna Deibert[1], and Linda Sequeira[1]
[1]*University of Delaware, Newark, DE*

Track: Cancer Technologies

Circulating Biomarkers: CTCs, Extracellular Vesicles and DNA

TH-209
The Exosome Total Isolation Chip (ExoTIC) Device
Fei Liu[1], Ophir Vermesh[2], Vigneshwaran Mani[1], Steven Madsen[3], En-Chi Hsu[3], Qiang Liu[1], Gayarti Gowrishankar[3], Masamitsu Kanada[3], Edwin Chang[3], Kenneth Lau[3], Kaushik Sridhar[1], Abel Bermudez[3], Sharon Pitteri[1], Tanya Stoyanova[1], Robert Sinclair[3], Sanjiv Sam Gambhir[2], Viswam Nair[3], and Utkan Demirci[1]
[1]*Stanford University, Palo Alto, CA,* [2]*Stanford University, Stanford, CA,* [3]*Stanford University, Stanford, CA*

TH-210
Gold Nanoparticle Based Microfluidic Device for Highly Efficient Isolation of Circulating Melanoma Cells
Kyung Eun You[1], Shailu Shree Poudyal[1], Kaitlin Ashley Torgerson Wickre[1], Lei Zhao[2,3], Michael Henry[2,3], Mohammed Milhem[2,3], and Hyeun Joong Yoon[1]
[1]*South Dakota State University, Brookings, SD,* [2]*University of Iowa Carver College of Medicine, Iowa City, IA,* [3]*Holden Comprehensive Cancer Center, University of Iowa, Iowa City, IA*

TH-211
A Diagnostic Immuno-Biochip for Selective Exosome Capture and Exosomal RNA Detection
Yunchen Yang[1], Chang Liu[1], and Yun Wu[1]
[1]*State University of New York at Buffalo, Buffalo, NY*

Track: Cancer Technologies

Tumor Microenvironment

TH-212
The Interplay Between Tissue Mechanics and Brain Metastasis *In Vivo*
Alexus Devine[1], Jack Staunton[1], and Kandice Tanner[1]
[1]*National Cancer Institute, National Institutes of Health, Laboratory of Cell Biology, Center for Cancer Research, Bethesda, MD*

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TH-213
Hyaluronic Acid-based Hydrogels to Investigate Effects of Microenvironment on Glioblastoma Invasion
Alireza Sohrabi[1], Yasmin Ghochani[1], Weikun Xiao[1], Harley Kornblum[1], and Stephanie Seidlits[1]
[1]*University of California, Los Angeles (UCLA), Los Angeles, CA*

TH-214
A Stiff Microenvironment Promotes Failure of Midbody Abscission and Multinucleation Downstream of EMT Initiators
Allison K. Simi[1], Alisya A. Anlas[1], Sherry X. Zhang[1], Tiffaney Hsia[1], Derek C. Radisky[2], and Celeste M. Nelson[1]
[1]*Princeton University, Princeton, NJ,* [2]*Mayo Clinic Cancer Center, Jacksonville, FL*

TH-215
Lymph Node Mimetic for Investigating Cancer Metastasis
Amirhossein Hakamivala[1], Ashwin Nair[1], Jer-Tsong Hsieh[2], and Liping Tang[1]
[1]*The University of Texas at Arlington, Arlington, TX,* [2]*The University of Texas Southwestern Medical Center, Dallas, TX*

TH-216
Tumor Derived Exosomes Polarize Macrophages Towards an Inflammatory Phenotype *In Vitro*
Anisha Datta[1], Shane Allen[1], and Laura Suggs[1]
[1]*University of Texas at Austin, Austin, TX*

TH-217
Assessing the Individual Impacts of Stiffness and Fiber Density on Breast Cancer Invasion using a Gelatin-methacrylate/Collagen Interpenetrating Network
Anthony Berger[1], Kelsey Linsmeier[1], Pamela Kreeger[1], and Kristyn Masters[1]
[1]*University of Wisconsin-Madison, Madison, WI*

TH-218
Evaluation of Extracellular Matrix Requirements in Tumor Drug Resistance
Charles Byrne[1] and Matthew Burow[1]
[1]*Louisiana State University, Walker, LA*

TH-219
Identifying Altered Intercellular Signaling Networks in Cancer: Wnt-inducible Signaling Pathway Protein 1 (WISP1) as an Illustrative Example
David Klinke[1]
[1]*West Virginia University, Morgantown, WV*

TH-220
Liposome Diffusion and Mechanical Stiffness in Cancer Spheroids
Devina Jaiswal[1], Armin Rad[1], Amanda Lor[1], Mu-Ping Nieh[1], Kevin Claffey[2], and Kazunori Hoshino[1]
[1]*University of Connecticut, Storrs, CT,* [2]*University of Connecticut Health Center, Farmington, CT*

TH-221
Influence of Fibroblasts on Metastatic Cancer Drug Resistance in a 3D Microfluidic Cell Array
Elizabeth C. Benoy[1], Chun-Wei Chi[1], A.H. Rezwanuddin Ahmed[1], Chenghai Li[1], and Sihong Wang[1]
[1]*City University of New York-City College, New York, NY*

TH-222
Recapitulating Metabolic Heterogeneity at the Tumor-Stromal Interface *In Vitro*
Hydari Masuma Begum[1], Gabriel Rocha[2], Kristen Nemes[1], and Keyue Shen[1,2,3]
[1]*Department of Biomedical Engineering, University of Southern California, Los Angeles, CA,* [2]*Department of Stem Cell Biology and Regenerative Medicine, University of Southern California, Los Angeles, CA,* [3]*Norris Comprehensive Cancer Center, University of Southern California, Los Angeles, CA*

TH-223
Engineering 3D In Vitro Models of Small Cell Lung Cancer using ECM-based Hydrogels
Jianfeng Li[1], Xinyi Jiang[1], Jing Lim[1], Dian Yang[1], Julien Sage[1], and Fan Yang[1]
[1]*Stanford University, Stanford, CA*

TH-224
Pulsed Electric Fields Preferentially Target Therapy-Resistant Glioma Cells
Jill Ivey[1], Akanksha Kanitkar[1], Eduardo Latouche[1], Zhi Sheng[2], Rafael Davalos[1], and Scott Verbridge[1]
[1]*Virginia Tech- Wake Forest University, Blacksburg, VA,* [2]*Virginia Tech Carilion Research Institute, Roanoke, VA*

TH-225
Heterogeneous Tumor Invasiveness is Influenced by Radiation-Induced Changes to the Extracellular Matrix
Marjan Rafat[1], Ninna Rossen[1], Hussein Shehade[1], Katrina Wisdom[1], Janine Erler[2], Amato Giaccia[1], and Edward Graves[1]
[1]*Stanford University, Stanford, CA,* [2]*University of Copenhagen, Copenhagen, Denmark*

TH-226
Heparin-based Hydrogel as a 3D Matrix for Solid-phase Growth Factor Presentation and Cultivation of Human Breast Cancer Cells
Nidhi Menon[1] and Caroline N. Jones[1]
[1]*Virginia Tech, Blacksburg, VA*

TH-227
3-D Microtechnology-based Platform for Culturing Virus Infected Cancer Cells
Rami El Assal [1], Franceline Juillard[2], Alessandro Tocchio[1], Thiruppathiraja Chinnasamy[1], Chantal Beauchemin[2], Kenneth M. Kaye[2], and Utkan Demirci[1]
[1]*Stanford University School of Medicine, Palo Alto, CA,* [2]*Harvard Medical School, Boston, MA*

TH-228
Electrospun 3D Poly(ε-caprolactone) Scaffolds For Osteosarcoma Behavior Modeling
Tejus Satish[1], Eric Molina[1], Brian Menegaz[2], Salah-Eddine Lamhamedi-Cherradi[2], Joseph Ludwig[2], and Antonios Mikos[1]
[1]*Rice University, Houston, TX,* [2]*University of Texas M. D. Anderson Cancer Center, Houston, TX*

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TH-229
The Breast Simulacrum: A 3D Biometric Model of the Tumor Microenvironment and Metabolism
Yoshiko Toyoda[1], John Morgan[1], Julia Jin[1], Jaime Bernstein[1], and Jason Spector[1,2]
[1]*Weill Cornell Medical College, New York, NY,* [2]*Nancy E. and Peter C. Meinig School of Bioengineering, Cornell University, Ithaca, NY*

Track: Cancer Technologies

Metastasis, Dormancy & Treatment Response

TH-230
Substratum Stiffness and Cancer Cell Dormancy
Alisya Anlas[1] and Celeste Nelson[1]
[1]*Princeton University, Princeton, NJ*

TH-231
High-Frequency Irreversible Electroporation Selectively Kills Tumor-Initiating Cells in Ovarian Cancer
Andrea Rolong[1], Eva Schmelz[1], and Rafael Davalos[1]
[1]*Virginia Tech, Blacksburg, VA*

TH-232
Platelet Decoys: Novel Cellular Therapeutic Approach to Target the Metastatic Cascade
Anne-Laure Papa[1], Netanel Korin[1], Michelle B Chen[2], Abhishek Jain[1], Anna Waterhouse[1], Amina Rahimi[1], Emma Nash[1], Roger D. Kamm[2,3], and Donald E. Ingber[1,4,5]
[1]*Wyss Institute for Biologically Inspired Engineering, Harvard University, Boston, MA,* [2]*Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, MA,* [3]*Department of Biological Engineering, Massachusetts Institute of Technology, Cambridge, MA,* [4]*Vascular Biology Program and Dept. of Surgery, Boston Children's Hospital and Harvard Medical School, Boston, MA,* [5]*Harvard John A. Paulson School of Engineering and Applied Sciences, Harvard University, Cambridge, MA*

TH-233
Alterations in Adhesion: Critical Step in Developing Chemoresistant Ovarian Cancer
Deepraj Ghosh[1], Carolina Mejia Pena[1], and Michelle Dawson[1]
[1]*Brown University, Providence, RI*

TH-234
Ethanol and HIFU Revert Prostate Cancer Cells to a Healthy Phenotype via ROS Production and NF- B Blockage
Emma Bortz[1], Heng Yu[1], Hakm Murad[1], and Damir Khismatullin[1]
[1]*Tulane University, New Orleans, LA*

TH-235
ERK1/2-driven Sprouty2 Expression Mediates Resistance to Receptor Tyrosine Kinase Inhibitors in Glioblastoma
Evan Day[1,2] and Matthew Lazzara[1]
[1]*University of Virginia, Charlottesville, VA,* [2]*University of Pennsylvania, Philadelphia, PA*

TH-236
Molecular Mechanisms of Emergent Drug Resistance of Colon Cancer Cells in 3D Tumor Models
Pradip Shahi Thakuri[1], Gary Luker[2], and Hossein Tavana[1]
[1]*The University of Akron, Akron, OH,* [2]*University of Michigan, Ann Arbor, MI*

TH-237
The Immunological Microenvironment of a Synthetic Pre-Metastatic Niche That Captures Early Metastatic Cells
Robert Oakes[1], Shreyas Rao[2], Grace Bushnell[1], Joseph Decker[1], Yining Zhang[1], Matthew Hall[1], Rachel Dudek[1], Jacqueline Jeruss[1], and Lonnie Shea[1]
[1]*University of Michigan, Ann Arbor, MI,* [2]*The University of Alabama, Tuscaloosa, AL*

Track: Cancer Technologies

Microfluidic Cancer Models

TH-238
A Microfluidic Device for Controlled Cell Placement and 1D Migration on Biomimetic Structures
Colin Hisey[1], Oihane Mitxelena-Iribarren[2], Miguel Martínez-Calderón[2], Sergio Arana[2], Maite Mujika[2], Santiago Olaizola[2], and Derek Hansford[1]
[1]*The Ohio State University, Columbus, OH,* [2]*CEIT-IK4 & Tecnun, Donostia-San Sebastián, Spain*

TH-239
A Stationary Microfluidic Approach to Circulating Tumor Cell Isolation from Whole Blood
Ileana Pirozzi[1], Adam Snider[1], and Anubhav Tripathi[1]
[1]*Brown University, Providence, RI*

TH-240
Real Time Analysis of the Role of Pericellular Matrix in Metastatic Extravasation and Invasion of Breast Cancer Epithelial Cells within a Microfluidic Platform
Marie-Elena Brett[1], Heather Bomberger[1], Geneva Doak[1], Matthew Price[1], James McCarthy[1], and David Wood[1]
[1]*University of Minnesota, Minneapolis, MN*

TH-241
Engineered Microfluidic Bioreactor For Examining The Three-Dimensional Breast Tumor Microenvironment
Matthew Rogers[1,2,3], Tammy Sobolik[3], David Schaffer[2,4], Phil Samson[2], Andrew Johnson[3,5], Phil Owens[3,5], John Wikswo[2,4], and Ann Richmond[3,5]
[1]*SyBBURE-Searle Undergraduate Research Program, Nashville, TN,* [2]*Vanderbilt Institute of Integrative Biosystems Research and Education, Nashville, TN,* [3]*Vanderbilt University School of Medicine, Nashville, TN,* [4]*Vanderbilt University, Nashville, TN,* [5]*U.S. Department of Veterans' Affairs, Nashville, TN,* [6]*Department of Veterans' Affairs, Nashville, TN*

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TH-242
High-throughput Cancer Drug Screening for Migratory Cancer Cells

Qionghua Shen[1], Young-tae Kim[1], Zaid Haddadin[1], Sandra Miller[1], Kelly Lim[1], and Hnaspeter Niederstrasser[2]
[1]*University of Texas at Arlington, Arlington, TX,*
[2]*UT southwestern Medical Center, Dallas, TX*

TH-243
Developing 3D Tumor Construct in Microfluidic Systems for Translational Applications

Shiny Rajan[1,2], Andrea Mazzocchi[1,2], Konstantinos I. Votanopoulos[3,4], Aleksander Skardal[1,2,4], and Adam R. Hall[1,2,4]
[1]*Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC,* [2]*Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC,* [3]*Wake Forest Baptist Medical Center, Department of Surgery-Surgical Oncology, Winston-Salem, NC,* [4]*Comprehensive Cancer Center at Wake Forest Baptist Medical, Winston-Salem, NC*

TH-244
Flow Induces Epithelial-mesenchymal Transition (EMT) in Dynamic Bioengineered Lung Cancer Microenvironment

Vigneshwaran Mani[1], Zhonglin Lyu[2], Baris Ercal[3], Ramasamy Paulmurugan[1], and Utkan Demirci[1]
[1]*Stanford University, Palo Alto, CA,* [2]*Stanford University, Stanford, CA,* [3]*Stanford University, Kayseri, CA*

Track: Cancer Technologies
Cancer Technologies–Other / Non-specified

TH-245
Effect of Low Dose X-Ray Radiation on Cells *In Vitro*

Katelyn Truong[1], Suzanne Bradley[1], Bryana Baginski[1], Endre Takacs[1], and Delphine Dean[1]
[1]*Clemson University, Clemson, SC*

TH-246
Investigating the Effects of Cold Atmospheric Plasma on Cervical Cancer

Nicole Sova[1], Yonry Zhu[1], Ariel Lanier[1], Quinn Mitchell[1], Amir Farnoud[1], David Burnette[1], and Monica Burdick[1]
[1]*Ohio University, Athens, OH*

TH-247
Quantitative Analysis of the Epidermal Necrosis in Cutaneous Radiation Injuries and Radiation Dermatitis Induced by Beta-Source Irradiation

Olga Pen[1], Peter Antinozzi[2], Nancy Kock[2], and J. Daniel Bourland[1,2]
[1]*Virginia Tech-Wake Forest University SBES, Winston-Salem, NC,* [2]*Wake Forest University, Winston-Salem, NC*

Tracks: Tissue Engineering, Cellular and Molecular Bioengineering
Engineering Multi-Cellular Systems

TH-248
An Integrated Gut-Liver Model to Assess Chemical Toxicity *In Vitro*

Anjaney Kothari[1], Rebekah Less[1], and Padma Rajagopalan[1]
[1]*Virginia Tech, Blacksburg, VA*

TH-249
Novel Muscle-powered Machine Design for Integrating a Motor Neuronal Central Actuating Unit

Gelson Pagan-Diaz[1], Yongdeok Kim[1], Caroline Cvetkovic[1], and Rashid Bashir[1]
[1]*University of Illinois, Urbana-Champaign, Urbana, IL*

TH-250
3D Biomimetic Blastema Model to Study Epimorphic Regeneration

Lina Quijano[1] and Taby Ahsan[1]
[1]*Tulane University, New Orleans, LA*

TH-251
Influence of Endothelial Cells on Mesenchymal Stem Cell Osteogenesis in Co-Culture Systems

Nicholas Schott[1], Ramkumar T-Annamalai[1], and Jan Stegemann[1]
[1]*The University of Michigan, Ann Arbor, MI*

TH-252
Tissue Engineered Bone as a Model for Cancer Metastasis

Vera Mayo[1], Siddarth Rawal[1], Diego Correa[1], Diego Correa[1], and Ashutosh Agarwal[1]
[1]*University of Miami, Miami, FL*

TH-253
***In Vitro* Fabrication of 3D Tissues with Spatial Organization of Heterogeneous Cells via Microsphere-Enabled Modular Strategy**

Weiwei Wang[1]
[1]*Stevens Institution of Technology, Hoboken, NJ*

TH-254
Brain-on-a-chip for Traumatic Brain Injury Drug Discovery

Anton Omelchenko[1], Rene Schloss[1], Jeffrey Zahn[1], Martin Yarmush[1], and Bonnie Firestein[1]
[1]*Rutgers University, Piscataway, NJ*

TH-255
Manipulating Quorum Sensing Signals in a Consortia

Kristina Stephens[1], Chen-Yu Tsao[1], Pricila Hauk[1], and William Bentley[1]
[1]*University of Maryland, College Park, MD*

TH-256
Assessing the Role of Dietary Factors and Inflammation on Gut Permeability

Mridu Malik[1], Laura Musselman[1], and Gretchen Mahler[1]
[1]*Binghamton University, Binghamton, NY*

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Track: Stem Cell Engineering
Engineering Organoid Development & Morphogenesis

TH-257
A Computational Model to Capture Gastrulation-like Patterning in 2D and 3D Cell Constructs: A First Step Towards Developing a Quantitatively Verified Roadmap for Tissue Development *Ex Vivo*

Himanshu Kaul[1], Geoff Clarke[1], Christopher McFaul[1], Mukul Tewary[1], Christopher Yip[1], and Peter Zandstra[1]
[1]*University of Toronto, Toronto, ON, Caneda*

TH-258
Generation of Biliary Organoids with Mesenchymal Niche from Human Induced Pluripotent Stem Cells

Jeremy Velazquez[1], Warner Kostes[1], Suyen Go[1], Swechchha Pradhan[1], Samira Kiani[1], Jorge Rakela[2], and Mo Ebrahimkhani[1,2]
[1]*Arizona State University, Tempe, AZ,* [2]*Mayo Clinic, Phoenix, AZ*

Track: Tissue Engineering
Engineering Replacement Tissues

TH-259
3D-Printed Cost-Effective Bioreactor Increases Accessibility and Design Flexibility for Tissue Engineering

Brittany Banik[1] and Justin Brown[1]
[1]*The Pennsylvania State University, University Park, PA*

TH-260
Synthesis of Hydroxyapatite Particles as a Novel Treatment to Osteoporosis

Dominic Romero[1], David Grant[1], and Sheila Grant[1]
[1]*University of Missouri-Columbia, Columbia, MO*

TH-261
The Endothelial Cell Secrotome Differentially Affects the Proliferation and Differentiation of Dysfunctional Skeletal Muscle Satellite Cells

Francisca Acosta[1], Rebekah Rodriguez[1], Sarah Stagg[1], and Christopher Rathbone[1]
[1]*The University of Texas at San Antonio (UTSA), San Antonio, TX*

TH-262
Nanotechnology-based Reprogramming of Diabetic Tissue Resolves Local Vasculopathy

Natalia Higuita-Castro[1], Alec Sunyecz[1], Jordan Moore[1], Richard Stewart[1], William Lawrence[1], Durba Pal[1], Chandan K. Sen[1], Savita Khanna[1], and Daniel Gallego-Perez[1]
[1]*The Ohio State University, Columbus, OH*

TH-263
Nano-Fiber Hydrogel Grafts for Ligament Repair

Nicolas Mann[1], Samantha Glanville[1], Isabelle Moderski[1], and Vince Beachley[1]
[1]*Rowan University, Glassboro, NJ*

TH-264
Induced Healing of Damaged Skeletal Muscle Restores Function of a Bio-hybrid Machine

Ritu Raman[1], Lauren Grant[2], Yongbeom Seo[2], Caroline Cvetkovic[2], Michael Gapinske[2], Alexandra Palasz[2], Howard Dabbous[2], Hyunjoon Kong[2], Pablo Perez-Pinera[2], and Rashid Bashir[2]
[1]*Massachusetts Institute of Technology, Cambridge, MA,*
[2]*University of Illinois at Urbana-Champaign, Urbana, IL*

TH-265
***In Situ* Tissue Regeneration Using Acellular Electroactive Scaffolds**

Samerender Nagam Hanumantharao[1], Srinivas Kannan[1], Meghan Friske[1], and Smitha Rao[1]
[1]*Michigan Technological University, Houghton, MI*

TH-266
Pro-angiogenic Factor Stimulation on Tissue Engineered Constructs

Sarah Grace Dennis[1], Heather Bainbridge[2], Sanket Pattanaik[2], and Michael Yost[2]
[1]*Clemson University, Charleston, SC,* [2]*Medical University of South Carolina, Charleston, SC*

TH-267
Expedited Tissue Engineered Muscle Construct Formation

Sarah Stagg[1], Rebekah Rodriguez[1], Francisca Acosta[1], and Christopher Rathbone[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

TH-268
Transplantation of Conformal Coated Islets of Langerhans: A Computational Model of *In Vivo* Glucose Transport and Insulin Release

Vita Manzoli[1,2], Filippo Consolo[2,3], Andrea Dossena[2], Annalisa Dimasi[2], Laura Morales[4], Mary Beggs[4], Diana Velluto[1], Alice A. Tomei[1,4], and Alberto C. Redaelli[2]
[1]*University of Miami, Miami, FL,* [2]*Politecnico di Milano, Milano, Italy,* [3]*Universita' Vita Salute San Raffaele, Milano, Italy,* [4]*University of Miami, Coral Gables, FL*

TH-269
Biomimetic Cytotoxic Dermatitis Model by 3D Bioprinting

Wonhye Lee[1], Shuyun Xu[1], Joo Yeon Ko[1], Anna Mandinova[2], Thiago J. Borges[1], Leonardo V. Riella[1], Bohdan Pomahac[1], George F. Murphy[1], Christine G. Lian[1], and Seung-Schik Yoo[1]
[1]*Brigham and Women's Hospital, Harvard Medical School, Boston, MA,*
[2]*Massachusetts General Hospital, Boston, MA*

TH-272
Hydro-nanofiber Mesh for Fibroblast 3D Cultivation

Young Ju Son[1], Wei Mao[1], Myun Koo Kang[1], Sol Lee[1], Jiun Shin[1], and Hyuk Sang Yoo[1]
[1]*Kangwon National University, Chuncheon, Korea, Republic of*

POSTER SESSION–THURSDAY

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Tracks: Stem Cell Engineering, Biomaterials

Engineering the Stem Cell Microenvironment

TH-273
Large Scale Expansion and Differentiation of Human Pluripotent Stem Cell-Derived Neural Progenitor Cells
Gayathri Srinivasan[1], Divya Varun[1], Daylin Morgan[1], Nicholas Walker[1], and David Brafman[1]
[1]*Arizona State University, Tempe, AZ*

TH-274
Modulation of Stem Cell Behavior: Nanotopography vs. Adhesive Ligands
KAI WANG[1] and Yong Yang[1]
[1]*West Virginia University, Morgantown, WV*

TH-275
Inflammatory Cytokines Influences Osteogenic Differentiation of Stem Cells
Kegan Sowers[1], Arth Shah[1], Kelly Hotchkiss[1], and Rene Olivares-Navarrete[1]
[1]*Virginia Commonwealth University, Richmond, VA*

TH-276
Risky Human Pluripotent Stem Cell Clones Are Revealed by a Single Cell Culture Platform
Leqian Yu[1,2]
[1]*Department of Micro Engineering, Kyoto university, Kyoto, Japan,* [2]*Institutes for Integrated Cell-Material Sciences (WPI-iCeMS), Kyoto University, Japan, Kyoto, Japan*

TH-277
Engineering a Myogenic Stem Cell Niche Through Super-Soft Lithography of Hydrogels
Daniel Stewart[1], Manashwi Ramanathan[1], Christina Pacak[1], and Chelsey Simmons[1]
[1]*University of Florida, Gainesville, FL*

TH-278
3D Hyaluronic Acid Based Hydrogel Constructs for Directed Differentiation of Human Pluripotent Stem Cells
Jesse Liang[1], Alireza Sohrabi[1], Weikun Xiao[1], Carolyn Kim[1], Peipei Lyu[1], and Stephanie Seidlits[1]
[1]*University of California, Los Angeles, Los Angeles, CA*

TH-279
Bio-inspired Electroconductive Hyaluronic Acid Hydrogel for Human Neural Stem Cell Engineering
Jisoo Shin[1], Eun Jung Choi[2], Changsik Song[2], and Seung-Woo Cho[1]
[1]*Yonsei University, Seoul, Korea, Republic of,* [2]*Sungkyunkwan University, Suwon, Korea, Republic of*

TH-280
Direct Reprogramming of Fibroblasts into Muscle by Controlled Release of Chemicals
Jun Fang[1], Jaekyung Koh[1], Dino Carlo[1], and Song Li[1]
[1]*University of California, Los Angeles, Los Angeles, CA*

TH-281
Assessing the Effect of Crosstalk between Human Mesenchymal Stem Cells and Human Umbilical Vein Endothelial Cells on a Peptide Amphiphile Scaffold on Osteogenesis and Angiogenesis
Lily Deng[1], Dhruv Patel[1], Jeremy Vines[1], Jun Chen[1], Catherine Porter[1], Grant Alexander[1], David Chesteen-Boyd[1], Yi-Ping Li[1], Amjad Javed[1], Shawn Gilbert[1], Kyounga Cheon[1], and Ho-Wook Jun[1]
[1]*University of Alabama at Birmingham, Birmingham, AL*

TH-282
Decellularized Bone Marrow Extracellular Matrix: a Novel Material for Studying Cell-Matrix Interactions
Rebecca Goldstein[1], Connor Healy [1], and Tara Deans[1]
[1]*University of Utah, Salt Lake City, UT*

Track: Tissue Engineering

Engineering Tissue Interfaces

TH-283
Development of a Novel Fibrin Poly-Dopamine Composite Hydrogel for Marine Applications
Ariana Tyo[1], Weilue He[1], Bruce Lee[1], and Rupak Rajachar[1]
[1]*Michigan Technological University, Houghton, MI*

TH-284
The Development of Spatially Heterogeneous Silk-cECM Scaffolds for Use as 3D *In Vitro* Models of the Interaction Between Stem Cells and Infarcted Myocardium
Breanna M Duffy[1], Whitney L Stoppel[1], Kelly Giachetto[2], David L Kaplan[1], and Lauren D Black, III[1]
[1]*Tufts University, Medford, MA,* [2]*Amgen Inc., Cambridge, MA*

TH-285
A 3D Printed Microfluidic Bioreactor to Engineering Biphasic Construct: Modelling and Experimental Validation
Giulio De Riccardis[1], Peter Alexander[2], Manuela Raimondi[1], Rocky Tuan[2], and Riccardo Gottardi[2]
[1]*Politecnico di Milano, Milano, Italy,* [2]*University of Pittsburgh, Pittsburgh, PA*

TH-286
3-D Physiomimetic Porcine ECM Hydrogels Promotes the Intra-Islet Vascular Cell Proliferation and Function of Rodent and Human Islets
Kaiyuan Jiang[1], Deborah Chaimov[1], Jiapu Liang[1], Smit Patel[1], and Cherie Stabler[1]
[1]*University of Florida, Gainesville, FL*

TH-287
Stent-Grafts with Novel Electrospun Magnetic Material and Bare Metal Stent Capable of Cell Capture
Susheil Uthamaraj[1], Joshua Choe[1], Brandon Tefft[1], Amir Lerman[1], Dan Dragomir-Daescu[1], and Gurpreet Sandhu[1]
[1]*Mayo Clinic, Rochester, MN*

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Track: Tissue Engineering

Printing and Patterning in Tissues

TH-288
Finding the Optimum Microenvironmental Factors to Engineer Cardiac Tissues
Ahmad Alassaf[1], Vera Mayo[1], Divya Bhansali[1], and Ashutosh Agarwal[1,2]
[1]*Department of Biomedical Engineering, University of Miami, Miami, FL,* [2]*Department of Pathology, University of Miami, Miami, FL*

TH-289
Photo-Crosslinkable Furfuryl-Gelatin as a Novel Bioink for 3D Bioprinting of Cardiac Tissue
Alok Kumar[1], Shweta Anil Kumar[1], Shinhye Park[2], Yoshihiro Ito[2], and Binata Joddar[1]
[1]*University of Texas at El Paso, El Paso, TX,* [2]*RIKEN, Wako-shi, Japan*

TH-290
Assessment of Angiogenesis and Cell Survival of a Bio-Printed Implant in an Animal Model
Beu Oropeza[1], Luis Solis[1], Valeria Altamirano[1], Daisy Alvarado[1], Jesus Castor[1], Jesus Cedeno[1], Dante Chaparro[1], Octavio Cordova[1], Isaac Deaguero[1], Erwin Delgado[1], Michael Furth[1], Mario Garcia[1], Mirsa Gonzalez[1], Alba Leyva[1], Emilio Loera[1], Gisela Lopez[1], Fernanda Lugo[1], Tania Miramontes[1], Erik Munoz[1], Paola Rodriguez[1], Carlos Serna[1], Leila Subia[1], Arahim Zuniga[1], and Thomas Boland[1]
[1]*University of Texas El Paso, El Paso, TX*

TH-291
3D Bioprinted Human Skin Models with RGD Modified Alginate-Nanocellulose Bioink
Hector Martinez[1], Evita Ning[2], Linnea Orrhult[3], Patrick Thayer[1], Erik Gatenholm[1], and Paul Gatenholm[3]
[1]*CELLINK LLC, Blacksburg, VA,* [2]*University of Strathclyde, Glasgow, United Kingdom,* [3]*Chalmers University, Gothenburg, Sweden*

TH-292
Surface Acoustic Waves Grant Superior Spatial Control of Cells Embedded in Hydrogel Fibers
Joseph Rufo[1], James Lata[2], Feng Guo[2], Po-Hsun Huang[2], Jian Yang[2], and Tony Huang[1]
[1]*Duke University, Durham, NC,* [2]*The Pennsylvania State University, University Park, PA*

TH-293
384-Pillar Plate for Assessing Metabolism-Induced Toxicity with 3D Printed Cells
Kyeong-Nam Yu[1], Soo-Yeon Kang[1], Pranav Joshi[1], and Moo-Yeal Lee[1]
[1]*Cleveland State University, Cleveland, OH*

TH-294
Leaf-inspired Microcontact Printing Vascular Patterns
Lian Wong[1], Jonathan Pegan[2], Michelle Khine[2], and Kara McCloskey[1]
[1]*UC Merced, Merced, CA,* [2]*UC Irvine, Irvine, CA*

TH-295
Spatial Micropatterning of Growth Factors in Hydrogels for Regulation of Encapsulated Cell Behaviors
Oju Jeon[1], Keewon Lee[1], and Eben Alsberg[1]
[1]*Case Western Reserve University, Cleveland, OH*

TH-296
Four Dimensional (4D) Printing of Dynamic Architecture for Tissue Engineering
Shida Miao[1], Haitao Cui[1], Margaret Nowicki[1], Se-jun Lee[1], Xuan Zhou[1], Wei Zhu[1], and Lijie Grace Zhang[1]
[1]*George Washington University, Washington, DC*

TH-297
Nanocomposite Hydrogels for Printing Three-Dimensional Tissue Constructs
SuRyon Shin[1]
[1]*Harvard Medical School, Cambridge, MA*

Track: Tissue Engineering

Tissue Engineering–Other/Non-Specified

TH-298
Non-destructive Evaluation of Engineered Cartilage Damage by Sliding Shear using Ultrasound
Mostafa Motavalli[1], Jim Berilla[1], James Dennis[2], Arnold Caplan[1], Joseph Mansour[1], and Jean Welter[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Baylor College of Medicine, Houston, TX*

TH-300
Nanotopographical Manipulation of Astrocyte Adhesion and GFAP Immunoreactivity
Devan Puhl[1], Christopher Johnson[1], Manoj Gottipati[1,2], Diana-Andra Borca-Tasciuc[1], and Ryan Gilbert[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*Ohio State University, Columbus, OH*

TH-301
Specific MicroRNAs Act as a Feedback Loop in Regulating Chondrocyte Maturation and Proliferation
Niels Asmussen[1], Michael McClure[1], Zhao Lin[1], Allison Ramey[1], Sharon Hyzy[3], Zvi Schwartz[1,2], and Barbara Boyan[1,3]
[1]*Virginia Commonwealth University, Richmond, VA,* [2]*The University of Texas Health Science Center at San Antonio, San Antonio, TX,* [3]*Georgia Institute of Technology, Atlanta, GA*

TH-302
Detection of Molecular Markers Which Stimulate EMT and Migration in Cells
Tamara Hill[1], Rami Barakat[1], Loan Bui[1], Sayem Bhuiyan[1], Sandra Miller[1], Viviana Casas Iberico[1], and Young-tae Kim[1]
[1]*University of Texas at Arlington, Arlington, TX*

Track: Cellular and Molecular Bioengineering

Experimental and Computational Studies of Mechanotransduction

TH-303
Modification of Fluidity and Shear-Mediated Activation of Platelets by Exogenous Fatty Acids
Alice Sweedo[1], Malithi Fonseka[1], Siu Leung[2], Scott Saavedra[1], and Marvin Slepian[1]
[1]*University of Arizona, Tucson, AZ,* [2]*The Pennsylvania State University, University Park, PA*

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TH-304
Mechanotransmission in Endothelial Cells Subjected to Oscillatory and Multidirectional Shear Flow
Mahsa Dabagh[1], Payman Jalali[2], Peter Butler[3], Amanda Randles[1], and John Tarbell[3]
[1]*Duke University, Durham, NC,* [2]*Lappeenranta University of Technology, Finland,* [3]*The Pennsylvania State University, University Park, PA,* [4]*The City College of New York, New York, New York, NY*

TH-306
FLNa Mechanotransduction in Cells Under Microfluidic Shear Flow Measured with Traction Force Microscopy
Rosa Kaviani[1], Chris Sitaras[1], Haruka Yoshie[1], and Allen Ehrlicher[1]
[1]*McGill University, Montreal, QC, Canada*

TH-307
A Computational and Experimental Study of Water and Ion Transport in a Human Cell Culture Model of the Alveolar Epithelium
Shelley Fong[1], Hui Ren[1], James Sneyd[1], Nigel Birch[1], and Vinod Suresh[1]
[1]*University of Auckland, Auckland, New Zealand*

TH-308
Assessment of Ca2+ Sensitivity of Force Generation in Intact Airway Smooth Muscle Using Phase Loop Plots
Young Han[1], Sara Osorio[1], and Gary Sieck[1]
[1]*Mayo Clinic, Rochester, MN*

Track: Cellular and Molecular Bioengineering
Gene Delivery and Genome Bioengineering

TH-309
Efficient Correction of the Sickle Allele in Patient Hematopoietic Stem Cells
Ciaran Lee[1], So Hyun Park[1], Yankai Zhang[2], Vivien Sheehan[2], and Gang Bao[1]
[1]*Rice University, Houston, TX,* [2]*Baylor College of Medicine, Houston, TX*

TH-310
Protective Effects of Micro RNA-122 in Rat Articular Chondrocytes in an In Vitro Osteoarthritis Model
Kayla Scott[1], Aniket Kulkarni[2], Zvi Schwartz[3], and Barbara Boyan[1]
[1]*Virginia Commonwealth University, Richmond, VA,*
[2]*Virginia Commonwealth University, Glen Allen, VA,*
[3]*Virginia Commonwealth University, Richmond, VA*

TH-311
Programmable DNA Isolation Aided Nanopore Sequencing
Kylie Standage-Beier[1], Philippe Faucon[1], Parithi Balachandran[1], and Xiao Wang[1]
[1]*Arizona State University, Tempe, AZ*

TH-312
Epigenomic Approaches to Analyze Role Of Topoisomerase IIbeta On Neural Development
Misaal Patel[1], Jeremy Anderson[1], Yi Lisa Lyu[1], and Li Cai[1]
[1]*Rutgers University, Piscataway, NJ*

TH-313
Disruption of CD109 in HUVECs using CRISPR/Cas9
Mithil Chokshi[1], Ciaran Lee[1], and Gang Bao[1]
[1]*Rice University, Houston, TX*

TH-314
Discovery and Characterization of SUMOylation Site of NS1 Protein in Influenza Viral Life Cycle using FRET Technology
Zhehao Xiong[1], Jin Jiang[1], Xuefeng Dong[1], and Jiayu Liao[1]
[1]*University of California, Riverside, Riverside, CA*

Track: Stem Cell Engineering
Hematopoietic Stem Cell Engineering

TH-315
Imaging-Based Fate Tracking for *In Vitro* Cultures of Hematopoietic Stem Cells
Hao Zhou[1], Gabriel Rocha[2], Lisa Nguyen[2], Daniel Yen[1], Rong Lu[1,2,3], and Keyue Shen[1,2,3]
[1]*Department of Biomedical Engineering, University of Southern California, Los Angeles, CA,* [2]*Department of Stem Cell Biology and Regenerative Medicine, University of Southern California, Los Angeles, CA,* [3]*Norris Comprehensive Cancer Center, University of Southern California, Los Angeles, CA*

TH-316
Local Myeloid Expansion of Hematopoietic Stem and Progenitor Cells to Treat *Staph-aureus* Infections
Leif Anderson[1], Lloyd Miller[2], and Scott Simon[1]
[1]*UC Davis, Davis, CA,* [2]*The Johns Hopkins University School of Medicine, Baltimore, MD*

Track: Stem Cell Engineering
Stem Cell Engineering–Other/Non-Specified

TH-317
Using Bioengineering Approaches to Investigate the Mechanism of a Multi-State Model of WNT Signaling
Joshua Cutts[1] and David Brafman[1]
[1]*Arizona State University, Tempe, AZ*

TH-318
Personalized Medicine for Rare Diseases: Towards Modeling Limb-Girdle Muscular Dystrophies Using Induced Pluripotent Stem Cells
Lila Habib[1], Rudolf Jaenisch[2], Maya Mitalipova[2], John John[3], Jasem Al-Hashel[4], and Eman Al-Jumah[4]
[1]*Kuwait University, Jabriya, Kuwait,* [2]*Massachusetts Institute of Technology, Cambridge, MA,* [3]*Ibn Sina Hospital, Shuwaikh, Kuwait,* [4]*Mubarek Al-Kabeer Hospital, Jabriya, Kuwait*

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Track: Biomaterials
Hydrogel Biomaterials

TH-319
Culturing Mucoadhesive Hydrogels from Engineered Biofilm Matrix Proteins
Anna Duraj-Thatte[1], Noemie-Manuelle Dorval Courchesne[1], Jarod Rutledge[1], Pichet Praveschotinunt[1], and Neel Joshi[1]
[1]*Harvard University, Boston, MA*

TH-320
Engineering Hydrogels to Treat Obesity
Christine Chang[1], Ana Ordonez[1], Abbey Cutchin[1], and Daniel Hart[1]
[1]*Stanford University, Stanford, CA*

TH-321
Effect of pH and Salt on Rheological Properties of RADA16 Self-Assembled Peptide Hydrogel
Elton Aleksi[1] and Eun Seok Gil[1]
[1]*3-D Matrix, Waltham, MA*

TH-322
Delivery of Single-Walled Carbon Nanotube Sensors to Quantify Nitric Oxide
Eric Hofferber[1], Mitchell Kuss[2], Joseph Stapleton[1], Janelle Adams[1], Sophie Walsh[1], Bin Duan[2], and Nicole Iverson[1]
[1]*University of Nebraska-Lincoln, LINCOLN, NE,* [2]*University of Nebraska Medical Center, Omaha, NE*

TH-323
Colorimetric Oxidative Stress Indicator for Wound Dressings
Eunice Leong[1] and Hyunjoon Kong[1]
[1]*University of Illinois, Urbana-Champaigr, Urbana, IL*

TH-324
Photothermal Wound Sealing Using Collagen-Silver Nanoplates Composite
Inam Ridha[1], Russell Urie[1], John Popovich [1], Sheba Goklany[1], Jacquelyn Kilbourne[1], Shelley Haydel[1], and Kaushal Rege[1]
[1]*Arizona State University, Tempe, AZ*

TH-325
Modulating Mechanical Properties of Extracellular Matrix Composites Via Lignin Incorporation
Jorge A. Belgodere[1], Syed A. Zamin[1], and Jangwook P. Jung[1]
[1]*Biological and Agricultural Engineering, LSU, Baton Rouge, LA*

TH-326
Engineering Dynamic Reversible PEG Hydrogels Using Light-sensing Proteins
Joshua Hammer[1], Ryan Schweller[1], and Jennifer West[1]
[1]*Duke University, Durham, NC*

TH-327
MMP-deactivating Contact Lens for Corneal Melting
Kyung Jae Jeong[1] and Jung-Jae Lee[2]
[1]*University of New Hampshire, Durham, NH,*
[2]*University of Colorado Denver, Denver, CO*

TH-328
Cell-Imprinted Hydrogel for Capture and Release of Circulating Tumor Cells
Lukuan Liu[1], Kaiguang Yang[1], Senwu Li[1], Xiao Li[1], Baofeng Zhao[1], Lihua Zhang[1], and Yukui Zhang[1]
[1]*Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian, China, People's Republic of*

TH-329
Hyaluronic Acid-Based Hydrogels with Simultaneously Tunable Mechanical and Bioactive Properties
Madison Godesky[1] and David Shreiber[1]
[1]*Rutgers, The State University of New Jersey, Piscataway, NJ*

TH-330
Ag@silica-Entrapped Hydrogel Microarray: Enhanced Fluorescence from the Metal for Protein Assay System
Minsu Kim[1], Kanghee Cho[1], Byoungyong Yoo[1], Jae Sang Lee[1], So Young Noh[1], Hye Yeon Gong[1], and Won-Gun Koh[1]
[1]*Yonsei University, Seoul, Korea, Republic of*

TH-331
A Two-step Method for Transferring Single Wall Carbon Nanotubes onto a Hydrogel Substrate
Mozhdeh Imaninezhad[1], Irma Kuljanishvili[2], and Silviya Zustiak[1]
[1]*Saint Louis University, St Louis, MO,* [2]*Saint Louis University, Saint Louis University, MO*

TH-332
Mussel-Inspired Wet Tissue Adhering Nanocomposites for Diabetic Foot Ulcer Treatment
Nikhil Pandey[1], Valinda Jones[1], Andres Urias[1], Yi Hong[1], and Kytai Nguyen[1]
[1]*University of Texas at Arlington, Arlington, TX*

TH-333
A New Class of Mechanically Robust Triazole-Zwitterionic Hydrogels with Foreign Body Response (FBR)-Resistant Property
Qingsheng Liu[1] and Minglin Ma[2]
[1]*Cornell University, ithaca, NY,* [2]*Cornell University, Ithaca, NY*

TH-334
Generating Composite Patterned Hydrogels Mechanically Faithful to Biological Tissue
Shail Mehta[1] and K. Jane Grande-Allen[1]
[1]*Rice University, Houston, TX*

TH-335
An Injectable and Self-healing Hydrogel for Cranial Bone Repair
Shaoyu Lü[1] and Xiao Bai[1]
[1]*Lanzhou University, Lanzhou, China, People's Republic of*

TH-336
Injectable Microporous Gelatin Hydrogel for Wound Healing
Shujie Hou[1], Rachel Lake[1], and Kyung Jae Jeong[1]
[1]*University of New Hampshire, Durham, NH*

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Track: Tissue Engineering

Immunoengineering and Immunomodulation in Tissue Engineering

TH-337
Enhanced Cellular Penetration into "Porous" Fibrous Implants Modulates the Immune Response *In Vivo*
Azadeh Timnak[1], Nahyun Son[1], Lindsey L. Yam[1], Yah-el Har-el[1,2], and Peter I. Lelkes[1,2]
[1]*Temple University, Philadelphia, PA,* [2]*Temple Institute for Regenerative Medicine and Engineering (TIME), Philadelphia, PA*

TH-338
Engineering an Immunomodulating and Adhesive Hydrogel for Diabetic Wound Healing
Bahram Saleh[1], Harkiranpreet Kaur Dhaliwal[1], Ehsan Shirzaei Sani[1], Mansoor Amiji[1], and Nasim Annabi[1]
[1]*Northeastern University, Boston, MA*

TH-339
Isolation and 3D Culture of Lymph Node Fibroblastic Reticular Cells to Restore Self-tolerance
Freddy Gonzalez[1,2], Maria Abreu[1], Vita Manzoli[1,3], Diana Velluto[1], and Alice Tomei[1,2]
[1]*Diabetes Research Institute – University of Miami, Miller School of Medicine, Miami, FL,* [2]*Department of Biomedical Engineering - University of Miami, Coral Gables, FL,* [3]*Department of Electronics, Information and Bioengineering – Politecnico di Milano, Milano, Italy*

TH-340
Identification of Immunosuppressive (ifn ε-Stimulated) MSC Morphological Subpopulations Using viSNE, A Tool for Visualizing Cellular Heterogeneity
Ross Marklein[1], Matthew Klinker[1], Katherine Drake[2], Hannah Polikowsky[2], Jessica Lo Surdo[3], and Steven Bauer[1]
[1]*U.S. Food and Drug Administration, Silver Spring, MD,* [2]*Cytobank, Inc., Santa Clara, CA,* [3]*Bristol-Myers Squibb, Syracuse, NY*

TH-341
Micro- and Nano-engineered Surfaces Modulate the Phenotype of Blood-derived Cells: Applications in Regenerative Medicine
Silvia Duarte-Sanmiguel[1], Natalia Higuita-Castro[1], Lilibeth Ortega-Pineda[1], and Daniel Gallego-Perez[1]
[1]*The Ohio State University, Columbus, OH*

Tracks: Cardiovascular Engineering, Stem Cell Engineering

Cardiovascular Regeneration and Stem Cells

TH-342
Optimization of Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes for Tissue Engineering and Disease Modeling
Aylin Acun[1], Adam Braegelman[1], Trung Dung[1], and Pinar Zorlutuna[1]
[1]*University of Notre Dame, South Bend, IN*

TH-343
Mimicking Embryological Vascular Development in Liposome-Laden Hydrogels
Cody Crosby[1], Christine Wei[1], David Shu[1], and Janet Zoldan[1]
[1]*The University of Texas at Austin, Austin, TX*

TH-344
The Role of Collagen and 5-azacytidine in the Secretion of Cardiac Secretome by Human Bone Marrow Derived Mesenchymal Stem Cells
Jyotsna Joshi[1] and Chandra Kothapalli[1]
[1]*Cleveland State University, Cleveland, OH*

TH-345
Assessment of Mitochondrial Clearance in a Human Induced Pluripotent Stem Cell Model of Diabetic Cardiomyopathy
Hye Ryeong Bae[1], Sang-Ging Ong[2], Won Hee Lee[2], Ningyi Shao[2], Haodi Wu[2], Kazuki Kodo[2], and Joseph Wu[2]
[1]*Stanford University, Stanford, CA,* [2]*Stanford Cardiovascular Institute, Stanford University School of Medicine, Stanford, CA*

TH-346
Sclerostin Supplementation as an Effective Therapy in Regulating Phenotypic Switch of Smooth Muscle Cells in Vascular Calcification
Kelsey McArthur[1], Amber Kay[2], James Stewart[2], and Chartisa LaShan Simpson[2]
[1]*Mississippi State University, Starkville, MS,* [2]*Mississippi State University, Mississippi State, MS*

TH-347
Investigation of the Transient Regenerative Potential of Cardiac Muscle using a Neonatal Pig Model
M. Katherine Copeland[1], Bryn Brazile[2], J. Ryan Butler[2], Yan Chang[1], Jim Cooley[2], Erin Brinkman-Ferguson[2], Andrew Claude[2], Sallie Lin[2], Sammira Rais-Rohani[2], Bradley Welch[2], Zui Pan[1], Pietro Bajona[3], Yi Hong[1], and Jun Liao[1]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*Mississippi State University, Mississippi State, MS,* [3]*UT Southwestern Medical Center, Dallas, TX*

TH-348
A New Target for Genetic Modification to Regulate Cardiac Tissue Regeneration After Ischemia/Reperfusion: The Role of MPV17 Protein
Ngonidzashe Madungwe[1,2], Yansheng Feng[1], and Jean Bopassa[1]
[1]*University of Texas Health Science Center at San Antonio, San Antonio, TX,* [2]*University of Texas at San Antonio, San Antonio, TX*

TH-349
In vitro Myocardial Inflammation Model to Examine Macrophage and Cardiomyocyte Interaction
Pamela Hitscherich[1] and Eun Jung Lee[1]
[1]*New Jersey Institute of Technology, Newark, NJ*

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

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TH-350
Enhanced Capture of Endothelium Regenerating Cells *In Vitro* and *Ex Vivo* Using a Combinatorial Approach of Growth Factors.
Randall Smith Jr.[1] and Stelios Andreadis[1,2]
[1]*SUNY BUFFALO, Amherst, NY,* [2]*Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY*

TH-351
Beating Clusters Created with Cardiac Extracellular Matrix from Decellularized Pig Hearts and Repopulated with Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes
Silvia Moncada[1], Joseph Rich[1], Matthew Trone[1], Kaitlyn McEntire[1], Hunter Behrmann[1], Toph Knutson[1], Matthew Hodgson[1], Beverly Roeder[1], and Alonzo Cook[1]
[1]*Brigham Young University, Provo, UT*

Tracks: Cardiovascular Engineering, Tissue Engineering

Cardiovascular Tissue Engineering

TH-352
CORM-3 Improves Cardiac Patch Function and Vascularization *In Vitro*
Brian Allen[1], Ilia Shadrin[1], Chris Jackman[1], Ying Qian[1], and Nenad Bursac[1]
[1]*Duke University, Durham, NC*

TH-353
Self-Assembly of Large Scale Engineered Vessels via 3D Printed Inserts
Cameron Pinnock[1], Zhengfan Xu[1], and Mai Lam[1]
[1]*Wayne State University, Detroit, MI*

TH-354
Optimizing Substrates for Engineering Aligned Human Stem Cell-Derived Cardiac Myocyte Tissues
Joycelyn K. Yip[1], Nathan Cho[1], Florian Barthelemy[2,3], M. Carrie Miceli[2,3,4], and Megan L. McCain[1,5]
[1]*Laboratory for Living Systems Engineering, Department of Biomedical Engineering, USC Viterbi School of Engineering, University of Southern California, Los Angeles, CA,* [2]*Microbiology Immunology and Molecular Genetics, University of California, Los Angeles, Los Angeles, CA,* [3]*Center for Duchenne Muscular Dystrophy, University of California, Los Angeles, Los Angeles, CA,* [4]*Molecular Biology Institute, University of California, Los Angeles, Los Angeles, CA,* [5]*Department of Stem Cell Biology and Regenerative Medicine, Keck School of Medicine of USC, University of Southern California, Los Angeles, CA*

TH-355
Generating Functional Anisotropic and 3D Tissue-like Construct Using Induced Pluripotent Stem Cell-derived Cardiomyocytes
Junjun Li[1]
[1]*Kyoto University, Kyoto, Japan*

TH-356
Toward Development of a Tissue Engineered Diabetic Cardiomyopathy Model
Laura McCallum[1], Charles Pickens[1], and Agneta Simionescu[1]
[1]*Clemson University, Clemson, SC*

TH-358
Nuclei Architecture in Patients with Heart Disease Due to LMNA Mutation
Mehrsa Mehrabi[1], Jason Core[1], Zachery Robinson[1], Linda McCarthy[1], Michael Zaragoza[1], and Anna Grosberg[1]
[1]*University of California, Irvine, Irvine, CA*

TH-359
End-Point Immobilization of Heparin on Plasma-Treated Surface of Electrospun Polycarbonate-Urethane Vascular Graft in a Minipig Model
Nianguo Dong[1], Song Li[2], and Xuefeng Qiu[1,2]
[1]*Union Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China, People's Republic of,* [2]*University of California, Los Angeles, Los Angeles, CA*

TH-360
Benefits of Nitric Oxide Delivery to Elastogenesis by Adult Human Aneurysm-derived Smooth Muscle Cells
Phillip Simmers[1], Kurt Farrell[1], and Chandra Kothapalli[1]
[1]*Cleveland State University, Cleveland, OH*

TH-361
***In Vivo* Tissue Engineering of Trilayered Structure of a Heart Valve Leaflet**
Soumen Jana[1], Ryan Hennessey[1], Federico Franchi[1], Melissa Young[1], and Amir Lerman[1]
[1]*Mayo Clinic, Rochester, MN*

TH-362
Human Tissue Engineered Model of Myocardial Ischemia-Reperfusion Injury
Timothy Chen[1] and Gordana Vunjak-Novakovic[1]
[1]*Columbia University, New York, NY*

TH-363
Nanoscale Decoration of Cardiac Microtissues Using Functionalized Gold Nanowires for Cell-Based Therapies
Ali Navaei[1] and Mehdi Nikkhah[1]
[1]*Arizona State University, Tempe, AZ*

TH-364
Fabrication of Biphasic Scaffold for Small Diameter Vascular Graft Applications
Allison Goins[1], Vidhya Ramaswamy[1], and Josephine Allen[1]
[1]*University of Florida, Gainesville, FL*

TH-365
Ferromagnetic Vascular Graft Enables Magnetic Targeting of Endothelial Cells
Brandon Tefft[1], Joshua Choe[1], Susheil Uthamaraj[1], Dan Dragomir-Daescu[1], Gurpreet Sandhu[1], and Amir Lerman[1]
[1]*Mayo Clinic, Rochester, MN*

TH-366
Micropatterned Soft Substrates Improve hESC-derived Cardiomyocyte Maturation
Brett Napiwocki[1,2], Randolph Ashton[1,2], and Wendy Crone[1,2]
[1]*UW-Madison, Madison, WI,* [2]*Wisconsin Institutes for Discovery, Madison, WI*

POSTER SESSION–THURSDAY

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TH-367
Preliminary Clinical Assessment of Growth Potential of Mitral Valves Fabricated from Porcine Small-Intestinal Submucosa
Brittany Gonzalez[1], Omkar Mankame[1], Sharan Ramaswamy [1], Lazaro Hernandez[2], Lilliam Valdes-Cruz[2], Steven Bibevski[2], Frank Scholl[2], Ivan Baez[2], and Sarah Bell[2]
[1]Florida International University, Miami, FL, [2]Joe DiMaggio Children's Hospital, Memorial Regional Hospital, Hollywood, FL

TH-368
Rapid Manufacturing of Regenerative Heart Valve Replacements
Francesco S. Pasqualini[1], Andrew Capulli[1], Maximilian Y. Emmert[2], Luca Cera[1], Luke MacQueen[1], John Ferrier[1], Simon P. Hoerstrup[2], and Kevin Kit Parker[1]
[1]Harvard University, Cambridge, MA, [2]University of Zurich, Zurich, Switzerland

TH-369
Tissue-engineered Atherosclerosis Model in a Physiological Bioreactor
Jun Chen[1], Grant Alexander[1], ChaeYun Bae[1], Chunxiang Zhang[1], Young-Sup Yoon[2], Brigitta Brott[1], Palaniappan Sethu [1], Jeonga Kim[1], and Ho-Wook Jun[1]
[1]University of Alabama at Birmingham, Birmingham, AL, [2]Emory University, Atlanta, GA

TH-370
Peptide-Modified Hyaluronic Acid Microrods Deliver Mechanochemical and Biochemical Cues for Cardiac Repair Following MI
Long Le[1], Qizhi Fang[1], Rich Sievers[1], Randall Lee[1], and Tejal Desai[1]
[1]University of California, San Francisco, San Francisco, CA

TH-371
In Vitro Assessment of Heart Valve Tissue Engineering Scaffold Inflammatory Potential
Mitchell VeDepo[1,2], Nicole Gigliotti[1], Marcia Chan[1], Richard Hopkins[1], and Gabriel Converse[1]
[1]Children's Mercy Hospital, Kansas City, MO, [2]University of Kansas, Lawrence, KS

TH-372
Compliance-Induced Intimal Hyperplasia using an *Ex Vivo* Arterial Culture System
Patricia Diaz-Rodiguez[1], Tyler Graf[1], Juan Diaz Quiroz[1], Vivan Guiza-Arguello[1], Alysha Kishan[2], Allison Post[2], Elizabeth Cosgriff-Hernandez[2], and Mariah Hahn[1]
[1]Department of biomedical engineering, Rensselaer Polytechnic Institute, Troy, NY, [2]Department of Biomedical Engineering, Texas A&M University, College Station, TX

TH-373
Assembly of iPS-derived Cardiomyocytes and Endothelial Cells into Perfusable Muscle Tissue
Rachel Hatano[1], Greg Girardi[1], and Kara McCloskey[1]
[1]University of California, Merced, Merced, CA

TH-374
Tissue-engineering of iPSC-Derived Brain-Specific Microvessels
Raleigh M. Linville[1], Moriah E. Katt[1], and Peter C. Searson[1]
[1]Johns Hopkins University, Baltimore, MD

TH-375
Suppression of Ischemic Myocardial Calcification by Annexin Gene Silencing
Shu Liu[1] and Yu Wu[1]
[1]Northwestern University, Evanston, IL

TH-376
Optogenetic Systematic Stimulation of the Autonomic Nervous System to the Heart *In Vitro*
Tess Torregrosa[1], Abigail Koppes[1], and Ryan Koppes[1]
[1]Northeastern University, Boston, MA

TH-377
Biophysical Creep Conditioning of Engineered Human iPSC-derived Cardiac Tissue
Travis Wallace[1] and Kareen Coulombe[1]
[1]Brown University, Providence, RI

TH-378
Maturing Sarcomeric Protein Expression and Contraction Kinetics of Engineered Heart Tissues Through Angiotensin II and Electrical Pacing.
Vic Keschrumrus[1], Christina Lee[1], Martin Galaz[1], and Henk Granzier[1]
[1]University of Arizona, Tucson, AZ

TH-379
Novel System for Pre-clinical Testing: Microfluidic Organotypic Culture of Human Cardiac Slices
Yun Qiao[1], Quan Dong[1], Baichen Li[1], Chaoyi Kang[1], Christian Miccile[1], Zhenyu Li[1], and Igor Efimov[1]
[1]The George Washington University, Washington, DC

TH-380
Solving Engineered Tissue Necrosis with Growth Factor-Induced Microvasculature
Zhengfan Xu[1] and Mai Lam[1]
[1]College of Engineering, Wayne State University, Detroit, MI

Tracks: Tissue Engineering, Biomechanics

Mechanobiology in Cell and Tissue Engineering

TH-381
Recapitulating the Placental Microenvironment to Enhance Trophoblast Fusion and Barrier Function
Blakely Bussie O'Connor[1], Francesco Pasqualini[1], Luke MacQueen[1], John Zimmerman[1], and Kevin Kit Parker [1]
[1]Harvard University, Cambridge, MA

TH-382
A Microfluidic System to Relate Cancer Cell Matrix Invasion to Exosome Mechanobiology
Ruby N. Huynh[1], Abigail Chandler[1], and Christopher B. Raub[1]
[1]The Catholic University of America, Washington, DC

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Tracks: Cardiovascular Engineering, Biomechanics

Mechanobiology of Cardiac and Smooth Muscle

TH-383
Visualizing Human Induced Pluripotent Stem Cell-derived Cardiomyocyte Cytoskeletal Remodeling and Force Generation in Tunable Single Cell Platform
Alison Schroer[1], Kristina Kooiker[1], Arjun Adhikari[1], Kathleen Ruppel[1], James Spudich[1], and Beth Pruitt[1]
[1]Stanford University, Stanford, CA

TH-384
Integrating 4-D Light-Sheet Imaging and Computational Fluid Dynamics to Elucidate the Effects of Biomechanical Forces on Valvular Development in the Outflow Tract
Jeffrey Hsu[1], Junjie Chen[1], Vijay Vedula[2], Juhyun Lee[1], Yichen Ding[1], Alison Marsden[2], and Tzung Hsiai[1]
[1]UCLA, Los Angeles, CA, [2]Stanford University, Stanford, CA

TH-385
Biomechanical Mismatch in Human iPS-Based Cardiac Microtissues for Modeling Myocardial Fibrosis
Zhen Ma[1,2], Sangmo Koo[3], Plansky Hoang[1], Nathaniel Huebsch[3], Bruce Conklin[4], Costas Grigoropoulos[3], and Kevin Healy[3]
[1]Syracuse University, Syracuse, NY, [2]Syracuse Biomaterials Institute, Syracuse University, NY, [3]University of California, Berkeley, Berkeley, CA, [4]Gladstone Institute of Cardiovascular Diseases, San Francisco, CA

TH-386
Computational Approaches to Understanding Single Cell Structure-Function Relationships
Tyler Harvey[1], Brian Dean[1], and Delphine Dean[1]
[1]Clemson University, Clemson, SC

Track: Cellular and Molecular Bioengineering

Mechanobiology of Cell Adhesion

TH-387
The Role of Vinculin in Long-Range Propagation of Mechanosensitive Signaling in Cell Layers
Evan Gates[1], Ilhan Gokhan[1], and Brenton Hoffman[1]
[1]Duke University, Durham, NC

TH-388
Exosomes from Diabetic SMCs Induce Adhesion of Monocytes to Vascular Endothelium
Heng Yu[1], Daniel Lightell[2], Cooper Woocs[2], and Damir Khismatullin[1]
[1]Tulane University, New Orleans, LA, [2]Tulane School of Medicine, New Orleans, LA

TH-389
Cytoplasmic Regulation of Integrin-Mediated Signal Transmission
Hengameh Shams[1] and Mohammad R. K. Mofrad[1]
[1]University of California, Berkeley, Berkeley, CA

TH-390
Role of Vimentin in Mesenchymal Stem Cell Area Changes in Response to Environmental Cues
Poonam Sharma[1], Diane R Wagner[2], and Adam H Hsieh[1,3]
[1]University of Maryland, College Park, MD, [2]Indiana University-Purdue University Indianapolis, Indianapolis, IN, [3]University of Maryland, Baltimore, MD

TH-391
Force-Transmission in Nascent Adhesions with Associations of Talin, Vinculin and Paxillin
Sangyoon Han[1], Alexia Bachir[2], Kevin Dean[1], Edgar Guttierrez[3], Alex Groisman[3], Alan Horwitz[2,4], and Gaudenz Danuser[1]
[1]University of Texas Southwestern Medical Center, Dallas, TX, [2]University of Virginia, Chalottesville, VA, [3]University of California San Diego, San Diego, CA, [4]Allen Institute for Cell Science, Seattle, WA

TH-392
Integrated Traction Force Microscopy and Magnetic Tweezers to Study Blister Formation in Pemphigus Vulgaris and Bullous Pemphigoid
Waddah Moghram[1], Anton Kruger[1], Edward Sander[1], and John Selby[1,2]
[1]University of Iowa, Iowa City, IA, [2]Iowa City VA Health Care System, Iowa City, IA

Track: Stem Cell Engineering

Mechanobiology of Stem Cell Engineering

TH-393
Cytoskeletal Development in Differentiating Embryonic Stem Cells
Liana Boraas[1] and Taby Ahsan[1]
[1]Tulane University, New Orleans, LA

TH-394
Physical Confinement Alters Cytoskeletal Requirements for Mesenchymal Stem Cell Migration
Mary Doolin[1] and Kimberly Stroka[1]
[1]University of Maryland, College Park, MD

TH-395
Adipocyte Maturation and Nuclear Reorganization
Parisa Rabbani[1], Caleb Liebman[1], Bo Chen[1], and Michael Cho[1]
[1]University of Texas at Arlington, Arlington, TX

TH-396
Mesenchymal Differentiation of Endothelial Progenitor Cells using Cyclic Strain
Prashanth Ravishankar[1], M Alejandra Zeballos[1], Raj R Rao[1], and Kartik Balachandran[1]
[1]University of Arkansas, Fayetteville, AR

TH-397
Nanotopography-dependent Promotion of Human Mesenchymal Stem Cell Osteogenesis
Weiyi Qian[1], Lanqi Gong[1], Xin Cui[1], Zijing Zhang[1], and Weiqiang Chen[1]
[1]New York University, New York, NY

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Track: Cellular and Molecular Bioengineering

Mechanobiology of the Vascular and Nervous Systems

TH-398
Triglyceride Rich Lipoprotein Composition and Metabolism Modulate Endothelial Inflammatory Phenotype
Anita Rajamani[1], Andrea Fernandez[1], John Newman[1], Scott Simon[1], and Anthony Passerini[1]
[1]*University of California, Davis, CA*

TH-399
In Vivo Axons of Motor Neurons Exhibit Circumferential Contractility
Anthony Fan[1], Alireza Tofangchi[1], Mikhail Kandel[1], Gabriel Popescu[1], and Taher Saif[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

TH-400
Flow-induced HDAC1 Phosphorylation and Nuclear Export in Angiogenic Sprouting
Despina Bazou[1], Mei Rosa Ng[1], Jonathan Song[1], Shan Min Chin[1], Nir Maimon[1], and Lance Munn[2]
[1]*Massachusetts General Hospital, Charlestown, MA,* [2]*Harvard Medical School, Charlestown, MA*

TH-401
Exploring the Mechanical Properties of Mutants of vonWillebrand Factor
Whitney Lai[1], Wenpeng Cao[1], Yi Wang[1], Frank Zhang[1], and Xuanhong Cheng[1]
[1]*Lehigh University, Bethlehem, PA*

Track: Respiratory Bioengineering, Biomechanics

Mechanics of the Respiratory System

TH-402
Experimental Results: Asymmetric Flow in Symmetric Branched Structures
Adam Sonnenberg[1], Ascanio Araujo[2], and Bela Suki[1]
[1]*Boston University, Boston, MA,* [2]*Universidade Federal do Ceara, Fortaleza, Brazil*

TH-403
Cell Injury Patterns in Airway Bifurcations Suggest an Alternative Mechanism of Plasma Membrane Disruption and Cell Detachment During Airway Reopening
Christopher Bobba[1] and Samir Ghadiali[1,2]
[1]*The Ohio State University, Columbus, OH,* [2]*The Ohio State University Wexner Medical Center, Columbus, OH*

TH-404
Computational Modelling of Cough and Mucus clearance in Patients with Total Laryngectomy
Don Nadun Kuruppumullage[1]
[1]*University of Central Florida, Orlando, FL*

TH-405
Lung Tissue Mechanics: Role of Pleural Cavity Shape on Tissue Deformation
Hamed Minaeizaeim[1], Haribalan Kumar[1], Merryn H. Tawhai[1], and Alys R. Clark[1]
[1]*Auckland Bioengineering Institute, University of Auckland, Auckland, New Zealand*

TH-406
Effects of Aging and Stretch Pattern on the Actin Cytoskeleton of Lung Fibroblasts
Elizabeth Bartolak-Suki[1] and Bela Suki[1]
[1]*Boston University, Boston, MA*

Track: Bioinformatics, Computational and Systems Biology

Metabolic Models

TH-407
Mapping Pancreatic Cancer Metabolism to Investigate Optimal Therapeutic Strategies: Insight from 13C Labeling
Mahua Roy[1], Katherine Machado[2], Daniel Braas[3], Heather Christofk[2], and Stacey Finley[4]
[1]*Biomedical Engineering, University of Southern California, Los Angeles, CA,* [2]*Biological Chemistry Department and UCLA Metabolomics Center at the David Geffen School of Medicine, University of California Los Angeles, Los Angeles, CA,* [3]*UCLA Metabolomics Center at the David Geffen School of Medicine, University of California Los Angeles, Los Angeles, CA,* [4]*Biomedical Engineering and Chemical Engineering & Materials Science, University of Southern California, Los Angeles, CA*

TH-408
Functional Significance of NOS-dependent Nitrite in Staphylococcal Respiration
Mohammad Islam[1], Sujata Chaudhari[2], Vinai Chittezham Thomas[2], and Rajib Saha[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE,* [2]*University of Nebraska Medical Center, Omaha, NE*

TH-409
Pharm Cat: A Physiologic-based Pharmacokinetic (PBPK) Model to Study Virtual Drug Dosing in Cats
Renee Lake[1], Jessica Quimby[2], and Brad Reisfeld[1]
[1]*Colorado State University, Fort Collins, CO,* [2]*The Ohio State University, Columbus, OH*

TH-410
Computation-Driven Understanding of the Cellular Cost and Regulation of Melanin Production
Wheaton Schroeder[1], Jyothi Kumar[1], Rajib Saha[1], and Steve Harris[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE*

Track: Nano and Micro Technologies

Microfluidics for the Diagnostic and Monitoring of Viral Infections

TH-411
Sorting Cells by their Density
Nazila Norouzi[1], Heran C. Bhakta[2], and William H. Grover[2]
[1]*University of California, Riverside, Mission viejo, CA,* [2]*University of California, Riverside, Riverside, CA*

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TH-412
Paper-based Vertical Flow Microfluidic Immunoassay for Diagnosis of Melioidosis
Peng Chen[1], Jian Gu[1], Marcellene Hollingsworth[2], Sujata Pandit[2], Anson Park[3], Douglas Montgomery[3], David AuCoin[2], and Frederic Zenhausern[1]
[1]*University of Arizona, Phoenix, AZ,* [2]*University of Nevada, Reno, NV,* [3]*Arizona State University, Tempe, AZ*

TH-413
Graphene Oxide-Based Microfluidic Cortisol Sensor with Enhanced Sensitivity
Shailu Shree Poudyal[1], Kyung Eun You[1], and Hyeun Joong Yoon[1]
[1]*South Dakota State University, Brookings, SD*

TH-414
Multiple Myeloma Cell Drug Responses Differ in Thermoplastic vs. PDMS Microfluidic Devices
Thomas Moore[1] and Edmond Young[1]
[1]*University of Toronto, Toronto, ON, Caneda*

TH-415
Nanoparticles Enrichment in a Microfluidic Thermal Gradient Device
Thomas Reidy[1], Zhibo Cao[1], and Xuanhong Cheng[1]
[1]*Lehigh University, Bethelhelm, PA*

Tracks: Cancer Technologies, Nano and Micro Technologies

Microscale Cancer Cell Analysis

TH-416
Luminescent Nanoparticles for High-throughput Microfluidic Droplet Barcoding
Manibarathi Vaithiyanathan[1], Khashayar Bajgiran[1], Pragathi Darapaneni[1], Riad Elkhanoufi[1], James Dorman[1], and Adam Melvin[1]
[1]*Louisiana State University, Baton Rouge, LA*

TH-417
Novel Biocompatible Piezoelectric Microsensor for Cancer and Soft Tissue Treatment Monitoring
Nicolae Scarisoreanu[1], Lucian Gruionu[2], and Gabriel Gruionu[2,3]
[1]*The National Institute for Laser, Plasma & Radiation Physics (INFLPR), Bucharest, Romania,* [2]*SC Medinsys SRL, Craiova, Romania,* [3]*Harvard Medical School and Massachusetts General Hospital, Boston, MA*

TH-418
The Vital Role of Nuclei in the Cell Passing through Small Restrictions and Size Based Filtration
Yiqiu Xia[1] and Si-Yang Zheng[1]
[1]*Penn State University, University Park, PA*

TH-419
Evaluating Binding Events of Cancer Cell Surfaceome
Fatih Inci[1], Duygu Cimen[1], Gozde Durmus[1], Muhammet Poyraz[1], Rakhi Gupta[1], and Utkan Demirci[1]
[1]*Stanford University, Palo Alto, CA*

TH-420
High-throughput Single Cell Analysis of Peptide Uptake and Deubiquitinating Enzyme Activity Using a Microfluidic Droplet Trapping Array
Nora Safabakhsh[1], Manibarathi Vaithiyanathan[2], Seleipiri Charles[2], Riad Elkhanoufi[1], Wayne III Wortmann[2], Adam Melvin[2], and Nora Safabakhsh[1]
[1]*Louisiana State University, Baton Rouge, LA,* [2]*Louisiana State University, Baton Rouge, LA*

Track: Cancer Technologies

Precision Medicine and Biomarkers in Cancer

TH-421
Primary Patient Tumor Organoids for Personalized Drug Treatment
Andrea Mazzocchi[1], Konstantinos Votanopoulos[2], Shay Soker[1,2], and Aleksander Skardal[1,2]
[1]*Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC,* [2]*Comprehensive Cancer Center at Wake Forest Baptist Hospital, Winston-Salem, NC*

TH-422
Repurposing of Minocycline Potentiates Irinotecan Efficacy Against Peritoneal Carcinomatosis
Huang-Chiao Huang[1], Joyce Liu[1], Yan Baglo[1], Sriram Anbil[1,2], Imran Rizvi[1], Michael Pigula[1], and Tayyaba Hasan[1]
[1]*Massachusetts General Hospital, Harvard Medical School, Boston, MA,* [2]*The University of Texas, San Antonio, TX*

TH-423
Development of Pancreatic Neuroendocrine Tumor Therapy Based on Specific Surface Receptors
Jianfa Ou[1], Zviadi Aburjania[1], Samuel Jang[1], Ningning Xu[1], KahYong Goh[1], Herbert Chen[1], Renata Jaskula-Sztul[1], and X. Margaret Liu[1]
[1]*The University of Alabama at Birmingham, Birmingham, AL*

TH-424
Direct Quantification of Deubiquitinating Enzyme Activity in Intact Cells Using a Protease Resistant, Cell Permeable Peptide-based Reporter
Nora Safabakhsh[1], Jacob Pettigrew[1], Gavin Pappas[2], Ted Gauthier[2], and Adam Melvin[2]
[1]*Louisiana State University, Baton Rouge, LA,* [2]*Louisiana State University, Baton Rouge, LA*

TH-425
Olfactory Receptor Gene Expression Is Correlated with Breast Cancer Progression
Shirin Masjedi[1], Laurence Zwiebel[1], and Todd Giorgio[1]
[1]*Vanderbilt University, Nashville, TN*

TH-426
Improving Cancer Diagnostics with a Novel Protein Energetics Model
Zachary Fritz[1], Lawrence Williams[1], and Martin Yarmush[1]
[1]*Rutgers University, Piscataway, NJ*

POSTER SESSION–THURSDAY

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

Track: Respiratory Bioengineering

Modeling of the Respiratory System

TH-427
Simulations of Surfactant Replacement Therapy in Large Mammals
Alireza Kazemi[1], Bruno Louis[2], Daniel Isabey[2], Marcel Filoche[1,2], and James Grotberg[3]
[1]*Ecole Polytechnique, Palaiseau, France,* [2]*INSERM, Créteil, France,* [3]*University of Michigan, Ann Arbor, MI*

TH-428
Computational Assessment of Airflow Sensitivity to Healthy and Diseased Lung Conditions
Bora Suki[1], Zachary Oppito[2], Shehan Jayasekera[2], Brian Vanger[2], Amy Zeller[2], Michael Morris[3], Kai Ruppert[4], Talissa Altes[5], Vineet Rakesh[1], Steven Day[2], Risa Robinson[2], Jaques Reifman[1], and Anders Wallqvist[1]
[1]*DoD Biotechnology High Performance Computing Software Applications Institute, US Army Medical Research and Materiel Command, Fort Detrick, MD,* [2]*Mechanical Engineering Department, Rochester Institute of Technology, Rochester, NY,* [3]*Department of Medicine, San Antonio Military Medical Center, Fort Sam Houston, TX,* [4]*Radiolology Department, University of Pennsylvania, Philadelphia, PA,* [5]*Department of Radiology, University of Missouri, Columbia, MO*

TH-429
Multi-Objective Optimization of Multi-Frequency Oscillatory Ventilation
Jacob Herrmann[1], Merryn Tawhai[2], and David Kaczka[1]
[1]*University of Iowa, Iowa City, IA,* [2]*University of Auckland, Auckland, New Zealand*

TH-430
A Computationally Tractable Model of Alveolar/Airway Interactions in the Entire Lung
Jason Ryans[1], Laura Krasovec[1], Hideki Fujioka[1], Dave Halpern[2], and Donald Gaver[1]
[1]*Tulane University, New Orleans, LA,* [2]*University of Alabama, Tuscaloosa, AL*

TH-431
Modeling of Inhalation and Bi-directional Airflow Effects on Olfactory Targeted Micro-particle Deposition in Human Nasal Cavities
Sasi Bhushan Yarragudi[1], Shakila Rizwan Bano[1], and Haribalan Kumar[2]
[1]*University of Otago, Dunedin, New Zealand,* [2]*University of Auckland, Auckland, New Zealand*

TH-432
Structured Tree Boundary Conditions in an Apnoeic Airway during THRIVE Therapy
Sibylle Van Hove[1], Laith Hermez[2], Vinod Suresh[1,3], and John Cater[1]
[1]*The University of Auckland, Auckland, New Zealand,* [2]*Fisher & Paykel Healthcare, Auckland, New Zealand,* [3]*Auckland Bioengineering Institute, Auckland, New Zealand*

TH-433
Intersubject Variability in Pulmonary Drug Delivery Efficiency to Target Lung Tumors at Different Lobes: An *In Silico* Study
Yu Feng[1], Xiaole Chen[2], Zelin Xu[3], and Ahmadreza Haghnegahdar[1]
[1]*Oklahoma State University, Stillwater, OK,* [2]*Southeast University, Nanjing, China, People's Republic of,* [3]*North Carolina State University, Raleigh, NC*

Track: Respiratory Bioengineering

Respiratory Bioengineering–Other/Non-Specified

TH-434
Dysphagia and Thickened Liquid
Ranjith Wijesinghe[1] and Mary Ewing[1]
[1]*Ball State University, Muncie, IN*

Track: Respiratory Bioengineering

Translational Respiratory Engineering

TH-435
Modeling the Frequency Response of a Proportional Solenoid Valve for Oscillatory Ventilation
Bakir Hajdarevic[1], Jacob Herrmann[1], and David Kaczka[1]
[1]*University of Iowa, Iowa City, IA*

TH-436
Using Alveolar Pneumocyte Self-Derived Exosomes to Modulate Lung Inflammatory Response
Christopher Chang[1], Natalia Higuita-Castro[2], Chris Bobba[1], Daniel Gallego-Perez[1,2], and Samir Ghadiali[1,2]
[1]*The Ohio State University, Columbus, OH,* [2]*The Ohio State University Wexner Medical Center, Columbus, OH*

TH-437
Modeling the Fate of a Chemotherapeutic Agent Following Direct Injection into a Lung Tumor
Jason H.T. Bates[1] and C. Matthew Kinsey[1]
[1]*University of Vermont, Burlington, VT*

TH-438
Predicting Risk of Death from Lung Cancer as a Function of Age and Smoking History
Katharine L. Hamlington[1], C. Matthew Kinsey[1], and Jason H.T. Bates[1]
[1]*University of Vermont, Burlington, VT*

Track: Translational Biomedical Engineering

Preclinical Models, GMP, GLP, FDA, and Unexpected Challenges

TH-439
Novel Device for Preventing Rodent Wound Splint Removal
Jade Montgomery[1,2], Linda Jourdan[2], and Robert Gourdie[1,2]
[1]*Virginia Tech, Blacksburg, VA,* [2]*Virginia Tech Carilion Research Institute, Roanoke, VA*

Track: Translational Biomedical Engineering

Translational Biomedical Engineering–Other/Non-specified

TH-440
Radiation Sensitivity of Gold Reduction by Maltose Binding Protein
Amar Thaker[1], Karthik Pushpavanam[1], Kaushal Rege[1], and Brent Nannenga[1]
[1]*Arizona State University, Tempe, AZ*

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TH-441
Impeding Foreign Body Response to Ventricular Catheters in the Treatment of Hydrocephalus by Masking Shunts with Monolayers of Ciliated Epithelial Cells.
Carolyn Harris[1] and Prashant Hariharan[1]
[1]*Wayne State University, Detroit, MI*

TH-442
Rationally Designed 2-Dimensional Paper Networks (2DPNs) for Point-of-Care Diagnostics
Kristin Byers[1], Laura Jamicich[1], Anna Bird[1], and Jacqueline Linnes[1]
[1]*Purdue University, West Lafayette, IN*

TH-443
Time Dependent Modifications of Intestinal Glucose Utilization Mediated by Roux-en-Y Gastric Bypass Surgery
Matthew D'Alessandro[1], Adam Akkad[2], Vasily Belov[1], Janine Appleton[1], Mikhail Papisov[1], Martin Yarmush[1], Omer Yilmaz[2], and Nima Saeidi[1]
[1]*Center for Engineering in Medicine, Harvard Medical School, Massachusetts General Hospital, Boston, MA,* [2]*Massachusetts Institute of Technology, Koch Institute for Integrative Cancer Research, Boston, MA*

TH-444
Assessing Driver Mental State through Physiological Measurements Using Simulator
Samuel John[1], Chaoyang Chen[1], Bo Cheng[2], Harshini Nagarajan[1], Wenjun Wang[2], Chaofei Zhang[2], Chao Zeng[2], and John Cavanaugh[1]
[1]*Wayne State University, Detroit, MI,* [2]*Tsinghua University, Beijing, China, People's Republic of,* [3]*Shihezi University, Shihezi, China, People's Republic of*

Track: Cellular and Molecular Bioengineering

Molecular and Cellular Engineering Functional Materials and Sensors

TH-445
Reducing the Structure of Pyranose-2-oxidase for an Improved Electron Transfer: A Smart Design for Enzymatic Electrodes
Catherine Booker[1], Tanzila Islam[1], Shuozhen Hu[1], Dmitri Tolkatchev[1], Su Ha[1], and Alla Kostyukova[1]
[1]*Washington State University, Pullman, WA*

TH-446
Processing of Fixed and Stored Adipose-Derived Stem Cells for Quantitative Protein Array Assays
Jessica Sadick[1], Adrienne Parsons[1], and Eric Darling[1]
[1]*Brown University, Providence, RI*

TH-447
Evolution of Antibody Probe for Detection of Fibronectin Conformational Changes
Leandro Moretti[1], Kimberly Kelly[1], and Thomas Barker[1]
[1]*University of Virginia, Charlottesville, VA*

TH-448
Microfluidic Devices with Integrated Microvalves for High-Throughput Replicative Lifespan Studies
Michael Robles[1], Nathaniel H. Thayer[1], Ben Cooper[1], Rob Keyser[1], Dan E. Gottschling[1], and R. Scott McIsaac[1]
[1]*Calico Labs, South San Francsico, CA*

TH-449
High Throughput Perfusion Platform for Identification of Endothelial Toxicity
Nicole Ravenscroft[1], Therese Bou-Akl[2], and Yawen Li[1]
[1]*Lawrence Technological University, Southfield, MI,* [2]*Ascension-St. John Providence, Southfield, MI*

TH-450
Electrical and Cell Adhesive Behavior of Polyaniline-Chloride and Chitosan Nanocomposites
Sara Abasi[1], John Aggas[1], and Anthony Guiseppi-Elie[1]
[1]*Center for Bioelectronics, Biosensors and Biochips (C[3]B), Department of Biomedical Engineering, Texas A&M University, College Station, TX*

TH-451
Monitoring Women's Fertility Through Volatile Biomarkers
Stephanie M. Ong[1], Christopher Miranda[1], Heather D. Bean[1], and Barbara S. Smith[1]
[1]*Arizona State University, Tempe, AZ*

TH-452
Identifying Volatile Hormone Signatures for Monitoring Female Reproductive Health
Vi Nguyen[1], Samantha Brenna[1], Jarrett Eshima[1], and Barbara Smith[1]
[1]*Arizona State University, Tempe, AZ*

TH-453
Functional Evaluation of Cell Aggregation Induced Peptide for 3D Culture
Yoshiaki Hirano[1], Yuki Yamamoto[1], and Sachiro Kakinoki[1]
[1]*Kansai University, Suita, Japan*

Track: Cellular and Molecular Bioengineering

Molecular and Cellular ImmunoEngineering

TH-454
A Novel Permanent Anti-Inflammatory Molecular Coating On Silicone Implants Significantly Reduces Peri-Prosthetic Capsule Formation
Alexandra Lin[1], Sarah Karinja[1], Omid Veiseh[2], Jaime Bernstein[1], Julia Jin[1], Omer Kaymakcalan[1], Yoshiko Toyoda[1], Xue Dong[1], Andrew Abadeer[1], Kerry Morrison[1], Rachel Akintayo[1], Robert Langer[3], Daniel Anderson[3], and Jason Spector[1]
[1]*Laboratory for Bioregenerative Medicine & Surgery, Weill Cornell Medical College, New York, NY,* [2]*Sigilon, Inc., Cambridge, MA,* [3]*Massachusetts Institute of Technology, Cambridge, MA*

TH-455
Engineering T Cells into Disease-Directed Protein Biofactories
Claire Repellin[1], Puja Patel[1], Lidia Sambucetti[1], and Parijat Bhatnagar[1,2]
[1]*SRI International, Menlo Park, CA,* [2]*Stanford University, Stanford, CA*

POSTER SESSION–THURSDAY

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TH-456
Pro-inflammatory Macrophage Activation Induced by Exposure to Hypergravity
Cristian Coriano-Ortiz[1], Kelly Hotchkiss[1], and Rene Olivares-Navarrete[1]
[1]*Virginia Commonwealth University, Richmond, VA*

TH-457
Universal Chimeric Antigen Receptors (CARs) for Multiplexed and Logic Control of T Cell Responses
Jang Hwan Cho[1], James Collins[2], and Wilson Wong[1]
[1]*Boston University, Boston, MA,* [2]*Massachusetts Institute of Technology, Cambridge, MA*

TH-458
Lymphatics in Allergic Airway Inflammation: Dual Roles in Immunity and Matrix Remodeling
Katharina Maisel[1], Lambert Potin[1], Lea Maillat[1], Cara Hrusch[1], Anne Sperling[1], and Melody Swartz[1]
[1]*University of Chicago, Chicago, IL*

TH-459
Novel Malaria Vaccine to Recruit Mosquito Immunity Toward a Robust Transmission Blocking Activity
Lampouguin Yenkoidiok Douti[1,2], Gaspar Canepa[2], and Carolina Barillas-Mury[2]
[1]*University of Maryland, Hyattsville, MD,* [2]*National Institutes of Health, Rockville, MD*

TH-460
Modulation of Mouse Macrophages on a Microarray Chip with Synthetic Glycopolymers
Parnian Bigdelou[1], Kyeong-Nam Yu[1], Jinshan Tang[1], Joshua Whited[1], Dan Wang[1], Xue-Long Sun[1], and Moo-Yeal Lee[1]
[1]*Cleveland State University, Cleveland, OH*

TH-461
SUMO Protease SENP3 Mediates a Host Defense Response to Contain Hepatitis B Virus Replication and Restore Host Protein Synthesis
Rui Xi[1], Kuei-Ling Tung [1], Preetish Kadur[1], and Xiling Shen[1]
[1]*Duke University, Durham, NC*

Tracks: Cellular and Molecular Bioengineering, Biomechanics

Molecular Bioengineering

TH-462
Salt Bridges Gate the Force Sensitivity of the Mechanotransducer ε-Catenin at Intercellular Junctions
Deborah Leckband[1], Samantha Barrick[1], Jing Li[1], Emad Tajkhorshid[1], and Alokananda Ray[1]
[1]*University of Illinois, Urbana, IL*

TH-463
Membrane Bending & Shape Changes by the Cancer Cell Glycocalyx
LaDeidra Monet Roberts[1], Carolyn Shurer[1], Marshall Colville[1], Joe Chin Hun Kuo[1], Jay Gandhi[1], Thais Enoki[1], and Matthew Paszek[1]
[1]*Cornell University, Ithaca, NY*

TH-464
The Sequence-Encoded Charge Patterning of the Intrinsically Disordered Tail of FtsZ Impacts Polymerization and Bacterial Cell Division
Megan Cohan[1], Ammon Posey[1], Stephen Grigsby[1], Alex Holehouse[1], Paul J. Buske[1], Anuradha Mittal[1], Petra Levin[1], and Rohit Pappu[1]
[1]*Washington University in St. Louis, St. Louis, MO*

TH-465
A Role for PSD-95 and its Binding Partners in Models of Traumatic Brain Injury
Mihir Patel[1], Emily Sewell[2], David Meaney[2], and Bonnie Firestein[1]
[1]*Rutgers University, Piscataway, NJ,* [2]*University of Pennsylvania, Philadelphia, PA*

TH-466
Mechanical Force Across E-Cadherin Regulates Epithelial Acini Homeostasis
Vani Narayanan[1] and Daniel Conway[1]
[1]*Virginia Commonwealth University, Richmond, VA*

Track: Tissue Engineering, Biomaterials

Naturally-Derived and Extracellular Matrix Biomaterials in Tissue Engineering

TH-467
Analyzing the Effects of Material Source on Gelatin Methacrylamide Scaffolds for Tissue Culture
Ashlyn Young[1] and Michael Daniele[1]
[1]*North Carolina State University, Raleigh, NC*

TH-468
A Novel Supercritical CO2-Based Treatment for Decellularization that Maintains Mechanical and Structural Integrity
Dominic Casali[1], Rachel Handleton[1], and Michael Matthews[1]
[1]*University of South Carolina, Columbia, SC*

TH-469
Multifunctional DNA Nanotubes as Artificial Extracellular Matrices for Bone Tissue Engineering
Gujie Mi[1], Di Shi[1], and Thomas Webster[1]
[1]*Northeastern University, Boston, MA*

TH-470
Growing Retinal Pigment Epithelial Cells on a Recombinant Spider Silk Protein Membrane
Ian Wadsworth[1], Chase Paterson[1], Thomas Harris[1], Harshit Singh[1], Zach Jensen[1], Lori Caldwell[1], Randolph V. Lewis[1], and Elizabeth Vargis[1]
[1]*Utah State University, Logan, UT*

TH-471
Crosslinked Alginate/Decellularized Extracellular Matrix Hydrogel Composite Bioink for 3D Bioprinting In Vitro Cancer Models
Jacqueline Kort Mascort[1], Murali Ramamoorthi[1], Joyce Jang[1], Salvador Flores Torres[1], Tao Jiang[1], Simon Tran[1], and Joseph Kinsella[1]
[1]*McGill University, Montreal, QC, Canada*

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TH-472
Additive and Hydrogel Manufacturing of a Silk Niche for Pancreatic Acinar Cells
Joseph Pearson[1], Jasmine King[1], Joo Ong[1], Teja Guda[1], and Mubeen Sultana[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

TH-473
Development of 3D Printed Dermal ECM Scaffolds
Morgan Janes[1], Javier Navarro[1], and John Fisher[1]
[1]*University of Maryland, College Park, MD*

TH-474
Biomimetic Self-Mineralizing Polysaccharide Material as a Scaffold for Bone Tissue Engineering
Priyanka Ruparelia[1], Ross Warren[1], Dennis LaJeunesse[1], Shyam Aravamudhan[1], and Sang Jin Lee[2]
[1]*The Joint School of Nanoscience and Nanoengineering, Greensboro, NC,* [2]*Wake Forest School of Medicine, Winston-Salem, NC*

TH-475
Enhanced Chondrogenesis on Sulfated Cellulose Containing Scaffolds Loaded with TGF-3
Roseline Menezes[1], Gloria Portocarrero Huang[1], George Collins[1], and Treena Livingston Arinzeh[1]
[1]*New Jersey Institute of technology, Newark, NJ*

Tracks: Tissue Engineering, Neural Engineering

Neural and Neurovascular Tissue Engineering

TH-476
Gene Delivery from Injectable, Macroporous, Hyaluronic Acid Hydrogels for Spinal Cord Regeneration
Arshia Ehsanipour[1], Tasha Aboufadel[1], Phillip Cox[1], Chris Walthers[1], Weikun Xiao[1], and Stephanie Seidlits[1]
[1]*University of California, Los Angeles, Los Angeles, CA*

TH-477
3D Model System to Study the Interactions Between Neural and Vascular Networks
Jonathan Grasman[1] and David Kaplan[1]
[1]*Tufts University, Medford, MA*

TH-478
Three-dimensional Tissues using Human Pluripotent Stem Cell Spheroids as Biofabrication Building Blocks
Qiang Li[1], Haishuang Lin[1], and Yuguo Lei[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE*

TH-479
Characterization of a 3D, Continuously Perfused Brain Microvascular Endothelium Tissue Model
Shannon Faley[1], Emma Hollmann[1], Jason Wang[1], Callie Weber[1], Justin Cruz[1], Ethan Lippmann[1], and Leon Bellan[1]
[1]*Vanderbilt University, Nashville, TN*

TH-480
Developing Novel Dopamine Based Printing Ink for Promoting Neural Stem Cell Differentiation
Xuan Zhou[1], Haitao Cui[1], Margaret Nowicki[1], and Lijie Zhang[1]
[1]*The George Washington University, Washington, DC*

Track: Neural Engineering

Neural Cell Model Systems

TH-481
Alterations of Spontaneous Spinal Cord Motor Neuron Activity In The Presence Of Calcium Channel Antagonist-agatoxin: Simulation And Experiment
Ashlesha Deshmukh[1], Bryan J. Black[1], Rahul Atamaramani[1], and Joseph J. Pancrazio[1]
[1]*The University of Texas at Dallas, Dallas, TX*

TH-482
Direct Current Stimulation of Endothelial Monolayers Induces a Transient and Reversible Increase in Transport Due to Electroosmotic Effect
Limary Cancel[1], Katherin Arias[1], Marom Bikson[1], and John Tarbell[1]
[1]*The City College of New York, New York, NY*

TH-483
Microelectrode Arrays for Rapid Screening of Metabolite Induced Electrophysiological Alterations in Primary Enteric Neurons
Marissa Puzan[1], Ryan Koppes[1], and Abigail Koppes[1]
[1]*Northeastern University, Boston, MA*

TH-484
Cryopreservation of Sympathetic and Parasympathetic Neurons for Autonomic Nervous System Culture
Tess Torregrosa[1], Abigail Koppes[1], and Ryan Koppes[1]
[1]*Northeastern University, Boston, MA*

Track: Neural Engineering

Neural Decoding and Control

TH-485
Performance Analysis of EEG Beamformers for Multiple Brain Source Localization
A N M Shahebul Hasan[1] and Kwong Ng[1]
[1]*New Mexico State University, Las Cruces, NM*

TH-486
IoT for Neural Engineering: A Communication Infrastructure for Experiments and Clinical Exams
Austin Jacobson[1] and Stephen Foldes[1,2]
[1]*Barrow Neurological Institute @ Phoenix Children's Hospital, Phoenix, AZ,* [2]*Arizona State University, Phoenix, AZ*

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TH-487
Task-Dependent Properties of Motor Cortical Impulse Response Functions
Douglas Crowder[1,2], William Memberg[1,2], Brian Murphy[1,2], Jennifer Sweet[1,2,3], Jonathan Miller[1,2,3], Benjamin Walter[1,2,3], Leigh Hochberg[4,5,6,7], A. Bolu Ajiboye[1,2], and Robert Kirsch[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Louis Stokes Cleveland Dept. of VA Med. Ctr., Cleveland, OH, [3]University Hospitals, Cleveland, OH, [4]Dept. of VA Med. Ctr., Providence, RI, [5]Brown University, Providence, RI, [6]Massachusetts Gen. Hosp., Boston, MA, [7]Harvard Medical School, Cambridge, MA

TH-488
Intramuscular EMG-Driven Control of a Virtual Hand Based on a Musculoskeletal Model
Dustin Crouch[1], Lizhi Pan[1], and He Huang[1]
[1]North Carolina State University, Raleigh, NC

TH-489
BCI System of High Rate Quasi-Steady-State VEPs Elicited by Orthogonal Stimulation Sequences
Ibrahim Kaya[1], Ozcan Ozdamar[1], and Jorge Bohorquez[1]
[1]University of Miami, Miami, FL

TH-490
Chaotic Analysis of EEG Signals to Predict Seizures
Kannathal Natarajan[1]
[1]NgeeAnn Polytechnic, Singapore, Singapore

TH-491
Cerebro-cardiac and Cerebro-respiratory Interactions while Listening to Songs
Mohammad Javad Mollakazemi[1], Dibyajyoti Biswal[1], Sridevi Thyagarajan[1], Joyce Evans[1], and Abhijit Patwardhan[1]
[1]Department of Biomedical Engineering, University of Kentucky, Lexington, KY

TH-492
A Brain Computer Interface Approach to Examine Changes in Anxiety While Walking in a Virtually Infinite World
Rachneet Kaur[1], Daan Michiels[1], Vivek Kaushik[1], Martin Bantchev[1], Manuel Hernandez[1], and Richard Sowers[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

TH-493
Effects of Neuronal Network Topology on Epileptogenesis
Shabnam Ghiasvand[1] and Yevgeny Berdichevsky[1]
[1]Lehigh University, Bethlehem, PA

TH-494
Fully Automated Unsupervised Behavioral Stage Classifier Using Intracranial EEG
Vaclav Kremen[1,2], Benjamin Brinkmann[1], Brent Berry[1], Michal Kucewicz[1], Fatemeh Khadjevand[1], Jamie Van Gompel[1], Matt Stead[1], Erik St. Louis[1], and Gregory Worrell[1]
*[1]Mayo Clinic, Rochester, MN, [2]CIIRC, Czech Technical University in Prague, Prague *, Czech Republic*

Track: Neural Engineering
Neural Device Interfaces

TH-495
Novel Recessed High-Selectivity Electrode Design for Safer Deep Brain Stimulation
Aakhila Rameeza[1] and Xuefeng Wei[1]
[1]The College of New Jersey, Ewing, NJ

TH-496
Multi-Electrode Recordings from the Stellate Ganglion Reveal Single Unit Potentiation by Hypoxia
Andrew Wells[1] and Mario Romero-Ortega[1,2]
[1]University of Texas at Dallas, Richardson, TX, [2]University of Texas Southwestern Medical Center, Dallas, TX

TH-497
Interfacial Mechanics of Shape Memory Polymers (SMPs) in Cortical Brain Tissue
Arati Sridharan[1], Vindhya Reddy Danda[2], Melanie Ecker[2], Allison Stiller[2], Walter Voit[2], Joseph J. Pancrazio[2], and Jit Muthuswamy[1]
[1]Arizona State University, Tempe, AZ, [2]University of Texas at Dallas, Dallas, TX

TH-498
New Mixed Boundary Value Model of Electromagnetic Fields from Surface Electrodes
Benjamin Schwartz[1], Jonathan Duncan[1], Shaun Brown[1], and Jit Muthuswamy[1]
[1]Arizona State University, Tempe, AZ

TH-499
***In Vivo* Evaluation of Chronic Reliability of High Resolution, Low-cost µECoG Arrays**
Brinnae Bent[1], Michael Trumpis[1], Ken Chiang[1], Virginia Woods[1], and Jonathan Viventi[1]
[1]Duke University, Durham, NC

TH-500
Broadband Spectral Power Modulation of Rat Epidural ECoG During Frequency Discrimination Task
Christian Song[1], Michael Trumpis[1], and Jonathan Viventi[1]
[1]Duke University, Durham, NC

TH-501
Fabrication and Long-Term Recording Ability of a Compliant Micro-ECoG Electrode Array
Cody Barton[1], Ruben Ponce Wong[2], Oliver Graudejus[2], and Bradley Greger[1]
[1]Arizona State University, Tempe, AZ, [2]BMSEED, Tempe, AZ

TH-502
EEG Characterization of Mechanoreceptors
Elena Choong[1] and Sahana Kukke[1]
[1]The Catholic University of America, Washington, DC

TH-503
Carbon Fiber Electrodes for Recording Spinal Cord Activity in Rats
Esma Cetinkaya[1], Sinan Gok[1], and Mesut Sahin[1]
[1]New Jersey Institute of Technology, Newark, NJ

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TH-504
Dynamic Hearing-Aid Algorithm with Spatial Selectivity
Kaan Raif[1]
[1]Saint Louis University, St. Louis, MO

TH-505
The Impact of Protein Loaded Thin-film Sol-Gel on Electrical Impedance Spectroscopy and Charge Carrying Capacity
Matthew McDermott[1,2] and Kevin Otto[2]
[1]Purdue University, West Lafayette, IN, [2]University of Florida, Gainesville, FL

TH-506
Motion Artefact Contamination of Neural Electrophysiology Recordings Cannot Be Eliminated with CAR
Nicholas Michelson[1], Alberto Vazquez[1], Jordan Williams[1], Xinyan Cui[1], and Takashi Kozai[1]
[1]University of Pittsburgh, Pittsburgh, PA

TH-507
Quantifying the Neurite Growth of Dissociated Retinal Cell Cultures to Assess the Biocompatibility of Vertically Aligned Carbon Nanotubes
Saba Moslehi[1], William Watterson[1], Julian Smith[1], Kara Zappitelli[1], David Miller[1], Curtis Colwell[1], Derek Hallman[1], Richard Taylor[1], Maria Perez[2], and Benjamin Aleman[1]
[1]University of Oregon, Eugene, OR, [2]Lund University, Lund, Sweden

Track: Neural Engineering
Neural Disease: Model Systems and Therapeutics

TH-508
A Diagnostic System for Automatic Seizure Onset Zone Localization
Adam von Paternos[1], Paige Murphy[1], Stephen Schmidt[1], Shaheer Hassan[1], and Sabato Santaniello[1]
[1]University of Connecticut, Storrs, CT

TH-509
Material Testing of PPODA-QT for the Treatment of Aneurysms
April Huckleberry[1], Sharna Beahm[1], Connor Gonzalez [1], William Merritt[1], and Timothy Becker[1]
[1]Northern Arizona University, Flagstaff, AZ

TH-510
Intraocular Pressure Recording in Conscious Rats and the Effects of Chronic Pressure Elevation
Christopher Passaglia[1], Kayla Ficarrotta[1], and Simon Bello[1]
[1]University of South Florida, Tampa, FL

TH-511
Amyloid Beta1-42 Dysregulates Vascular Endothelial Barrier Function and Angiogenesis
John Long[1] and Levi Wood[1]
[1]Georgia Institute of Technology, Atlanta, GA

TH-512
Retinal Temperature Monitoring by *In Vivo* Electroretinography
Marja Pitkanen[1], Ossi Kaikkonen[1], and Ari Koskelainen[1]
[1]Aalto University School of Science, Espoo, Finland

TH-513
Culture of Humam Stem Cell Derived Dopaminergic Neurons on Graphene Oxide to Reduce the Progression of Parkinson's *In Vitro*
Nishat Tasnim[1], Lois Mendez[1], Alok Kumar[1], Mahesh Narayan[1], and Binata Joddar[1]
[1]University of Texas at El Paso, El Paso, TX

TH-514
Continuous Analysis of Parkinsonian Rodent Gait via Frustrated Total Internal Reflection
Robert Moesinger[1] and Alan Dorval[2]
[1]University of Utah, Ogden, UT, [2]University of Utah, Salt Lake City, UT

TH-515
In Vitro Neurovascular Model Development for Biomaterial Device Testing and Particulate Characterization
Trevor Cotter[1], Connor Gonzalez[1], William Merritt[1], and Timothy Becker[1]
[1]Northern Arizona University, Flagstaff, AZ

TH-516
Enhanced Neural Stem Cell Differentiation in 3D Printed Scaffold with Light Stimulation
Wei Zhu[1], Se-Jun Lee[1], and Lijie Grace Zhang[1]
[1]The George Washington University, Washington, DC

Track: Neural Engineering
Neuromodulation: Brain and Spinal Cord

TH-517
Sophorolipid Butyl Ester Diacetate Has No Effect on Murine Peritoneal Macrophage and Spinal Cord Astrocyte Viability but Increases Spinal Cord Astrocyte Glial Fibrillary Acidic Protein Expression *In Vitro*
Alexis Ziemba[1], Manoj Gottipati[1], Filbert Totsingan[1], Cheryl Hanes[2], Richard Gross[1], Michelle Lennartz[2], and Ryan Gilbert[1]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Albany Medical Center, Albany, NY

TH-518
Denoising of Local Field Potentials from Deep Leads affected by Blood Pressure Artifacts
Enrico Opri[1], Stephanie Cernera[1], Rene Molina[1], Michael Okun[1], Kelly Foote[1], and Aysegul Gunduz[1]
[1]University of Florida, Gainesville, FL

TH-519
Information Theoretic EEG Analysis Of Children With Severe Disabilities In Response To Power Mobility Training: A Pilot Study
Joshua Usoro[1], Lisa Kenyon[1], John Farris[1], and Samhita Rhodes[1]
[1]Grand Valley State University, Grand Rapids, MI

POSTER SESSION–THURSDAY

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

TH-520
A Chronically Implantable System for Drug Delivery to Deep Brain Microstructures
Khalil Ramadi[1,2], Kevin Spencer[1,2], Canan Dagdeviren[1,2], Pauline Joe[2], Carlos Nunez Lopez[2], Ann M. Graybiel[1,3], Robert Langer[1,2], and Michael Cima[1,2]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Koch Institute for Integrative Cancer Research, Cambridge, MA,* [3]*McGovern Institute for Brain Research, Cambridge, MA*

TH-521
Multi-resolution Acoustic Simulation of Transcranial Focused Ultrasound (tFUS)
Kyungho Yoon[1], Phillip Croce[1], Ryan Margolin[1], Wonhye Lee[1], and Seung-Schik Yoo[1]
[1]*Brigham and Women's Hospital, Harvard Medical School, Boston, MA*

TH-522
Experience Dependent Plasticity of Cortical Attention States
Pouria Riyahi[1] and Matthew Colonnese[1]
[1]*The George Washington University, Washington, DC*

TH-523
Spontaneous and Evoked Activity from Murine Motor Neurons Cultured on Microelectrode Arrays
Rahul R. Atmaramani[1], Bryan J. Black[1], Isabella Reed[1], Ellie Chen[1], and Joseph J. Pancrazio[1]
[1]*University of Texas at Dallas, Richardson, TX*

Track: Neural Engineering, Biomechanics

Neuromuscular Biomechanics

TH-524
Three Dimensional Reconstruction of Vibrissal (Whisker) Follicle Morphology Across the Rat Mystacial Pad
Chris S. Bresee[1] and Mitra J.Z. Hartmann[1]
[1]*Northwestern University, Evanston, IL*

TH-525
Development of a Functional, Multiscale Tapered Fiber as a Biomimic of a Rodent Vibrissa
David W. Collinson[1], L. Catherine Brinson[1], and Mitra J.Z. Hartmann[1]
[1]*Northwestern University, Evanston, IL*

TH-526
Human Jaw-Tongue Reflex Evoked by High Frequency Mandibular Vibrations
Ferhat[§] Erdogan[1] and Mesut Sahin[1]
[1]*New Jersey Institute of Technology, Newark, NJ*

TH-527
Electric Field Sensors in Mouse Home-Cage Detect Activity and Respiration Changes After Nerve Injury
Heidi Kloefkorn[1], Alejandro Lopez[2], Bill Goolsby[1], Michael Sawchuck[1], Mallika Halder[1], and Shawn Hochman[1]
[1]*Emory University, Atlanta, GA,* [2]*San Jose State University, San Jose, CA*

TH-528
Effects of Ankle Perturbations During Electrical Stimulation on Gait Cadence
Kailey Nishimura[1] and Seung-Jae Kim[1]
[1]*California Baptist University, Riverside, CA*

TH-529
Quantification of the Natural Tactile Scene Using a Three Dimensional Dynamic Model of the Rat Vibrissal System
Nadina Zweifel[1], Ian Abraham[1], Todd D. Murphey[1], and Mitra J.Z. Hartmann[1]
[1]*Northwestern University, Evanston, IL*

TH-530
Locomotor Adaptation on Visual Feedback Distortion and Split-belt Treadmill
Pranathi Chunduru[1], Seung-Jae Kim[2], and Hyunglae Lee[1]
[1]*Arizona State University, Tempe, AZ,* [2]*California Baptist University, Riverside, CA*

Track: Neural Engineering

Neural Engineering–Other/Non-Specified

TH-531
Use of Machine Learning Algorithms in Electroencephalography based Brain-Computer Interfaces
Jacob Salyers[1] and Yan Gai[1]
[1]*Saint Louis University, St. Louis, MO*

Track: Neural Engineering

Peripheral Nerve Stimulation and Repair

TH-532
Peripheral Nerve Regeneration via Optical Stimulation
David Vera[1], Zoe Horton[1], Audrey Lee[1], Ryan Koppes[1], and Abigail Koppes[1]
[1]*Northestern University, Boston, MA*

TH-533
Spatiotemporal Growth Factor Release for Enhanced Peripheral Nerve Regeneration
Elizabeth Mays[1] and Harini Sundararaghavan[1]
[1]*Wayne State University, Detroit, MI*

TH-534
Neurostimulator Signal Generator with Tunable Waveforms
José Aquiles Parodi Amaya[1] and Jin-Woo Choi[1]
[1]*Louisiana State University, Baton Rouge, LA*

T-535
Efficient Stimulus Artifact Removal to Allow Single-unit Recordings from Fast-conducting A-fibers
Longtu Chen[1], Monty Escabi[1], and Bin Feng[1]
[1]*University of Connecticut, Storrs, CT*

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

TH-536
Neuromodulation of Peripheral Nerve Excitability using Ultrasound
Sanchit Chirania[1] and Bruce Towe[1]
[1]*Arizona State University, Tempe, AZ*

TH-537
Electrically Conductive Composite Hydrogel Embedded with Functionalized Carbon Nanotubes for Nerve Regeneration
Xifeng Liu[1], Joseph Kim[1], Wei Wu[1], Alan Miller[1], and Lichun Lu[1]
[1]*Mayo Clinic, Rochester, MN*

Tracks: Stem Cell Engineering, Bioinformatics, Computational and Systems Biology

Stem Cell Systems Biology & Bioinformatics

TH-538
Construction of a Data-Model to Identify Conflicting Signaling Axes Governing Myoblast Cell-Fate Responses to Diverse Ligands
Alexander Loiben[1], Sharon Baumgarten-Soueid[1], Debadrita Bhattacharya[1], Ruth Kopyto[1], Joseph Kim[1], and Benjamin Cosgrove[1]
[1]*Cornell University, Ithaca, NY*

TH-539
Molecular Mechanisms of *In Vitro* Myogenic Differentiation of hiPSCs
Priya Nayak[1], Shankar Subramaniam[1], and Shyni Varghese[1]
[1]*UCSD, La Jolla, CA*

TH-540
The Effect of GATA6 Expression And Its Neighborhood Impact Factor On Regulating Cell Fate
Shay Carter[1], Jeremy Velazquez[1], Shaun Wootten[1], Samira Kiani[1], and Mo Ebrahimkhani[1,2]
[1]*Arizona State University, Tempe, AZ,* [2]*Meyo Clinic, Phoenix, AZ*

Tracks: Stem Cell Engineering, Tissue Engineering

Stem Cells in Tissue Engineering

TH -541
Mechanical Stimulation Promoting the Differentiation of Mesenchymal Stem Cells into Chondrocytes
Andrew Lyzen[1], Alex Eddington[1], Nick Denney[1], Therese Bou-Akl[2], and Yawen Li[1]
[1]*Lawrence Technological University, Southfield, MI,* [2]*Ascension St Johns Providence, Novi, MI*

TH -542
Designing an Artificial Pancreas
Caden Duffy[1] and Alonzo Cook[1]
[1]*Brigham Young University, Provo, UT*

TH -543
Peptide-Modified Hyaluronic Acid Hydrogels Promote Oligodendrocyte-Lineage Differentiation
Christopher Walthers[1], Jesse Liang[1], Joshua Karam[1], Rebecca Bierman[1], and Stephanie Seidlits[1]
[1]*UCLA, Los Angeles, CA*

TH-544
Role of Cross-talk Between PDGF and tgf ε-1 Signaling in Controling Mesenchymal Stem Cell Migration
Deepraj Ghosh[1] and Michelle Dawson[1]
[1]*Brown University, Providence, RI*

TH-545
Delivery and In Situ Differentiation of MSCs to the Trabecular Meshwork During Glaucoma
Eric Snider[1], Yinglin Li[1], Irsham Zaman[1], Kristin Gao[1], Richard Kim[1], Kelsey Tweed[1], and C. Ross Ethier[1]
[1]*Georgia Tech and Emory University, Atlanta, GA*

TH-546
Alginate Encapsulated Mesenchymal Stromal Cells for Osteoarthritis Treatment
Ileana Marrero-Berrios[1], Sarah E. Salter[1], Sapna S. Sanyal[1], Rene S. Schloss[1], and Martin L. Yarmush[1]
[1]*Rutgers, the State University of New Jersey, Piscataway, NJ*

TH-547
Microfluidic Selection of Mesenchymal Stromal Cell Subpopulations During Culture Expansion Extends the Chondrogenic Potential *In Vitro*
Lu Yin[1], Yingnan Wu[2], Ching Ann Tee[2], Vinitha Denslin[2], Zheng Yang[2], Chwee Teck Lim[2], Eng Hin Lee[2], and Jongyoon Han[3]
[1]*Singapore-MIT alliance for Research and Technology Center, Singapore, Singapore,* [2]*National University of Singapore, Singapore, Singapore,* [3]*Massachusetts Institute of Technology, Cambridge, MA*

TH-548
Developmental Pathways Pervade Stem Cell Responses to Evolving Extracellular Matrices
Quyen Tran[1], Paul Campagnola[1], and Brenda Ogle[2]
[1]*University of Wisconsin-Madison, Madison, WI,* [2]*University of Minnesota-Twin Cities, Minneapolis, MN*

TH-549
Self-Regulation of Neural Differentiation of Embryonic Stem Cells Mediated by Stromal Cell Signaling
Ramila Joshi[1], James Buchanan[1], Jun Li[2], and Hossein Tavana[1]
[1]*The University of Akron, Akron, OH,* [2]*Kent State University, Kent, OH*

TH-550
Glucose Metabolism during Chondrogenesis of Human Mesenchymal Stem Cells
Yi Zhong[1], William Pontius[1], Mostafa Motavalli[1], Arnold Caplan[1], Jean Welter[1], and Harihara Baskaran[1]
[1]*Case Western Reserve University, Cleveland, OH*

POSTER SESSION–THURSDAY

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

Track: Neural Engineering, Nano and Micro Technologies

Stroke and Neurovascular Disease and Models

TH-551
PO2-regulated Red Blood Cell Mechanics Modulates Capillary Blood Flow in the Brain
Jiandi Wan[1] and Sitong Zhou[1]
[1]*RIT, Rochester, NY*

TH-552
Multi-Joint Somatosensory Assessment in Patients Post Stroke
Li-Qun Zhang[1,2], Dali Xu[3], Yupeng Ren[3], Sang Hoon Kang[2], and Yunju Lee[2]
[1]*University of Maryland, Baltimore, MD,* [2]*Northwestern University, Evanston, IL,* [3]*NorthShore Hospital, Evanston, IL*

TH-553
Nitric Oxide Releasing Bionanomatrix Coating for Brain Aneurysm Coils to Improve Healing
Patrick Hwang[1], Maggie Collier[2], Grant Alexander[2], Brigitta Brott[1,2], Robert Hergenrother[2], Ramanathan Kadirvel[3], David Kallmes[3], and Ho-Wook Jun[1,2]
[1]*Endomimetics LLC, Birmingham, AL,* [2]*University of Alabama at Birmingham, Birmingham, AL,* [3]*Mayo Clinic, Rochester, MN*

Track: Cellular and Molecular Bioengineering, Biomechanics

Substrate Effects in Mechanobiology

TH-559
Cracks in Basement Membrane-like Soft Substrate Trigger Epithelial Dissociation Without Mechanoactivation
Christopher Walter[1], Joshua Davis[1], and Amit Pathak[1]
[1]*Washington University in St. Louis, St. Louis, MO*

TH-560
Physical Confinement of Cells Induces Compression of the Focal Adhesion Protein Vinculin
Katheryn Rothenberg[1], Andrew LaCroix[1], Shane Neibart[1], and Brenton Hoffman[1]
[1]*Duke University, Durham, NC*

TH-561
Disrupted Surfaces of Porous Membranes Reduce YAP Nuclear Localization in Adipose-Derived Stem Cells
Stephanie Casillo[1], Ana Peredo[1], Spencer Perry[1], Henry Chung[1], and Thomas Gaborski[1]
[1]*Rochester Institute of Technology, Rochester, NY*

TH-562
Solid Surface Tension Directs Cellular Behaviors through Integrin-based Mechanotransduction
Zhu Cheng[1], Carolyn Shurer[1], Chung-Yuen Hui[1], and Matthew Paszek[1]
[1]*Cornell University, Ithaca, NY*

TH-563
The Cytotoxicity of Silica Nanoparticles on A549 Human Epithelial Cells under Biaxial Mechanical Stretch
Hamed Ghazizadeh[1] and Shyam Aravamudhan[1]
[1]*NC A&T State University, Greensboro, NC*

TH-564
Effects of Tumor-Relevant Substrate Mechanics on Primary Pancreatic Cancer Cells
Janny Pineiro[1], Wisam Fares[1], Andrés Rubiano[1], and Chelsey Simmons[1]
[1]*University of Florida, Gainesville, FL*

TH-565
Size Effect on Random Motion of Colloidal Particles near a Substrate
Jiyeon Hyun[1], Jaehong Key[2], Sangwoo Lee[2], and Seiyoung Lee[2]
[1]*Yonsei university, Wonju, Korea, Republic of,* [2]*Yonsei University, Wonju, Korea, Republic of*

TH-566
System for the Application of Hydrostatic Pressure and Mechanical Strain to a Flexible Cell-Seeded Substrate
Justin Bacaoat[1], Jiro Nagatomi[1], and Cody Dunton[1]
[1]*Clemson University, Clemson, SC*

TH-567
NF2 Haploinsufficient Fibroblasts are Less Mechanically Sensitive than NF1 Haploinsufficient Fibroblasts or Healthy Fibroblasts
Rufeng Ma[1], Ralf Kemkemer[2,3], Dieter Kaufman[2,3], and Kristen L. Mills[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*Reutlingen University, Reutlingen, Germany,* [3]*Max Planck Institute for Intelligent Systems, Stuttgart, Germany*

TH-568
Force Driving Metastatic-like Dispersion and Malignant Transformation in Epithelial Monolayers
Sulin Zhang[1], Yao Zhang[2], Xuechen Shi[1], and Tiankai Zhao[1]
[1]*Penn State University, University Park, PA,* [2]*Northwestern University, Evanston, IL*

TH-569
Modulation of Viscous and Elastic Properties of PDMS Substrates Regulates Cellular Response
Thomas Petet[1], Ariana Decastro[1], and Christopher Lemmon[1]
[1]*Virginia Commonwealth University, Richmond, VA*

TH-570
On the Measurement of Energy Dissipation of Adherent Cells with Quartz Crystal Microbalance with Dissipation Monitoring
Weiwei Zhao[1], Jun Xi[2], and Ruiguo Yang[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE,* [2]*Drexel University, Philadelphia, PA*

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

TH-571
Nuclear Stress Dependent DNA Damage and Repair Factors Mis-localization after Lamin-A Depletion
Yuntao Xia[1], Jerome Irianto[1], Charlotte Pfeifer[1], Lucas Smith[1], and Dennis Discher[1]
[1]*University of Pennsylvania, Philadelphia, PA*

Track: Bioinformatics, Computational and Systems Biology

Systems Approaches to Therapy, Therapeutics, and Precision Medicine

TH-572
High-throughput Cell Phenotyping for Early Diagnosis Of Atherosclerosis
Jeong-Ki Kim[1] and Dong-Hwee Kim[1]
[1]*Korea University, Seoul, Korea, Republic of*

TH-573
Development of a Novel RNA-Dependent Method for Tuning Gene Circuit Dynamics
Qi Zhang[1], Song Yuan[1], and Xiao Wang[1]
[1]*Arizona State University, Tempe, AZ*

TH-574
A Novel Bio-chemo-mechanical Model of Tissue-engineered Vascular Graft Development
Ramak Khosravi[1], Jason Szafron[1], Cameron Best[2], James Reinhardt[2], Yong-Ung Lee[2], Tai Yi[2], Qiang Zeng[2], Toshiharu Shinoka[2], Christopher Breuer[2], and Jay Humphrey[1]
[1]*Yale University, New Haven, CT,* [2]*Nationwide Children's Hospital, Columbus, OH*

Tracks: Biomechanics, Cellular and Molecular Bioengineering

The Nucleus and Cytoskeleton in Mechanobiology

TH-575
Allosteric Effect of ε-Actinin Binding on Vinculin Activation
Hengameh Shams[1] and Mohammad R. K. Mofrad[1]
[1]*University of California, Berkeley, Berkeley, CA*

TH-576
Characterization of Cellular Behaviors Towards Cancer Progression Under Compression
Kenneth Kwun Yin Ho[1], Yu-En Huang[1], Katharine Shao[2], and Allen Liu[3]
[1]*University of Michigan, Ann Arbor, MI,* [2]*Detroit Country Day School, Beverly Hills, MI*

TH-577
Shear Force On Hutchinson - Gilford Progerin Cells Causes Nuclear Rupture And Cell Death
Kranthidhar Bathula[1], Lindsay Lafratta[1], and Daniel Conway[1]
[1]*Virginia Commonwealth University, Richmond, VA*

TH-578
Unfolding Behavior of Von Willebrand Factor (VWF) Multimer and Fragments
Yi Wang[1], Wei Zhang[1], Whitney Lai[1], Xuanhong Cheng[1], and X. Frank Zhang[1]
[1]*Lehigh University, Bethlehem, PA*

TH-579
Molecular Insights into the Activation of LINC Complex Protein SUN2
Zeinab Jahed[1], Uyen Vu[1], Jared Hennen[2], Joachim D. Mueller[2], G.W. Gant Luxton[2], and Mohammad R.K. Mofrad[1]
[1]*University of California Berkeley, Berkeley, CA,* [2]*University of Minnesota, Minneapolis, MN*

Tracks: Biomechanics, Bioinformatics, Computational and Systems Biology

Computational and Multiscale Modeling in Biomechanics

TH-580
The Versatile Micromechanical Model of Cell Migration
Abdel-Rahman Hassan[1], Thomas Biel[1], and Taeyoon Kim[1]
[1]*Purdue University, West Lafayette, IN*

TH-581
Multiscale Modeling of Thrombus Biomechanics in Aortic Dissections
Alireza Yazdani[1]
[1]*Brown University, Providence, RI*

TH-582
A Multiscale Modeling Approach to Quantifying the Effects of Brain Geometry Effects in Chronic Traumatic Encephalopathy
Amir Bakhtiary[1], Allan Dobbins[2], Kyle Johnson[1], Mark Horstemeyer[1], and Rajkumar Prabhu[1]
[1]*Mississippi State University, Miss. State, MS,* [2]*University of Alabama at Birmingham, Birmingham, AL*

TH-583
Biomechanical Investigation of the Influence of Increased Femoral Anteversion on the Success of Reduction of Severe Grades of Developmental Dysplasia of the Hip with the Pavlik Harness
Blake Lozinski[1], Hessein Ali[1], Victor Huayamave[2], Christopher Rose[1], Brendan Jones[1], Eduardo Divo[2], Faissal Moslehy[1], Alain Kassab[1], and Charles Price[1,3]
[1]*University of Central Florida, Orlando, FL,* [2]*Embry-Riddle Aeronautical University, Daytona Beach, FL,* [3]*Orlando Health, Orlando, FL*

TH-584
Analysis of Foot Pressure Data to Model Human Walking Through a Doorway
Christopher Karcz[1], Antonio Valdevit[1], and Arthur Ritter[1]
[1]*Stevens Institute of Technology, Hoboken, NJ*

POSTER SESSION–THURSDAY

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

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TH-585
A Phenomenological Model for the Spatio-Temporal Evolution of Embryonic Aortic Arch Microstructure
Gürsan Çoban[1], Samane Lashkarinia[1], Muhammad Jamil[1], Erhan Ermek[1], Selda Göktas [1], Ayse Idil Çakiroglu[1], Cansu Karakaya[1], Merve Celik[1], and Kerem Pekkan[1]
[1]*Koç University, Istanbul, Turkey*

TH-586
Development of an Active Continuum Small Intestine Finite Element Model
In-seok Han[1], Jaemin Kim[1], Soonmoon Jung[1], and Junghwa Hong[1]
[1]*Korea Univ., Seoul, Korea, Republic of*

TH-587
A Design of Trocar Valve Based on Finite Element Analysis for Improving Performance in Laparoscopic Surgery
Jaemin Kim[1], Taekyeong Lee[1], Hunhee Kim[1], Youngho Lee[1], Soonmoon Jung[1], Dongwook Yang[1], Beomgeun Jo[1], Jeongwoo Lee[1], Chanwoo Lee[1], and Junghwa Hong[1]
[1]*Korea University, Sejong, Korea, Republic of*

TH-588
Identifying Injury Risk Regions within Soft Tissues of Dynamic Human Body Finite Element Models
James Gaewsky[1], Derek Jones[1], Ashley Weaver[1], and Joel Stitzel[1]
[1]*Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC*

TH-589
A Biomechanical Investigation of the Thoracic Kyphosis after Surgical Correction with A Spinal Implant
Jaylin Carter[1], Timothy Mchenry[2], and Guigen Zhang[1]
[1]*Clemson University, Clemson, SC, [2]Greenville Health System, Greenville, SC*

TH-590
A Parallel Coupled Fluid Solid Modeling Tool with Palabos and LAMMPS based on the Immersed Boundary Method
Jifu Tan[1], Talid Sinno[1], and Scott Diamond[1]
[1]*University of Pennsylvania, Philadelphia, PA*

TH-591
Constitutive Modeling and Fluid-Structure Interactions of Venous Tissue
Nayyan Kaul[1] and Hsiao-Ying Shadow Huang[1]
[1]*North Carolina State University, Raleigh, NC*

TH-592
Analysis of Thermal Characteristics of Normal and Tumoral Tissues During Hyperthermia Treatment
Saeed Tiari[1], Mahboobe Mahdavi[1], Kinjalkumar Chauhan[1], Saurin Patel [1], and Rajan Patel[1]
[1]*Gannon University, Erie, PA*

TH-593
Imaging and Modelling the Motility of the Forestomach in Sheep
Stephen Waite[1], John Cater[1], Garry Waghorn[2], and Vinod Suresh[1]
[1]*University of Auckland, Auckland, New Zealand, [2]Independent Scientist, Hamilton, New Zealand*

TH-594
Multiscale Model Predicts Increasing Focal Adhesion Size with Decreasing Stiffness in Fibrous Matrices
Xuan Cao[1], Ehsan Ban[1], Brendon Baker[2], Yuan Lin[3], Jason Burdick[1], Christopher Chen[1], and Vivek Shenoy[1]
[1]*University of Pennsylvania, Philadelphia, PA, [2]University of Michigan, Ann Arbor, MI, [3]the University of Hong Kong, Hong Kong, Hong Kong*

Tracks: Cardiovascular Engineering, Bioinformatics, Computational and Systems Biology

Computational Modeling in Cardiovascular Systems

TH-595
Database of Biophysical Parameters Of Mammalian Myocyte
André Petraconi[1], Jorge Negroni[2], José Puglisi[1,3], Robson Silva[1], and Daniel Goroso[1]
[1]*Universidade de Mogi das Cruzes, Mogi das Cruzes, Brazil, [2]Universidad de La Plata, La Plata, Argentina, La Plata, Argentina, [3]California North State University, CA, USA, California, CA*

TH-596
Undersized Mitral Annuloplasty Increases Left Ventricular Strain Regardless of Ring Type
Ashley Morgan[1], Joe Pantoja[2], Alexander Collins[3], Jiwon Kim[4], Jonathan Weinsaft[4], Robert Levine[5], Liang Ge[3], and Mark Ratcliffe[6]
[1]*UCSF East Bay General Surgery Residency, Oakland, CA, [2]UCLA General Surgery Residency, Los Angeles, CA, [3]Northern California Institute for Research and Education, San Francisco, CA, [4]Weill-Cornell Medical College, New York, NY, [5]Massachusetts General Hospital, Boston, MA, [6]San Francisco VA Medical Center, San Francisco, CA*

TH-597
Increased CaMKII-activated INa,L Alters Ion Homeostasis and CaMKII Regulation of Calcium Cycling in Atrial Cells: A Mathematical Modeling Study
Birce Onal[1], Daniel Gratz[1], and Thomas Hund[1]
[1]*The Ohio State University, Columbus, OH*

TH-598
Assessing the Effect of Risk Factors on Patients with Coarctation of the Aorta
Bradley Feiger[1], John Gounley[1], Jane Leopold[2], and Amanda Randles[1]
[1]*Duke University, Durham, NC, [2]Harvard Medical School, Boston, MA*

TH-599
***In Silico* Evaluation of Plaque and Arterial Boundaries for Patient Specific Modeling**
Christopher Noble[1], Kent Carlson[1], Dan Dragomir-Daescu[1], Amir Lerman[1], and Melissa Young[1]
[1]*Mayo Clinic, Rochester, MN*

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TH-600
Influence of Cell- and Tissue-level Factors on Sinoatrial Node Cell Firing: a Mathematical Modeling Study Using the Expanded LongQt User Interface
Daniel Gratz[1], Birce Onal[1], and Thomas Hund[1]
[1]*The Ohio State University, Columbus, OH*

TH-601
Predicting Downstream Wall Shear Stress Profiles in Aortas Using Simulations and Overall Morphology
Daniel Puleri[1], Ismael Perez[1], Austin Ferguson[1], Ziyun Niu[2], John Gounley[1], and Amanda Randles[1]
[1]*Duke University, Durham, NC, [2]North Carolina School of Science and Mathematics, Durham, NC*

TH-602
Simulated Impact of Arteriovenous Stenoses on Flow Dynamics in Upper Extremity Dialysis Fistulae
Danielle DeColli[1], Kevin Anton[2], Aalpen Patel[2], and Joseph Tranquillo[1]
[1]*Bucknell University, Lewisburg, PA, [2]Geisinger Medical Center, Danville, PA*

TH-603
J Wave Identification Optimization Algorithm Based on Feature Selection and PCA
Dengao Li[1], Huiying Niu[1], Jumin Zhao[1], Fanming Wu[1], and Hong Wang[1]
[1]*Taiyuan University of Technology, Taiyuan, China, People's Republic of*

TH-604
Automated Detection of J Wave using Analytic Time Frequency Flexible Wavelet Transform Applied on ECG Signals
Dengao Li[1], Jie Zhou[1], Jumin Zhao[1], and Xinyan Liu[1]
[1]*Taiyuan University of Technology, Taiyuan, China, People's Republic of*

TH-605
An Automated J Wave Detection System Based on Feature Extraction
Dengao Li[1], Xinyan Liu[1], Jumin Zhao[1], and Jie Zhou[1]
[1]*Taiyuan University of Technology, Taiyuan, China, People's Republic of*

TH-606
Left Ventricular End Systolic Pressure Volume Relationship (ESPVR): Comparison between Real Time MRI and Conductance Catheter Measurement Methods
Duc Giao[1], Yan Wang[2], Henrik Haraldsson[2], Kiyoaki Takaba[1], Kimberly Spaulding[1], Renan Rojas[1], Gilbert Soon[1], Anusha Badathala[1], Yue Zhang[1], Jing Liu[2], David Saloner[2], Liang Ge[3], and Mark Ratcliffe[3]
[1]*Veterans Affairs Medical Center, San Francisco, CA, [2]University of California, San Francisco, San Francisco, CA, [3]University of California, San Francisco and Veterans Affairs Medical Center, San Francisco, CA*

TH-607
Optimal Blood Flow Characteristics in a Four-way Right-atrium Bypass Connector
Elizabeth Mack[1], Jakin Jagani[1], and Alexandrina Untaroiu[1]
[1]*Virginia Tech, Blacksburg, VA*

TH-608
Computational Fluid Dynamics of 22 Weeks Old Human Fetal Heart with Tetralogy of Fallot
Hadi Wiputra[1], Maryam Jahanzad[1], Guat Ling Lim[1], Sanah Merchant Soomer[1], Hwa Liang Leo[1], Arijit Biswas[1], Citra Nurfarah Zaini Mattar[1], and Choon Hwai Yap[1]
[1]*National University of Singapore, Singapore, Singapore*

TH-609
A Closed Cardiovascular Circulation Model and Its Applications to Arteriovenous Fistulas and LVAD
Hailu Getachew[1], Hamidreza Gharahi[1], Adam Willis[1,2], and Seungik Baek[1]
[1]*Michigan State University, East Lansing, MI, [2]University of Texas Southwestern, Dallas, TX*

TH-610
Effect of Gaussian Weight Function on Element Free Galerkin Simulation of Cardiac Propagation
Ian Sturdevant[1] and Kwong Ng[1]
[1]*New Mexico State University, Las Cruces, NM*

TH-611
A Computational Thrombus Generation Model Applied to Aneurysms Treated with Shape Memory Polymer Foam and Metal Coils
John Horn[1,2], Jason Ortega[1], Jonathan Hartman[3], and Duncan Maitland[2]
[1]*Lawrence Livermore National Laboratory, Livermore, CA, [2]Texas A&M University, College Station, TX, [3]Kaiser Permanente Sacramento Medical Center, Sacramento, CA*

TH-612
Multivariate Models for Aortic Pressure and Cardiac Output Constructed from Meta-Analysis
John Scaringi[1] and Ethan Kung[1]
[1]*Clemson University, Clemson, SC*

TH-613
Investigating the Effects of FGF12B on Nav1.5 Sodium Channel Dynamics
Kathryn Mangold[1] and Jonathan Silva[1]
[1]*Washington University in St. Louis, St. Louis, MO*

TH-614
Introducing New Criteria to Predict Aneurysm Growth
Mahsa Dabagh[1], Priya Nair[2], John Gounley[1], David Frakes[2], Fernando Gonzalez[1], and Amanda Randles[1]
[1]*duke university, Durham, NC, [2]Arizona University, Arizona, AZ*

TH-615
Computational Investigation of a Self-Powered Fontan Circulation
Rachel Quinn[1], Marcus Ni[1], Ray Prather[1], Alain Kassab[1], Eduardo Divo[2], and William DeCampli[3]
[1]*University of Central Florida, Orlando, FL, [2]Embry-Riddle Aeronautical University, Daytona Beach, FL, [3]Arnold Palmer Hospital for Children, Orlando, FL*

POSTER SESSION–THURSDAY

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

TH-616
Multiscale Computational Fluid Dynamics Assessment of Post-LVAD Implantation to Reduce Stroke
Ray Prather[1], Marcus Ni[1], Alain Kassab[1], Eduardo Divo[2], and William DeCampli[3]
[1]University of Central Florida, Orlando, FL, [2]Embry Riddle Aeronautical University, Daytona Beach, FL, [3]Orlando Health, Orlando, FL

TH-617
Model Order Reduction for Finite Difference Modeling of Cardiac Propagation
Riasat Khan[1] and Kwong Ng[1]
[1]New Mexico State University, Las Cruces, NM

TH-618
Finite Difference Monodomain Modeling of Cardiac Tissue with Optimal Parameters
Riasat Khan[1] and Kwong Ng[1]
[1]New Mexico State University, Las Cruces, NM

TH-619
A Reduced-order Model for Wall Shear Stress in Patient-specific Cerebral Aneurysms Based on Snapshot Proper Orthogonal Decomposition
Suyue Han[1], Clemens Schirmer[2], and Yahya Modarres-Sadeghi[1]
[1]University of Massachusetts, Amherst, MA, [2]Geisinger Health System, Wilkes-Barre, PA

TH-620
A Layered and Heterogeneous Finite Element Model for Mechanobiological Simulation of Aortic Valves
Ying Lei[1] and Zannatul Ferdous[1]
[1]University of Tennessee, Knoxville, TN

Tracks: Cancer Technologies, Bioinformatics, Computational and Systems Biology

Computational Modeling of Cancer

TH-622
Tumor Cells Experience Uniformly Distributed Mechanical Cues in a 3D Bone Scaffold During Perfusion
Boyuan Liu[1], Suyue Han[1], Brandon Hedrick[1], Yahya Modarres-Sadeghi[1], and Maureen Lynch[1]
[1]UMass-Amherst, Amherst, MA

TH-623
A Multi-state Population Model of Chemoresistance and Phenotypic Dynamics of Breast Cancer Cells
Grant Howard[1], Kaitlyn Johnson[1], Thomas Yankeelov[1], and Amy Brock[1]
[1]The University of Texas at Austin, Austin, TX

TH-624
Computational-experimental Approach to Model Tumor Development as a Function of Glucose Level
Jianchen Yang[1], John Virostko[1], Angela Jarrett[1], and Thomas Yankeelov[1]
[1]University of Texas at Austin, Austin, TX

TH-625
Multi-scale Modeling of Interactions Between Deformable Cancer Cell and the Vessel Wall
Mahsa Dabagh[1], John Gounley[1], and Amanda Randles[1]
[1]duke university, Durham, NC

TH-626
Agent-based Modeling to Predict the Effect of Electrochemotherapy on Tumors
Maryam Moarefian[1] and Luke Achenie[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

TH-627
Physical Mechanisms of Cancer in the Transition to Metastasis
Pilhwa Lee[1] and Charles Wolgemuth[2]
[1]University of Michigan, Ann Arbor, MI, [2]University of Arizona, Tucson, AZ

TH-628
Modeling of Extracellular Matrix Degradation in a Metastatic Tumor Microenvironment Using Compucell3D
Yen Nguyen[1], Anya Zornes[1], and Ashlee Ford Versypt[1]
[1]Oklahoma State University, Stillwater, OK

Tracks: Cellular and Molecular Bioengineering, Bioinformatics, Computational and Systems Biology

Computational Modeling of Cell Motility and Proliferation

TH-629
Preliminary Validation of a Discrete Macrophage Model using Published Experimental Results
Adam Butchy[1], Cheryl Telmer[2], and Natasa Miskov-Zivanov[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Carnegie Mellon, Pittsburgh, PA

TH-630
Analysis of the Spatio-Temporal Dynamics of Infection Using a Hybrid Imaris-MATLAB Platform
Danielle Stolley[1] and Elebeoba May[1]
[1]University of Houston, Houston, TX

TH-631
Theory of Fluidic Control for Bacterial Sociality
Dervis Vural[1] and Gurdip Uppal[1]
[1]University of Notre Dame, Notre Dame, IN

TH-632
Engineering of a Synthetic Quadrastable Gene Network to Approach Waddington Landscape and Cell Fate Determination
Fuqing Wu[1], Riqi Su[1], Ying-Cheng Lai[1], and Xiao Wang[1]
[1]Arizona State University, Tempe, AZ

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

TH-633
Modeling Blood Vessel Development via Co-emergence of Endothelial and Smooth Muscle Cell Patterns
Jose Zamora[1], Ajay Gopinathan[1], and Kara McCloskey[1]
[1]University of California Merced, Merced, CA

TH-634
Agent-Based Computational Model of Salmonella Infection of Dendritic Cells
Lee Talman[1], Denise Monack[2], and Shayn Peirce-Cottler[1]
[1]University of Virginia, Charlottesville, VA, [2]Stanford University, Stanford, CA

Track: Bioinformatics, Computational and Systems Biology

Single-Cell Measurements and Models

TH-635
A Dynamical Model of Gene Expression Exposes the Regulative Power of the Nuclear Nanoenvironment
Anne Shim[1], Luay Almassalha[1], Hiroaki Matsuda[1], Rikkert Nap[1], Marina Casalino-Matsuda[2], Vadim Backman[1], Roger Kamm[3], and Igal Szleifer[1]
[1]Northwestern University, Evanston, IL, [2]Northwestern University, Chicago, IL, [3]Massachusetts Institute of Technology, Cambridge, MA

TH-636
A Robust scRNA-seq Data Analysis Pipeline for Measuring Gene Expression Noise
Parithi Balachandran[1], Philippe Faucon[2], and Xiao Wang[1]
[1]School of Biological and Health Systems Engineering, Arizona State University, Tempe, AZ, [2]School of Computing, Informatics, and Decision Systems Engineering, Arizona State University, Tempe, AZ

TH-637
A Computational Analysis of Interactions of Oxidative Stress and Antioxidant System in Endothelial Dysfunction.
Sheetal Joshi[1] and Mahendra Kavdia[1]
[1]Wayne State University, Detroit, MI

TH-638
Induced Transmembrane Voltage of Stem Cells with Realistic 3D Morphologies
Somen Baidya[1], Ahmed M. Hassan[1], Beatriz Pazmino[2], Jack F. Douglas[2], and Edward J. Garboczi[3]
[1]University of Missouri- Kansas City, Kansas City, MO, [2]National Institute of Standards and Technology, Gaithersburg, MD, [3]National Institute of Standards and Technology, Boulder, CO

TH-639
Model-Driven Design of Single-Cell Experiments
Zachary Fox[1] and Brian Munsky[1]
[1]Colorado State University, Fort Collins, CO

Track: Bioinformatics, Computational and Systems Biology

Analysis of Cell Signaling

TH-640
Differences in Immune Cell Signaling Between Treatment-Naive polyJIA Patients and Matched Controls
Allison Throm[1] and Anthony French[1]
[1]Washington University in St. Louis, St. Louis, MO

TH-641
Computational Simulations of iIntermittent and Repeated Delivery of TRAIL Apoptosis Signal to Neutralize Tumor Cells in the Bloodstream
Emily Lederman[1] and Michael King[2]
[1]Cornell University, Ithaca, NY, [2]Vanderbilt University, Nashville, TN

TH-642
Inflammatory Microenvironment Alterations of Paracrine Signaling Dynamics in Antigen Presenting Cells
Joseph Decker[1], Liam Casey[1], and Lonnie Shea[1]
[1]University of Michigan, Ann Arbor, MI

TH-643
Multiscale Modeling of Dynamic Interactions between Calreticulin and a Model Membrane Microdomain
Lingyun Wang[1], Joanne Murphy-Ullrich[1], Jianyi Zhang[1], and Yuhua Song[1]
[1]The University of Alabama at Birmingham, Birmingham, AL

Track: Bioinformatics, Computational and Systems Biology

Omics Data and Analysis

TH-644
The Translation Problem: Machine Learning Models of Mouse Molecular Data Predict Human Inflammatory Pathology Phenotypes
Douglas Brubaker[1] and Douglas Lauffenburger[1]
[1]MIT, Cambridge, MA

TH-645
Gene Regulatory Network Reconstruction of Fibroblast with Biophysical and Biochemical Cues
Pilhwa Lee[1], Joseph Decker[1], Lonnie Shea[1], and Daniel Beard[1]
[1]University of Michigan, Ann Arbor, MI

TH-646
Molecular Basis for the Link between Macular Degeneration and a Single Nucleotide Polymorphism
Reed Harrison[1] and Dimitrios Morikis[1]
[1]University of California, Riverside, Riverside, CA

POSTER SESSION–THURSDAY

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

TH-647
Systems Glycobiology: Novel Tools for the Study of the Glycome
Sriram Neelamegham[1], Kai Cheng[1], and Yusen Zhou[1]
[1]*State University of New York - Buffalo, Buffalo, NY*

TH-648
Volatile Metabolites as Biomarkers for Characterizing Pyocyanin Production and Mucoidy in *Pseudomonas aeruginosa*
Trenton J. Davis[1] and Heather D. Bean[1]
[1]*Arizona State University, Tempe, AZ*

TH-649
Plasma Amino Acids in Individuals with Autism Spectrum Disorder: A Multivariate Statistical Analysis
Troy Vargason[1], Daniel P. Howsmon[1], Uwe Kruger[1], James Adams[2], and Juergen Hahn[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*Arizona State University, Tempe, AZ*

Track: Bioinformatics, Computational and Systems Biology

Bioinformatics, Computational and Systems Biology–Other/Non-Specified

TH-650
A Comparison on Bio-mathematical Models for Cognitive Performance under Fatigue
Henry Peng[1], Fethi Bouak[1], Wenbi Wang[1], Renee Chow[1], and Matthew Lamb[1]
[1]*Defence Research and Development Canada, Toronto Research Centre, Toronto, ON, Canada*

TH-651
Developing a Retrieval Method for a Case-Based Reasoning System for Predicting Appearance after Breast Reconstruction
Krista M. Nicklaus[1,2], Gezheng Wen[1,2], Joowon Cho[1,2], Audrey Cheong[3], Greg P. Reece[2], Fatima A. Merchant[3], Michelle C. Fingeret[2], Scott B. Cantor[2], and Mia K. Markey[1,2]
[1]*The University of Texas at Austin, Austin, TX,* [2]*The University of Texas MD Anderson Cancer Center, Houston, TX,* [3]*University of Houston, Houston, TX*

TH-652
An *In Vitro* Approach to Identify Skin Sensitizers With Feature Selection and Classification Models
Lingting Shi[1], Talia Greenstein[1], Serom Lee[1], Rene Schloss[1], and Martin Yarmush[1]
[1]*Rutgers University, Piscataway, NJ*

TH-653
Quality Control of mRNAs at the Entry of the Nuclear Pore Complex
Mohammad Soheilypour[1] and Mohammad Mofrad[1]
[1]*University of California, Berkeley, Berkeley, CA*

TH-654
Gut Microbiome as Biomarker for Neuromodulation Therapy of Inflammatory Bowel Diseases
Ziyang Gao[1]
[1]*Duke University, Durham, NC*

Track: Bioinformatics, Computational and Systems Biology

Theory and Practice of Synthetic Biology

TH-655
Processing Oscillatory Signals by Incoherent Feedforward Loops
Carolyn Zhang[1], Ryan Tsoi[1], Feilun Wu[1], and Lingchong You[1]
[1]*Duke University, Durham, NC*

TH-656
Fine Tuning of Population Ratio in a Two-strain Synthetic Microbial Consortia
Xingwen Chen[1] and Xiao Wang[1]
[1]*Arizona State University, Tempe, AZ*

Track: Biomedical Engineering Education (BME)

Entrepreneurship and Innovation

TH-657
Three-Course Sequence: An Approach to Launching Innovative Medical Devices
Andrew Jacobs[1], Duncan McNally[1], and Olivia Coiado[1]
[1]*University or Portand, Portland, OR*

TH-658
ThinkTank: A Hyperdisciplinary Approach to Team-Based Innovation
Jonathan Ehrman[1], Kevin Cyr[1], Katrina Leaptrot[1], Sean Bedingfield[1], Alyssa Lokits[1], Stacy Sherrod[1], Carin McAbee[1], and Chrissy Marasco[1]
[1]*Vanderbilt University, Nashville, TN*

TH-659
Initial Experience with Active Learning to Inspire The Entrepreneurial Mindset in a Junior Level Biomedical Engineering Product Design Class
Michael VanAuker[1]
[1]*Arizona State University, Tempe, AZ*

TH-660
A Template for Multi-Disciplinary Team-Based Problem Solving, Design, and Assessment: Application in Biomedical Engineering
Silviya Zustiak[1], Scott Sell[1], and Glenn Gaudette[2]
[1]*Saint Louis University, St Louis, MO,* [2]*Worcester Polytechnic Institute, Worcester, MA*

Thursday, October 12 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:00 pm–3:45 pm

Track: Biomedical Engineering Education (BME)

Technological Enhancements

TH-661
Learning Catalytics: Real-time Assessment and Peer-learning in Interdisciplinary Engineering Course
Angela Jones[1]
[1]*University of Maryland, College Park, College Park, MD*

TH-663
Flipping Biomolecules for Enhanced Learning and Course Sustainability
Kevin Buno[1], Evan Phillips[1], and Sherry Voytik-Harbin[1]
[1]*Purdue University, West Lafayette, IN*

TH-664
Interactive Mini Online Lectures with Tutorial-based Example Videos for the Flipped Classroom
Samantha Brenna[1], Michael Caplan[1], and Casey Ankeny[1]
[1]*Arizona State University, Tempe, AZ*

Track: Biomedical Engineering Education (BME)

Outcomes Assessment

TH-665
Continuous ABET Assessments Made Easier
Eileen Haase[1] and Cathy Jancuk[1]
[1]*Johns Hopkins University, Baltimore, MD*

TH-666
Continuous Improvement in Instruction in Responsible Conduct of Research
Julia Savoy[1], Mia Markey[2,3], and H. Grady Rylander[2]
[1]*University of Wisconsin-Madison, Madison, WI,* [2]*The University of Texas at Austin, Austin, TX,* [3]*The University of Texas MD Anderson Cancer Center, Houston, TX*

TH-667
Improvements on a Communication Intervention as a Part of a Summer Research Experiences for Undergraduates (REU) Program
Margo Cousins[1], Courtney Sviatko[1], Stephanie Young[1], Laura Suggs[1], Mia Markey[1], and Brandi DeMont[1]
[1]*University of Texas at Austin, Austin, TX*

TH-668
A Comparison of Summative and Formative Assessments in Promoting Learning of Physiology by Biomedical Engineering Students
William Guilford[1] and Brian Helmke[1]
[1]*University of Virginia, Charlottesville, VA*

Track: Biomedical Engineering Education (BME)

Biomedical Engineering Education (BME)–Other/Non-Specified

TH-669
Research Animal Retirement Foundation
Rachele McAndrew[1] and Jennapher Lingo VanGilder[2]
[1]*Arizona State University, Tempe, AZ,* [2]*Arizona State Univeristy, Tempe, AZ*

TH-670
Unexpected Positive Consequence of a Nationwide Program that Gives Economic Support for Low Income High Quality Students in Colombia
Vivian Talero[1], Juan M Cordovez[1], and Juan Carlos Briceno[1]
[1]*Universidad de los Andes, Bogota, Colombia*

POSTER SESSION–THURSDAY

FRIDAY'S SCHEDULE HIGHLIGHTS

PLATFORM SESSIONS–FRI-1

8:00 am–9:30 am — **Convention Center**
See pages 149-157

Special Session

8:00 am–9:30 am — **Room 122C**
Career Options for the BME Graduate Students and Postdoctoral Fellows

Industry Session

8:00 am–10:00 am — **Room 125AB**
Tech Transfer Innovation Challenge

Exhibit Hall Open

9:30 am–5:00 pm — **300 Level Exhibition Hall**

Poster Session

9:30 am–5:00 pm — **300 Level Exhibition Hall**

Poster Viewing with Authors & Refreshment Break

9:30 am–10:15 am — **300 Level Exhibition Hall**

Plenary Session

10:15 am–11:15 am — **North Ballroom BCD**

Wallace H. Coulter Award for Healthcare Innovation Lecture
Bonnie Anderson

Women in BME Luncheon

11:30 am–1:00 pm — **West Ballroom**
See page 144

Industry Session

1:00 pm–3:00 pm — **Room 125AB**
Clinical Innovators Spotlight

Don't forget to turn your BMES BASH ticket in for a wristband at the information or registration booths before Friday afternoon

PLATFORM SESSIONS–FRI-2

1:15 pm–2:45 pm — **Convention Center**
See pages 158-166

Special Session

1:15 pm–2:45 pm — **Room 122C**
Curricular Innovation: Highlighting Your Most Unique or Innovative Course Offerings

Special Session

1:15 pm–2:45 pm — **Room 122A**
International Symposium on Biomedical Engineering

Special Session

1:30 pm–4:30 pm — **Room 121ABC**
BMES-NSF Special Session on Research in Biomedical Engineering and Grant Writing

Poster Viewing with Authors & Refreshment Break

2:45 pm–3:30 pm — **300 Level Exhibition Hall**

Industry Session

3:00 pm–5:00 pm — **Room 125AB**
Investment Pitches and Partnering

PLATFORM SESSIONS–FRI-3

3:30 pm–5:00 pm — **Convention Center**
See pages 167-175

Special Session

3:30 pm–5:00 pm — **Room 122A**
Symposium in honor of Dr. and Mrs. Athanasiou

Plenary Session

5:15 pm–6:15 pm — **North Ballroom BCD**

Diversity Award Lecture: The Danger of Acting Now
Manu Platt, PhD

BMES Dessert Bash

8:30 pm–11:00 pm — **Arizona Science Center**

Friday, October 13 | 8:00 am–9:30 am | Platform Session 1

OP-Fri-1-1 — Room 224A

Track: Biomaterials

Biomaterials for Regenerative Medicine I

Chairs: Rebecca Wachs, Daniel Alge

8:00 am
Shear-induced Fibrillogenesis of Fibronectin Nanofibers for Enhanced Cutaneous Wound Healing
Christophe Chantre[1,2], Patrick Campbell[1], Holly Golecki[1], Adrian Buganza[1,3], Andrew Capulli[1], Leila Deravi[1,4], Stephanie Dauth[1], Sean Sheehy[1], Jeffrey Paten[4], Karl Gledhill[5], Yanne Doucet[5], Erbil Abaci[5], Jeffrey Ruberti[4], Simon Hoerstrup[2], Angela Christiano[5], and Kevin Kit Parker[1]
[1]Harvard University, Cambridge, MA, [2]University of Zurich, Zurich, Switzerland, [3]Purdue University, West Lafayette, IN, [4]Northeastern University, Boston, MA, [5]Columbia University, New York, NY

8:15 am
Engineering an Antimicrobial and Osteoinductive Hydrogel for Bone Tissue Regeneration
Ehsan Shirzaei Sani[1], Seyed Hossein Bassir[2], Roberto Portillo Lara[1,3], Giuseppe Intini[2,4], and Nasim Annabi[1,5]
[1]Northeastern University, Boston, MA, [2]Harvard School of Dental Medicine, Boston, MA, [3]Tecnológico de Monterrey, Monterrey, Mexico, [4]Harvard Stem Cell Institute, Cambridge, MA, [5]Brigham and Women's Hospital, Boston, MA

8:30 am
Intra-Articular TSG-6 Delivery From Heparin-based Materials Reduces Cartilage Damage In Osteoarthritis
Liane Tellier[1,2], Elda Trevino[1,2], Nick Willett[1,2,3], Robert Guldberg[1], and Johnna Temenoff[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA, [3]Veterans Affairs Center, Atlanta, GA

8:45 am
BDNF mimetic Peptide Amphiphile Nanostructures for Neural Regeneration
Alexandra Edelbrock[1], Zaida Alvarez[1], and Samuel Stupp[1]
[1]Northwestern University, Chicago, IL

9:00 am
Oxygen-controllable Hydrogels to Study Hypoxic, Cluster-based Vasculogenesis
Michael Blatchley[1], Songnan Wang[1], Franklyn Hall[2], and Sharon Gerecht[1]
[1]Johns Hopkins University, Baltimore, MD, [2]Mississippi State University, Starkville, MS

9:15 am
A Novel Sol-Gel Derived Silica/Calcium Phosphate Nanocomposite Powder for Bone Regeneration
Seyed Mohsen Latifi[1], Otto J Juhl IV[1], Yue Zhang[1], and Henry J Donahue[1]
[1]Department of Biomedical Engineering, Virginia Commonwealth University, Richmond, VA

***Biomaterials Track sponsored by:**

ACS Biomaterials SCIENCE & ENGINEERING

OP-Fri-1-2 — Room 224B

Tracks: Biomaterials, Drug Delivery & Intelligent Systems

Drug Delivering Biomaterials I

Chairs: Katie Bratlie , Forrest Kievit

8:00 am
PEGylation Of Model Drug Carriers Enhances Uptake By Primary Human Neutrophils
William Kelley[1], Catherine Fromen[1], and Omolola Eniola-Adefeso[1]
[1]University of Michigan, Ann Arbor, MI

8:15 am
Refilling Drug-Eluting Depots through Systemic Administration of Inert Prodrugs
Yevgeny Brudno[1], Rajiv Desai[2], Brian Kwee[3], Neel Joshi[2], Michael Aizenberg[2], and David Mooney[2]
[1]University of North Carolina at Chapel Hill and North Carolina State University, Raleigh, NC, [2]Harvard University, Cambridge, MA

8:30 am
PEG Hydrogels with Tunable Biodegradation Rate for Sustainable Delivery of Multicomponent mixture of Platelet-Rich Plasma for treatment of Osteoarthritis
Era Jain[1], Saahil Sheth[1], Natasha Case[1], Nobuaki Chinzei[2], Linda Sandell[2], Scott Sell[1], Muhammad Rai[2], and Silviya Zustiak[1]
[1]Saint Louis University, St. Louis, MO, [2]Washington University, St. Louis, MO

8:45 am
Development of Polymeric Antioxidant Microspheres to Scavenge ROS and Prevent Joint Damage from Post-traumatic Osteoarthritis
Taylor Kavanaugh[1], Eric Dailing[1], Hongsik Cho[2], Karen Hasty[2], and Craig Duvall[1]
[1]Vanderbilt University, Nashville, TN, [2]UT Health Science Center, Memphis, TN

9:00 am
Restoration of Endothelial Cell Function in Ischemic Tissues for Accelerated Vascularization
Hong Niu[1], Zhaobo Fan[1], and Jianjun Guan[1]
[1]The Ohio State University, Columbus, OH

9:15 am
Prediction and Validation of Engineered High-Density Lipoprotain-Mimetic-Nanoparticle Formulations for Multifunctional Drug Carrier Development
Taeyoung Kim[1], Yoshitaka Sei[1], Seung Soon Jang[1], and YongTae Kim[1]
[1]Georgia Institute of Technology, Atlanta, GA

***Biomaterials Track sponsored by:**

ACS Biomaterials SCIENCE & ENGINEERING

Friday, October 13 | 8:00 am–9:30 am | Platform Session 1

OP-Fri-1-3 — Room 229A

Tracks: Biomechanics, Cellular and Molecular Bioengineering

The Nucleus and Cytoskeleton in Mechanobiology

Chairs: Amit Pathak, Kimberly Stroka

8:00 am
Differential SUN Protein Oligomerization Reveals Novel Functional Insights
Zeinab Jahed[1], Darya Fadavi[1], Uyen Vu[1], Jared Hennen[2], Ehsan Asgari[1], Joachim D. Mueller[2], G.W. Gant Luxton[2], and Mohammad R.K. Mofrad[1]
[1]*University of California Berkeley, Berkeley, CA,* [2]*University of Minnesota, Minneapolis, MN*

8:15 am
Role of Nuclear Forces in Topography Induced Stem Cell Differentiation
Kelly Hotchkiss[1], Paul Arsenovic[1], Cristian Coriano-Ortiz[1], Claire Reagan[1], Daniel Conway[1], and Rene Olivares-Navarrete[1]
[1]*Virginia Commonwealth University, Richmond, VA*

8:30 am
Lamin Mutations Responsible for Muscular Dystrophy Cause Progressive Nuclear Damage in Muscle Fibers
Ashley Kaminski[1], Gregory Fedorchak[1], Tyler Kirby[1], Philipp Isermann[1], and Jan Lammerding[1]
[1]*Cornell University, Ithaca, NY*

8:45 am
The Role of Cell Geometry and Extracellular Matrix Ligands on Vinculin Loading and Actin Architectures
Karen Xu[1], Andrew LaCroix[1], and Brenton Hoffman[1]
[1]*Duke University, Durham, NC*

9:00 am
Repair Factor Depletion and Genome Variation in Cancer Cells after Pore Invasion
Jerome Irianto[1], Yuntao Xia[1], Charlotte R. Pfeifer[1], Avathamsa Athirasala[1], Jiazheng Ji[1], Cory M. Alvey[1], Manu Tewari[1], Rachel R. Bennett[1], Shane M. Harding[1], Andrea J. Liu[1], Roger A. Greenberg[1], and Dennis E. Discher[1]
[1]*University of Pennsylvania, Philadelphia, PA*

9:15 am
Proteomic Responses to Mechanical Perturbation in Drosophila
Ardon Z. Shorr[1], Rachel Willen[1,2], Tiffany Lau[1], Lina Gonzalez[1,3], Jonathan S. Minden[1], and Philip R. LeDuc[1]
[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*Tufts Medical Center, Boston, MA,* [3]*Massachusetts Institute of Technology (MIT), Boston, MA*

OP-Fri-1-4 — Room 229B

Tracks: Biomechanics, Cardiovascular Engineering

Cardiovascular Biomechanics

Chairs: Karen May-Newman, Manuel Rausch

8:00 am
Changes in Biaxial Mechanical Properties Precede Ascending Aortic Aneurysm Formation in Mice
Jungsil Kim[1], Kacey Lentz[1], Hiromi Yanagisawa[2], and Jessica Wagenseil[1]
[1]*Washington University, St. Louis, MO,* [2]*University of Tsukuba, Tsukuba, Japan*

8:15 am
Intramural Shear in Ascending Thoracic Aortic Aneurysm
Christopher Korenczuk[1], Rohit Dhume[1], Ryan Mahutga[1], and Victor Barocas[1]
[1]*University of Minnesota, Minneapolis, MN*

8:30 am
Accelerated Atherosclerosis Development in C57bl6 Mice By Overexpressing AAV-Mediated PCSK9 And Partial Carotid Ligation
Sandeep Kumar[1], Dong Wor Kang[1], Amir Rezvan[1], and Hanjoong Jo[1,2]
[1]*Emory University, Atlanta, GA,* [2]*Emory University & Georgia Tech, Atlanta, GA*

8:45 am
Impact of Prior High-Altitude Pulmonary Edema on Pulmonary Hemodynamics
Ashley Mulchrone[1], Heather Shumaker [1], Marlowe Eldridge[1], and Naomi Chesler[1]
[1]*University of Wisconsin-Madison, Madison, WI*

9:00 am
A Unified Approach for Reconstructing Left Ventricle Kinematics from Noninvasive Imaging Data
Brian Hong[1], Timothy Secomb[1], and Michael Moulton[2]
[1]*University of Arizona, Tucson, AZ,* [2]*University of Nebraska Medical Center, Omaha, NE*

9:15 am
Predicting the Uniaxial Failure Properties Of The Aortic Media With An Embedded Fiber Finite Element Method
James Thunes[1], Julie Phillippi[1], Thomas Gleason[1], David Vorp[1], and Spandan Maiti[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

Friday, October 13 | 8:00 am–9:30 am | Platform Session 1

OP-Fri-1-5 — Room 221A

Track: Cardiovascular Engineering

Thrombosis and Hemostasis

Chairs: Elaheh Rahbar, Juan Jimenez

8:00 am
Assessment of Platelet Dense Granule Trafficking, P2Y1/P2Y12, and Protease-activated Receptors Interactions in Neonates Utilizing Whole Blood, Small Volume Assays
Anh Ngo[1], Annachiara Mitrugno[1], Anne Rocheleau[1], Sandra Baker[1], Ayesha Khader[1], Joseph Aslan[1], Susan Lettimore[1], Michael Recht[1], Kristina Haley[1], Xiaolin Nan[1], and Owen McCarty [1]
[1]*Oregon Health & Science University, Portland, OR*

8:15 am
An Inferior Vena Cava Ligation Model to Study Thrombin Generation Kinetics under Flow
Wei Yin[1], Andrew Dimatteo[1], Andrew Kumpfbeck[1], Stephen Leung[1], Marina Fandaros[1], Bryan Musmacker[1], David Rubenstein[1], and Mary Frame[1]
[1]*Stony Brook University, Stony Brook, NY*

8:30 am
Pathway Analysis Reveals a p38 MAP kinase-MAPKAPK2-RTN4/Nogo Axis Regulating Intracellular Calcium Dynamics in Procoagulant Platelets
Owen McCarty[1], Joseph Aslan[1], Özgün Babur[1], Ariana Buchanan[1], Anh Ngo[1], Jiaqing Pang[1], Rachel Rigg[1], Annachiara Mitrugno[1], Larry David[1], and Emek Demir[1]
[1]*Oregon Health & Science University, Portland, OR*

8:45 am
A Novel Targeted Dual-Pathway Anti-thrombotic Therapy Reduces Arterial and Venous Thrombosis without Increased Bleeding Risk
Donny Hanjaya-Putra[1,2], Carolyn Haller[1,2], Xiaowei Wang[3], Peter Karlheinz[3], and Elliot L. Chaikof[1,2]
[1]*The Wyss Institute for Biologically Inspired Engineering, Boston, MA,* [2]*Harvard Medical School, Boston, MA,* [3]*Baker Heart Research Institute, Melbourne, Australia*

9:00 am
Decreased Expression of Platelet Glycoprotein ibε and Glycoprotein VI Receptors and Diminished Hemostatic Capacity In Heart Failure Patients
Zengsheng Chen[1], Tieluo Li[1], Bartley Griffith[1], and Zhongjun Wu[1,2]
[1]*University of Maryland School of Medicine, Baltimore, MD,* [2]*University of Maryland, College Park, College Park, MD*

9:15 am
Soluble Fibrin Causes an Acquired Platelet GPVI-Deficiency: Implications for Coagulopathy
Mei Yan Lee[1], Bradley Herbig[1], Christopher Verni[1], and Scott Diamond[1]
[1]*University of Pennsylvania, Philadelphia, PA*

OP-Fri-1-6 — Room 221B

Tracks: Nano and Micro Technologies, Cellular and Molecular Bioengineering

Micro/Nano Tools in Molecular Biology (Genomics, Proteomics)

Chairs: Liang Tang, Jacqueline Linnes

8:00 am
A Non-invasive Single-cell Transcriptomic and Metabolic Analysis Microfluidic Array
Xuan Li[1], Yinglei Tao[1], Ning Ma[1], Do-Hyun Lee[1], H. Kumar Wickramasinghe[1], Michelle Digman[1], and Abraham Lee[1]
[1]*University of California, Irvine, Irvine, CA*

8:15 am
Macrogenomic Engineering: Modulating Chromatin Folding for Increased Chemotherapeutic Efficacy
Greta Bauer[1], Luay Almassalha[1], Wenli Wu[1], Lusik Cherkezyan[1], Scott Gladstein[1], John Chandler[1], David VanDerway[1], Brandon Seagle[2], Igal Szleifer[1], Shohreh Shahabi[2], and Vadim Backman[1]
[1]*Northwestern University, Evanston, IL,* [2]*Northwestern University Feinberg School of Medicine, Chicago, IL*

8:30 am
Multiplexed Quantification of Angiogenic Receptors via qFlow Cytometry and Qdot-nanosensors
Si (Stacie) Chen[1] and P.I. Imoukhuede[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

8:45 am
Simultaneous Detection of Zika, Dengue, and Chikunguna Viral Targets Directly from Whole Blood
Akid Ornob[1], Anurup Ganguli[1], Hojeong Yu[1], Gregory Damhorst[1], Weili Chen[1], Fu Sun[1], Abdul Bhuiya[1], Brian Cunningham[1], and Rashid Bashir[1]
[1]*The University of Illinois at Urbana-Champaign, Urbana, IL*

9:00 am
Sequence-Specific Purification of Urine Cell-Free DNA for Tuberculosis Diagnosis
Amy Oreskovic[1], Nuttada Panpradist[1], David Horne[2], and Barry Lutz[1]
[1]*University of Washington, Seattle, WA,* [2]*Harborview Medical Center, Seattle, WA*

9:15 am
Detection of *E. coli* O157:H7 via a One-pot, Isothermal DNA Preparation and Amplification Platform
Sherine Cheung[1], Matthew Yee[1], Nguyen Le[1], Benjamin Wu[1], and Daniel Kamei[1]
[1]*University of California at Los Angeles, Los Angeles, CA*

PLATFORM SESSIONS–FRIDAY–1–8:00 AM–9:30 AM

Friday, October 13 | 8:00 am–9:30 am | Platform Session 1

OP-Fri-1-7 — Room 221C

Track: Tissue Engineering

Immunoengineering and Immunomodulation in Tissue Engineering

Chairs: Evangelia Bellas, Edward Phelps

8:00 am
Harnessing the Regenerative Potential of Macrophages Using Instructive Extracellular Matrices
Ramkumar Tiruvannamalai Annamalai[1], William Carson[1], Benajamin Levi[1], Steven Kunkel[1], and Jan Stegemann[1]
[1]*University of Michigan, Ann Arbor, MI*

8:15 am
Hydrogel Stiffness Alters the Phenotype Of Cord Blood-Derived Macrophage
Rebecca Scott[1,2], Kristi Kiick[1], and Robert Akins[2]
[1]*University of Delaware, Newark, DE,* [2]*Nemours-Alfred I. duPont Hospital for Children, Wilmington, DE*

8:30 am
Functionalized Immunomodulatory IL-10 Surfaces Attenuates Biomaterial Topography Activated Macrophages
Kaiyuan Jiang[1], Jiapu Liang[1], Sydney Wiggins[1], and Cherie Stabler[1]
[1]*University of Florida, Gainesville, FL*

8:45 am
Reprogramming Macrophages Toward the Anti-biofilm Phenotype against *Staphylococcus Aureus* Biofilm
Talib Alboslemy[1], Bing Yu[1], and Min-Ho Kim[1]
[1]*Kent State University, Kent, OH*

9:00 am
Design of Local Immune-Privileged Microenvironment to Prevent Islet Graft Rejection
Dilem Oran[1], Tolga Lokumcu[1], Ozgur Albayrakoalbayra[1], Tugba Bal[1], Tugba Bagci-Onder[1], Mert Erkan[1], Fusun Can[1], and Seda Kizilel[1]
[1]*Koc University, Istanbul, Turkey*

9:15 am
TNF Stimulation Induces Patient-Specific Differences In Insulin Stimulated Glucose Uptake In 3D Adipose Tissue Models
Roselyn Abbott[1], Roza Ogurlu[1], and David Kaplan[1]
[1]*Tufts University, Medford, MA*

OP-Fri-1-8 — Room 222A

Tracks: Nano and Micro Technologies, Biomaterials

Integration of Biomaterials with Chips and Devices

Chairs: Debanjan Sarkar, Jamal Lewis

8:00 am
A Novel High-Throughput 3D Cancer Cell Migration Assay on a Microwell Chip Platform
Alexander Roth[1], Stephen Hong[1], Sean Yu[1], Yana Sichkar[1], Oju Jeon[2], Noor Janto[2], Pranav Joshi[1], Eben Alsberg[2], and Moo-Yeal Lee[1]
[1]*Cleveland State University, Cleveland, OH,* [2]*Case Western Reserve University, Cleveland, OH*

8:15 am
Development and Characterization of Micropatterned Cardiac Co-Cultures for Improved Tissue Engineering Strategies
Jonathan Soucy[1], David Diaz Vera[1], Jody Askaryan[2], Abigail Koppes[1], Nasim Annabi[1,3], and Ryan Koppes[1]
[1]*Northeastern University, Boston, MA,* [2]*Rensselaer Polytechnic Institute, Troy, NY,* [3]*Harvard-MIT HST, Cambridge, MA*

8:30 am
A Dry Condition Detection Technique for Field Effect Transistor Biosensor
Yoshihiko Watanabe[1], Anurup Ganguli[1], Akid Ornob[1], and Rashid Bashir[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

8:45 am
Biosensor to Enumerate Leukocytes and CD64 Expression on Neutrophils for Sepsis Diagnosis
Umer Hassan[1,2], Tanmay Ghonge[1,2], Bobby Reddy[1,2,3], Enrique Valera[1,2], Ishan Taneja[2,3], Jacob Berger[1,2], Alex Hasnain[1], Tor Jensen[2], Manish Patel[1], Michael Rappleye[1], Naif Mansury[1], Ryan Healey[1], Zachary Price[2], and Rashid Bashir[1,2,4]
[1]*University of Illinois Urbana-Champaign, Urbana, IL,* [2]*Carle Foundation Hospital, Urbana, IL,* [3]*Prenosis Inc, Urbana, IL,* [4]*Carle Illinois College of Medicine, Urbana, IL*

9:00 am
Capillary-Facilitated Coating of Carbon Nanotube Thin Film as a Strain Gauge For Blood Retraction Test
Zida Li[1], Xufeng Xue[1], David Peyer[1], Brendan McCracken[1], Kevin Ward[1], and Jianping Fu[1]
[1]*University of Michigan, Ann Arbor, MI*

9:15 am
One-step Clear Alginate Hydrogels Electro-deposited for Organ-on-chip Applications
Kelsey Gray[1], Sukriti Ghosh[1], and Kimberly Stroka[1]
[1]*University of Maryland, College Park, MD*

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OP-Fri-1-9 — Room 222B

Track: Cellular and Molecular Bioengineering

Gene Delivery and Genome Bioengineering

Chairs: Jordan Green, Michael Mitchell

8:00 am
Combinatorial Library of Polymers Enables Transfection of Post-Mitotic Differentiated Retinal Cells
David Wilson[1], Bibhudatta Mishra[1], Yuan Rui[1], Mark Suprenant[1], Srinivasa Sripathi[1], Baranda Hansen[1], Cynthia Berlinicke[1], Donald Zack[1], and Jordan Green[1]
[1]*Johns Hopkins University, Baltimore, MD*

Friday, October 13 | 8:00 am–9:30 am | Platform Session 1

8:15 am
Enhanced Viral Transduction Efficiency Using Microfluidic Technology
Laura Healey[1], Vishal Tandon[1], Bryan Teece[1], Jose Santos[1], Dorit Berlin[1], Daniel Doty[1], Jeffrey Borenstein[1], and Jenna Balestrini[1]
[1]*Draper, Cambridge, MA*

8:30 am
CRISPR-Cas9 Mediated Targeted Gene Knock-in with Long ssODN Donors
So Hyun Park[1], Ciaran Lee[1], and Gang Bao[1]
[1]*Rice University, Houston, TX*

8:45 am
Chemical and Physical Priming of Human Mesenchymal Stem Cells to Enhance Nonviral Gene Delivery
Tyler Kozisek[1], Albert Nguyen[1], Andrew Hamann[1], Amy Mantz[1], Eva Schubert[1], Mathias Schubert[1], and Angela K. Pannier[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE*

9:00 am
Robust and Tunable Transcriptional Activation of Native Genes by Integration of Heterologous Promoters
Michael Gapinske[1], Alexander Brown[1], Nathan Tague[1], Wendy Woods[1], Jackson Winter[1], and Pablo Perez-Pinera[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

9:15 am
Large-scale Design of Robust Genetic Circuits with Multiple Inputs and Outputs for Mammalian Cells
Benjamin Weinberg[1], Hang Pham[1], Leidy Caraballo[1], Thomas Lozanoski[1], Adrien Engel[2], Swapnil Bhatia[1], and Wilson Wong[1]
[1]*Boston University, Boston, MA,* [2]*ETH Zurich, Basel, Switzerland*

OP-Fri-1-10 — Room 223

Track: Cellular and Molecular Bioengineering

Cell Migration

Chairs: Katie Bratlie, Weiqiang Chen

8:00 am
Tissue-Specific Characterization of Innate and Introduced Immune Cell Migration in Danio rerio
Colin Paul[1], Alexus Devine[1], and Kandice Tanner[1]
[1]*National Cancer Institute, Bethesda, MD*

8:15 am
Migration Against the Direction of Flow is LFA-1 Dependent in Human Hematopoietic Stem and Progenitor Cells
Alexander Buffone, Jr.[1], Nicholas Anderson[1], and Daniel Hammer[1]
[1]*University of Pennsylvania, Philadelphia, PA*

8:30 am
Regulation of Actomyosin Dynamics During Coordinated Cell Movements in Embryonic Wound Repair
Anna Kobb[1], Teresa Zulueta-Coarasa[1], and Rodrigo Fernandez-Gonzalez[1,2]
[1]*University of Toronto, Toronto, ON, Caneda,* [2]*The Hospital for Sick Children, Toronto, ON, Canada*

8:45 am
Distinct Migration Mechanisms of Vertically and Laterally Confined Cells
Panagiotis Mistriotis[1], Emily Wisniewski[1], Robert Law[1], Alexandros Afthinos[1], Soontorn Tuntithavornwat[1], Kaustav Bera[1], Runchen Zhao[1], and Konstantinos Konstantopoulos[1]
[1]*Johns Hopkins University, Baltimore, MD*

9:00 am
Force-Activated Protein Dynamics of Vinculin Affect Directed Cell Migration
Katheryn Rothenberg[1], David Scott[2], and Brenton Hoffman[1]
[1]*Duke University, Durham, NC,* [2]*University of North Carolina, Chapel Hill, Chapel Hill, NC*

9:15 am
Generation of Force and Motion by a Living Parasite Measured Using a Laser Trap
Rachel Stadler[1], Ke Hu[2], Brian Helmke[1], and William Guilford[1]
[1]*University of Virginia, Charlottesville, VA,* [2]*Indiana University, Bloomington, IN*

OP-Fri-1-11 — Room 225A

Track: Biomedical Imaging and Optics

Ultrasound Imaging

Chairs: Brett Byram, Srivalleesha Mallidi

8:00 am
Real Time 3D Flow Visualization
Cooper Moore[1] and Olaf von Ramm[1]
[1]*Duke University, Durham, NC*

8:15 am
Motion Assessment in the Left Ventricle Using High Speed Ultrasound Imaging
Martin Andersen[1], Cooper Moore[2], Samuel Schmidt[1], Johannes Struijk[1], and Olaf von Ramm[2]
[1]*Aalborg University, Aalborg, Denmark,* [2]*Duke University, Durham, NC*

8:30 am
A Novel Paradigm to Predict Spontaneous Preterm Birth Using the Cervical Heterogeneity Index in Ultrasound Images
Sleiman R. Ghorayeb[1], Matthew Blitz[2], Sarah Pachtman[2], Megan Murphy[1], Zara Rahman[1], and Burton Rochelson[2]
[1]*Hofstra University, Hempstead, NY,* [2]*Northwell Health, Manhasset, NY*

8:45 am
Multi-functional Ultrasonic Micro-elastography Imaging System
Xuejun Qian[1], Teng Ma[1], Mingyue Yu[1], Xiaoyang Chen[1], K. Kirk Shung[1], and Qifa Zhou[1]
[1]*University of Southern California, Los Angeles, CA*

9:00 am
Detecting Corneal Biomechanical Changes Using a Novel Ocular Pulse Elastography Method
Joel Palko[1], Xueliang Pan[1], and Jun Liu[1]
[1]*Ohio State University, Columbus, OH*

9:15 am
Transparent Microring Ultrasonic Detector Fabricated by Soft Nanoimprint Method
Hao Li[1], Biqin Dong[1], Xiangfan Chen[1], Hao Zhang[1], and Cheng Sun[1]
[1]*Northwestern University, Evanston, IL*

PLATFORM SESSIONS–FRIDAY–1–8:00 AM–9:30 AM

Friday, October 13 | 8:00 am–9:30 am | Platform Session 1

OP-Fri-1-12 — Room 225B

Tracks: Biomedical Imaging and Optics, Cardiovascular Engineering

Cardiovascular Imaging

Chairs: Arash Kheradvar, Ramin Pashaie

8:00 am
Photoacoustic Imaging of Placental Ischemia During Preeclampsia
Dylan Lawrence[1], Megan Escott[1], and Carolyn Bayer[1]
[1]*Tulane University, New Orleans, LA*

8:15 am
Two-Photon Excited Fluorescence Imaging of Heart Valves Non-Invasively Identifies Calcific Nodules
Lauren Baugh[1], Zhiyi Liu[1], Kyle Quinn[2], Irene Georgakoudi[1], and Lauren Black[1]
[1]*Tufts University, Medford, MA,* [2]*University of Arkansas, Fayetteville, AR*

8:30 am
A Novel MRA-Based Framework for the Detection Of Changes In Cerebrovascular Blood Pressure
Yitzhak Gebru[1], Guruprasad Giridharan[1], Mohammed Ghazal[1,2], Ali Mahmoud[1], Ahmed Shalaby[1], Ayman El-Baz[1], J. Richard Jennings[3], and Ashraf Khalil[2]
[1]*University of Louisville, Louisville, KY,* [2]*Abu Dhabi University, Abu Dhabi, United Arab Emirates,* [3]*University of Pittsburgh, Pittsburgh, PA*

8:45 am
Myocardial Phantom for Dynamic, Multimodal Imaging Calibration and Modeling Methods
Hiba Shahid[1], Joshua Au[1], Viraat Goel[1], Pierce Hadley[1], Alex Hasnain[1], Boeun Hwang[1], Bara Saadah[1], Linsun Sunny[1], Teresa Yang[1], Hugh Yeh[1], Wawrzyniec Dobrucki[1,2], and Brad Sutton[1,2]
[1]*University of Illinois at Urbana-Champaign, Champaign, IL,* [2]*Beckman Institute, Champaign, IL*

9:00 am
Characterization of Novel Voltage-Sensitive Dyes for Cardiac Applications
N Rokhaya Faye[1,2], Sushmitta Raja[1], Alan Urban[3], Alexandre Hentz[4], Gihad Dargazanli[4], and Olivier Bernus[1]
[1]*University of Bordeaux, Bordeaux, France, Metropolitan,* [2]*Georges Washington University, Washington DC, DC,* [3]*University of Bordeaux, Paris, France,* [4]*SANOFI, Chilly Mazarin, France*

9:15 am
Eulerian Video Magnification Enhanced Optical Gating For In Vivo Micro-CT Imaging of Avian And Murine Embryonic Heart Development
Henrik Lauridsen[1,2] and Jonathan Butcher[1]
[1]*Cornell University, Ithaca, NY,* [2]*Aarhus University, Aarhus N, Denmark*

OP-Fri-1-13 — Room 228A

Track: Device Technologies and Biomedical Robotics

Biosensors I

Chairs: Daniel Ratner, Yun Wu

8:00 am
Optimizing Silicon Photonics for Serologic and Phenotypic Profiling of Blood
Pakapreud Khumwan[1], Alexander Wende[1], Zakariya Khaleel[1], and Daniel Ratner[1]
[1]*University of Washington, Seattle, WA*

8:15 am
Development of an Electrical Differential Counter Based Immunosensor for the Detection of Sepsis Biomarkers
Enrique Valera[1,2], Umer Hassan[1,2], Jacob Berger[1,2], Audrey Gomez[1,2], Michael Rappleye[1,2], Daniel Abboud[1], Andrew Carlson[1], Monish Chheda[1], Zeeshan Haidry[1], Ryan Healey[1,2], Na-Teng Hung[1], Nathaniel Leung[1], Stanley Liu[1], Naif Mansury[1,2], Mariam Saadah[1,2], Alexander Hasnain[1,2], Varshini Kadadevarmath[1,2], Cynthia Liu[1], Jeffrey Varghese[1], Victor Font-Bartumeus[1], Shreya Gargya[1], Arielle Summitt[1], Yamini Yedetore[1], and Rashid Bashir[1,2,3]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL,* [2]*Carle Foundation Hospital, Urbana, IL,* [3]*Carle Illinois College of Medicine, Urbana, IL*

8:30 am
Rapid Quantification of Mouse Follicular Stimulating Hormone with Microfluidic Capillary ELISA
Xiaotian Tan[1], Anu David[1], James Day[1], Hongbo Zhu[1], Ariella Shikanov[1], and Xudong Fan[1]
[1]*University of Michigan-Ann Arbor, Ann Arbor, MI*

8:45 am
Zika Virus Infection Detection Using a Paper-based Analytical Device
Lei Wang[1], Brian Geiss[1], Chuck Henry[1], and David Dandy[1]
[1]*Colorado State University, Fort Collins, CO*

9:00 am
Highly Sensitive and Portable Surface Plasmon Resonance Biosensor for Predicting and Monitoring Responses to Lung Cancer Immunotherapy
Chang Liu[1], Zijian An[1], Xie Zeng[1], Qiaoqiang Gan[1], and Yun Wu[1]
[1]*State University of New York at Buffalo, Buffalo, NY*

9:15 am
Viability Sorting of Cells Based on Differences in Cell Stiffness Using Microfluidics
Muhymin Islam[1], Nicholas Stone[1], Hannah Brink[1], Anna Liu[1], Wilbur Lam[1], Alexander Alexeev[1], Edmund Waller[2], and Todd Sulchek[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory School of Medicine, Atlanta, GA*

Friday, October 13 | 8:00 am–9:30 am | Platform Session 1

OP-Fri-1-14 — Room 228B

Track: Cancer Technologies

Cancer Cell Motility and Migration

Chairs: Monica Burdick, Stephanie Fraley

8:00 am
Evaluation of Glioblastoma Cell Migration Modes Using Three-dimension Brain-mimetic Hydrogels
Yixiao Cui[1], Sara Cole[1], Aaron Short[2], anc Jessica Winter[1]
[1]*The Ohio State University, Columbus, OH,* [2]*Battelle, West Jefferson, OH*

8:15 am
Extracellular Matrix Malleability Enables Invasion of Cancer Cells Through Confining Environments
Katrina Wisdom[1], Kolade Adebowale[1], Rajiv Desai[2], David Mooney[2], Louis Hodgson[3], and Ovijit Chaudhuri[1]
[1]*Stanford University, Stanford, CA,* [2]*Harvard University, Cambridge, MA,* [3]*Albert Einstein College of Medicine, Bronx, NY*

8:30 am
Influence of Fibroblast Activity on Myoferlin-Mediated Changes in Breast Cancer Cell Migration
Kelsey Watts[1], Vasudha Shukla[1], Michael Ostrowski[1], Douglas Kniss[1], and Samir Ghadiali[1]
[1]*The Ohio State University, Columbus, OH*

8:45 am
Metastatic Tumor Cell Migration in Engineered Blood-Brain Barrier Microenvironments
Marina Shumakovich[1], Jonathan Siglin[1], Gregory Dawson[1], and Kimberly Stroka[1]
[1]*University of Maryland, College Park, MD*

9:00 am
Exploiting Intratumor Heterogeneity Through Cancer Cell Sorting Based on Migratory Phenotype
Lauren A. Hapach[1,2], Shawn P. Carey[1], Zachary E. Goldblatt[1], Devika Pokhriyal[1], Jiahe Li[1], and Cynthia A. Reinhart-King[1,2]
[1]*Cornell University, Ithaca, NY,* [2]*Vanderbilt University, Nashville, TN*

9:15 am
Microtubule-Targeting Agents Alter Glioma Cell Traction and Migration By Distinct Drug-Specific Mechanisms
Louis Prahl[1], Patrick Bangasser[1], Mahya Hemmat[1], Steven Rosenfeld[2], and David Odde[1]
[1]*University of Minnesota, Minneapolis, MN,* [2]*Cleveland Clinic, Cleveland, OH*

OP-Fri-1-15 — Room 227C

Tracks: Stem Cell Engineering, Biomaterials

Engineering the Stem Cell Microenvironment

Chairs: Pinar Zorlutuna, Penney Gilbert

8:00 am
Engineering the Microenvironment of Liver Progenitor Cell Spheroids with Hydrogel Microparticles
Andreas Kourouklis[1], Stefan Gentile[1], and Gregory Underhill[1]
[1]*University of Illinois Urbana-Champaign, Champaign, IL*

8:15 am
Engineering PEG-based Microribbon Hydrogels with Independently Tunable Mechanical and Biochemical Properties to Modulate Osteogenesis of Human Mesenchymal Stem Cells
Xinming Tong[1], Jianfeng Li[1], and Fan Yang[1]
[1]*Stanford University, Stanford, CA*

8:30 am
PNIPAAm-co-Jeffamine® (PNJ) Scaffolds as In Vitro Models for Niche Enrichment of Glioblastoma Stem-Like Cells
John Heffernan[1,2], James McNamara[1,3], Sabine Borwege[1], Brent Vernon[2], Nader Sanai[1], Shwetal Mehta[1], and Rachael Sirianni[1,2]
[1]*Barrow Neurological Institute, Phoenix, AZ,* [2]*Arizona State University, Tempe, AZ,* [3]*University of Arizona, Tucson, AZ*

8:45 am
Mineral-coated Microparticles Reduce the Dosage of Recombinant Basic Fibroblast Growth Factor Required for hPSC Pluripotency Maintenance
Hunter Johnson[1], Andrew Khalil[1], Angela Xie[1], and William Murphy[1]
[1]*University of Wisconsin-Madison, Madison, WI*

9:00 am
Understanding the Role of Tissue-Level Forces in Mesoderm Differentiation of Human Embryonic Stem Cells
Jonathon Muncie[1], Johnathon Lakins[2], and Valerie Weaver[3]
[1]*Joint Graduate Group in Bioengineering, UCSF and UC Berkeley, San Francisco, CA,* [2]*Center for Bioengineering and Tissue Regeneration, UCSF, San Francisco, CA,* [3]*Department of Anatomy and Department of Bioengineering and Therapeutic Sciences, Eli and Edythe Broad Center of Regenerative Medicine and Stem Cell Research, and Helen Diller Family Comprehensive Cancer Center, UCSF, San Francisco, CA*

9:15 am
Dynamic Remodeling of a Biomaterial Niche Alters Hematopoietic Stem Cell Lineage Specification
Aidan Gilchrist[1], Bhushan Mahadik[1], Sunho Lee[1], Yuhang Hu[1], Bruce Hanon[1], and Brendan Harley[1]
[1]*University of Illinois Urbana Champaign, Urbana, IL*

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PLATFORM SESSIONS–FRIDAY–1–8:00 AM–9:30 AM

Friday, October 13 | 8:00 am–9:30 am | Platform Session 1

OP-Fri-1-16 — Room 226A

Track: Neural Engineering

Peripheral Nerve Stimulation

Chairs: Tim Bruns, Kip Ludwig

8:00 am
Understanding Fiber Recruitment of Peripheral Nerves During Intrafascicular Stimulation via Computational Modeling
Erin Patrick[1], Kevin Otto[1], Rizwan Bashirullah[1], and Aysegul Gunduz[1]
[1]University of Florida, Gainesville, FL

8:15 am
Selective Stimulation of A-fibers in the Vagus Nerve by a Novel Multi-Contact Cuff Electrode
Camilo Sanchez[2], Andrew Wells[1], and Mario Romero-Ortega[1]
[1]University of Texas Dallas, Richardson, TX

8:30 am
A New Approach to Study Vagal Control of Stomach Function
Matthew Ward[1,2] and Thomas Nowak[2]
[1]Purdue University, West Lafayette, IN, [2]Indiana University School of Medicine, Indianapolis, IN

8:45 am
Neuromodulation of Gut Motility in Awake Rats Optimized by a Novel Neuromuscular Model
Bradley Barth[1], Craig Henriquez[1], Warren Grill[1], and Xiling Shen[1]
[1]Duke University, Durham, NC

9:00 am
Peripheral Neuromodulation for Female Sexual Dysfunction
Tim Bruns[1], Lauren Zimmerman[1], Indie Rice[1], Kora Dreffs[1,2], Nicole Honey[1], and Mitch Berger[1]
[1]University of Michigan, Ann Arbor, MI, [2]Emory University, Atlanta, GA

9:15 am
Acoustic Neuromodulation Enhances Peripheral Neurite Extension
Daniel Ventre[1], Emily Ashbolt[1], Marissa Puzan[1], and Abigail Koppes[1]
[1]Northeastern University, Boston, MA

OP-Fri-1-17 — Room 226B

Track: Neural Engineering

Deep Brain Stimulation

Chairs: Aysegul Gunduz, Matt Johnson

8:00 am
Development of Wearable Focused Ultrasound Transducer for the Stimulation of Rat Brain
Ryan W. Margolin[1], Phillip Croce[1], Kyungho Yoon[1], Seung-Schik Yoo[1], and Wonhye Lee[1]
[1]Brigham and Women's Hospital, Harvard Medical School, Boston, MA

8:15 am
A particle-swarm Optimization Algorithm for Predicting Deep Brain Stimulation Settings that Improve Parkinsonian Motor Signs
Alex Doyle[1], Simeng Zhang[1], Edgar Pena[1], MariPen Yeatts[1], and Matthew Johnson[1]
[1]University of Minnesota - Twin Cities, Minneapolis, MN

8:30 am
Computational Study of a Novel Time-Varying Stimulation Paradigm for Deep Brain Stimulation
Daniel Tamashiro[1], Ziyan Cai[2], Zhouyan Feng[2], and Xuefeng Wei[1]
[1]The College of New Jersey, Ewing, NJ, [2]Zhejiang University, Hangzhou, China, People's Republic of

8:45 am
Towards Responsive Deep Brain Stimulation for Medically Refractory Freezing of Gait in Parkinson's Disease
Rene Molina[1], Jonathan Shute[1], Enrico Opri[1], Kristen Sowalsky[1], Jaimie Roper[1], Daniel Martinez-Ramirez[1], Christopher Hass[1], Kelly Foote[1], Micheal Okun[1], and Aysegul Gunduz[1]
[1]University of Florida, Gainesville, FL

9:00 am
A Real-Time Classifier for Closed-Loop Sleep Modulation in Mice
Dillon Huffman[1], Farid Yaghouby[1], Asma'a Ajwad[1], Hao Wang[1], Bruce O'Hara[1], Farid Yaghouby[1], and Sridhar Sunderam[1]
[1]University of Kentucky, Lexington, KY

9:15 am
Closed-Loop Deep Brain Stimulation Paradigm for Tourette Syndrome
Jackson Cagle[1], Michael Okun[1], Kelly Foote[1], and Aysegul Gunduz[1]
[1]University of Florida, Gainesville, FL

OP-Fri-1-18 — Room 227C

Track: Biomedical Engineering Education (BME)

Assessment of Innovations

Chairs: Eileen Haase, Jason Zara

8:00 am
Using Calibrated Peer Review to Track Improvements in Visual Communication Skills
Tracy Volz[1], Anoosha Moturu[1], and Ann Saterbak[2]
[1]Rice University, Houston, TX, [2]RIce University, Houston, TX

8:15 am
Evaluating the Successful Implementation of Project ENGAGES: A Paid Biomedical Engineering Research Experience for African American High School Students at Georgia Tech
Ayesha Boyce[1], Adeyemo Adetogun[1], Cherie Avent[1], Lakeita Servance[2], Lizanne DeStefano[2], Robert Nerem[2], and Manu Platt[2]
[1]University of North Carolina, Greensboro, Greensboro, NC, [2]Georgia Institute of Technology, Atlanta, GA

Friday, October 13 | 8:00 am–9:30 am | Platform Session 1

8:30 am
Assessment of a Creativity-Focused Research Experiences for Undergraduates (REU) Program in Biomedical Engineering
Megan Huffstickler[1], Sarah Zappe[1], Margaret Slattery[1], and Keefe Manning[1]
[1]Penn State University, University Park, PA

8:45 am
Using Online Resources to Close the Gap in a Sophomore Biomedical Engineering Course
Eileen Haase[1] and Harry Goldberg[1]
[1]Johns Hopkins University, Baltimore, MD

9:00 am
Assessing Key Skills in a Graduate Project Based Learning Biomedical Engineering Course
Jeffrey La Belle[1,2], Aldin Malkoc[1], Sarah Mcbryan[1], Kara Karaniuk[1], and Mackenzie Honikel[1]
[1]Arizona State University, Tempe, AZ, [2]Mayo Clinic Arizona, School of Medicine, Scottsdale, AZ

9:15 am
Demonstrations of Linear Systems Concepts and The Fourier Transform in an Undergraduate Course on Medical Imaging
Jason Zara[1], Camille Roberts[1], and Aisling Casey[1]
[1]The George Washington University, Washington, DC

***BME Track sponsored by:**

NJIT New Jersey Institute of Technology
Department of Biomedical Engineering

SPECIAL SESSION

8:00 am–9:30 am — **Room 122C**

Career Options for the BME Graduate Students and Postdoctoral Fellows

Chair: Rita Alevriadou

This session aims to cater to the needs of BME PhD students and postdoctoral fellows. It brings together a panel of professionals who have PhD degrees in BME or related disciplines and are currently employed either in industry (2 speakers), academia (2 speakers; current or past BME/Bioengineering Department Chairs) or government (1 speaker). Each, through his/her short (10 min) presentation, will share useful tips, and their experiences, on what the BME PhD students and postdocs need to do to land the job of their dreams! A moderator will facilitate the Q&A session with the panelists both after each talk and at the end of all talks.

INDUSTRY SESSION

8:00 am–10:00 am — **Room 125AB**

Tech Transfer Innovation Challenge

Chair: Stephanie Mansfield, Brooks Kushman P.C.

This session will be a forum for select researchers and academics to pitch to companies interested in sponsoring research or licensing a technology. The technology topics will align with the commercial interests of the participating companies. Company representatives will be available after the pitches for questions and networking.

***Industry Track sponsored by:**

TAMU BIOMEDICAL ENGINEERING TEXAS A&M UNIVERSITY

PLATFORM SESSIONS–FRIDAY–1–8:00 AM–9:30 AM

Friday, October 13 | 1:15 pm–2:45 pm | Platform Session 2

OP-Fri-2-1 — Room 224A

Track: Biomaterials

Biomaterials for Regenerative Medicine II

Chairs: Ariella Shikanov, Rene Olivares-Navarrete

1:15 pm
Sirt1 Transgene Delivery Improves Diabetes-Impaired Wound Healing
Yunxiao Zhu[1], Michele Jen[1], Chongwen Duan [1], Baixue Xiao[1], Alex Lortie[1], Hsin-Yu Kuo [1], Milan Mrksich [1], and Guillermo Ameer[1]
[1]Northwestern University, Evanston, IL

1:30 pm
Electrochemical Manipulation of Living Cells Supported By Biodegradable Polymeric Nanosheets For Cell Transplantation Therapy
Jin Suzuki[1], Nobuhiro Nagai[2], Matsuhiko Nishizawa[1], Toshiaki Abe[2], and Hirokazu Kaji[1]
[1]Graduate of Engineering,Tohoku University, Sendai, Japan, [2]Graduate of Medicine, Tohoku University, Sendai, Japan

1:45 pm
Sliding Hydrogels with Tunable Molecular Mobility and Degradation Enhance and Accelerate Neocartilage Formation by Mesenchymal Stem Cells in 3D
Xinming Tong[1] and Fan Yang[1]
[1]Stanford University, Stanford, CA

2:00 pm
Sustained Release of Bioactive VEGF-C and VEGF-D from Alginate Hydrogels for Therapeutic Lymphangiogenic Applications
Kevin Campbell[1], Dustin Hadley[1], David Kukis[1], and Eduardo Silva[1]
[1]University of California Davis, Davis, CA

2:15 pm
Plant-inspired Biomimetic and Estrogenic Nanofiber as a Regenerative Wound Dressing
Seungkuk Ahn[1], Christophe Chantre[1], Alanna Gannon[1], Johan Lind[1], Patrick Campbell[1], Thomas Grevesse[1], Blakely O'Connor[1], and Kevin Kit Parker[1]
[1]Disease Biophysics Group, Wyss Institute for Biologically-Inspired Engineering, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA

2:30 pm
Premineralized Silica Fiber Matrix for Accelerated Bone Regeneration
Hyun Kim[1], Mark Lyles[2], and Syam Nukavarapu[3]
[1]University of Connecticut, Storrs, CT, [2]University of Rhode Island, Kingston, RI, [3]University of Connecticut Health, Farmington, CT

***Biomaterials Track sponsored by:**

ACS Biomaterials SCIENCE & ENGINEERING

OP-Fri-2-2 — Room 224B

Tracks: Biomaterials, Drug Delivery & Intelligent Systems

Drug Delivering Biomaterials II

Chairs: Silviya Zustiak, Srivatsan Kidambi

1:15 Ppm
Leukocytes as Mobile Carriers of Anti-Cancer Therapeutics via Bispecific Liposomes
Zhenjiang Zhang[1], Dai Liu[1], Nerymar Ortiz Otero[1], Thong Cao[1], and Michael King[1]
[1]Vanderbilt University, Nashville, TN

1:30 pm
Connectosomes with Chimeric Transmembrane Proteins for Cell-Specific Targeting and Drug Delivery
Amanda Meriwether[1], Avinash Gadok[1], Chi Zhao[1], and Jeanne Stachowiak[1]
[1]The University of Texas at Austin, Austin, TX

1:45 Ppm
Tuning Sequential Delivery of Multiple Biological Factors from a Drug Delivery System
Jumana Alhamdi[1,2], Marja Hurley[1], Gloria Gronowicz[1], and Liisa Kuhn[1,2]
[1]University of Connecticut (UConn) Health, Farmington, CT, [2]University of Connecticut, Storrs, CT

2:00 pm
The Therapeutic Effect of Epigenetic Drug-encapsulating Lipid Nanoemulsions for Triple Negative Breast Cancer Cells
Bumjun Kim[1] and Debra Auguste[1]
[1]Northeastern University, Boston, MA

2:15 pm
Hydrogels for Biomimetic Signal Transduction and Cell Regulation
Yong Wang[1] and Jinping Lai[1]
[1]Penn State, State College, PA

2:30 pm
Raising the BAR: Functional and Mechanistic Evaluation of Multivalent BAR Nanoparticles to Inhibit Oral Biofilms
Paridhi Kelia[1], Ankita Jain[1], Donald Demuth[1], and Jill Steinbach-Rankins[1]
[1]University of Louisville, Louisville, KY

***Biomaterials Track sponsored by:**

ACS Biomaterials SCIENCE & ENGINEERING

Friday, October 13 | 1:15 pm–2:45 pm | Platform Session 2

OP-Fri-2-3 — Room 229A

Track: Biomechanics

Injury Biomechanics I

Chairs: Ruth Ochia, Babak Bazrgari

1:15 pm
Thoracic Responses of the Hybrid III, THOR-M, and PMHS under Three Safety Restraint Conditions
Devon Albert[1], Stephanie Beeman[1], and Andrew Kemper[1]
[1]Virginia Tech, Blacksburg, VA

1:30 pm
Validating FE Hybrid III and THOR For Future Spaceflight Configuration Testing
Kyle McNamara[1,2], Derek Jones[1,2], James Gaewsky[1,2], Xin Ye[1,2], Mona Saffarzadeh[1,2], Bharath Koya[1,2], F. Scott Gayzik[1,2], Ashley Weaver[1,2], and Joel Stitzel[1,2]
[1]Virginia Tech-Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC, [2]Wake Forest School of Medicine, Winston-Salem, NC

1:45 pm
Quantitative Evaluation of Linked Rigid-Body Representations of The Trunk
Shoma Kudo[1], Masahiro Fujimoto[1], and Akinori Nagano[1]
[1]Ritsumeikan University, Shiga, Japan

2:00 pm
A Finite Element Analysis Comparison of the Effects of Bowing Deformity and Glutues Muscle Forces on Femoral Stress in OI Type I
Jessica Fritz[1], Peter Smith[2], and Gerald Harris[1,2]
[1]Marquette University/Medical College of Wisconsin, Milwaukee, WI, [2]Shriners Hospitals for Children-Chicago, Chicago, IL

2:15 pm
Measuring Grip Forces in Activities of Daily Living with Relevance to Prosthetic and Orthotic Design
Christopher Nycz[1], Michael Delph[2], Kevin Keough[2], Todd Farrell[2], and Gregory Fischer[1]
[1]Worcester Polytechnic Institute, Worcester, MA, [2]Liberating Technologies, Inc., Holliston, MA

2:30 pm
Trunk Kinematics in Patients with Acute Low Back Pain during Flexion-Extension Tasks
Iman Shojaei[1], Elizabeth G Salt[1], and Babak Bazrgari[1]
[1]University of Kentucky, Lexington, KY

OP-Fri-2-4 — Room 229B

Tracks: Biomechanics, Cardiovascular Engineering

Hemodynamics and Vascular Mechanics I

Chairs: Chung-Hao Lee, Juan Jimenez

1:15 pm
Spatiotemporal Variations in Intracardiac Shear Stress Differentially Modulate Trabeculation for Developmental Contractile Function
Juhyun Lee[1,2], Vijay Vedula[3], Junjie Chen[1], Jeffrey Hsu[1], Alison Marsden[3], and Tzung Hsiai[1]
[1]UCLA, Los Angeles, CA, [2]University of Texas Arlington, Arlington, TX, [3]Stanford University, Los Angeles, CA

1:30 pm
Lymphatic Pulsatility in Wild-type Mice
Akshay Pujari[1], Daniel Sweet[2], Mark Kahn[2], and Juan Jimenez[1]
[1]University of Massachusetts, Amherst, MA, [2]University of Pennsylvania, Philadelphia, PA

1:45 pm
Consequences of Sickle Cell Disease on Pulmonary Vascular Hemodynamics and Right Ventricular Function
David Schreier[1], Diana Tabima[1], Tim Hacker[1], and Naomi Chesler[1]
[1]University of Wisconsin-Madison, Madison, WI

2:00 pm
Miniature Mock Circulation System to Simulate Synchronous and Asynchronous Left Ventricular Assist Device Flow Modulation
Abhinav Kanukunta[1], Guruprasad Giridharan[1], and Kevin Soucy[1]
[1]University of Louisville, Louisville, KY

2:15 pm
Impact of Red Blood Cell Rigidity on the Vascular Wall adhesion of Neutrophils: Implication in the Pathology of Sickle Cell Disease
Mario Gutierrez[1], Margaret Fish[1], and Omolola Eniola-Adefeso[1]
[1]University of Michigan, Ann Arbor, MI

2:30 pm
Increased Density in Multicellular Aggregates Alters Magnitude and Distribution of Forces
Heather Cirka[1], Zachary Goldblatt[1], and Kristen Billiar[1]
[1]Worcester Polytechnic Institute, Worcester, MA

OP-Fri-2-5 — Room 221A

Track: Cancer Technologies

Circulating Biomarkers: CTCs, Extracellular Vesicles and DNA I

Chairs: Eduardo Reategui, Ming Su

1:15 pm
Rapid Isolation of Extracellular Vesicles with Lipid Nanoprobes
Yuan Wan[1], Gong Cheng[1], and Si-Yang Zheng[1]
[1]Penn State University, University Park, PA

Friday, October 13 | 1:15 pm–2:45 pm | Platform Session 2

1:30 pm
High Throughput Microfluidic Technologies for the Isolation and Single Cell Multiplex Gene Expression Analysis of Circulating Tumor Cells
Sunitha Nagrath[1]
[1]University of Michigan, Ann Arbor, MI

1:45 pm
Self-Separable Hollow-Microspheres Coated with Enzymatically Degradable Nanofilm For Rapid Cell Isolation And Recovery
Ziye Dong[1], Caroline Ahrens[1], Yu Dan[1], Zhenya Ding[1], HyunTaek Lim[1], and Wei Li[1]
[1]Texas Tech University, Lubbock, TX

2:00 pm
Microvesicle Induction by the Metabolically-Regulated Glycocalyx
LaDeidra Monet Roberts[1], Carolyn Shurer[1], Michael Hollander[1], Thais Enoki[1], and Matthew Paszek[1]
[1]Cornell University, Ithaca, NY

2:15 pm
Whole Blood Preservation for Microfluidic Rare-cell Diagnostics and Transcriptomics
Keith Wong[1], Shannon Tessier[1], David Miyamoto[1], Kathleen Miller[1], Lauren Bookstaver[1], Thomas Carey[1], Cleo Stannard[1], Rebecca Sandlin[1], Vishal Thapar[1], Lecia Sequist[1], David Ting[1], Daniel Haber[1,2], Shyamala Maheswaran[1], Shannon Stott[1], and Mehmet Toner[1]
[1]Massachusetts General Hospital, Harvard Medical School, Boston, MA, [2]Howard Hughes Medical Institute, Chevy Chase, MD

2:30 pm
An Intravascular Magnetic Wire for High-Throughput *In Vivo* Enrichment Of Rare Circulating Cancer Biomarkers
Ophir Vermesh[1], Amin Aalipour[1], Jessie Ge[1], Yamil Saenz[1], Yue Guo[1], Seung-min Park[1], Yoshiaki Mitsutake[1], Michael Bachmann[1], Chin Chun Ooi[1], Jennifer Lyons[1], Kerstin Mueller[1], Hamed Arami[1], Alfredo Green[1], Shan Wang[1], and Sam Gambhir[1]
[1]Stanford University, Stanford, CA

OP-Fri-2-6 — **Room 221B**

Tracks: Nano and Micro Technologies, Translational Biomedical Engineering

Micro/Nano Tools in Medicine

Chairs: Jung-Jae Lee, Qun Wang

1:15 pm
Novel Nanocarriers Capable of Spontaneous, Linker-free Multifunctionalization
Praveesuda Michael[1,2], Miguel Santos[1,2], Elysse C. Filipe[1,2], Alex H.P. Chan[1,2], Juichien Hung[2], Bob S.L. Lee[1,2], Richard Tan[1,2], Minh Huynh[1], Clare Hawkins[1,2,3], Anna Waterhouse[2], Marcela M.M. Bilek[1], and Steven G. Wise[2]
[1]University of Sydney, Sydney, Australia, [2]The Heart Research Institute, Sydney, Australia, [3]Panum Institute, Denmark, Denmark

1:30 pm
Deformability-based Separation of Pancreatic Islets From Exocrine Acinar Tissue For Transplant Applications
Walter Varhue[1], Linda Langman[1], Molly Kelly-Goss[1], Kenneth Brayman[1], Shayn Peirce-Cottler[1], and Nathan Swami[1]
[1]University of Virginia, Charlottesville, VA

1:45 pm
A Microfluidic Biopsy Tissue Array for Clinical Screening Of Personalized Medicine
A.H. Ahmed[1], Chenghai Li[1], Helen Kang[2], Chun-Wei Chi[1], Xuejun Jiang[2], and Sihong Wang[1]
[1]City University of New York-City College, New York, NY, [2]Memorial Sloan Kettering Cancer Center, New York, NY

2:00 pm
An In Vivo Nanoreporter for the Detection of Lysosomal Storage Disorders
Thomas Galassi[1,2], Prakrit Jena[2], Janki Shah[2], Daniel Roxbury[3], and Daniel Heller[2]
[1]Weill Cornell Medicine, New York, NY, [2]Memorial Sloan Kettering Cancer Center, New York, NY, [3]University of Rhode Island, Kingston, RI

2:15 pm
Rapid Detection of Exosomal RNAs on A Micro-Mixer Device for Lung Cancer Early Detection
Yunchen Yang[1], Rongrong Sun[2], Lei Li[2], and Yun Wu[1]
[1]State University of New York at Buffalo, Buffalo, NY, [2]Washington State University, Pullman, WA

2:30 pm
Photothermal Ablation with Plasmon Resonant Liposomes
Jeffrey Watson[1] and Marek Romanowski[1]
[1]University of Arizona, Tucson, AZ

OP-Fri-2-7 — **Room 221C**

Track: Tissue Engineering

Printing and Patterning in Tissue Engineering

Chairs: Y. Shrike Zhang, Kelly Stevens

1:15 pm
Characterization of Vascular Tissue Functionality in Microgravity using 3D Bioprinted Tissues
Likitha Somasekhar[1], Cameron Hume[1], Kenia Nunes[1], Amanda Oliveira[1], Kishen Mitra[2], and Kunal Mitra[1]
[1]Florida Institute of Technology, Melbourne, FL, [2]West Shore Jr. Sr. High School, Melbourne, FL

1:30 pm
Bioprinting Exosome Microenvironments
Saigopalakrishna Yerneni[1], Theresa Whiteside[2], Lee Weiss[1], and Phil Campbell[1]
[1]Carnegie Mellon University, Pittsburgh, PA, [2]University of Pittsburgh, Pittsburgh, PA

1:45 pm
Biomateral Extrusion and Organization For *In Situ* Skin Cell Deposition
Richard Cheng[1], Navid Hakimi[1], Saeid Amini-Nik[2], Marc Jeschke[2], and Axel Guenther[1]
[1]University of Toronto, Toronto, ON, Canada, [2]Sunnybrook Research Institute, Toronto, ON, Canada

Friday, October 13 | 1:15 pm–2:45 pm | Platform Session 2

2:00 pm
Rapid Stereolithography Printing of Human-scale Vascularized Tissue
Nanditha Anandakrishnan [1], Hang Ye[1], Chi Zhou[1], and Ruogang Zhao[1]
[1]University at Buffalo, Buffalo, NY

2:15 pm
In Situ Polymerizing Collagen for the Development of 3D Printed Tissue Engineering Scaffolds
Chris Glover[1], Ferris Pfeiffer[1], Bret Ulery[1], Dave Grant[1], and Sheila Grant[1]
[1]University of Missouri, Columbia, MO

2:30 pm
Open Source, Multi-Printhead, Modular Bioprinting System
Edwin Shen[1] and Kara McCloskey[1]
[1]University of California, Merced, Merced, CA

OP-Fri-2-8 — **Room 222A**

Tracks: Tissue Engineering, Nano and Micro Technologies

Organ-on-a-Chip Models for Drug Discovery and the Study of Disease III

Chairs: Chandra Kothapalli, Zhen Ma

1:15 pm
Optogenetic Cardiac Muscular Thin Film Assay for Preclinical Proarrhythmic Risk Assessment
Sung Jin Park[1], Keel Yong Lee[1], Sean L. Kim[1], Patrick H. Campbell[1], Francesco S. Pasqualini[1], and Kevin Kit Parker[1]
[1]Harvard University, Cambridge, MA

1:30 pm
Myocardium-on-chip Derived from Characterized Human iPSCs with Capillary-like flow for Personalized Medicine
Bradley Ellis[1], Paolo Contessotto[2], Aylin Acun[1], U. Isik Can[1], Abhay Pandit[2], and Pinar Zorlutuna[1]
[1]University of Notre Dame, Note Dame, IN, [2]National University of Ireland, Galway, Galway, Ireland

1:45 pm
Metabolically-Driven Maturation of iPS-Cell Derived Cardiomyocytes in Microphysiological Systems
Nathaniel Huebsch[1], Berenice Charrez[1], Brian Siemons[1], Steven Boggess[1], Felipe Lee-Montiel[1], Evan Miller[1], and Kevin Healy[1]
[1]University of California, Berkeley, Berkeley, CA

2:00 pm
3D Cell Printing of a Vascularized Airway-on-a-chip and Its Application to Asthma Disease Modeling
Ju Young Park[1], Hyunryul Ryu[2], Byungjun Lee[2], Noo Li Jeon[2], and Dong-Woo Cho[1]
[1]POSTECH, Pohang, Korea, Republic of, [2]Seoul National University, Seoul, Korea, Republic of

2:15 pm
Engineering Microscale Perfused Vascularized Fat *In Vitro*
Xuanyue Li[1], Tyler Ryan[1], Calin Nicolescu[1], Miles Massidda[1], and Joe Tien[1]
[1]Boston University, Boston, MA

2:30 pm
Formation and Characterization of Human Dermal Microvascular Structure in a Microfluidic Device
Sahar Biglari[1], Alessandro Zambon[2], Sina Naficy[1], Majid Ebrahimi Warkiani[3], and Fariba Dehghani[1]
[1]University of Sydney, Sydney, Australia, [2]University of Padua, Padua, Italy, [3]University of New South Wales, Sydney, Australia

OP-Fri-2-9 — **Room 222B**

Track: Cellular and Molecular Bioengineering

Molecular and Cellular Engineering Functional Materials and Sensors

Chairs: Corey Bishop, Ana Jaklenec

1:15 pm
Using Synthetic Biology to Engineer Inducible Hybrid Biomagnetic Materials
Michael Behrens[1], Felicia Scott[2], and Warren Ruder[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Virginia Tech, Blacksburg, VA

1:30 pm
High-throughput In Vivo Evaluation of Nanobiomaterial-mediated Tissue Targeting of Polymeric Gene Delivery Vectors Using DNA Barcodes
Jayoung Kim[1], Camila Zamboni[1], Hannah Vaughan[1], David Wilson[1], and Jordan Green[1]
[1]Department of Biomedical Engineering, Institute for NanoBioTechnology, and Translational Tissue Engineering Center, Johns Hopkins University School of Medicine, Baltimore, MD

1:45 pm
A Novel Synthetic Toehold Switch for microRNA Detection in Mammalian Cells
Shue Wang[1], Nick Emery[1], and Allen Liu[1]
[1]University of Michigan, Ann Arbor, MI

2:00 pm
Intracellular Probes for Detection of Polymerase Activity in Live Cells
Lok Ting Chu[1] and Ting-Hsuan Chen[1]
[1]City University of Hong Kong, Hong Kong, Hong Kong

2:15 pm
Development of a Rapid Diagnostic for Navajo Neurohepatopathy
Courtney DuBois[1], David Carpentieri[2], Mitchell Shub[2], and Michael Caplan[1]
[1]Arizona State University, Tempe, AZ, [2]Phoenix Children's Hospital, Phoenix, AZ

PLATFORM SESSIONS–FRIDAY–2–1:15 PM–2:45 PM

Friday, October 13 | 1:15 pm–2:45 pm | Platform Session 2

2:30 pm
Highly Stable and Sensitive Nucleic Acid Detection using Unique Dye Interactions and a Fluorescence Multi-well Plate Reader on a Mobile Phone
Janay Kong[1], Qingshan Wei[1], Derek Tseng[1], Jingzhi Zhang[1], Eric Pan[1], Michael Lewinski[2], Omai Garner[1], Aydogan Ozcan[1], and Dino Di Carlo[1]
[1]*University of California Los Angeles, Los Angeles, CA,* [2]*Roche Molecular Systems, Inc., Pleasanton, CA*

OP-Fri-2-10 — Room 223

Track: Cellular and Molecular Bioengineering

CMBE Young Innovators I

Chairs: Michael King, Alyssa Panitch

1:15 pm
Nanomaterials for Combination Cancer Immunotherapy
James Moon[1]
[1]*University of Michigan, Ann Arbor, MI*

1:30 Ppm
Immunotheranostic Polymersomes Modularly Assembled from Tetrablock and Diblock Copolymers with Oxidation-Responsive Fluorescence
Evan Scott[1], Yu-Gang Liu[1], and Fan Du[1]
[1]*North Western, Evanston, IL*

1:45 pm
Phenotypically Screened Carbon Nanoparticles for Enhanced Combinatorial Therapy in Triple Negative Breast Cancer
Taylor Kampert[1], Santosh K. Misra[1], Indrajit Srivastava[1], Indu Tripathi[1], and Dipanjan Pan[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

2:00 pm
Phase-Separated Liposomes Enhance the Efficiency of Macromolecular Delivery to the Cellular Cytoplasm
Zachary I. Imam[1], Laura E. Kenyon[1], Grant Ashby[1], Fatema Nagib[1], Morgan Mendicino[1], Chi Zhao[1], Avinash K. Gadok[1], and Jeanne Stachowiak[1]
[1]*The University of Texas at Austin, Austin, TX*

2:15 pm
Mechanochemical Guidance of Cellular Epigenetics During Programming and Reprogramming
Yanfen Li[1], Junmin Lee[1], Claire B. Tang[1], and Kristopher Killian[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

2:30 pm
Microfibrous Scaffolds Enhance Endothelial Differentiation and Organization of Human Induced Pluripotent Stem Cells
Joseph J. Kim[1], Luqia Hou[1], Nicholas P. Mezak[2], Maureen Wanjare[1], Guang Yang[1], Lydia M. Joubert[3], and Ngan Huang[1]
[1]*Stanford Cardiovascular Institute, Stanford, CA,* [2]*Center for Tissue Regeneration, Repair and Restoration, Palo Alto, CA,* [3]*Stanford University, Palo Alto, CA*

OP-Fri-2-11 — Room 225A

Track: Biomedical Imaging and Optics

Fluorescence Imaging

Chairs:

1:15 pm
Optimizing Spectral Bands for Hyperspectral Fluorescence Imaging
Travis Sawyer[1] and Jennifer Barton[1]
[1]*University of Arizona, Tucson, AZ*

1:30 pm
SensorFRET: A Standardless Approach to Measuring Pixel-based Spectral Bleed-through and FRET Efficiency using Spectral Imaging
Paul Arsenovic[1], Carl Mayer[1], and Daniel Conway[1]
[1]*Virginia Commonwealth University, Richmond, VA*

1:45 pm
Camera Based Ultrasound-switchable Fluorescence Imaging System
Tingfeng Yao[1], Shuai Yu[1], and Baohong Yuan[1]
[1]*The University of Texas at Arlington, Arlington, TX*

2:00 pm
In Vivo Label-free Multiphoton Microscopy Reveals Differences in Diabetic Wound Metabolism
Jake Jones[1], Hallie Ramser[1], Olivia Kolenc[1], and Kyle Quinn[1]
[1]*University of Arkansas, Fayetteville, AR*

2:15 pm
Quantification and Imaging of Vascular Permeability and Partial Pressure of Oxygen *In Vivo*
Yuichiro Iwamoto[1], Keitaro Oda[1], and Kosuke Tsukada[1]
[1]*Keio University, Yokohama, Japan*

2:30 pm
Cardiac Imaging in Embryonic Zebrafish Using Light Field Microscopy with Selective Volume Illumination
Sara Madaan[1], Thai Truong[1], Dan Holland[1], and Scott Fraser[1]
[1]*University of Southern California, Los Angeles, CA*

OP-Fri-2-12 — Room 225B

Track: Biomedical Imaging and Optics

MRI

Chairs: Galit Pelled, Stephen LaConte

1:15 pm
Lobar Emphysema Index Based on Hyperpolarized He-3 Diffusion MRI
Sina Tafti[1], William Garrison[1], Nick Tustison[1], Darius Hossainian[1], Gordon Cates[1], John P Mugler[1], Jaime Mata[1], Kun Qing[1], Michael Shim[1], Talissa Altes[1], Eduard E de Lange[1], and G. Wilson Miller[1]
[1]*University of Virginia, Charlottesville, VA*

Friday, October 13 | 1:15 pm–2:45 pm | Platform Session 2

1:30 pm
Free-breathing Abdominal MRI Improved by k-t-bootstrapping and POCSMUSE
Mei-Lan Chu[1], Hing-Chiu Chang[2], Mustafa Bashir[3], Hsiao-Wen Chung[4], and Nan-kuei Chen[1]
[1]*University of Arizona, Tucson, AZ,* [2]*The University of Hong Kong, Hong Kong, Hong Kong,* [3]*Duke University, Durham, NC,* [4]*National Taiwan University, Taipei, Taiwan*

1:45 pm
Investigating the Effect of a Non-Negativity Constraint for Inverse Laplacian Conductivity Mapping
Kathleen Ropella[1] and Douglas Noll[1]
[1]*University of Michigan, Ann Arbor, MI*

2:00 pm
Sciatic Nerve Segmentation in MR Images of the Upper Leg Via Convolutional Neural Networks
Shashank Manjunath[1] and Richard Dortch[1]
[1]*Vanderbilt University Institute of Imaging Science, Nashville, TN*

2:15 pm
Single PC Board Design for Interleaved 1H and 13C Mouse Birdcage Coils for 7T
Travis Carrell[1], Mary McDougall[1], and James Bankson[2]
[1]*Texas A&M University, College Station, TX,* [2]*The University of Texas MD Anderson Cancer Center, Houston, TX*

2:30 pm
Advanced Techniques for Characterizing Rodent Brains with Diffusion MRI
Loi Do[1], Adam Bernstein[1], Pradyumna Bharadwaj[1], Gene Alexander[1], Carol Barnes[1], and Theodore Trouard[1]
[1]*University of Arizona, Tucson, AZ*

OP-Fri-2-13 — Room 228A

Track: Device Technologies and Biomedical Robotics

Biosensors II

Chairs: Lindsey Bornhoeft, Marissa Wechsler

1:15 pm
A Continuous-Ink, Multiplexed-Pen Plotter Approach for Low-Cost, High-Throughput Fabrication of Paper-Based Microfluidics
Reza Amin[1], Fariba Ghaderinezhad[1], Lu Li[1], Eric Lepowsky[1], Bekir Yenilmez[1], Stephanie Knowlton[1], and Savas Tasoglu[1]
[1]*University of Connecticut, Storrs, CT*

1:30 pm
Composite Hydrogels for Enzymatic Optical Biosensing of Lactate and Glucose
Lindsey Bornhoeft[1], Aniket Biswas[1], Yilhwan You[1], and Mike McShane[1]
[1]*Texas A&M University, College Station, TX*

1:45 pm
Polymer Modified Silica-Gold Nanoshells for the Detection of Model Protein Biomarkers for Disease Diagnostic Applications
Marissa Wechsler[1], David Spencer[1], Jocelyn Dang[1], Heidi Culver[1], and Nicholas Peppas[1,2]
[1]*The University of Texas at Austin, Austin, TX,* [2]*Dell Medical School, Austin, TX*

2:00 pm
Assessment and Enrichment of Activated T cells Using Rapid, Label-Free Microfluidic Dielectrophoresis
Patrick Han[1], Shari Yosinski[1], Mark Reed[1], and Tarek Fahmy[1]
[1]*Yale University, New Haven, CT*

2:15 pm
A Smartphone-based Microfluidic Cell Migration Assay
Ke Yang[1,2,3], Jiandong Wu[2], Hagit Peretz-Soroka[2], Ling Zhu[1], Zhigang Li[1], Yaoshuo Sang[1], Jolly Hipolito[2], Michael Zhang[4], Susy Santos[5,6], Yong Liu[1], and Francis Lin[2]
[1]*Institute of Applied Technology, Hefei Institutes of Physical Science, Chinese Academy of Sciences, Hefei, China, People's Republic of,* [2]*University of Manitoba, Winnipeg, MB, Canada,* [3]*University of Science and Technology of China, Hefei, China, People's Republic of,* [4]*Seven Oaks General Hospital, Winnipeg, MB, Canada,* [5]*Victoria General Hospital and River Heights/Fort Garry Community areas, Winnipeg, MB, Canada,* [6]*South Winnipeg Integrated Health & Social Services, Winnipeg, MB, Canada*

2:30 pm
New Technique of Venous Waveform Analysis for Intravascular Volume Assessment
Kyle Hocking[1], Bret Alvis[1], Franz Baudenbacher[1], Susan Eagle[1], and Colleen Brophy[1]
[1]*Vanderbilt University, Nashville, TN*

OP-Fri-2-14 — Room 228B

Track: Cancer Technologies

Tumor Cell-ECM Interactions

Chairs: Candice Tanner, Ovi Chaudhuri

1:15 pm

Matthew Paszek – invited speaker

1:45 pm
Podocalyxin Enhances Pancreatic Cancer Cell Migration and Invasion *In Vitro* and *In Vivo* via a Src Kinase-dependent Pathway
Bin Sheng Wong[1], Daniel Shea[1], Robert Law[1], Soontorn Tuntithavornwat[1], Jake Bieber[1], and Konstantinos Konstantopoulos[1]
[1]*Johns Hopkins University, Baltimore, MD*

2:00 pm
Heterogeneity in Cell-Matrix Adhesion as an Indicator of Tumor Cell Metastatic State
Afsheen Banisadr[1], Pranjali Beri[1], Alexander Fuhrmann[1], Thea Tlsty[2], and Adam Engler[1]
[1]*UCSD, La Jolla, CA,* [2]*UCSF, San Francisco, CA*

2:15 pm
Dynamic Deformation of the Cell Plastically Shapes the Nucleus and Amplifies Cancer Nuclear Irregularities
Vincent Tocco[1], Yuan Li[1], Varun Aggarwal[1], Srujana Neelam[1], Keith Christopher[1], James Matthews[1], Lauren Paschall[1], Hendrik Luesch[1], Jonathan Licht[1], Richard Dickinson[1], and Tanmay Lele[1]
[1]*University of Florida, Gainesville, FL*

PLATFORM SESSIONS–FRIDAY–2–1:15 PM–2:45 PM

Friday, October 13 | 1:15 pm–2:45 pm | Platform Session 2

2:30 pm
A High-Density Tumor Model to Assess Breast Cancer Dispersion and ECM Remodeling under the Influence of Stromal Cells
Harpinder Saini[1], Kiarash Rahmani[1], Danh Truong[1], Eyerusalem Assefa[1], Robert Ros[1], and Mehdi Nikkhah[1]
[1]*Arizona State University, Tempe, AZ*

OP-Fri-2-15 — Room 227C

Tracks: Stem Cell Engineering, Neural Engineering

Neural Stem Cell Engineering

Chairs: Abigail Koppes, Stephanie Seidlits

1:15 pm
Engineering Synthetic Multivalent Ligands to Investigate and Control Stem Cell Signaling
Chun Yang[1], Ravi Kane [2], and David Schaffer[1]
[1]*University of California, Berkeley, Berkeley, CA,* [2]*Georgia Institute of Technology, Atlanta, GA*

1:30 pm
***In Vivo* Electrical Stimulation of Neural Stem Cells via a Conductive Polymer Scaffold to Enhance Stroke Recovery**
Byeongtaek Oh[1], Alexa Levinson[1], Vivek Lam[1], and Paul George[1]
[1]*Stanford University, Stanford, CA*

1:45 pm
Electrical Stimulation for Neuronal Activation and 3D Growth *In Vitro*
Taylor Jackvony[1], Min Tang-Schomer[1,2], David Kaplan[3], and Sabato Santaniello[2,4]
[1]*Connecticut Children's Medical Center, Farmington, CT,* [2]*CT Institute for the Brain and Cognitive Sciences, Storrs, CT,* [3]*Tufts University, Medford, MA,* [4]*University of Connecticut, Storrs, CT*

2:00 pm
Development of a High-Throughput Array to Track Effects of Combinatorial Microenvironments on Neural Stem Cell Differentiation
Alexis Morrison Litke[1], Chris Walthers[1], Jesse Liang[1], Stephanie Seidlits[1], Robert Damoiseaux[1,2], Westbrook Weaver[1,2], and Dino Di Carlo[1,2,3]
[1]*University of California, Los Angeles, Los Angeles, CA,* [2]*California Nanosystems Institute, Los Angeles, CA,* [3]*Jonsson Comprehensive Cancer Center, Los Angeles, CA*

2:15 pm
Regional Patterning and Engraftment of hPSC-Derived Posterior Central Nervous System Tissue
Maria Estevez-Silva[1], Nisha Iyer[1], Akshitha Sreeram[1], Stephanie Cuskey[1], Nikolai Fedorchak[1], and Randolph Ashton[1]
[1]*University of Wisconsin Madison, Madison, WI*

2:30 pm
Neural Stem Cell-laden Multichannel Bridges Support Axon Regeneration and Endogenous Neurogenesis Following Spinal Cord Injury
Courtney Dumont[1], Molly Munsell[1], Mitchell Carlson[1], and Lonnie Shea[1]
[1]*University of Michigan, Ann Arbor, MI*

OP-Fri-2-16 — Room 226A

Track: Neural Engineering

Motor Control and Rehabilitation

Chairs: Dan Moran, Jeff Capadona

1:15 pm
BCI Control Using Signal from DBS Electrode Implant
Keith Dyson-Perkins[1], Rory Murphy[1], and Daniel Moran[1]
[1]*Washington University in St. Louis, St Louis, MO*

1:30 pm
Electrochemical Neural Interfaces for Promoting Motor Plasticity
Samira Moorjani[1], Steve I. Perlmutter[1], and Eberhard E. Fetz[1]
[1]*University of Washington, Seattle, WA*

1:45 pm
The Effects of Chronic Microelectrode Implantation in Motor Cortex on Motor Behavior in Healthy Rats
Monika Goss[1,2], Keith Dona[1,2], Justin McMahon[1,2], Andrew Shoffstall[1,2], Evon Ereifej[1,2], and Jeffrey Capadona[1,2]
[1]*Louis Stokes Cleveland VA Medical Center, Cleveland, OH,* [2]*Case Western Reserve University, Cleveland, OH*

2:00 pm
Brain Machine Interface-Driven Afferent Peripheral Nerve Stimulation for Motor Rehabilitation After Spinal Cord Injury
Sarah Thomas[1], Christopher Schildt[1], Elizabeth Powell[1], Yuvaraj Rajamanickam[1], Lumy Sawaki[1], and Sridhar Sunderam[1]
[1]*University of Kentucky, Lexington, KY*

2:15 pm
Exploiting the Selectivity of Multi-contact Peripheral Nerve Cuff Electrodes to Prolong Standing Times with Neural Stimulation after Spinal Cord Injury
Kristen Gelenitis[1], Max Freeberg[1], and Ronald Triolo[1]
[1]*Case Western Reserve University, Cleveland, OH*

2:30 pm
Real-Time Feedback Training to Improve Gait and Posture in Parkinson's Disease
Deepika Baskaran[1], Narayanan Krishnamurthi[1,2], Padma Mahant[3], Maria Cristina Ospina[4], and James Abbas[1]
[1]*Center for Adaptive Neural Systems, School of Biological and Health Systems Engineering, Arizona State University, Tempe, AZ,* [2]*College of Nursing & Health Innovation, Arizona State University, Downtown Phoenix, AZ,* [3]*Barrow Neurological Institute, Phoenix, AZ,* [4]*University of Arizona, Tuscon, AZ*

Friday, October 13 | 1:15 pm–2:45 pm | Platform Session 2

OP-Fri-2-17 — Room 226B

Track: Neural Engineering

Sensory Neuroprostheses

Chairs: Bradley Greger, George McConnell

1:15 pm
Neural ITD Sensitivity and Temporal Coding with Cochlear Implants in an Animal Model of Early-onset Deafness
Yoojin Chung[1,2] and Bertrand Delgutte[1,2]
[1]*Massachusetts Eye and Ear, Boston, MA,* [2]*Harvard Medical School, Boston, MA*

1:30 pm
Evoking Visual Percepts via Epicortical Microstimulation in Nonhuman Primates
Denise Oswalt[1], David Zhou[2], Proyag Datta[2], Neil Talbot[2], Robert Greenberg[2], Zaman Mirzadeh[3], and Bradley Greger[1]
[1]*Arizona State University, Tempe, AZ,* [2]*Second Sight Medical Products, Sylmar, CA,* [3]*Barrow Neurological Institute, Phoenix, AZ*

1:45 pm
Latency of The Perceived Sensation Evoked By Peripheral Nerve Stimulation In People With Lower Limb Amputations
Breanne Christie[1,2], Hamid Charkhkar[1,2], Emily Graczyk[1,2], Dustin Tyler[1,2], and Ronald Triolo[1,2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Louis Stokes Cleveland VA Medical Center, Cleveland, OH*

2:00 pm
Median Nerve Stimulation via a FAST-LIFE Array Elicits a Graded Response in Primary Somatosensory Cortex Area 3b
Justin Tanner[1], Taylor Hearn[1], Stephen Helms Tillery[1], Edward Keefer[2], and Jonathan Cheng[2]
[1]*Arizona State University, Tempe, AZ,* [2]*Nerves Incorporated, Dallas, TX*

2:15 pm
Modification of the Proprioceptive Map in an Upper Limb Amputee via Peripheral Nerve Stimulation
Taylor Hearn[1], Justin Tanner[1], Cynthia Overstreet[2], Jonathan Cheng[2], Edward Keefer[2], and Stephen Helms Tillery[1]
[1]*Arizona State University, Tempe, AZ,* [2]*Nerves Incorporated, Dallas, TX*

2:30 pm
Spinal Root Stimulation to Restore Sensation and Reduce Phantom Limb Pain in Upper-limb Amputees
Lee Fisher[1], Santosh Chandrasekaran[1], Ameya Nanivadekar[1], Ahmed Kashkoush[1], Eric Helm[1], Jennifer Collinger[1], Michael Boninger[1], and Robert Gaunt[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

OP-Fri-2-18 — Room 227C

Track: Biomedical Engineering Education (BME)

Collaborative Programs

Chairs: Stephanie George, Matthew Walker III

1:15 pm
Teaching Engineering Design in Cuba: Understanding Constraint
Russell Jamison[1]
[1]*VCU, Richmond, VA*

1:30 pm
Inter Professional Senior Design Experience: Nursing Student Clinical Consultants
Colin Drummond[1], Matthew Williams[1], and Jesse Honsky[1]
[1]*Case Western Reserve University, Cleveland, OH*

1:45 pm
Collaborative Capstone Design Experience: Designing Assistive Care Devices for Patient with Disabilities
Mansoor Nasir[1], Darrell Kleinke[2], and Molly McClelland[2]
[1]*Lawrence Technological University, Southfield, MI,* [2]*University of Detroit, Mercy, Detroit, MI*

2:00 pm
Trauma and Emergency Medicine Innovation Program
Gabriel Gruionu[1]
[1]*Harvard Medical School and Massachusetts General Hospital, Boston, MA*

2:15 pm
A Novel Educational Model for Physician-Engineers Convergence: The Medical Innovators Development Program (MIDP)
Matthew Walker III[1], Andre Churchwell[1], Victoria Morgan[1], Trent Rosenbloom[1], Bonnie Miller[1], and Reed Omary[1]
[1]*Vanderbilt University, Nashville, TN*

2:30 pm
Clinical Experiences in Engineering Biomedical Innovation
Stephanie George[1] and Barbara Muller-Borer[1]
[1]*East Carolina University, Greenville, NC*

***BME Track sponsored by:**

NJIT New Jersey Institute of Technology
Department of Biomedical Engineering

PLATFORM SESSIONS–FRIDAY–2–1:15 PM–2:45 PM

Friday, October 13 | 1:15 pm–2:45 pm | Platform Session 2

INDUSTRY SESSION

1:00 pm–3:00 pm **Room 125AB**

Clinical Innovators Spotlight

Chairs: Jonathan Gunn, Briteseed, and Omid Veiseh, Sigilon

One of the challenges in biomedical engineering careers is developing an understanding of current and anticipated unmet clinical needs, and how to address those needs with existing and new technologies. The audience will be treated to a detailed view, from leading clinical innovators, on how real-world problems in cardiology, oncology, organ transplantation, and orthopedics can be addressed with biomedical engineering solutions.

***Industry Track sponsored by:**

TEXAS A&M BIOMEDICAL ENGINEERING

SPECIAL SESSIONS

1:15 pm–2:45 pm **Room 122C**

Curricular Innovation: Highlighting Your Most Unique or Innovative Course Offerings

Chair: Terry Johnson

Our courses and curricula reflect the fast-paced, interdisciplinary nature of bioengineering. Each of us have faced challenges in giving students access to–and deciding upon the best methods of delivery for–crucial content and experience. Please, take this opportunity to share with the BMES community your innovative and unique modules, courses, and curricula–and your students' experiences with them. This special session on education is a series of talks that will allow the community to share with one another their latest curricular work, and related challenges.

1:15 pm–2:45 pm **Room 122A**

Minisymposium on International Research Collaborations and Funding Opportunities in Biomedical Engineering

Chair: Damir Khismatullin
Co-Chair: Song Li

This Minisymposium is the follow-up of the First International Symposium on Biomedical Engineering that was held at the BMES 2016 Annual Meeting and brought together high-level officials from bioengineering societies in the United States, Canada, Australia, South Korea, and China. It consists of several talks by leading biomedical engineers showcasing successful externally-funded research collaboration between the United States and other countries participated in the First International Symposium. The talks will be followed by panel discussion of funding opportunities available for international collaborative research in bioengineering.

Invited speakers:
X. Edward Guo (Columbia University)
Stephanie Willerth (University of Victoria, Canada)
Deok-Ho Kim (University of Washington)

SPECIAL SESSION

1:30 pm–4:30 pm **Room 121ABC**

BMES-NSF Special Session on CAREER and UNSOLICITED Awards

Chair: Michele Grimm

**additional registration and $10 ticket required*

BMES and the National Science Foundation (NSF) will convene a special session focused on innovative research in biomedical engineering and grant writing. The session will bring together NSF Bioengineering and Engineering Healthcare grantees, young investigators, junior and senior faculty, post-doctoral fellows and graduate students for idea exchange and networking related to conducting and funding cutting-edge research in BME. The session will showcase NSF funded research and researchers, foster collaboration and idea exchange, familiarize participants with NSF funding mechanisms, and provide strategies for preparing competitive grant proposals, in particular NSF CAREER and unsolicited grant applications. The research areas where the NSF Biomedical Engineering Program supports fundamental and transformative research will also be discussed. Participants will gain an increased awareness of NSF funded research, a better understanding of NSF funding opportunities and how to prepare successful grant applications, and a chance to establish new relationships leading to future collaborations. This material is based upon work supported by the National Science Foundation under Grant No. CBET-1741771. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

***Special Session sponsored by:**

NSF

Friday, October 13 | 3:30 pm–5:00 pm | Platform Session 3

OP-Fri-3-1 **Room 224A**

Track: Biomaterials

Biomaterials Scaffolds I

Chairs: Josephine Allen, Sarah Stabenfeldt

3:30 pm
A Novel Tri-Component Polymeric Electrospun Scaffold for Vascular Tissue Engineering
Vidhya Ramaswamy[1], Taylor Repetto[1], and Josephine Allen[1]
[1]University of Florida, Gainesville, FL

3:45 pm
Design of a Modular Fibrin-Based Cardiac Patch
Megan Chrobak[1], Katrina Hansen[1], Marianne Kanellias[1], Josh Gershlak[1], Glenn Gaudette[1], and George Pins[1]
[1]Worcester Polytechnic Institute, Worcester, MA

4:00 pm
Functionalization of Titanium with Poly (acrylic acid) Brushes
Amy Mantz[1], Alice Rosenthal[2,3], Mathias Schubert[1], Eva Franke-Schubert[1], Petra Uhlmann[1,2], and Angela K Pannier[1]
[1]University of Nebraska-Lincoln, Lincoln, NE, [2]Leibniz-Institut für Polymerforschung Dresden e.V, Dresden, Germany, [3]Technische Universität Dresden, Dresden, Germany

4:15 pm
Effect of Electrical Stimulation on Nerve Cells as a Function of Hydrogel Stiffness and Electrical Conductivity with a Custom Designed Device
Mozhdeh Imaninezhad[1], Fenglian Xu[1], Kristin Kalinowski[1], Reetom Bera[1], and Silviya Zustiak[1]
[1]Saint Louis University, St Louis, MO

4:30 pm
Nanofiber Scaffolds of Protein-loaded Porous Silicon Nanoparticles in Polycaprolactone by Spray Nebulization
Jonathan Zuidema[1], Tushar Kumeria[2], Dokyoung Kim[3], Jinyoung Kang[1], Joanna Wang[1], Geoffrey Hollett[1], and Michael Sailor[1]
[1]University of California San Diego, La Jolla, CA, [2]University of Queensland, Brisbane, Australia, [3]Kyung Hee University, Seoul, Korea, Republic of

4:45 pm
Conditions for Maintenance Of Reactive Amine Groups During Post-Processing of an Elastomeric Biomaterial
Harleigh Warner[1,2] and William D. Wagner[1]
[1]Wake Forest University School of Medicine, Winston-Salem, NC, [2]Virginia Tech and Wake Forest University, Winston Salem, NC

***Biomaterials Track sponsored by:**

ACS Biomaterials SCIENCE & ENGINEERING

OP-Fri-3-2 **Room 224B**

Tracks: Drug Delivery & Intelligent Systems, Biomaterials

Drug Delivering Biomaterials III

Chairs: Craig Duvall, Rebecca Willits

3:30 pm
Optimization of Protein-Loaded Electrospun Fibers for Targeted Intestinal Delivery
Hannah Frizzell[1] and Kim A. Woodrow[1]
[1]University of Washington, Seattle, WA

3:45 pm
Disruption of Gram-negative Bacterial Membranes via Peptide-based Potentiators for Intracellular Delivery of Small Molecule Antibiotics
Leslie Chan[1], Kelsey Hern[1], Ester Kwon[1], Katie Lee[2], Deborah Hung[2], and Sangeeta Bhatia[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Broad Institute, Cambridge, MA

4:00 pm
Resorbable Antibiotic-eluting Bone Void Filler Performance in a Large Animal Model to Address Periprosthetic Joint Infection
David Grainger[1] and Kristofer Sinclair[1]
[1]University of Utah, Salt Lake City, UT

4:15 pm
Self-assembled Galectin-enzyme Fusions for Localized Bbiocatalysis
Shaheen Farhadi[1], Margaret Fettis[1], Evelyn Bracho-Sanchez[1], Sabrina Freeman[1], Benjamin Keselowsky[1], and Gregory Hudalla[1]
[1]University of Florida, Gainesville, FL

4:30 pm
Celastrol-Loaded Nanocarriers for Targeted Therapeutic Inhibition of Inflammatory Cells
Sean Allen[1], Yugang Liu[1], and Evan Scott[1]
[1]Northwestern University, Evanston, IL

4:45 pm
Acetalated Dextran Nanoparticles for Rapid and Glucose Responsive Insulin Delivery
Lisa Volpatti[1], Robert Langer[1], and Daniel Anderson[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

***Biomaterials Track sponsored by:**

ACS Biomaterials SCIENCE & ENGINEERING

Friday, October 13 | 3:30 pm–5:00 pm | Platform Session 3

OP-Fri-3-3 — Room 229A

Track: Biomechanics

Injury Biomechanics II

Chairs: Vincent Wang, Jessica Fritz

3:30 pm
Freezing Does Not Alter Multi-scale Tendon Mechanics and Damage Mechanisms in Tension
Andrea Lee[1] and Dawn Elliott[1]
[1]*University of Delaware, Newark, DE*

3:45 pm
Localized Strain and Biomechanics Of The Disrupted Tendon Bone Attachment
Ryan Locke[1], John Peloquin[1], Elisabeth Lemmon[1], Adrianna Szostek[1], Dawn Elliott[1], and Megan Killian[1]
[1]*University of Delaware, Newark, DE*

4:00 pm
Effects of Hypoxia on the Biomechanical Properties of Neonatal Brachial Plexus
Shania Shaji[1], Shadi Malaeb[2], Maria Delivoria-Papadopoulos[2], and Anita Singh[1]
[1]*Widener University, Chester, PA,* [2]*Drexel University, Philadelphia, PA*

4:15 pm
Three Dimensional Human Lumbar Intervertebral Disc Internal Strains During Combined Repetitive Loading
Christina Moawad[1], Dhara Amin[1], Richard Stanley[1], Boyin Ding[2], and John Costi[1]
[1]*Flinders University, Adelaide, Australia,* [2]*The University of Adelaide, Adelaide, Australia*

4:30 pm
Quantification of Viscoelastic Properties in Unilateral Patellar Tendinopathy
Rabeet Ahmad[1], Andrew Sprague[1], Daniel Cortes[2], and Karin Grävare Silbernagel[1]
[1]*University of Delaware, Newark, DE,* [2]*Pennsylvania State University, University Park, PA*

4:45 pm
Physiological Considerations of the Anterior Cruciate Ligament Necessary for Knee Stability
Benjamin Marchi[1] and Ellen Arruda[1]
[1]*University of Michigan, Ann Arbor, MI*

OP-Fri-3-4 — Room 229B

Tracks: Cardiovascular Engineering, Biomechanics

Hemodynamics and Vascular Mechanics II

Chairs: Karen May-Newman, Mark Palmer

3:30 pm
An Integrated Simulation-Experimental Approach to Determine Three-Dimensional Strain Energy Density Function Parameters: Application to Viable Myocardium
David Li[1], Reza Avazmohammadi[1], João Soares[1], Robert Gorman[2], and Michael Sacks[1]
[1]*The University of Texas at Austin, Austin, TX,*
[2]*University of Pennsylvania, Philadelphia, PA*

3:45 pm
Putting on the Squeeze - Why You Need Compressibility to Model Actively Contracting Myocardium
Joao Soares[1], David Li[1], Joseph Gorman III[2], Robert Gorman[2], and Michael Sacks[1]
[1]*University of Texas at Austin, Austin, TX,* [2]*University of Pennsylvania, Philadelphia, PA*

4:00 pm
Engineering 3D Cardiac Microtissues with Tunable Mechanical Load
Jacqueline Bliley[1], Rebecca Duffy[1], Ivan Batalov[1], Dan Shiwarski[1], Rachelle Simko[1], Anna Kalmykov[1], Mathilde Vermeer[2], Peter van der Meer[2], and Adam Feinberg[1]
[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*University Medical Center Groningen (UMCG), Groningen, Netherlands*

4:15 pm
Targeting Serotonin 2B Receptor to Improve Cardiac Function Following Myocardial Infarction
J. Caleb Snider[1], Qinkun Zhang[1], Hind Lal[1], and W. David Merryman[1]
[1]*Vanderbilt University, Nashville, TN*

4:30 pm
***In Silico* Organ-Level Modeling of Murine Cardiac Function: Application to Pulmonary Arterial Hypertension**
Reza Avaz[1], Emilio Mendiola[1], Joao Soares[1], David Li[1], Jordan Graves[1], Richard Dixon[2], Edward Hsu[1], and Michael Sacks[1]
[1]*UT Austin, Austin, TX,* [2]*Texas Heart Institute, Houston, TX,* [3]*University of Utah, Salt Lake City, UT*

4:45 pm
Direct Infarct Injection of Thermo-responsive Hydrogel Improves Contractile Protein Function in the Borderzone
Kimberly Spaulding[1], Anusaya Ramasubramanian[2], Kiyoaki Takaba[1], Henrik Haraldsson[2], Alexander Collins[1], Esteban Aguayo[1], David Lovett[3], Anthony Baker[3], Kevin Healy[2], and Mark Ratcliffe[3]
[1]*Veterans Affairs Medical Center, San Francisco, California, San Francisco, CA,* [2]*University of California, Berkeley, Berkeley, CA,* [3]*University of California San Francisco, San Francisco, CA*

OP-Fri-3-5 — Room 221A

Track: Cancer Technologies

Circulating Biomarkers: CTCs, Extracellular Vesicles and DNA II

Chairs: Wei Li, Hossein Tavana

3:30 pm
Biomarker-Free Sorting of Rare Cells and Clusters from Whole Blood by Magnetic Levitation Profiling
Gozde Durmus[1], Kaushik Sridhar[1], Rakhi Gupta[1], Christian Hoerner[2], Viswam Nair[2], Heather Wakelee[2], Alice Fan[2], Ronald Davis[1], Lars Steinmetz[1], and Utkan Demirci[1]
[1]*Stanford University, Palo Alto, CA,* [2]*Stanford University, Stanford, CA*

Friday, October 13 | 3:30 pm–5:00 pm | Platform Session 3

3:45 pm
Multigene Profiling of Single Circulating Tumor Cells From Lung Cancer Patients
Seung-min Park[1], Dawson Wong[2], Chin Chun Ooi[2], David Kurtz[2], Ophir Vermesh[3], Amin Aalipour[3], Susie Suh[2], Luke Lee[4], Heather Wakelee[5], Maximilian Diehn[3], Viswam Nair[2], Shan Wang[2], and Sanjiv Gambhir[3]
[1]*Stanford University School of Medicine, Palo Alto, CA,* [2]*Stanford University, Stanford, CA,* [3]*Stanford University School of Medicine, Stanford, CA,* [4]*Case Western Reserve University, Cleveland, OH,* [5]*UC Berkeley, Berkeley, CA*

4:00 pm
Microfluidic Liquid Biopsy: Seeking Particles Large and Small in Cancer Patient Blood
Eduardo Reategui[1], Kristen van der Vos[2], Charles P. Lai[2], Myoung-Hwan Park[3], Mahnaz Zeinali[4], Berent Aldikacti[1], Leonora Balaj[2], Wei Li[3], Shannon N. Tessier[1], Keith Wong[5], David T. Ting[1], Brain V. Nahed[6], Shyamala Maheswaran[1], Daniel A. Haber[1], Mehmet Toner[7], Xandra O. Breakefield[2], and Shannon L. Stott[1]
[1]*Massachusetts General Hospital Cancer Center, Harvard Medical School, Charlestown, MA,* [2]*Department of Neurology, Massachusetts General Hospital, Harvard Medical School MA* [82125]*, Charlestown, MA,* [3]*Department of Chemical Engineering, Massachusetts General Hospital, Cambridge, MA,* [4]*Harvard Medical School / Massachusetts General Hospital, Charlestown, MA,* [5]*Massachusetts General Hospital Cancer Center, Harvard Medical School, Cambridge, MA,* [6]*Massachusetts General Hospital Brain Tumor Center / Pappas Center for Neurooncology, Boston, MA,* [7]*Massachusetts General Hospital, Harvard Medical School, Charlestown, MA*

4:15 pm
Noninvasive Prediction of Aggressive Prostate Cancer through Protease Nanosensors
Jaideep Dudani[1], Maria Ibrahim[1], Jesse Kirkpatrick[1], Andrew Warren[1], and Sangeeta Bhatia[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

4:30 pm
A Temporal Examination of Platelet Counts as a Predictor of Prognosis in Lung Cancer Patients
Joanna Sylman[1,2,3], Garth Tormoen[3], Annachiara Mitrugno[3], Todd Wagner[2], Owen McCarty[3], and Parag Mallick[1]
[1]*Stanford University, Palo Alto, CA,* [2]*VA Palo Alto Health Care System, Palo Alto, CA,* [3]*Oregon Health and Science University, Portland, OR*

4:45 pm
Resistive-Pulse Sensing Tumor-Derived Exosome Detection Device for Resource-Limited Settings
Thomas Carey[1], Connie Yu[1], and Lydia Sohn[1]
[1]*University of California, Berkeley, Berkeley, CA*

OP-Fri-3-6 — Room 221B

Track: Respiratory Bioengineering

Respiratory Mechanobiology

Chairs: Samir Ghadiali, Jason Gleghorn

3:30 pm
A Mechanobiological Morphoelastic Model of Inflammation and Mechanotransduction-Induced Remodelling of the Airway Wall: Application to an Ovalbumin Mouse Model of Asthma
Michael Hill[1], Christopher Philp[1], Charlotte Billington[1], Amanda Tatler[1], Reuben O'Dea[1], Simon Johnson[1], and Bindi Brook[1]
[1]*University of Nottingham, Nottingham, United Kingdom*

3:45 pm
Pulsatile Ventilation May Improve the Uniform Recruitment of Obstructed Pulmonary Bifurcations
Eiichiro Yamaguchi[1], Liam Nolan[1], and Donald Gaver[1]
[1]*Tulane University, New Orleans, LA*

4:00 pm
Mechanotransduction in Alveolar Macrophages Contributes to Lung Injury by Modulating Pro-inflammatory Cytokine Secretion and miR-146a Expression
Christopher Bobba[1], Megan Ballinger[2], Joshua Englert[2], and Samir Ghadiali[1,2]
[1]*The Ohio State University, Columbus, OH,* [2]*The Ohio State University Wexner Medical Center, Columbus, OH*

4:15 pm
Bone-marrow Derived Pro-angiogenic Cells Mediate Pathologic Biomechanical Remodeling During Pulmonary Hypertension through Serotonin 2b Receptor Signaling
Nathaniel Bloodworth[1], James West[1], Cyndi Clark[1], Christa Gaskill[1], Santhi Gladson[1], Shelia Shay[1], Christy Moore[1], Harikrishna Tanjore[1], Susan Majka[1], and W. David Merryman[1]
[1]*Vanderbilt University, Nashville, TN*

4:30 pm
Substrate Elasticity Governs Epigenetic Repression of Anti-Fibrotic Gene Activity in Lung Fibroblasts
Dakota Jones[1], Giovanni Ligresti[1], and Daniel Tschumperlin[1]
[1]*Mayo Clinic, Rochester, MN*

4:45 pm
***In Vitro* and *In Vivo* Evaluation of an Inhibitor of Protein Kinase C to Treat ARDS**
Donald Buerk[1], Yuan Tang[1,2], Shuang Sun[2], Elisabetta Liverani[2], Laurie Kilpatrick[2], and Mohammad Kiani[1,2]
[1]*MedVas Concepts, LLC, Wynnewood, PA,* [2]*Temple University, Philadelphia, PA*

OP-Fri-3-7 — Room 221C

Tracks: Tissue Engineering, Drug Delivery & Intelligent Systems

Drug Delivery for Tissue Engineering

Chairs: Luis Solorio, Mary Caldorera-Moore

3:30 pm
Controlled Release Of N-acetylcysteine Positively Affects the Viability, Redox State and Morphology of Oligodendrocyte Progenitor Cells Under Oxidative Stress
Nicholas Murphy[1] and Kyle Lampe[1]
[1]*University of Virginia, Charlottesville, VA*

3:45 pm
Nitric Oxide Releasing Bionanomatrix to Improve Dialysis Fistula Maturation
Patrick Hwang[1], Grant Alexander[2], Maheshika Somarathna[2], Maggie Collier[2], Brigitta Brott[1,2], Jennifer Pollock[2], Timmy Lee[2], and Ho-Wook Jun[1,2]
[1]*Endomimetics LLC, Birmingham, AL,* [2]*University of Alabama at Birmingham, Birmingham, AL*

PLATFORM SESSIONS–FRIDAY–3–3:30 PM–5:00 PM

Friday, October 13 | 3:30 pm–5:00 pm | Platform Session 3

4:00 pm
3D Intestinal Spheroids as a Biomimetic Model for Studying Drug Transport
Karen Samy[1] and Tjeal Desai[1]
[1]*University of California San Francisco, San Francisco, CA*

4:15 pm
The Role of Cellular Morphology in Nanoparticle Uptake
Pouria Fattahi[1], Yin-Ting Yeh[1], Si-Yang Zheng[1], Sulin Zhang[1], Justin Brown[1], and Peter Butler[1]
[1]*Pennsylvania State University, University Park, PA*

4:30 pm
Intra-Cartilage Delivery of RNA Therapeutics via Nanopiece to Treat Osteoarthritis
Yupeng Chen[1,2], Hongchuan Yu[1,2], Brandon Vorrius[2], Hicham Fenniri[3,4], Thomas Webster[1,3], and Qian Chen[1,2]
[1]*Brown University, Providence, RI,* [2]*Rhode Island Hospital, Providence, RI,* [3]*Northeastern University, Boston, MA,* [4]*National Institute of Nanotechnology, Edmonton, Canada*

4:45 pm
VEGF Nanoparticles to Repair Heart after Myocardial Infarction
Yasin Oduk[1], Wuqiang Zhu[1], Ramaswamy Kannappan[1], and Jianyi (Jay) Zhang[1]
[1]*University of Alabama at Birmingham, Birmingham, AL*

OP-Fri-3-8 — **Room 222A**

Tracks: Tissue Engineering, Nano and Micro Technologies

Organ-on-a-Chip Models for Drug Discovery and the Study of Disease IV

Chairs: Chelsey Simmons, Salman Khetani

3:30 pm
Engineering an *In Vitro* Artificial Alveolar Model for Rapid Drug Screening
Ayesha Arefin[1,2], Jen-Huang Huang[3], Kiersten Haffey[4], Mohammad Omar Ishak[4], Rashi Iyer[4], Pulak Nath[4], and Jennifer Harris[4]
[1]*University of New Mexico, Albuquerque, NM,* [2]*Los Alamos National laboratory, Los Alamos, NM,* [3]*National Tsing Hua University, Hsinchu, Taiwan, Hsinchu, Taiwan,* [4]*Los Alamos National Laboratory, Los Alamos, NM*

3:45 pm
Actively Controlled Zonation of Primary Rat/Human Hepatocytes in Various Liver Metabolisms Using a Gradient Microfluidic Device
Young Bok(Abraham) Kang[1], Jinsu Eo[1], Hua Bai[1], Martin Yarmush[1], and O. Berk Usta[1]
[1]*Massachusetts General Hospital, Harvard Medical School, and Shriners Hospitals for Children-Boston, Boston, MA*

4:00 pm
Microfluidic Retinal Pigment Epithelial Cell Culture with Functional Analysis
William McClintic[1], Carmen Foster[2], Andrea Timm[3], Scott Retterer[2], and Patrick Collier[2]
[1]*University of Tennessee, Knoxville, TN,* [2]*Oak Ridge National Laboratory, Oak Ridge, TN,* [3]*Johns Hopkins Applied Physics Lab, Laurel, MD*

4:15 pm
Liver-on-a-paper Model for Drug Screening
Kattika Kaarj[1], Soohee Cho[1], and Jeong-Yeol Yoon[1]
[1]*The University of Arizona, Tucson, AZ*

4:30 pm
In Vitro Disease Model of the Retina Focusing on Angiogenesis
Li-Jiun Chen[1], Shun Ito[1], Nobuhiro Nagai[2], Matsuhiko Nishizawa[1], Toshiaki Abe[2], and Hirokazu Kaji[1]
[1]*Tohoku University, Sendai, Japan,* [2]*Tohoku University Graduate School of Medicine, Sendai, Japan*

4:45 pm
Fluidic Platform for ex vivo Interrogation of Pancreatic Islets
Matthew Ishahak[1], Giovanni Lenguito[1], Siddarth Rawal[1], Peter Buchwald[1], Cherie Stabler[2], and Ashutosh Agarwal[1]
[1]*University of Miami, Miami, FL,* [2]*University of Florida, Gainesville, FL*

OP-Fri-3-9 — **Room 222B**

Tracks: Cellular and Molecular Bioengineering, Tissue Engineering

Engineering Multi-cellular Systems

Chairs: Omid Veiseh, Warren Grayson

3:30 pm
Sex Differences in the Impact of Oxygen and Pathogen Exposure on Human Colon Biopsy Slices
Luke Schwerdtfeger[1], Erica Borresen[1], Elizabeth Ryan[1], and Stuart Tobet[1]
[1]*Colorado State University, Fort Collins, CO*

3:45 pm
3D Bi-cellular Biomimetic Model of Vasculitis Reveals a RhoA, Rac, and N-cadherin Balance in Pericyte-regulated Barrier Function
Stella Alimperti[1,2], Teodelinda Mirabella[1,2], Varnica Bajaj[2], William Polacheck[1,2], Jeroen Eyckmans[2], and Christopher Chen[1,2]
[1]*Harvard University- Wyss Institute for Biologically Inspired Engineering, Boston, MA,* [2]*Boston University, Boston, MA*

4:00 pm
Engineering Vascularized Livers to Recapitulate Organ-Level Functions
Arnav Chhabra[1], Hyun-Ho Song[1], Christopher Chen[2], and Sangeeta Bhatia[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Boston University, Boston, MA*

4:15 pm
Transcriptome Profiling of 3D Co-cultured Cardiomyocytes and Endothelial Cells under Oxidative Stress Using a Photocrosslinkable Hydrogel System
Xiaoshan Yue[1], Aylin Acun[1], and Pinar Zorlutuna[1]
[1]*University of Notre Dame, Notre Dame, IN*

Friday, October 13 | 3:30 pm–5:00 pm | Platform Session 3

4:30 pm
Engineering Customized Cellular and Multicellular Sensing and Response Behaviors Using Synthetic Notch Receptors
Leonardo Morsut[1]
[1]*University of Southern California (USC), Los Angeles, CA*

4:45 pm
Engineering Biomimetic Hydrogels to Support Hepatocyte Phenotype and Function
Asli Unal[1], Syndey Jeffs[1], and Jennifer West[1]
[1]*Duke University, Durham, NC*

OP-Fri-3-10 — **Room 223**

Track: Cellular and Molecular Bioengineering

CMBE Young Innovators II

Chairs: Michael King, Alyssa Panitch

3:30 pm
Data-modeling Identifies Conflicting Signaling Axes Governing Myoblast Proliferation and Differentiation Responses to Diverse Ligand Stimuli
Alexander M. Loiben[1], Sharon Y. Baumgarten-Soueid[1], Debadrita Bhattacharya[1], Ruth F. Kopyto[1], Joseph Kim[1], and Benjamin Cosgrove[1]
[1]*Cornell University, Ithaca, NY*

3:45 pm
Distinct Roles of Direct Contact and Secreted Factors in the Immunomodulatory Effects of Cryopreserved Viable Human Amniotic Membrane
Claire E. Witherel[1], Tony Yu[1], Mark Concannon[1], Will Dampier[2], and Kara Spiller[1]
[1]*Drexel University, Philadelphia, PA,* [2]*Drexel University College of Medicine, Philadelphia, PA*

4:00 pm
Chemoprotection Across the Tumor Border: Cancer Cell Response to Doxorubicin Depends on Stromal Fibroblast Ratios and Interstitial Therapeutic Transport
Jennifer Munson[1], Daniel K. Logsdon[1], and Garrett Beeghly[1]
[1]*University of Virginia, Charlottesville, VA*

4:15 pm
Shape-specific Nanoceria Mitigate Oxidative Stress-induced Calcification in Primary Human Valvular Interstitial Cell Culture
Yingfei Xue[1], Cynthia St. Hilaire[1], Luis Hortells[1], Julie A. Phillippi[1], Vinayak Sant[1], and Shilpa Sant[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

4:30 pm
Tethered Jagged-1 Synergizes with Matrix Stiffness to Modulate Notch-induced Myogenic Progenitor Differentiation
Penney Gilbert[1], Helia Safaee[1], Mohsen Bakooshli[1], Richard Cheng[1], Haijiao Liu[2], Sadegh Davoudi[1], Aditya Mortowirogo[1], and Craig Simmons[2]
[1]*University of Toronoto, Toronto, ON, Canada,* [2]*Ted Rogers Centre for Heart Reserach, Toronto, ON, Canada*

OP-Fri-3-11 — **Room 225A**

Track: Biomedical Imaging and Optics

Imaging Techniques in Clinical Translation

Chairs: Narasimhan Rajaram, Ramin Pashaie

3:30 pm
Automated and Cost-Effective Antimicrobial Susceptibility Testing on a Mobile Phone
Steve Feng[1,2], Derek Tseng[1,2], Calvin Brown[1,2], Dino Di Carlo[2,3,4], Omai Garner[5], and Aydogan Ozcan[1,2,3,6]
[1]*Electrical Engineering Department, University of California, Los Angeles, CA,* [2]*Bioengineering Department, University of California, Los Angeles, CA,* [3]*California NanoSystems Institute, University of California, Los Angeles, CA,* [4]*Jonsson Comprehensive Cancer Center, University of California, Los Angeles, CA,* [5]*Department of Pathology and Laboratory Medicine, David Geffen School of Medicine, University of California, Los Angeles, CA,* [6]*Department of Surgery, David Geffen School of Medicine, University of California, Los Angeles, CA*

3:45 pm
Intracranial Electrical Impedance Tomography for TBI Monitoring
Ryan Halter[1]
[1]*Dartmouth College, Hanover, NH*

4:00 pm
A Novel Low-cost Compact Diffuse Speckle Contrast Flowmeter for Contact Blood Flow Measurement
Siavash Mazdeyasna[1], Chong Huang[1], Myeongsu Seong[2], Joshua Morgan[1], Mingjun Zhao[1], Ahmed Bahrani[1], Jae Kim[2], Jeffrey Hastings[1], and Guoqiang Yu[1]
[1]*University of Kentucky, Lexington, KY,* [2]*Gwangju Institute of Science and Technology, Gwangju, Korea, Republic of*

4:15 pm
Development of Augmented Microscope for Image Guided Surgery
Laura Camp[1], Jeffrey Watson[1], Nikolay Martirosyan[2], Michael Lemole Jr.[1,2], and Marek Romanowski[1]
[1]*University of Arizona, Tucson, AZ,* [2]*Banner University Medical Center, Tucson, AZ*

4:30 pm
Monitoring Exocytosis and Full Fusion of Insulin Granules via Graphene Liquid Cell Transmission Electron Microscopy Imaging
Meagan Ouy[1], Emre Firlar[1], Shayan Shafiee[1], Yuan Xing[1], Alessandro Chan[1], Reza Yassar[1], Solomon Afelik[1], Yong Wang[1], Jose Oberholzer[1], and Tolou Shokuhfar[1]
[1]*University of Illinois at Chicago, Chicago, IL*

4:45 pm
Hyperspectral Imaging for Cancer Detection and Image-guided Surgery
Baowei Fei[1,2], Guolan Lu[1], Martin Halicek[1], James Little[3], Xu Wang[3], and Amy Chen[3]
[1]*Emory University and Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University School of Medicine, Atlanta, GA,* [3]*Emory University, Atlanta, GA*

PLATFORM SESSIONS–FRIDAY–3–3:30 PM–5:00 PM

Friday, October 13 | 3:30 pm–5:00 pm | Platform Session 3

OP-Fri-3-12 — Room 225B

Track: Biomedical Imaging and Optics

Applications of MRI and Focused Ultrasound

Chairs: Stephen LaConte

3:30 pm
Quantitative T1 Mapping of Breast Cancer Xenografts During HIFU Ablation
Sara Johnson[1], Jill Shea[1], Alana Welm[2], Harika Gundlapalli[2], Maihi Fujita[2], and Allison Payne[1]
[1]*University of Utah, Salt Lake City, UT,* [2]*Huntsman Cancer Institute, Salt Lake City, UT*

3:45 pm
Towards Personalized Medicine in Autism Diagnosis: Anatomical Abnormalities Analysis Using a Deep Learning Based Approach
Omar Dekhil[1], Mohameed Ghazal[2], Ahmed Shalaby[1], Andy Switala[1], Gregory Barnes[1], Ayman El-BAz[1], and Ashraf Khalil[3]
[1]*university of Louisville, Louisville, KY,* [2]*Department of Electrical and Computer Engineering, Abu Dhabi University, UAE, Abu Dhabi, United Arab Emirates,* [3]*Abu Dhabi University, Abu Dhabi University, United Arab Emirates*

4:00 pm
Effect of Exercise on Myocellular Lipid Content and Diffusion Tensor Imaging Measurements
Noel Naughton[1] and John Georgiadis[2,3]
[1]*Univeristy of Illinois at Urbana-Champaign, Urbana, IL,* [2]*Univeristy of Illinois at Urbana Champaign, Urbana, IL,* [3]*Illinois Institute of Technology, Chicago, IL*

4:15 pm
Efficient Hepatic Site-Selective Delivery of Novel Trimodal Optical/MR/X-ray Contrast Nanoconstructs for Colorectal Cancer Liver Metastasis Therapy
Abdul K. Parchur[1], Jaidip M. Jagtap[1], Gayatri Sharma[1], Venkateswara Gogineni[2], Michael J. Flister[3], Sarah White[2], and Amit Joshi[1]
[1]*Biomedical Engineering, Medical College of Wisconsin, Milwaukee, WI,* [2]*Radiology, Medical College of Wisconsin, Milwaukee, WI,* [3]*Physiology, Medical College of Wisconsin, Milwaukee, WI*

4:30 pm
DTI-based Network Analysis of APP/PS1 Mouse Brains
David Hike[1,2], Abdol Aziz Ould Ismail[1,2,3], Victor Wong[1], Scott Boebinger[1], Tara Palin[1], and Samuel Grant[1,2]
[1]*Florida State University, Tallahassee, FL,* [2]*National High Magnetic Field Laboratory, Tallahassee, FL,* [3]*University of Pennsylvannia, Philadelphia, PA*

4:45 pm
Functional Connectivity Alteration in Middle School Male Football Athletes with Controls
Pratik Kashyap[1], Kausar Abbas[1], Sharlene Newman[2], and Thomas Talavage[1]
[1]*Purdue University, West Lafayette, IN,* [2]*Indiana University (Bloomington), Bloomington, IN*

OP-Fri-3-13 — Room 228A

Track: Device Technologies and Biomedical Robotics

Upper-Limb Exoskeletons

Chairs: Simon Kudernatsch, Jennifer Kovac

3:30 pm
A Real-Time EMG Based Embedded Controlling System for Intuitive Exoskeleton
Biao Chen[1], Chaoyan Chen[2], Jie Hu[1], Pan Tian[1], Yang Zhou[2], Xinuo Zhang[3], John Cavanaugh[2], and Mark Ming-Cheng Cheng[2]
[1]*Shanghai Jiao Tong University, Shanghai, China, People's Republic of,* [2]*Wayne State University, Detroit, MI,* [3]*China Capital Medical University, Beijing, China, People's Republic of*

3:45 pm
Kinesiology of Light Weight Bionic Upper Arm Exoskeleton and Computer Simulation
Yousef Alshahrani[1], Guanghua Xu[2], Chaoyang Chen[1], Yang Zhou[1], Min Li[2], and John Cavanaugh[1]
[1]*Wayne State University, Detroit, MI,* [2]*Xi'an Jiaotong University, Xi'an, China, People's Republic of*

4:00 pm
Robotic Exoskeleton for Upper Extremity Strength Augmentation: REUESA
Simon Kudernatsch[1] and Donald Peterson[1]
[1]*Texas A&M University, College Station, TX*

4:15 pm
EMG Based Control of a Wearable Robot for Elbow and Forearm Movement Assistance
Fidel Sierra-flores[1], Jennifer Kovac[1], Mohammad Habibur Rahman[1], and Maarouf Saad[2]
[1]*University of Wisconsin Milwaukee, Milwaukee, WI,* [2]*Ecole de technologie supérieure, Montreal, QC, Canada*

4:30 pm
Movement of A Paralyzed Hand With Elastomeric Orthotics
Edward Austin[1], Charles Kearney[2], Mitchell St. Pierre[2], Young Ho Shin[2], and Jin-Woo Choi[2]
[1]*Baton Rouge General Medical Center/Louisiana State University, Baton Rouge, LA,* [2]*Louisiana State University, Baton Rouge, LA*

4:45 pm
DExterous hand control through Fascicular Targeting (DEFT)
Cynthia Overstreet[1], Jonathan Cheng[2], and Edward Keefer[1]
[1]*Nerves Incorporated, Dallas, TX,* [2]*UT Southwestern Medical Center, Dallas, TX*

Friday, October 13 | 3:30 pm–5:00 pm | Platform Session 3

OP-Fri-3-14 — Room 228B

Track: Cancer Technologies

Molecular Profiling in Cancer

Chairs: Gabe Kwong, Kristen Naegle

3:30 pm
Microchip Spatial Gene Expression Analysis Using Real-Time Reverse Transcriptase Loop Mediated Isothermal Amplification for Molecular Histopathology
Anurup Ganguli[1], Gregory Damhorst[1], Nicolas Spegazzini[1], Akid Ornob[1], Tanmay Ghonge[1], Brianna Thornton[2], Christian Konopka[1], Wawrzyniec Dobrucki[1], Rohit Bhargava[1], Farhad Kosari[3], and Rashid Bashir[1]
[1]*University of Illinois at Urbana Champaign, Urbana, IL,* [2]*Tuskegee University, Tuskegee, AL,* [3]*Mayo Clinic Cancer Center Research, Rochester, MN*

3:45 pm
Sphingosine-1-Phosphate Inhibits Adhesion of Malignant Cancer Cells MDA-MB-231 to Microvessel Walls by Protecting Endothelial Surface Glycocalyx
Lin Zhang[1], Min Zeng[1], and Bingmei Fu[1]
[1]*The City College of New York, New York, NY*

4:00 pm
Magnetic Nanoparticle Relaxation Mechanism Plays a Role in Lysosomal Membrane Permeabilization
Andreina Chiu Lam[1], Melissa Cruz-Acuna[1], and Carlos Rinaldi[1]
[1]*University of Florida, Gainesville, FL*

4:15 pm
Implantable Nanosensor Detection of an Ovarian Cancer Biomarker *In Vivo*
Ryan Williams[1], Christopher Lee[1], Thomas Galassi[2], Jackson Harvey[2], Rachel Leicher[3], Maria Sirenko[3], Janki Shah[1], Narciso Olvera[4], Fanny Dao[4], Douglas Levine[4], and Daniel Heller[1,2]
[1]*Memorial Sloan Kettering Cancer Center, New York, NY,* [2]*Weill Cornell Medicine, New York, NY,* [3]*Tri-Institutional Program in Chemical Biology, New York, NY,* [4]*NYU Langone Medical Center, New York, NY*

4:30 pm
Protease-Activated Detection and Imaging of Cancer Metastasis
Liangliang Hao[1] and Sangeeta Bhatia[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

4:45 pm
Rapid Production of Bispecific Antibodies Using Off-the-shelf IgG
Andrew Tsourkas[1] and Burcin Altun[1]
[1]*University of Pennsylvania, Philadelphia, PA*

OP-Fri-3-15 — Room 227C

Track: Stem Cell Engineering

Organoid Engineering and Advanced Biomanufacturing

Chairs: Taby Ahsan, Kelly Stevens

3:30 pm
Self-organized Amniogenesis from Human Pluripotent Stem Cells in an Engineered Biomimetic Niche
Yue Shao[1], Kenichiro Taniguchi[2], Katherine Gurdziel[3], Ryan Townshend[2], Xufeng Xue[1], Koh Meng Aw Yong[1], Jianming Sang[1], Jason Spence[2], Deborah Gumucio[2], and Jianping Fu[1,2]
[1]*University of Michigan, Ann Arbor, Ann Arbor, MI,* [2]*University of Michigan Medical School, Ann Arbor, MI,* [3]*Wayne State University, Detroit, MI*

3:45 pm
Engineering CNS Morphogenesis: De Novo Synthesis of Neural Tube Slice Cultures
Gavin Knight[1,2] and Randolph Ashton[1,2]
[1]*University of Wisconsin, Madison, WI,* [2]*Wisconsin Institute for Discovery, Madison, WI*

4:00 pm
Engineering 3-D Neural Organoid Morphology using PVOH-Ca Sacrificial Templates
Carlos Marti-Figueroa[1], Jason McNulty[1], Joshua Plantz[1], Lih-Sheng Turng[1], and Randolph Ashton[1]
[1]*University of Wisconsin - Madison, Madison, WI*

4:15 pm
Mechanically Guided Emergent Patterning of Neuroectoderm Tissue Using Human Pluripotent Stem Cells
Xufeng Xue[1], Yubing Sun[2], Agnes Resto-Irizarry[1], Koh Meng Aw Yong[1], Shinuo Weng[1], Yue Shao[1], and Jianping Fu[1]
[1]*University of Michigan, Ann Arbor, MI,* [2]*University of Massachusetts, Amherst, MA*

4:30 pm
In Vitro Production of Functional Pancreatic Islets from iPSC-Derived Organoids
Huanjing Bi[1], Kaiming Ye[1], and Sha Jin[1]
[1]*SUNY-Binghamton, Binghamton, NY*

4:45 pm
Rational Design of Synthetic Matrices to Guide Intestinal Stem Cell Morphogenesis
Victor Hernandez-Gordillo[1], GiHun Choi[1], Mario Gamboa[1], Rebecca Carrier[2], David Breault[3], and Linda Griffith[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Northeastern University, Boston, MA,* [3]*Harvard Medical School, Boston, MA*

PLATFORM SESSIONS–FRIDAY–3–3:30 PM–5:00 PM

Friday, October 13 | 3:30 pm–5:00 pm | Platform Session 3

OP-Fri-3-16 — Room 226A

Track: Neural Engineering

Micro/Nano Tools in Neurosciences

Chairs: Erkin Seker, Anja Kunze

3:30 pm
Selective Partial Perfusion of *In Vivo* Single Axons Using a Simple Microfluidic Device
Anthony Fan[1], Alireza Tofangchi[1], and Taher Saif[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

3:45 pm
Manipulation of *In Vitro* Neurite Outgrowth using Nanoplasmonic Neural Interface Platform
Nari Hong[1] and Yoonkey Nam[1]
[1]*KAIST, Daejeon, Korea, Republic of*

4:00 pm
Nanoporous Gold Biointerfaces: Modifying Nanostructure to Control Neural Cell Coverage and Enhance Electrophysiological Recording Performance
Christopher Chapman[1], Ling Wang[1], Hao Chen[1], Joshua Garrison[1], Pamela Lein[1], and Erkin Seker[1]
[1]*University of California, Davis, Davis, CA*

4:15 pm
Characterization of Multiwall Carbon Nanotube-Modified Ultrananocrystalline Diamond Microelectrodes for Enhanced Neurotransmitter Detection
Chao Tan[1], Gaurab Dutta[1], Haocheng Yin[1], Prabhu Arumugam[1], and Shabnam Siddiqui[1]
[1]*Louisiana Tech University, Ruston, LA*

4:30 pm
Blended Polyester Nanoparticles to Modulate Retinoid Signaling in a Transgenic Murine Model of ALS
David Medina[1], Eugene Chung[1], Rick Ceton[1,2], Robert Bowser[1], and Rachael Sirianni[1,2]
[1]*Barrow Neurological Insitute, Phoenix, AZ,* [2]*Arizona State University, Tempe, AZ*

4:45 pm
Deconstructing Behavioral Neuropharmacology with Cellular Specificity
Brenda Shields[1], Elizabeth Kahuno[1], Charles Kim[2], Pierre Apostolides[2], Jennifer Brown[2], Sarah Lindo[2], Brett Mensh[2], Joshua Dudman[2], Luke Lavis[2], and Michael Tadross[1]
[1]*Duke University, Durham, NC,* [2]*Janelia Research Campus, Ashburn, VA*

OP-Fri-3-17 — Room 226B

Track: Neural Engineering

Neural Decoding

Chairs: Dawn Taylor, Chuck Dorval

3:30 pm
Investigating Force Perception By Means of Muscle Synergies Analysis
Simone Toma[1] and Marco Santello[1]
[1]*Arizona State University, Tempe, AZ*

3:45 pm
Artificial Neural Network Models for Predicting Reaching and Grasping Behavior from Neural Activity in Motor Cortex
Adam G. Rouse[1], Marc H. Schieber[1], and Thomas M. Howard[1]
[1]*University of Rochester, Rochester, NY*

4:00 pm
Extracting More Information from Field Potentials Using Band-Optimized Spatial Filtering
Dawn Taylor[1,2] and Tyler Johnson[1]
[1]*Cleveland Clinic, Cleveland, OH,* [2]*Louis Stokes Cleveland VA Medical Center, Cleveland, OH*

4:15 pm
A Computational Study of Probe Design for Source Localization in Multi-unit Neural Recordings
Patrick Greene[1] and Kevin Lin[1]
[1]*University of Arizona, Tucson, AZ*

4:30 pm
Chronic Tracking of Neuronal Clusters Using Ultraflexible Electrode Array
Xue Li[1], Hanlin Zhu[1], Zhengtuo Zhao[1], Xiaoling Wei[1], Lan Luan[1], and Chong Xie[1]
[1]*University of Texas at Austin, Austin, TX*

4:45 pm
Effective Information in the Thalamocortical Circuit Diminishes with Loss of Consciousness
Ryan Verner[1] and Edward Bartlett[1]
[1]*Purdue University, West Lafayette, IN*

Friday, October 13 | 3:30 pm–5:00 pm | Platform Session 3

OP-Fri-3-18 — Room 227C

Track: Biomedical Engineering Education (BME)

Design and Curriculum

Chairs: Casey Ankeny, Elizabeth Logsdon

3:30 pm
Incorporating the Patient Experience into a BME Class
Daniel Cavanagh[1] and Joseph Tranquillo[1]
[1]*Bucknell University, Lewisburg, PA*

3:45 pm
Evaluation of a Clinical Immersion Course and its Impact on Engineering Design Projects
Adam Engler[1,2] and Geert Schmid-Schonbein[1]
[1]*UC San Diego, La Jolla, CA,* [2]*Sanford Consortium for Regenerative Medicine, La Jolla, CA*

4:00 pm
Online Lesson Viewing Patterns in Two Flipped Classroom BME Courses
Jean-Michel Maarek[1]
[1]*University of Southern California, Los Angeles, CA*

4:15 pm
Mentoring for INnovative Design Solutions (MINDS) Program Integrates Key Design Considerations for Clinical Translation
Teresa Murray[1,2], Alicia Fernandez-Fernandez[2,3], Dominic Nathan[2], Jeffrey LaMack[2,4], Bhavit Vora[2], and Marcia Pool[2,5]
[1]*Louisiana Tech University, Ruston, LA,* [2]*Alpha Eta Mu Beta, Champaign, IL,* [3]*Nova Southeastern University, Ft. Lauderdale, FL,* [4]*Milwaukee School of Engineering, Milwaukee, WI,* [5]*University of Illinois, Urbana, IL*

4:30 pm
Curriculum to Advance Capstone Design Projects Beyond the One Year
Elizabeth Logsdon[1], Robert Allen[1], Mary Emma Gorham Bigelow[1], Amir Manbachi[1], and Nicholas Durr[1]
[1]*Johns Hopkins University, Baltimore, MD*

4:45 pm
Concept Mapping in a Student-Centered, Biomaterials Classroom
Mikayle Holm[1], Rachel Ponstein[2], Sarah Stabenfeldt[2], and Casey Ankeny[2]
[1]*University of Minnesota, Minneapolis, MN,* [2]*Arizona State University, Tempe, AZ*

***BME Track sponsored by:**

NJIT New Jersey Institute of Technology
Department of Biomedical Engineering

INDUSTRY SESSION

3:00 pm–5:00 pm — **Room 125AB**

Investment Pitches and Partnering

Chair: Clark Wilson, Merchant and Gould P.C.

This session will be a forum for select companies to pitch to four venture capitalists interested in providing funding for start-up ventures. The business categories will align with the interests of the participating VCs. Each venture capitalist will be available after the pitches for questions and networking.

***Industry Track Sponsored by:**

TAMU BIOMEDICAL ENGINEERING TEXAS A&M UNIVERSITY

SPECIAL SESSION

3:30 pm–5:00 pm — **Room 122A**

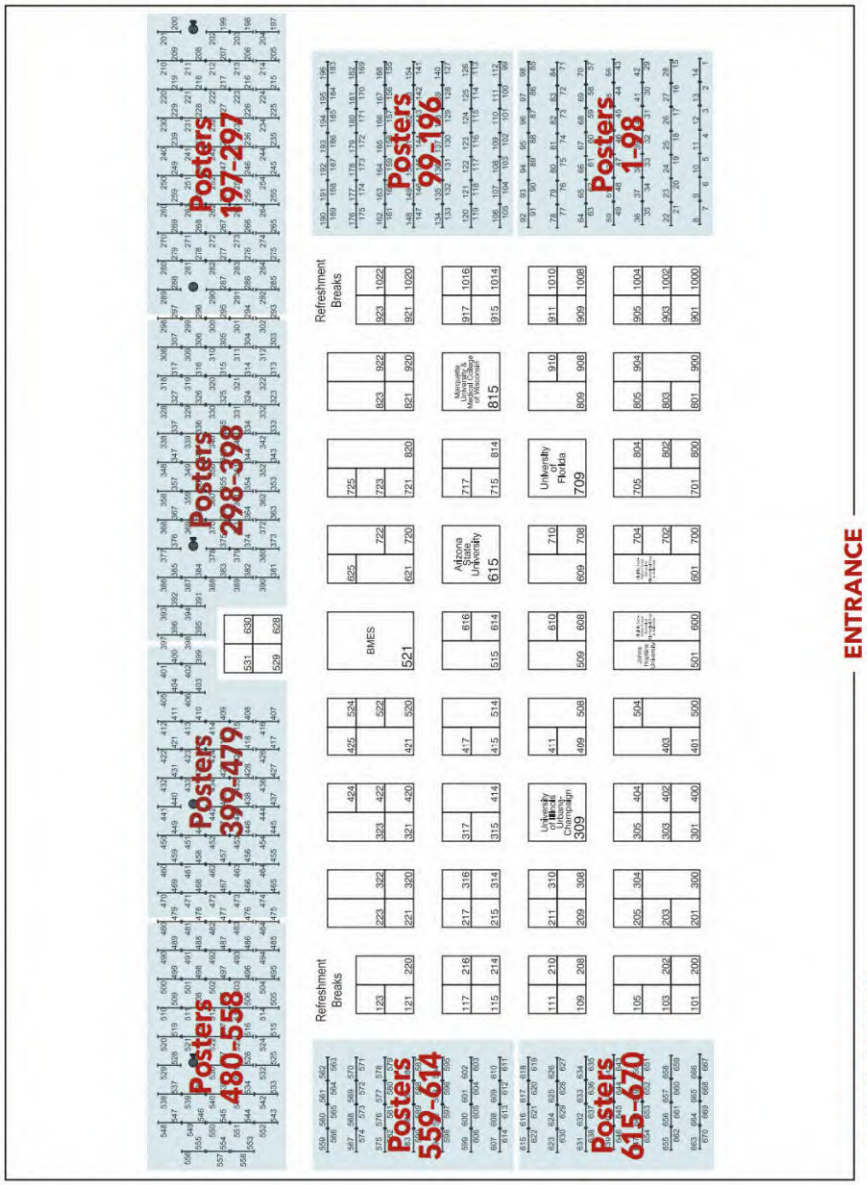
Symposium in honor of Dr. and Mrs. Athanasiou

Chair: Michael Detamore

In recognition of Dr. Kyriacos Athanasiou's sustained commitment to the field of biomedical engineering in general and to BMES in particular, serving as President in 2003-2004, as Editor in Chief of the Annals of Biomedical Engineering since 2009, and for creating an award endowment with his wife, Kiley, to honor the next generation of biomedical engineers.

PLATFORM SESSIONS–FRIDAY–3–3:30 PM–5:00 PM

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North



Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

Track: Device Technologies and Biomedical Robotics

Affordable Health Devices and Frugal Innovation

FRI-1
An Effective Tool to Eradicate Root Canal Infection: Based on Electrochemistry
Abhijith Segu[1], Divya Rani Bijukumar[1], Sukotjo Cortino[2], Qian Xie[2], and Mathew T Mathew[1,2]
[1]*University of Illinois at Chicago, Rockford, IL,* [2]*UIC College of Dentistry, Chicago, IL*

FRI-2
Aramid Nanofiber Composite Separators for Flexible Zinc-Based Thin Film Batteries
Ahmet Emre[1] and Nicholas Kotov[1]
[1]*University of Michigan, Ann Arbor, MI*

FRI-3
CT-Derived, 3D-Printed Needle Guide to Mark the Alveolar Foramen Prior to Pediatric Craniofacial Surgery
Amanda Banks[1], Alexa Melvin[1], Alexander Lin[2], and Andrew Hall[1]
[1]*Saint Louis University, Saint Louis, MO,* [2]*Saint Louis University School of Medicine, Saint Louis, MO*

FRI-4
Rapid Electroanalytical Device for Single Drop Dengue Diagnosis
Ambalika Tanak[1], Sriram Muthukumar[2], and Shalini Prasad[1]
[1]*University of Texas at Dallas, Richardson, TX,* [2]*EnLiSense LLC, Allen, TX*

FRI-5
Automatic Measurement of Pupillary Responsiveness for Vitamin A Deficiency Diagnostics
Amir Soltanianzadeh[1], Katie Healy[1], Sucheta Mehra[1], Amanda Palmer[1], Theodor Sauer[1], Alfred Sommer[1], Keith West[1], and Alain Labrique[1]
[1]*Johns Hopkins University, Baltimore, MD*

FRI-6
Preliminary Refractive Index Measurements in a Portable Optical Cavity Biosensor
Cody Joy[1], Donggee Rho[1], and Seunghyun Kim[1]
[1]*Baylor University, Waco, TX*

FRI-7
Spinal Cannulation Automated Navigation (SCAN) Robotic System
David Le[1], Ahmad Mia[1], Antarius Daniel[1], Dora Obodo[1], Lan-Khanh Tran[1], Qudsia Javid[1], Feitian Zhang[1], and Mahesh B. Shenai[2]
[1]*George Mason University, Fairfax, VA,* [2]*INOVA Fairfax Hospital, Falls Church, VA*

FRI-8
Harnessing Virtual Reality in Robotic Assistive Devices
Devaraj Savitri Dhakshinamurthy[1], Mahesh Shenai[2], and Nathalia Peixoto[1]
[1]*George Mason University, Fairfax, VA,* [2]*Inova Fairfax Medical Campus, Fairfax, VA*

FRI-9
Design of an Improved Skin Graft Knife: The Motorized Weck Blade
Garret Glenn[1], Alexis Morgan[1], Matthew Rodriguez[1], and Olivia Coiado[1]
[1]*University or Portland, Portland, OR*

FRI-10
A Simple, Accurate, and Reproducible Method to Quantify the Tension on Fascial Closures in Hernia Repair
Jaime Bernstein[1], Adam Levy[1], Lawrence Bonassar[2], and Jason Spector[1]
[1]*Weill Cornell Medical College, New York, NY,* [2]*Cornell University, Ithaca, NY*

FRI-11
A Point-of-Care Screening Platform for Serotargets of Severe Acute Malnutrition
Jay Gupta[1], Amy Cheng[1], Daniel Joh[1], Trenton Dailey-Chwalibog[2], Angus Hucknall[3], Qingshan Wei[3], Aydogan Ozcan[4], Benjamin Guesdon[2], Michael Freemark[1], and Ashutosh Chilkoti[3]
[1]*Duke University, Durham, NC,* [2]*Action Contre la Faim, Paris, France,* [3]*North Carolina State University, Raleigh, NC,* [4]*University of California, Los Angeles, CA*

FRI-12
Development of an Affordable 3D Printed Bionic Hand using Underactuation Principle
Jonah Robison[1], Rebecca Dorsey[1], Christopher Hicks[1], David McLeod[1], Alexander Ormerod[1], Matthew Roach[1], Andrew Sedler[1], Melissa McCullough[1], and Jorge Rodriguez[1]
[1]*Clemson University, Clemson, SC*

FRI-13
Continuous Flow Bioreactor System with pH and Dissolved Oxygen Monitoring for Cell Expansion
Katherine Gilleran[1], Maria Garcia[1], and Colin Tomaselli-Greenslade[1]
[1]*Hofstra University, Hempstead, NY*

FRI-14
Rapid Prototyping of 3D Microfluidics Using Low-cost Materials and Maker Tools
Kevin Bishop[1], Megan Co[1], and Matthew Johnston[1]
[1]*Oregon State University, Corvallis, OR*

FRI-15
A Straightforward Low-Cost Test for Sickle Cell Disease
Kevin Cyr[1], Jennifer Colby[2], and Christina Marasco[1]
[1]*Vanderbilt Institute for Integrative Biosystems Research and Education, Nashville, TN,* [2]*Vanderbilt University Medical Center, Nashville, TN*

FRI-16
Design of a Laminar Flow Hood for a Vietnamese Pediatric Hospital
Krunal Patel[1], Maxwell McKeough[1], and Miiri Kotche[1]
[1]*University of Illinois at Chicago, Chicago, IL*

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-17
The Recovery Glove System–A Sensor Driven Glove with interactive games for Fine Motor Skill Disabilities
Oscar Ledezma[1], Jonathan Rey[1], Brian Lee[1], Nicholas Alvarado[1], Erick Morales[1], David Estrada[1], and Deborah Won[1]
[1]*California State University Los Angeles, Los Angeles, CA*

FRI-18
LifeGo: A Container for Safe Organ Transport
Ramon Emiliani[1], Emilio Botero[1], Juan Diaz Boada[1], and Alejandro Posada[1]
[1]*Universidad de los Andes, Bogota, Colombia*

FRI-19
Development of a Rapid, Point-of-Care Diagnostic Test for Diagnosis of Aspergillosis
Rebecca Ulrich von Bargen[1]
[1]*The University of Oklahoma, Norman, OK*

FRI-20
Building a Proposal for an Institution-wide 3D Printing Program
Robert Wesley[1]
[1]*Nicklaus Children's Hospital, Miami, FL*

FRI-21
Portable Artificial-Intelligent Real-Time (PAIRT) Affordable Bionanosensor for DNA Hybridization
Sohini Kar[1,2], Samuel Opper[3], Franzel Pena[3], Shawn McGinley[3], Sethan Jasti[3], and Saion Sinha[2,3]
[1]*Saratoga High School, Saratoga, CA,* [2]*12-15 Molecular Diagnostics LLC, Branford, CT,* [3]*University of New Haven, West Haven, CT*

FRI-22
Low-Cost Mobile Data-Logging System to Track Patient Condition and Location
Takafumi Asaki[1], Christopher Naron[1], Simon Kundernatsch[1], and Donald R. Peterson[1]
[1]*Texas A&M University-Texarkana, Texarkana, TX*

FRI-23
Affordable Stabilizing Electric Toothbrush for Improving Dental Hygiene in Populations Lacking Fine Motor Control
Than Huynh[1], Alexander Hasnain[1], Parul Agrawal[1], William Danziger[1], Ian Feign[1], Cody Guldner[1], Aditya Kishore[1], Albert Li[1], Cynthia Liu[1], James Nie[1], and Brett Volmert[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

FRI-24
Sandwich PDMS Membrane Device for HIV Virus Capture and Concentration Test
Yi Wang[1], Keely Heintz[1], Kieren Connor[1], and Xuanhong Cheng[1]
[1]*Lehigh University, Bethlehem, PA*

Track: Device Technologies and Biomedical Robotics

Biosensors

FRI-25
Carbon Nanospikes and Vertically Aligned Carbon Nanofibers for Biosensing Applications
Aysha Shanta[1], Khandaker Mamun[1], Ava Hedayatipour[1], Syed Islam[1], and Nicole McFarlane[1]
[1]*The University of Tennessee, Knoxville, TN*

FRI-26
Investigating Aqueous-Ionic Liquid Interfaces towards Developing Wearable Biosensors
Badrinath Jagannath[1], Sriram Muthukumar[2], Rujuta Munje[1], and Shalini Prasad[1]
[1]*University of Texas at Dallas, Richardson, TX,* [2]*EnLiSense LLC, Allen, TX*

FRI-27
Measuring Volume Status and Recovery in Exercising Patients
Cody Spence[1], Paul Hart[1], Bret Alvis[1], Franz Baudenbacher[1], Kyle Hocking[1], Susan Eagle[1], and Colleen Brophy[1]
[1]*Vanderbilt University, Nashville, TN*

FRI-28
Point of Care Sensor for Cardiovascular Disease
David Probst[1], Chi Lin[2], Aldir Malkoc[2], and Jeffery LaBelle[2]
[1]*Arizona State, Chandler, AZ,* [2]*Arizona State, Tempe, AZ*

FRI-29
Point-of-care Sensor for the Detection of the Human Papillomavirus Using Cell-free DNA in Saliva
David Probst[1], Christina Salas[1], Jake Turner[1], Chi Lin[1], Jeffery LaBelle[1], and Barbara Smith[1]
[1]*Arizona State, Tempe, AZ*

FRI-30
Design and Analysis of an Optical Cavity Based Biosensor using Distributed Bragg Reflectors
Donggee Rho[1] and Seunghyun Kim[1]
[1]*Baylor University, Waco, TX*

FRI-31
A Nano-Calorimetry Based Platform for Point of Care ThermometricELISA
Evan Kazura[1], Igor Ges[1], Ray Mernaugh[2], and Franz Baudenbacher[1]
[1]*Vanderbilt University, Nashville, TN,* [2]*Vanderbilt University Medical Center, Nashville, TN*

FRI-32
A Bio-Impedance Monitor for Fast Non Invasive Measurement of Hydration Status and Edema
Fred Dyer[1], Jaspal Attrey[1], Murray Turner[1], and Barry Beeler[1]
[1]*LV Lab, Tazewell, TN*

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-33
Rapid DUI Saliva Swab for THC Detection
Hunter Stevenson[1], Shalini Prasad[1], and David Kinnamon[1]
[1]*University of Texas at Dallas, Richardson, TX*

FRI-34
An Electrochemical Biosensor System for Chemical Imaging of Live Biological Samples with High Spatiotemporal Resolution
Jasmine Nejad[1], William Tedjo[1], Rachel Feeny[1], Luke Schwerdtfeger[1], Chad Eitel[1], Stuart Tobet[1], Charles Henry[1], and Thomas Chen[1]
[1]*Colorado State University, Fort Collins, CO*

FRI-35
Giant Magnetoresistive Detection for the Quantitative Lateral Flow Immunoassay
Jongwon Park[1]
[1]*Kyungil University, Gyeongsan, Korea, Republic of*

FRI-36
Development of a Paper-based Diagnostic Platform For The Detection Of Diarrhea Causing Pathogens
Kshitij Ranjan[1], Zhenyuan Lu[1], and Shannon Weigum[1]
[1]*Texas State University-San Marcos, San Marcos, TX*

FRI-37
Toward the Development of a Point-of-Care Diagnostic Technology for Dry Eye and Ocular Disorders
Mackenzie Honikel[1], Chi Lin[1], Andrew Penman[2], Marcus Smith[2], and Jeffrey La Belle[1]
[1]*Arizona State University, Tempe, AZ,* [2]*Advanced Tear Diagnostics, LLC, Birmingham, AL*

FRI-38
Rapid On-chip Protein Biomarker Detection and Data Mining Analysis for Chronic Kidney Disease Assessment
Meili Dong[1,2], Jiandong Wu[2], Zimin Ma[2], Hagit Peretz-Soroka[2], Michael Zhang[3], Paul Komenda[3], Navdeep Tangri[3], Yong Liu[3], Claudio Rigatto[3], and Francis Lin[2]
[1]*Institute of Applied Technology, Hefei Institutes of Physical Science, Chinese Academy of Sciences, Hefei, China, People's Republic of,* [2]*University of Manitoba, Winnipeg, MB, Canada,* [3]*Seven Oaks General Hospital, Winnipeg, MB, Canada*

FRI-39
Differential ISFET Based pH Sensing
Mst Shawkat[1] and Nicole McFarlane[1]
[1]*University of Tennessee, Knoxville, Knoxville, TN*

FRI-40
Novel MEMS Device for Rapid Detection of MRSA
Nicole Ravenscroft[1], Aimee Tomlinson[1], Amanda Bukhtia[1], Kaitlyn Tingley[1], Sally Yurgelevic[2], Gregory Auner[2], Therese Bou-Akl[3], Mansoor Nasir[1], and Yawen Li[1]
[1]*Lawrence Technological University, Southfield, MI,* [2]*Wayne State University, Detroit, MI,* [3]*Ascension-St. John Providence, Southfield, MI*

FRI-41
On-chip and Label-free Glucose Sensing Using Mid-Infrared Waveguides
Pao Lin[1]
[1]*Texas A&M University, College station, TX*

FRI-42
Pupillary Device Design for Ocular Cranial Nerve Monitoring
Rheagan Chambers[1], Hannah Burton [1], G. Michael Lemole Jr[1], and Marek Romanowski[1]
[1]*University of Arizona, Tucson, AZ*

FRI-43
Towards Surgical Margin Assessment with MicroEndoscopic Electrical Impedance Sensing
Ryan Halter[1], Aditya Mahara[1], Elias Hyams[2], and Jason Pettus[2]
[1]*Dartmouth College, Hanover, NH,* [2]*Dartmouth Hitchcock Medical Center, Lebanon, NH*

FRI-44
Portable Affordable Bionanosensor for DNA Hybridization
Samuel Opper[1], Sohini Kar[2,3], Franzel Pena[1], Sethan Kumar Jasti[1], and Saion Sinha[1]
[1]*University of New Haven, West Haven, CT,* [2]*Saratoga High School, Saratoga, CA,* [3]*12-15 Molecular Diagnostics LLC, Branford, CT*

FRI-45
Fabrication of Gold Nanorod Vertical Array and its Role in Fluorescence Intensity Enhancement
Sharon Kwee[1] and Liang Tang[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

FRI-46
A Rapid Paper-based Spot Test for Direct Detection of *E. coli* O157:H7 in Milk
Sherine Cheung[1], Matthew Yee[1], Nguyen Le[1], Elizabeth Gomes[1], Zahra Afrasiabi[2,3], and Daniel Kamei[1]
[1]*UCLA, Los Angeles, CA,* [2]*Lincoln University, Jefferson City, MO,* [3]*Soka University of America, Aliso Viejo, CA*

FRI-47
Dehydrated Aqueous Two-Phase Components Improve Paper-Based IgM Detection in Serum
So Youn Lee[1], David Pereira[1], Chloe Wu[1], Benjamin Wu[1], and Daniel Kamei[1]
[1]*University of California, Los Angeles, Los Angeles, CA*

FRI-48
Hand Movement Pattern Recognition Using Surface Electromyography and BP Neural Network Machine Learning Algorithm
Yang Zhou[1], Chaoyang Chen[1], Biao Chen[2], Xinuo Zhang[3], Yousef Alshahrani[1], Bo Cheng[4], Mark Cheng[1], and John Cavanaugh[1]
[1]*Wayne State University, Detroit, MI,* [2]*Shanghai Jiaotong University, Shanghai, China, People's Republic of,* [3]*Capital Medical University, Beijing, China, People's Republic of,* [4]*Tsinghua University, Beijing, China, People's Republic of*

POSTER SESSION–FRIDAY

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

Track: Device Technologies and Biomedical Robotics

Wearable Sensors and Devices

FRI-49
A New Genotyping Platform: Electric Field Induced Release and Measurement (EFIRM)
Zhenyu Huang[1], Xiaoyan Lin[2], Xueying He[3], Yaqin Mo[3], Xiaoyang Wang[2], Yingjun Lin[3], Xiaoxia Sun[2], Haoran Liang[2], Chao Ji[2], Feng Li[4], Fang Wei[4], and Wei Liao[1]
[1]Ezlife Biotechnology Co., Ltd, Los Angeles, CA, [2]Ezlife Biotechnology Co., Ltd, Beijing, China, People's Republic of, [3]Ezlife Biotechnology Co., Ltd, Guangzhou, China, People's Republic of, [4]School of Dentistry, University of California, Los Angeles, Los Angeles, CA

FRI-50
Testing the Accuracy of Wearable Heart Rate Monitors in a Diverse Population
Quynh Ho[1], Vannessa Oyco[1], Chelsi Vining[1], and Alessandro Bellofiore[1]
[1]San Jose State University, San Jose, CA

FRI-51
Wax Transfer Printing-Based Fabrication of Cloth Electrochemical Sensors
Corey Downs[1], Anthony To[1], and Elain Fu[1]
[1]Oregon State University, Corvallis, OR

FRI-52
A Wearable and Cost Effective Brain-Computer Interface Assistive Device
Davide Marzorati[1] and Hananeh Esmailbeigi[1]
[1]University of Illinois at Chicago, Chicago, IL

FRI-53
A Customizable Tongue Controlled Assistive Device
Kevin Kerr[1], Nicholas Marjanovic[1], Ricardo Aranada[1], Ernesto Berrum[1], and Hananeh Esmailbeigi[1]
[1]University of Illinois at Chicago, Chicago, IL

FRI-54
Chip-Scale and Label-Free Biomedical Sensors Using Mid-Infrared Aluminum Nitride Waveguides
Pao Lin[1]
[1]Texas A&M University, College Station, TX

FRI-55
Towards the Design of a Soft Robotic Third Arm for Assisted Living Tasks
Pham Nguyen[1] and Panagiotis Polygerinos[1]
[1]Arizona State University, Mesa, AZ

FRI-56
Microneedles for Wearable Sensing and Interstitial Fluid Collection
Philip Miller[1]
[1]Sandia National Labs, Albuquerque, NM

FRI-57
Toward Securing LoT-based Medical Devices
Saikat Chakrabarti[1] and Olivia Coiado[1]
[1]University or Portand, Portland, OR

Track: Device Technologies and Biomedical Robotics

Implantable Devices and Implantable Electronics

FRI-58
Analysis of Biliary Stent Using Abaqus
Aaron Van Gorkom[1], Greg Gillispie[1], Clifford Howard Jr[2], and Philip Brown[1]
[1]Biomedical Engineering, Wake Forest Baptist Health, Winston-Salem, NC, [2]Wake Forest University Baptist Medical Center, Winston-Salem, NC

FRI-59
Development of the Digitally Adjustable Phrenic Nerve Stimulator
Alexey Revinski[1], Emma Cripe[1], Michelle Wang[1], Kirby Gong[1], Matthew Glucksberg[1], and Debra Weese-Mayer[2]
[1]Northwestern University, Evanston, IL, [2]Lurie Children's Hospital, Chicago, IL

FRI-60
Enhanced Speech Perception Under Noisy Conditions using an Optimized Cochlear Implant Stimulation
Andres Llico[1], Jing Li[1], Daniel Aguiar[1], and Thomas Talavage[1]
[1]Purdue University, West Lafayette, IN

FRI-61
The Development of a Novel Inserter for the InnFocus MicroShunt®
Anh Le[1], Esdras Arrieta[2], Nidhi Relhan[2], Yasushi Kato[1], John Martin[1], Jean Marie Parel[2], and Leonard Pinchuk[1,2]
[1]InnFocus Inc., Miami, FL, [2]Ophthalmic Biophysics Center, Bascom Palmer Eye Institute, University of Miami Miller School of Medicine, Miami, FL

FRI-62
Osmotic Transport Device to Alleviate Tissue Swelling Following Spinal Cord Injury
Christopher Hale[1], Jennifer Yonan[1], Devin Binder[1], and Victor Rodgers[1]
[1]UC Riverside, Riverside, CA

FRI-63
Impact of Bifurcation Dual Stenting on Endothelial Shear Stress
Henry Chen[1], Bon-Kwon Koo[2], and Ghassan Kassab[1]
[1]California Medical Innovations Institute, San Diego, CA, [2]Division of Cardiology, Seoul National University Hospital, Seoul, Korea, Republic of

FRI-64
Characterization of a Bioprosthetic Bicuspid Venous Valve Hemodynamics: Implications for Mechanism of Valve Dynamics
Henry Chen[1], Wei-Hsin Tien[2], and Ghassan Kassab[1]
[1]California Medical Innovations Institute, San Diego, CA, [2]University of Washington, Taipei, Taiwan

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-65
Anti-biofouling Microtubes for Glaucoma Drainage Devices
Hyunsu Park[1], Simon John[2], and Hyowon Lee[1]
[1]Weldon School of Biomedical Engineering, Birck Nanotechnology Center, Center for Implantable Devices, Purdue University, West Lafayette, IN, [2]Howard Hughes Medical Institute, Jackson Laboratory, Bar Harbor, ME

FRI-66
An *Ex Vivo* Study of an Inductively Powered Remote-Controlled Miniature Pacer
Parinaz Abiri[1], René Packard[1], Yichen Ding[1], Alireza Yousefi[1], Dejan Markovic[1], and Tzung Hsiai[1]
[1]University of California, Los Angeles, Los Angeles, CA

Track: Biomechanics, Device Technologies and Biomedical Robotics

Advances in Biomechanical Testing of Medical Devices

FRI-67
Biomechanical Testing and Validation of a Novel Fastening Device for Adolescent Scoliosis Braces
Chloe Chung[1], Derek Kelly[2], Jack Steele[3], Terrell Tate[3], Cody Bateman[1], and Denis DiAngelo[1]
[1]University of Tennessee Health Science Center, Memphis, TN, [2]Campbell Clinic Orthopaedics and Le Bonheur Children's Hospital, Collierville, TN, [3]The Center for Orthotics and Prosthetics, Inc., Memphis, TN

FRI-68
Use of a Novel, Clinically Relevant *Ex Vivo* Model to Study the Prophylactic Use of Foam Dressings to Redistribute Pressure
Elizabeth Starck[1], George Skountrianos[1], and Abram Janis[1]
[1]Hollister Incorporated, Libertyville, IL

FRI-69
Validation of MicroCT Based Bone Bending Device
Kyle Bodnyk[1] and Richard Hart[1]
[1]The Ohio State University, columbus, OH

FRI-70
Pelvic Anatomical Characterization and Comparison by Sex and History of Pregnancy
Mona Saffarzadeh[1], Caresse Hightower[1], and Ashley Weaver[1]
[1]Wake Forest-Virginia Tech School of Biomedical Engineering Sciences, Winston Salem, NC

FRI-71
Effects of Slope Walking on Dynamic Stability
Seong Hyun Moon[1], Rahul Soangra[1], Chris Frames[1], Saba Rezvanian[1], Victoria Smith[1], Markey Olson[1], and Thurmon Lockhart[1]
[1]Arizona State University, Tempe, AZ

Track: Biomaterials, Nano and Micro Technologies

Integration of Biomaterials with Chips and Devices

FRI-73
Femtosecond Laser Micromachining, Fabrication and Alignment of Circular Microtubes in Hydrogels
Carsten Corazza[1] and David Long[2]
[1]University of Auckland, Auckland, New Zealand, [2]Wichita State University, Wichita, KS

FRI-74
Tunable Electrochemical Impedance Spectroscopy - Factors Affecting the Optimal Frequency
Chi En Lin[1], David Probst[1], and Jeffrey LaBelle[1]
[1]Arizona State University, Tempe, AZ

FRI-75
Microengineered Cell Compression Device for Studying Chondrocyte Mechanobiology
Donghee Lee[1], Alek Erickson[2], Andrew T. Dudley[2], and Sangjin Ryu[1]
[1]University of Nebraska-Lincoln, Lincoln, NE, [2]University of Nebraska Medical Center, Omaha, NE

FRI-76
Design of a Pumpless Microfluidic Chip for Blood Analysis Using Modified Silicone
Kokou Serge Dogbevi[1], Bryan Khai Ngo[1], Melissa Grunlan[1], and Gerard Coté[1]
[1]Texas A&M University, College Station, TX

FRI-77
High-precision Microtubule Sorting by the Measurement of Persistence Length with Sub-pixel Resolution
Naoto Isozaki[1], Kazuki Ukita[1], Hirofumi Shintaku[1], Hidetoshi Kotera[1], Taviare Hawkins[2], Jennifer Ross[3], and Ryuji Yokokawa[1]
[1]Kyoto University, Kyoto, Japan, [2]University of Wisconsin-La Crosse, La Crosse, WI, [3]University of Massachusetts-Amherst, Amherst, MA

FRI-78
Engineered Biomimetic Glomerular Basement Membrane: Effects of Stiffness on Podocyte Culture
Ellery Jones[1], Matthew Ishahak[1], Alessia Fornoni[1], and Ashutosh Agarwal[1]
[1]University of Miami, Miami, FL

FRI-79
Suppression of Fibrosis in Glaucoma Surgery using an Innovate Microfluidic Meshwork
Fei He[1], Behzad Amoozgar[2], Xiaoling Wei[1], Hun-Hui Lee[2], Michele Bloomer[2], Zhengtuo Zhao[1], Paul Coh[2], Lan Luan[1], Ying Han[2], and Chong Xie[1]
[1]The University of Texas at Austin, Austin, TX, [2]University of California, San Francisco, CA

POSTER SESSION–FRIDAY

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-80
Polymer Morphology Influences Electronic Properties of Polyaniline-Chitosan Nanocomposites
John Aggas[1], Jodie Lutkenhaus[2], and Anthony Guiseppi-Elie[1]
[1]*Center for Bioelectronics, Biosensors, and Biochips (C³B), Texas A&M University, College Station, TX,* [2]*Artie McFerrin Department of Chemical Engineering, Texas A&M University, College Station, TX*

FRI-81
Graphene Patterned Microchip for Colorectal Cancer Detection
Kavya Hemmanur[1], Shrishti Singh[1], Sanjay Robin Karimbanamlayil Babu[1], Isaac Macwan[1], and Prabir Patra[1]
[1]*University of Bridgeport, Bridgeport, CT*

FRI-82
Efficient Designing of High-performance Biomarker Assays using Computational Modeling
Mahsa Dabagh[1], Cassio Fontes[1], Daniel Joh[1], Rohan Achar[1], John Gounley[1], Angus Hucknall[1], Ashutosh Chilkoti[1], and Amanda Randles[1]
[1]*Duke University, Durham, NC*

FRI-83
In Vitro Recapitulation of the Dysfunctional Neuromuscular Junction in Charcot-Marie-Tooth Disease
Rachel Besser[1], Matthew Ishahak[1], Ellery Jones[1], Renata Maciel[1], Mario Saporta[1], and Ashutosh Agarwal[1]
[1]*University of Miami, Miami, FL*

FRI-84
Microfluidic System for Assessing Myoblast Migration Behavior in Co-culture Systems
Rahul R. Atmaramani[1], Nesreen Alsmadi[1], Bryan J. Black[1], David W. Schmidtke[1], and Joseph J. Pancrazio[1]
[1]*University of Texas at Dallas, Richardson, TX*

Track: Nano and Micro Technologies, Drug Delivery & Intelligent Systems

Nano to Micro Devices in Delivery

FRI-85
Iron Oxide Nanoparticle Based T-cell Tracking for Improving Personalized Cancer Immunotherapy
Alen Trubelja[1], Harshavardhan Deshmukh[1], Ciaran Lee[1], Sheng Tong[1], and Gang Bao[1]
[1]*Rice University, Houston, TX*

FRI-86
Design Optimization of Dual Nanoparticle Delivery for Enhanced Cancer Treatment
Ibrahim Chamseddine[1] and Michael Kokkolaras[1]
[1]*McGill University, Montreal, QC, Canada*

FRI-87
Apoptosis Induction by Functionalized Fullerenes-based Ultrasound Sonodynamic Therapy in HL-60 cells
Nagahiko Yumita[1], Yumiko Iwase[2], and Nishi Koji[2]
[1]*Yokohama University of Pharmacy, Yokohama, Kanagawa, Japan, Japan,* [2]*Yokohama University of Pharmacy, Yokohama, Japan*

FRI-88
Nanochannel Delivery System for Controlled Release of Ocular Drugs to Target Increased Intraocular Pressure
Priya Jain[1], R. Lyle Hood[2], Andrea Ballerini[1], Giacomo Bruno[1,3], and Alessandro Grattoni[1]
[1]*Houston Methodist Research Institute, Houston, TX,* [2]*University of Texas at San Antonio, San Antonio, TX,* [3]*Politecnico de Turino, Turin, Italy*

FRI-89
Development of Targeted Nanoscale Drug Delivery System for Osteoarthritic Cartilage Tissue
Tao Jiang[1], Komal Rajpura[1], Ho Man Kan[1], Erica Komal[1], Yingcui Li[2], and Kevin Lo[1]
[1]*UConn Health, Farmington, CT,* [2]*University of Hartford, West Hartford, CT*

FRI-90
Enzyme-Loaded Poly(lactic-co-glycolic acid) Nanoparticles as Anti-biofilm Treatment Strategy for Biofilm Infections
Chendong Han[1], James Goodwine[1], Karin Sauer[1], and Amber Doiron[1]
[1]*State University of New York at Binghamton, Vestal, NY*

FRI-91
Biomimetic Anisotropic Platelet Membrane Coated Particles for Enhanced Drug Delivery and Wound Healing
Elana Ben-Akiva[1], Randall Meyer[1], Jonathan Smith[1], Drew Pardoll[1], and Jordan Green[1]
[1]*Johns Hopkins University, Baltimore, MD*

FRI-92
Sustained Delivery of 1,25-dihydroxyvitamin D3 for Endogenous Antimicrobial Peptide Induction
Jingwei Xie[1], Jiang Jiang[1], and Hongjun Wang[1]
[1]*University of Nebraska Medical Center, Omaha, NE*

FRI-93
Injectable Multidrug Delivery Hydrogel for Postoperative Management of Ocular Surgery
Maziar Mohammadi[1,2], Kisha Patel[2], Seyedeh Parisa Alaie[2], Nisha Hollingsworth[1], Cagri Besirli[1], Ronald Larson[1], and Jordan Green[2]
[1]*University of Michigan, Ann Arbor, MI,* [2]*Johns Hopkins University School of Medicine, Baltimore, MD*

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FRI-94
Drosophila Melanogaster as a Model for the Delivery of Protein Based Nanoparticles Through the Blood-Brain Barrier
Michael Furth[1], Samantha Hinojos[1], Kyung-An Han[1], and Thomas Boland[1]
[1]*University of Texas at El Paso, El Paso, TX*

FRI-95
Greater than 24 Hour Sweat Stimulation By Iontophoretic Delivery of Carbachol For Continuous Biosensing
Phillip Simmers[1], Kevin Li[1], Gerald Kasting[1], and Jason Heikenfeld[1]
[1]*University of Cincinnati, Cincinnati, OH*

FRI-96
Targeting of Nanoparticles to Degraded Elastin in an Angiotensin II Abdominal Aortic Aneurysm Model
Xiaoying Wang[1], Nasim Nosoudi[2], Saketh Karamched[1], Aditi Sinha[3], and Naren Vyavahare[1]
[1]*Clemson University, Clemson, SC,* [2]*Wright State University, Dayton, OH,* [3]*Amgen Inc., Thousand Oaks, CA*

Track: Nano and Micro Technologies

Advances in Micro/Nano Manufacturing

FRI-97
Nanoceramic Coatings to Prevent Bacterial Contamination and Biofilm Formation in Dental Unit Waterlines
Arash Aslani[1], Jong Hyun Shim[2], Tao Tao[2], Januja Joshi[2], Karin Sauer[2], and Junghyun Cho[3]
[1]*N² Biomedical, Bedford, MA,* [2]*Binghamton University, Binghamton, NY,* [3]*Binghamton Univesity, Binghamton, NY*

FRI-98
White Blood Cell Separation on Hybrid Microfluidic Paper-based Systems via Electro-Kinetic Forces
Daniel Baughman[1], Julia DeBelly[1], Joshua Kline[1], Anne Mammel[1], Zachary Seder[1], Taylor Zoch[1], and Melanie Watson[1]
[1]*Trine University, Angola, IN*

FRI-99
Development Micromixing Evaluation Software Based on Particle-tracking Algorithms
H.A. Betancourt Cervantes[1], Hector R. Siller[1], and J. Israel Martinez-Lopez[1]
[1]*Tecnologico de Monterrey, Monterrey, Mexico*

FRI-100
Characterization of a Nanoscale Electroporation Platform Using HL-60 Cells
Hanwen Yuan[1], Mark Crain[1], Patricia Soucy[1], Stuart Williams[1], and Robert Keynton[1]
[1]*University of Louisville, Louisville, KY*

FRI-101
Improvement of Dry and Wet Adhesion in Parylene C Microdevices
Jessica Ortigoza-Diaz[1], Kee Scholten[1], and Ellis Meng[1]
[1]*USC, Los Angeles, CA*

FRI-102
A Novel Route for Generation of 3D Nanofiber Scaffolds
Jingwei Xie[1], Jiang Jiang[1], Shixuan Chen[1], and Hongjun Wang[1]
[1]*University of Nebraska Medical Center, Omaha, NE*

FRI-103
Co-Culture Membranes with Tunable Nanopore Sizes to Selectively Control Cell-Cell Communication
Marcela Mireles Ramirez[1], Cody Soule[1], Robert Carter[1], Stephanie Casillo[1], and Thomas Gaborski[1]
[1]*Rochester Institute of Technology, Rochester, NY*

FRI-104
Surface Modification of Medical Devices using Microfabrication Techniques
Seyedhamidreza Alaie[1,2], Sanlin Robinson[1,2,3], Amir Ali Amiri Moghadam[1,2], Jordyn Auge[1,2], James Min[1,2], Bobak Mosadegh[1,2], and Simon Dunham[1,2]
[1]*Weill Cornell Medicine, New York, NY,* [2]*NewYork-Presbyterian Hospital &Weill Cornell Medicine, New York, NY,* [3]*Cornell University, Ithaca, NY*

FRI-105
Femtosecond Laser Micro-processing of Gelatin Methacrylate Hydrogel
Zheng Xiong[1,2], Puskal Kunwar[1,2], Yin Zhu[1,2], Rafael Ramos[1,2], and Pranav Soman[1,2]
[1]*Syracuse University, Syracuse, NY,* [2]*Syracuse Biomaterial Institute, Syracuse, NY*

Track: Nano and Micro Technologies

Advances in Pathogen Detection

FRI-106
Integration of Droplet Digital PCR Assay for Microbial Detection on Centrifugal Microfluidic Disc
Hamsa Gowda[1], Xiao Huang[2], Horacio Kido[1], Michael Hoffman[2], Marc Madou[1], and Sunny Jiang[1]
[1]*University of California, Irvine, Irvine, CA,* [2]*California Institute of Technology, Pasadena, CA*

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Track: Nano and Micro Technologies

Nano and Micro Technologies–Other/Non-Specified

FRI-107
An Electrochemical Impedance Based Sensor for Rapid Detection of Iron Deficiency and Anemia
Hongjun Song[1], Jenna Rosano[1], Charles Garson[1], Katherine Marschner[1], Balabhaskar Prabhakarpandian[1], and Kapil Pant[1]
[1]CFD Research Corporation, Huntsville, AL

FRI-108
Enhancement of Molecule Reactions Achieved by a Cell-phone-powered Acoustofluidic Pump
Po-Hsun Huang[1], Hunter Bachman[1], Shujie Yang[1], Peiran Zhang[1], and Tony Jun Huang[1]
[1]Duke University, Durham, NC

FRI-109
Electric Field-Assisted Protein Fractionation by Charged Ultrafiltration Membranes
Raymond Yeung[1], David Jassby[1], and Victor Rodgers[1]
[1]University of California, Riverside, Riverside, CA

FRI-110
Fabric Based Biosensing for Cortisol Lifestyle Monitoring
Sayali Upasham[1], Ambalika Tanak[1], Badrinath Jagannath[1], and Shalini Prasad[1]
[1]The University of Texas at Dallas, Richardson, TX

FRI-111
A Multiscale Device for the Study of Compartmentalized Purinergic Signaling
Sean McCutcheon[1], Robert Majeska[1], Mitchell Schaffler[1], and Maribel Vazquez[1]
[1]City College of New York, New York, NY

FRI-112
A Novel Microfluidic Technique for Measuring Surface Expression and 2D Binding Affinity of Proteins
Tanmay Ghonge[1], Anurup Ganguli[1], Enrique Valera[1], Gelson Pagan Diaz[1], Greg Damhorst[1], Jacob Berger[1], and Rashid Bashir[1]
[1]University of Illinois at Urbana Champaign, Urbana, IL

FRI-113
Delivery of Controllable Hydrogen Sulfide Concentration via PDMS Microfluidics for Biological Applications
Theodore Christoforidis[1], Tom Driver[1], Jalees Rehman[1], and David Eddington[1]
[1]University of Illinois at Chicago, Chicago, IL

FRI-114
Enhanced Stochastic Fluctuations to Measure Steep Energy Landscapes with Atomic Force Microscopy
Todd Sulchek[1], Ahmad Haider[1], and Daniel Potter[1]
[1]Georgia Tech, Atlanta, GA

FRI-115
Ultrasensitive Detection of Secreted Proteins from Single Cells using Quantum Dots
Vanessa Herrera[1], Ssu-Chieh Joseph Hsu[1], Maha Rahim[1], Wendy Liu[1], and Jered Haun[1]
[1]University of California, Irvine, Irvine, CA

Track: Nano and Micro Technologies, Tissue Engineering

Organ-on-a-Chip Models for Study of Disease and Drug Discovery

FRI-116
Tissue-Engineered Human Skeletal Muscle Model of Rheumatoid Arthritis
Catherine Oliver[1], Brittany Davis[1], James Hong[1], Kim Huffman[1], and George Truskey[1]
[1]Duke University, Durham, NC

FRI-117
Patient-Specific Liver Microtissues for Disease Modeling and Drug Screening
Dantong Huang[1], Sarah Gibeley[1], Syandan Chakraborty[1,2], Hon Fai Chan[1,3], Serge Cremers[1], Henry Ginsberg[1], and Kam Leong[1]
[1]Columbia University, New York, NY, [2]GlaxoSmithKline, Collegeville, PA, [3]Massachusetts Institute of Technology, Cambridge, MA

FRI-118
A Microfluidic Model of the Endosteal and Perivascular Niches of Bone Marrow
Drew Glaser[1], Natalie Ng[2], Greg Fox[2], Katherine Weilbaecher[2], Dan Link[2], and Steven George[1]
[1]University of California, Davis, Davis, CA, [2]Washington University, Saint Louis, MO

FRI-119
Brain-on-Chip: Central Nervous System and Blood Brain Barrier
Elizabeth Wheeler[1], David Soscia[1], Erik Mukerjee[1], Nicholas Fischer[1], Heather Enright[1], Monica Moya[1], Anna Belle[1], and Kris Kulp[1]
[1]LLNL, Livermore, CA

FRI-120
Self-Assembly of Vascularized Tissue to Support Tumor Explants *In Vitro*
Nir Maimon[1], Despina Bazou[2], and Nir Maimon[3]
[1]Massachusetts GeneralHospital/ Harvard Medical School, Boston, MA, [2]Mater Misericordiae University Hospital, Dublin, Ireland, [3]Massachusetts General Hospital/ Harvard Medical School, Boston, MA

FRI-121
A Donor-Specific Optogenetic 3D Model of Human Neuromuscular Junctions
Olaia F. Vila[1], Sebastien Uzel[2], Stephen P. Ma[1], Roger D. Kamm[2], and Gordana Vunjak-Novakovic[1]
[1]Columbia University, New York, NY, [2]Massachussets Institute of Technology, Cambridge, MA

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FRI-122
A Gut Inflammation-on-a-chip Emulating Dextran Sodium Sulfate-induced Inflammation in Mice
Woojung Shin[1] and Hyun Jung Kim[1]
[1]The University of Texas at Austin, Austin, TX

FRI-123
Innovative 3D-Printed Methodology for Recapitulation of Biological Structure on a Chip
Wu Shang[1], Andrew Lamont[1], Gregory Payne[1], Ryan Sochol[1], and William Bentley[1]
[1]University of Maryland, College Park, MD

FRI-124
An Integrated Biomimetic Adipose Tissue Microchip
Yuting Chen[1,2], Latha Ramalingam[1], Jiangyu Wu[2], Naima Moustaid-Moussa[1], and Wei Li[1]
[1]Texas Tech University, Lubbock, TX, [2]Wuhan Institute of Technology, Wuhan, China, People's Republic of

FRI-125
A Beating Heart-on-a-Chip for the Generation of Functional Cardiac Micro-Tissues
Alberto Redaelli[1], Chiara Conficconi[1,2], Marta Lemme[1,3], Paola Occhetta[1], Emanuele Gaudiello[3], Emiliano Votta[1], Giulia Cerino[3], Anna Marsano[2,3], and Marco Rasponi[1]
[1]Politecnico di Milano, Milano, Italy, [2]university Basel, Basel, Switzerland, [3]University Basel, Basel, Switzerland

FRI-126
Effect of *Streptococcus mutans* on Keratinocyte Barrier Function in an Oral Mucosa On-A-Chip
Benjamin Rahimi[1], Dominic M. Padova[1], Thinh Le[1], Gili Kaufman[2], Diane R. Bienek[2], Xiaolong Luo[1], and Christopher Raub[1]
[1]The Catholic University of America, Washington, DC, [2]ADA Foundation, Volpe Research Center, Gaithersburg, MD

FRI-127
Oral Mucosa On-A-Chip to Assess the Response of Human Gingival Cells to Dental Materials
Christopher Rahimi[1], Dominic M. Padova[1], Diane R. Bienek[2], Gili Kaufman[2], Xiaolong Luo[1], and Christopher Raub[1]
[1]The Catholic University of America, Washington, DC, [2]ADA Foundation, Volpe Research Center, Gaithersburg, MD

FRI-128
Brain-mimetic 3D Microfluidic Co-culture Platform for Controlling Differentiation of Human Neural Stem Cells
Jin Kim[1], Jisoo Shin[1], Jong Seung Lee[1], and Seung-Woo Cho[1]
[1]Yonsei University, Seoul, Korea, Republic of

FRI-129
Quantifying ROS Generation in Individual Living Pancreatic Islets Using a Fluorescent Optical Sensor and Microfluidic Device
Romario Regeenes[1] and Jonathan Rocheleau[1]
[1]University of Toronto, Toronto, ON, Canada

Track: Orthopedic and Rehabilitation Engineering, Device Technologies and Biomedical Robotics

Musculoskeletal Robotics and Biomechatronics in Rehabilitation

FRI-130
The Variable Impedance Treadmill (VIT) for Robot-assisted Rehabilitation
Linda Fou[1], Jeffrey Skidmore[1], and Panagiotis Artemiadis[1]
[1]Arizona State University, Tempe, AZ

Track: Device Technologies and Biomedical Robotics

Translation of Devices from the Lab to the Clinic/Market

FRI-131
Differential Response of -cells to Non-invasive Exogenous Electrical Stimulation
Andrew Edward[1], Dennis Hoang[1], Jessi Toumeh[1], Thao-Mi Vu[1], Caleb Liebman[1], and Michael Cho[1]
[1]University of Texas at Arlington, Arlington, TX

FRI-132
Computational One-Way FSI Simulations of Retinal Traction Force from Alcon UltraVit Probes
Yongting Ma[1], Danial Shahmirzadi[1], Brian McDonell[2], Paul Missel[1], Dina Abulon[2], and Ramesh Sarangapani[1]
[1]Alcon Research, Ltd., Fort Worth, TX, [2]Alcon Research, Ltd., Lake Forest, CA

Track: Device Technologies and Biomedical Robotics

Device Technologies and Biomedical Robotics–Other/Non-Specified

FRI-133
Dual-Valve Continuous Pressure Regulation System for Applications in Haptic Feedback for Robotic Surgery
Ahmad Abiri[1], Jake Pensa[1], and Warren Grundfest[1]
[1]University of California Los Angeles, Los Angeles, CA

FRI-134
Development of Thin Soft Actuators for Transcatheter Applications
Amir Ali Amiri Moghadam[1,2], Seyedhamidreza Alaie[1,2], James K. Min[1,2], Simon N. Dunham[1,2], and Bobak Mosadegh[1,2]
[1]Dalio Institute of Cardiovascular Imaging, New York-Presbyterian Hospital &Weill Cornell Medicine, New York, NY, [2]Weill Cornell Medicine, New York, NY

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FRI-135
Position Tracking System for Dental Patients during Cone Beam Computer Tomography (CBCT)
Cem Yaba[1], Sinan Onal[1], Sohyung Cho[1], Cyril Pandarakalam[1], Nathalia Garcia[1], and Mohamed Omran[1]
[1]*Southern Illinois University Edwardsville, Edwardsville, IL*

FRI-136
Non-Invasive Detection of Respiration and Heart Rate with a Vehicle Seat Sensor
Grace Wusk[1] and Hampton Gabler[1]
[1]*Virginia Tech, Blacksburg, VA*

FRI-137
Mechanical Characterization of Medical Adhesive Tapes Used for Pediatric Nasogastric Tube Securement
Hannah Cebull[1], Aaron Beabout[1], Hallie Kirdahy[1], Esra Alzaher[1], Jean Christopher[2], and James Keszenheimer[1]
[1]*The University of Akron, Akron, OH,* [2]*Akron Children's Hospital, Akron, OH*

FRI-138
3D-Printed Microfluidic Device for the Analysis of Intestinal Tissue *Ex Vivo*
Ian McLean[1], Charles Henry[1], and Stuart Tobet[1]
[1]*Colorado State University, Fort Collins, CO*

FRI-139
Investigating the Use of Structured Light Imaging for 3-D Reconstruction of the Human Forearm for Automated Venipuncture
Josh Leipheimer[1], Max Balter[1], Alvin Chen[1], Tim Maguire[1], and Martin Yarmush[1]
[1]*Rutgers University, Piscataway, NJ*

FRI-140
Developing a Minimal Gut-Brain Axis with Genetically Engineered Cells and Robots
Keith Heyde[1] and Warren Ruder[2]
[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*University of Pittsburgh, Pittsburgh, PA*

FRI-141
Design and Mechanics of Honeybee-inspired Surgical Needles
Mohammad Sahlabadi[1], David Gardell[1], Jonasan Younan Attia[1], and Parsaoran Hutapea[1]
[1]*Temple University, Philadelphia, PA*

FRI-142
Direct Nucleic Acid Amplification from Urine with Adaptive PCR
Nicholas Adams[1], Austin Hardcastle[1], Bill Gabella[1], and Rick Haselton[1]
[1]*Vanderbilt University, Nashville, TN*

FRI-143
Modeling and Experimental Study of a Laparoscopic Camera's Interaction with Abdomen Tissue
Reza Yazdanpanah[1], Xiaolong Liu[2], and Jindong Tan[3]
[1]*University of Tennessee, knoxville, TN,* [2]*Unversity of Tennessee, Knoxville, TN,* [3]*University of Tennessee, Knoxville, TN*

FRI-144
Transparent and Stretchable Hydrogel Ionic Circuit Materials for Localized Electrical Stimulation in Aqueous Environments
Siwei Zhao[1], Peter Tseng[1], Wenyi Li[1], Jonathan Grasman[1], Ying Chen[1], Bradley Napier[1], Fiorenzo Omenetto[1], and David Kaplan[1]
[1]*Tufts University, Medford, MA*

FRI-145
Design of Collector Tips for Proper Collection of Basal Tear Fluid with Minimized Eye Irritation
Yong Chan Cho[1], Seung Ho Lee[2], Dong Yeon Nam[1], Beom Kang Huh[1], Se-Na Kim[1], and Young Bin Choy[1,2,3]
[1]*Interdisciplinary Program in Bioengineering, College of Engineering, Seoul National University, Seoul, Korea, Republic of,* [2]*Institute of Medical & Biological Engineering, Medical Research Center, Seoul National University, Seoul, Korea, Republic of,* [3]*Department of Biomedical Engineering, College of Medicine, Seoul National University, Seoul, Korea, Republic of*

Track: Cardiovascular Engineering, Device Technologies and Biomedical Robotics

Cardiovascular Devices

FRI-146
Analysis of Expanded Polytetrafluoroethylene (ePTFE) Membranes for Use Within a Valved Conduit for Right Ventricular Outflow Tract Reconstruction
Abigail Loneker[1,2], Arush Kalra[2], Samuel Luketich[1], Doug Bernstein[2], Antonio D'Amore[1,3,4], and Denver Faulk[2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*PECA Labs, Pittsburgh, PA,* [3]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA,* [4]*RiMED Foundation, Palermo, Italy*

FRI-147
Evaluation of a Flexible Cardiac Cryoablation Probe in Modified Porcine Thigh Muscle Preparation
Carrie Herman[1], Dannah Reiter[1], Jacqueline Wendel[1], Philip Schmidt[1], Jeremy Dando[1], Adam Cates[1], Tamer Ibrahim[2], and David Francischelli[1]
[1]*AtriCure, Minnetonka, MN,* [2]*AtriCure, San Ramon, CA*

FRI-148
Effect of Short Exposure to High Shear on Neutrophil Rolling Behavior
Christopher Lewis[1], Nesreen Alsmadi[2], Trevor Snyder[3], and David Schmidtke[2]
[1]*University of Oklahoma, Norman, OK,* [2]*UT Dallas, Richardson, TX,* [3]*VADovations, Oklahoma City, OK*

FRI-149
Solid-State Drive System for use in Ventricular Assist Devices
Dillon Hurd[1]
[1]*Iowa State University, Roland, IA*

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FRI-150
Vagus Nerve Stimulation Improves Long-term Survival in Dahl Salt-Sensitive Hypertensive Rats
Elizabeth M. Annoni[1], Dusty Van Helden[2], Imad Libbus[3], Bruce H. KenKnight[3], John W. Osborn[2], and Elena G. Tolkacheva[1]
[1]*University of Minnesota, Department of Biomedical Engineering, Minneapolis, MN,* [2]*University of Minnesota, Department of Integrative Biology and Physiology, Minneapolis, MN,* [3]*Cyberonics Inc., Houston, TX*

FRI-151
Pharmacokinetic and Pathological Analysis of Local Liquid Delivery of Paclitaxel Via a Perfusion Cardiac Catheter
Emily Turner[1], Megan Erwin[1], Marzieh Atigh[1], Uwe Christians[2], and Saami K. Yazdani[1]
[1]*University of South Alabama, Mobile, AL,* [2]*iC42 Clinical Research and Development, University of Colorado, Aurora, CO*

FRI-152
Nanomatrix Coated Stent Enhances Endothelialization and Reduces Platelet and Smooth Muscle Cell Adhesion under Physiologic Conditions
Grant Alexander[1], Patrick Hwang[1], Jeong-a Kim[1], Brigitta Brott[1], Young-Sup Yoon[2], and Ho-Wook Jun[1]
[1]*University of Alabama at Birmingham, Birmingham, AL,* [2]*Emory University, Atlanta, GA*

FRI-153
Novel Synthetic Biomaterial for Fabrication of Heart Valve Replacements Resists Calcification
Hobey Tam[1] and Naren Vyavahare[1]
[1]*Clemson University, Clemson, SC*

FRI-154
Electrical Catheter Alignment System for Vascular Fistula Creation
Mamadou Diallo[1], Sorin Popa[2], and Robert Dickinson[1]
[1]*Imperial College, London, United Kingdom,* [2]*Stent Tek Ltd Chelmsford, United Kingdom*

FRI-155
Computational Modeling for Optimizing Hemodynamic Performance of Endovascular Chemofilter Device
Nazanin Maani[1], Daryl Yee[2], Michael Nosonovsky[1], Julia Greer[2], Steven Hetts[3], and Vitaliy Rayz[4]
[1]*University of Wisconsin-Milwaukee, Milwaukee, WI,* [2]*California Institute of Technology, Pasadena, CA,* [3]*University of California San Francisco, San Francisco, CA,* [4]*Purdue University, West Lafayette, IN*

FRI-156
Novel Microfluidic Device to Study Platelets after Millisecond Exposure to High Shear
Nesreen Alsmadi[1], Sarah Shapiro[2], Christopher Lewis[2], Vinit Sheth[1], Trevor Snyder[3], and David Schmidtke[1]
[1]*University of Texas at Dallas, Richardson, TX,* [2]*University of Oklahoma, Norman, OK,* [3]*INTEGRIS Advanced Cardiac Care, Nazih Zuhdi Transplant Institute, Oklahoma City, OK*

FRI-157
The Effect of Inflow Cannula Angle on the Intraventricular Flow Field of the LVAD-Assisted Heart
Nikolas Marquez[1], Ricardo Montes[1], Saniya Salim[1], and Karen May-Newman[1]
[1]*San Diego State University, San Diego, CA*

FRI-158
Design of a Wireless Power System for Continuous Flow Pediatric Left Ventricular Assist Devices
Nolyn Preston[1], Thomas Ziccardi[1], Arabo Keshishi[1], Tommy Khamlue[1], Andy Nguyen[1], and John Valdovinos[1]
[1]*California State University, Northridge, Northridge, CA*

FRI-159
Simulation of Transcathter Aortic Valve Deployment and Blood Flow in a Beating Heart
Ram Ghosh[1], Gil Marom[1], Matteo Bianchi[1], Praveen Sridhar[2], Karl D'Souza[3], and Danny Bluestein[1]
[1]*Stony Brook University, Stony Brook, NY,* [2]*Dassault Systèmes Simulia Corp, Aachen, Germany,* [3]*Dassault Systèmes Simulia Corp., Johnston, RI*

FRI-160
The Effect of Mitral Valve Prosthesis Design and Orientation on Intraventricular Flow Transport Studied in a Mock Circulatory Loop
Ricardo Montes[1], Vi Vu[1], Lorenzo Rossini[2], Nikolas Marquez[1], Pablo Martinez-Legazpi[3], J Bermejo[3], Juan Carlos del Alamo[2], and Karen May-Newman[1]
[1]*San Diego State University, San Diego, CA,* [2]*University of California, San Diego, La Jolla, CA,* [3]*Hospital General Universitario Gregorio Marañón and Instituto de Investigación Sanitaria Gregorio Marañón, Madrid, Spain, Madrid, Spain*

FRI-161
Paper-Microfluidic Device to Monitor Blood Coagulation and Patient-Specific Response to Heparin/Protamine
Robin Sweeney[1], Vina Nguyen[1], Benjamin Alouidor[1], Elizabeth Budiman[1], Raymond Wong[1], and Jeong-Yeol Yoon[1]
[1]*University of Arizona, Tucson, AZ*

FRI-162
Detection of the Infrasonic Sounds Emitted from the Human Heart with a Novel Infrasonic Stethoscope
Rolando Valdez[1], Kenneth D. Cohen[1], Daniel Woodard[1], and Qamar A. Shams[2]
[1]*NASA-Kennedy Space Center, Kennedy Space Center, FL,* [2]*NASA-Langley Research Center, Hampton, VA*

FRI-163
A Physiologically-Driven Biaxial Bioreactor System to Investigate Valve Interstitial Cell Phenotypic State after Surgical Repair
Salma Ayoub[1], Samuel Potter[1], Jordan Graves[1], and Michael Sacks[1]
[1]*The University of Texas at Austin, Austin, TX*

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FRI-164
The Interaction of Cardiac Geometry and LVAD Inflow Cannula Diameter on the Flow Dynamics of the LVAD-Assisted Heart
Saniya Salim[1], Ricardo Montes[1], Nikolas Marquez[1], Ashley Tabajunda[1], Vi Vu[1], and Karen May-Newman[1]
[1]*San Diego State University, San Diego, CA*

FRI-165
Surgical Implantation of Patient-Specific Device for the Left Atrial Appendage
Sanlin Robinson[1,2], Seyedhamidreza Alaie[2], Hannah Sidoti[2], Jordyn Auge[2], Lohendran Baskaran[2], James Min[2], Simon Dunham[2], and Bobak Mosadegh[2]
[1]*Cornell University, Ithaca, NY,* [2]*Weill Cornell Medicine, New York - Presbyterian, New York, NY*

FRI-166
Catheter Deployable, Patient Specific, Left Atrial Appendage Occluders
Simon Dunham[1], Seyedhamidreza Alaie[1], Sanlin Robinson[2], Amir Ali Amiri Moghadam[1], Jordyn Auge[1], Hannah Sidoti[1], Lohendran Baskaran[1], James Min[1], and Bobak Mosadegh[1]
[1]*Weill Cornell Medical College, New York, NY,* [2]*Cornell University, Ithaca, NY*

FRI-167
Patient-specific Left Ventricle Models for Studying Flow Dynamics in the LVAD-Assisted Heart
Vi Vu[1], Ricardo Montes[1], Lorenzo Rossini[2], Josue Campos[1], Nikolas Marquez[1], Pablo Martinez-Legazpi[3], J Bermejo[3], Juan Carlos del Alamo[2], and Karen May-Newman[1]
[1]*San Diego State University, San Diego, CA,* [2]*University of California, San Diego, La Jolla, CA,* [3]*Hospital General Universitario Gregorio Marañón and Instituto de Investigación Sanitaria Gregorio Marañón, Madrid, Spain, Madrid, Spain*

FRI-168
The Role of Stent Types in Abdominal Aortic Aneurysm Endoleak after Endovascular Aneurysm Repair
Yue Liu[1], Gregory Simonian[2], and Vikki Hazelwood[1]
[1]*Stevens Institute of Technology, Hoboken, NJ,* [2]*Seton Hall-Hackensack Meridian School of Medicine, South Orange, NJ*

Track: Cardiovascular Engineering

Cardiac Electrophysiology

FRI-169
Kinetics of Chromophore Oxidation and Action Potential Repolarization upon Cardiac Ischemia
Frederick Zasadny[1] and Matthew Kay[1]
[1]*The George Washington University, Washington, DC*

FRI-170
The Origin of Ectopic Ventricular Beats during Early Acute Regional Ischemia in Isolated Non-contracting Swine Hearts
Hanyu Zhang[1], Gregory Walcott[1], and Jack Rogers[1]
[1]*University of Alabama at Birmingham, Birmingham, AL*

FRI-171
Engineered Prokaryotic Channels for Cardiac Antiarrhythmic Therapy
Hung Nguyen[1] and Nenad Bursac[1]
[1]*Duke University, Durham, NC*

FRI-172
Minimum Reentrant Path Volume Index (RVI) Predicts Arrhythmia Vulnerability in Human Left Ventricle
Kedar Aras[1], Chaoyi Kang[1], Brianna Cathey[1], and Igor Efimov[1]
[1]*George Washington University, Washington, DC*

FRI-173
Alternating Heights of the R Wave in ECG: Possible Link with Depolarization Alternans
Sahar Alaei Varnoosfaderani[1], David Wasemiller[1], Siqi Wang[1], Paul Anaya[1], and Abhijit Patwardhan[1]
[1]*University of Kentucky, Lexington, KY*

FRI-174
Investigation of Bioinspired Soft Materials And Robotics in Modeling of the Human Left Atrium
Samuel Shrago[1], Christopher Coyne[1], Chance Munger[1], Alexander Kurz[1], Grant Kruger[1], and Hakan Oral[2]
[1]*University of Michigan–Ann Arbor, Ann Arbor, MI,* [2]*University of Michigan Medical School, Ann Arbor, MI*

FRI-175
Adrenergic Stimulation in Acute Hyperglycemia: Effects On Cellular And Tissue Level Murine Cardiac Electrophysiology
Sridevi Thyagarajan[1] and Abhijit Patwardhan[1]
[1]*University of Kentucky, Lexington, KY*

FRI-176
Muscle Cell-Based "Living" Diodes
Uryan Can[1], Neerajha Nagarajan[1], Dervis Can Vural[1], and Pinar Zorlutuna[1]
[1]*University of Notre Dame, Notre Dame, IN*

Track: Cardiovascular Engineering

Heart Valve Structure, Function, and Disease

FRI-177
Smaller and Less Crystalline Hydroxyapatite Nanoparticles Drive Osteogenic Response of 3D-Cultured Aortic Valve Interstitial Cells Under Cyclic Strain via a BMP-Dependent Pathway
Ablajan Mahmut[1], Xiaoyin Ma[1], Andrea Lo[1], Jennifer Richards[1], Jooho Kim[1], Lara A Estroff[1], and Jonathan T Butcher[1]
[1]*Cornell University, ithaca, NY*

FRI-178
Mitral Valve Chordae Tendineae: Functional Characterization
Amir Khalighi[1], Bruno Rego[1], Andrew Drach[1], Robert Gorman[2], Joseph Gorman[2], and Michael S. Sacks[1]
[1]*The University of Texas at Austin, Austin, TX,* [2]*University of Pennsylvania, Philadelphia, PA*

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-179
Patient-Specific In-Vitro and In-Vivo Simulations of Ovine Mitral Valve
Andrew Drach[1], Amir Khalighi[1], Joseph H Gorman[2], Robert C Gorman[2], and Michael Sacks[1]
[1]*University of Texas at Austin, Austin, TX,* [2]*University of Pennsylvania, Philadelphia, PA*

FRI-180
Two-Photon Fluorescence Microscopy Assessment of Elastin Fiber Network in Primate Aortic Valves Subjected to Flex-Flow Conditions
Brittany Gonzalez[1], Alejandro Pinero[1], Manuel Perez[1], Ilyas Saytashev[1], Krishna Rivas[2], Pablo Morales[2], Sharan Ramaswamy[1], and Jessica Ramella-Roman[1]
[1]*Florida International University, Miami, FL,* [2]*Mannheimer Foundation Inc, Homestead, FL*

FRI-181
Valve Interstitial Cell Calcification Is Induced by Chondroitin Sulfate
Jonathan Bramsen[1], Gretchen Mahler[1], Peter Huang[1], Bruce Murray[1], Sudip Dahal[1], and Bridget Alber[1]
[1]*Binghamton University, Vestal, NY*

FRI-182
Tricuspid Annulus Dilates After Chordae Tendineae Rupture in Porcine Ex-vivo Beating Hearts
Keyvan Amini Khoiy[1], Kourosh Asgarian[2], Francis Loth[1], and Rouzbeh Amini[1]
[1]*The University of Akron, Akron, OH,* [2]*St. Joseph's Regional Medical Center, Paterson, NJ*

FRI-183
Decreasing Protein Adsorption on Heart Valves using PEGDA-Based Coating
Madeleine Gomel[1], Monica Farenholtz[2], and K. Jane Grande-Allen[1]
[1]*Rice University, Houston, TX,* [2]*Texas Children's Hospital, Houston, TX*

FRI-184
On the Dynamics of Bioprosthetic Heart Valve
Rana Zakerzadeh[1], Michael C. H. Wu[2], Ming-Chen Hsu[2], and Michael Sacks[1]
[1]*University of Texas at Austin, Austin, TX,* [2]*Iowa State University, Ames, IA*

Track: Cardiovascular Engineering

Angiogenesis and Engineered Vascularization

FRI-185
Vascularized Tissue-Engineered Model For Studying Drug Resistance In Neuroblastoma
Aranzazu Villasante[1,2], Katsuhisa Sakaguchi[3], Jinho Kim[1], Nai-Kong Cheung[4], Masamichi Nakayama[4], Hesam Parsa[1], Teruo Okano[2], Tatsuya Shimizu[2], and Gordana Vunjak-Novakovic[1]
[1]*Columbia University, New York, NY,* [2]*Institute of Advanced Biomedical Engineering and Science, Tokyo Women's Medical University, TWIns, Tokyo, Japan,* [3]*Waseda University, TWIns. Tokyo, Japan,* [4]*Memorial Sloan Kettering Cancer Center, New York, NY*

FRI-186
Introduction of the *Ex Vivo* Mouse Mesometrium Culture Model for Investigating Multicellular Dynamics During Angiogenesis
Ariana Suarez-Martinez[1], Dana Kaplan[1], Katie Huang[1], Stryder Meadows[1], Susanne Bierschenk[2], Markus Sperandio[2], and Walter Murfee[1]
[1]*Tulane University, New Orleans, LA,* [2]*Ludwig-Maximilians Universitat, Munich, Germany*

FRI-187
A Microfluidic Model to Study Endothelial Hydraulic Conductivity at Vessel Bifurcation
Ehsan Akbari[1], Griffin Spychalski[1], Kaushik Rangharajan[1], Shaurya Prakash[1], and Jonathan W. Song[1]
[1]*The Ohio State University, Columbus, OH*

FRI-188
Collagen Type I Alignment Regulates Endothelial Network Formation During Vasculogenesis
Jane Wei[1], Michael McCoy[1], Liang Yang[1], and Claudia Fischbach-Teschl[1]
[1]*Cornell University, Ithaca, NY*

FRI-189
Conditional Regulation of Inflammation-driven Angiogenesis using Engineered HDL-mimetic Nanoparticles
Jungho Ahn[1,2], Yoshitaka Sei[1], Noo Li Jeon[2], and YongTae Kim[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Seoul National University, Seoul, Korea, Republic of*

FRI-190
Galvanotaxis: An Electroceutical Strategy for Directing Vascular Cell Migration
Kaitlyn Ammann[1] and Marvin Slepian[1]
[1]*University of Arizona, Tucson, AZ*

FRI-191
Laser-Based Degradation for Engineered Vasculature in Synthetic and Natural Hydrogels
Keely Keller[1] and John Slater[1]
[1]*University of Delaware, Newark, DE*

FRI-192
Redox Active Ultrafine Particles Disrupt the Cooperation of FOXO1/Notch Signaling to Impair Vascular Regeneration
Kyung In Baek[1], Rene Packard[1], Yichen Ding[1], Anh Luu[1], Jeffrey Hsu[1], Constantinos Sioutas[2], Rongsong Li[1], and Tzung Hsiai[1]
[1]*UCLA, LA, CA,* [2]*USC, LA, CA*

FRI-193
Nanoparticles for Gene Therapy: An Alternative Treatment For Hindlimb Ischemia
Linda Noukeu[1,2], Subhash Banerjee[2,3], Liping Tang[1,2], and Kytai Nguyen[1,2]
[1]*Department of Bioegineering, University of Texas at Arlington, Arlington, TX,* [2]*Joint Biomedical program, UT southwestern, Dallas, TX,* [3]*Division of Cardiology, UT Southwestern Medical Center, Dallas, TX*

POSTER SESSION–FRIDAY

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-194
Endothelial Progenitor Cells Undergo Endothelial-to-Mesenchymal Transition and Angiogenesis from Increased Stiffness and Shear Stress
Patrick Link[1], Laszlo Farkas[1], and Rebecca Heise[1]
[1]*Virginia Commonwealth University, Richmond, VA*

FRI-195
Sacrificial Fiber Patterning to Induce Vascularization and Inosculation in hiPSC-Derived Cardiac Tissues
Rajeev Kant[1] and Kareen Coulombe[1]
[1]*Brown University, Providence, RI*

FRI-196
Microvasculature Orientation Guided by Aligned Extracellular Matrix Nanofibers
Zichen Qian[1], Wenkai Jia[1], Avik Ghosh[1], Daniel Radke[1], and Feng Zhao[1]
[1]*Michigan Technological University, Houghton, MI*

Track: Cardiovascular Engineering

Thrombosis and Hemostasis

FRI-197
Endothelial Dysfunction and Dilation to Pico-molar Doses in Mesenteric Arterioles Following Upstream Vascular Damage
Andrew DiMatteo[1], Andrew Kumpfbeck[1], Joohee Gha[1], Wei Yin[1], David Rubenstein[1], and Mary Frame[1]
[1]*Stony Brook University, Stony Brook, NY*

FRI-198
Novel Approach for Visualizing the Binding of FXIa on Endothelial Cell Surface and FXIa Trafficking Following Endothelial Cell-induced Internalization
Anh Ngo[1], Cristina Puy[1], Erik Tucker[1], David Gailani[2], Andras Gruber[1], and Owen McCarty[1]
[1]*Oregon Health & Science University, Portland, OR*
[2]*Vanderbilt University School of Medicine, Nashville, TN*

FRI-199
Quantitative Assessment of Platelet Function in Adolescent Women with Heavy Menstrual Bleeding
Anne Rocheleau[1], Ayesha Khader[1], Anh Ngo[1], Michael Recht[1], Owen McCarty[1], and Kristina Haley[1]
[1]*Oregon Health & Science University, Portland, OR*

FRI-200
Characterization of Thrombi Produced in Stagnation Point Flows
Bradley Herbig[1] and Scott Diamond[1]
[1]*University of Pennsylvania, Philadelphia, PA*

FRI-201
Investigation of the Platelet-endothelium Interface Using a Microvessel Flow Chamber
Daniel Sallee[1], Jevgenia Zilberman-Rudenko[1], Andrew Wong[2], Stephanie Reitsma[1], Cristina Puy[1], Toshiaki Shirai[1], Peter Searson[2], and Owen McCarty[1]
[1]*Oregon Health & Science University, Portland, OR,* [2]*Johns Hopkins University, Baltimore, MD*

FRI-202
***In Vitro* Hemocompatibility Testing of Coronary Stents**
Reema Elziq[1] and Alessandro Bellofiore[1]
[1]*San Jose State University, San Jose, CA*

FRI-203
Evaluation of Upstream Stenosis-Platelet Interactions for Downstream Adhesion and Activation
Shekh Rahman[1], Colin Eichinger[1], and Vladimir Hlady[1]
[1]*University of Utah, Salt Lake City, UT*

FRI-204
Tissue Plasminogen Activator (tPA) Nanoformulation for Effective Ischemic Stroke Therapy with Minimal Hemorrhagic Risk
Su Enming[1], Daniel Lawrence[1], and Mathumai Kanapathipillai[2]
[1]*University of Michigan, Ann Arbor, MI,* [2]*University of Michigan-Dearborn, Dearborn, MI*

FRI-205
Effect of Tissue Factor and Fibrinogen Supplementation on Clot Functional Properties Under Blood Flow
Vijay Govindarajan[1], Shu Zu[2], Scott Diamond[2], Jaques Reifman[1], and Alexander Mitrophanov[1]
[1]*DoD Biotechnology High Performance Computing Software Applications Institute, US Army Medical Research and Materiel Command, Fort Detrick, MD,* [2]*University of Pennsylvania, Philadelphia, PA*

FRI-206
Hemodynamic Force Triggers Rapid NETosis within Sterile Thrombotic Occlusions
Xinren Yu[1], Jifu Tan[1], and Scott Diamond[1]
[1]*University of Pennsylvania, Philadelphia, PA*

Track: Cardiovascular Engineering, Biomechanics

Cardiovascular Biomechanics

FRI-207
LV Free Wall 3D Kinematics in Healthy and Infarcted Hearts - Adaptation and Remodeling
Joao Soares[1], Robert Joseph Desjardins[1], Joseph Gorman III[2], Robert Gorman[2], and Michael Sacks[1]
[1]*University of Texas at Austin, Austin, TX,* [2]*University of Pennsylvania, Philadelphia, PA*

FRI-208
***In Silico* Systolic Performance of a Tissue Engineered Porcine Aortic Valve**
Joshua Choe[1], Susheil Uthamaraj[1], Christopher Noble[1], Brandon Tefft[1], Soumen Jana[1], Amir Lerman[1], and Melissa Young[1]
[1]*Mayo Clinic, Rochester, MN*

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-209
Regulation of Human Cardiac Fibroblast-Myofibroblast Phenotype by Chemical and Biomechanical Cues
Nathan Cho[1], Shadi E. Razipour[1], Davi M. Lyra-Leite[1], and Megan L. McCain[1,2]
[1]*Laboratory for Living Systems Engineering, Department of Biomedical Engineering, USC Viterbi School of Engineering, University of Southern California, Los Angeles, CA,* [2]*Department of Stem Cell Biology and Regenerative Medicine, Keck School of Medicine of USC, University of Southern California, Los Angeles, CA*

FRI-210
Valve Endothelial Cell Gene Expression in Response to a Clinically-Relevant Pediatric Pulsatile Flow Profile
Sana Nasim[1], Alexander Williams[2], Denise Medina[1], Lilliam Valdes-Cruz[3], Steven Bibevski[3], Frank Scholl[4], and Sharan Ramaswamy[4]
[1]*Florida International University, Miami, FL,* [2]*Florida International University, Miami, FL,* [3]*Joe DiMoggio's Hospital University, Hollywood, FL,* [4]*Joe DiMoggio's Hospital University, Hollywood, FL,* [4]*florida International University, Miami, FL*

FRI-211
Impact of Size of Transcatheter Aortic Valve on Leaflet and Stent Stresses
Yue Xuan[1], Kapil Krishnan[1], Danny Dvir[2], Jian Ye[3], Julius Guccione[1], Liang Ge[1], and Elaine Tseng[1]
[1]*University of California San Francisco, San Francisco, CA,* [2]*University of Washington Medical Center, Seattle, WA,* [3]*University of British Columbia, Vancouver, BC, Canada*

FRI-214
Functional Characterization of Microscale Heterogeneity in Adult Rat Myocardium
Jeffery Clark[1] and Stuart Campbell[1]
[1]*Yale University, New Haven, CT*

FRI-215
Biaxial Mechanical Properties of Venous Valve Leaflet Tissues
Jiaqi Lu[1] and Hsiao-Ying Shadow Huang[1]
[1]*North Carolina State University, Raleigh, NC*

FRI-216
Strain Effects on Collagen Proteolysis in Heart Valve Tissues
Kaitlyn Barbour[1] and Hsiao-Ying Shadow Huang[1]
[1]*North Carolina State University, Raleigh, NC*

FRI-217
Cardiovascular Function and Structure are Preserved Despite Disruption of Collagen Synthesis
Mark Golob[1], Dawiyat Massoudi[1], Diana Tabima[1], James Johnston[1], Gregory Wolf[1], Timothy Hacker[1], Daniel Greenspan[1], and Naomi Chesler[1]
[1]*University of Wisconsin-Madison, Madison, WI*

FRI-218
A Finite-Element Approach to Compute the Pressure Waveform in Vascular Structures from 4D MRV Data
Mehrzad Tartibi[1], Mehrzad Tartibi[1], Evan Kao[1], Sarah Kefayati[1], Henrik Haraldson[1], Michael Hope[1], and David Saloner[1]
[1]*University of California San Francisco, San Francisco, CA*

FRI-219
Impact of Patient-specific Material Properties on Ascending Thoracic Aortic Aneurysm Wall Stress: A Comparison of Finite Element Analyses Using Patient-specific vs Average Wall Material Properties
Zhongjie Wang[1], Yue Xuan[1], Liang Ge[1], and Elaine Tseng[1]
[1]*UCSF Medical Center and San Francisco VA Medical Center, San Francisco, CA*

Track: Cardiovascular Engineering, Biomechanics

Hemodynamics and Vascular Mechanics

FRI-220
Design of a Pulsatile Patient-specific *In-Vitro* Benchtop Model for Use in LVAD Hemodynamic Experiments
Benjamin Eslahpazir[1], Kyle Beggs[1], Zoe Lauters[1], William DeCampli[2], and Alain Kassab[1]
[1]*University of Central Florida, Orlando, FL,* [2]*Arnold Palmer Children's Hospital, Orlando, FL*

FRI-221
Bioscaffold Mitral Valve Hydrodynamic Evaluation in Child versus Adult Hemodynamic Settings
Elnaz Pour Issa[1], Omkar V. Mankame[1], Schedules Hernandez[2], Steven Bibevski[2], Frank Scholl[2], Sarah M Bell[2], Ivan Baez[2], Lilliam Valdes-Cruz[2], and Sharan Ramaswamy[1]
[1]*Florida International University, Miami, FL,* [2]*Joe DiMaggio Children's Hospital, Hollywood, FL*

FRI-222
Physiology-Modeling Coupled Experiment: A High Fidelity Hardware-In-The-Loop Hybrid Model for the Circulation
Ethan Kung[1], Masoud Farahmand[1], and Akash Gupta[1]
[1]*Clemson University, Clemson, SC*

FRI-223
Development of an *In Vitro* Model for Physiological Testing Native and Prosthetic Venous Valves
Garrett Easson[1], Megan Laughlin[1], Hanna Jensen[1], Marc Girardot[2], and Morten Jensen[1]
[1]*University of Arkansas, Fayetteville, AR,* [2]*BioMed Design LLC, Atlanta, GA*

POSTER SESSION–FRIDAY

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-224
Alterations in Arterial Biomechanics Due to Surgery Are Attenuated By Treatment with PEG Hydrogel
Karyn Robinson[1], Rebecca Scott[1,2], Anne Hesek[1], Edward Woodford[1], Wafa Amir[3], Thomas Planchon[3], Kristi Kiick[1,2], and Robert Akins[1,2]
[1]*Nemours - Alfred I. duPont Hospital for Children, Wilmington, DE,* [2]*University of Delaware, Newark, DE,* [3]*Delaware State University, Dover, DE*

FRI-225
Compression Effects on the Volumetric Flow Rate of Steady Flow Through Collapsible Tubes
Lanny Griffin[1]
[1]*Cal Poly St. Univ, San Luis Obispo, CA*

FRI-226
A Novel, Flow-Sensitive MicroRNA, miR-744, Induces Endothelial Inflammation by Targeting LIMS2
Rachel Simmons[1], Dong Won Kang[1], Sandeep Kumar[1], and Hanjoong Jo[1]
[1]*Georgia Institute of Technology & Emory University, Atlanta, GA*

FRI-227
Radial Position and Local Reynolds Number in the Feed Determine Location and Fate of Particles in 25 um Diameter Bifurcations
Samira Darvishi[1] and Mary Frame[1]
[1]*Stony Brook University, Stony Brook, NY*

FRI-228
Patient-based Model of Abdominal Aortic Aneurysm Wall Pressure and Stress
Touhid Ahamed[1], Luis Dorfmann[1], Robert Peattie[2], and Erica Kemmerling[1]
[1]*Tufts University, Medford, MA,* [2]*Tufts Medical Center/ Tufts University, Boston, MA*

FRI-229
Mathematical Model of Abdominal Aortic Aneurysm Growth and Remodeling
Wenjian Lin[1], Mark Iafrati[2], Robert Peattie[3], Erica Kemmerling[1], and Luis Dorfmann[1]
[1]*Tufts University, Medford, MA,* [2]*Tufts Medical Center, Boston, MA,* [3]*Tufts Medical Center / Tufts University, Boston, MA*

FRI-230
Transient Aortic Blood Flow Modeling for Cardiovascular Risk Assessment in Turner Syndrome
Dhananjay Radhakrishnan Subramaniam[1], Ephraim Gutmark[1], Christian Trolle[2], Steffen Ringgaard[2], Claus Gravholt[2], Kristian Mortensen[3], Philippe Backeljauw[4], and Iris Gutmark-Little[4]
[1]*University of Cincinnati, Cincinnati, OH,* [2]*Aarhus University Hospital, Aarhus, Denmark,* [3]*Great Ormond Street Hospital, London, United Kingdom,* [4]*Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

FRI-231
Towards Identifying Vortex Structures in Aneurysms
Ismael Perez[1], Daniel Puleri[1], Luiz A. Hegele Jr.[1], John Gounley[1], and Amanda Randles[1]
[1]*Duke University, Durham, NC*

FRI-232
Optimization Based Vascular Growth and Remodeling Using Dual Splitting: The Collaboration Between Local and Regional Regulations
Jiacheng Wu[1] and Shawn C. Shadden[1]
[1]*UC Berkeley, Berkeley, CA*

FRI-233
Probing the Effects of Type-2 Diabetes on Vascular Endothelial Mechanics
Md. Mydul Islam[1] and Rober: Steward Jr.[1]
[1]*University of Central Florida, Orlando, FL*

Track: Cardiovascular Engineering

Cardiovascular Engineering–Other/Non-Specified

FRI-234
Baseline Sex Differences in Cardiac Metabolic Gene Expression Fade in Nonischemic Cardiomyopathy
Aaron Koppel[1], Joshua Saef[2], and Igor Efimov[1]
[1]*The George Washington University, Washington, DC,* [2]*Washington University School of Medicine, St. Louis, MO*

FRI-235
A Novel Method to Characterize Spontaneously Beating Cardiomyocytes
Akankshya Shradhanjali[1], Brandon Riehl[1], and Jung Yul Lim[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE*

FRI-236
Blocking Cadherin-11 Decreases Plaque Burden in Atherosclerotic Mice
Camryn Johnson[1], MacRae Linton[1], and W. David Merryman[1]
[1]*Vanderbilt University, Nashville, TN*

FRI-237
Zinc-sensing Receptor ZnR/GPR39 Mediates Zn-regulated Vascular Functions
Donghui Zhu[1], Yingchao Su[1], and Bingmei Fu[2]
[1]*University of North Texas, Denton, TX,* [2]*The City College of the City University of New York, New York, NY*

FRI-238
A Review of the Preoperative Risk Factors & Quantitative Values Associated With Endoleak After Endovascular Aneurysm Repair
Jonathan Itskovitch[1], Nicolette Pappas[1], Yue Liu[1], and Vikki Hazelwood[1]
[1]*Stevens Institute of Technology, Hoboken, NJ*

FRI-239
The Role of Gut Microbiota in Cardiac Injury
Marissa Pier[1], John Konhilas[1], and Marvin Slepian[1]
[1]*University of Arizona, Tucson, AZ*

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

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FRI-240
Activation of Oxytocin Neurons in Rat Model of Cardiac Pressure Overload Alters Expression of Myocardial Interleukin-1Beta
Mary Kate Dwyer[1], Kara Garrott[1], Jhansi Dyanavapalli[1], David Mendelowitz[1], and Matthew Kay[1]
[1]*The George Washington University, Washington, DC*

FRI-241
Using Novel Processing of Surface Peri-Arterial Accelometric Data to Calculate Pulse Transit Times and Pulse Wave Velocities
Natalie Canino[1] and Charles Robinson[1]
[1]*Clarkson University, Potsdam, NY*

FRI-242
Study of The Development of Basement Membrane in Heart
Xiaoqi Yang[1], Huaxiao Yang[1], Ramond Runyan[2], Thomas k Borg[3], and Bruce Z Gao[1]
[1]*Clemson University, Clemson, SC,* [2]*University of Arizona, Tucson, AZ,* [3]*Medical University of South Carolina, Charleston, SC*

FRI-243
Cardiovascular Disease Prediction and Risk Factor Mining with RFMiner
Yao Xiao[1] and Ruogu Fang[1]
[1]*Florida International University, Miami, FL*

Track: Neural Engineering, Stem Cell Engineering

Neural Progenitor and Neural Stem Cell Engineering

FRI-244
Autologous Bone Marrow Mononuclear Cell Treatment for Pediatric Traumatic Brain Injury Influences Circulating PUFA Levels and Inflammation
Charlotte Mae K. Waits[1], Steven Kosmach[2], Susan Sergeant[1], Floyd H. Chilton[1], Charles S. Cox, Jr.[2], and Elaheh Rahbar[1]
[1]*Wake Forest School of Medicine, Winston-Salem, NC,* [2]*University of Texas Health Science Center at Houston, Houston, TX*

FRI-245
Establishment of a Patient Biopsy-Derived Intestinal Model from Enteric Neural Stem Cells and Intestinal Epithelial Stem Cells
Marissa Puzan[1], Caroline Ghio[1], David Breault[2,3], and Abigail Koppes[1]
[1]*Northeastern University, Boston, MA,* [2]*Boston Children's Hospital, Boston, MA,* [3]*Harvard Stem Cell Institute, Cambridge, MA*

FRI-246
Characterizing Human Embryonic Stem Cells Function With Dielectrophoresis And Flow Cytometry
Tayloria Adams[1], Clarissa Ro[1], Shubha Tiwari[1], and Lisa Flanagan[1]
[1]*University of California Irvine, Irvine, CA*

FRI-247
Interplay of Matrix Dimension and Electrical Stimulation in Engineering Human Neural Progenitor Cells for Stroke Recovery.
Byeongtaek Oh[1], Alexa Levinson[1], Vivek Lam[1], and Paul George[1]
[1]*Stanford University, Stanford, CA*

FRI-248
Investigating The Role Of FGF In Reprogramming Of Epidermal Keratinocytes Towards Neural Crest Fate
Georgios Tseropoulos[1], Vivek Bajpai[2], Laura Kerosuo[3], Kristie Cummings[1], Samaneh Moghadasi Boroujeni[1], Pedro Lei[1], Surya Rajan Selvam[1], Xiaoyan Wang[1], Biao Liu[4], Song Liu[4], Gabriella K. Popescu[1], Marianne Bronner[3], and Stelios Andreadis[1]
[1]*University at Buffalo, Buffalo, NY,* [2]*Stanford School of Medicine, Stanford, CA,* [3]*California Institute of Technology, Pasadena, CA,* [4]*Roswell Park Cancer Institute, Buffalo, NY*

FRI-249
An Integrated Miniature Bioprocessing For Personalized Human Induced Pluripotent Stem Cell Expansion And Differentiation Into Neural Stem Cells
Haishuang Lin[1], Qiang Li[1], and Yuguo Lei[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE*

FRI-250
Using Bioengineering Approaches To Generate A Three-Dimensional (3-D) Human Induced Pluripotent Stem Cell (hiPSC)-Based Model Of Alzheimer’s Disease (AD)
Lexi Bounds[1]
[1]*Arizona State University, Tempe, AZ*

FRI-251
Mimicking the In Vivo Characteristics of Human Neural Stem Cells with 3D NSC Microarrays
Pranav Joshi[1], Kyeong-Nam Yu[1], Soo-Yeon Kang[1], Chandrasekhar Kothapalli[1], and Moo-Yeal Lee[1]
[1]*Cleveland State University, Cleveland, OH*

FRI-252
Oligodendrocyte Precursor Cell Hyperdensity in a Mouse Model of Neurofibromatosis Type I Resembles Preneoplastic Lesions
Preethi Raghavan[1], James Lennon[1], and Michelle Monje-Deisseroth[1]
[1]*Stanford University, Stanford, CA*

FRI-253
High-Content Imaging Assays On 3D-cultured Neural Stem Cells for the Assessment of Neurotoxicity
Soo-Yeon Kang[1], Pranav Joshi[1], Kyeong-Nam Yu[1], and Moo-Yeal Lee[1]
[1]*Cleveland State University, Cleveland, OH*

FRI-254
Progerin Induced Aging to Develop a Clinically Relevant in vitro Model of Alzheimer's Disease
Sreedevi Raman[1] and David Brafman[1]
[1]*Arizona State University, Tempe, AZ*

POSTER SESSION–FRIDAY

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

Track: Biomaterials

Advanced Characterization and Imaging of Biomaterial Environments

FRI-255
Strain-Rate Dependent Elasticity of Lung Surfactant
Alec Thomas[1] and Mark Borden[1]
[1]University of Colorado, Boulder, CO

FRI-256
Development of a Humanized Mouse Model that Recapitulates the Fibrotic Response to Biomaterial Implants
Joshua Doloff[1,2], Atieh Sadraei[1], Shady Farah[1], Rita Bortell[3], Michael Brehm[3], Dale Greiner[3], Robert Langer[1,2], and Daniel Anderson[1,2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Children's Hospital Boston, Boston, MA, [3]University of Massachusetts Medical School, Worcester, MA

FRI-257
Assessing Drug Encapsulation Efficiency using Nanoparticle Tracking Analysis
Ragy Ragheb[1] and Duncan Griffiths[1]
[1]Malvern, Westborough, MA

Track: Biomedical Imaging and Optics, Cardiovascular Engineering

Imaging in Cardiovascular Systems

FRI-258
Deep Learning Semi-Automated Heart Ventriculometrics Estimation
Aliaa Elshamekh[1], Fatma Taher[2], Omar Dekhil[1], Garth Beache[1], Ayman El-Baz[1], and Hussain Al-ahmad[3]
[1]University of Louisville, Louisville, KY, [2]Khalifa University, Abu Dhabi, United Arab Emirates, [3]University of Dubai, Dubai, United Arab Emirates

FRI-259
Open Source Electrophysiology Laboratory: 3D Printed Experimental Setup
Brianna Cathey[1], Sofian Obaid[1], Sharon George[1], and Igor Efimov[1]
[1]The George Washington University, Washington, DC

FRI-260
Biphasic Analysis of Coronary Arterial Shear Stress Using IVUS-derived Borders and CFD Analysis
Jon Klingensmith[1], Naga Sai Kiran Maddali[1], Vikas Alluri[1], and H. Felix Lee[1]
[1]Southern Illinois University Edwardsville, Edwardsville, IL

FRI-261
Determining Radiation-Induced Subclinical Cardiac Toxicity in Left Sided Breast Cancer Patients using Magnetic Resonance Imaging with Tagging
Shruti Siva Kumar[1], Alexandria Weler[1], Julie Bradley[2], Christopher Klassen[3], and Walter O'Dell[1]
[1]University of Florida, Gainesville, FL, [2]UF Health Proton Therapy Institute, Jacksonville, FL, [3]University of Florida Health Shands Hospital, Jacksonville, FL

FRI-262
Imaging based Left Atrial Appendage Shape Classification for Stasis Risk Stratification
Soroosh Sanathkhani[1] and Prahlad Menon[1,2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Duquesne University, Pittsburgh, PA

FRI-263
Optical Coherence Tomography Imaging to Study Cardiac Tissue Changes Due to Chemically Induced Edema
Tara Diba[1], Sharon George[1], Igor Efimov[1], and Jason Zara[1]
[1]The George Washington University, Washington, DC

FRI-264
Quantification of Myocardial Mechanics under Inotropic Stimulation using 3D cine DENSE CMR
Zhanqiu Liu[1], Xiaoyan Zhang[1], Gregory Wehner[1], David Powell[1], Kenneth Campbell[1], Brandon Fornwalt[1,2], and Jonathan Wenk[1]
[1]University of Kentucky, Lexington, KY, [2]Geisinger Health System, Danville, PA

FRI-265
Sarcomeric Addition in a 3D in-vivo-like Neonatal Cardiomyocyte Culture under Mechanical Stretch
Zhonghai Wang[1], Ailin Wei[1], Xiaoqi Yang[1], Siyu Ma[1], Thomas K. Borg[2], and Zhi Gao[1]
[1]Clemson University, Clemson, SC, [2]Medical University of South Carolina, Charleston, Clemson, SC

FRI-266
Imaging Lymphatic Function in a Rat Model of Hypertension and the Impact on Breast Cancer Metastasis
Jaidip Jagtap[1], Gayatri Sharma[1], Abdul Parchur[1], Venkateswara Gogineni[1], Sarah White[1], Carmen Bergom[1], Micheal Flister[1], and Amit Joshi[1]
[1]Medical College of Wisconsin, Milwaukee, WI

FRI-267
4D Light Sheet Fluorescent Imaging to Elucidate Notch and ErbB2 Signaling in Chemo-Induced Cardiac Injury and Regeneration
Junjie Chen[1], Nelson Jen[1], Yichen Ding[1], Jonathan Gau[1], Michael Chen[1], Chadi Nahal[1], Rene Packard[1], and Tzung Hsiai[1]
[1]University of California, Los Angeles, Los Angeles, CA

FRI-268
Using Augmented Reality to Interact with 3D Holographic Images of Intracardiac Geometry and Catheter Positions During Cardiac Ablation Procedures
Michael Southworth[1], Jennifer Silva[2], and Jonathan Silva[1]
[1]Washington University in St Louis School of Engineering and Applied Science, St Louis, MO, [2]Washington University in St Louis School of Medicine, St Louis, MO

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-269
3D Printed Model of Mitral Valve Prolapse with Accurate Replicability for Surgical Simulation
Takashi Shirakawa[1,2], Masao Yoshitatsu[1], Yasushi Koyama[3], Hiroki Mizoguchi[1], Toru Miyoshi[4], Akira Kurata[5], Takafumi Masai[3], Koichi Toda[2], and Yoshiki Sawa[2]
[1]Kansai Rosai Hospital, Amagasaki, Japan, [2]Osaka University, Suita, Japan, [3]Sakurabashi Watanabe Hospital, Osaka, Japan, [4]Okayama University, Okayama, Japan, [5]Ehime University, Ehime, Japan

Track: Biomedical Imaging and Optics, Neural Engineering

Imaging in Neuroscience and Brain Initiatives

FRI-270
Three-dimensional Neutrophil Distribution in the Acutely Injured Spinal Cord Revealed by Optical Clearing and Lightsheet Imaging
Dylan McCreedy[1,2], Linda Noble-Haeusslein[2], and Todd McDevitt[1]
[1]J. David Gladstone Institutes, San Francisco, CA, [2]University of California, San Francisco, CA

FRI-271
Analysis of Preictal Periods by Connectivity Features and Machine Learning
Farnaz Rezaei[1], Bharat Karumuri[1], Mahboubeh Madadi[1], Diana Pizarro[2], Sandipan Pati[2], and Leonidas Iasemidis[1]
[1]Louisiana Tech University, Ruston, LA, [2]University of Alabama, Birmingham, AL

FRI-272
A Novel Early Diagnosis System for Alzheimer's Disease Based on Local based Analysis Using 11C PiB PET Scans
Fatma El-zahraa Elgamal[1,2], Mohammed Elmogy[1,2], Ahmed Atwan[1], Mohammed Ghazal[2,3], Manuel Casanova[4], Gregory Barnes[5], Ashraf Khalil[3], and Ayman El-Baz[2]
[1]Faculty of Computers and Information, Mansoura University, Mansoura, Egypt, [2]J.B. Speed School of Engineering, University of Louisville, Louisville, KY, [3]Abu Dhabi University, Abu Dhabi, United Arab Emirates, [4]School of Medicine, University of South Carolina, Greenville, SC, [5]University of Louisville Autism Center, University of Louisville, Louisville, KY

FRI-273
Group-level White Matter Analysis for Middle School Football Athletes in Comparison with High School Athletes: DTI Study
Ikbeom Jang[1], Trey Shenk[1], Nicole Vike[1], Sharlene Newman[2], and Thomas Talavage[1]
[1]Purdue University, West Lafayette, IN, [2]Indiana University, Bloomington, IN

FRI-274
Machine Learning based Classification using Diffusion Tensor MR Imaging to detect Youth Athletes with Repetitive Head Blows
Ikbeom Jang[1], Victoria Poole[2], Trey Shenk[1], Diana Svaldi[1], and Thomas Talavage[1]
[1]Purdue University, West Lafayette, IN, [2]Beth Israel Deaconess Medical Center, Boston, MA

FRI-275
A Functional Neural Circuit Signature of Blast Induced Traumatic Brain Injury Identified by *In Vivo* Calcium Imaging of Hippocampal CA1 Neurons
Matthew Hemphill[1], Shanti Tummala[1], and David Meaney[1]
[1]University of Pennsylvania, Philadelphia, PA

FRI-276
2D and 3D Neuronal Cultures Exhibit Significantly Different Spontaneous Activity Patterns
Md Fayad Hasan[1] and Yevgeny Berdichevsky[1,2]
[1]Department of Electrical and Computer Engineering, Lehigh University, Bethlehem, PA, [2]Bioengineering Program, Lehigh University, Bethlehem, PA

FRI-277
Development of Novel Carbon Electrodes for the Detection of Neural Activity using fMREIT
Neeta Ashok Kumar[1], Munish Chauhan[1], and Rosalind Sadleir[1]
[1]Arizona State University, Tempe, AZ

FRI-278
Visualizing Beta Band ERD In Stereoscopic 3D: Exploring Brain Activity During Fatiguing Contractions
Priya Balasubramanian[1], Chris Larkee[1], Dylan Snyder[1], and Brian Schmit[1]
[1]Marquette University, Milwaukee, WI

FRI-279
Acute Impacts of Football Competition on Brain White Matter Microstructure in High School Athletes
Yukai Zou[1], Ikbeom Jang[1], Nicole Vike[1], Thomas Talavage[1], and Joseph Rispoli[1]
[1]Purdue University, West Lafayette, IN

FRI-280
Abnormal White Matter Microstructure and Cognitions in Adolescent Athletes with Concussion History
Yukai Zou[1], Ikbeom Jang[1], Nicole Vike[1], Victoria Poole[2], Trey Shenk[1], Diana Svaldi[1], Thomas Redick[1], Larry Leverenz[1], Eric Nauman[1], Thomas Talavage[1], and Joseph Rispoli[1]
[1]Purdue University, West Lafayette, IN, [2]Beth Isarel Deaconess Medical Center, Boston, MA

FRI-281
Short and Long-term White Matter Microstructural Differences in Adolescent Female Soccer Athletes
Yukai Zou[1], Xianglun Mao[1], Ikbeom Jang[1], Nicole Vike[1], Diana Svaldi[1], Thomas Redick[1], Larry Leverenz[1], Eric Nauman[1], Thomas Talavage[1], and Joseph Rispoli[1]
[1]Purdue University, West Lafayette, IN

FRI-282
A Novel MRI-compatible Haptic Interface for Functional Brain Imaging
Alok Subbarao[1], Samir Menon[2], and Alessandro Bellofiore[1]
[1]San Jose State University, San Jose, CA, [2]Stanford University, Palo Alto, CA

POSTER SESSION–FRIDAY

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-283
Acoustoelectric Imaging of Current Stimulation Patterns from a Clinical DBS Device
Chet Preston[1], Pier Ingram[1], Yexian Qin[1], Willard Kasoff[1], Alex Burton[1], and Russell Witte[1]
[1]*University of Arizona, Tucson, AZ*

FRI-284
Functional Connectivity in Stroke Survivors: A Pilot Study
Kelsey Tynes[1], Kaleb Vinehout[1], Miguel Sotelo[1], and Brian Schmit[1]
[1]*Marquette University, Milwaukee, WI*

FRI-285
Functional Photoacoustic Tomography for Neonatal Brain Imaging: Developments and Challenges
Mohammadreza Nasiriavanaki[1]
[1]*Wayne State University, Detroit, MI*

FRI-286
Brain Networks in Latino Farmworkers With Chronic Exposures to Pesticides
Mohsen Bahrami[1], Paul Laurienti[2], Thomas Arcury[2], and Sean Simpson[2]
[1]*Virginia Tech - Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC,* [2]*Wake Forest School of Medicine, Winston-Salem, NC*

FRI-287
A Simple and Realistic Simulation Method for Low-Dose CT
Peng Liu[1] and Ruogu Fang[1,2]
[1]*Florida International University, Miami, FL,* [2]*FIU, Miami, FL*

FRI-288
Statistical Analysis and Performance Limits of Inter-Spike Interval Estimation in Calcium Imaging
Somayyeh Soltanian-Zadeh[1], Yiyang Gong[1], and Sina Farsiu[1]
[1]*Duke University, Durham, NC*

Track: Biomedical Imaging and Optics, Cancer Technologies

Imaging Strategies and Molecular Profiling in Cancer

FRI-289
A New Framework for Incorporating Appearance and Shape Features of Lung Nodules for Precise Diagnosis of Lung Cancer
Ahmed Shaffie[1], Ahmed Soliman[1], Neal Dunlap[1], Brian Wang[1], Adel Elmaghraby[1], Georgy Gimel'farb[2], Victor VanBerkel[1], and Ayman El-Baz[1]
[1]*University of Louisville, Louisville, KY,* [2]*University of Auckland, Auckland, New Zealand*

FRI-290
Multiplexed Molecular Analysis Using Fluorescence Lifetime Imaging Microscopy (FLIM): Towards Future Cancer Diagnostics
Jered Haun[1], Hinesh Patel[1], Maha Rahim[1], and Enrico Gratton[1]
[1]*University of California, Irvine, Irvine, CA*

FRI-291
Multi-spectral Quantitative Discrimination of Human Ovarian Tissue with Modulated Imaging
Sreyankar Nandy[1] and Quing Zhu[1]
[1]*Washington University in St. Louis, St Louis, MO*

FRI-292
Computational Verification of a Two-layer Inverse Monte Carlo Look-up Table Model Using Diffuse Reflectance Spectroscopy
Yao Zhang[1], Amulya Pratapa[1], Mia Markey[1,2], and James Tunnell[1]
[1]*the University of Texas at Austin, Austin, TX,* [2]*The University of Texas MD Anderson Cancer Cente; Houston, TX*

FRI-293
Evaluation of Cancer-Targeted Contrast Agents for Imaging of Triple Negative Breast Cancer
Nagwa El-Baz[1], Rajat Chauhan[1], Kurtis James[1], Danial Malik[1], Mingming Zhu[1], Junling Li[1], Donald Miller[1], Robert Keynton[1], Chin Ng[1], Ayman El-Baz[1], Paula Bates[1], Tariq Malik[1], and Martin O'Toole[1]
[1]*University of Louisville, Louisville, KY*

FRI-294
GLUT5 Targeting Fluorescent Probes for Cancer Detection
Srinivas Kannan[1], Vagarshak Begoyan[1], Shuai Xia[1], Suhel Shaikh[1], Brennan Vogl[1], Smitha Rao[1], and Marina Tanasova[1]
[1]*Michigan Tech, Houghton, MI*

Track: Biomedical Imaging and Optics, Orthopedic and Rehabilitation Engineering

Imaging Techniques for Musculoskeletal System

FRI-295
Extended Field-of-View Ultrasound Does Not Yield Greater Error than Traditional Ultrasound
Amy Adkins[1] and Wendy Murray[1]
[1]*Northwestern University, Evanston, IL*

FRI-296
Utility and Feasibility of Apparent Diffusion Coefficient Maps for the Assessment of Intervertebral Disk Tissue State and Degeneration
Evgenii Belykh[1,2,3,4], Andrey Kalinin[2,4], Morgan Giers[1], Liudmila Bardonova[1,2,4], Mark Preul[1], and Vadim Byvaltsev[2,4]
[1]*Barrow Neurological Institute, Phoenix, AZ,* [2]*Irkutsk Scientific Center of Surgery and Traumatology, Irkutsk, Russian Federation,* [3]*Arizona State University, Tempe, AZ,* [4]*Irkutsk State Medical University, Irkutsk, Russian Federation*

FRI-297
Ultrasound Elastography Probe Design for Rotator Cuff Diagnosis
Glenn Hefter[1], Mia Warner[1], David Kwartowitz[1], and Delphine Dean[1]
[1]*Clemson University, Clemson, SC*

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

Track: Biomedical Imaging and Optics, Biomechanics

Imaging Techniques in Biomechanics

FRI-298
A New Head-Holder Device for CT Scanning: Adjusting Head Position to Accommodate New CT Scanner Technology
Keawepono Wong[1], Molly Golek[1], Charles Bolton[1], and Dianna Bardo[2]
[1]*Arizona State University, Tempe, AZ,* [2]*Phoenix Children's Hospital, Phoenix, AZ*

FRI-299
3D Modeling of the Pelvic Floor Structures
Qi Xing[1], Lan-Khanh H Tran[1], Connor Stapp[1], Siddhartha Sikdar[1], Parag Chitnis[1], Seyed Abbas Shobeiri[2], and Qi Wei[1]
[1]*George Mason University, Fairfax, VA,* [2]*Inova Women's Hospital, Falls Church, VA*

FRI-300
A More Accurate and Precise Way to Perform Ultrasound Strain Elastography to Detect Placenta Disease
Shier Nee Saw[1], Jess Yi Ru Low[1], Hwai Yi Lim[1], Citra Nurfarah Zaini Mattar[2], Arijit Biswas[2], Lujie Chen[3], and Choon Hwai Yap[1]
[1]*National University of Singapore, Singapore, Singapore,* [2]*National University Hospital System, Singapore, Singapore,* [3]*Singapore University of Technology and Design, Singapore, Singapore*

FRI-301
Image Fusion of Time-of-Flight MRA and 4D Flow MRI to Enhance Flow Analysis and CFD Modeling of Brain Aneurysms
Ahmadreza Baghaie[1], Ali Bakhshinejad[2], Roshan M. D'Souza[2], and Vitaliy L. Rayz[1]
[1]*Purdue University, West Lafayette, IN,*
[2]*University of Wisconsin-Milwaukee, Milwaukee, WI*

FRI-302
Viscoelasticity of the Porcine and Human Brain through MR Elastography
Efe Ozkaya[1], Johannes Weickenmeier[2], Ellen Kuhl[2], and Mehmet Kurt[1]
[1]*Stevens Institute of Technology, Hoboken, NJ,* [2]*Stanford University, Stanford, CA*

FRI-303
Mean Deformation Metrics of Chemotactic Neutrophils Confined in 3D Collagen Matrices
Michael Harman[1,2], Lauren Hazlett[1], Jonathan Reichner[2], and Christian Franck[1]
[1]*Brown University, Providence, RI,* [2]*Rhode Island Hospital, Providence, RI*

FRI-304
Shear Wave Speed in Pressurized Soft Tissue
Navid Nazari[1,2] and Paul Barbone[1]
[1]*Boston University, Boston, MA,* [2]*Brigham and Women's Hospital, Boston, MA*

FRI-305
The Use of CT Angiography and CFD to Predict Oxygenator Thrombus Location
Robert Conway[1], Jiafeng Zhang[1], Yizhong Wang[1], Tieluo Li[1], Jean Jeudy[1], Zhongjun Wu[1], and Bartley Griffith[1]
[1]*University of Maryland Baltimore, Baltimore, MD*

FRI-306
Use of Polarized Spatial Frequency Domain Imaging for Dynamic Collagenous Tissue Strain Analysis
Samuel Pottter[1], Will Goth[1], James Tunnell[1], and Michael Sacks[1]
[1]*University of Texas at Austin, Austin, TX*

Track: Biomedical Imaging and Optics, Translational Biomedical Engineering

Imaging Techniques in Clinical Translation

FRI-307
Noncontact Diffuse Correlation Spectroscopy Assessment of Tissue Blood Flow for the Prediction of Mastectomy Skin Flap Necrosis
Mingjun Zhao[1], Chong Huang[1], Nneamaka Agochukwu[1], Ahmed Bahrani[1], Siavash Mazdeyasna[1], Lesley Wong[1], and Guoqiang Yu[1]
[1]*University of Kentucky, Lexington, KY*

FRI-308
Triangulation of Feature Points via Stereovision: Toward Deformation Tracking for Image-Guided Breast Surgery
Sarah Goodale[1], Ma Luo[1], Xiaochen Yang[1], and Michael Miga[1,2]
[1]*Vanderbilt University, Nashville, TN,* [2]*Vanderbilt University Medical Center, Nashville, TN*

FRI-309
Quantitative Imaging of Electron Density and Effective Atomic Number Using Spectral CT
Xu Dong[1], Olga Pen[2], Zhicheng Zhang[3], and Guohua Cao[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*Wake Forest University, Winston-Salem, NC,* [3]*Chinese Academy of Sciences, Shenzhen, China, People's Republic of*

FRI-310
Translational Photoacoustic Imaging Technology for the Early Detection of Endometrial Cancer
Christopher Miranda[1], Joel Barkley[2], and Barbara Smith[1]
[1]*Arizona State University, Tempe, AZ,* [2]*Maricopa Integrated Health Systems, Phoenix, AZ*

FRI-311
Emotional Arousal and the Perception of Facial Disfigurement
Joowon Cho[1,2], Michelle Fingeret[2], Sheng-Cheng Huang[1], Gregory Reece[2], and Mia Markey[1,2]
[1]*The University of Texas at Austin, Austin, TX,* [2]*The University of Texas MD Anderson Cancer Center, Houston, TX*

POSTER SESSION–FRIDAY

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FRI-312
Acrolein as a Biomarker for Non-Invasively Assessing Concussion Severity and Location of Injury
Nicole Vike[1], Jonathan Tang[1], Thomas Talavage[1], Riyi Shi[1], and Joseph Rispoli[1]
[1]*Purdue University, West Lafayette, IN*

FRI-313
A Photometric Stereo Technique to Acquire Tissue Surface Geometry for 3D Imaging of Blood Flow Distributions in Mastectomy Skin Flaps
Siavash Mazdeyasna[1], Chong Huang[1], NicK McGregor[1], Mingjun Zhao[1], Ahmed Bahrani[1], and Guoqiang Yu[1]
[1]*University of Kentucky, Lexington, KY*

Track: Biomedical Imaging and Optics, Tissue Engineering

Imaging Techniques in Tissue Engineering

FRI-314
Nondestructive Optical Probe Detects Changes in Cartilage Matrix and Mechanical Properties
Anne Haudenschild[1], Benjamin Sherlock[1], Xiangnan Zhou[1], Jerry Hu[1], J. Kent Leach[1], Laura Marcu[1], and Kyriacos Athanasiou[1]
[1]*University of California at Davis, Davis, CA*

FRI-315
Multimodal *In Vivo* 3D Characterization of Cellular Dynamics in Non-healing Diabetic Wounds
Joanne Li[1], Andrew J. Bower[1], Eric J. Chaney[1], Marina Marjanovic[1], and Stephen A. Boppart[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

FRI-316
Mesoscopic Fluorescence Tomography for Imaging Bone Engineered Tissues
Qinggong Tang[1], Charlotte Piard[1], Jonathan Lin[1], Kai Nan[1], Ting Guo[1], John Caccamese[2], John Fisher[1], and Yu Chen[1]
[1]*University of Maryland-College Park, College Park, MD,* [2]*University of Maryland School of Dentistry, Baltimore, MD*

FRI-317
Parameter Optimization for Serial Slice Registration in the Presence of Noise: Generating Accurate 3D Models of Microvessels in the Trigone Region
Starr Johnson[1], Tova Ablove[1], Teresa Danforth[1], John Tomaszewski[1], and Scott Doyle[1]
[1]*University at Buffalo, Buffalo, NY*

FRI-318
Three-Dimensional in vivo Analysis of Histology for Low-Level Laser Therapy
Wataru Katagiri[1] and Kosuke Tsukada[1]
[1]*Keio University, Yokohama, Kanagawa, Japan*

Track: Biomedical Imaging and Optics, Respiratory Bioengineering

Imaging the Respiratory System

FRI-319
A Comprehensive Framework for Early Assessment of Radiation Induced Lung Injury
Ahmed Soliman[1], Fahmi Khalifa[2], Ahmed Shaffie[1], Neal Dunlap[1], Brian Wang[1], Adel Elmaghraby[1], George Gimel'farb[1], Victor van Berkel[1], and Ayman El-Baz[1]
[1]*University of Louisville, Louisville, KY,* [2]*Mansoura University, Mansoura, Egypt*

FRI-320
Imaging of 99mTc-HMPAO Uptake in the Isolated Perfused Rat Lung: Pharmacokinetic Analysis
Anne Clough[1,2], Katherine Barry[1], Benjamin Rizzo[1], Elizabeth Jacobs[2,3], and Said Audi[1,2]
[1]*Marquette University, Milwaukee, WI,* [2]*Zablocki VA Medical Center, Milwaukee, WI,* [3]*Medical College of Wisconsin, Milwaukee, WI*

FRI-321
Validation of Pulmonary Vessel Sizing from 3D Medical Images
Anne Gormaley[1], David Prida[1], Shruti Siva Kumar[1], and Walter O'Dell[1]
[1]*University of Florida, Gainesville, FL*

Track: Biomedical Imaging and Optics

MRI

FRI-322
Predicting Fusiform Face Area Activation Using Surface Brain Decoding During Resting State and Task
Amnah Eltahir[1,2], Mark Tenzer[1], Jonathan Lisinski[1], and Stephen LaConte[1,2]
[1]*Virginia Tech Carilion Research Institute, Roanoke, VA,* [2]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

FRI-323
Physiological and Mechanical Noise in Brain MR Elastography
Charlotte A Chaze[1] and Curtis L Johnson[1]
[1]*University of Delaware, Newark, DE*

FRI-324
Statistical Learning Analysis of Unenhanced MRI to Diagnose Labral Tears of the Shoulder
Daniel Clymer[1], Mark Whiting[1], Jonathan Cagan[1], Phillip LeDuc[1], Sam Akhavan[2], Carmen Latona[2], and Jason Long[2]
[1]*Carnegie Mellon University, Pittsburgh, PA*
[2]*Allegheny Health Network, Pittsburgh, PA*

FRI-325
DTI-based Network Analysis of APP/PS1 Mouse Brains
David Hike[1,2], Abdol Aziz Ould Ismail[1,2,3], Victor Wong[1], Scott Boebinger[1], Tara Palin[1], and Samuel Grant[1,2]
[1]*Florida State University, Tallahassee, FL,* [2]*National High Magnetic Field Laboratory, Tallahassee, FL,* [3]*University of Pennsylvannia, Philadelphia, PA*

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FRI-326
Magnetic Resonance Electrical Impedance Tomography on Neural Activity Imaging
Fanrui Fu[1], Munish Chauhan[1], and Rosalind Sadleir[1]
[1]*Arizona State University, Tempe, AZ*

FRI-327
Prostate Cancer Diagnosis Based on the Fusion of Imaging-Markers with Clinical-Biomarkers
Islam Abdelmaksoud[1,2], Ahmed Shalaby[1], Mohammed Elmogy[1,2], Ahmed Aboulfotouh[2], Naoufel Werghi[3], Adel Elmaghraby[1], and Ayman El-Baz[1]
[1]*University of Louisville, Louisville, KY,* [2]*Faculty of Computers and Information, Mansoura University, Mansoura, Egypt,* [3]*Khalifa University of Science Technology and Research, Abu Dhabi, United Arab Emirates*

FRI-328
Portable and Low-Cost Gradient Amplifier System for Classroom MRI
James Lunsford[1], Victor Trujillo[1], Michael Piper[1], Brendin Hart[1], Steven Wright[1], and Chadi Geha[1]
[1]*Texas A&M University, College Station, TX*

FRI-329
Novel Stretchable and Flexible Radiofrequency Coil Design for Magnetic Resonance Imaging
Jana Vincent[1] and Joseph Rispoli[1]
[1]*Purdue University, West Lafayette, IN*

FRI-330
Carbogen Gas-challenge to Obtain a Set of Critical Perfusion Parameters in fMRI
Jinxia Yao[1], Gregory Tamer[1], and Yunjie Tong[1]
[1]*Purdue University, West Lafayette, IN*

FRI-331
A Geometric Deformable Model-Based Framework for Kidney Segmentation using 3D Diffusion MRI
Danyal Bhutto[1], Mohamed Shehata[1], Ahmed Soliman[1], Mohamed Abou El-ghar[2], Fahmi Khalifa[2], Moumen Elmelegy[3], Adel Elmaghraby[1], and Ayman El-Baz[1]
[1]*J.B. Speed School of Engineering, University of Louisville, Louisville, KY,* [2]*Mansoura University, Mansoura, Egypt,* [3]*Assiut University, Assiut, Egypt*

FRI-332
Diffusion Tensor Imaging in Rat Spinal Cord as it Relates to Axonal Injury Away from Epicenter
Olesya Motovylyak[1], Matthew D. Budde[2], Shekar N. Kurpad[2], and Brian D. Schmit[1,2]
[1]*Marquette University, Milwaukee, WI,* [2]*Medical College of Wisconsin, Milwaukee, WI*

FRI-333
Design of a Novel Electrodynamic Vibrotactile Stimulator For Use In MRI
Paul Goggans[1], Farhad Farzbod[1], Masoud Naghdi[1], and Dwight Waddell[1]
[1]*University of Mississippi, University, MS*

FRI-334
A Novel 3D Automatic Framework for Muscle and Fat Segmentation of Thigh MRI Volumes in SCI Subjects
Samineh Mesbah[1,2,3], Ahmed Shalaby[2], Susan Harkema[3,4,5], Enrico Rejc[4,5], and Ayman El-baz[6]
[1]*Department of Electrical and Computer Engineering, University of Louisville, LOUISVILLE, KY,* [2]*Department of Bioengineering, University of Louisville, louisville, KY,* [3]*Frazier Rehab Institute, Kentucky One Health, Louisville, KY,* [4]*Department of Neurological Surgery, University of Louisville, Louisville, KY,* [5]*Kentucky Spinal Cord Injury Research Center, University of Louisville, Louisville, KY,* [6]*Department of Bioengineering, University of Louisville, Louisville, KY*

FRI-335
Sciatic Nerve Segmentation in MR Images of the Upper Leg via Convolutional Neural Networks
Shashank Manjunath[1] and Richard Dortch[1]
[1]*Vanderbilt University Institute of Imaging Science, Nashville, TN*

FRI-336
Multisite Reliability of Default Mode Network in Resting State fMRI
Sumra Bari[1], Kausar Abbas[1], Pratik Kashyap[1], and Thomas Talavage[1]
[1]*Purdue Univeristy, West Lafayette, IN*

FRI-337
MR Spectroscopic Evaluation of Deviant Brain Metabolism in Asymptomatic High School Football Athletes
Sumra Bari[1], Trey Shenk[1], Diana Svaldi[1], Victoria Poole[1], Ulrike Dydak[1], Joseph Rispoli[1], and Thomas Talavage[1]
[1]*Purdue Univeristy, West Lafayette, IN*

FRI-338
Development of 19F MRI Trackable Nanodelivery System for Anticancer Drugs
William Crowe[1], Zhi Dai[1], Lulu Wang[1], Zhongwei Zhang[1], and Dawen Zhao[1]
[1]*Wake Forest University School of Medicine, Winston-Salem, NC*

FRI-339
SAR and Temperature Rise Simulation of Breast Model Fused with Human Model in High Field MRI
Xin Li[1], Qingyu Yang [1], and Joseph Rispoli[1]
[1]*Purdue University, West Lafayette, IN*

FRI-340
Estimating Uncertainty in Images Reconstructed with Sparsity-Based Object PriorsIn MRI
Yang Lou[1], Yujia Chen[1], Cihat Eldeniz[1], hongyu an[1], and Mark Anastasio[1]
[1]*Washington University in St. Louis, St. Louis, MO*

POSTER SESSION–FRIDAY

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

Track: Biomedical Imaging and Optics

Optical Imaging & Microscopy

FRI-341
Detection of Resting Spontaneous Low-frequency Oscillations in Cerebral Blood Fow using a Fast Diffuse Correlation Spectroscopy
Ahmed Bahrani[1] and Guoqiang Yu[1]
[1]University of Kentucky, Lexington, KY

FRI-342
Level Set Segmentation Using Statistical Shape Priors
Ahmed ElTanboly[1,2], Hassan Hajjdiab[3], Mohammed Ghazal[3], Ahmed Shalaby[1], Magdi El-Azab[2], and Ayman El-Baz[1]
[1]University of Louisville, Louisville, KY, [2]Mansoura University, Mansoura, Egypt, [3]Abu Dhabi University, Abu Dhabi, United Arab Emirates

FRI-343
Imaging Cell-Nanostructure Interactions via Anisotropy Contrast Optical Microscopy: Contrast Enhancement and Quantitative Estimation of Protein Adsorption and Infiltration
Albert Nguyen[1], Darin Peev[1], Chad Briley[1], Alex Ruder[1], Angela Pannier[1], and Mathias Schubert[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

FRI-344
Employing Optical Singularities to Investigate Biophysical Phenomena
Anindya Majumdar[1] and Sean Kirkpatrick[1]
[1]Michigan Technological University, Houghton, MI

FRI-346
Rapid Quantification of Mitochondrial Fractal Dimension in Individual Cells
Isaac Vargas Lopez[1], Kinan Alhallak[1], Narasimhan Rajaram[1], and Kyle Quinn[1]
[1]University of Arkansas, Fayetteville, AR

FRI-347
Multi-Camera Laparoscopic Visualization System
Jae-Jun Kim[1], Alex Watras[1], Hewei Liu[1], Zhanpeng Zeng[1], Jacob A. Greenberg[2], Charles P. Heise[2], Yu Hen Hu[1], and Hongrui Jiang[1]
[1]University of Wisconsin-Madison, Madison, WI, [2]University of Wisconsin School of Medicine and Public Health, Madison, WI

FRI-348
Optical Imaging of Breast Cancer Cell Metabolism in Response to Varying Periods of Hypoxic Stress
Jake Allison[1], Lisa Rebello[1], Mason Harper[1], and Narasimhan Rajaram[1]
[1]University of Arkansas, Fayetteville, AR

FRI-349
Optical Phantoms for Mobile Based Diagnosis
Jerry So[1], Nivedha Kanvar[1], Shreyas Chandragiri[1], Brandon Harrison[1], Alexander Dumont[1], and Chetan Patil[1]
[1]Temple University, Philadelphia, PA

FRI-350
Quantitative Method to Estimate Age-At-Death of Human Crania using Computer Vision and Machine Learning
Jessica Aldrich[1], Jacob Griffith[1], Peer Moore-Jansen[1], and Kim Cluff[1]
[1]Wichita State University, Wichita, KS

FRI-351
Clinical Report Guided Retinal Microaneurysm Detection Using Deep Learning
Ling Dai[1], Qiang Wu[2], Bin Sheng[1], Weiping Jia[2], Xuhong Hou[2], and Ruogu Fang[3]
[1]Shanghai Jiao Tong University, Shanghai, China, People's Republic of, [2]Shanghai Jiao Tong University Affiliated Sixth People's Hospital, Shanghai, China, People's Republic of, [3]Florida International University, Florida, FL

FRI-352
Generation of Subcellular Micro-Texture Using Label-free Optical Scatter Imaging
Mohammad Naser[1], Rene Schloss[1], Anil Shrirao[1], and Nada Boustany[1]
[1]Rutgers University, Piscataway, NJ

FRI-353
Light-Scatter Based Label-free Assessment of Mitochondrial Remodeling and Fission
Mohammad Naser[1], Rene Schloss[1], Bonnie Firestein[1], and Nada Boustany[1]
[1]Rutgers University, Piscataway, NJ

FRI-354
Using Wavelength-Normalized Optical Spectroscopy to Improve the Accuracy of Bacteria Growth Rate Quantification
Samantha McBirney[1], Kristy Trinh[1], Annie Wong-Beringer[1], and Andrea Armani[1]
[1]University of Southern California, Los Angeles, CA

Track: Biomedical Imaging and Optics

Ultrasound Imaging

FRI-355
Deep Networks for Ultrasound Beamforming
Adam Luchies[1], Kazuyuki Dei[1], and Brett Byram[1]
[1]Vanderbilt University, Nashville, TN

FRI-356
Spectral Analysis of Radiofrequency Ultrasound Signals for the Identification of Intercostal Nerves
Asher Haggard[1], Jon Klingensmith[1], Russell Fedewa[2], Hesham Elsharkawy[2], Kenneth Cummings[2], Sean DeGrande[2], and D. Geoffrey Vince[2]
[1]Southern Illinois University Edwardsville, Edwardsville, IL, [2]The Cleveland Clinic Foundation, Cleveland, OH

FRI-357
Transcranial Focused Ultrasound Aberration Correction
Jad El Harake[1] and Charles Caskey[1]
[1]Vanderbilt University, Nashville, TN

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-358
Development of Quasi-Stable Microbubble Clusters: Potential for New Strategies in Ultrasound Contrast Agent Imaging and Drug Delivery
Ronald Hall[1], Kenneth Hoyt[1,2], Caroline Lux[2], Jacques Lux[2], Robert Mattrey[2], and Shashank Sirsi[1,2]
[1]University of Texas at Dallas, Richardson, TX, [2]University of Texas at Southwestern, Dallas, TX

FRI-359
Concurrent Assessment of Mechanical and Compositional Information of Soft Tissues Using Combined Acoustic Radiation Force Impulse Imaging and Thermal Strain Imaging
Waqas Khalid[1] and Kang Kim[1]
[1]University of Pittsburgh, Pittsburgh, PA

Track: Biomedical Imaging and Optics

Applications of MRI and Focused Ultrasound

FRI-360
Evaluation of a Nanoparticle Treatment for Traumatic Brain Injury in Mice Using MRI
Alexander Magsam[1], Forrest Kievit[1], Anthony Convertine[2], Christine Yoo[2], and Patrick Stayton[2]
[1]University of Nebraska-Lincoln, Lincoln, NE, [2]Molecular Engineering and Sciences Institute, Seattle, WA

FRI-361
Assessment of Complex Shear Moduli from Inverse Modeling of MRE Displacement Data
Benjamin Schwartz[1] and Richard Magin[1]
[1]University of Illinois at Chicago, Chicago, IL

Track: Biomedical Imaging and Optics

Molecular Imaging

FRI-362
Photoacoustic-guided Surgery with Indocyanine Green-coated Superparamagnetic Iron Oxide Nanoparticle Clusters Extends Progression-free Survival in a Pre-clinical Mouse Tumor Model
Ahmad Amirshaghaghi[1], Jayesh Thawani[1], Lesan Yan[1], Joel Stein[1], Jessica Liu[1], and Andrew Tsourkas[1]
[1]University of Pennsylvania, Philadelphia, PA

FRI-363
A Noise Reduction Method for Quantifying Nanoparticle Light Scattering in Low Magnification Dark-field Microscope Far-field Images
Dali Sun[1], Jia Fan[1], Chang Liu[1], and Ye Hu[1]
[1]Arizona State Univ, Tempe, AZ

FRI-364
Imaging the Effect of Germline Tumor Micro-environment Variation on Triple Negative Breast Cancer
Jaidip Jagtap[1], Gayatri Sharma[1], Abdul Parchur[1], Venkateswara Gogineni[1], Sarah White[1], Micheal Flister[1], and Amit Joshi[1]
[1]Medical College of Wisconsin, Milwaukee, WI

FRI-365
Synthesis and Characterization of a Magnetically Active 19F Molecular Beacon
Megan E. Dempsey[1], Hetal D. Marble[1], Tun-Li Shen[1], Nicolas L. Fawzi[1], and Eric M. Darling[1]
[1]Brown University, Providence, RI

FRI-366
The Plasma Membrane Is Compartmentalized by a Fractal Actin Meshwork
Patrick C. Mannion[1], Sanaz Sedegh[1], Jenny L. Higgins[1], Michael M. Tamkun[1], and Diego Krapf[1]
[1]Colorado State University, Fort Collins, CO

Track: Biomedical Imaging and Optics

NanoTheranostics

FRI-367
Synthesizing Various Sizes of PLGA Nanoparticles to Image NP Behavior in Traumatic Brain Injury
Aria Tarudji[1], Alex Magsam[1], and Forrest Kievit[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

FRI-368
Novel Nanotheranostics for MRI-Guided Delivery of Arsenic Trioxide to Treat Glioma
Liang Zhang[1], Zhongwei Zhang[2], and Dawen Zhao[2]
[1]UT Southwestern Medical Center, Dallas, TX, [2]Wake Forest University School of Medicine, Winston Salem, NC

FRI-369
Conducting Polymer Nanoparticles for Laser-Mediated Photothermal Ablation of Cancer: Synthesis, Characterization, and In Vitro Evaluation
Travis Cantu[1], Kyle Walsh[2], Varun Pattani[3], Austin Moy[3], James Tunnell[3], Jennifer Irvin[1,2], and Tania Betancourt[1,2]
[1]Texas State University, San Marcos, TX, [2]Texas State University, SAN MARCOS, TX, [3]The University of Texas at Austin, Austin, TX

Track: Biomedical Imaging and Optics

Biomedical Imaging and Optics–Other/Non-Specified

FRI-370
***In Vivo* Photoplethysmographic Monitoring of the Intestine using Visible Wavelengths**
Anna Wisniowiecki[1], Mitchell Robinson[1], Ryan Butcher[1], Mark Wilson[2,3], M. Nance Ericson[4], and Gerard Cote[1]
[1]Texas A&M University, College Station, TX, [2]University of Pittsburgh, Pittsburgh, PA, [3]Veterans Affairs Healthcare System, Pittsburgh, PA, [4]Consultant, Knoxville, TN

FRI-371
Breast Image Segmentation by Improved BP Neural Network based on Mathematical Morphology and Fuzzy Clustering
Dengao Li[1], Yantao Li[1], Jumin Zhao[1], and Hua Li[1]
[1]Taiyuan University of Technology, Taiyuan, China, People's Republic of

POSTER SESSION–FRIDAY

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-372
Comparison of Brain Tumor Segmentation Methods For Computing Volumetric and Radial Measurements
Kyle W. Singleton[1], Fillan Grady[2], Eddie Carrasco Jr.[3], Cassandra Rickertson[1], Yvette Morris[1], Kamala R. Clark-Swanson[1], Scott A. Whitmire[1], and Kristin R. Swanson[1]
[1]*Mayo Clinic, Phoenix, AZ,* [2]*University of Iowa, Iowa City, IA,* [3]*Arizona State University, Tempe, AZ*

FRI-373
A Computer Aided Diagnosis System for Early Detection of Diabetic Retinopathy Using OCTA Scans
Nabila Eladawi[1-2], Mohammed Elmogy[1-2], Omar Helmy[3], Ahmed Aboelfetouh[1], Alaa Riad[1], Harpal Sandhu[4], Shlomit Schaal[3], and Ayman El-Baz[2]
[1]*Faculty of Computers and Information, Mansoura University, Mansoura, Egypt,* [2]*Speed School of Engineering, University of Louisville, Louisville, KY,* [3]*University of Massachusetts Medical School, Worcester, MA,* [4]*University of Louisville, Louisville, KY*

FRI-374
The Effect of Cetuximab based Near-Infrared Targeted Photo Therapy on an In-Vivo Pancreatic Cancer Model
Nzola De Magalhaes[1] and Richard Klemke[1]
[1]*University of California San Diego, San Diego, CA*

FRI-375
Effect of Multi-Site Datasets On Classifier Performance: Support Vector Machines vs. Convolutional Neural Networks
Ryan Therrien[1], Scott Doyle[1], and William Mangione[1]
[1]*University At Buffalo, Buffalo, NY*

FRI-376
CBCT Platform Setup for Animal Radiation Oncology Experiment
Zhexuan Zhang[1], Junwei Shi[2], Yidong Yang[2], and Weizhao Zhao[1]
[1]*University of Miami, Coral Gables, FL,* [2]*University of Miami, Miami, FL*

Track: Nano and Micro Technologies, Translational Biomedical Engineering

Micro/Nano Tools in Medicine

FRI-377
Ligand-Conjugated Particles in Gastrointestinal Endoscopy for Early Detection of Esophageal Cancer
Mahboubeh Noori[1], Evan Streator[1], Grady Carlson[1], Monica Burdick[1], David Drozek[1], and Douglas Goetz[1]
[1]*Ohio University, Athens, OH*

FRI-378
Synergistic Effect of Cold Atmospheric Plasma and Drug Loaded Core-shell Nanoparticles on Adult Human Mesenchymal Stem Cell Chondrogenesis
Se-Jun Lee[1], Dayun Yan[1], Xuan Xhou[1], Wei Zhu[1], Michael Keidar[1], and Lijie Grace Zhang[1]
[1]*George Washington University, Washington, DC*

FRI-379
Green synthesis of Curcuma longa Silver Nanoparticles and its Antimicrobial Evaluation
Busola Odeniyi[1] and Akinwale Coker [1]
[1]*University of Ibadan, Chicago, IL*

FRI-380
Fibrin-targeted Polymerized Shell Microbubbles as Ultrasound Contrast Agents for Detection of Post-surgical Abdominal Adhesions
Catherine A. Gormley[1], Benjamin Keenan[1], Stanley J. Heydrick[1], R. Glynn Holt[1], Jon O. Nagy[2], and Joyce Y. Wong[1]
[1]*Boston University, Boston, MA,* [2]*NanoValent Pharmaceuticals, Inc., Bozeman, MT*

FRI-381
Mechanism of Nanomaterial Clearance by the Liver
Kim Tsoi[1], Sonya MacParland[1], Xue-Zhong Ma[1], Oyedele Adeyi[1], Anton Zilman[1], Ian McGilvray[1], and Warren Chan[1]
[1]*University of Toronto, Toronto, ON, Canada*

FRI-382
Detection of DNA Molecules at Point-of-care Settings without PCR
Logeeshan Velmanickam[1], Michael Fondawiski[1], and Dharmakeerthi Nawarathna[1]
[1]*North Dakota State University, Fargo, ND*

FRI-383
Developing a High Throughput *In Vitro* Platform to Study Liver Stages of the Human Malaria Plasmodium vivax
Nil Gural[1], Alex Miller[2], Sandra March[1-2], Jetsumon Sattabongkot[3], and Sangeeta N. Bhatia[1-2,4]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Broad Institute, Cambridge, MA,* [3]*Mahidol University, Bangkok, Thailand,* [4]*HHMI, Cambridge, MA*

FRI-384
Evaluating the Potential of Commercially Available Magnetic Nanoparticles for Hyperthermia Applications
Olivia Lanier[1], Olena Korotych[1], Adam Monsalve[1], Christopher Nacea[1], Noa Grooms[1], Dayita Wable[1], and Jon Dobson[1]
[1]*University of Florida, Gainesville, FL*

FRI-385
Laser-Sealing of Soft Tissue Using Plasmonic Silk Nanocomposites
Russell Urie[1], Deepanjan Ghosh[1], Chengchen Guo[1], Mitzi Thelakkaden[1], Jacquelyn Kilbourne[1], Jeffrey Yarger[1], and Kaushal Rege[1]
[1]*Arizona State University, Tempe, AZ*

FRI-386
Microfluidic Filter Device for Dissociation of Aggregates and Tissues into Single Cells
Xiaolong Qiu[1], Marissa Pennell[1], Jeremy Lombardo[1], Griffith Wagner[1], Elliot Hui[1], and Jered Haun[1]
[1]*University of California Irvine, Irvine, CA*

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Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-387
Microfluidic Device for Rapid Digestion of Tissues into Cellular Suspensions
Xiaolong Qiu[1], Trisha M. Westerhof[1], Erik Werner[1], Amrith Karunaratne[1], Pedram P. Pourfard[1], Jeremy Lombardo[1], Edward L. Nelson[1], Elliot Hui[1], and Jered Haun[1]
[1]*University of California Irvine, Irvine, CA*

FRI-388
Measurement of Blood Viscosity Using a Droplet-Based Microfluidic Device
Yunzi Li[1], Sarah Mena[1], Kevin Ward[2,3], and Mark A. Burns[1,3,4]
[1]*Chemical Engineering, University of Michigan, Ann Arbor, MI,* [2]*Emergency Medicine, University of Michigan, Ann Arbor, MI,* [3]*Michigan Center for Integrative Research in Critical Care, University of Michigan, Ann Arbor, MI,* [4]*Biomedical Engineering, University of Michigan, Ann Arbor, MI*

Track: Nano and Micro Technologies, Neural Engineering

Micro/Nano Tools in Neurosciences

FRI-389
Organic LEDs Optically Modulate Neurons Expressing Opsins
Arati Sridharan[1], Ankur Shah[1], Swathy Sampath Kumar[1], James Kyeh[1], Joseph Smith[1], and Jit Muthuswamy[1]
[1]*Arizona State University, Tempe, AZ*

FRI-390
High Sensitivity Electrochemical Probe for Multiplexed Glutamate and Dopamine Detection in Brain Tissue
Chao Tan[1], Md. Imran Hossain[1], P. Timothy Doughty[1], Chelsea Pernici[1], Jessica Scoggin[1], Shabnam Siddiqui[1], Teresa Murray[1], and Prabhu Arumugam[1]
[1]*Louisiana Tech University, Ruston, LA*

FRI-391
Optical Recording of Neural Response in Cultured Neurons during Gold-nanorod Mediated Photothermal Inhibition
Hyunjun Jung[1] and Yoonkey Nam[1]
[1]*KAIST, Daejeon, Korea, Republic of*

FRI-392
Tuning Topography of Self-Rolled-Up 3D Microtube Arrays to Improve Alignment of Hippocampal Neurons
Olivia V. Cangellaris[1], Elise A. Corbin[2], Paul Froeter[1], Xiuling Li[1], and Martha U. Gillette[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL,* [2]*University of Pennsylvania, Philadelphia, PA*

FRI-393
Engineering Defined Neural Cell Patterns Using Surface Acoustic Waves
Sarah Grundeen[1], Manuel Brugger[2], Christoph Westerhausen[2], Adele Doyle[1], and Luke Theogarajan[1]
[1]*University of California Santa Barbara, Santa Barbara, CA,* [2]*University of Augsburg, Augsburg, Germany*

FRI-394
Touch-spinning of PCL Nanofibers for Nerve Regeneration
Se-Jun Lee[1], Darya Asheghali[2], Sergiy Minko[2], and Lijie Grace Zhang[1]
[1]*George Washington University, Washington, DC,* [2]*University of Georgia, Athens, GA*

FRI-395
Novel Micro/Nano Scale Interfaces for Intracellular Recording
Swathy Sampath Kumar[1] and Jit Muthuswamy[1]
[1]*Arizona State University, Tempe, AZ*

FRI-396
Autonomous Microscale System for Intracellular Neural Recording
Swathy Sampath Kumar[1], Michael S. Baker[2], Murat Okandan[2], and Jit Muthuswamy[1]
[1]*Arizona State University, Tempe, AZ,* [2]*Sandia National Laboratories, Albuquerque, NM*

FRI-397
Thermal Challenges in Realizing High-throughput, Robotic Micropositioning Systems for the Brain
Vladislav Voziyanov[1], Michael Baker[2], Murat Okandan[2], and Jit Muthuswamy[1]
[1]*Arizona State University, Tempe, AZ,* [2]*Sandia Labs, Albuquerque, NM,* [3]*MPower Technology, Inc, Albuquerque, NM*

FRI-398
A Microfluidic Platform for Dopaminergic Neuron Culture and *In Situ* Dopamine Uptake Measurements
Yue Yu[1] and Aaron Wheeler[1]
[1]*University of Toronto, Toronto, ON, Canada*

FRI-399
Synchronized Calcium Oscillation in Astrocytes in 3D Fibrous Scaffold
Bo Chen[1], Farrokh Sharifi[2], Marilyn McNamara[2], Nicole Hashemi[2], and Michael Cho[1]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*Iowa State University, Ames, IA*

FRI-400
Programmable Amplifier Array for Various On-chip Electrophysiological Recordings
Kevin White[1], Geoffrey Mulberry[1], and Brian Kim[1]
[1]*University of Central Florida, Orlando, FL*

FRI-401
Graphene-based Biocompatible Micro Electrode Arrays for Simultaneous Electrical and Optical Measurements of Neuronal Activity
Sahil Rastogi[1], Guruprasad Raghavan[1], Ge Yang[1], and Tzahi Cohen-Karni[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

POSTER SESSION–FRIDAY

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

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Track: Cancer Technologies, Drug Delivery & Intelligent Systems

Cancer Drug Delivery

FRI-402
Targeting Nanotherapeutics to the Glioblastoma via the Cell Surface Receptor Fn14
Aniket Wadajkar[1], Jimena Dancy[1], Nina Connolly[1], Jeffrey Winkles[1], Graeme Woodworth[1], and Anthony Kim[1]
[1]University of Maryland, Baltimore, Baltimore, MD

FRI-403
Semiconducting Polymeric Patchy Nanoparticles as Novel Cancer Theranostics for Ovarian Cancer
Binal Brahmbhatt[1], Kaitlyn Scott[1], Veda Prasad[1], Dora Obodo[1], Amr Majul[1], Negin Asadzadehzanjani[1], Sundaresan Gobalakrishnan[2], Jamal Zweit[2], and Carolina Salvador-Morales[1]
[1]George Mason University, Fairfax, VA, [2]Virginia Commonwealth University, Richmond, VA

FRI-404
Multifunctional Gold Nanoparticles for Targeted Combinational Cancer Therapy
Binita Shrestha[1,2], Hao Zhang[1], Chiung Yu Hung[1], and Liang Tang[1,2]
[1]University of Texas at San Antonio, San Antonio, TX, [2]University of Texas Health Science Center, San Antonio, TX

FRI-405
A Computational Model to Predict Drug Delivery to Heterogeneous Tumors Overexpressing HER2
Bruna Menezes[1], Cornelius Cilliers[1], Greg Thurber[1], and Jennifer Linderman[1]
[1]University of Michigan, Ann Arbor, MI

FRI-406
A Comparison Study to Ivestigate the Effect of Drug-conjugated Site on its Delivery Efficacy using Double Hydrophilic Block Copolymers-based Prodrugs
Hua Wei[1]
[1]Lanzhou University, Lanzhou, China, People's Republic of

FRI-407
Redox-sensitive Multi-stage Albumin Nanoparticle for Drug Delivery
Jae You Kim[1] and Debadyuti Ghosh[1]
[1]The University of Texas at Austin, Austin, TX

FRI-408
Lipid and Polymer Nanoparticle Delivery of Lipophilic Black Raspberry Phytochemicals for Oral Cancer Chemoprevention
Lauren Cosby[1], Thomas Knobloch[1], Christopher Weghorst[1], and Jessica Winter[1]
[1]The Ohio State University, Columbus, OH

FRI-409
Preparation of Small Gold Nanorods and Their Applications in the Photothermal Therapy against Breast Cancer
Lijun Wang[1] and Liang Tang[1]
[1]University of Texas at San Antonio, San Antonio, TX

FRI-410
Ultrasound-Guided Monitoring and Control of Liposomal Doxorubicin Uptake in Tumors using Microbubble Contrast Agents.
Rojin Eslami[1], Sonia Hernandez[2], Bianca Lec[2], Mark Borden[3], Jessica Kandel[2], and Shashank Sirsi[2,3]
[1]Univeristy of Texas Dallas, Richardson, TX, [2]University of Chicago Medical Center, Chicago, IL, [3]University of Colorado, Boulder, CO, [4]University of Texas Dallas, Richardson, TX, [5]University of Texas Southwestern, Dallas, TX

FRI-411
The Effect of Gold Nanosphere Physiochemical Properties on Corona Formation and Cellular Uptake
Sadaf Pustchi[1], Binita Shrestha[1], and Liang Tang[1]
[1]UTSA, San Antonio, TX

FRI-412
Multifunctional Ormosil-Theranostic Probes for Adjuvant Cancer Therapy, Deep Tumor Penetration and In-Vivo Imaging
Abhignyan Nagesetti[1], Zoe Bernard[1], Pedro de Costa[1], Juanpablo Olguin[1], and Anthony McGoron[1]
[1]Florida International University, Miami, FL

FRI-413
Exploiting Protein Adsorption to Stabilize Colloidal Drug Aggregates
Ahil Ganesh[1], Christopher McLaughlin[1], Da Duan[2], Brian Shoichet[2], and Molly Shoichet[1]
[1]University of Toronto, Toronto, ON, Canada, [2]University of California-San Francisco, San Francisco, CA

FRI-414
Shape, Targeting and EPR effect in the Lipid Nanoparticles: Discoidal Bicelle as an Ideal Carrier for Cancer Therapeutics
Armin Tahmasbi Rad[1] and Mu-Ping Nieh[1]
[1]University of Connecticut, Storrs, CT

FRI-415
Liposome-Targeted Inhibition of CXCR2 in PDAC-CAF Mouse Models
Austin Rivera[1], Lindsey Brinton[2], Siva Sai Krishna Dasa[1], and Kimberly Kelly[1]
[1]University of Virginia, Charlottesville, VA, [2]Ohio State University, Columbus, OH

FRI-416
STAT3 Inhibitor Loaded Dipalmitoylphosphatidylcholine-Poly (lactic-co-glycolic acid) (DPPC-PLGA) Nanoparticles For The Treatment of Lung Cancer
Daria Zhukova[1], Roshni Iyer[1], Gizem Oter[1], Matthew Muir[1], Benjamin Chen[2], Debabrata Saha[2], and Kytai Nguyen[1,2]
[1]University of Texas at Arlington, Arlington, TX, [2]University of Texas Southwestern Medical Center, Dallas, TX

FRI-417
Magnetically Triggered Drug Release from Nanoparticles
Eric Fuller[1], Carlos Rinaldi[1], Brent Sumerlin[1], and Hao Sun[1]
[1]University of Florida, Gainesville, FL

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FRI-418
HIFU Synergistically Enhances Thermally Triggered Chemotherapy for Liver Cancer: Evidence from in vitro and in vivo Studies
Gray Halliburton[1], Hakm Murad[1], Monica Kala[1], Yueheng Zhang[1], Vijay John[1], and Damir Khismatullin[1]
[1]Tulane University, New Orleans, LA

FRI-419
HIFU is Synergistic with Anti-neoplastic Drugs that Target ER Stress
Hakm Murad[1], Emma Bortz[1], Partha Chandra[1], Debasis Mondal[1], and Damir Khismatullin[1]
[1]Tulane University, New Orleans, LA

FRI-420
Microbeam Radiation Therapy Enhances Nanoparticle Drug Delivery in GEMM Triple Negative Breast Cancer Model
Judith Rivera[1], Sha Chang[2], Leah Herity[3], Lauren Price[3], Andrew Madden[3], Charlene Santos[3], David Darr[3], and William Zamboni[3]
[1]UNC-Chapel Hill/ NC State University, Chapel Hill, NC, [2]UNC School of Medicine, Chapel Hill, NC, [3]UNC Chapel Hill, Chapel Hill, NC

FRI-421
Carbon Nanotube Functionalized Mesenchymal Stem Cell for Tumor-Targeted Photothermal Therapy
Jun Zhang[1], Dustin Pierce[1], and Ching-An Peng[1]
[1]University of Idaho, Moscow, ID

FRI-422
Cerebrospinal Fluid as a Medium for Nanoparticle Drug Delivery to Leptomeningeal Metastasis in Medulloblastoma
Kyle Householder[1,2], Robert Wechsler-Reya[3], and Rachael Sirianni[1,2]
[1]Barrow Neurological Institute, Phoenix, AZ, [2]Arizona State University, Tempe, AZ, [3]Sanford Burnham Prebys Medical Discovery Institute, La Jolla, CA

FRI-423
Targeted Photothermal Ablation of Breast Cancer
Patrick McKernan[1], Roger Harrison[1], and Rajagopal Ramesh[2]
[1]University of Oklahoma, Norman, OK, [2]University of Oklahoma Health Science Center, Norman, OK

FRI-424
Enhanced Ethanol Ablation as a Surgical-Alternative for Tumor Treatment in Resource-Limited Settings
Robert Morhard[1], Corrine Nief[1], Carlos Barrero Castedo[1], Megan Madonna[1], Fangyao Hu[1], Jenna Mueller[1], Mark Dewhirst[1], David Katz[1], and Nirmala Ramanujam[1]
[1]Duke University, Durham, NC

FRI-425
The Downstream Bioeffects of Microbubble-mediated Sonoporation on Cancer Cells
Xinxing Duan[1], Shun Yu Lo[1], Wai Hung Sit[1], Alfred C.H. Yu[2], and Jennifer M.F. WAN[1]
[1]The University of Hong Kong, Hong Kong, Hong Kong, [2]The University of Waterloo, Waterloo, ON, Canada

Track: Cancer Technologies

Cancer Immunoengineering

FRI-426
Mathematical Modeling to Analyze CAR T-Cell Cytotoxicity and Survival
Amritava Das[1], Nicole Piscopo[1], Katie Mueller[1], Christian Capitini[1], David Beebe[1], and Krishanu Saha[1]
[1]University of Wisconsin-Madison, Madison, WI

FRI-427
Can Exogenous Electric Fields Abrogate Cancerous Signaling? Evidence and a Mitochondrial Perspective
Ishan Goswami[1], Justin Perry[1], Mitchell Allen[1], David A. Brown[1], Michael R. von Spakovsky[1], and Scott S. Verbridge[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

FRI-428
Bio-inspired Design of Nanoparticle Artificial Antigen-presenting Cells for Immunotherapy
John Hickey[1], Fernando Vicente[1], Hai-Quan Mao[1], and Jonathan Schneck[1]
[1]Johns Hopkins University, Baltimore, MD

FRI-429
Immune Modulating Effects of Pulsed Focused Ultrasound in Murine Breast and Melanoma Tumor Models
Omer Aydin[1], Scott Burks[1], and Joseph Frank[1]
[1]National Institute of Health, Bethesda, MD

FRI-430
The Expression and Functional Testing of ACDCIx, a Novel Antibody-Peptide Fusion for Immunotherapy of Glioblastoma
Rebecca Cook[1,2], Sierra Bichler[1], Andrew Diamos[1], Braeden Schaefer[1], Andrew Niemann[1], Hugh Mason[1], Tsafrir Mor[1], Joseph Blattman[1], and Rachael Sirianni[1,2]
[1]Arizona State University, Tempe, AZ, [2]Barrow Neurological Institute, Phoenix, AZ

FRI-431
Tracking the Dynamic Interplay of Tumor Response to the Immunotherapeutic Effect of Iron Oxide Nanoparticles
Saeid Zanganeh[1,2] and Ryan Spitler[2]
[1]Sloan Kettering Institute for Cancer Research, New York, NY, [2]Stanford Cancer Imaging Training Program (SCIT), Stanford University, Palo Alto, CA

Track: Drug Delivery & Intelligent Systems

Delivery Systems for Proteins and Vaccines

FRI-432
Dermal Delivery of Horseradish Peroxidase (HRP) via a Novel Noninvasive Vaccination Device (Porcine Model)
Adiba Chowdhury[1]
[1]Stony Brook University, Coram, NY

POSTER SESSION–FRIDAY

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FRI-433
Immune Responses to Influenza a Virus DNA Vaccination are Enhanced by Chitosan Nanoparticle Delivery
Anna Lampe[1], Eric Farris[1], James Williams[2], Deborah Brown[1], and Angela Pannier[1]
[1]University of Nebraska-Lincoln, Lincoln, NE, [2]Nature Technology Corporation, Lincoln, NE

FRI-434
Optimization of pH-Responsive, Polymer-Enabled Intracellular Peptide Delivery
Brian Evans[1], Craig Duvall[2], Eric Dailing[2], Kameron Kilchrist[2], and Alvin Mukalel[2]
[1]Vanderbilt University Medical Center, Nashville, TN, [2]Vanderbilt University, Nashville, TN

FRI-435
The Effects of Storage Conditions on Stability of an Antigen-Model Protein within the ImmunoMatrix Patch
Eshani Goradia[1], Adiba Chowdhury[1], Yun Shi Liang[1], Samuel Urena[2], Ryan Von Dollen[2], and Sawicka Katarzyna[2]
[1]Stony Brook University, Princeton, NJ, [2]Stony Brook University, Stony Brook, NY

FRI-436
Nanoparticle Vaccine Generates Lung-Resident CD8+ T Cells That Protect Against Viral Challenge
Frances C. Knight[1], Pavlo Gilchuk[1], Amrendra Kumar[1], Kyle W. Becker[1], Sema Sevimli[1], Sebastian Joyce[1], and John T. Wilson[1]
[1]Vanderbilt University, Nashville, TN

FRI-437
Antimalarial Action of a Recombinant Engineered Fusion Protein
Patrick McKernan[1] and Roger Harrison[1]
[1]University of Oklahoma, Norman, OK

FRI-438
The Effects of Temperature and Humidity on Nanofiber Morphology
Samuel Urena[1], Adiba Chowdhury[1], Ryan Von Dollen[1], Yun Shi Liang[1], Eshani Goradia[1], and Katarzyna Sawicka[1]
[1]Stony Brook University, Stony Brook, NY

Track: Drug Delivery & Intelligent Systems, Biomaterials

Drug Delivering Biomaterials

FRI-439
Novel Approach to Measuring Hydrophobic Drug Release *In Vitro*
Anastasia Frank-Kamenetskii[1], Dmitry Gil[1], John Barry[1], Naren Banik[2], and Alexey Vertegel[1]
[1]Clemson University, Clemson, SC, [2]Medical University of South Carolina, Charleston, SC

FRI-440
Imidazole-modified Chitosan Nanoparticles for Delivery to Lung Epithelial Cells in Air-liquid Interface Cultures
Blake Lash[1], Joscelyn Mejias[1,2], and Krishnendu Roy[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

FRI-441
Dual-Functionalized Thermosensitive Ferri-Liposomes for Brain Tumor-Targeted Drug Delivery
Di Shi[1], Gujie Mi[1], and Thomas Webster[1]
[1]Northeastern University, Boston, MA

FRI-442
Modulation of Endoplasmic Reticulum Stress Associated Brain Endothelial Dysfunction by Natural Osmolytes
Jacqueline Sloan[1], Tania Ismail[1], Zhaolin Chen[1], and Mathumai Kanapathipillai[2]
[1]University of Michigan-Dearborn, Dearborn, MI, [2]UM-Dearborn, Dearborn, MI

FRI-443
Optimization of Drug Loaded Electrospun Fibers to Induce Fibrosis of the Utero-tubal Junction
Jamie Hernandez[1], Anna Blakney[1], Bob Katz[2], Jeffery Jensen[3], and Kim Woodrow[1]
[1]University of Washington, Seattle, WA, [2]ContraMed, Campbell, CA, [3]Oregon Health & Sciences University, Beaverton, OR

FRI-444
Alginate Nanoparticles Prepared via W/O Emulsions as Therapeutic Carriers
Justin Rosch[1], Allison DuRoss[1], Hayden Winter[2], Anna Brown[1], and Conroy Sun[1]
[1]Oregon State University, Portland, OR, [2]Portland State University, Portland, OR

FRI-445
Novel Engineered Silicone Hydrogel Contact Lenses for the Controlled Release of a Diversity Of Post-Cataract Therapeutics
Mark Byrne[1,2] and Stephen DiPasquale[1]
[1]Rowan University, Glassboro, NJ, [2]OcuMedic Inc., Mullica Hill, NJ

FRI-446
Oligonucleotide Hybridized Hydrogels for Sustained Release of Small Molecule (Aptamer) Therapeutics
Nikunj Agrawal[1], Rebacca Wachs[1], Yan Du[2], Peter Allen[2], Andrew Ellington[2], Zin Khaing[1], and Christine Schmidt[1]
[1]University of Florida, Gainesville, FL, [2]University of Texas, Austin, TX

FRI-447
Dasatinib Encapsulated Sub-micrometer Spray Dried PLGA Particles As Drug Delivery Platform For Proliferative Vitreoretinopathy
Rayeanne Balgemann[1], Rajat Chauhan[1], Kevin Mcdonald[1], Henry Kaplan[1], Tamiya Shigeo[1], and Martin O'Toole[1]
[1]University of Louisville, Louisville, KY

FRI-448
PEG-coated Amine-Functionalized Mesoporous Silica for Ocular Delivery of Dexamethasone
Se Na Kim[1], Song Ah Ko[1], and Young Bin Hoy[1,2,3]
[1]Interdisciplinary Program in Bioengineering, College of Engineering, Seoul National University, Seoul, Korea, Republic of, [2]Department of Biomedical Engineering, College of Medicine, Seoul National University, Seoul, Korea, Republic of, [3]Institute of Medical & Biological Engineering, Medical Research Center, Seoul National University, Seoul, Korea, Republic of

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FRI-449
Optimization of DNA Nanolayer Films for Gene Delivery in Craniomaxillofacial Repair
Sheryl Wang[1,2] and Paula Hammond[1,2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Koch Institute for Integrative Cancer Research, Cambridge, MA

FRI-450
Theranostic Multilayer Capsules for Ultrasound Imaging and Guided Drug Delivery
Sithira Ratnayaka[1], Jun Chen[1], Aaron Alford[1], Veronika Koslovskaya[1], and Eugenia Kharlampieva[1]
[1]University of Alabama at Birmingham, Birmingham, AL

FRI-451
Plasma based Semisynthetic Hydrogels as Alternative to Fibrin Sealants
Amrita Pal[1], Chandrashekhar Pathak[1], and Brent Vernon[1]
[1]Arizona State University, Tempe, AZ

FRI-452
Effects of Formulation Parameters on the Size of Biodegradable Fluorescent Nanoparticles
Aneetta Kuriakose[1], Paula Perez[2], Nikhil Pandey[1], Dingying Shan[3], Jian Yang[3], and Kytai Nguyen[1]
[1]UT Arlington, Arlington, TX, [2]University of Texas at El Paso, El Paso, TX, [3]Pennsylvania State University, State College, PA

FRI-453
Targeting and Immobilization of Therapeutic Factors via Native Free Radicals
Christopher Lowe[1], Keana Mirmajlesi[1], and David Shreiber[1]
[1]Rutgers University, Piscataway, NJ

FRI-454
Injectable In Situ Forming Depot Systems for Long-Acting Contraception
Dileep R. Janagam[1], Suryatheja Ananthula[1], Kamaljit Chaudhry[1], Linfeng Wu[1], Timothy D. Mandrell[1], James R. Johnson[1], and Tao L. Lowe[1]
[1]University of Tennessee Health Science Center, Memphis, TN

FRI-455
Enzyme-Cleavable Peptide Amphiphiles Enhance Intracellular Delivery
Handan Acar[1], Mathew R. Schnorenberg[1], James L. LaBelle[1], and Metthew V. Tirrell[1]
[1]The University of Chicago, Chicago, IL

FRI-456
Effect of Chitosan's Biophysical Properties on Intravesical Drug Delivery
Jared J. Hopkins[1], Sean G. Smith[1], and David A. Zaharoff[1]
[1]University of North Carolina, North Carolina State University, Raleigh, NC

FRI-457
Oral Delivery of Therapeutic Peptide Amphiphiles for Polycystic Kidney Disease
Jonathan Wang[1] and Eun Ji Chung[1]
[1]University of Southern California, Los Angeles, CA

FRI-458
Biocompatible Electrospun Nanofibrous Scaffolds Enhance Tumoricidal Stem Cell Therapy in Surgical Model of Glioblastoma Resection and Recurrence
Kathryn Moore[1], Juli Bago[2], Oyni Okolie[1], Mahsa Mohiti-Asli[1], Elizabeth Loboa[3], and Shawn Hingtgen[2]
[1]The University of North Carolina at Chapel Hill and North Carolina State University, Raleigh, NC, [2]UNC Eshelman School of Pharmacy, University of North Carolina, Chapel Hill, NC, [3]College of Engineering, University of Missouri, Columbia, MO

FRI-459
Preparation and Optimization of Chemically Modified Alginates as Vehicles for Targeted Drug Delivery
Kevin Enck[1], Surya Banks[1], Victor Agwu[1], Aubrey Peeden[2], Mark Welker[1], and Emmanuel Opara[1]
[1]Wake Forest University, Winston-Salem, NC, [2]Forsyth Tech, Winston-Salem, NC

FRI-460
Mechanisms of Cell Death Caused by Photothermal Ablation of Cancer Cells Mediated by Conductive Polymer Nanoparticles
Madeline Huff[1], Eda Baykal-Caglar[1], Janet Vela-Ross[1], James Tunnell[2], Jennifer Irvin[1], and Tania Betancourt[1]
[1]Texas State University, San Marcos, TX, [2]University of Texas at Austin, Austin, TX

FRI-461
PNDJ Hydrogel Provides High, Sustained Antimicrobial Levels in Orthopaedic Surgical Sites
Michael Nguyen[1], Vajra Badha[1], Erin Childers[1,2], Alex McLaren[2,3], and Derek Overstreet[1,2]
[1]Arizona State University, Tempe, AZ, [2]Sonoran Biosciences, Chandler, AZ, [3]University of Arizona, College of Medicine Phoenix, Phoenix, AZ

FRI-462
Heparin-Coated Magnetic Nanoparticles Uptake by Fibroblasts and Vascular Cells
Nardine Ghobrial[1], Benjamin Fellows[1], Olin Mefford[1], and Delphine Dean[1]
[1]Clemson University, Clemson, SC

FRI-463
Maximizing Drug Loading in Microbubbles for Ultrasound -Mediated Drug Delivery
Pinunta Nittayacharn[1], Jacob Lilly[1], and Agata Exner[1]
[1]Case Western Reserve University, Cleveland, OH

FRI-464
Antibacterial Properties of Nitric Oxide
Rana Gbyli[1] and Kagya Amoako[1]
[1]University of New Haven, West Haven, CT

FRI-465
Overcoming Inherent Chemotherapeutic Resistance of Liver Cancer through Concurrent Intratumoral Delivery of Drug and Chemosensitizer
Selva Jeganathan[1], Christopher Hernandez[1], Anshul Dhingra[1], and Agata Exner[1]
[1]Case Western Reserve University, Cleveland, OH

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FRI-466
Degradable Alginate Hydrogels for Controlled Release
Shonit Sharma[1], Justin Madrigal[1], and Eduardo Silva[1]
[1]University of California, Davis, Davis, CA

FRI-467
Engineered Polymeric Matrices with Controlled Protein Release for Rotator Cuff Tendon Repair
Varadraj Vernekar[1], Anupama Prabhath[1], Sangamesh Kumbar[1], and Cato Laurencin[1]
[1]UConn Health, Farmington, CT

FRI-468
Extended Antibiotics Release by Incorporation of Calcium Polyphosphate Gel in PMMA Cement
Weiping Ren[1], Wei Song[1], and David Markel[2]
[1]Wayne State University, Detroit, MI, [2]Providence Hosptial, Southfield, MI

FRI-469
Efficient Intracellular Gene Therapeutics Delivery Using Biodegradable Lipid-Like Nanoparticles
Yamin Li[1], Yong Tao[2], Zheng-Yi Chen[2], and Qiaobing Xu[1]
[1]Tufts University, Medford, MA, [2]Harvard Medical School, Boston, MA

Track: Drug Delivery & Intelligent Systems, Cancer Technologies

Drug Delivery for Immunomodulation and Immunotherapy

FRI-470
Platelets with Checkpoint Inhibitors for Post-surgical Cancer Immunotherapy
Chao Wang[1] and Zhen Gu[1]
[1]University of North Carolina at Chapel Hill, North Carolina State University, Raleigh, NC

FRI-471
Does Co-encapsulation Matte? Probing the Biophysical and Functional Impacts of Nanoparticle Combinatorial Delivery
Patrick Han[1], Sean Bickerton[1], Shihan Khan[1], Jungseok Lee[1], Eric Song[1], and Tarek Fahmy[1]
[1]Yale University, New Haven, CT

FRI-472
Development of a Drug Loaded Nano-Liposomal Vesicle Platform to Use in Drug Carrier Cell Applications for the Improvement of ImmunoChemotherapy Outcomes
Serkan Yaman[1,2], Jon A. Weidanz[1], and Kytai T. Nguyen[1,2]
[1]The University of Texas at Arlington, Arlington, TX, [2]University of Texas Southwestern Medical Center, Dallas, TX

FRI-473
Self-Assembly of Degradable Immune Polyplexes to Control Toll-like Receptor Function
Shannon J. Tsai[1] and Christopher M. Jewell[1,2,3,4]
[1]Fischell Department of Bioengineering, University of Maryland - College Park, College Park, MD, [2]Department of Microbiology and Immunology, University of Maryland Medical School, Baltimore, MD, [3]Marlene and Stewart Greenebaum Cancer Center, Baltimore, MD, [4]United States Department of Veterans Affairs, Baltimore, MD

FRI-474
Magnetic Nanoparticles as a Clinically Accessible Biomarker of Patient Response to Dendritic Cell Vaccines
Adam Grippin[1], Elias Sayour[1], Brandon Wummer[1], Adam Monsalve[1], Jon Dobson[1], and Duane Mitchell[1]
[1]University of Florida, Gainesville, FL

FRI-475
Computationally-Designed Nanotherapeutics for Immune Modulation of the Tumor Microenvironment
Ashish Kulkarni[1]
[1]Harvard Medical School, Cambridge, MA

FRI-476
Enhancing Immune Cells using Plasma Membrane-inserting Drugs to Combat Cancer
Emily M. Slaby[1,2], Michael H. Zhang[1,2], Georgina A. Stephanie[1], and Gregory L. Szeto[1,2]
[1]University of Maryland, Baltimore County, Baltimore, MD, [2]University of Maryland Marlene and Stewart Greenebaum Comprehensive Cancer Center, Baltimore, MD

Track: Drug Delivery & Intelligent Systems, Tissue Engineering

Drug Delivery in Tissue Engineering & Medicine

FRI-477
Spatiotemporal Release of Bioactive Molecules for Tissue Engineering Applications
Amir Najarzadeh[1] and David Puleo[1]
[1]University of Kentucky, Lexington, KY

FRI-478
Development of a Tissue Regeneration Matrix with Anti-Breast Cancer Properties
Heather Gregory[1], Bailey-Jean Walker[1], Kendyl Williams[1], and Brian Booth[1]
[1]Clemson University, Clemson, SC

FRI-478
Localized Release of Corticosteroid from Macroporous Organosilicone Beads Scaffolds
Jiapu Liang[1], Kaiyuan Jiang[1], and Cherie Stabler[1]
[1]University of Florida, Gainesville, FL

FRI-480
Validation of an Osteochondral Bioreactor for *In Vitro* Drug Screening
Kalon Overholt[1], Alessandro Pirosa[1], Rocky Tuan[1], and Riccardo Gottardi[1]
[1]University of Pittsburgh, Pittsburgh, PA

FRI-481
Host Tissue Responses to PEG-Immobilized Pro-Chondrogenic and Anti-Angiogenic Growth Factor
Roche de Guzman[1], Liam Lang[1], and Daniel Foyt[1]
[1]Hofstra University, Hempstead, NY

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FRI-482
Electrosensitive Growth Factor Delivery from Polypyrrole Coated Polyvinylidene Fluoride Electrospun Fibers
Solaleh Miar[1] and Teja Guda[1]
[1]University of Texas at San Antonio, San Anntonio, TX

FRI-483
Cold Atmospheric Plasma (CAP) Modified Core-shell Nanofibers for Bone Tissue Engineering Applications
Yangfang Zhou[1], Mian Wang[1], Michael Keidar[2], and Thomas Webster[1]
[1]Northeastern University, Boston, MA, [2]The George Washington University, Washington, DC

FRI-484
Alginate-Liposomal Bupivacaine Formulation Preserves Mesenchymal Stromal Cells Anti-Inflammatory Function
Xiomara I. Perez[1], Mollie Davis[1], Ileana Marrero-Berrios[1], Timothy Maguire[1,2], Rene S. Schloss[1], Joel Yarmush[3], and Martin L. Yarmush[1]
[1]Rutgers University, Piscataway, NJ, [2]BeauRidge Pharmaceuticals, LLC, New York, NY, [3]New York Presbyterian-Brooklyn Methodist Hospital, Brooklyn, NY

Track: Drug Delivery & Intelligent Systems

Novel Materials and Self Assembly

FRI-485
Self-Assembly of Smart Multifunctional Hybrid Compartments with Programmable Bioactivity
Gong Cheng[1], Sijie Hao[1], Yuan Wan[1], and Siyang Zheng[1]
[1]Penn State University, University Park, PA

FRI-486
Trafficking and Processing of Self-assembled Immune Signals in Primary Antigen Presenting Cells
Michelle L. Bookstaver[1], Krystina L. Hess[1], and Christopher M. Jewell[1,2,3,4]
[1]Fischell Department of Bioengineering, University of Maryland-College Park, College Park, MD, [2]Department of Microbiology and Immunology, University of Maryland Medical School, Baltimore, MD, [3]Marlene and Stewart Greenebaum Cancer Center, Baltimore, MD, [4]United States Department of Veterans Affairs, Baltimore, MD

Track: Drug Delivery & Intelligent Systems

Nucleic Acid Delivery

FRI-487
Mechanisms of Enhanced Non-Viral Gene Delivery to Human Mesenchymal Stem Cells Induced by Glucocorticoid Priming
Andrew Hamann[1], Kelly Broad[1], Anna Toner[1], and Angela K Pannier[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

FRI-488
Self-organized Iron Sulfide Supraparticles as Artificial Viruses
Emine Turali-Emre[1], Ahmet Emre[1], and Nicholas Kotov[1]
[1]University of Michigan, Ann Arbor, MI

FRI-489
Nuclear Envelope as a Physical Barrier in Electrotransfection
Lisa Cervia[1], Liangli Wang[1], Chun-Chi Chang[1], Mao Mao[1], and Fan Yuan[1]
[1]Duke University, Durham, NC

FRI-490
Increase in Electrotransfection Efficiency by Activation of Autophagy Machinery
Mao Mao[1], Chun-Chi Chang[1], Lisa Cervia[1], Jing Ji[1], Paloma Liton[1], and Fan Yuan[1]
[1]Duke University, Durham, NC

FRI-491
Mucus-Penetrating Non-Viral Gene Delivery Platform for Obstructive Lung Diseases
Namho Kim[1,2], Alessandra Livraghi-Butrico[3], Richard C. Boucher[3], Justin Hanes[1,2], and Jung Soo Suk[2]
[1]Johns Hopkins University, Baltimore, MD, [2]Johns Hopkins University School of Medicine, Baltimore, MD, [3]University of North Carolina at Chapel Hill, Chapel Hill, NC

FRI-492
Novel Gene Delivery via Cell-nanoparticle Hybridization
Remy C. Cooper[1], Leyuan Xu[1,2], and Hu Yang[1]
[1]Virginia Commonwealth University, Richmond, VA, [2]Yale University, New Haven, CT

FRI-493
Layer-by-layer Assembly of siRNA on SI-ATRP Shelled Gold Nanoparticles
Sol Lee[1], Hyesung Kim[1], Youngju Son[1], Wei Mao[1], Myunkoo Kang[1], Jiun Shin[1], and Hyuksang Yoo[1]
[1]Kangwon National University, Chuncheon-si, Korea, Republic of

FRI-494
Lipid nanoparticle-based mRNA delivery to the Brain
Venkatesh Deshpande[1], Kevin Kauffman[2], James Kaczmarek[2], Daniel Anderson[2], and Jay Sy[1]
[1]Rutgers University, Piscataway, NJ, [2]Massachusetts Institute of Technology, Cambridge, MA

Track: Drug Delivery & Intelligent Systems

Topics in Drug Delivery

FRI-495
Development of Carbon Monoxide-Releasing Poly(diol citrate) Polymer as a Potential Surface Modifier for Vascular Graft Applications
Darcy Lichlyter[1], Jenny Poon[1], and Antonio Webb[1]
[1]University of Florida, Gainesville, FL

FRI-496
Effect of Formulation Variables on Injectability, *In Vitro* Release and *In Vivo* Initial Burst of Injectable In Situ Forming Depot Systems
Dileep R. Janagam[1], Suryatheja Ananthula[1], Lizhu Wang[1], Timothy D. Mandrell[1], James R. Johnson[1], and Tao L. Lowe[1]
[1]University of Tennessee Health Science Center, Memphis, TN

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FRI-497
Contraceptive Hormone-loaded Electrospun Patches in Combination with Microneedles for Transdermal Drug Delivery
Mohammad Mofidfar[1] and Mark R. Prausnitz[1]
[1]School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, Atlanta, Georgia, 30332, USA., Atlanta, GA

FRI-498
Measurement of Sustainable Release of Miltefosine from Biodegradable Nanoparticles Using a New Colorimetric Detection Assay
Rebecca Byler[1,2], Diane McMahon-Pratt[2], and Tarek Fahmy[1]
[1]Yale School of Engineering and Applied Science, New Haven, CT, [2]Yale School of Public Health, New Haven, CT

FRI-499
Rapidly Separable Microneedle Patches for Sustained Release of Contraceptive Hormones
Wei Li[1], Richard Terry[1], and Mark Prausnitz[1]
[1]Georgia Institute of Technology, Atlanta, GA

Track: Drug Delivery & Intelligent Systems

Targeted or Responsive Delivery Systems

FRI-500
Epitope-functionalized Nanoparticles for Entrapment of Autism Auto-antibodies
Amir Bolandparvaz[1], Elizabeth Edmiston[2], Kenneth Alvarez[1], Judy Van De Water[1], and Jamal Lewis[1]
[1]UC Davis, Davis, CA, [2]M.I.N.D. (Medical Investigation of Neurodevelopmental Disorders) Institute, Davis, CA

FRI-501
Gelatin Nanoparticle Loading of Anti-Parasitic Compound for Treatment of Leishmaniasis
Carlos Serna[1], Alfredo Ornelas[1], Eva Iñiguez[1], Katja Michael[1], Rosa Maldonado[1], and Thomas Boland[1]
[1]The University of Texas at El Paso, El Paso, TX

FRI-502
Red Blood Cells for Glucose-Responsive Insulin Delivery
Chao Wang[1] and Zhen Gu[1]
[1]University of North Carolina at Chapel Hill, North Carolina State University, Raleigh, NC

FRI-503
IR820-Loaded PLGA Nanoparticles for Photothermal Therapy of Triple Negative Breast Cancer
Danielle Valcourt[1], Sarah Peden[1], and Emily Day[1]
[1]University of Delaware, Newark, DE

FRI-504
Folate Receptor-Mediated Targeting of Plasmon Resonant Liposomes
Daniom Tecle[1], Shellie Knights-Mitchell[1], and Marek Romanowski[1]
[1]University of Arizona, Tucson, AZ

FRI-505
Enzymatic-Responsive Nanoparticles as Drug Carriers to Treat Cancer
Duong Le[1,2], Hien Lam[1], Tram Vo[1], and Kytai Nguyen[1,2]
[1]University of Texas at Arlington, Arlington, TX, [2]Joint Biomedical Engineering Program between the University of Texas at Arlington and the University of Texas Southwestern Medical Center, Dallas, TX

FRI-506
Investigation of Particle Modulus for Vascular Targeted Drug Delivery *In Vitro* and *In Vivo*
Genesis Lopez-Cazares[1], Margaret Fish[1], Catherine Fromen[1], Timothy Scott[1], Reymond Adili[1], Michael Holinstat[1], and Omolola Eniola-Adefeso[1]
[1]University of Michigan, Ann Arbor, MI

FRI-507
NIR-Induced Spatiotemporally Controlled Gene Silencing in Cells
Guojun Chen[1], Ben Ma[1,2], and Shaoqin Gong[1]
[1]University of Wisconsin-Madison, Madison, WI, [2]Fourth Military Medical University, Xi'an, China, People's Republic of

FRI-508
Blood-Brain Barrier Disruption by Novel Cationic Polymers
Jamelle Simmons[1], Shu Liu[1], Kevin Edgar[1], and Yong Woo Lee[1]
[1]Virginia Tech, Blacksburg, VA

FRI-509
Pretargeting for Prolonged Retention of Mucus-Penetrating Particles at Mucosal Surfaces
Justin Huckaby[1], Christina Parker[1], Daniel Wadsworth[1], Jay Newby[1], and Sam Lai[1]
[1]University of North Carolina-Chapel Hill, Chapel Hill, NC

FRI-510
Redox Dual-Responsive Biodegradable Polymeric Micelles with High Drug Loading for Effective Anticancer Drug Delivery
Jye Yng Teo[1,2], Willy Chin[2], Xiyu Ke[2], Shujun Gao[2], Shaoqiong Liu[2], Wei Cheng[2], James Hedrick[2], and Yi Yan Yang[2]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Institute of Bioengineering and Nanotechnology, Singapore, Singapore, [3]IBM Almaden Research Center, San Jose, CA

FRI-511
MMP-Responsive Hydrogels for siRNA Delivery after Myocardial Infarction
Leo Wang[1], Jennifer Chung[1], Pavan Atluri[1], and Jason Burdick[1]
[1]University of Pennsylvania, Philadelphia, PA

FRI-512
Acoustic-transfection using High Frequency Ultrasound for Cell Manipulation
Sangpil Yoon[1], Pengzhi Wang[2], Yingxiao Wang[2], and K. Kirk Shung[1]
[1]University of Southern California, Los Angeles, CA, [2]University of California, San Diego, La Jolla, CA

FRI-513
Establishing an Animal Model Artificial Pancreas System to Study Blood Glucose Levels in Real-Time
Sarah Park[1], Ramin Balouchzadeh[1], Hoo Sang Ko[1], H Felix Lee[1], and Guim Kwon[1]
[1]Southern Illinois University Edwardsville, Edwardsville, IL

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-514
Selecting an Optimally Charged Cartilage-Targeting Delivery Carrier for Post-Traumatic Osteoarthritis
Yamini Krishnan[1], Holly A. Rees[2], Christina P. Rossitto[1], Han-Hwa Hung[1], Eliot H. Frank[1], Paula T. Hammond[1], David R. Liu[2], and Alan J. Grodzinsky[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Harvard University, Cambridge, MA

FRI-515
You Can Trigger and Monitor Drug Release for a Long Time
Yoonjee Park[1], Zhe Zhang[1], Madison Taylor[1], and Xingyu He[1]
[1]University of Cincinnati, Cincinnati, OH

Track: Drug Delivery & Intelligent Systems

Drug Delivery & Intelligent Systems–Other/Non-Specified

FRI-516
Surface Properties of Silica Nanoparticles Regulates Their Interactions with Cell Membrane Models
Ali Asghari Adib[1], Saeed Nazemidashtarjandi[1], Alexander Kelly[2], Addy Kruse[1], Katherine Cimatu[1], Allan David[2], and Amir Farnoud[1]
[1]Ohio University, Athens, OH, [2]Auburn University, Auburn, AL

FRI-517
Design of a Universal Microscope Incubator for Drug Screening of 3D Models of Engineered Myocardium
Marianne Kanellias[1], Rachel Connolly[1], Heather Stratica[1], Katrina Hansen[1], Megan Chrobak[1], Glenn Gaudette[1], John Sullivan[1], and George Pins[1]
[1]Worcester Polytechnic Institute, Worcester, MA

Track: Biomechanics

Human Performance/Sports Biomechanics

FRI-518
The Effect of Vision Compared To Additional Support on Stability after a Perturbation
Aisha Moore[1], Pouye Sedighian[1], Shadnaz Asgari[1], and Vennila Krishnan[1]
[1]California State University Long Beach, Long Beach, CA

FRI-519
Novel Compression Method to Measure Structural Stiffness Differences in Football Faceguards
Alex Bina[1], Steve Siclari[1], Gregory Batt[1], and John DesJardins[1]
[1]Clemson University, Clemson, SC

FRI-520
Timing of Major Pitching Motion Events in Youth Baseball Players In Relation to Elbow and Shoulder Moment
Andrew Oliver[1], Jacob Howenstein[1], Kristof Kipp[2], and Michelle Sabick[1]
[1]Saint Louis University, St. Louis, MO, [2]Marquette University, Milwaukee, WI

FRI-521
Effects of Visual Feedback Distortion on Gait Asymmetry Induced by Unilateral Load Perturbation
Carlos Tobar[1], Eva Martinez[1], and Seung-Jae Kim[1]
[1]California Baptist University, Riverside, CA

FRI-522
The Effects of Backpack Type on Kinematics of Lower Back and Activity of Abdominal Muscles during Walking and Jogging
Cazmon Suri[1], Iman Shojaei[1], and Babak Bazrgari[1]
[1]University of Kentucky, Lexington, KY

FRI-523
Parametric Analysis of Fatigue in Stationary Biking: A Computational Approach
Deepak Sathyanarayan[1], Austin Rivera[1], and Matthew Panzer[1]
[1]University of Virginia, Charlottesville, VA

FRI-524
Optimal Design and Control of a Rowing Exercise Machine
Farbod Rohani[1], Hanz Richter[1], and Antonie J. van den Bogert[1]
[1]Cleveland State University, Cleveland, OH

FRI-525
Entropy Analysis of Ankle Stability in Relation to Environmental Mechanics
Harrison Hanzlick[1] and Hyunglae Lee[1]
[1]Arizona State University, Tempe, AZ

FRI-526
Ramp Perturbation Tests are too Simple to Identify a Realistic Controller in Human Standing Balance
Huawei Wang[1] and Antonie van den Bogert[1]
[1]Cleveland State University, Cleveland, OH

FRI-527
Reflexive Behaviors of Trunk Muscles in Sudden Perturbations: The Effects of Age
Iman Shojaei[1] and Babak Bazrgari[1]
[1]University of Kentucky, Lexington, KY

FRI-528
Head Impacts in Soccer: Measurement and Characterization of Influencing Parameters
Josh Auger[1], Justin Markel[1], Dimitri Pekoski[1], Nicolas Leiva[2], Thomas Talavage[1], Larry Leverenz[1], and Eric Nauman[1]
[1]Purdue University, West Lafayette, IN, [2]Universidad de Los Andes, Bogota, Colombia

FRI-529
Changes In Head Impact Exposure Over Consecutive Seasons Among Individual Youth Football Players
Mireille Kelley[1,2], Jillian Urban[1,2], Meagan Rosenberg[1,2], Christopher Whitlow[2], Joseph Maldjian[2], and Joel Stitzel[1,2]
[1]Virginia Tech-Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC, [2]Wake Forest School of Medicine, Winston-Salem, NC, [3]University of Texas Southwestern Medical Center, Dallas, TX

POSTER SESSION–FRIDAY

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-531
Comparison of Gait Initiation Characteristics With And Without Additional Load
Pouye Sedighian[1], Aisha Moore[1], Vennila Krishnan[1], and Shadnaz Asgari[1]
[1]*California State University Long Beach, Long Beach, CA*

FRI-532
Comparison of Kinect and Optical Motion Capture System for Kinematic and Kinetic Gait Analysis Utilizing OpenSim
Ryosuke Akaguma[1], Masahiro Fujimoto[1], Takahiko Sato[1], and Akinori Nagano[1]
[1]*Ritsumeikan University, Shiga, Japan*

FRI-533
A Comprehensive Technique to Investigate Differences in Upper-extremity Movement During a Touch Screen Task within an Open and a Constrained Environment
Tanimu Deleon-Nwaha[1] and Donald R. Peterson[1,2]
[1]*University of Connecticut, Storrs, CT,* [2]*Texas A&M University, College Station, TX*

FRI-534
Head Impacts for Middle School Football Players Comparable to High School Players
Taylor Lee[1], Joshua Auger[1], Jacob Music[1], Roy Lycke[1], Thomas Talavage[1], Larry Leverenz[1], Sharlene Newman[2], and Eric Nauman[1]
[1]*Purdue University, West Lafayette, IN,* [2]*Indiana University, Bloomington, IN*

FRI-535
Quantification of Energetic Passivity of the Human Ankle in 2 Degrees-of-Freedom
Varun Nalam[1], Rylie Lodes[1], Dhruvil Shah[1], and Hyunglae Lee[1]
[1]*Arizona State University, Tempe, AZ*

Track: Biomechanics

Injury Biomechanics

FRI-536
Injuries Sustained to the Human Knee During Hyperextension with Applied External Rotation of the Femur
Addie Kicklighter[1], Lauren Reagin[1], and Ha Vo[1]
[1]*Mercer University, Macon, GA*

FRI-537
Relative Displacement of the Brain with Respect to the Skull During a Controlled Angular Speed Pulse
Allison Guettler[1], Andrew Kemper[1], John Bolte, IV[2], and Warren Hardy[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*The Ohio State University, Columbus, OH*

FRI-538
Assessing Brain Injury Criteria through Reconstructions of Head Impacts in Football
Bethany Rowson[1], Steven Rowson[1], and Stefan Duma[1]
[1]*Virginia Tech, Blacksburg, VA*

FRI-539
Finite Element Based Pelvic Injury Metric Creation and Validation in Lateral Impact for a Human Body Model
Caitlin Weaver[1,2,3], Alexander Baker[1,2], Matthew Davis[1,2], Anna Miller[4], and Joel Stitzel[1,2]
[1]*Virginia Tech-Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC,* [2]*Wake Forest School of Medicine, Winston-Salem, NC,* [3]*US Army Research Laboratory Soldier Protection Sciences Branch, Aberdeen Proving Ground, MD,* [4]*Washington University, St. Louis, MO*

FRI-540
Development of Human Rib Cortical Bone Material Model using Finite Element Analysis
Costin Untaroiu[1] and Keegan Yates[1]
[1]*Virginia Tech, Blacksburg, VA*

FRI-541
Skull Deflection Effects on Brain Tissue Response Using Finite Element Simulation
Derek Jones[1,2], Jillian Urban[1,2,3], Ashley Weaver[1,2], and Joel Stitzel[1,2]
[1]*Virginia-Tech Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC,* [2]*Wake Forest School of Medicine, Winston-Salem, NC,* [3]*Clinical and Translational Science Institute, Winston-Salem, NC*

FRI-542
Quantifying the Range of Injury Risk to the Head And Neck from Unmanned Aircraft Systems
Eamon Campolettano[1], Megan Bland[1], Ryan Gellner[1], Bethany Rowson[1], David Sproule[1], Abigail Tyson[1], Stefan Duma[1], and Steven Rowson[1]
[1]*Virginia Tech, Blacksburg, VA*

FRI-543
Injury Simulation of While Wearing High Heel Footwear
Harcharan Singh Ranu[1]
[1]*American Orthopadeic Biomechanics Research Institute, Atlanta, GA*

FRI-544
Effects of Anthropometric and Environmental Variables on Biomechanical Measures of Head Impact Exposure in Youth Football Players
Jillian Urban[1,2], Mireille Kelley[1], Mark Espeland[3], Logan Miller[1], Derek Jones[1], Elizabeth Davenport[4], Christopher Whitlow[1,2,5], Alexander Powers[4], Joseph Maldjian[4], and Joel Stitzel[1]
[1]*Virginia Tech – Wake Forest School of Biomedical Engineering and Sciences, Winston Salem, NC,* [2]*Wake Forest School of Medicine, Clinical and Translational Sciences Institute, Winston Salem, NC,* [3]*Wake Forest School of Medicine, Department of Biostatistical Sciences, Winston Salem, NC,* [4]*University of Texas Southwestern, Department of Radiology, Dallas, TX,* [5]*Wake Forest School of Medicine, Department of Radiology (Neuroradiology), Winston Salem, NC,* [6]*Wake Forest School of Medicine, Department of Neurosurgery, Winston Salem, NC*

FRI-545
Effects of Cervical Spine Ligament Sprain on Head and Neck Stability
Jodie Sheffels[1], Rosa Hamalainen[1], Calvin Kuo[1], and David Camarillo[1]
[1]*Stanford University, Stanford, CA*

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Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-546
Disease Related and Regional Differences in Properties of the Equine Temporomandibular Joint Disc
Jose Guerrero Cota[1], Boaz Arzi[1], and Derek Cissell[1]
[1]*School of Veterinary Medicine, University of California, Davis, Davis, CA*

FRI-547
Development of a Gottingen Miniature Pig Finite Element Model to Investigate Injury Scaling Techniques
Keegan Yates[1] and Costin Untaroiu[1]
[1]*Virginia Tech, Blacksburg, VA*

FRI-548
Comparative Analysis of Impact Attenuation Properties from Soccer Headgear
Kevin McIver[1], Goutham Sankaran[1], Justin Markel[1], Tom Talavage[1], Larry Leverenz[1], and Eric Nauman[1]
[1]*Purdue University, West Lafayette, IN*

FRI-549
Effect of Achilles Taping on Joint Contributions to Work and Power
Kristen Renner[1], Evan McConnell[1], Alex Black[1], Lewis Young[1], and Robin Queen[1]
[1]*Virginia Tech, Blacksburg, VA*

FRI-550
Biomechanics of Orbital Floor Fractures
Liying Zhang[1], Sagar Patel[1], Christopher Andrecovich[1], Michael Silverman[1], and Mahdi Shkoukani[1]
[1]*Wayne State University, Detroit, MI*

FRI-551
Hearing Damage Caused by Multiple Blast Exposure–A Study on Middle Ear and Cochlea Function Changes in Chinchillas
Rong Gan[1], Tao Chen[1], Kyle Smish[1], and Zachary Yokell[1]
[1]*University of Oklahoma, Norman, OK*

FRI-552
Are Humans More Accurate Than Sensors in Head Impact Severity Estimation?
Rosa Hamalainen[1], Jodie Sheffels[1], Calvin Kuo[1], Lyndia Wu[1], and David Camarillo[1]
[1]*Stanford University, Stanford, CA*

FRI-553
Effect of Tackling Form on Head Acceleration in Youth Football
Ryan Gellner[1], Eamon Campolettano[1], and Steven Rowson[1]
[1]*Virginia Tech, Blacksburg, VA*

FRI-554
Design of Wearable Protection System for a Fall Injury Reduction
Taekyeong Lee[1], Hunhee Kim[1], Youngho Lee[1], Jaemin Kim[1], Soonmoon Jung[1], Dongwook Yang[1], Jeongwoo Lee[1], Beomgeun Jo[1], Chanwoo Lee[1], and Junghwa Hong[1]
[1]*Korea University, Sejong, Korea, Republic of*

FRI-555
Biomechanical Investigation of Ankle Injuries Sustained from Foot Pronation and Supination in Subtalar Joint (STJ)-Closed Kinematics Chain Motions
Trung Le[1], Bich Nguyen[1], and Ha Vo[1]
[1]*Mercer University, Macon, GA*

FRI-556
Mechanisms of Serious-to-Fatal Injury in Rear-Struck Vehicle Occupants in the U.S.
Whitney Tatem[1] and H. Clay Gabler[1]
[1]*Virginia Tech, Blacksburg, VA*

FRI-557
A Modular Simplified Human Body Finite Element Model Can Reduce Run-Time Requirements for Lower Extremity Impact Biomechanics Studies
William Decker[1], Bharath Koya[2], Berkan Guleyupoglu[1], and F. Scott Gayzik[1]
[1]*Wake Forest University Center for Injury Biomechanics, Winston Salem, NC,* [2]*Wake Forest School of Medicine, Winston Salem, NC*

FRI-558
Comparing Injury Prediction Performance Between Supervised Machine Learning and Regression
Yunliang Cai[1], Wei Zhao[1], and Songbai Ji[1,2]
[1]*Worcester Polytechnic Institute, Worcester, MA,* [2]*Dartmouth College, Hanover, NH*

Track: Orthopedic and Rehabilitation Engineering

Articular Cartilage, Meniscus and Joints

FRI-559
A Whole Joint-In-Motion Culture System Reveals a Critical Role of Glucose in Regulating Articular Cartilage and Growth Plate Matrix Production
Carrie Hui Mingalone[1], Christopher Nehme[2], Kirsten Garvey[1], Rose Banks[1], Thomas James[2], William Messner[2], and Li Zeng[1]
[1]*Tufts University, Boston, MA,* [2]*Tufts University, Medford, MA*

FRI-560
Gold Nanoparticle-Homogenized Tissue-Hyaluronic Acid Conjugates for Limiting Progression of Osteoarthritis
Colten Snider[1], David Grant[1], and Sheila Grant[1]
[1]*University of Missouri, Columbia, MO*

FRI-561
Initial Screening of Pomegranate Punicalagin for use in Intraarticular Osteoarthritis Therapy
Mark Mosher[1,2], Steven Elder[1], John Clune[1], Hudson Chenault[1], and Paul Gloth[1]
[1]*Mississippi State University, Mississippi State, MS,* [2]*The Center for Advanced Vehicular Systems, Starkville, MS*

FRI-562
3D Printed Osteochondral Scaffold with Biomimetic Structure
Xuan Zhou[1], Margaret Nowicki[1], and Lijie Zhang[1]
[1]*The George Washington University, Washington, DC*

POSTER SESSION–FRIDAY

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Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

Track: Orthopedic and Rehabilitation Engineering

Bone

FRI-563
"Smart" Surgical Instruments: Surgical Skill Measurement Apparatus for Resident Motor Skills Training and Evaluation
Ashkan Pourkand[1], Rebecca Smith[2], Krishan Bhakta[3], Naghmeh Zamani[4], Deana Mercer[5], Christina Salas[5], and David Grow[4]
[1]University of Utah, SaltLake city, UT, [2]University of Minnesota, Minneapolis, MN, [3]Georgia Institute of Technology, Atlanta, GA, [4]New Mexico Tech, socorro, NM, [5]University of New Mexico, Albuqurque, NM

FRI-564
An Injectable, Bioactive Material for Osteoporotic Bone Regeneration
Simona Morochnik[1] and Guillermo Ameer[1]
[1]Northwestern University, Chicago, IL

Track: Device Technologies and Biomedical Robotics

Design and Control of Prostheses and Exoskeletons

FRI-565
Decoding User's Intention from Surface EEG Signals Using Machine Learning Algorithms
Alon Albalak[1], Guanghua Xu[2], Chaoyang Chen[1], Min Li[2], and John Cavanaugh[1]
[1]Wayne State University, Detroit, MI, [2]Xi'an Jiaotong University, Xi'an, China, People's Republic of

FRI-566
Performance Requirements of MEMS based Vestibular Prosthesis
Sina Askari[1], Mohammad H. Asadian[1], and Andrei M. Shkel[1]
[1]University of California Irvine, Irvine, CA

Track: Orthopedic and Rehabilitation Engineering, Biomechanics

Orthopedic and Rehabilitation Engineering: Implant and Prosthetic Biomechanics

FRI-568
Influence of Bone-implant Interface Condition on the Femoral Fracture after Cementless Total Hip Replacement: A Finite Element Study
Caleb Yenusah[1], Tonya Stone[1], Youssef Hammi[1], and R. Prabhu[1]
[1]Mississippi State University, Starkville, MS

FRI-569
Sustain Release of Oxidized Dextran And BMP-2 From the Surface of Implants to Prevent Bacterial Adhesion And Promote Bone Osseointegration
Guilherme Guimaraes[1], Andres Garcia[1], and Rupak Dua[1]
[1]Hampden-Sydney College, Hampden-Sydney, VA

FRI-570
A Clinical Gait Analysis of Below Knee Amputee Fit With Mercer Universal Prosthesis
Ha Vo[1], Lawrence Webb[1], Edward O'Brien[1], Richard Kunz[1], Trung Le[1], Ngoc Bich Nguyen[1], Alisha Arora[1], and Craig McMahan[1]
[1]Mercer University, Macon, GA

FRI-571
The Effect of Focal Offload Size Within a 3D Printed Orthotic Material on Pressure Distribution
Kyle Walker[1], Shannon Hall[2], Breanne Przestrzelski[2], Katelyn Ragland[2], Meredith Owen[2], Brian Kaluf[2], Timothy Pruett[2], Steven Hoeffner[2], and John DesJardins[2]
[1]Clemson University, Central, SC, [2]Clemson University, Clemson, SC, [3]Ability Prosthetics & Orthotics, Greenville, SC

FRI-572
Biomechanical Comparison of Augmented Glenoid Implant Designs: A Finite Element Analysis
Liying Zhang[1], Varun Pathak[1], James Whaley[1], and Vani Sabesan[1]
[1]Wayne State University, Detroit, MI

FRI-573
The Effect of Gel Liner Materials on Changes in Peak Pressures and Pressure Gradients
Meredith Owen[1], Kara Donovan[1], Kyle Walker[1], Shannon Hall[1], and John DesJardins[1]
[1]Clemson University, Clemson, SC

FRI-574
Controlling Degradation of a Magnesium Based Metal for Internal Fixation Applications
Michael Sealy[1], Yuebin Guo[2], Austin Baecher[2], Thomas Bailey[2], Devin Bonner[2], Ziye Liu[2], C Liu[2], and Dale Feldman[3]
[1]University of Nebraska-Lincoln, Lincoln, NE, [2]University of Alabama, Tuscaloosa, AL, [3]UAB, Birmingham, AL

FRI-575
Fatigue Analyses of Customized Knee Inserts for Total Knee Replacement
Narayana Kurapati[1], Erkan Bahce[2], Soondo Kweon[1], and H. Felix Lee[1]
[1]Southern Illinois University Edwardsville, Edwardsville, IL, [2]Inonu University, Malatya, Turkey

FRI-576
Adverse Effect of CoCrMo Wear Particles on Human Osteoblasts Cells
Poojitha VelloreJaysukumar[1], Divya Bijukumar[1], and Mathew Mathew[1]
[1]University of Illinois,College of Medicine at Rockford, Rockford, IL

Track: Orthopedic and Rehabilitation Engineering, Biomechanics

Orthopedic Biomechanics

FRI-577
The Pull-out Strength of Cortical Screw in Different Angle Configurations on Cadaveric Tibia Bone
Bich Nguyen[1], Trung Le[1], Ha Vo[1], and Lawrence Webb[2]
[1]Mercer University, Macon, GA, [2]Navicent Health, Macon, GA

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FRI-578
Morphometric, Mechanical, and Histological Characterization of the Ligaments of the Trapeziometacarpal Joint
Christina Salas[1], Lauren Long[1], Jodie Gomez[1], Mahmoud Reda Taha[1], and Deana Mercer[1]
[1]University of New Mexico, Albuquerque, NM

FRI-579
Lower Body Gait Kinematics in Mild-to-Moderate vs. Severe Osteogenesis Imperfecta in Southeastern Asia
Nikhil Kurapati[1,2,3], Rebecca Boerigter[1], Carlo Sumpaico[4], Joycie Abiera[4], Melanie Alcausin[4], Peter A. Smith[3], and Gerald Harris[1,2,3]
[1]Marquette University, Milwaukee, WI, [2]Medical College of Wisconsin, Milwaukee, WI, [3]Shriners Hospitals for Children-Chicago, Chicago, IL, [4]Philippine General Hospital, Manila, Philippines

FRI-580
Rib Plate With Angled Monocortical Screws Has Pull-Out Strength Equivalent to Bicortical Screw-Plate
Oluwajomiloju Olaode[1], Raymond Dunn[2], and Kristen Billiar[1]
[1]Worcester Polytechnic Institute, Worcester, MA, [2]University of Massachusetts Medical School, Worcester, MA

FRI-581
The Effect of Simulated Rotator Cuff Tear Size on Glenohumeral Joint Force and Muscle Compensation
Richard A. Arce[1] and Meghan E. Vidt[1]
[1]Arizona State University, Phoenix, AZ

FRI-582
Buckling Behavior of Spinal Anesthesia Needles
Tessa Hulburt[1], Jessica Booth[2], Peter Pan[2], and Philip Brown[1]
[1]Wake Forest School of Medicine-Virginia Polytechnic Institute, Winston Salem, NC, [2]Wake Forest Baptist Health, Winston Salem, NC

FRI-583
A Comparison Pullout Strength Between Locking Screw and Non-locking Screw: A Biomechanical Study of Fresh Frozen Cadaver
Trung Le[1], Bich Nguyen[1], Ha Vo[1], and Loc Lam[2]
[1]Mercer University, Macon, GA, [2]Philadelphia College of Osteopathic Medicine-Georgia Campus, Suwanee, GA

Track: Orthopedic and Rehabilitation Engineering, Biomechanics

Orthopedic: Mechanobiology and Mechanotransduction

FRI-584
Development of an In Vitro Bone-Tendon-Muscle Explant Culture Model
Brianne K. Connizzo[1], Hannah M. Zlotnick[1], John M. Drago[1], and Alan J. Grodzinsky[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

FRI-585
Long-Term Wear of Novel 3D-Printed Foot Orthoses
Breanne Przestrzelski[1], Katelyn Ragland[1], Shannon Hall[1], Kyle Walker[1], Tim Pruett[1], Steve Hoeffner[1], Brian Kaluf[2], Nicole Hooks[2], Dan Ballard[3], and John DesJardins[1]
[1]Clemson University, Clemson, SC, [2]Ability Prosthetics & Orthotics, Greenville, SC, [3]Upstate Pedorthics, Greenville, SC

FRI-586
Biomechanical Investigation of Ibuprofen Treatment of Murine Achilles Tendinopathy
Sabah Rezvani[1], Adam Bitterman[2], Jun Li[3], George Holmes[3], Johnny Lin[3], Simon Lee[3], Anna Plaas[3], and Vincent Wang[1]
[1]Virginia Tech, Blacksburg, VA, [2]Northwell Health, Huntington, NY, [3]Rush University, Chicago, IL

FRI-587
Medial Tibial Plateau Cartilage Compression during a Closed-Chain Flexion Task
Stephanie Wiltman[1], Elizabeth Bottorff[1], and April Chambers[1]
[1]University of Pittsburgh, Pittsburgh, PA

FRI-588
In vitro Models for the Guidance of Rehabilitation Regimens that Promote Cartilage Regeneration after Repair Surgery
Tomoya Iseki[1], Shinsuke Kihara[1], Hiroshi Sasaki[1], Shinichi Yoshiya[2], Freddie Fu[1], Rocky Tuan[1], and Riccardo Gottardi[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Hyogo College of Medicine, Nishinomiya City, Japan

Track: Stem Cell Engineering, Orthopedic and Rehabilitation Engineering

Musculoskeletal Stem Cell Engineering

FRI-589
NANOG Restores the Myogenic Differentiation Potential of Senescent Myoblasts.
Aref Shahini[1], Debanik Choudhury[1], Mohammadnabi Asmani[1], Ruogang Zhao[1], Pedro Lei[1], and Stelios Andreadis[1]
[1]University at Buffalo, Buffalo, NY

FRI-590
Muscle Satellite Cells from Non-Pathological Tissue Exhibit Stiffness-Dependent Behaviors Not Observed in Cells from Patients with Cerebral Palsy
Stephanie Yeager[1], Rebecca Scott[1,2], and Robert Akins[1]
[1]Nemours Alfred I duPont Hospital for Children, Wilmington, DE, [2]University of Delaware, Newark, DE

FRI-591
3D Bioprinted Cartilage Scaffold for Improved Human Bone Marrow Mesenchymal Stem Cell Differentiation
Wei Zhu[1], Haitao Cui[1], Benchaa Boualam [2], Fahed Masood[2], and Lijie Grace Zhang[1]
[1]The George Washington University, Washington, DC, [2]University of Maryland, College Park, MD

POSTER SESSION–FRIDAY

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

Track: Tissue Engineering, Orthopedic and Rehabilitation Engineering

Musculoskeletal Tissue Engineering

FRI-592
The Role of Bioreactor Oscillatory Mechanostimulation on an Engineered Tendon Tissue Construct
Chelsea Coffey[1], Mary Beth Hoover[1], and Vassilios Sikavitsas[1]
[1]University of Oklahoma, Norman, OK

FRI-593
Human iPSC-derived Neuronal Enhancement of Tissue Engineered Muscle Repair Technologies with a Novel Hydrogel for the Treatment of Volumetric Muscle Loss
Ellen Mintz[1], Kimberly Smith[1], Edward Ende[1], Victoria Toscano[1], KJ Lampe[1], MJ McConnell[1], and George J. Christ[1]
[1]University of Virginia, Charlottesville, VA

FRI-594
Improving BMP-Induced Osteogenesis Through DNA-Based Binding to Hyaluronic Acid Hydrogels
Fallon Fumasi[1], Purbasha Nandi[1], Nicholas Stephanopoulos[1], and Julianne Holloway[1]
[1]Arizona State University, Tempe, AZ

FRI-595
Engineering Functional Skeletal Muscle-On-A-Chip Towards Modeling Neuromuscular Junction Degeneration
Jeffrey W. Santoso[1], Gio C. Suh[1], Shaoyu Lin[2], Nethika R. Ariyasinghe[1], Justin K. Ichida[2], and Megan L. McCain[1,2]
[1]Laboratory for Living Systems Engineering, Department of Biomedical Engineering, USC Viterbi School of Engineering, University of Southern California, Los Angeles, CA, [2]Department of Stem Cell Biology and Regenerative Medicine, Keck School of Medicine of USC, University of Southern California, Los Angeles, CA

FRI-596
Three-dimensional Graphene Scaffold for Musculoskeletal Tissue Engineering
Katie M. Yocham[1], Crystal Scott[1], Kiyo Fujimoto[1], Emily Tanasse[1], Julia T. Oxford[1], Trevor J. Lujan[1], and David Estrada[1]
[1]Boise State University, Boise, ID

FRI-597
Oxygen-releasing Microsphere Scaffolds for Bone Tissue Engineering
Leila Daneshmandi[1,2], Yusuf Khan[1,2], and Cato Laurencin[1,2]
[1]University of Connecticut, Storrs, CT, [2]Institute for Regenerative Engineering, Farmington, CT

FRI-598
Differences Between Healthy and Degenerated Intervertebral Disc Cells Metabolic Response to Bone Morphogenetic Proteins' Influence
Liudmila Bardonova[1,2,3], Morgan Giers[2], Evgenii Belykh[1,2,3,4], Nicholas Theodore[2], Vadim Byvaltsev[1,3], and Mark C. Preul[2]
[1]Irkutsk State Medical University, Irkutsk, Russian Federation, [2]Barrow Neurological Institute, Phoenix, AZ, [3]Irkutsk Scientific Center of Surgery and Traumatology, Irkutsk, Russian Federation, [4]Arizona State University, Tempe, AZ

FRI-599
Apoptotic Intervertebral Disc Cells' Affect on the Metabolism of Transplanted Cells
Morgan B Giers[1], Liudmila Bardinova[1,2,3], Kyle Eyster[4], Eric Woolf[1], Adrienne Scheck[1], Vadim Byvaltsev[2,3], Nicholas Theodore[5], and Mark Preul[1]
[1]Barrow Neurological Institute, St. Joseph's Hospital and Medical Center, Phoenix, AZ, [2]Irkutsk Scientific Center of Surgery and Traumatology, Irkutsk, Russian Federation, [3]Irkutsk State Medical University, Irkutsk, Russian Federation, [4]Arizona State University, Tempe, AZ, [5]Johns Hopkins University, Baltimore, MD

FRI-600
Evaluation of GLP-1 Receptor Agonist Exendin-4 on Tendon Regeneration
Sama Abdulmalik[1,2], Daisy Ramos[1,3], Swetha Rudraiah[1,4], Augustus D. Mazzocca[1], and Sangamesh Kumbar[1,2,3]
[1]University of Connecticut Health Center, Farmington, CT, [2]University of Connecticut, Storrs, CT, [3]Materials Science and Engineering, Storrs, CT, [4]University of St. Joseph, Hartford, CT

FRI-601
3D Printed Scaffolds for Vascularized Bone Tissue Engineering
Adhithi Kanthan[1] and Joseph Freeman[1]
[1]Rutgers University, Piscataway, NJ

FRI-602
Modeling Ultrasound in Cartilage Tissue Engineering: From Cellular to Macroscale
Anu Subramanian[1], April Miller[1], Neety Sahu[1], and Hendrik Viljoen[1]
[1]University of Nebraska, Lincoln, NE

FRI-603
The *In Vitro* Effects of Ascorbic Acid and Calcitriol on Stem Cell Differentiation on Silk
Joseph Pearson[1], Paul Dowell[1], Kayla Sanchez[1], Joo Ong[1], and Teja Guda[1]
[1]University of Texas at San Antonio, San Antonio, TX

Track: Orthopedic and Rehabilitation Engineering

Orthopedic and Rehabilitation Engineering–Other/Non-Specified

FRI-604
Characterization of Antimicrobial Susceptibility of Bacterial Biofilms on Tissues
Vajra Badha[1], Rex Moore[1], Alex McLaren[2,3], Brent Vernon[1,2], and Derek Overstreet[1,2]
[1]School of Biological and Health Systems Engineering, Arizona State University, Tempe, AZ, [2]Sonoran Biosciences, Scottsdale, AZ, [3]University of Arizona, College of Medicine, Phoenix, AZ

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

Track: Orthopedic and Rehabilitation Engineering, Neural Engineering

Rehabilitation Engineering: Implantable Devices

FRI-607
Stable Myoelectric Signal Recordings Via Permanently Implanted Intramuscular Electrodes For Enhanced Prosthetic Control
Hendrik Dewald[1,2], Matthew Williams[1,2,3], Joris Lambrecht[1,2], and Robert Kirsch[1,2,3]
[1]Case Western Reserve University, Cleveland, OH, [2]Cleveland FES Center, Cleveland, OH, [3]Louis Stokes Cleveland VA Medical Center, Cleveland, OH

Track: Orthopedic and Rehabilitation Engineering, Neural Engineering

Rehabilitation: Blast Injury and Spinal Cord Injury

FRI-608
Assessment of Cerebellar Injury in Rats Using Evoked Potentials and a Behavioral Task
Ahmet Asan[1], Gokhan Ordek[1], Esma Cetinkaya[1], Venkata Kakulavarapu[1], Maciej Skotak[1], Namas Chandra[1], and Mesut Sahin[1]
[1]New Jersey Institute of Technology, Newark, NJ

FRI-609
Dynamic Synaptic Weights of Hodgkin Huxley Model
Amadeo Candido[1], Deborah Won[1], and Ismael Perez[2]
[1]California State University Los Angeles, Los Angeles, CA, [2]Duke University, Durham, NC

FRI-610
A Hybrid Computational Model for Optimizing NMES Of Peripheral Nerve Fibers: Electrode Tip Radius Variation
Patrick Arguello[1] and Deborah Won[1]
[1]California State University, Los Angeles, Los Angeles, CA

Track: Neural Engineering, Biomechanics

Traumatic Brain Injury Biomechanics

FRI-611
Spatial and Temporal Deformation Patterns of the Brain under Blunt and Blast Trauma
Abdus Ali[1], Namas Chandra[1], and Bryan Pfister[1]
[1]New Jersey Institute of Technology, Newark, NJ

FRI-612
Characterization of a Combined Model of Blast and Blunt Injury
Aswati Aravind[1], Mathew Long[1], Rama Kekulavarapu[1], Namas Chandra[1], and Bryan Pfister[1]
[1]New Jersey Institute of Technology, Newark, NJ

FRI-613
Validation of an *In Vitro* TBI Model for Blood Brain Barrier Disruption
Edidiong Inyang[1], Vinay Abhyankar[2], and Michael Cho[1]
[1]University of Texas at Arlington, Arlington, TX, [2]University of Texas at Arlington Research institute, Forth Worth, TX

FRI-614
Therapeutic Hypothermia Effects on Caspase-3 and Calpastatin Expression after Injury in a 3D in vitro TBI Model
Mark Scimone[1], Paul Hopkins[1], Harry Cramer[1], Jonathan Estrada[1], and Christian Franck[1]
[1]Brown University, Providence, RI

FRI-615
Monitoring HDAC Class IIa Activity In The Brain After Traumatic Brain Injury Using Noninvasive PET Imaging With 18F-TFAHA
Swatabdi Kamal[1]
[1]Wayne State University, Detroit, MI

Track: Neural Engineering

Spinal Cord Tissue Engineering & Repair

FRI-616
Derivation of V0 Interneurons from Mouse Embryonic Stem Cells
Jennifer Pardieck[1,2] and Shelly Sakiyama-Elbert[2]
[1]Washington University in St. Louis, St. Louis, MO, [2]University of Texas at Austin, Austin, TX

FRI-617
Mapping Applied DC Electric Fields in the Intact and Injured Spinal Cord via Computational Modeling
Kavya Cherukuri[1] and Jianming Li[1]
[1]Purdue University, West Lafayette, IN

FRI-618
GAG Mimetic Scaffolds Containing Aligned Fibers for Spinal Cord Repair Strategies
Sharareh Hashemi[1], Roseline Dominic Menezes[1], and Treena Livingston Arinzeh[1]
[1]New Jersey Institute of Technology, Newark, NJ

Track: Neural Engineering

Repair and Regeneration of the Injured Brain

FRI-619
Utilizing Phage Display to Target the Neural Injury Landscape
Amanda Witten[1], Jonathan Lifshitz[2], and Sarah Stabenfeldt[3]
[1]Arizona State University, Phoenix, AZ, [2]BARROW Neurological Institute, Phoenix, AZ, [3]Arizona State University, Tempe, AZ

FRI-620
Phage Display as a Biomarker Discovery Tool for Brain Injury
Briana Martinez[1], Gergey Mousa[1], and Sarah Stabenfeldt[1]
[1]Arizona State University, Tempe, AZ

FRI-621
Use of a Hyaluronan and Methylcellulose Hydrogel to Deliver Human Cortically-Specified Neural Cells to the Stroke-Injured Brain
Samantha Payne[1], Balazs Varga[2], Cindi Morshead[1], Andras Nagy[3], and Molly Shoichet[1]
[1]University of Toronto, Toronto, ON, Canada, [2]Welcome Trust-Medical Research Council Stem Cell Institute, Cambridge, United Kingdom, [3]Lunenfeld-Tanenbaum Research Institute, Toronto, ON, Canada

POSTER SESSION–FRIDAY

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

Track: Orthopedic and Rehabilitation Engineering

Spine and Intervertebral Disc

FRI-623
Reliability of Structural Measurements of the Human Intervertebral Discs Using Open-Upright MRI
Christian Weber[1] and Simon Tang[1]
[1]*Washington University in St. Louis, St. Louis, MO*

FRI-624
Effects of Facet Joint Degeneration on Stress Alteration in Cervical Spine C5-C6: A Finite Element Analysis
Huihao Wang[1,2,3], Kuan Wang[1,2], Zhen Deng[1,2], Hongsheng Zhan[1,2], and Yi-Xian Qin[3]
[1]*Shuguang Hospital Affiliated to Shanghai University of TCM, Shanghai, China, People's Republic of,* [2]*Shanghai Academy of TCM, Shanghai, China, People's Republic of,* [3]*Stony Brook University, Stony Brook, NY*

FRI-625
Epigenome Targeting Gene Therapies for Disc Degeneration
Niloofar Farhang[1], Martin Jensen[1], Brandon Lawrence[1], Hamid Ghandehari[1], and Robby Bowles[1]
[1]*University of Utah, SLC, UT*

FRI-626
Hypertrophic Differentiation of Human Cartilage Endplate Cells Promotes Catabolism and Expression of Pain Predictors in Discogenic Back Pain
Taylor Yeater[1], Katherine Lakstins[1], Safdar Khan[1], William Marras[1], and Devina Purmessur[1]
[1]*The Ohio State University, Columbus, OH*

FRI-627
Durability of Instrument Drivers Made From Machined and 3-D Printed 17-4 Stainless Steel
Zachary Dooley[1] and Corey Gladieux[1]
[1]*SeaSpine Inc., Carlsbad, CA*

Track: Biomechanics, Orthopedic and Rehabilitation Engineering

Biomechanics of Rehabilitation/Injury

FRI-628
A Study on Fall Detection Algorithm in Non-ADL Situation
Jeongwoo Lee[1], Taekyeong Lee[1], Hunhee Kim[1], Youngho Lee[1], Jaemin Kim[1], Soonmoon Jung[1], Dongwook Yang[1], Beomgeun Jo[1], Chanwoo Lee[1], and Junghwa Hong[1]
[1]*Korea University, Sejong, Korea, Republic of*

FRI-629
Modeling of Tendon Transfer Surgeries to Revert Ulnar Claw
Jessica Abreu[1] and Luciano Menegaldo[2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Federal University of Rio de Janeiro, Rio de Janeiro, Brazil*

FRI-630
Inverse Dynamic Analysis of Knee Contact Loads for ACL Reconstruction Patients During Gait and Cycling
Katherine Mavrommati[1], Megan Pottinger[1], Otto Schueckler[2], Scott Hazelwood[1], and Stephen Klisch[1]
[1]*California Polytechnic State University, San Luis Obispo, CA,* [2]*Central Coast Orthopedic Medical Group, San Luis Obispo, CA*

FRI-631
Automatically Detecting Destabilizing Wheelchair Conditions and Applying Electrical Stimulation to Maintain Seated Posture
Kiley Armstrong[1,2], Musa Audu[1,2], and Ronald Triolo[1,2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Louis Stokes Cleveland VA Medical Center, Cleveland, OH*

FRI-632
Touch Screen Application in a Stroke Rehabilitation Setting
Kostyantyn Shcherbina[1], Erin Schulte[1], Omar Sangid[1], Zepher Begnell[1], Wilsaan Joiner[1], and Michelle Harris-Love[1]
[1]*George Mason University, Fairfax, VA*

FRI-633
Are Ankle-Foot-Orthoses (AFOs) Contributing to Falls?
Masood Nevisipour[1] and Claire Honeycutt[1]
[1]*Arizona State University, Tempe, AZ*

FRI-634
The Impact of Asymmetrical Loading Throughout Gait
Matthew Daley[1], Kristen Currier[1], Courtney Mason[1], Troy Ramos[1], and Gretchen Roman[1]
[1]*Arizona State University, Tempe, AZ*

FRI-635
Self-paced Walking on Treadmill Induces Higher Gait Adaptive Capacity in Healthy Individuals than that when Walking at Constant Speed
Rahul Soangra[1], Seong Moon[2], and Thurmon Lockhart[2]
[1]*Chapman University, Tempe, AZ,* [2]*Arizona State University, Tempe, AZ*

FRI-636
Effects of Military Rucksacks on Dynamic Stability
Seong Hyun Moon[1], Rahul Soangra[1], Chris Frames[1], Victoria Smith[1], Saba Rezvanian[1], Markey Olson[1], and Thurmon Lockhart[1]
[1]*Arizona State University, Tempe, AZ*

FRI-637
Effect of Therapeutic Ultrasound on Postural Control and Fibularis Longus Corticospinal Excitabilities in Population with Chronic Ankle Instability
Takuya Suzuki[1], Masahumi Terada[1], Daiki Taniyama[1], Kohei Kawakatsu[1], and Akinori Nagano[1]
[1]*Ritsumeikan University, Shiga, Japan*

FRI-638
Analysis of Upper Limb Motor Loss Effects on Daily Living Activities
Tyler Wieczorek[1], Stephanie Carey[1], and Norali Pernalete[2]
[1]*University of South Florida, Tampa, FL,* [2]*California State Polytechnic University Pomona, Pomona, CA*

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-639
Assessing Dynamic Stability and Motor Adaptation in Unanticipated Locomotor Transitions Using an Inverted Pendulum Model of Human Walking
Victoria Barrera[1], Nathaniel Pickle[1], and Nicholas Fey[1,2]
[1]*The University of Texas at Dallas, Richardson, TX,* [2]*The University of Texas Southwestern Medical Center, Dallas, TX*

Track: Biomechanics, Neural Engineering

Brain Biomechanics

FRI-642
Vibration of Skull and Cerebrospinal Fluid (CSF) Pressure in Noninvasive Intracranial Pressure Monitoring
Ashkan Eslaminejad[1], Mohammad Hosseini Farid[1], Hesam Sarvghad Moghadam[2], Mariusz Ziejewski[1], and Ghodrat Karami[1]
[1]*North Dakota State University, Fargo, ND,* [2]*Harvey Mudd College, Claremont, CA*

FRI-643
Development of *In Vitro* Platform to Investigate the Brain Wound Formation Attributed by BMI
Eun Young Park[1], Eunmin Ko[1], and Jennifer H. Shin[1]
[1]*Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of*

FRI-644
Attenuation Properties of Guardian Caps on Riddell Speed Football Helmets
Goutham Sankaran[1], Kevin Mciver[1], Eric Nauman[1], Tom Talavage[1], and Larry Leverenz[1]
[1]*Purdue University, West Lafayette, IN*

FRI-645
The Effect of Hydrostatic Pressure on Neuronal Cell Morphology *In Vitro*
Kallie Etten[1] and Jiro Nagatomi[1]
[1]*Clemson University, Clemson, SC*

FRI-646
A Biomechanical, Histological and Computational Modeling Study of Brain Response to Free-Field Blast
Liying Zhang[1], John Cavanaugh[1], Srinivasu Kallakuri[1], Ke Feng[1], Tushar Arora[1], and Albert King[1]
[1]*Wayne State University, Detroit, MI*

FRI-647
Volumetric White Matter Changes due to Accumulated Subconcussive Impacts In Football and a Traumatic Car Accident
Mackenzie Tweardy[1], Ikbeom Jang[1], Eric Nauman[1], Tom Talavage[1], and Larry Leverenz[1]
[1]*Purdue University, West Lafayette, IN*

FRI-648
The Effect of Dyskinesia on Postural Stability- A Pilot Study
Markey Olson[1,2], Victoria Smith[1,2], Christopher Frames[1,2], Thurmon Lockhart[1], and Abraham Lieberman[2]
[1]*Arizona State University, Tempe, AZ,* [2]*Barrow Neurological Institute, Phoenix, AZ*

FRI-649
An Examination of Brain Injury by Golf Ball Impacts
Mohammad Hosseini Farid[1], Ashkan Eslaminejad[1], Mohammadreza Ramzanpour[1], Mariusz Ziejewski[1], and Ghodrat Karami[1]
[1]*North Dakota State University, Fargo, ND*

Track: Biomedical Engineering Education (BME)

Dual & Pluri-Institution Programs

FRI-650
Leveraging on North-South Collaboration to Develop Biomedical Engineering Education and Practice in Nigeria
Akinwale Coker[1], Chucks Diji[1], Sunday Adesogan[1], Abel Olorunnisola[2], David Gatcell[3], Matthew Glucksberg[3], and Robert Murphy[3]
[1]*University of Ibadan, Chicago, IL,* [2]*Northwestern Center for Global Health, Chicago, IL,* [3]*Northwestern University, Chicago, IL*

FRI-651
STEM Activities for Early Scouting
Diana Gaitan-Leon[1] and Mariana Tafur-Arciniegas[1]
[1]*University of Los Andes, Bogota, Colombia*

FRI-652
Immersing Biomedical Engineering Graduate Instructors into High School STEM Curriculum: The IBBME Discovery Program at the University of Toronto
Locke Davenport Huyer[1], Genevieve Conant[1], Cindy V. Bui[1], Sherif Ramadan[1], Ben G. Kinsella[1], Andrea Vegh[1], Andrew Effat[1], Janice Wong[1], Neal Callaghan[1], Brittany Lauton[1], Andrey I. Shukalyuk[1], and Dawn M. Kilkenny[1]
[1]*University of Toronto, Toronto, ON, Canada*

Track: Biomedical Engineering Education (BME), Undergraduate Research, Design & Leadership

Design and Curriculum

FRI-655
Industrial Design of Medical Devices in a Master of Engineering Project Course
Alan Eberhardt[1] and Shea Tillman[2]
[1]*University of Alabama at Birmingham, Birmingham, AL,* [2]*Auburn University, Auburn, AL*

FRI-656
A Collaborative Approach to Enhancing Undergraduate and Graduate Curriculum by Engaging in New Content Building and Utilizing Research and Outreach Resources at the University of Toronto
Andrey Shukalyuk[1]
[1]*University of Toronto, Toronto, ON, Canada*

FRI-657
Using Course Design to Achieve Gender Equity in an Undergraduate STEM Course
Caitlin Hanlon[1], Eileen Haase[2], and Harry Goldberg[1]
[1]*Johns Hopkins University School of Medicine, Baltimore, MD,* [2]*Johns Hopkins University, Baltimore, MD*

POSTER SESSION–FRIDAY

Friday, October 13 | 9:30 am–5:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:45 pm–3:30 pm

FRI-658
Development of a Two-week Active-learning Ultrasound Module for a General Bioimaging Course
Christopher Dillon[1], Allison Payne[1], and Douglas Christensen[1]
[1]University of Utah, Salt Lake City, UT

FRI-659
Bringing the Clinic to the Classroom: An Alternative to Clinical Immersion
Conrad Zapanta[1], Howard Edington[2], Philip Empey[3], David Whitcomb[3], and Alan Rosenbloom[1]
[1]Carnegie Mellon University, Pitttsburgh, PA, [2]Allegheny Health Network, Pittsburgh, PA, [3]University of Pittsburgh, Pittsburgh, PA

FRI-660
Enhancing Professional Development in Research-Intensive Summer Programs
David Shreiber[1] and Evelyn Erenrich[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ

FRI-661
Practicing Design and Prototyping in Biomedical Engineering Programs
Eric Meyer[1] and Mansoor Nasir[1]
[1]Lawrence Technological University, Southfield, MI

FRI-662
An Integrated Approach to Teaching an Interdisciplinary Biomedical Device Engineering Course
Erkin Seker[1]
[1]University of California, Davis, Davis, CA

FRI-663
Are We on the Right Track with Tracks?
Jennifer Amos[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

FRI-664
Introducing Bioengineering Approaches through Grand Challenges
Karin Jensen[1], Marina Marjanovic[1], and Marcia Pool[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

FRI-665
New Project-based, Self-learning Module at Sophomore Level to Jump-start Computer Aided Design (CAD) Skill Development in Biomedical Engineering Education
Rucha Joshi[1], Andrew Brightman[1], Asem Aboelzahab[1], Melanie Venderley [1], Divya Tankasala[1], Matthew Thompson[1], and Shuo Han[1]
[1]Purdue University, West Lafayette, IN

FRI-666
A Redesigned Two Term Bioengineering Capstone Experience at Union College Incorporating Needs Finding from a Clinical Immersion Program
Shane Cotter[1], Jennifer Curray[1], and Sudhir Khetan[1]
[1]Union College, Schenectady, NY

Track: Biomedical Engineering Education (BME), Undergraduate Research, Design & Leadership

Industry Preparation

FRI-667
A Convergent Collaborative Learning Model to Enhance Students' Learning Experience In Biomedical Engineering Course
Kannathal Natarajan[1]
[1]NgeeAnn Polytechnic, Singapore, Singapore

FRI-668
The Future of BME Design and Undergraduate Research in an Academic Biomanufacturing Lab
Marc Moore[1]
[1]University of Oklahoma, Norman, OK

FRI-669
Person-to-person Variability in mMacrophage Protease Dynamics
Ken Brandon[1,2], Andrew Shockey[3], and Manu Platt[3]
[1]University of Alabama, Huntsville, Huntsville, AL, [2]Oakwood University, Huntsville, AL, [3]Georgia Institute of Technology College of Eng, Atlanta, GA

Track: Biomedical Imaging and Optics

Functional Neuroimaging

FRI-670
Functional Neuroimaging via Optical Coherence Angiography
Ramin Pashaie[1]
[1]University of Wisconsin-Milwaukee, Milwaukee, WI

Saturday, October 14 | 8:00 am–9:30 am | Platform Session 1

SATURDAY'S SCHEDULE HIGHLIGHTS

PLATFORM SESSIONS-SAT-1
8:00 am–9:30 am — Convention Center
See pages 221-229

Special Session
8:00 am–9:30 am — Room 121ABC
BMES-NSF Special Session on Graduate Research Fellowships Program

Exhibit Hall Open
9:30 am–5:00 pm — 300 Level Exhibition Hall

Poster Session
9:30 am–1:00 pm — 300 Level Exhibition Hall

Poster Viewing with Authors & Refreshment Break
9:30 am–10:30 am — 300 Level Exhibition Hall

Plenary Session
10:30 am–11:45 am — North Ballroom BCD

Rita Schaffer Young Investigator Lecture
Craig Goergen, PhD
Small Animal Cardiovascular Imaging for Engineers

PLATFORM SESSIONS-SAT-2
1:30 pm–3:00 pm — Convention Center
See pages 230-238

PLATFORM SESSIONS-SAT-3
3:15 pm–4:45 pm — Convention Center
See pages 238-244

OP-Sat-1-1 — Room 224A

Track: Biomaterials

Biomaterials Scaffolds II

Chairs: Antonio Webb, Ashley Brown

8:00 am
Biodegradable Conductive Elastomers with Improved Conductive Stability
Cancan Xu[1,2], Yihui Huang[1,2], Gerardo Yepez[1], Zi Wei[3], Fuqiang Liu[3], Alejandro Bugarin[1], Liping Tang[1,2], and Yi Hong[1,2]
[1]University of Texas at Arlington, Arlington, TX, [2]University of Texas Southwestern Medical Center at Dallas, Dallas, TX, [3]University of Massachusetts Lowell, Lowell, MA

8:15 am
Osteogenic Differentiation of Mesenchymal Stem Cells on Zinc Oxide Composite Scaffolds
Ateka Khader[1] and Treena Livingston Arinzeh[1]
[1]New Jersey Institute of Technology, Newark, NJ

8:30 am
Addition of poly-(L-lactic acid)-co-poly (pentadecalactone) to poly-L-lactic Acid Fibers Increases Neurite Outgrowth of Dorsal Root Ganglia *In Vitro*
Alexis Ziemba[1], Keith Lane[1], Andrew Mason[1], Nacho Martinez[1], Ryan Sexton[1], Anthony D'Amato[1], Filbert Totsingan[1], Hubert Casajus[1], Richard Gross[1], David Corr[1], and Ryan Gilbert[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

8:45 am
Electrospun Poly(N-isopropyl acrylamide)/ Poly(caprolactone) Fibers to Generate Anisotropic Cell Sheets
Alicia Allen[1], Elissa Barone[1], Cody Crosby[1], Laura Suggs[1], and Janet Zoldan[1]
[1]University of Texas at Austin, Austin, TX

9:00 am
Vascular Scaffolds with Enhanced Antioxidant Activity Inhibit Graft Calcification
Bin Jiang[1], Rachel Suen[1], Jiao-Jing Wang[2], Zheng Zhang[2], Jason Wertheim[2], and Guillermo Ameer[1]
[1]Northwestern University, Evanston, IL, [2]Northwestern University, Chicago, IL

9:15 am
Mechanical Characterization of Drawn Electrospun Polyacrylonitrile (PAN) Carbon Fiber Precursor
David Brennan[1] and Vincent Beachley[1]
[1]Rowan University, Glassboro, NJ

***Biomaterials Track sponsored by:**

ACS Biomaterials SCIENCE & ENGINEERING

Saturday, October 14 | 8:00 am–9:30 am | Platform Session 1

OP-Sat-1-2 — Room 224B

Track: Biomaterials

Drug Delivering Biomaterials IV

Chairs: Benoit Danielle, Yuguo Lei

8:00 am
Reducing Implant Precipitation Rate for Deeper Vascular Occlusion
Danielle Gilbert[1], Selva Jeganathan[1], Sidhartha Tavri[2], and Agata Exner[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*University Hospitals, Cleveland, OH*

8:15 am
IgA and IgM Protein Primarily Drive Plasma Corona-induced Adhesion Reduction of PLGA Nanoparticles in Human Blood Flow
Daniel Sobczynski[1] and Omolola Eniola-Adefeso[1]
[1]*University of Michigan, Ann Arbor, MI*

8:30 am
Bioactive Silica-based Nanospheres With Long-term Antibacterial Effects for Endodontic Sealing
Xiaohua Liu[1] and Xiaogang Cheng[1]
[1]*Texas A&M University College of Dentistry, Dallas, TX*

8:45 am
Efficacy of Genipin Eluting Coils via *In Vitro* Aneurysm Models
Tiffaney Hsia[1], Heather Bowman[1], Xuanyu Min[1], and Christopher Bettinger[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

9:00 am
Combating *Candida albicans*: Aspartic Protease-Triggered Hydrogels for Drug Delivery
Noel Vera-Gonzalez[1] and Anita Shukla[1]
[1]*Brown University, Providence, RI*

***Biomaterials Track sponsored by:**

ACS Biomaterials SCIENCE & ENGINEERING

OP-Sat-1-3 — Room 229A

Track: Biomechanics, Biomedical Imaging and Optics

Imaging Techniques in Biomechanics

Chairs: Giuliano Scarcelli, Junjie Yao

8:00 am
Nanonet Force Microscopy: Measuring Forces in Anisotropic Single Cell Migration
Abinash Padhi[1] and Amrinder Nain[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

8:15 am
Determining 3D Displacement Fields In Cartilage Using Two-Photon Microscopy
Mostafa Motavalli[1], Jay Myers[1], Alex Huang[1], Jean Welter[1], and Joseph Mansour[1]
[1]*Case Western Reserve University, Cleveland, OH*

8:30 am
Quantification of Sliding Induced Transport in Articular Cartilage Using FRAP
Brian Graham[1], Axel Moore[1], David Burris[1], and Christopher Price[1]
[1]*University of Delaware, Newark, DE*

8:45 am
Using Brillouin Microscopy to Quantify the Effectiveness of Accelerated Corneal Collagen Cross-Linking
Joshua Webb[1] and Giuliano Scarcelli[1]
[1]*University of Maryland, College Park, MD*

9:00 am
Full-Volume Strain Mapping and Mechanical Characterization of Anterior Cruciate Ligament Bundles
Callan Luetkemeyer[1], Luyao Cai[2], Corey Neu[2,3], and Ellen Arruda[1]
[1]*University of Michigan, Ann Arbor, MI,* [2]*Purdue University, West Lafayette, IN,* [3]*University of Colorado Boulder, Boulder, CO*

9:15 am
Image Processing Framework Utilizing OCT and MicroCT to Characterize the 3D Deformed *In Vivo* Stent Geometry
Mark Elliott[1], Dan Kim[2], David Molony[2], Liam Morris[3], Sarang Joshi[1], and Lucas Timmins[1]
[1]*University of Utah, Salt Lake City, UT,* [2]*Emory University School of Medicine, Atlanta, GA,* [3]*Galway Mayo Institute of Technology, Galway, Ireland*

OP-Sat-1-4 — Room 229B

Tracks: Biomechanics, Orthopedic and Rehabilitation Engineering

Rehabilitation Biomechanics

Chair: Ashley Weaver

8:00 am
Sex-Specific Differences of Temporal Gait Patterns in Ankle Osteoarthritis Patients
Cherice Hughes-Oliver[1], Divya Srinivasan[1], and Robin Queen[1]
[1]*Virginia Tech, Blacksburg, VA*

8:15 am
Passive Elastic Finger Joint Torques Change Minimally in Moderately Impaired Individuals with Chronic Hemiparetic Stroke
Benjamin Binder-Markey[1,2], Julius PA Dewald[1], and Wendy Murray[1,2,3]
[1]*Northwestern University, Chicago, IL,* [2]*Shirley Ryan Ability Lab, Chicago, IL,* [3]*Edward Hines, Jr. VA Hospital, Hines, IL*

Saturday, October 14 | 8:00 am–9:30 am | Platform Session 1

8:30 am
Compensation in the Forelimb After Body Weight Supported Treadmill Training in Spinal Cord Injury Rats
Anita Singh[1], Gabrielle Gehron[1], Shania Shaji[1], Brittany King[2], Jacklyn Wirko[2], and Jennifer Kadlowec[2]
[1]*Widener University, Chester, PA,* [2]*Rowan Institution, Glassboro, NJ*

8:45 am
Comparative Analysis of the Destabilizing Effects of Anterior Versus Posterior Releases on the Thoracolumbar and Lumbar Spine
Bryan Rynearson[1], Rahul Ramanathan[1], Marcus Allen[1], Nicholas Vaudreuil[1], Kevin Bell[1], and Patrick Bosch[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

9:00 am
More Push from Your Push-Off: Joint-Level Modifications to Modulate Propulsive Forces in Old Age
Michael Browne[1] and Jason Franz[1]
[1]*University of North Carolina and North Carolina State University, Chapel Hill, NC*

9:15 am
Examining the Influence of Residual Limb Adipose Tissue Volume On Non-steady Locomotor Performance Of Transfemoral Amputees–A Surgical Intervention Case Study
Nicholas Fey[1,2] and Emily Levy[1]
[1]*University of Texas at Dallas, Richardson, TX,* [2]*UT Southwestern Medical Center, Dallas, TX*

OP-Sat-1-5 — Room 221A

Tracks: Cardiovascular Engineering, Device Technologies and Biomedical Robotics

Cardiovascular Devices

Chairs: Kevin Soucy, Robert Akins

8:00 am
Preclinical Development of a Radially Expandable Vascular Conduit for Pediatric Cardiovascular Surgery
Abigail Loneker[1,2], Arush Kalra[2], Alan Nugent[3], Samuel Luketich[1], Doug Bernstein[2], Antonio D'Amore[1,4,5], and Denver Faulk[2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*PECA Labs, Pittsburgh, PA,* [3]*UT Southwestern Medical Center, Dallas, TX,* [4]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA,* [5]*RiMED Foundation, Palermo, Italy*

8:15 am
External Balloon for Fontan Cavo-Pulmonary Assist–In-Vitro Study Of Device Design Considerations
Mitra Shabanisamghabady[1] and Ethan Kung[1]
[1]*Clemson University, Clemson, SC*

8:30 am
Thrombogenicity and Hemodynamic Assessment of a Novel Polymeric Valve for Transcatheter Aortic Valve Replacement
Oren Rotman[1], Jawaad Sheriff[2], Marvin Slepian[2,3], and Danny Bluestein[1,3]
[1]*Stony Brook University, Stony Brook, NY,* [2]*University of Arizona, Tucson, AZ,* [3]*Polynova Cardiovascular Inc., Stony Brook, NY*

8:45 am
Quantification of Fluid Changes through Cardiac Muscle for the Development of a Biomedical, Electromagnetic Patch Sensor
Fayez Aruwaili[1], Jacob Griffith[1], Jeremy Patterson[1], and Kim Cluff[1]
[1]*Wichita State University, Wichita, KS*

9:00 am
Development of an Experimental Model for Detection of LVAD Pump Thrombus
Ashley Tabajunda[1], Ricardo Montes[1], Saniya Salim[1], Vi Vu[1], and Karen May-Newman[1]
[1]*San Diego State University, San Diego, CA*

9:15 am
Dual Propeller Micro-pump for Pediatric Patients with Right Ventricular Dysfunction
Alexandrina Untaroiu[1], Jakin Jagani[1], and Elizabeth Mack[1]
[1]*Virginia Tech, Blacksburg, VA*

OP-Sat-1-6 — Room 221B

Tracks: Drug Delivery & Intelligent Systems, Nano and Micro Technologies

Nano to Micro Devices in Delivery I

Chairs: R. Lyle Hood, Kazunori Hoshino

8:00 am
Controlled Delivery of Lentivectors from Blended Microgel Suspensions
Justin Madrigal[1], Shonit Sharma[1], Roberta Stilhano[1], and Eduardo Silva[1]
[1]*University of California, Davis, Davis, CA*

8:15 am
Biodegradable Nanoparticle Delivery of Anti-Infective Tandem Peptides for Treatment of *P. Aeruginosa* Lung Infections
Ester J. Kwon[1], Matthew Skalak[1], Alessandro Bertucci[2], Gary Braun[3], Erkki Ruoslahti[3], Michael J. Sailor[2], and Sangeeta N. Bhatia[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*University of California San Diego, La Jolla, CA,* [3]*Sanford Burnham Prebys Medical Discovery Institute, La Jolla, CA*

8:30 am
Microfabricated Immune-isolating Devices for Long Term Cell Based Therapies
Suman Bose[1], Robert Langer[1], and Daniel Anderson[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

8:45 am
Renal Selective Mesoscale Nanoparticles Treat Acute Kidney Injury
Ryan Williams[1], Elizabeth Mercer[2], Madeline Dorso[3], Sunil Rangarajan[4], Janki Shah[1], Edgar Jaimes[1,3], and Daniel Heller[1,3]
[1]*Memorial Sloan Kettering Cancer Center, New York, NY,* [2]*Indiana University, Indianapolis, IN,* [3]*Weill Cornell Medicine, New York, NY,* [4]*University of Alabama at Birmingham, Birmingham, AL*

9:00 am
A Prodrug Strategy to Improve Drug Loading and Determine Intracellular Release from Nanoparticle Systems
Rachel Creighton[1], Mikaela Ebner[2], Wilma Afunugo[2], Alaina Bever[2], Shijie Cao[1], Yonghou Jiang[1], Kim Woodrow[1], and Ian Suydam[2]
[1]*University of Washington, Seattle, WA,* [2]*Seattle University, Seattle, WA*

PLATFORM SESSIONS–SATURDAY–1–8:00 AM–9:30 AM

Saturday, October 14 | 8:00 am–9:30 am | Platform Session 1

9:15 am
Cationic Helical Polypeptide Carrier for CRISPR/Cas9 Based Genome Editing
Hong-Xia Wang[1], Ziyuan Song[2], Yeh-Hsing Lao[1], Xin Xu[3], Jing Gong[1], Du Cheng[4], Syandan Chakraborty[1], Mingqiang Li[1], Lichen Yin[3], and Kam Leong[1]
[1]Columbia University, New York, NY, [2]University of Illinois at Urbana-Champaign, Urbana-Champaign, IL, [3]Soochow University, Suzhou, China, People's Republic of, [4]Sun Yat-Sen University, Guangzhou, China, People's Republic of

OP-Sat-1-7 **Room 221C**

Track: Tissue Engineering

Naturally-Derived and Extracellular Matrix Biomaterials in Tissue Engineering

Chairs: Rhima Coleman, Tara Deans

8:00 am
A Bio-engineered Pre-Vascularized Islet Organ Generated by Organ Crossover
Philipp Moser[1,2], Antonio Citro[1,3], Konrad Rajab[1], Xi Ren[1], Daniele Evangelista[1], Bruno Podesser[2], Lorenzo Piemonti [3], and Harald Ott[1]
[1]Massachusetts General Hospital, Boston, MA, [2]Head Center for Biomedical Research, Vienna, Austria, [3]San Raffaele Diabetes Research Institute, Milan, Italy

8:15 am
Repopulation of Decellularized Renal ECM Scaffolds: New Challenges in Scaling Up from Rat to Pig Kidneys
Joseph Uzarski[1], William Miller[2], and Jason Wertheim[1]
[1]Northwestern University Feinberg School of Medicine, Chicago, IL, [2]Northwestern University, Evanston, IL

8:30 am
Non-Plasmin Fibrinolytic Proteases as Alternative Destabilizers of Fibrin-Based Tissue Constructs
Simone Douglas[1], Rodney Averett[2], and Manu Platt[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]University of Georgia, Athens, GA

8:45 am
Cell-Secreted Extracellular Matrix Promotes Osteogenic Differentiation of Stromal Vascular Fraction
Jenna Harvestine[1], Hakan Orbay[2], Jonathan Chen[1], David Sahar[2], and J. Kent Leach[1,3]
[1]University of California, Davis, Davis, CA, [2]UC Davis Medical Center Department of Surgery, Division of Plastic Surgery, Sacramento, CA, [3]UC Davis Medical Center, Sacramento, CA

9:00 am
Injectable Microribbon-like Hydrogels for Stem Cell Delivery and Craniofacial Repair
Yaohui Tang[1], Xinming Tong[1], and Fan Yang[1]
[1]Stanford University, Stanford, CA

9:15 am
Dental Pulp Regeneration Using Novel Self-Assembling Peptides
Peter Nguyen[1], William Gao[1], Saloni Patel[1], Saul Weiner[2], and Vivek Kumar[1]
[1]New Jersey Institute of Technology, Newark, NJ, [2]Rutgers, Newark, NJ

OP-Sat-1-8 **Room 222A**

Track: Cellular and Molecular Bioengineering

Mechanobiology of Cell Adhesion

Chairs: Kimberly Stroka, Renita Horton

8:00 am
Detecting Vinculin Load-Dependent Protein Recruitment to Focal Adhesions
Andrew LaCroix[1] and Brenton Hoffman[1]
[1]Duke University, Durham, NC

8:15 am
P-selectin and ICAm-1 Synergy in Mediating THP-1 Monocyte Adhesion in Flow is Length Dependent
Erin Edwards[1] and Susan Thomas[1]
[1]Georgia Institute of Technology, Atlanta, GA

8:30 am
Integrin Subtypes and Nanoscale Dimensionality Influence Chemoresistance in Breast Cancer Cells
Jennifer Young[1], Heidi Somsel[1], Ximeng Hua[1], Horst Kessler[2], and Joachim Spatz[1,3]
[1]Max Planck Institute for Medical Research, Heidelberg, Germany, [2]TUM Institute for Advanced Study, Munich, Germany, [3]Heidelberg University, Heidelberg, Germany

8:45 am
Calibrating and Mapping Integrin Molecular Tensions in Single Platelets
Xuefeng Wang[1], Yongliang Wang[1], and Dana LeVine[1]
[1]Iowa State University, Ames, IA

9:00 am
Mechanosensitive Cadherin Adhesion and its Regulation
Ramesh Koirala[1], Chi-Fu Yen[1], Andrew Priest[1], and Sanjeevi Sivasankar[1]
[1]Iowa State University, Ames, IA

9:15 am
Novel Role of Cadherin-11 In Cell Signaling Via Direct Interaction with the PDGF Receptor
Yayu Liu[1], Sindhu Row[1], Sandeep Agarwal[2], and Stelios Andreadis[1]
[1]University at Buffalo, Buffalo, NY, [2]Baylor College of Medicine, Houston, TX

Saturday, October 14 | 8:00 am–9:30 am | Platform Session 1

OP-Sat-1-9 **Room 222B**

Track: Cellular and Molecular Bioengineering

Molecular and Cellular Immunoengineering I

Chairs: Stacey Finley, Jordan Green

8:00 am
Immunopathology and Cell Biology of the GAD65 Autoantigen in Pancreatic Islets
Edward Phelps[1,2], Chiara Cianciaruso[2], and Steinunn Baekkeskov[2]
[1]University of Florida, Gainesville, FL, [2]Swiss Federal Institute of Technology, Lausanne, Switzerland

8:15 am
Super Natural Killer Cell-Mediated Targeted Therapy on Chemo-Resistant Cancer Cells.
Dai Liu[1], Zhenjiang Zhang[1], Thong Cao[1,2], Nerymar Ortiz Otero[1,2], and Michael King[1]
[1]Vanderbilt University, Nashville, TN, [2]Cornell University, Ithaca, NY

8:30 am
Nanotheranostics Reveal Sex Dependent Inflammatory Responses in Mouse Models of Atherosclerosis
Yu-Gang Liu[1], Sean David Allen[1], Sijia Yi[1], and Evan Alexander Scott[1]
[1]Northwestern University, Evanston, IL

8:45 am
Engineered T Regulatory Cells (Tregs) as a Multiple Sclerosis (MS) Therapeutic
Elissa Leonard[1] and Jennifer Maynard[1]
[1]University of Texas at Austin, Austin, TX

9:00 am
Glycoengineering HIV Immunogens to Enhance the Binding Landscape for Humoral Immune Responses
Wen-Han Yu[1,2], Peng Zhao[3], Monia Draghi[2], Claudia Arevalo[2], Christina Karsten[2], Lance Wells[3], Douglas Lauffenburger[1], and Galit Alter[2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Ragon Institute of Massachusetts General Hospital, Massachusetts Institute of Technology and Harvard University, Cambridge, MA, [3]Complex Carbohydrate Research Center, The University of Georgia, Athens, GA

9:15 am
Role of Transport Phenomena in Establishing Chemokine Gradients in Lymph Nodes
Mohammad Jafarnejad[1], David Zawieja[2], Bindi Brook[3], Robert Nibbs[4], and James Moore[1]
[1]Imperial College London, London, United Kingdom, [2]Texas A&M University, Temple, TX, [3]University of Nottingham, Nottingham, United Kingdom, [4]University of Glasgow, Glasgow, United Kingdom

OP-Sat-1-10 **Room 223**

Track: Orthopedic and Rehabilitation Engineering

Articular Cartilage, Meniscus and Joints

Chairs: Riccardo Gottardi, Robert Sah

8:00 am
Mitigation of Osteoarthritis Symptoms under Joint Alteration using Low Intensity Acoustic Radiation Force
XIAOFEI LI[1], Yue-Li Sun[2], Zhilun Zhou[1], Chaudhry Raza Hassan[1], Dongye zhang[1], Minyi Hu[1], and Yi-Xian Qin[1]
[1]Stony Brook University, Stony Brook, NY, [2]Stony Brook University and Institute of Spine, Longhua Hospital, Stony Brook, NY

8:15 am
IL-6 Biomarker Detection in a Rat Monoiodoacetate Osteoarthritis Model using Magnetic Capture
Brittany Partain[1], Elena Yarmola[1], Yash Shah[1], Jorge Figueras[1], Samuel Armington[1], Carlos Rinaldi[1], Jon Dobson[1], and Kyle Allen[1]
[1]University of Florida, Gainesville, FL

8:30 am
Repeated Intra-Articular Injection of Zoledronic Acid Suppresses Cartilage Erosions After DMM
Michael David[1], Melanie Smith[1], Rachael Pilachowski[1], John Lowman[1], and Christopher Price[1]
[1]University of Delaware, Newark, DE

8:45 am
Through-Thickness Patterns of Shear Strain Change with Progressively Osteoarthritic Human Cartilage
Franz Maier[1], Courtland G. Lewis[2], and David M. Pierce[1]
[1]University of Connecticut, Storrs, CT, [2]Hartford Healthcare, Hartford, CT

9:00 am
Shear-Induced Formation of a Lamina Splendens-Like Gel from Synovial Fluid
Sierra Cook[1], Ya Guan[1], Cory Brown[2], Noah Pacifici[1], Evan Czako[1], and Delphine Gourdon[1,3]
[1]Cornell University, Ithaca, NY, [2]University of California, Santa Barbara, Santa Barbara, CA, [3]University of Ottawa, Ottawa, ON, Canada

9:15 am
Sequential Cytokine Treatment Promotes Synovial Lubricant Synthesis and Reduces MMP Activity in Fibroblast Like Synoviocytes
Ahmad Abu-Hakmeh[1], Allison Fleck[1], and Leo Q. Wan[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

PLATFORM SESSIONS–SATURDAY–1–8:00 AM–9:30 AM

Saturday, October 14 | 8:00 am–9:30 am | Platform Session 1

OP-Sat-1-11 — Room 225A

Track: Nano and Micro Technologies

Advances in Micro/Nano Manufacturing

Chairs: Maryam Mobed-Miremadi, Vladimir Reukov

8:00 am

Acoustic Separation of Nanoparticles in Continuous Flow

Joseph Rufo[1], Mengxi Wu[2], Zhangming Mao[2], Lin Wang[3], and Tony Huang[1]
[1]*Duke University, Durham, NC,* [2]*The Pennsylvania State University, University Park, PA,* [3]*Ascent Bio-Nano, Research Triangle Park, NC*

8:15 am

Flexible Nanotextured PDMS as a Substrate for Selective Cell Capture

Mohammad R. Hasan[1], Sai Santosh Sasank Peri[1], Viraj Sabane[2], Nuzat Mansur[1], Jean Gao[1], Kytai Nguyen[1], Jon Weidanz[1], Vinay Abhyankar[2], and Samir Iqbal[1]
[1]*University of Texas Arlington, Arlington, TX,* [2]*University of Texas Arlington Research Institute, Fort Worth, TX*

8:30 am

A Microfluidic Thermometer: Precise Temperature Measurements in Microliter-Scale Volumes

Brittney A. McKenzie[1] and William H. Grover[1]
[1]*University of California, Riverside, Riverside, CA*

8:45 am

Delivery of Undiluted Whole Blood in Microchannels Enabled by Acoustic-based Fluid Propulsion

Po-Hsun Huang[1], Nitesh Nama[1], and Tony Jun Huang[1]
[1]*Duke University, Durham, NC*

9:00 am

A Viscosity-Based Measurement System for Pathogen Detection

Katherine Clayton[1], Taylor Moehling[1], Andrew J. Witten[1], Dong Hoon Lee[1], Gregory D. Berglund[1], Steven T. Wereley[1], Jacqueline C. Linnes[1], and Tamara L. Kinzer-Ursem[1]
[1]*Purdue University, West Lafayette, IN*

9:15 am

High-throughput Microtechnologies for Transient Profiling of Molecular Signatures during Neutrophil Swarming

Eduardo Reategui[1], Jae Jung Kim[2], Alex Hopke[3], Fatemeh Jalali[4], Maedeh Roushan[3], Jesmond Dalli[3], Charles N. Serhan[4], Patrick S. Doyle[2], and Daniel Irimia[4]
[1]*Massachusetts General Hospital Cancer Center, Harvard Medical School, Charlestown, MA,* [2]*Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, MA,* [3]*Massachusetts General Hospital, Harvard Medical School, Charlestown, MA,* [4]*Harvard Medical School / Massachusetts General Hospital, Charlestown, MA,* [5]*Harvard Medical School/Center for Experimental Therapeutics and Reperfusion Injury, Brigham and Women's Hospital, Boston, MA,* [6]*Center for Experimental Therapeutics and Reperfusion Injury, Brigham and Women's Hospital. Harvard Medical School, Boston, MA*

OP-Sat-1-12 — Room 225B

Track: Device Technologies and Biomedical Robotics

Translation of Devices from the Lab to the Market

Chairs: Yongfan Men, Curtis Wang

8:00 am

Evaluation of a Novel Incremental Syringe to Improve on Accuracy and Precision of Dosing

Gregory Gillispie[1,2] and Philip Brown[1,2]
[1]*Virginia Tech-Wake Forest School for Biomedical Engineering Sciences, Winston-Salem, NC,* [2]*Wake Forest Innovations, Winston-Salem, NC*

8:15 am

CloudPette: Cloud-Based Ultrahigh-Precision Microfluidic Pipetting

Yongfan Men[1], Jinzhen Fan[1], Kuo-Hao Tseng[1], Yi Ding[1], Yunfeng Ding[1], Cheemeng Tan[1], and Tingrui Pan[1]
[1]*University of California, Davis, Davis, CA*

8:30 am

Retrospective Predictors of Mortality in an Enterocutaneous Fistula Population at a Tertiary Medical Center

Alyssa Rollando[1], Stephen Waller[2], Philip Johnson[2], Russ Waitman[2], and Sara Wilson[1]
[1]*University of Kansas, Lawrence, KS,* [2]*University of Kansas Medical Center, Kansas City, KS*

8:45 am

Development of a Novel Bipolar Radiofrequency Ablation Device for Ablation of Post-excision Surfaces and Summary of Performance in *Ex Vivo* and *In Vivo* Soft Tissues

Tyler Wanke[1,2], Alyssa Bailey[2], Thomas Kurth[2,3], Ryan Bean[2], Terence Chan[2,4], Michelle Hasse[2], Curtis Wang[2,4], Anna Somera[2], Robert Rioux[2], and Roberta Lee[2]
[1]*Northwestern University, Chicago, IL,* [2]*Innoblative Designs, Inc., Chicago, IL,* [3]*University of Illinois, Chicago, IL,* [4]*Northwestern University, Evanston, IL*

9:00 am

Design and Fabrication of Indigenous Phototherapy Equipment for Treating Neonatal Jaundice in Nigeria

Akinwale Coker[1], Mynepalli Sridhar[1], Hammed Taiwo [1], and Akinniyi Osuntoki [2]
[1]*University of Ibadan, Chicago, IL,* [2]*University of Lagos, Chicago, IL*

9:15 am

Commercial Robot Based Retractor for Spine Surgery

Alexander Smith[1], Riley Neuville[1], Paul Birinyi[2], and Andrew Hall[1]
[1]*Saint Louis University, Saint Louis, MO,* [2]*Saint Louis University School of Medicine, Saint Louis, MO*

Saturday, October 14 | 8:00 am–9:30 am | Platform Session 1

OP-Sat-1-13 — Room 228A

Track: Device Technologies and Biomedical Robotics

Implantable Sensors I

Chairs: Shang Song, Tim Bruns

8:00 am

A Silicon Nanopore Membrane (SNM) Based Intravascular Bioartificial Pancreas Device (iBAP) for Islet Encapsulation Under Convective Transport

Shang Song[1], Charles Blaha[1], Willieford Moses[1], Jaehyun Park[1], Nathan Wright[1], Joey Groszek[2], William Fissell[2], Shant Vartanian[1], Andrew Posselt[1], and Shuvo Roy[1]
[1]*University of California, San Francisco, San Francisco, CA,* [2]*Vanderbilt University Medical Center, Nashville, TN*

8:15 am

Localization of Microscale Devices *In Vivo* using Addressable Transmitters Operated as Magnetic Spins

Manuel Monge[1], Audrey Lee-Gosselin[1], Mikhail Shapiro[1], and Azita Emami[1]
[1]*California Institute of Technology, Pasadena, CA*

8:30 am

Artificial Muscle for Artificial Heart: Large Volume Fluid Pumping by Dielectric Elastomer

Zhe Li[1], Yingxi Wang[1], Choon Chiang Foo[2], Hareesh Godaba[1], Jian Zhu[1], and Choon Hwai Yap[1]
[1]*National University of Singapore, Singapore, Singapore,* [2]*Institute of High Performance Computing, Singapore, Singapore*

8:45 am

Real Time Angle Measuring Tool for Lumbar Spinal Fusion

William Langenbach[1], Kirsten Jefferys[1], James Abbas[1], and Brian Kelly[1,2]
[1]*ASU, Tempe, AZ,* [2]*Barrow Neurological Institute, Phoenix, AZ*

9:00 am

Development of a Stretchable Substrate for a Bidirectional Bladder Interface

Christopher Stephan[1], Dongxiao Yan[1], Yu-Heng Cheng[1], Lauren Zimmerman[1], Anne Cameron[1], Euisik Yoon[1], John Seymour[1], and Tim Bruns[1]
[1]*University of Michigan, Ann Arbor, MI*

9:15 am

Biodegradable Piezoelectric Force Sensor for Monitoring Biological Pressures

Thanh Nguyen[1]
[1]*University of Connecticut, Storrs, CT*

OP-Sat-1-14 — Room 228B

Track: Cancer Technologies, Drug Delivery & Intelligent Systems

Cancer Drug Delivery

Chairs: Jeannine Coburn, Ashish Kulkarni

8:00 am

Nanomedicine Claims Versus Human Clinical Performance: Where's the Disconnect?

David Grainger[1]
[1]*University of Utah, Salt Lake City, UT*

8:15 am

Targeting Personalized Medicines to the Tumor Microenvironment

Daniel Heller[1,2], Yosi Shamay[1], Aviram Mizrachi[3], Maurizio Scaltriti[1], Adriana Haimovitz-Friedman[1], and John Humm[1]
[1]*Memorial Sloan Kettering Cancer Center, New York, NY,* [2]*Weill Cornell Medical College, New York, NY,* [3]*Rabin Medical Center, Petah Tikva, Israel*

8:30 am

Targeting Small Cell Lung Cancer-Brain Metastasis in vivo using Human Adipose-derived Stromal Cells

Xinyi Jiang[1], Dian Yang[1], Jing Shan Lim[1], Julien Sage[1], and Fan Yang[1]
[1]*Stanford University, Stanford, CA*

8:45 am

Disrupting Physical Interactions Between Multiple Myeloma and the Bone Marrow Niche via Nanoparticle-Mediated RNAi

Michael Mitchell[1] and Robert Langer[1]
[1] *Massachusetts Institute of Technology, Cambridge, MA*

9:00 am

Nanoscale Bacteria-Enabled Autonomous Delivery Systems (NanoBEADS) for Cancer Therapy

Bahareh Behkam[1]
[1]*Virginia Tech, Blacksburg, VA*

9:15 am

Co-delivery of Chemotherapeutics and Stem Cell-mediated Non-viral Gene Therapy Synergistically Enhances Tumor apoptosis of Pediatric Brain Glioma

Xinyi Jiang[1], Christine Wang[1], Anitha Ponnuswami[1], Michelle Monje-Deisseroth[1], and Fan Yang[1]
[1]*Stanford University, Stanford, CA*

OP-Sat-1-15 — Room 227C

Tracks: Stem Cell Engineering, Bioinformatics, Computational and Systems Biology

Stem Cell Systems Biology

Chairs: Patrick Cahan, Sriram Chandrasekaran

8:00 am

Tracking Pluripotent Stem Cell Differentiation with FLOW-MAP, a Graph-Based, Force-Directed Layout Algorithm for Single-Cell, Time Course Datasets—INVITED

Kristen Fread[1], Melissa Ko[2], Corey Williams[1], Rohit Rustagi[1], Gabriela K. Fragiadakis[2], Garry Nolan[2], and Eli Zunder[1]
[1]*University of Virginia, Charlottesville, VA,* [2]*Stanford, Stanford, CA*

8:30 am

Systems Analysis of Transcriptional and Signaling Networks Specifying Hematopoietic Cell Fate

Melissa Kinney[1,2], Linda Vo[1], Jessica Barragan[1], Tolulope Roswano[1], Pinar Eser[3], James Collins[2], Patrick Cahan[4], Douglas Lauffenburger[2], and George Daley[1]
[1]*Boston Children's Hospital & Harvard Medical School, Boston, MA,* [2]*Massachusetts Institute of Technology, Cambridge, MA,* [3]*Harvard Medical School, Boston, MA,* [4]*Johns Hopkins, Baltimore, MD*

PLATFORM SESSIONS–SATURDAY–1–8:00 AM–9:30 AM

Saturday, October 14 | 8:00 am–9:30 am | Platform Session 1

8:45 am
Interrogation of Muscle Stem Cell-Niche Interactions Using Artificial 3D Niche Micro-Gels and Single-Cell RNA-Sequencing
Andrea De Micheli[1], Sharon Baumgarten-Souied[1], Francis Chen[1], Brenton Munson[1], and Benjamin Cosgrove[1]
[1]*Cornell University, Ithaca, NY*

9:00 am
A Notch Positive Feedback Controlling Intestinal Stem Cell Niche Patterning
Kai-Yuan Chen[1], Tara Srinivasan[2], Kuei-Ling Tung[2], Pengcheng Bu[1], and Xiling Shen[1]
[1]*Duke University, Durham, NC,* [2]*Cornell University, Ithaca, NY*

9:15 am
Comprehensive Mapping of Pluripotent Stem Cell Metabolism using Dynamic Genome-scale Network Modeling
Sriram Chandrasekaran[1], Jin Zhang[2], George Daley[2], and James Collins[3]
[1]*University of Michigan, Ann Arbor, MI,* [2]*Harvard Medical School, Boston, MA,* [3]*MIT, Cambridge, MA*

OP-Sat-1-16 **Room 226A**

Track: Bioinformatics, Computational and Systems Biology

Systems Biology of Infectious Disease

Chairs: Kelly Arnold, Priya Shah

8:00 am
A Systems Approach to Elucidate Mechanisms of HIV Control
Jishnu Das[1,2], Jessica Sassic[2], Max Mangano[2], Sean O'Keefe[2], Douglas Lauffenburger[1], and Galit Alter[2]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Massachusetts General Hospital, Cambridge, MA*

8:15 am
Quantifying Lentiviral Reactivation Across Individual Genomic Integration Sites
Anand Pai[1] and Leor Weinberger[1]
[1]*Gladstone Institutes and UCSF, San Francisco, CA*

8:30 am
Eradicating *M. tuberculosis* Persisters
Jason Yang[1,2], Meagan Hamblin[2], Sarah Wright[1,2], and James Collins[1,2]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Broad Institute of MIT and Harvard, Cambridge, MA*

8:45 am
Surrogate-assisted Optimization Can Locate Optimal Tuberculosis Antibiotic Treatment Regimens
Joseph Cicchese[1], Elsje Pienaar[1,2], Denise Kirschner[2], and Jennifer Linderman[1]
[1]*University of Michigan, Ann Arbor, MI,* [2]*University of Michigan Medical School, Ann Arbor, MI*

9:00 am
Emergence and Selection of Antibiotic Resistance in Tuberculosis
Elsje Pienaar[1], Denise Kirschner[1], and Jennifer Linderman[1]
[1]*University of Michigan, Ann Arbor, MI*

9:15 am
Experimental Design in the Context of Bacterial Strain Identification
Carolyn Zhang[1] and Lingchong You[1]
[1]*Duke University, Durham, NC*

OP-Sat-1-17 **Room 226B**

Tracks: Neural Engineering, Device Technologies and Biomedical Robotics

Neural Device-Tissue Interfaces

Chairs: Takashi Kozai, Erin Purcell

8:00 am
Investigating the Role of Inflammation in the Functionality of Intracortical Devices
Janak Gaire[1], Heui Chang Lee[2], Nicholas L. Hilborn[1], Mary K. Regan[1], and Kevin J. Otto[1]
[1]*University of Florida, Gainesville, FL,* [2]*University of Texas Southwestern Medical Center, Dallas, TX*

8:15 am
Quantitative Mapping of Tissue Oxygenation Around Neural Interfaces Using Novel PISTOL MR Imaging
James Beauchamp[1], Jordan Kariniemi[1], Nutandev B. Jayadev[1], Arati Sridharan[1], Vikram D. Kodibagkar[1], and Jit Muthuswamy[1]
[1]*Arizona State University, Tempe, AZ*

8:30 am
Melatonin Injection Improves Quality and Longevity of Chronic Neural Recording
Asiyeh Golabchi[1,2], Patrick Cody[1,2], Bingchen Wu[1], Takashi D. Y. Kozai[1,2,3,4], and X. Tracy Cui[1,2,3]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Center for the Neural Basis of Cognition, Pittsburgh, PA,* [3]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA,* [4]*NeuroTech Center of the University of Pittsburgh Brain Institute, Pittsburgh, PA*

8:45 am
Electrical Evaluation of Micro-Electrode Arrays Coated with Thin Films for Minocycline Release
Kaitlynn Olczak[1], Matthew McDermott[1,2], and Kevin Otto[1]
[1]*University of Florida, Gainesville, FL,* [2]*Purdue University, West Lafayette, IN*

9:00 am
Evaluation of Impedance and *In Vivo* Recording Performance of Extracellular Matrix-Coated Neural Microelectrodes
Flavia Vitale[1], Wendy Shen[1], Nicolette Driscoll[1], Andrew G. Richardson[1], Brendan Murphy[1], Akshay Ananthakrishnan[1], Justin Burrell[1], Oladayo Adewole[1], Timothy H. Lucas[1], D. Kacy Cullen[1], Mark G. Allen[1], and Brian Litt[1]
[1]*University of Pennsylvania, Philadelphia, PA*

9:15 am
Ultra-flexible Brain Probes Form Reliable, Glial Scar Free Neural Integration
Zhengtuo Zhao[1], Lan Luan[1], Xiaoling Wei, Jennifer Siegel[1], Shams Kazmi[1], Robert Fowler[1], Andrew Dunn[1], Raymond Chitwood[1], and Chong Xie[1]
[1]*University of Texas at Austin, Austin, TX*

Saturday, October 14 | 8:00 am–9:30 am | Platform Session 1

OP-Sat-1-18 **Room 227C**

Track: Undergraduate Research, Design & Leadership

Undergraduate Research, Design & Leadership I

Chairs: Jeffrey La Belle, Tim Becker

8:00 am
A Perfusable Hollow Fiber In A 3D Poly(ethylene glycol)-based Vascularized 3D Scaffold
Sydney Jeffs[1], Asli Unal[2], and Jennifer West[2]
[1]*Duke University, Chapel Hill, NC,* [2]*Duke University, Durham, NC*

8:09 am
The Role of Electroporation in Cold Atmospheric Plasma as a Potential Cancer Therapy
Quinn Mitchell[1], Nicole Sova[1], David Burnette[1], and Monica Burdick[1]
[1]*Ohio University, Athens, OH*

8:18 am
Photocrosslinkable, Stimuli-Responsive Protein Microparticles
Vincent Miao[1], Stefan Roberts[1], Simone Costa[1], Joseph Simon[1], and Ashutosh Chilkoti[1]
[1]*Duke University, Durham, NC*

8:27 am
Characterizing Metabolic Network Changes in Pseudomonas aeruginosa During Development of Antibiotic Resistance
Ethan Stancliffe[1] and Jason Papin[1]
[1]*University of Virginia, Charlottesville, VA*

8:36 am
Biomimetic Microgels with Controllable Deformability to Improve Wound Healing Outcomes
Colleen Roosa[1], Erin Sproul[1], and Ashley Brown [1]
[1]*Joint Department of Biomedical Engineering at NC State University and UNC-Chapel Hill, Raleigh, NC*

8:45 am
Computational Modeling of Mechanical Interactions of Cell Migration in a Viscoelastic Substrate
Karla Robles[1], Min-Cheol Kim[2], and Harry Asada[2]
[1]*Middle Tennessee State University, Madison, TN,* [2]*Massachusetts Institute of Technology, Cambridge, MA*

8:54 am
Tension Simulating Ligament Loading Induces Changes in Neuronal Morphology Even at Strain Below Those Sustained in Painful Injury
Alejandro Villasmil[1], Meagan Ita[1], Sagar Singh[1], and Beth Winkelstein[1]
[1]*University of Pennsylvania, Philadelphia, PA*

9:03 am
Investigating Cholera Toxin Infection During Pregnancy Using an In Vitro Placental Model
Tanaya Puranik[1], Christina Bailey[1], and Anita Shukla[1]
[1]*Brown University, Providence, RI*

9:12 am
A Hybrid Model of Tumor Angiogenesis: Theory and Simulations
Caleb Phillips[1], Manasa Gadde[1], Tessa Davis[1], Thomas Yankeelov[1], J. Tinsley Oden[1], and Ernesto Lima[1]
[1]*The University of Texas at Austin, Austin, TX*

9:21 am
Whole-Body Mathematical Models of Synthetic Biosensing Liposomes: An Application for the Prevention of Metastasis
Tanishq Abraham[1] and Cheemeng Tan[1]
[1]*University of California, Davis, Davis, CA*

SPECIAL SESSION

8:00 am–9:30 am **Room 121ABC**

BMES-NSF Special Session on Graduate Research Fellowships Program

Chair: Michele Grimm

BMES and the National Science Foundation (NSF) will convene a special session focused on NSF's Graduate research Fellowships Program (GRFP). The goal of the session is to bring together program officers, grantees, reviewers and graduate students to highlight the NSF GRFP and inform undergraduate and graduate students on GFRP guidelines and strategies to develop winning GRFP grant proposals. This material is based upon work supported by the National Science Foundation under Grant No. CBET-1741771. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

PLATFORM SESSIONS–SATURDAY–1–8:00 AM–9:30 AM

Saturday, October 14 | 1:30 pm–3:00 pm | Platform Session 2

OP-Sat-2-1 — Room 224A

Track: Biomaterials

Hydrogel Biomaterials I

Chairs: Alejandro Almarza, Kristyn Masters

1:30 pm
Fabrication of Polyethylene Glycol-based Templated Macroporous Hydrogels for Cell Encapsulation
Mozhdeh Imaninezhad[1], Grant Kolar[1], and Silviya Zustiak[1]
[1]Saint Louis University, St Louis, MO

1:45 pm
Elastic and Antimicrobial Gelatin/Tropoelastin Hydrogels for Chronic Wound Healing
Ehsan Shirzaei Sani[1], Devyesh Rana[1], Roberto Portillo Lara[1,2], Jessie Gifford[1], Suzanne Mithieux[3], Anthony Weiss[3], and Nasim Annabi[1,4]
[1]Northeastern University, Boston, MA, [2]Tecnológico de Monterrey, Monterrey, Mexico, [3]University of Sydney, NSW, Australia, [4]Brigham and Women's Hospital, Boston, MA

2:00 pm
Minor Aema/Dmaema Inclusion Influences Water Distribution, Impedance and Modulus of Poly (Hema) Hydrogels
Ankita Bhat[1], Blake Smith[1], Anthony Guiseppi-Elie[1], and Cerasela Zoica-Dinu[2]
[1]Center for Bioelectronics, Biosensors and Biochips (C[2]B), Texas A&M University, College Station, TX, [2]Department of Chemical Engineering, West Virginia University, Morgantown, WV

2:15 pm
Engineering Hydrogels with Tunable Conductivity and Mechanical Properties
Brian Walker[1], Roberto Portillo Lara[1,2], Ehsan Shirzaei Sani[1], and Nasim Annabi[1,3,4]
[1]Northeastern University, Boston, MA, [2]Tecnologico de Monterrey, Monterrey, Mexico, [3]Harvard, Cambridge, MA, [4]Massachusetts Institute of Technology, Cambridge, MA

2:30 pm
Multicellular Assemblies of Salivary Stem/Progenitor Cells in Peptide-Decorated Hyaluronic Acid-Based Hydrogels
Anitha Ravikrishnan[1], Eric Fowler[1], Xinqiao Jia[1], and Swati Pradhan-Bhatt[1,2]
[1]University of Delaware, Newark, DE, [2]Helen F. Graham Cancer Center & Research Institute, Christiana Care Health Systems, Newark, DE

2:45 pm
Silane-Functionalized Dendrimer for the Generation of Ultrathin Polymeric Coatings on Pancreatic Islets
Kerim Gattas-Asfura[1], Nicholas Abuid[1], and Cherie Stabler[1]
[1]University of Florida, Gainesville, FL

***Biomaterials Track sponsored by:**

ACS Biomaterials SCIENCE & ENGINEERING

OP-Sat-2-2 — Room 224B

Track: Biomaterials

Natural and Bioinspired Biomaterials I

Chairs: Edward Phelps, Jung Yul Lim

1:30 pm
NO-Releasing Polymer Combined with Covalently-Bound Polyzwitterion For Antimicrobial Applications
Priyadarshini Singha[1], Qiaohong Liu[1], Jason Locklin[1], and Hitesh Handa[1]
[1]The University of Georgia, Athens, GA

1:45 pm
Endothelial Cell Function in Liquid-Based Anti-thrombotic Surface Coating
Hunghao Chu[1], Jiaqi Yao[1], Tuo Zhang[1], Mighten Yip[1], Mousumi Dhara[1], James Min[1], Simon Dunham[1], and Bobak Mosadegh[1]
[1]Weill Cornell Medicine, New York, NY

2:00 pm
Engineered Fibrin Vehicles to Drive Wound Healing Potential of Mesenchymal Stem Cell Spheroids
Kaitlin Murphy[1], Jacklyn Whitehead[1], Dejie Zhou[1], Steve Ho[1], and J. Kent Leach[1,2]
[1]University of California, Davis, Davis, CA, [2]University of California, Davis Health, Sacramento, CA

2:15 pm
Engineered Spider Silk Protein Scaffolds for Controlled Cell Interaction
Tamara B. Aigner[1], Jana Petzold[2], Kristin Schacht[1], Elise K. DeSimone[1], Felix B. Engel[2], and Thomas Scheibel[1]
[1]University Bayreuth, Bayreuth, Germany, [2]University Erlangen-Nuerenberg, Erlangen, Germany

2:30 pm
A Brain ECM Mimicking Hydrogel
Sualyneth Galarza[1], Christopher Hall[1], and Shelly Peyton[1]
[1]University of Massachusetts Amherst, Amherst, MA

2:45 pm
Molecularly Imprinted Polymer-Peptide Hybrid Materials for the Recognition and Sequestration of Proteins
John Clegg[1], Joann Gu[1], Matthew Harger[1], Pengyu Ren[1], and Nicholas Peppas[1]
[1]University of Texas at Austin, Austin, TX

***Biomaterials Track sponsored by:**

ACS Biomaterials SCIENCE & ENGINEERING

PLATFORM SESSIONS–SATURDAY–2–1:30 PM–3:00 PM

Saturday, October 14 | 1:30 pm–3:00 pm | Platform Session 2

OP-Sat-2-3 — Room 229A

Tracks: Biomechanics, Orthopedic and Rehabilitation Engineering

Orthopedic: Mechanobiology and Mechanotransduction

Chairs: Justin Brown, Weiqiang Chen

1:30 pm
Mechanical Support of Strain Protection from Enzyme Degradation in Constrained Collagen Gels
Meagan Ita[1] and Beth Winkelstein[1]
[1]University of Pennsylvania, Philadelphia, PA

1:45 pm
Longitudinal Repeatability of Tribological Rehydration in Bovine Articular Cartilage Samples
Margot Farnham[1], David Burris[1], and Christopher Price[1]
[1]University of Delaware, Newark, DE

2:00 pm
Functional LINC Complex Necessary for Mechanotransduction in Osteocytes
Chris Brunkhorst[1], Yue Zhang[1], Daniel Conway[1], Rene Olivares-Navarrete[1], and Henry Donahue[1]
[1]Virginia Commonwealth University, Richmond, VA

2:15 pm
Directed Mesenchymal Stem Cell Migration During Aligned Neo-Tissue Formation
Christopher Gilchrist[1], Daniel Sykora[1], Ashwin Prakash[1], Brenton Hoffman[1], and Farshid Guilak[2]
[1]Duke University, Durham, NC, [2]Washington University, St. Louis, St. Louis, MO

2:30 pm
Alteration of Stress and Fluid Flow Distribution in a Degenerated Intervertebral Disc: A Poro-elastic Finite Element Study
Chaudhry Hassan[1] and Yi-Xian Qin[1]
[1]Stony Brook University, Stony Brook, NY

2:45 pm
Variations Among Human Spine Segments and their Relationships to In Vitro Kinematics: A Retrospective Analysis of Experimental Data Including 282 Lumbar Motion Segments from 85 Donor Spines
Anna Newcomb[1], Jennifer Lehrman[1], Neil Crawford[2], and Brian Kelly[1]
[1]Barrow Neurological Institute, Phoenix, AZ, [2]Globus Medical, Phoenix, AZ

OP-Sat-2-4 — Room 229B

Tracks: Biomechanics, Cellular and Molecular Bioengineering

Biomechanics in Cell and Tissue Engineering

Chairs: Penney Gilbert, Kyle Quinn

1:30 pm
Optimized Biomechanical and Pharmacological Conditioning of Mesenchymal Stem Cells for Enhancing Therapeutic Angiogenesis
Jason Lee[1], Kayla Henderson[1], Pablo Maceda[1], Miguel Armenta-Ochoa[1], Eun Yoon[1], Lara Samarneh[1], Austin Veith[1], Mitchell Wong[1], and Aaron Baker[1]
[1]University of Texas at Austin, Austin, TX

1:45 pm
Studying the Mechanical Force Propagation at the Myocardial Infarct Boundary
Trung Dung Nguyen[1], Neerajha Nagarajan[1], and Pinar Zorlutuna[1]
[1]University of Notre Dame, Notre Dame, IN

2:00 pm
Tissue Transglutaminase 2 Regulation of Tumor Cell Tensional Homeostasis
Francois Bordeleau[1], Wenjun Wang[1], Marc Antonyak[2], Richard Cerione[2], and Cynthia Reinhart-King[1]
[1]Department of Biomedical Engineering, Vanderbilt University, Nashville, TN, [2]Department of Molecular Medicine, Cornell University, Ithaca, NY

2:15 pm
Regulation of Macrophage Morphology and Function by Cyclic Uniaxial Stretch
Hamza Atcha[1], Chase Davis[1], Anna Grosberg[1], and Wendy Liu[1]
[1]University of California, Irvine, Irvine, CA

2:30 pm
Pro-Cancerous Role of Low-Molecular-Weight Hyaluronic Acid Predicted by an Electro-Chemo-Mechanical Model for Cell-Matrix Crosstalk
Xingyu Chen[1] and Vivek Shenoy[1]
[1]University of Pennsylvania, Philadelphia, PA

2:45 pm
Biomechanics of Neural Tube Closure in Mammalian Embryos
Nader Hamzavi[1] and Yubing Sun[1]
[1]University of Massachusetts, Amherst, Amherst, MA

Saturday, October 14 | 1:30 pm–3:00 pm | Platform Session 2

OP-Sat-2-5 — Room 221A

Tracks: Cardiovascular Engineering, Stem Cell Engineering

Cardiovascular Regeneration and Stem Cells

Chairs: Ge Zhang, Kareen Coulombe

1:30 pm

Functional Adhesion and Contraction Deficits Identified in the Principal Cardiovascular Disease Risk Locus in Human iPSCs

Valentina LoSardo[1], Aditya Kumar[2], Evan Teng[2], William Ferguson[1], Pavel Chubukov[1], Tierney Phillips[2], Michael Duran[1], Stephanie Thomas[2], Nikki Villarasa[3], Adam Engler[2,4], Fyodor Urnov[3], Eric Topol[3], Ali Torkamani[3], and Kristin Baldwin[1]
[1]The Scripps Research Institute, La Jolla, CA, [2]University of California San Diego, La Jolla, CA, [3]Scripps Translational Science Institute, La Jolla, CA, [4]Sanford Consortium for Regenerative Medicine, La Jolla, CA, [5]Sangamo BioSciences, Inc., Richmond, CA

1:45 pm

Evaluating the Vasculogenic Potential of Endothelial Cells Derived from Induced Pluripotent Stem Cells

Jonathan Bezenah[1] and Andrew Putnam[1]
[1]University of Michigan, Ann Arbor, MI

2:00 pm

Modeling Complex Gene-environment Interactions in Familial Dilated Cardiomyopathy Using Genome-Edited Human Pluripotent Stem Cells

Cassandra Happe[1], Dekker Deacon[1], Chao Chen[1], Kevin Tenerelli[1], Vivien Tran[1], Rossin Erbe[1], Neil Tedeschi[1], Robert Ross[1,2], Neil Chi[1], and Adam Engler[1,3]
[1]University of California, San Diego, La Jolla, CA, [2]Veterans Administration Healthcare, San Diego, CA, [3]Sanford Consortium for Regenerative Medicine, La Jolla, CA

2:15 pm

Novel Mechanisms of Non-Coding Genomic Regulation Identified in Cardiac Disease-in-a-dish Models

Aditya Kumar[1], Stephanie Thomas[1], Kirsten Wong[1], Valentina Lo Sardo[2], Daniel Cheah[1], Jesse Placone[1], Kevin Tenerelli[1], William Ferguson[2], Eric Topol[2,3], Kristin Baldwin[2], and Adam Engler[1,4]
[1]University of California, San Diego, La Jolla, CA, [2]The Scripps Research Institute, La Jolla, CA, [3]Scripps Translational Science Institute, La Jolla, CA, [4]Sanford Consortium for Regenerative Medicine, La Jolla, CA

2:30 pm

Mechanical Strain is a Promoter of Endocardial Differentiation and May Act Through lncRNA H19

Mark Vander Roest[1] and W. David Merryman[1]
[1]Vanderbilt University, Nashville, TN

2:45 pm

Co-culture of Cardiomyocytes and Pro-epicardial Cells Derived from Human iPS Cells Enhances Excitation-contraction Coupling and Three-dimensional Aggregate Complexity

Jacques Guyette[1,2], Jun Jie Tan[1,2,3], Ling Xiao[1,2], David Milan[1,2], and Harald Ott[1,2]
[1]Harvard Medical School, Boston, MA, [2]Massachusetts General Hospital, Boston, MA, [3]Universiti Sains Malaysia, Penang, Malaysia

OP-Sat-2-6 — Room 221B

Tracks: Drug Delivery & Intelligent Systems, Nano and Micro Technologies

Nano to Micro Devices in Delivery II

Chairs: Ryan Koppes

1:30 pm

Electrically-Controlled Small Molecule Delivery from Nanoporous Gold Electrodes

Zidong Li[1], Ling Wang[1], Ozge Polat[1], and Erkin Seker[1]
[1]University of California Davis, Davis, CA

1:45 pm

Bacteria Inspired Magnetic Microrobots for Spatiotemporally Enhanced Nanodrug Transport

Simone Schurle[1], Tiffany Yeh[1], Ava Soleimany[1], Moritz Haeberli[1], and Sangeeta N. Bhatia[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

2:00 pm

Encapsulation-Free Controlled Release of Brain-Derived Neurotrophic Factor to the Stroke-Injured Brain

Jaclyn Obermeyer[1], Cindi Morshead[1], and Molly Shoichet[1]
[1]University of Toronto, Toronto, Ontario, Canada

2:15 pm

Galectin 3 as a Retention Strategy for Delivery of Proteins to Multiple Sites In Vivo

Sabrina Freeman[1], Evelyn Bracho-Sanchez[1], Kevin Koenders[1], Antonietta Restuccia[1], Margaret Fettis[1], Shaheen Farhadi[1], Gregory Hudalla[1], and Benjamin Keselowsky[1]
[1]University of Florida, Gainesville, FL

2:30 pm

Ultrasound-enhanced Drug Delivery for Treatment of Onychomycosis

Alina Kline-Schoder[1], Zung Le[1], and Vesna Zderic[1]
[1]The George Washington University, Washington, DC

2:45 pm

Universal Microfluidic Platform for Real-Time Drug Release Studies

Zidong Li[1], Ling Wang[1], and Erkin Seker[1]
[1]University of California Davis, Davis, CA

Saturday, October 14 | 1:30 pm–3:00 pm | Platform Session 2

OP-Sat-2-7 — Room 221C

Track: Tissue Engineering

Advanced Biomanufacturing in Tissue Engineering

Chairs: Kent Leach, Jennifer Munson

1:30 pm

Guided Self-assembly of Functional Cellular Architectures Based on Magnetic Levitation

Alessandro Tocchio[1], Naside Gozde Durmus[2,3], Kaushik Sridhar[1], Bukre Coskun[4], Vigneshwaran Mani[1], Rami El Assal[1], and Utkan Demirci[1]
[1]Bio-Acoustic MEMS in Medicine (BAmM) Laboratory, Canary Center at Stanford for Cancer Early Detection, Department of Radiology, Stanford School of Medicine, Palo Alto, CA, [2]Department of Biochemistry, School of Medicine, Stanford University, Stanford, Stanford, CA, [3]Stanford Genome Technology Center, Stanford University, Stanford, CA, [4]Department of Molecular and Celluiar Biology, University of California, Davis, CA

1:45 pm

Augmenting Biomimicry: Engineering Perfusable Networks Using Bioactive Sphingolipids

Andrew Abadeer[1], Julia Jin[1], Yoshika Toyoda[1], Brandon Gold[1], John Morgan[1], and Jason Spector[1]
[1]Weill Cornell Medical College, New York, NY

2:00 pm

A Parametric Study to Photocrosslink Degradable and Bio-compatible Methacrylated Alginate Microgels

Shuo Wang[1], Oju Jeon[2], Andrew Bruning[1], Eben Alsberg[2], and Chang Kyoung Choi[1]
[1]Michigan Technological University, Houghton, MI, [2]Case Western Reserve University, Cleveland, OH

2:15 pm

Blood-Tissue Gradients of Sphingosine 1-Phosphate (S1P) as a Regulator of Vascular Stability

John Morgan[1] and Jason Spector[1]
[1]Cornell University Medical College, New York, NY

2:30 pm

Is Wharton's Jelly Really A Jelly?

Tushar Sharma[1], Mitchell George[1], Kevin Aroom[1], Max Skibber[1], Brijesh Gill[1], and Charles S Cox[1]
[1]The University of Texas Health Science Center at Houston (UTHealth), Houston, TX

2:45 pm

Fabrication of a 3D-printed *In Vivo*-like Skin Tissue as a Clinical Model Utilized for Photothermal Breast Cancer Therapy

Ki Hwan Nam[1] and Ji Yong Bae[1]
[1]Korea Basic Science Institute, Daejeon, Korea, Republic of

OP-Sat-2-8 — Room 222A

Track: Cellular and Molecular Bioengineering

Mechanobiology of the Vascular and Nervous Systems

Chairs: Kunze Anja, Zhen Ma

1:30 pm

Tissue-Specific Endothelial Cell Response to Laminar Shear Stress

Nick Merna[1], Andrew Wong[1], Pierre Llanos[1], Michael Ginsberg[2], Shahin Rafii[2], and Sina Rabbany[1]
[1]Hofstra University, Hempstead, NY, [2]Angiocrine Bioscience, San Diego, CA, [3]Weill Cornell Medicine, New York, NY

1:45 pm

Extracellular Matrix Stiffness Regulates Tumor Vasculature Angiogenesis and Enhances VEGF Signaling

Francois Bordeleau[1], Danielle LaValley[2], Brooke Mason[2], Matthew Zanotelli[2], and Cynthia Reinhart-King[1]
[1]Department of Biomedical Engineering, Vanderbilt University, Nashville, TN, [2]Meinig School of Biomedical Engineering, Cornell University, Ithaca, NY

2:00 pm

Targeting the Glycocalyx as a Biomarker of Endothelium Dysfunction and Vascular Disease

Ian Harding[1], Solomon Mensah[1], Ming Cheng[1], and Eno Ebong[1]
[1]Northeastern University, Boston, MA

2:15 pm

Thrombin Treatment Reveals a Bimodal Behavior of Tensional Homeostasis in Endothelial Cell Clusters

Sze Nok Tam[1], Han Xu[1], Alicia Zollinger[1], Michael Smith[1], and Dimitrije Stamenovic[1]
[1]Boston University, Boston, MA

2:30 pm

Effects of Substrate Elasticity on NOX-mediated Superoxide Production in A ε-stimulated Microglia

Xue Geng[1], Tao Teng[1], Grace Sun[2], Jae-Won Shin[1], Orly Lazarov[1], and James Lee[1]
[1]University of Illinois at Chicago, Chicago, IL, [2]University of Missouri, Missouri, MO

2:45 pm

Intrinsic Axonal Tension Mediates Neurotransmitter Vesicle Clustering at The Presynaptic Terminal *In Vivo*

Anthony Fan[1], Alireza Tofangchi[1], and Taher Saif[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

PLATFORM SESSIONS–SATURDAY–2–1:30 PM–3:00 PM

Saturday, October 14 | 1:30 pm–3:00 pm | Platform Session 2

OP-Sat-2-9 — Room 222B

Track: Cellular and Molecular Bioengineering

\Molecular and Cellular Immunoengineering II

Chairs: Jaime Spangler, Keyue Shan

1:30 pm
Dendritic Cell Priming in Heterogeneous Cultures Modulates Phenotype and Function for Immunotherapy
Hannah Frizzell[1], Jaehyung Park[1], Natacha Lou-Comandante[1], and Kim A. Woodrow[1]
[1]University of Washington, Seattle, WA

1:45 pm
Engineering Immunogenically Dying Tumor Cells for Whole-cell Cancer Vaccination
Yuchen Fan[1] and James Moon[1]
[1]University of Michigan, Ann Arbor, MI

2:00 pm
Computational Model Predicts the Optimal Chimeric Antigen Receptor (CAR) Signaling Domain Structure for Dual Antigen Targeting
Jennifer A. Rohrs[1], Dongqing Zheng[1], Nicholas A. Graham[1], Pin Wang[1], and Stacey D. Finley[1]
[1]University of Southern California, Los Angeles, CA

2:15 pm
DNA Netosis Engineered to Ensnare and Kill Disseminated Tumor Cells
Thong Cao[1] and Michael King[1]
[1]Vanderbilt University, Nashville, TN

2:30 pm
Cytosolic Phospholipase A2 Facilitates Soluble Oligomeric Amyloid-ε uptake in Microglia
Tao Teng[1], Devin Ridgley[1], Li Dong[2], Orly Lazarov[1], Grace Sun[2], and James Lee[1]
[1]University of Illinois at Chicago, Chicago, IL, [2]University of Missouri, Columbia, MO

2:45 pm
Co-delivery of Islet Self-antigens and Regulatory Drugs Reduces Diabetic Inflammatory T cell Response
Haleigh Eppler[1] and Christopher Jewell[1,2,3,4,5]
[1]Biological Sciences, University of Maryland - College Park, College Park, MD, [2]Fischell Department of Bioengineering, University of Maryland - College Park, College Park, MD, [3]Department of Microbiology and Immunology, University of Maryland Medical School, Baltimore, MD, [4]Marlene and Stewart Greenebaum Cancer Center, Baltimore, MD, [5]United States Department of Veterans Affairs, Baltimore, MD

OP-Sat-2-10 — Room 222C

Track: Tissue Engineering

Musculoskeletal Tissue Engineering

Chairs: Warren Grayson, Mark Van Dyke

1:30 pm
Effects of Dexamethasone Priming on Osteogenesis of Mesenchymal Stem Cells in PEG-based Microribbon Hydrogels
Jianfeng Li[1], Xinming Tong[1], and Fan Yang[1]
[1]Stanford University, Stanford, CA

1:45 pm
Immuno-regulatory Roles of Cyclic Loading that Promotes Skeletal Muscle Regeneration
Bo Ri Seo[1], Christopher Payne[1], Brian Kwee[1], Conor Walsh[1], and David Mooney[1]
[1]Harvard University, Cambridge, MA

2:00 pm
Development of a Composite Scaffold to Provide Electrical, Mechanical, and Topographical Cues for Myoblast Maturation
Daniel Browe[1] and Joseph Freeman[1]
[1]Rutgers University, Piscataway, NJ

2:15 pm
Long-Term Survival, Functionality, and Proteolytic Degradation of 3D Printed Neuromuscular Machines
Caroline Cvetkovic[1], Meghan Ferrall-Fairbanks[2], Manu Platt[2], and Rashid Bashir[3]
[1]Houston Methodist Research Institute, Houston, TX, [2]Georgia Tech University, Atlanta, GA, [3]University of Illinois at Urbana-Champaign, Urbana, IL

2:30 pm
Towards Combining Cell Printing and CRISPR Epigenome Editing for Engineered IVD and Musculoskeletal Tissues
David Ede[1], Nikki DavidoffF, Leann Lam[1], Alejandro Blitch[1], David Au[2], and Robby Bowles[1]
[1]University of Utah, Salt Lake City, UT, [2]Wasatch Microfluidics, Salt Lake City, UT

2:45 pm
Repair and Regeneration of Chondral Defects: An *In Vitro* Study Demonstrating Feasibility and Mechanism
Neety Sahu[1], Gaurav Budhiraja[1], and Anuradha Subramanian[1]
[1]University of Nebraska-Linclon, Lincoln, NE

Saturday, October 14 | 1:30 pm–3:00 pm | Platform Session 2

OP-Sat-2-11 — Room 225A

Track: Nano and Micro Technologies

Applications of Nanopores and Nanoparticles

Chairs: Amber Doiron, Neha Kamat

1:30 pm
Development of Anti-HER2 Indocyanine Green-Encapsulated PEG-Coated PLGA Nanoparticles for Targeted Phototherapy of Breast Cancer Cells
Yu-Hsiang Lee[1] and Yun-Han Lai[1]
[1]National Central University, Taoyuan, Taiwan

1:45 pm
Electrically-Guided DNA Printing and Multiplexed DNA Detection with Nanoporous Gold Electrodes in a Microfluidic Device
Jovana Veselinovic[1], Zidong Li[1], Pallavi Daggumati[1], Ling Wang[1], and Erkin Seker[1]
[1]University of California Davis, Davis, CA

2:00 pm
Dextran Vertoporfin Conjugates for Photodynamic Therapy
Lesan Yan[1], Joann Miller[1], Theresa Busch[1], Andrew Tsourkas[1], and Zhiliang Cheng[1]
[1]University of Pennsylvania, Philadelphia, PA

2:15 pm
Size and Shape-controllable Synthesis of Nanomaterials by an Acoustofluidic Micromixer
Po-Hsun Huang[1], Shuaiguo Zhao[1], Mengxi Wu[1], Nitesh Nama[1], and Tony Jun Huang[1]
[1]Duke University, Durham, NC

2:30 pm
Field-Dependence of Magnetic Iron Oxide Nanoparticle-induced heating
Sheng Tong[1], Lin Hong[1], and Gang Bao[1]
[1]Rice University, Houston, TX

2:45 pm
Quantification of Circulating *M. tuberculosis* Antigen Peptides Allows Rapid Diagnosis and Treatment Monitoring
Chang Liu[1], Jia Fan[1], Christopher Lyon[1], and Ye Hu[1]
[1]Arizona State University, Tempe, AZ

OP-Sat-2-12 — Room 225B

Track: Biomedical Imaging and Optics

Optical Imaging and Nano-Technology

Chairs: Bahman Anvari, Raiyan Zaman

1:30 pm
Visualization of Nanodomains And Kinase Dynamics at the T Cell Plasma Membrane
Ying Hu[1], Nicholas Keller[1], and Bjoern Lillemeier[1]
[1]Salk Institute for Biological Studies, La Jolla, CA

1:45 pm
Thick-Shelled Indium Phosphide Quantum Dots: Cadmium-Free Imaging in the Visible and Near Infrared
Allison Dennis[1], Reyhaneh Toufanian[1], Alexander Saeboe[1], Margaret Chern[1], and Thuy Nguyen[1]
[1]Boston University, Boston, MA

2:00 pm
Near-Infrared Chemiluminescent Nanoparticles for *In Vivo* Optical Imaging
Venkatesan Perumal[1], Rupinder Kaur[1], and Jung-Jae Lee[1]
[1]University of Colorado Denver | Anschutz Medical Campus, Denver, CO

2:15 pm
Temperature-switchable Near-infrared Fluorescence Nano-capsules
Shuai Yu[1], Zhen Wang[1], Tingfeng Yao[1], and Baohong Yuan[1]
[1]The University of Texas at Arlington, Arlington, TX

2:30 pm
Nanostructure Introduces Artifacts in Quantitative Immunofluorescence by Influencing Fluorophore Intensity
Christopher Chapman[1], Xiangchao Zhu[2], Hao Chen[1], Pamela Lein[1], Ahmet Yanik[2], and Erkin Seker[1]
[1]University of California, Davis, Davis, CA, [2]University of California, Santa Cruz, Santa Cruz, CA

OP-Sat-2-13 — Room 228A

Track: Device Technologies and Biomedical Robotics

Implantable Sensors II

Chairs: Daniel Heller, Joshua Doloff

1:30 pm
Electrophysiology of Platinum and Carbon Electrodes in Stimulating Peripheral Nerve and EMG Recording
Xinuo Zhang[1], Chaoyan Chen[2], Yong Hai[1], Biao Chen[3], Jie Hu[3], Yang Zhou[2], John Cavanaugh[2], and Mark Ming-Cheng Cheng[2]
[1]China Capital Medical University, Beijing, China, People's Republic of, [2]Wayne State University, Detroit, MI, [3]Shanghai Jiao Tong University, Shanghai, China, People's Republic of

1:45 pm
Anti-Biofouling Implantable Magnetic Microactuators with Integrated Piezoresistive Sensor
Qi Yang[1] and Hyowon Lee[1]
[1]Purdue University, West Lafayette, IN

2:00 pm
Multiphysics Modeling of Implantation and Aqueous Flow through the CyPass Micro-Stent
Paul Missel[1]
[1]Alcon Research, Ltd., Fort Worth, TX

PLATFORM SESSIONS–SATURDAY–2–1:30 PM–3:00 PM

Saturday, October 14 | 1:30 pm–3:00 pm | Platform Session 2

2:15 pm
In Vivo Implantable Optical Nanosensor for MicroRNA
Daniel Heller[1,2], Jackson Harvey[1,2], Prakrit Jena[1], Ryan Williams[1], Thomas Galassi[1,2], Gul Zerze[3], and Jeetain Mittal[3]
[1]*Memorial Sloan-Kettering Cancer Center, New York, NY,* [2]*Weill Cornell Medical College, New York, NY,* [3]*Lehigh University, Bethlehem, PA*

2:30 pm
Zwitterionic Surface Coating for Improvement of Continuous Glucose Monitor Biocompatibility and Function
Joshua Doloff[1,2], Xi Xie[1], Atieh Sadraei[1], James McGarrigle[3], Volkan Yesilurt[1], Jose Oberholzer[3], Robert Langer[1], and Daniel Anderson[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Children's Hospital Boston, Boston, MA,* [3]*University of Illinois Chicago, Chicago, IL*

OP-Sat-2-14 — Room 228B

Track: Cancer Technologies

Microfluidic Cancer Models

Chairs: Xiaocheng Jiang, Mehdi Nikkhah

1:30 pm
Migratory Propensity of Metastatic Breast Cancer Cells as a Function of Adhesion Strength
Pranjali Beri[1], Afsheen Banisadr[1], Alexander Fuhrmann[1], Anna Popravko[1], Jesse Placone[1], Thea Tlsty[2], and Adam Engler[1]
[1]*University of California, San Diego, La Jolla, CA,* [2]*University of California, San Francisco, San Francisco, CA*

1:45 pm
Ultra-Sensitive Digital Detection of Epigenetic DNA Methylation Heterogeneity
Christine O'Keefe[1], Thomas Pisanic[1], and Tza-Huei Wang[1]
[1]*Johns Hopkins University, Baltimore, MD*

2:00 pm
In Vitro and *In Silico* Models of Endothelial to Mesenchymal Transformation and Tumor-Endothelial Cell Interaction
Sara Mina[1,2], Jonathan Bramsen[2], Peter Huang[2], Bruce Murray[2], and Gretchen Mahler[2]
[1]*MIT, Cambridge, MA,* [2]*SUNY Binghamton, Binghamton, NY*

2:15 pm
Blebbing And Protrusive Phenotypic Heterogeneity of Aggressive Breast Cancer Cells Governs their Patterns of Decision Making
Runchen Zhao[1], Alexandros Afthinos[1], Tian Zhu[1], and Konstantinos Konstantopoulos[1]
[1]*Johns Hopkins University, Baltimore, MD*

2:30 pm
Tri-layer Microfluidic Platform for Studying Tumor Angiogenesis and Cancer Cell Intravasation
Supriya Nagaraju[1], Danh Truong[1], and Mehdi Nikkhah[1]
[1]*Arizona State University, Tempe, AZ*

2:45 pm
A Microfluidic Device for Predicting a Cancer Patient's Risk of Metastasis and Response to Chemotherapy
Christopher Yankaskas[1], Panagiotis Mistriotis[1], Colin Paul[1], Keyata Thompson[2], Kristen Manto[1], Andreas Chai[1], Michele Vitolo[2], Stuart Martin[2], and Konstantinos Konstantopoulos[1]
[1]*The Johns Hopkins University, Baltimore, MD,* [2]*University of Maryland School of Medicine, Baltimore, MD*

OP-Sat-2-15 — Room 227C

Track: Biomedical Engineering Education (BME)

Motivation and Added Value

Chairs: Véronique Peiffer, Ruth Ochia

1:30 pm
Non-cognitive Factors Associated with Freshmen Undergraduate Bioengineering Majors
Ruth Ochia[1], Jamie Bracey[1], and Yah-el Har-el[1]
[1]*Temple University, Philadelphia, PA*

1:45 pm
What Freshman Biomedical Engineering Students Think They're Going To Do After Graduation
Emma Frow[1] and Michael Caplan[1]
[1]*Arizona State University, Tempe, AZ*

2:00 pm
Teaching Communications Skills to Undergraduate and Graduate Students of Biomedical Engineering at the University of Utah: A Genre Acquisition and Apprenticeship Approach
Rob MacLeod[1] and Heather Palmer[1]
[1]*University of Utah, Salt Lake City, UT*

2:15 pm
Engaging Biomedical Engineering Students in Health Disparities Research and Impact: A Pilot Study at the City College of New York (CCNY)
Maribel Vazquez[1], Otto Marte[1], Joseph Barba[1], and Karen Hubbard[1]
[1]*City College of New York (CCNY), New York, NY*

2:30 pm
Impact of Two-Stage Quizzes on Student Learning And Perceptions in a Lower Division BME Course
Jennifer Choi[1]
[1]*University of California Davis, Davis, CA*

2:45 pm
The Value-oriented Health Economic Environment: What Every Innovator Should Know
Véronique Peiffer[1], Cynthia Yock[1], Paul Yock[1], and Jan Pietzsch[1,2]
[1]*Stanford University, Stanford, CA,* [2]*Wing Tech Inc., Menlo Park, CA*

***BME Track Sponsored by:**

NJIT — Department of Biomedical Engineering

Saturday, October 14 | 1:30 pm–3:00 pm | Platform Session 2

OP-Sat-2-16 — Room 226A

Track: Bioinformatics, Computational and Systems Biology

Novel Methods for Systems Biology

Chairs: Tara Deans, Patrick Cahan

1:30 pm
Ensemble Clustering Infers Signaling Differences Resulting from HER2 Overexpression
Katherine Schaberg[1], Venktesh Shirure[1], Elizabeth Worley[1], Steven George[1], and Kristen Naegle[1]
[1]*Washington University in St Louis, St. Louis, MO*

1:45 pm
Fluocell to Visualize and Quantify Fluorescence Ratio Dynamics in Live Cells
Qin Qin[1], Shannon Laub[1], Yingxiao Wang[1], and Shaoying Lu[1]
[1]*University of California, San Diego, La Jolla, CA*

2:00 pm
An Optogenetic Toolkit for Rapid Creation of Optically Controllable Circuits in *Saccharomyces cerevisiae*
Cameron Stewart[1], Neydis Moreno[1], Stephanie Geller[1], and Megan McClean[1]
[1]*University of Wisconsin-Madison, Madison, WI*

2:15 pm
Tunable Cellular Decision-Making Behavior in a Constant Synthetic Network Topology
Najaf Shah[1] and Casim Sarkar[2]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*University of Minnesota, Minneapolis, MN*

2:30 pm
An Ultrasensitive Multikinase Activity Assay for High-throughput Cellular Profiling
Christian Smolko[1] and Kevin Janes[1]
[1]*University of Virginia, Charlottesville, VA*

OP-Sat-2-17 — Room 226B

Track: Neural Engineering

Neural Device Technology

Chairs: Teresa Murray, Jit Muthuswamy

1:30 pm
Robust Silicon Carbide neural interface: Electrochemical Performance
Evans Bernardin[1], Christopher L. Frewin[2], Richard Everly[1], Jawad Ul Hassan[3], Joseph J. Pancrazio[2], and Stephen E. Saddow[1]
[1]*University of South Florida, Tampa, FL,* [2]*University of Texas at Dallas, Dallas, TX,* [3]*Linköping University, Linköping, Sweden*

1:45 pm
In Vivo Validation of a flexible CMOS-compatible Neural Interface
Aritra Kundu[1], Erin Patrick[1], Ahmed Fahmy[1], Francisco Delgado[1], Seth Currlin[1], Ryan Madler[1], Kevin Otto[1], Nima Maghari[1], and Rizwan Bashirullah[1]
[1]*University of Florida, Gainesville, FL*

2:00 pm
Transparent Graphene Electrodes for Chronic In Vivo Optical and Electrophysiological Recording
Nicolette Driscoll[1], Flavia Vitale[1], Hajime Takano[2], Ramya Vishnubhotla[1], A.T. Charlie Johnson[1], Douglas Coulter[2,3], and Brian Litt[1,3]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*Children's Hospital of Philadelphia, Philadelphia, PA,* [3]*Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA*

2:15 pm
Plug-and-Play Input/Output Connection to Syringe-Injectable Mesh Electronics
Thomas Schuhmann[1], Jun Yao[1], Guosong Hong[1], Tian-Ming Fu[1], and Charles Lieber[1]
[1]*Harvard University, Cambridge, MA*

2:30 pm
Feedforward-Equalized Communication Link for Implantable Systems Achieving 400 Mbps
Taufiq Ahmed[1], Naila Tasneem[1], and Ross M. Walker[1]
[1]*University of Utah, Salt Lake City, UT*

2:45 pm
Injectable Microstimulators for Ultrasound Driven, Wireless Neuromodulation
Arati Sridharan[1], Sanchit Chirania[1], Nathaniel Bennett[1], Bruce Towe[1], and Jit Muthuswamy[1]
[1]*Arizona State University, Tempe, AZ*

OP-Sat-2-18 — Room 227C

Track: Undergraduate Research, Design & Leadership

Undergraduate Research, Design & Leadership II

Chairs: Jeffrey La Belle, Tim Becker

1:30 pm
Biased Angiogenesis in Response to Low Oxygen Dynamics
Yunli Chu[1], Sandra Lam[1], and Steven George[2]
[1]*Washington University in St. Louis, St. Louis, MO*
[2]*University of California, Davis, Davis, CA*

1:39 pm
Microfluidic Encapsulation of Mesenchymal Stem Cells for Treatment of Type 1 Diabetes
Emily Long[1]
[1]*Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC*

1:48 pm
Identifying the Mechanisms Mediating TKI-Induced Cardiac Hypertrophy
Monika Grabowska[1], Bryan Chun [1], and Jeff Saucerman[1]
[1]*University of Virginia, Charlottesville, VA*

1:57 pm
Nanoparticle Delivery Through a Resection-Disrupted Blood-Brain-Barrier for the Treatment of Glioblastoma
Sara Belko[1], Kyle Householder[1], and Rachael Sirianni[2]
[1]*Arizona State University, Tempe, AZ,* [2]*Barrow Neurological Institute, Phoenix, AZ*

PLATFORM SESSIONS–SATURDAY–2–1:30 PM–3:00 PM

Saturday, October 14 | 1:30 pm–3:00 pm | Platform Session 2

2:06 pm
Predictive Modeling of Sepsis in Adult ICU Patients
Philip Schroeder[1], Roman Wang[1], Yasasvini Puligundla[1], Catherine Sun[1], Mawulolo Ameko[1], Christopher Moore[1], and Laura Barnes[1]
[1]*University of Virginia, Charlottesville, VA*

2:15 pm
The Use of Allogeneic Block Bone Grafts as an Effective Bone Substitute During Implant Insertion
Aniket Kulkarni[1], Joshua Cohen[1], Kayla Scott[1], Kaan Sahingur[1], Barbara D. Boyan[1,2], and Zvi Schwartz[1,3]
[1]*Virginia Commonwealth University, Richmond, VA,* [2]*Georgia Institute of Technology, Atlanta, GA,* [3]*University of Texas Health Science Center at San Antonio, San Antonio, TX*

2:24 pm
Porous Silicon Nanoparticle Fabrication Optimization Toward siRNA Loading and Delivery
Elizabeth Curvino[1], Isom Kelly[1], Joshua Fain[1], Meredith Jackson[1], Sharon Weiss[1], and Craig Duvall[1]
[1]*Vanderbilt University, Nashville, TN*

2:33 pm
The Composition of the Biomass Objective Function in Genome-Scale Metabolic Models Impacts In Silico Predictions
Patrick Gelbach[1], Anna Blazier[1], and Jason Papin[1]
[1]*University of Virginia, Charlottesville, VA*

2:42 pm
Analysis of C9ORF72 in ALS via Targeted Transcriptional Regulation
Amanda Urke[1], Antonia Dominguez[1], and Lei S. Qi[1]
[1]*Stanford University, Stanford, CA*

2:51 pm
Ground/Pedal Reaction Forces and Knee Flexion Angles for Transtibial Amputees in Gait and Cycling
Grigoriy Orekhov[1], Elizabeth Heyde[1], Matt Robinson[2], Scott Hazelwood[1], and Stephen Klisch[1]
[1]*California Polytechnic State University, SLO, San Luis Obispo, CA,* [2]*Hanger Clinic, San Luis Obispo, CA*

OP-Sat-3-1 **Room 224A**

Track: Biomaterials

Hydrogel Biomaterials II

Chairs: Daniel Gallego-Perez, Nicole Iverson

3:15 pm
Novel PEG-based Hydrogel via Thiol-Epoxy Chemistry for Controlling Stem Cell Fate
Cong Truc Huynh[1], Fangze Liu[1], Katherine A. Coughlin[2], and Eben Alsberg[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Northwestern University, Evanston, IL*

3:30 pm
Chromonic Liquid Crystal Hydrogels with Patternable, High Strain Actuation for Biomedical Applications
Jennifer Boothby[1], Ruvini Kuiaratne[1], and Taylor Ware[1]
[1]*University of Texas at Dallas, Richardson, TX*

3:45 pm
Aligned Hydrogel Tubes and Bridges Guide Axon Elongation and Myelination Following Spinal Cord Injury
Courtney Dumont[1], Mitchell Carlson[1], and Lonnie Shea[1]
[1]*University of Michigan, Ann Arbor, MI*

4:00 pm
Hydrogel Degradation Mechanism Impacts Adventitial Fibroblast Behavior
Rebecca Scott[1,2], Karyn Robinson[2], Robert Akins[2], and Kristi Kiick[1]
[1]*University of Delaware, Newark, DE,* [2]*Nemours-Alfred I. duPont Hospital for Children, Wilmington, DE*

4:15 pm
An In Vitro Model for Injectable Silk-HA Hydrogels to Prevent Preterm Birth
Nicole R. Raia[1], Stephanie L. Bakaysa [2], Chiara E. Ghezzi[1], Michael D. House[2], and David L. Kaplan[1]
[1]*Biomedical Engineering, Tufts University, Medford, MA,* [2]*Division of Maternal Fetal Medicine, Tufts Medical Center, Boston, MA*

4:30 pm
Multifactorial Analysis of Alginate-Mediated Maintenance of Preconditioned MSC Spheroids
Ben Hung[1] and J. Kent Leach[1]
[1]*University of California at Davis, Davis, CA*

***Biomaterials Track sponsored by:**

ACS Biomaterials SCIENCE & ENGINEERING

Saturday, October 14 | 3:15 pm–4:45 pm | Platform Session 3

OP-Sat-3-2 **Room 224B**

Track: Biomaterials

Natural and Bioinspired Biomaterials II

Chairs: Rodney Averett, Angela Pannier

3:15 pm
Mechanism of Thrombus Repellency on Slippery, Liquid-Immobilized Surface Coatings
Sally Gao[1,2] and Anna Waterhouse[1,2]
[1]*Heart Research Institute, Newtown, Australia,* [2]*University of Sydney, Sydney, Australia*

3:30 pm
Engineered Immune Polyelectrolyte Multilayers to Promote Immune Tolerance and Reverse Paralysis
Lisa Tostanoski[1] and Christopher Jewell[1,2,3,4]
[1]*University of Maryland, College Park, MD,* [2]*University of Maryland School of Medicine, Baltimore, MD,* [3]*United States Department of Veterans Affairs, Baltimore, MD,* [4]*Marlene and Stewart Greenebaum Cancer Center, Baltimore, MD*

3:45 pm
CC-DHA: A Novel Elastomeric Biomaterial to Facilitate Abdominal Laparotomy Closure
Omer Kaymakcalan[1], Julia Jin[1], Zhexun Sun[2], Nicole Ricapito[2], Mary McCorry[2], Sarah Karinja[1], Andrew Abadeer[1], Jonathan Morgan[1], David Putnam[2], and Jason Spector[1,2]
[1]*Weill Cornell Medicine, New York, NY,* [2]*Cornell University, Ithaca, NY*

4:00 pm
Engineering Recruitment and Release of Cargo from Synthetic Organelles
Benjamin Schuster[1], Matthew Good[1], and Daniel Hammer[1]
[1]*University of Pennsylvania, Philadelphia, PA*

4:15 pm
Nanocellulose-loaded Electrospun Biomedical Polymer Fibers: The Effect of Cellulose Particle Size
Katrina Hatch[1], Tomáš Kalous[2], Jana Hlavatá[2], Fei Liu[1], Tatsiana Liavitskaya[1], and Andrei Stanishevsky[1]
[1]*University of Alabama at Birmingham, Birmingham, AL,* [2]*Technical University in Librec, Liberec, Czech Republic*

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ACS Biomaterials SCIENCE & ENGINEERING

OP-Sat-3-3 **Room 229A**

Tracks: Biomechanics, Biomaterials

Biomechanics of Biomaterials

Chairs: Chung-Hao Lee, Yubing Sun

3:15 pm
Enhanced Wear Protection by a Synthetic Lubricin Mimetic Combined to Fibronectin
Roberto Andresen Eguiluz[1], Sierra Cook[2], Mingchee Tan[3], Cory Brown[4], Noah Pacifici[2], Mihir Samak[3], Lawrence Bonassar[2], David Putnam[2], and Delphine Gourdon[2,5]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL,* [2]*Cornell University, Ithaca, NY,* [3]*Massachusetts Institute of Technology, Cambridge, MA,* [4]*University of California Santa Barbara, Santa Barbara, CA,* [5]*University of Ottawa, Ottawa, Ontario, Canada*

3:30 pm
What is the Tear Resistance of the Vagina?
Jeffrey McGuire[1], Steve Abramowitch[2], Spandan Maiti[2], and Raffaella De Vita[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*University of Pittsburgh, Pittsburgh, PA*

3:45 pm
Dynamic Measurement of Blood Viscoelasticity using Acoustic Tweezing
Nithya Kasireddy[1], Erika Chelales[1], Vahideh Hosseinzadeh[2], Daishen Luo[1], Glynn Holt[2], and Damir Khismatullin[1]
[1]*Tulane University, New Orleans, LA,* [2]*Boston University, Boston, MA*

4:00 pm
An Integrated Experimental-Computational Approach for Multi-Scale Investigations of Heart Valve Function - Linking Valve Interstitial Cell Responses with Tissue Biomechanical Behavior
Devin Laurence[1] and Chung-Hao Lee[1]
[1]*The University of Oklahoma, Norman, OK*

4:15 pm
A Forelimb Fatigue Model to Study Damage Accrual and Repair in Osteoporotic Rabbits
Brandon Coates[1] and Matt Silva[1]
[1]*Washington University in St. Louis, St. Louis, MO*

4:30 pm
Biomechanical Comparison of Three Posterior Cruciate Ligament Reconstruction Techniques
Allison Gordon[1], Ferris Pfeiffer[1,2,3], Jill Jouret[1,2,3], Mauricio Kfuri[1,2], James Cook[1,2,3], and João Bourbon[4]
[1]*University of Missouri, Columbia, MO,* [2]*Missouri Orthopaedic Institute, Columbia, MO,* [3]*Thompson Laboratory for Regenerative Orthopaedics, Columbia, MO,* [4]*University of São Paulo, Aracaju, Brazil*

*** Biomaterials Track Sponsored by ACS Biomaterials Science & Engineering**

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Saturday, October 14 | 3:15 pm–4:45 pm | Platform Session 3

OP-Sat-3-4 — Room 229B

Tracks: Cardiovascular Engineering, Biomechanics

Mechanobiology of the Cardiovascular System

Chairs: Kytai Nguyen, Chelsey Simmons

3:15 pm
Mitochondrial Function is Co-regulated by Matrix Elasticity and Tissue Alignment in Engineered Cardiac Tissues
Davi M. Lyra-Leite[1], Allen M. Andres[2], Andrew P. Petersen[1], Nathan Cho[1], Nethika R. Ariyasinghe[1], Jezell Lee[1], Roberta A. Gottlieb[2], and Megan L. McCain[1,3]
[1]Laboratory for Living Systems Engineering, Department of Biomedical Engineering, USC Viterbi School of Engineering, University of Southern California, Los Angeles, CA, [2]Heart Institute and Barbra Streisand Women's Heart Center, Cedars-Sinai Medical Center, Los Angeles, CA, [3]Department of Stem Cell Biology and Regenerative Medicine, Keck School of Medicine of USC, University of Southern California, Los Angeles, CA

3:30 pm
Vinculin-mediated Increase in Cardiac Function Confers Systemic Metabolic Efficiency and Extends Healthspan and Lifespan
Ayla Sessions[1], Peter Min[1], and Adam Engler[1]
[1]University of California, San Diego, La Jolla, CA

3:45 pm
Engineering Functional μMyocardium with Tunable Cell-Matrix and Cell-Cell Interactions
Nethika R. Ariyasinghe[1], Caitlin H. Reck[1], Alyssa A. Viscio[1], Andrew P. Petersen[1], Davi M. Lyra-Leite[1], Nathan Cho[1], and Megan L. McCain[1,2]
[1]Laboratory for Living Systems Engineering, Department of Biomedical Engineering, USC Viterbi School of Engineering, University of Southern California, Los Angeles, CA, [2]Department of Stem Cell Biology and Regenerative Medicine, Keck School of Medicine of USC, University of Southern California, Los Angeles, CA

4:00 pm
Anisotropic Hysteresis of Vascular Smooth Muscle Cells Measured by Cellular Micro-Biaxial Stretching
Zaw Win[1], Justin Buksa[1], and Patrick Alford[1]
[1]University of Minnesota, Minneapolis, MN

4:15 pm
Developing and Characterizing an N-Cadherin FRET-based Tension Sensor
Aarti Urs[1], Ishaan Puranam[1], and Brenton Hoffman[1]
[1]Duke University, Durham, NC

4:30 pm
Force-Velocity Measurement in Engineered Heart Tissue Using Iterative Load Clamp
Lorenzo Sewanan[1,2] and Stuart Campbell[1]
[1]Yale University, New Haven, CT, [2]Yale School of Medicine, New Haven, CT

OP-Sat-3-5 — Room 221A

Tracks: Cardiovascular Engineering, Bioinformatics, Computational and Systems Biology

Computational Modeling in Cardiovascular Systems

Chairs: Andrew Siefert, Saami Yazdani

3:15 pm
On the use of Brachial Pressure as an Estimator of Hyperemic Aortic Pressure in Computing Fractional Flow Reserve
Elizabeth Thompson[1], Adrien Lefieux[1], Habib Samady[1], and Don Giddens[2]
[1]Emory University School of Medicine, Atlanta, GA, [2]Georgia Institute of Technology and Emory University, Atlanta, GA

3:30 pm
Computational Modeling of Blood Flow in Microvascular Networks
Peter Balogh[1] and Prosenjit Bagchi[1]
[1]Rutgers University, Piscataway, NJ

3:45 pm
Computational Modeling of Inferior Vena Cava Filters: Identifying Fluid-Structure Interactions that Lead to Filter Perforation
Robert Herbert[1], Josh Dowell[2,3], and Samir Ghadiali[1,3]
[1]The Ohio State University, Columbus, OH, [2]St Vincent Hospital and Health Services, Indianapolis, IN, [3]Ohio State University Wexner Medical Center, Columbus, OH

4:00 pm
A Mathematical Model for NO Production by Aldehyde and Xanthine Oxidases During Hypoxia
Yien Liu[1], Donald Buerk[1], Kenneth Barbee[1], and Dov Jaron[1]
[1]Drexel University, Philadelphia, PA

4:15 pm
Giving it a Whirl: Spiral Flow Modulation of Mechanical Circulatory Support Devices
Pablo Huang Zhang[1,2], Peter Davies[3], and J. Yasha Kresh[1,2,3]
[1]Drexel University College of Medicine, Philadelphia, PA, [2]Drexel University, Philadelphia, PA, [3]University of Pennsylvania, Philadelphia, PA

4:30 pm
Patient Specific Assessment of Critical Embolization Rates in the Hybrid Norwood Procedure
Ray Prather[1], John Seligson[1], Marcus Ni[1], Alain Kassab[1], Eduardo Divo[2], and William DeCampli[3]
[1]University of Central Florida, Orlando, FL, [2]Embry Riddle Aeronautical University, Daytona Beach, FL, [3]Orlando Health, Orlando, FL

Saturday, October 14 | 3:15 pm–4:45 pm | Platform Session 3

OP-Sat-3-6 — Room 221B

Tracks: Nano and Micro Technologies, Drug Delivery & Intelligent Systems

Nano to Micro Devices in Delivery III

Chairs: Andrew Tsourkas, Smitha Rao

3:15 pm
Modulating Cerebral Hemodynamics to Facilitate Nanoparticle Drug Delivery to the Brain
David Medina[1], Rick Ceton[1,2], Eugene Chung[1], and Rachael Sirianni[1,2]
[1]Barrow Neurological Insitute, Phoenix, AZ, [2]Arizona State University, Tempe, AZ

3:30 pm
Monitoring Nanoparticle Stability and Mobility in Whole Blood and Tissues *In Situ*
Ana Bohorquez[1], Mythreyi Unni[1], Andreina Chiu[1], Sayali Belsare[1], Lori Rice[1], Chris Pampo[1], Dietmar Siemann[1], and Carlos Rinaldi[1]
[1]University of Florida, Gainesville, FL

3:45 pm
Femtomolar IL-1 Cytokine Detection Using A Microfluidic FePt Nanoparticle-Based ELISA
Randolph Callender[1], Mathias Wipf[1], Jung Seok Lee[1], Luye Mu[1], Jieun Lee[1], Tarek Fahmy[1], and Mark Reed[1]
[1]Yale University, New Haven, CT

4:00 pm
The Use of Magnetic Microwires in Promoting Osteosarcoma Cell Death *In Vitro*
Jay Campisi[1,2], Ion Martínez de Apellániz[2], Sara Lizarbe-Sancha[2], Iñigo Arranz-Bárcena[2], Oihane Mitxelena-Iribarren[2], Valentina Zhukova[4], Arcady Zhukov[3,4], Sergio Arana[2], and Maite Mujika[2]
[1]Regis University, Denver, CO, [2]CEIT and Tecnun (University of Navarra), Donostia-San Sebastián, Spain, [3]UPV/EHU, Donostia-San Sebastián, Spain, [4]IKERBASQUE, Basque Foundation for Science, Bilbao, Spain

4:15 pm
Anti-fusion Targeted Nanomicellar Theranostics: Novel Antiviral Strategies for Respiratory Syncytial Virus Infection-induced Lung Diseases
Shyam Mohapatra[1,2] and Subhra Mohapatra[3]
[1]University of South Florida, Tampa, FL, [2]JAH VA Hospital, Tampa, FL, [3]Univ of South Florida, Tampa, FL

4:30 pm
Crystal Structure and Dimension: Towards the Production of a Catalytic ROS Producing Nanoparticle
Daniel Lane[1], Kvar Black[1], Nathan Reed[1], Ramesh Raliya[1], Rebecca Gilson[1], Rui Tang[1], and Samuel Achilefu[1]
[1]Washington University in St. Louis, St. Louis, MO

OP-Sat-3-7 — Room 222B

Track: Cellular and Molecular Bioengineering

Molecular Bioengineering

Chairs: Greg Hudalla, Krishanu Saha

3:15 pm
Proximity-based Sortase-mediated Ligation
Hejia Wang[1], Burcin Altun[1], Kido Nwe[1], and Andrew Tsourkas[1]
[1]University of Pennsylvania, Philadelphia, PA

3:30 pm
In-silico Design Of CRISPR/Cas9 Guide RNA For Personalized Medicine
Yidan Pan[1], Ciaran Lee[1], and Gang Bao[1]
[1]Rice University, Houston, TX

3:45 pm
Development of an Ezrin Tension Sensor to Measure Forces Between the Cytoskeleton and Plasma Membrane
Matthew Berginski[1], Andrew LaCroix[1], and Brenton Hoffman[1]
[1]Duke University, Durham, NC

4:00 pm
Self-Assembled FN III 12-14 Into Microaggregates Drive Cells To EMT
Hilmi Humeid[1] and Christopher Lemmon[1]
[1]Virginia Commonwealth University, Richmond, VA

4:15 pm
Visualizing and Quantifying Fibroblast Collagen Production in an *In Vitro* Model of Wound Healing and Fibrosis
Mariam El-Hattab[1] and Edward Sander[1]
[1]University of Iowa, Iowa City, IA

4:30 pm
Assembly of Pure Multi-Protein Machinery Using Synthetic Microbial Consortia
Fernando Villarreal[1], Luis Eduardo Contreras Llano[1], Michael Chavez[1], Yunfeng Ding[1], Jinzhen Fan[1], Tingrui Pan[1], and Cheemeng Tan[1]
[1]University of California, Davis, Davis, CA

OP-Sat-3-8 — Room 225B

Track: Biomedical Imaging and Optics

Biomedical Imaging and Optics

Chairs: Paolo Provenzano, Ramin Pashaie

3:15 pm
Adaptive Optics for Autofocusing Eyeglasses
Nazmul Hasan[1], Mohit Karkhanis[1], Fariha Khan[1], Aishwaryadev Banerjee[1], Tridib Ghosh[2], Hanseup Kim[1], and Carlos Mastrangelo[1]
[1]University of Utah, Salt Lake City, UT, [2]SharpEyes LLC, Salt Lake City, UT

PLATFORM SESSIONS–SATURDAY–3–3:15 PM–4:45 PM

Saturday, October 14 | 3:15 pm–4:45 pm | Platform Session 3

3:30 pm
Real-Time Label-Free Imaging of Dynamic Metabolic Processes During Apoptosis In Live Cells
Marina Marjanovic[1], Andrew Bower[1], Joanne Li[1], Eric Chaney[1], and Stephen Boppart[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

3:45 pm
Improved Performance in Fiber Bundle Imaging Systems Via Dithering
Arthur Gmitro[1], Andrew Rouse[1], and Neil Momsen[1]
[1]*University of Arizona, Tucson, AZ*

4:00 pm
Photonic Inactivation of Virus Particles by Femtosecond Lasers
Mina Nazari[1], Rahm Gummuluru[1], Mi Hong[1], Björn Reinhard[1], and Shyamsunder Erramilli[1]
[1]*Boston University, Boston, MA*

4:15 pm
Noncontact 3-dimensional Speckle Contrast Diffuse Correlation Tomography of Tissue Blood Flow Distribution
Mingjun Zhao[1], Chong Huang[1], Daniel Irwin[1], Siavash Mazdeyasna[1], Nneamaka Agochukwu[1], Ruohui Li[1,2], Lesley Wong[1], and Guoqiang Yu[1]
[1]*University of Kentucky, Lexington, KY,* [2]*Beijing Union University, Beijing, China, People's Republic of*

4:30 Pm
Accurate Segmentation of Pressure Ulcer Images
Ahmed Shalaby[1], Ali Mahmoud[1], Begoña García-Zapirain[2], Adel Elmaghraby[1], and Ayman El-Baz[1]
[1]*University of Louisville, Louisville, KY,* [2]*EVIDA Research Group,Deusto University, Spain, Deusto, Spain*

OP-Sat-3-9 — **Room 228A**

Track: Device Technologies and Biomedical Robotics

Affordable Health and Frugal Innovation

Chairs: Adam Brown, Perry Weinthal

3:15 pm
Automating Biomarker Concentration and Signal Enhancement for Paper-Based Chlamydia Detection
Daniel Bradbury[1], April Pan[1], Benjamin Wu[1,2], and Daniel Kamei[1]
[1]*University of California Los Angeles, Los Angeles, CA,* [2]*School of Dentistry, University of California Los Angeles, Los Angeles, CA*

3:30 pm
Measuring the Mass, Volume, and Density of Microgram-Sized Objects in Fluids
Shirin Mesbah Oskui[1], Heran Bhakta[1], Graciel Diamante[1], Huinan Liu[1], Daniel Schlenk[1], and William Grover[1]
[1]*University of California, Riverside, Riverside, CA*

3:45 pm
Implementation of a Split Trehalase in an Electrochemical Biosensor for Rapid Point-of-Care Detection of Antibodies and Biomarkers of Disease
Jeroen De Buck[1] and Marija Drikic[1]
[1]*University of Calgary, Calgary, AB, Canada*

4:00 pm
Rapid Workflow for Cancer Cell Genomics
Adam Snider[1] and Anubhav Tripathi[1]
[1]*Brown University, Providence, RI*

4:15 pm
Open-Source Device for Variable Ulnar Eminence
Perry Weinthal[1]
[1]*Florida Atlantic University, Boca Raton, FL*

4:30 pm
Point-of-Care System for Monitoring Cellular Adhesion in Sickle Cell Disease
Mark Lewandowski[1], Jonathon Koss[1], Jane Little[1], and Umut Gurkan[1]
[1]*Case Western Reserve University, Cleveland, OH*

OP-Sat-3-10 — **Room 226A**

Track: Bioinformatics, Computational and Systems Biology

Analysis of Cell Signaling

Chairs: Megan McClean, Princess Imoukhuede

3:15 pm
A Rule-based Model of the CamKII Holoenzyme
Matthew Pharris[1], Melanie Stefan[2], and Tamara Kinzer-Ursem[1]
[1]*Purdue University, West Lafayette, IN,* [2]*The University of Edinburgh, Edinburgh, United Kingdom*

3:30 pm
How Specific Sequence Features of FG Nups Affect Nucleocytoplasmic Transport
Mohaddeseh Peyro[1], Mohammad Soheilypour[1], Ali Ghavami[1], Briana Lee[1], and Mohammad Mofrad[1]
[1]*University of California Berkeley, Berkeley, CA*

3:45 pm
Keratinocyte ERK Signaling is Modulated by Growth Factor Presentation Scheme and Cellular Tight Junctions
Pamela Kreeger[1], Chloe Kim, Sarah Jacobsen[1], Cameron Stewart[1], Megan McClean[1], and Kristyn Masters[1]
[1]*University of Wisconsin-Madison, Madison, WI*

4:00 pm
Computational Model Predicts the Dynamics of Thrombospondin-1 Mediated Apoptosis Signaling
Qianhui Wu[1], Jennifer Rohrs[1], Pin Wang[1], and Stacey Finley[1]
[1]*University of Southern California, Los Angeles, CA*

Saturday, October 14 | 3:15 pm–4:45 pm | Platform Session 3

4:15 pm
Large-scale Logic-based Differential Equation Computational Model Revealed a New Dimension in Macrophage Polarization
Xiaji Liu[1], Jingyuan Zhang[1], Angela Zeigler[1], Merry Lindsey[2,3], and Jeffrey Saucerman[1]
[1]*University of Virginia, Charlottesville, VA,* [2]*University of Mississippi Medical Center, Jackson, MS,* [3]*G.V. (Sonny) Montgomery Veterans Affairs Medical Center, Jackson, MS*

4:30 pm
High-dimensional Single-cell Signaling Analysis Identifies Novel Targets for Eradicating Latent HIV-infected T Cells
Linda Fong[1] and Kathryn Miller-Jensen[1]
[1]*Yale University, New Haven, CT*

OP-Sat-3-11 — **Room 226B**

Track: Neural Engineering

CNS Repair and Regeneration

Chairs: Stephanie Seidlits, Ryan Koppes

3:15 pm
Improving Functional Gains in a Skilled Reaching Task Following Brain Injury Through Combinatorial Neural Stem Cell and Motor Rehabilitation Therapy
Caroline Addington[1], Gergey Mousa[2], Peter Hillebrand[2], Amber Bengson[2], Kristen Okada[2], Akshara Thakore[2], Sarah Stabenfeldt[2], and Jeffrey Kleim[2]
[1]*University of Virginia, Charlottesville, VA,* [2]*Arizona State University, Tempe, AZ*

3:30 pm
Endogenous Neural Stem Cell Activation After Traumatic Brain Injury
Jeremy Anderson[1], Misaal Patel[1], Quinn Wade[1], Kelvin Kwan[1], and Li Cai[1]
[1]*Rutgers University, Piscataway, NJ*

3:45 pm
Feasibility of Nanoparticle Delivery Correlates With Blood Brain Barrier Permeability After Diffuse Brain Injury
Vimala Bharadwaj[1], Rachel Rowe[2], Jordan Harrison[2], Chen Wu[2], Trent Anderson[2], Jonathan Lifshitz[2,3], P. David Adelson[3], Vikram Kodibagkar[1], and Sarah Stabenfeldt[1]
[1]*Arizona State University, Tempe, AZ,* [2]*University of Arizona, College of Medicine-Phoenix, Phoenix, AZ,* [3]*Barrow Neurological Institute at Phoenix Children's Hospital, Phoenix, AZ*

4:00 pm
Implantation of an Astrocyte Extracelllular Matrix Containing Hydrogel Improves Neural Fiber Growth into a Spinal Cord Lesion
Russell Thompson[1,2], Jennifer Pardieck[1,2], Lindsey Crawford[2], and Shelly Sakiyama-Elbert[1]
[1]*University of Texas-Austin, Austin, TX,* [2]*Washington University in St Louis, St Louis, MO*

4:15 pm
IL-4-Releasing Films Shift Macrophages to an Anti-inflammatory State for Spinal Cord Injury Regeneration
Alexis Ziemba[1], Anthony D'Amato[1], Devan Puhl[1], Taylor MacEwen[1], Abigail Koppes[2], Ryan Gilbert[1], Michelle Lennartz[3], and Ryan Koppes[2]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*Northeastern University, Boston, MA,* [3]*Albany Medical Center, Albany, NY*

4:30 pm
Combinatorial Lentiviral Gene Delivery of Pro-oligodendrogenic Factors to Improve Myelination of Regenerating Axons After Spinal Cord Injury
Dominique Smith[1], Daniel Margul[2], Mitchell Johnson[1], and Lonnie Shea[1]
[1]*University of Michigan - Ann Arbor, Ann Arbor, MI,* [2]*Northwestern University, Chicago, IL*

OP-Sat-3-12 — **Room 227C**

Track: Undergraduate Research, Design & Leadership

Undergraduate Research, Design & Leadership III

Chairs: Jeffrey La Belle, Tim Becker

3:15 pm
The Influences of Mitochondrial Depolarization on Mitochondrial Network Structures
Shao-Ting Chiu[1], Jun-Yi Leu[2], and An-Chi Wei[3]
[1]*Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan,* [2]*Institute of Molecular Biology, Academia Sinica, Taipei, Taiwan*

3:24 pm
3-Dimensional Fluid-Structure Interaction Computational Model of Heart Valves for Bioreactor Optimization
Frederic Blais[1], Giulia Luraghi[2], Francesco Migliavacca[2], Giancarlo Pennati[2], Leslie Sierad[1,3], and Ethan Kung[1]
[1]*Clemson University, Clemson, SC,* [2]*Politecnico di Milano, Milan, Italy,* [3]*Aptus Bioreactors, Clemson, SC*

3:33 pm
Antibacterial Effects of Copper-PDMS Membranes for Artificial Lungs
Angela Lai[1], Neha Kapate[1], Neil Carleton[1], and Keith Cook[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

3:42 pm
Similarity in Viral and Host Promoters Couples Viral Reactivation with Host Cell Migration
Kathrin Bohn-Wippert[1], Erin Tevonian[1], Melina Megaridis[1], and Roy Dar[1]
[1]*University of Illinois at Urbana-Champagin, Urbana, IL*

PLATFORM SESSIONS–SATURDAY–3–3:15 PM–4:45 PM

Saturday, October 14 | 3:15 pm–4:45 pm | Platform Session 3

3:51 pm
Modeling Glioblastoma Invasion With Microfluidics
Elijah Karvelis[1], Mai Ngo[1], Aidan Gilchrist[1], Roger Kamm[2], and Brendan Harley[1]
[1]*University of Illinois at Urbana Champaign, Urbana, IL,* [2]*Massachusetts Institute of Technology, Cambridge, MA*

4:00 pm
Anti-inflammatory Potential and Dose Dependence of Select Cytokines on Macrophage Activation Profiles
Nicolas Castro[1], Hongyu Chen[2], and Mariah Hahn[2]
[1]*Georgia Institute of Technology, Delmar, NY,* [2]*Rensselaer Polytechnic Institute, Troy, NY*

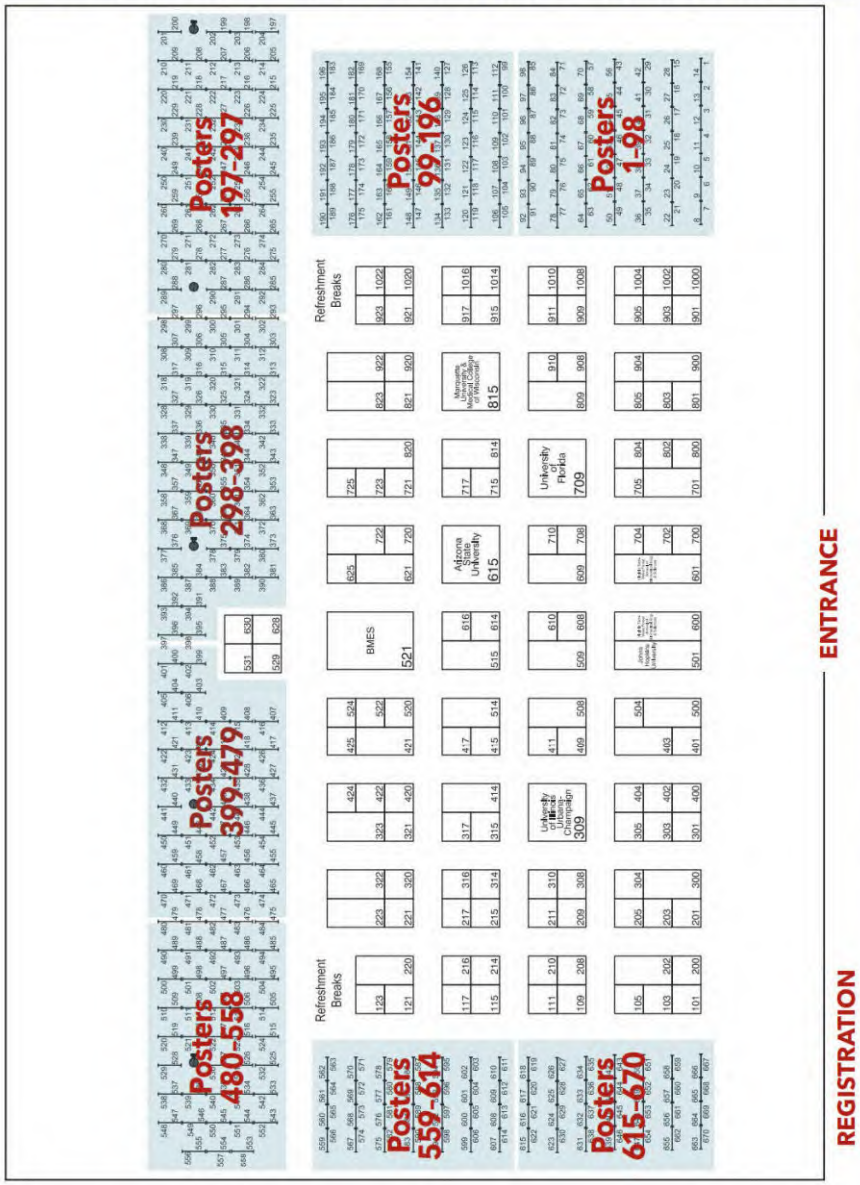
4:09 pm
Tunable Release of Metabolic Modulators To Restrain Autoimmune Reactions
Jessica Yau[1], Joshua Gammon[1], and Christopher Jewell[1,2,3,4]
[1]*University of Maryland, College Park, MD,* [2]*University of Maryland Medical School, Baltimore, MD,* [3]*Marlene and Stewart Greenebaum Cancer Center, Baltimore, MD,* [4]*United States Veterans Administration, Washington D.C., MD*

4:18 pm
Smartphone-Based Microscope For Pathogen Detection
Meghan Henderson[1], Katherine Clayton[2], Ryan Preston[1], Dong Hoon Lee[1], Steven Wereley[1], Tamara Kinzer-Ursem[1], and Jacqueline Linnes[1]
[1]*Purdue University, West Lafayette, IN*

4:27 pm
Spatial Organization of Peptides by 3D Printing with Peptide-Polymer Conjugates
Kelly Seims[1], Katherine Hudson[1], Peter Schwarzenberg[1], Hafiz Busari[1], Divya Patel[1], Arianna Pineiro , Hannah Dailey[1], and Lesley Chow[1]
[1]*Lehigh University, Bethlehem, PA*

4:36 pm
High-Throughput Single-Cell Analysis of MSC Mechanosensing
John F. Durel[1], Sebastián L. Vega[2], and Jason A. Burdick[2]
[1]*University of Virginia, Charlottesville, VA,* [2]*University of Pennsylvania, Philadelphia, PA*

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North



Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

Tracks: Undergraduate Research, Design & Leadership, Bioinformatics, Computational and Systems Biology

Bioinformatics, Computational and Systems Biology-Undergraduate

SAT-1
Identifying Biomarkers to Determine Efficacy of Anti-angiogenic Treatment
Alyssa Arnheim[1] and Stacey Finley[2]
[1]Boston University, Boston, MA, [2]University of Southern California, Los Angeles, CA

SAT-2
Transcriptional Analysis of Effects of Chloroquine Treatment on Resistant Malaria Parasites
Ana Untaroiu[1], Maureen Carey[1], Jason Papin[1], and Jennifer Guler[1]
[1]University of Virginia, Charlottesville, VA

SAT-3
Comparison of Logic-Based ODE and Mass Action Kinetic Models of Biological Networks
Elizabeth Snyder-Mounts[1], Philip Tan[2], and Jeffery J. Saucerman[2]
[1]Duke University, Durham, NC, [2]University of Virginia, Charlottesville, VA

SAT-4
Mathematical Modeling of Renal Function Decline in Patients with Hyperoxaluria
Emily Nieves[1] and Melissa Hallow[1]
[1]University of Georgia, Athens, GA

SAT-5
Machine-Learning Predictions and Experimental Validation of Structural Factors that Mediate GPCR-Arrestin Interactions
Julian Kosacki[1], P. C. Dave Dingal[2], Timothy Daley[2], and Lei S. Qi[2]
[1]University of California, Riverside, Riverside, CA, [2]Stanford University, Stanford, CA

SAT-6
Pervasive Monitoring of Patients Activity In The Intensive Care Unit
Kaitlyn Adams[1], Kumar Malhorta[1], Scott Siegel[1], Anis Davoudi[1], Azra Bihorac[1], and Parisa Rashidi[1]
[1]University of Florida, Gainesville, FL

SAT-7
Sleep and the Gut Microbiome
Karun Rajesh[1]
[1]Virginia Commonwealth University, Herndon, VA

SAT-8
Initialization of an Agent-Based Model for the Investigation of Diabetic Retinopathy
Kathleen Fitzgerald[1], Bruce Corliss[1], and Shayn Peirce[1]
[1]University of Virginia, Charlottesville, VA

SAT-9
Inclusion of Fold Change Genes into a Computational Model to Identify Novel Regulators of Cardiomyocyte Hypertrophy
Kathryn H. Bridges[1], Bryan Chun[1], and Jeffrey J. Saucerman[1]
[1]University of Virginia, Charlottesville, VA

SAT-10
Non-motor Symptoms as a Marker of Parkinson's Disease Progression: An Exploratory Analysis
Kimberly Huynh[1], Ying-Hui Chou[1], Mark Sundman[1], Nan-kuei Chen[1], and Vignesh Subbian[1]
[1]University of Arizona, Tucson, AZ

SAT-11
Agent Based Modeling of Salmonella Infection
Miguel Anaya[1], Shayn Peirce-Cottler[2], and Lee Talman[2]
[1]Stevens Institute of Technology, Hoboken, NJ, [2]University of Virginia, Charlottesville, VA

SAT-12
Refining Causal Networks Associated with Immune Cell Interactions in Cancer using Network Inference Algorithms and Expanded Metagene Constructs
Paraag Gupta[1] and David Klinke[1]
[1]West Virginia University, Morgantown, WV

SAT-13
Bottom Up Approach for Examining Network Connectivity Through Measures of Dynamics
Rohit Konda[1], Vineet Tiruvadi[1], Robert Butera[1], and Helen Mayberg[2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

SAT-14
FLOWMAP: A Tool to Visualize Single-Cell Datasets with Force-Directed Graph Layout
Rohit Rustagi[1]
[1]University of Virginia, Charlottesville, VA

SAT-15
MaGIC: Predictive Infrastructure Leveraging Chromatin Signature to Infer Stochastic Monoallelic Expression
Sachit Saksena[1,2], Henry Ward[1], Sebastien Vigneau[3], Svetlana Vinogradova[3], and Alexander Gimelbrant[1]
[1]Harvard Medical School, Boston, MA, [2]University of Texas at Austin, Austin, TX, [3]Dana-Farber Cancer Institute, Boston, MA

SAT-16
Identification of Adipose Gene Networks Using Naturally Occurring Genetic Variation in Male and Female Mice
Shayna Holness[1] and Mete Civelek[2]
[1]Rider University, Lawrenceville, NJ, [2]University of Virginia, Charlottesville, VA

SAT-17
Coupling of Agent Based and Network Models of Cardiac Fibrosis
Thomas Athey[1,2], Jia-Jye Lee[1], Jeff Saucerman[1], and Jeffrey Holmes[1]
[1]University of Virginia, Charlottesville, VA, [2]Johns Hopkins University, Baltimore, MD

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-18
Design of Intraoperative Visualizations of Mastectomy Specimens for Breast Reconstruction Surgery
Tiara Lewis[1], Krista Nicklaus[2], Ali Naqvi[3], Mary Catherine Bordes[4], Audrey Cheong[5], Michelle Fingeret[4], Fatima Merchant[6], Greg Reece[4], and Mia Markey[6]
[1]University of Texas at Arlington, Arlington, TX, [2]University of Texas at Ausitn, Austin, TX, [3]University of Texas at Austin, Austin, TX, [4]MD Anderson Cancer Center, Houston, TX, [5]University of Houston, Houston, TX, [6]University of Houstion, Houston, TX

SAT-19
Membrane Capacitive Memory Suppresses Alternans, Promotes Spontaneous Activity, and Alters Conduction in a Fractional-Order Minimal Cardiomyocyte Model
Tien Comlekoglu[1] and Seth Weinberg[1]
[1]Virginia Commonwealth University, Richmond, VA

SAT-20
Heart Rate Variability Alters Cardiac Repolarization and Electromechanical Dynamics
Vrishti Phadumdeo[1] and Seth Weinberg[1]
[1]Virginia Commonwealth University, Richmond, VA

SAT-21
Exploration of Variables for Use in a Retrieval Method for a Case Based Reasoning System for Predicting Appearance After Breast Reconstruction
Yahir Garay[1], Krista M. Nicklaus[2,3], Gezheng Wen[2,3], Joowon Cho[2,3], Audrey Cheong[4], Greg P. Reece[3], Fatima A. Merchant[4], and Mia K. Markey[2,3]
[1]University of Texas at El Paso, El Paso, TX, [2]The University of Texas at Austin, Austin, TX, [3]The University of Texas MD Anderson Cancer Center, Houston, TX, [4]University of Houston, Houston, TX

Track: Undergraduate Research, Design & Leadership, Biomaterials

Biomaterials-Undergraduate

SAT-22
Multi-Material Hydrogel Printing Using Open-source 3D Printer
Alex Filip[1], Lucas Albrecht[1], Stephen Sawyer[1], and Pranav Soman[1]
[1]Syracuse University, Syracuse, NY

SAT-23
The Bending of TiN And Au Wiring On Soft Polymer Substrates
Ali Khurram[1], Alexandra Joshi Imre[1], and Walter Voit[1]
[1]The University of Texas at Dallas, Richardson, TX

SAT-24
Exploration of Defect Site Growth in Thin-Film Encapsulation Layers
Alireza Nazari Khanamiri[1], Alexandra Joshi-Imre[1], and Stuart Cogan[1]
[1]The University of Texas at Dallas, Richardson, TX

SAT-25
First Layer Material Variation in PEMs Influences Surface Topography and Fibroblast Behavior
Allison McCrady[1,2], Ivan Ding[1], and Amy Peterson[1]
[1]Worcester Polytechnic Institute, Worcester, MA, [2]Trine University, Angola, IN

SAT-26
Comparison of Multi-arm PEG-based Hydrogels for Tendon and Ligament Repair
Amanda Kautzer[1], Breeanne Brand[1], Carly Joseph[1], Ariana Tyo[1], and Rupak Rajachar[1]
[1]Michigan Technological University, Houghton, MI

SAT-27
Synthesis and Characterization of Biogenic Selenium Nanoparticles with Antibacterial properties
David Cruz[1], Amit K. Roy[1], and Thomas J Webster[1]
[1]Northeastern University, Boston, MA

SAT-28
Engineering and Cytotoxicity Study of 3D Printed TangoPlus and VeroClear as Potential Biomaterials
Angela Clyde[1,2], Adreann Peel[1], Ty Nicholas[1], Zachary Ellsworth[1], David Britt[1], Craig Day[2], and Yu Huang[1]
[1]Utah State University, Logan, UT, [2]Institute of Antiviral Research, Logan, UT

SAT-29
Imidazole-Modification Enhances Nanoparticle Transport Through Cystic-Fibrosis (CF) like Mucus and Promotes Uptake into a Human CF Cell Line
Angela Jimenez[1], Joscelyn Mejias[2], Blake Lash[2], and Krishnendu Roy[2]
[1]University of Florida, Gainesville, FL, [2]Georgia Institute of Technology and Emory University, Atlanta, GA, [3]Georgia Institute of Technology, Atlanta, GA

SAT-30
Design of a Light-Mediated, Reversible Sol-Gel Transition PEG Hydrogel Using LOV2
Anna Ruta[1], Joshua Hammer[1], and Jennifer West[1]
[1]Duke University, Durham, NC

SAT-31
Pathophysiology Model using Micro-Continuous Optical Printing
Anne Vesey[1,2], Kathleen Miller[2], Natalie Lawrence[2], Justin Liu[2], and Shaochen Chen[2]
[1]Stanford University, Stanford, CA, [2]UC San Diego, La Jolla, CA

SAT-32
Novel Materials for Additive Manufacturing
Benjamin Young[1], Kathryn Jerwann[2], Lee Cagle[3], and Jonathan Lopiano[2]
[1]Clemson, Anderson, SC, [2]Clemson, Clemson, SC, [3]Clemson, Effingham, SC

POSTER SESSION–SATURDAY

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-33
Nanoceria-SOD Conjugate's Antioxidant Thermal Stability
Bradley Skelton[1], Benjamin Synoground[1], Nicholas Seiter[1], Dmitry Gil[1], and Vladimir Reukov[1]
[1]*Clemson University, Clemson, SC*

SAT-34
Effects of Aging on Liver Extracellular Matrix Structural Proteins
Brandon Burger[1], Andrea Hartman[2], Elizabeth Stahl[3], and Bryan Brown[3]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*University of Pittsburgh, Pittsbugh, PA,* [3]*University of Pittsburgh, Pittsburgh, PA*

SAT-35
Fabrication of a Brain Endothelium in a Perfused Hydrogel Scaffold
Callie Weber[1], Jason Wang[1], Emma Hollmann[1], Allison Bosworth[1], Shannon Faley[1], Ethan Lippmann[1], and Leon Bellan[1]
[1]*Vanderbilt University, Nashville, TN*

SAT-36
Evaluating the Feasibility of 3D Printing a PEGDA/AA Hydrogel for Skeletal Muscle Tissue Engineering
Carolina Leynes[1,2], Robert Warren[2], Daniel Browe[2], and Joseph Freeman[2]
[1]*The University of Texas Rio Grande Valley, Brownsville, TX,* [2]*Rutgers, The State University of New Jersey, Piscataway, NJ*

SAT-37
Cells on Gels: Biomimetic Micron-Scale Polyacrylamide Gel Substrates for Studies of GBM Cell Adhesion and Migration
Caroline Miller[1], Alyse Krausz[2], Natalia Higuita-Castro[1], Daniel Gallego-Perez[1], and Derek Hansford[1]
[1]*The Ohio State University, Columbus, OH,* [2]*University of Michigan, Ann Arbor, MI*

SAT-38
Lymph Node Trafficking and Dendritic Cell Activation of Supramolecular Peptides
Cassandra Ingram[1], Lucas Shores[1], and Joel Collier[1]
[1]*Duke University, Durham, NC*

SAT-39
Stability of Weak Adhesion in MDA-MB 231 Cells as an Indication Of Metastatic Capacity.
Chanda Austin[1], Pranjali Beri[1], and Adam Engler[1,2]
[1]*University of California, San Diego, La Jolla, CA,* [2]*Sanford Consortium, La Jolla, CA*

SAT-40
Characterization of an Extracellular Matrix Hydrogel and its Effects on MMP Activity
Charles Webb[1,2], Timothy Keane[2], Christine-Maria Horejs[3], and Molly Stevens[2,3]
[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*Imperial College London, London, United Kingdom,* [3]*Karolinska Institutet, Stockholm, Sweden*

SAT-41
Mesenchymal Stems Distribute Unevenly On PEG-DMA Hydrogel Surfaces
Christina Lochner[1], Elizabeth Hernandez[1], and Derek Doroski[1]
[1]*Franciscan University of Steubenville, Steubenville, OH*

SAT-42
Cell Densities and The Effects on Cell-Cell Junction Forces
Christina Smith[1], Sung Sik Hur[2], Yi-Ting Yeh[2], Yi-Shuan Li[2], and Shu Chien[2]
[1]*Arizona State University, Scottsdale, AZ,* [2]*University of California San Diego, San Diego, CA*

SAT-43
Determining the Rate of Oxygen Diffusion from Oxygen Microbubbles Through the Peritoneum
Cora Carman[1], Nathan Legband[2], Fariba Aghabaglou[2], Hunter Velds[3], Connor Slagle[3], Mark Borden[3], and Benjamin Terry[2]
[1]*New Mexico Institute of Mining and Technology, Socorro, NM,* [2]*University of Nebraska, Lincoln, NE,* [3]*University of Colorado, Boulder, CO*

SAT-44
3D Printing with Peptide-Polymer Conjugates to Control Scaffold Functionalization and Porosity
Divya Patel[1], Katherine Hudson[2], Peter Schwarzenberg[2], Hafiz Busari[2], Kelly Seims[2], Hannah Dailey[2], and Lesley Chow[2]
[1]*Lehigh University, Towanda, PA,* [2]*Lehigh University, Bethlehem, PA*

SAT-45
Microstructural and Nanomechanical Analysis of Cat Vibrissae
Gari Eberly[1] and Donna Ebenstein[1]
[1]*Bucknell University, Lewisburg, PA*

SAT-46
Development and Validation of a Method for Microindentation of Denture Teeth
Emily Gabriel[1] and Donna Ebenstein[1]
[1]*Bucknell University, Lewisburg, PA*

SAT-47
Establishment of Guidelines for Indentation of Soft Biomaterials Using Blunt Tips
Avery Snyder[1] and Donna Ebenstein[1]
[1]*Bucknell University, Lewisburg, PA*

SAT-48
Adhesion Ligand Density Influences Dendritic Cell Activation and Maturation in RGD-Modified Alginate Hydrogels
Erica Budina [1], Brian Kwee [1,2], Nathaniel Huebsch[2], Omar Ali [2], and David Mooney[1,2]
[1]*Harvard University, Cambridge, MA,* [2]*Wyss Institute for Biologically Inspired Engineering, Cambridge, MA*

SAT-49
Determining the Morphology-Property Relationship of ZnO Nanoparticles
Gregory Jensen[1], Adam Talbot[1], Angela Clyde[1], James Gayer[1], David Britt[1], and Yu Huang[1]
[1]*Utah State University, Logan, UT*

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-50
Mechanical Characterization of Laminin Coated Gelatin Hydrogels
Isabella Claure[1], Rachel Besser[1], Ellery Jones[1], Joseph Reda[1], Matthew Ishahak[1], and Ashutosh Agarwal[1]
[1]*University of Miami, Coral Gables, FL*

SAT-51
Integrating Degradable Polymers for Tunable Release of Toll-like Receptor Ligands from Microneedles
Jahnavi Muralidharan[1], Emily Gosselin[1], and Christopher Jewell[1,2,3,4]
[1]*Fischell Department of Bioengineering, University of Maryland-College Park, College Park, MD,* [2]*Department of Microbiology and Immunology, University of Maryland Medical School, Baltimore, MD,* [3]*Marlene and Stewart Greenebaum Cancer Center, Baltimore, MD,* [4]*United States Department of Veteran Affairs, Baltimore, MD*

SAT-52
Vacancy-Driven Gelation of Thiolated Polymer Using Defect-Rich MoS2 Nanoassembliesfor Biomedical Applications
James Gentry[1], Manish Jaiswal[1], Jake Carrow[1], and Akhilesh Gaharwar[1]
[1]*Texas A&M University, College Station, TX*

SAT-53
Biocompatibility and Functionality Assessment of a Novel Nitinol Tongue Prosthetic Device to Treat Dysphagia
James Kern[1], Yanfei Chen[1], and YoungJae Chun[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

SAT-54
3D Printed and Solvent-Spun PNIPAM Templates form Multiscale-Vascularized Hydrogels for Brain Modeling with iPSC-Derived Brain Microvascular Endothelial Cells
Jason Wang[1], Callie Weber[1], Shannon Faley[1], Brian O'Grady[1], Emma Hollman[1], Allison Bosworth[1], Ethan Lippmann[1], and Leon Bellan[1]
[1]*Vanderbilt University, Nashville, TN*

SAT-55
In Vitro Characterization of Tolerogenic Responses Induced by Antigen-Polymer Conjugate Nanoparticles
Justin Rose[1], Ryan Pearson[1], Liam Casey[1], Kevin Hughes[1], and Lonnie Shea[1]
[1]*University of Michigan, Ann Arbor, MI*

SAT-56
Biomimetic Rubber: Structure, Properties, and Applications
Justine Paul[1], Shelby Buffington [1], and Dr. Patrick Mather [1,2]
[1]*Syracuse University, Syracuse, NY,* [2]*Bucknell University, Lewisburg, PA*

SAT-57
Poly(N-Isopropylacrylamide): Collagen Hydrogels for Tunable Rate of Drug Delivery
Katarina DiLillo[1], Victoria Smith[1], and Christopher Anderson[1]
[1]*Lafayette College, Easton, PA*

SAT-58
Importance of Podosome Formation on Macrophage-Implant Interaction
Andy Vo[1], Kelly Hotchkiss[1], and Rene Olivares-Navarrete[1]
[1]*Virginia Commonwealth University, Richmond, VA*

SAT-59
Gut Microbe-derived Microparticles for Controlling the Immune System
Kenneth Alvarez[1], Svetlana Miakicheva[1], Nnamezie Ononuju[2], and Jamal Lewis[1]
[1]*University of California Davis, Davis, CA,* [2]*Florida Agricultural & Mechanical University, Tallahassee, FL*

SAT-60
Non-enzymatic Glycation Enhances Mechanical Properties of Collagen Bioinks for 3D Printing
Leigh Slyker[1], Nicole Diamantides[2], and Lawrence Bonassar[2]
[1]*The University at Buffalo (SUNY), Buffalo, NY,* [2]*Cornell University, Ithaca, NY*

SAT-61
Role of Nanoparticles on Mechanical and Thermal Properties of Thermosensitive Hydrogels
Marcus Kraus[1], Andrew Chang[1], and Prashanth Asuri[1]
[1]*Santa Clara University, Santa Clara, CA*

SAT-62
Nanoparticle Self-Assembly for Colloidal Gel Fabrication
Maria Guevara[1], James Coyne[2], and Yong Wang[2]
[1]*University of Florida, Gainesville, FL,* [2]*The Pennsylvania State University, State College, PA*

SAT-63
Tuning Silk Fibroin Scaffold Pore Size Via Varying Temperature-Controlled Lyophilization Parameters
Megan Sanders[1], Kim Ornell[2], and Jeannine Coburn[2]
[1]*University of Oklahoma, Norman, OK,* [2]*Worcester Polytechnic Institute, Worcester, MA*

SAT-64
Solid Polymer Electrolytes for Lithium-Ion Batteries in Medical Devices
Metecan Erdi[1], Matthew Widstrom[1], and Peter Kofinas[1]
[1]*University of Maryland, College Park, MD*

SAT-65
Fabrication of Hybrid Hydrogel Constructs for Biomedical Applications
Michael Zimmerman[1,2], Sara Abasi[1,2], John Aggas[1,2], and Anthony Guiseppi-Elie[1,2]
[1]*Texas A&M University, College Station, TX,* [2]*Center for Bioelectronics, Biosensors and Biochips (C*[3]*B), College Station, TX*

SAT-66
Chitosan as an Oral Phosphate Binder
Michele Dill[1], Shanna Smith[1], and Christopher Batich[1]
[1]*University of Florida, Gainesville, FL*

POSTER SESSION–SATURDAY

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-67
Influence of Biomaterial Scaffold Properties on Breast Cancer Cell Morphology and Proliferation
Minh-Chau Le[1], Zi Wang[1], Bowen Ding[1], Kathryn Ellett[1], and Stephen Florczyk[1]
[1]University of Central Florida, Orlando, FL

SAT-68
Nanoparticle Mediated siRNA Delivery to Salisphere Culture Permits Uptake in Secretory Cells
Mollie Hansen[1], Jomy Varghese[1], Martha Ormanoski[2], Catherine Ovitt[1], and Danielle Benoit[1]
[1]University of Rochester, Rochester, NY, [2]Cornell University, Ithaca, NY

SAT-69
Polyelectrolyte Complex (PEC) Attachment Testing for the Prevention of Abdominal Adhesion
Avi Desai[1], Peidong He[1], Rene Schloss[1], and Noshir Langrana[1]
[1]Rutgers University, Piscataway, NJ

SAT-70
Expansion Microscopy to Image Cell Internalization of Lanthanide UCNPs
Olivia Parker[1,2], Carina Arboleda[2], Alexandra Stubelius[2], and Adah Almutairi[2]
[1]Princeton University, Princeton, NJ, [2]University of California, San Diego, La Jolla, CA

SAT-71
Evaluating the Effects of Formulation Conditions on the Thermostability of NELL-1 Using Thermal Shift Assay
Patrick Minassians[1], Yulong Zhang[1,2], and Benjamin Wu[1,2]
[1]University of California, Los Angeles, Los Angeles, CA, [2]UCLA School of Dentistry, Los Angeles, CA

SAT-72
***In Vitro* Vascular Model for Atherosclerosis**
Khosrow Khodabandehlou[1], Prajwal Bharadwaj[1], Mitul Luhar[1], and Eun Ji Chung[1]
[1]University of Southern California, Los Angeles, CA

SAT-73
Characterization of Clogging Effect due to Uncross-linked Polymers in Polydimethylsiloxane (PDMS) Microfluidic Devices
Priyokti Rana[1]
[1]Lehigh University, Bethlehem, PA

SAT-74
Printing Solidified Biomembrane Networks
Rachel Monroe[1], Elio Challita[2], Xianqiao Wang[2], and Eric Freeman[2]
[1]University of Kentucky, Lexington, KY, [2]University of Georgia, Athens, GA

SAT-75
Analysis of Fibroblast Traction Forces on Colloidal Thin Films
Rahul Kathard[1], Daniel Chester[1], and Ashley Brown[1]
[1]North Carolina State University, Raleigh, NC

SAT-76
Aligned Nanofiber Scaffolds Fabricated Via Airbrushing
Roshonda Knight[1] and Erica Visness[1]
[1]Florida Gulf Coast University, Fort Myers, FL

SAT-77
Development of a 3D Hydrogel System that Promotes Sequestration of Cell-Secreted Extracellular Matrix
Saloni Jaikamal[1], Claire Tomaszewski[1], and Ariella Shikanov[1]
[1]University of Michigan, Ann Arbor, MI

SAT-78
Design and Application of an Oxygen-Sensing Construct for Monitoring Chronic Wound Recovery
Samantha Schwager[1], Daniel Tavakol[1], Lindsay Jeffries[1], Anthony Bruce[1], Christopher DeRosa[1], Cassandra Fraser[1], and Shayn Peirce-Cottler[1]
[1]University of Virginia, Charlottesville, VA

SAT-79
Measuring the Mechanical Properties of Biological Adhesives on Hydrophobic Surfaces
Samantha Zanetti[1], Samantha Moorzitz[1], Gary Dickinson[1], and Manuel Figueroa[1]
[1]The College of New Jersey, Ewing Township, NJ

SAT-80
Recapitulating Fibroblastic Reticular Cell Networks In Vitro Using Collagen Scaffolds
Shane Wright[1], Freddy Gonzalez[1,2], and Alice Tomei[1,2]
[1]University of Miami, Coral Gables, FL, [2]Diabetes Research Institute, Miami, FL

SAT-81
Response of Bone Marrow Mononuclear Cells to Oxidative Damage and Decellularized Cardiac Extracellular Matrix
Shiwei Sun[1], Raymond Wang[1], and Karen Christman[1]
[1]University of California San Diego, La Jolla, CA

SAT-82
Incorporation of Novel BDNF-Mimetic Small Molecule onto Peptide Amphiphile Scaffold for Neural Regeneration
Sieun Lee[1], Stacey Chin[2], Alexandra Edelbrock[3], and Samuel Stupp[3]
[1]Hope College, Holland, MI, [2]Northwestern University, Evanston, IL, [3]Northwestern University, Chicago, IL

SAT-83
Micro-Fabrication of Bioengineered Muscle Tissue for High Throughput Screening
Sindhoor Ambati[1]
[1]North Carolina State University, Raleigh, NC

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-84
Characterization of Decellularized Extracellular Matrix (ECM) Hydrogel for Endothelial Cell Function
Soojin Kim[1], Sydney Thai[2], Andrea Lucia Alfonso[3], and Alice Eun Jung Lee[1]
[1]New Jersey Institute of Technology, Newark, NJ, [2]Livingston High School, Livingston, NJ, [3]County College of Morris, Parsippany, NJ

SAT-85
Injectable Hydrogels from Poly (ethylene glycol) and Synthetic Silicate Nanoparticles for 3D Printing
Sujay Shankar[1], Charles Peak[2], and Akhilesh Gaharwar[2]
[1]The University of Texas at Austin, Austin, TX, [2]Texas A&M University, College Station, TX

SAT-86
Interactions between Biophysical Processes Involved in Cancer Cell Migration
Sydney Conner[1,2], Daniel Ortiz[2], and Stephanie Fraley[2]
[1]Union College, Schenectady, NY, [2]University of California San Diego, La Jolla, CA

SAT-87
Injectable Enzyme-Responsive Nano-particles for Myocardial Infarction
Tyra Foulks[1], Gina Policastro[2], Karen Christman[2], and Nathan Giannschi[3]
[1]North Carolina A&T State University, Columbia, SC, [2]University of California San Diego, San Diego, CA, [3]Northwestern University, Chicago, IL

SAT-88
Hydroxyapatite Mineralization by Proteins Derived from Bone and Nacre
Vincent Cali[1], Kristopher White[2], and Ronke Olabisi[2]
[1]CUNY Queens College, Bayside, NY, [2]Rutgers, The State University of New Jersey, Piscataway, NJ

SAT-89
Pancreatic Cancer Cell Chemoresistance On Mechanically Tailored Hydrogels
Wisam Fares[1], Janny Pineiro[1], Andres Rubiano[1], and Chelsey Simmons[1]
[1]University of Florida, Gainesville, FL

SAT-90
Synthesis and Characterization of Modular PEG-Peptide Bioinks
Zachary Davis[1,2], Faraz Jivan[1], and Daniel Alge[1]
[1]Texas A&M, College Station, TX, [2]North Carolina State University, Raleigh, NC

SAT-91
Porous All-Carbon Electrodes for *In Vivo* Energy Storage
Michael D'Agati[1] and Balaji Sitharaman[1]
[1]Stony Brook University, Stony Brook, NY

Track: Undergraduate Research, Design & Leadership, Biomechanics

Biomechanics-Undergraduate

SAT-92
Musculoskeletal Modeling of the Lower Limb: A Novel Approach for Locomotor Rehabilitation
Abby Williamson[1], Anton Sobinov[2], Matthew Boots[2], and Sergiy Yakovenko[2]
[1]University of Rochester, Rochester, NY, [2]West Virginia University, Morgantown, WV

SAT-93
Standardization of the Jaipur Foot Manufacturing Process
Aidan R. Friederich[1], Daniel R. Palmer[1], Kylie J. Rembert[1], Naji Chaar[2], Jacob E. Cantin[2], Kristine M. Fischenich[1], Lisa M. Abrams[2], Sheryl A. Sorby[2], Harlal Singh Mali[3], Anil K. Jain[4], and Tammy L. Haut Donahue[1]
[1]Colorado State University, Fort Collins, CO, [2]The Ohio State University, Columbus, OH, [3]Malaviya National Institute of Technology, Jaipur, India, [4]Santokba Durlabhji Memorial Hospital, Jaipur, India

SAT-94
Correlation between Shear Wave Elastography and Mechanical Properties of the Achilles Tendon
Alexander Singh[1], Elliot Dobson[1], Noah Flaxman[1], Colin Price[1], Sebastian Guidice[1], and Matthew Panzer[1]
[1]University of Virginia, Charlottesville, VA

SAT-95
Application of the Euro NCAP Pedestrian Protocol Using an Advanced Human Body Model
Alexandra Deghand[1,2,3], Scott Gayzik[2,3], Bharath Koya[2,3], and Will Decker[2,3]
[1]Wichita State University, Wichita, KS, [2]Virginia Tech-Wake Forest University of Biomedical Engineering and Sciences, Blacksburg, VA, [3]Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC

SAT-96
Numerical Determination of Wall Shear Stress in Red Blood Cell Membranes
Alfredo Lucas[1], Vivek P. Jani[1], and Pedro Cabrales[1]
[1]University of California, San Diego, La Jolla, CA

SAT-97
Towards Virtualized Transradial Prosthesis with Simulated Dynamics and Surface EMG Interface
Amanda Barbarossa[1], Matthew Boots[1], Anton Sobinov[1], and Sergiy Yakovenko[1]
[1]West Virginia University, Morgantown, WV

SAT-98
Rocking or Rolling? Analysis of Leg Kinematics during the Stance Phase of Normal Walking
Amanda Studnicki[1] and Fabrizio Sergi[1]
[1]University of Delaware, Newark, DE

POSTER SESSION–SATURDAY

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-99
Mechanical Integrity of a Decellularized Porcine Lamina Cribrosa
Amy Hill[1], Kelsey Sadlek[2], Catalina Ardila[1], Dominic Muli[1], Bryan Brown[1], and Jonathan Vande Geest[1,3,4]
[1]University of Pittsburgh, Pittsburgh, PA, [2]University of Pittsburgh, Pittburgh, PA, [3]McGowen Institute for Regenerative Medicine, Pittsburgh, PA, [4]Louis J. Fox Center for Vision Restoration, Pittsburgh, PA

SAT-100
Quantifying Mechanical Properties of the Extracellular Matrix Using Externally Stretched Post Array Detectors
Ariana Joy DeCastro[1], Carl Mayer[1], Daniel Conway[1], and Christopher Lemmon[1]
[1]Virginia Commonwealth University, Richmond, VA

SAT-101
Measuring the Motion of Finger Joints during Natural Flexion and Extension of the Human Hand
Bridget Soderna[1,2], Christopher Nycz[1], and Gregory Fischer[1]
[1]Worcester Polytechnic Institute, Worcester, MA, [2]Carnegie Mellon University, Pittsburgh, PA

SAT-102
Regional Distribution and Time-Course of Changes in Abnormal Delta Wave Activity Following a Single Season of High School Football
Caroline Heller[1], Elizabeth Davenport[2], Richard Barcus[3], Leonardo Bezerra[3], Jillian Urban[3], Alexander Powers[3], Joel Stitzel[3], Joseph Maldjian[2], and Christopher Whitlow[3]
[1]Georgia Institute of Technology, Sullivans Island, SC, [2]University of Texas Southwestern, Dallas, TX, [3]Wake Forest University School of Medicine, Winston-Salem, NC

SAT-103
Gait Analysis of Genu Recurvatum Pediatric Patient Before and After KAFO Fitting
Caroline Merz[1] and Ha Vo, MD, PhD, DPM[1,2]
[1]Mercer University, Macon, GA, [2]Mercer University School of Medicine, Macon, GA

SAT-104
Dynamic Fluoroscopic Assessment of Glenohumeral Kinematics in People with Spinal Cord Injury
Christina Lee[1], Yen-Sheng Johnny Lin[2], and Yasin Dhaher[3]
[1]Northwestern University, Evanston, IL, [2]Shirley Ryan AbilityLab, Chicago, IL, [3]Northwestern University, Chicago, IL

SAT-105
Analysis of Strain Induced MSC Differentiation using Native ECM Scaffolds
Saveetha Raghupathi[1], Amulya Veldanda[1], and Christopher Wagner[1]
[1]The College of New Jersey, Ewing, NJ

SAT-106
Computational Analysis of Strain Gradients Within 3D Hydrogel Scaffolds
Amulya Veldanda[1], Saveetha Raghupathi[1], and Christopher Wagner[1]
[1]The College of New Jersey, Ewing, NJ

SAT-107
Repeatability of Clinical Shear Wave Elastography Imaging of the Achilles Tendon Assessed on a Volunteer Population
Colin Price[1], Elliot Dobson[1], Alexander Singh[1], Noah Flaxman[1], J. Sebastian Giudice[1], Ahmed Alshareef[1], and Matthew Pazner[1]
[1]University of Virginia, Charlottesville, VA

SAT-108
Evaluation of Head Impact Methodology for Determination of Anthropomorphic Testing Device (ATD) Response via Hybrid III ATD Characterization
Colin Price[1], Noah Flaxman[1], Ahmed Alshareef[1], Erin Sanchez[1], James Funk[1], and Matthew Pazner[1]
[1]University of Virginia, Charlottesville, VA

SAT-109
Quantifying Motion Variability During a Skilled Dance Sequence
Cydney Dennis[1], Michelle Dickerson[1], Julia Cipriani[1], Chrysantha Davis[1], Sofie Massa[1], and Delina Sheth[1]
[1]George Mason University, Fairfax, VA

SAT-110
Finite Element Analysis of Femoral Neck Strength Losses Due To Space Irradiation
Dale Johnson[1], Summer Lawrence[2], Eric Livingston[2], Robert Hienz[3], Catherine Davis[3], and Anthony Lau[1,2]
[1]The College of New Jersey, Ewing, NJ, [2]University of North Carolina, Chapel Hill, NC, [3]Johns Hopkins University School of Medicine, Baltimore, MD

SAT-111
Winding Filament Muscle Model Improves OpenSim Force Predictions
Dan Rivera[1], Zachary Lerner[1], and Kiisa Nishikawa[1]
[1]Northern Arizona University, Flagstaff, AZ

SAT-112
Effects of Mechanical Perturbations on Muscle Activation During Walking
Dana Lorenz[1], Huawei Wang[2], and Antonie van den Bogert[2]
[1]University of Hartford, West Hartford, CT, [2]Cleveland State University, Cleveland, OH

SAT-113
Development of Subject-Specific Musculoskeletal Models to Predict Quadriceps Strength
Daniel Davis[1], Zachary Domire[2], Brett Whorley[3], and Anthony Kulas[2]
[1]University of Wyoming, Laramie, WY, [2]East Carolina University, Greenville, NC, [3]University of Nebraska-Lincoln, Omaha, NE

SAT-114
Biaxial Mechanical Properties of Tutoplast Processed Pericardial Grafts: Comparison to Human Tunica Albuginea Properties
Daniel Surinach[1] and Vincent Wang[1]
[1]Virginia Tech, Blacksburg, VA

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-115
Geometry Dependent Relaxation of Tissue Using Softening Neural Interfacing Devices for Cortical and Intrafascicular Applications.
Dante Cromartie[1], Joseph Reed[1], Allison Stiller[1], Alexandra Joshi-Imre[1], Joseph Pancrazio[1], and Walter Voit[1]
[1]University of Texas at Dallas, Richardson, TX

SAT-116
Injury Metric Sensitivity in FE ATDs and the GHBMC M50-OS to Small Boundary Condition Perturbations
David Shumate[1], Derek Jones[1], F. Scott Gayzik[1], Ashley Weaver[1], and Joel Stitzel[1]
[1]Wake Forest School of Medicine, Winston-Salem, NC

SAT-117
The Pressure Pointe: Assessing Forces on Young Dancers' Feet during Ballet
Haley Flannery[1], Sean Flannery[1], Melissa Copeland[1], Shruti Kaul[1], Stephen Zoeller[1], Lucas Schmidt[1], Melissa McCullough[1], and Delphine Dean[1]
[1]Clemson University, Clemson, SC

SAT-118
Comparison of Compression-Based Mechanical Properties between Low-Cost Foam Materials and Skin for Tourniquet Application Training
Derek Vielhauer[1,2], Alexander Hooke[3], Bethany Lowndes[3], and Susan Hallbeck[3]
[1]Mayo Clinic, Rochester, AZ, [2]Arizona State University, Tempe, AZ, [3]Mayo Clinic, Rochester, MN

SAT-119
Measurement of EMG of Reflex Responses to Wrist Perturbations Applied by an MRI Compatible Robot
Emily Patterson[1], Andrea Zonnino[1], and Fabrizio Sergi[1]
[1]University of Delaware, Newark, DE

SAT-120
Design of a Non-Invasive Mouse Model for Post-Traumatic Osteoarthritis
Emma MacIntyre[1], Shayna Tomlinson [1], and Deva Chan[2]
[1]Worcester Polytechnic Institute, Worcester, MA, [2]Rensselaer Polytechnic Institute, Troy, NY

SAT-121
Designing a Perfusion System for Decellularized Spinach Leaf Scaffolds to Support Cell Function
Fatin Alkhaledi[1], Emily Rose Robbins[2], Katrina Hansen[3], and Glenn Gaudette[4]
[1]Worcester Polytechnic Institute, Worcester, MA, [2]worcester Polytechnic insitute, worcester, MA, [3]Worcester Polytechnic Institute, Worcester, MA, [4]Worcester Polytechnic Institute, Worcester, MA

SAT-122
De-phosphorylation of Osteopontin: Does it Affect Bone Fracture?
Felix Hernandez Luna[1], Stacyann Bailey[2], and Deepak Vashishth[2]
[1]Universidad Interamericana de Puerto Rico, Bayamon, PR, [2]Rensselaer Polytechnic Institute, Troy, NY

SAT-123
Strain Patterns in the Patellar Tendon Assessed During Exercise Using Ultrasound Elastrography
Grace Weyand[1], Hannah Goldring[1], Catherine Kuo[1], Michael Richards[1], Katherine Rizzone[1], and Mark Buckley[1]
[1]University of Rochester, Rochester, NY

SAT-124
Relationship between Coordination Variability and Tibial Stress during Running
Hannah Aris[1], Joseph Hamill[2], and Stacey Meardon[3]
[1]University of Maryland, Baltimore County, Baltimore, MD, [2]University of Massachusetts Amherst, Amherst, MA, [3]East Carolina University, Greenville, NC

SAT-125
Comparison of Viscoelastic Heating in the Nucleus and Annulus Fibrosus of Bovine Intervertebral Disc
Harrah Newman[1], Robby Bowles[2], and Mark Buckley[1]
[1]University of Rochester, Rochester, NY, [2]University of Utah, Salt Lake City, UT

SAT-126
Development of a 3D-Printed Myoelectric Powered Upper Limb Prosthetic for Pediatric Transradial Amputees
Ilan Palte[1]
[1]Washington University in St. Louis, St Louis, MO

SAT-127
Validation of Agreement Between Muscular Models in FEBio2 and OpenSim
Jacob Alaniz[1], Silvia Blemker[1], and Brian Jones[1]
[1]University of Virginia, Charlottesville, VA

SAT-128
Development of Rupture Testing Methodology for Eyeballs Using Intraocular Pressurization
Jacob Fladd[1], Natalie Pellizzi[2], John DesJardins[2], Robert Sharpe[3], and George Magrath[3]
[1]Clemson University, Summerville, SC, [2]Clemson University, Clemson, SC, [3]Medical University of South Carolina, Charleston, SC

SAT-129
Evaluation of Head Impact Exposure in High School Football Players by Position Group
Jacob Garlant[1], Mireille Kelley[1], Jill Urban[1], and Joel Stitzel[1]
[1]Wake Forest University School of Medicine, Winston-Salem, NC

SAT-130
Development Toward a Noninvasive Tear Glucose Sensor Employing an Engineered GDH-FAD
Jared Johns[1], Anna Deng[2], Daniel Matloff[1], Chi Lin[2], Yuka Ito[3], Koji Sode[3], and Jeffrey LaBelle[2]
[1]Arizona State University, Paradise Valley, AZ, [2]Arizona State University, Tempe, AZ, [3]Tokyo University of Agricultural Technology, Tokyo, Japan

SAT-131
Accuracy of the GForceTracker for Monitoring Head Impacts in Boys and Girls Lacrosse
Jessica Buice[1], Amanda Esquivel[1], and Christopher Andrecovich[2]
[1]University of Michigan-Dearborn, Dearborn, MI, [2]Exponent, Inc., Farmington Hills, MI

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-132
ARHGAP36 and FOXR2 Role in Cellular Mechanosensing and Force Transmission
Jonathan Maleska[1], Ghaidan Shamsan[1], David Odde[1], Pauline Jackson[1], and David Largaespada[1]
[1]*University of Minnesota, Twin Cities, Minneapolis, MN*

SAT-133
Compression, Relaxation, and Adhesion Properties of Hydrogels and an Organogel as Potential Synthtic Brain Phantoms
Allison Troup[1], Shawn Potter[1], and Jorge Rodriguez[2]
[1]*SC Governor's School for Science and Mathematics, Hartsville, SC,* [2]*Clemson Univesity, Clemson, SC*

SAT-134
Swing Phase of the Gait Cycle Between Fallers and Non-fallers
Joseph Dimodica[1], Arlette Geller[1], Rahul Soangra[2], Seong Moon[1], Saba Rezvanian[1], Chris Frames[1], Victoria Smith[1], Markey Olson[1], and Thurmon Lockhart[1]
[1]*Arizona State University, Tempe, AZ,* [2]*Chapman University, Irvine, CA*

SAT-135
Adaptations to Split-Belt User-Driven Treadmill After Induced Asymmetric Gait
Kelley Kempski[1], Nicole Ray[1], and Jill Higginson[1]
[1]*University of Delaware, Newark, DE*

SAT-136
Nonlinear Evaluation of Gait In Older Fallers and Non-Fallers
Kyle Xue[1], Arlette Geller[1], Joseph Dimodica[1], Rahul Soangra[2], Seong Moon[1], Thurmon Lockhart[1], Saba Rezvanian[1], Christopher Frames[1], Tuan Nguyen[1], Victoria Smith[1], and Markey Olson[1]
[1]*Arizona State University, Tempe, AZ,* [2]*Chapman University, Irvine, CA*

SAT-137
An Evaluation of Positioning an Advanced Human Body Model Using Open Source PIPER
Madeline Blankenship[1,2,3], Berkan Guleyupoglu[1,2], Bharath Koya[1,2], and Scott Gayzik[1,2]
[1]*Wake Forest University Center for Injury Biomechanics, Winston Salem, NC,* [2]*Virginia Tech-Wake Forest University Department of Biomedical Engineering and Sciences, Winston Salem, NC,* [3]*Clemson University, Clemson, SC*

SAT-138
Field Measure to Estimate Vertical and Leg Stiffness
Margaret Marshall[1] and Richard Willy[1]
[1]*East Carolina University, Greenville, NC*

SAT-139
The Effects of Hind Limb Suspension and Casting on Bone Strength
Matthew Sanseverino[1], Toni Speacht[2], Henry J. Donahue[3], and Anthony G. Lau[1]
[1]*The College of New Jersey, Ewing Township, NJ,* [2]*Penn State College of Medicine, Hershey, PA,* [3]*Virginia Commonwealth University, Richmond, VA*

SAT-140
EMS Backboard Pad: An Inflatable Spinal Support System
Maxwell Lohss[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

SAT-141
Absence of a Primary Cilium in Osteocytes Results in Altered Actin Cytoskeletal Reorganization in Response to Fluid Flow
McKenzie Sup[1], Michael Duffy[1], and Christopher Jacobs[1]
[1]*Columbia University, New York, NY*

SAT-142
Bio-mechanic Applications in the Design of Flexible Spine Fixation Devices
Megan Wieser[1], Steven Lathers[1], and Jeffrey T. LaBelle[1]
[1]*Arizona State University, Tempe, AZ*

SAT-143
Role of the A2B Adenosine Receptor in the Degradation of Cartilage in Rheumatoid Arthritis
Meghan Kupratis[1], Lauren Mangano Drenkard[1], Louis Gerstenfeld[2], and Elise Morgan[1,2]
[1]*Boston University, Boston, MA,* [2]*Boston University School of Medicine, Boston, MA*

SAT-144
Mechanical Analysis of Human Motion: Validation of Static Optimization and Computed Muscle Control
Michael L. Frawley[1] and Antonie J. van den Bogert[1]
[1]*Cleveland State University, Cleveland, OH*

SAT-145
Mechanical Properties of the Pulmonary Arteries in Normotensive and Hypertensive Rats
Michael Godoy[1], Daniela Velez-Rendon[1], Erica Pursell[1], and Daniela Valdez-Jasso[1]
[1]*University of Illinois at Chicago, Chicago, IL*

SAT-146
Relation of Lumbar Disk Degeneration and Poisson's Ratio: A Poro-elastic Finite Element Analysis
Nicholas Van Nest[1]
[1]*Stony Brook University, Stony Brook, NY*

SAT-147
Novel Axial Forearm Loading Causes Short Term Changes to Distal Radius Microstructure in Young Women
Nicole Zaino[1], Ying Fang[2], and Karen Troy[2]
[1]*Clarkson Univesity, Potsdam, NY,* [2]*Worcester Polytechnic Institute, Worcester, MA*

SAT-148
Cortical Thinning in Lumbar Vertebrae of Astronauts on Long-Duration Spaceflight Missions
Nisha Subramanian[1], Kyle McNamara[2], and Ashley Weaver[2]
[1]*University of California, Berkeley, Fremont, CA,* [2]*Virginia Tech-Wake Forest University, Winston-Salem, NC*

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-149
Manufacturing of 3D Fiber-Reinforced Hydrogels for Tumor Growth Studies
Rachel Dass[1], Ngai To[1], Ashok Williams[1], James Nowak[1], Johnson Samuel[1], and Kristen Mills[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

SAT-150
Biaxial Relaxation Properties of the Rat Vaginal Tissue
David Case[1], Alyssa Huntington[1], and Raffaella De Vita[1]
[1]*Virginia Tech, Blacksburg, VA*

SAT-151
The Effect of Impactor Missile Design on Impact Severity for Playground Surfacing Assessment
Rebecca Mooney[1]
[1]*Bucknell University, Lewisburg, PA*

SAT-152
Influence of Bracing on Kinematic Response of Occupants in Pre-Crash Evasive Swerving Maneuvers
Ridhi Sahani[1,2], Christine Holt[2], Ethan Douglas[1], Valentina Graci[1], Thomas Seacrist[1], and Kristy Arbogast[1]
[1]*Center for Injury Research and Prevention, Children's Hospital of Philadelphia, Philadelphia, PA,* [2]*Bucknell University, Lewisburg, PA*

SAT-153
Bone Strength in Rat Models subjected to Head-Only Proton Radiation
Rose LoPiano[1], Robert D. Hienz[2], and Catherine M. Davis[2]
[1]*The College of New Jersey, Ewing, NJ,* [2]*Johns Hopkins University School of Medicine, Baltimore, MD*

SAT-154
Barometric Smart Shoe Comparison to Vicon System
Ryan Bridges[1], Seong Moon[1], Saba Rezvenian[1], Christopher Frames[1], Victoria Smith[1], Rahul Soangra[1], and Thurmon Lockhart[1]
[1]*Arizona State University, Tempe, AZ*

SAT-155
Community Dwelling Measurement of Vitamin D, CHAMPS Questionnaire, and Time Up & Go
Ryan Bridges[1], Seong Moon[1], Saba Rezvenian[1], Christopher Frames[1], Victoria Smith[1], Rahul Soangra[1], and Thurmon Lockhart[1]
[1]*Arizona State University, Tempe, AZ*

SAT-156
A Psuedo Rigid Body Method for Reducing Soft TIssue Artifact (STA): Results for STA Simulation and Standard Gait Experiments
Samuel Tucker[1], Nina Yadlowsky[1], Steven Klisch[1], Scott Hazelwood[1], and Valentina Profiti[2]
[1]*Cal Poly State University, San Luis Obispo, CA,* [2]*Politecnico di Torino, Torino, Italy*

SAT-157
Proposed Age and Gender Adjustments to the Hybrid III ATD Scaling Procedure
Sean Maroney[1,2], Sean Shimada[1], and Nick Merrier[1]
[1]*Biomechanical Consultants, Davis, CA,* [2]*University of California at Davis, Davis, CA*

SAT-158
Design of A Shape-Memory Alloy Actuated Glove
Sean Vincent Herrera[1] and Michael Zabala[1]
[1]*Auburn University, Auburn, AL*

SAT-159
Disruption of Gut Microbiome Alters Bone Tissue Composition
Sebastian Roubert Martinez[1], Jason D. Guss[1], and Christopher J. Hernandez[1]
[1]*Cornell University, Ithaca, NY*

SAT-160
The Effect of DMSO on the Mechanobiology of Lung Cancer Cells During Metastasis
Shaurey Vetsa[1], Richard Han[1], Don Gibbons[2], and Kathyrn Grande-Allen[1]
[1]*Rice University, Houston, TX,* [2]*MD Anderson, Houston, TX*

SAT-161
The Effects of an Osteoarthritis Unloader Brace on Knee Joint Space During Gait
Shumeng Yang[1], Kanto Nagai[1], and William Anderst[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

SAT-162
Nanomolar Drag Reducing Polymers (DRPs) Reduce Near-wall Margination of Rigid RBCs in Microchannels: A Potential Therapy for Sickle Cell Disease
Shushma Gudla[1], Daniel Crompton[1], and Marina V. Kameneva[1,2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA*

SAT-163
Characterization of Colitis and Control Bones
Silvia Alvarez[1], Cory Lindeman[2], Siyuan Pang[2], and Iwona Jasiuk[2]
[1]*Wichita State University, Pratt, KS,* [2]*University of Illinois at Urbana-Champaign, Urbana, IL*

SAT-164
FEM Analysis of the Effect of Valgus Knee Condition on the Stress Distribution in Proximal Femur
Sofya Pugach[1], Chaudhry Hassan[1], and Yi-Xian Qin[1]
[1]*Department of Biomedical Engineering, Stony Brook University, Stony Brook, NY*

SAT-165
Application of PIPER Software to Adjust Spinal Position of Human Body Models in Military Relevant Postures
Sophia K. Tushak[1,2], Jazmine R. Aira[2], and F. Scott Gayzik[2]
[1]*North Carolina State University, Raleigh, NC,* [2]*Wake Forest University School of Medicine, Winston-Salem, NC*

SAT-166
Comparison of Atlas-Based Finite Element Model to *In Vivo* Brain Motion During Low-Velocity Impacts
Tanner Filben[1], Logan Miller[1], Jill Urban[1], Yuan Feng[2], Philip Bayly[3], and Joel Stitzel[1]
[1]*Wake Forest School of Medicine, Winston-Salem, NC,* [2]*Soochow University, Suzhou, China, People's Republic of,* [3]*Washington University in St. Louis, St. Louis, MO*

POSTER SESSION–SATURDAY

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-167
Whole Muscle and Individual Fascicle Excursion for the Plantar Flexors: Implications for Muscle Modeling
Taylor Montgomery[1]
[1]*Fisk University, Nashville, TN*

SAT-168
Computational Assessment to Correlate the Evolution of Wall Stress Over Time with the Location of Dissection in the Ascending Thoracic Aorta
Trevor Kickliter[1], Kory Blose[1], Justin Weinbaum[1,2], Thomas Gleason[1], and David Vorp[1,2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA*

SAT-169
Thermal Effects of Therapeutic Ultrasound at TMM/ Bone Mimic Interface Using a Phantom Model
Victoria Doheny[1,2], Yunbo Liu[2], Subha Maruvada[2], and Gregory Clement[2]
[1]*The George Washington University, Washington, DC,* [2]*The Food and Drug Administration (CDRH/OSEL/DAM), Silver Spring, MD*

SAT-170
A Novel Spherical Stent for Occlusion of Cancer and Aneurysm
Hao-Ming Hsiao[1], Wen Hsin Yang[2], Tzu-Yuan Lin[1], Chien-Erh Lin[1], and Jiong-Hong Chen[1]
[1]*National Taiwan University, Taipei, Taiwan,* [2]*University of Rochester, Rochester, NY*

SAT-171
Feasibility of Using the Chick Chorioallantoic Membrane Model to Test Constancy of Angioadaptive Responses Over Time
William Carlson[1] and Christopher Quick[1]
[1]*Texas A&M University, College Station, TX*

SAT-172
Changes in Muscle Architecture During Isometric Contractions in Stroke Survivors
Zoe Villamar[1], William Rymer[2], Jongsang Son[2], and Fatemeh Saadat[2]
[1]*Virginia Commonwealth University, Richmond, VA,* [2]*Northwestern University, Chicago, IL*

Track: Undergraduate Research, Design & Leadership, Biomedical Engineering Education (BME)

Biomedical Engineering Education (BME)-Undergraduate

SAT-173
An Application of mHealth Technologies for Treatment of Plantar Fasciitis
Benjamin Shumpert[1], Jack McGreevey[1], Ryan Gilbert[1], Alex Giron[1], Vladimir Reukov[1], and Eddie Bear[1]
[1]*Clemson University, Clemson, SC*

SAT-174
Microscopy with Ultraviolet Surface Excitation (MUSE) for Enhancing K-12 and Undergraduate Education in Life Sciences
Chi Huang[1], Ronald Wood[2], and Stavros Demos[1]
[1]*University of Rochester, Rochester, NY,* [2]*University of Rochester School of Medicine and Dentistry, Rochester, NY*

SAT-175
MacroAFM: A Macroscopic Model for High School and Undergraduate Education
Fletcher Roberts[1], Thomas Roberts[1], William Bagnal[1], and Vladimir Reukov[1]
[1]*Clemson University, Clemson, SC*

SAT-176
Micro-BLIP: A New Tool for Instrumentation Education
Jake Donovan[1], Oliver Snyder[1], and George Stetten[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

SAT-177
Magnetic Nanoparticles for the Detection of Matrix Metalloproteinase-2 Activity in Tumor Models
Kareem El-Kattan[1], Tareq Anani[1], and Allan David[1]
[1]*Auburn University, Auburn, AL*

SAT-178
A Comprehensive Comparison of Five Different Methods to Characterize Theranostics Nanoparticles Size Distribution Based on Polydispersity and Nanoparticle Morphology
Ralph Valentin[1], Gloria Andrade-Feraud[2], and Anthony McGoron[1]
[1]*Florida International University, Miami, FL,* [2]*Pennsylvania State University, State College, PA*

SAT-179
Effects of Statin on Endothelial Cell Inflammation When Pretreated or Post-treated With tnf-ε
Thuy Van[1,2], Matthew Hagen[2], and Monica Hinds[2]
[1]*Portland State University, Portland, OR,* [2]*Oregon Health & Science University, Portland, OR*

Track: Undergraduate Research, Design & Leadership, Biomedical Imaging and Optics

Biomedical Imaging and Optics-Undergraduate

SAT-180
Cluster and Quadrant Analysis for Thermographic Breast Cancer Detection
Aidan Murray[1], Shannon Toole[1], and Pannie Xu[1]
[1]*George Washington University, Washington, DC*

SAT-181
Acoustoelectric Imaging of Nerve Phantom Using a 96-Element Phased Array Ultrasound Transducer
Alex Burton[1], Yexian Qin[1], Pier Ingram[1], Chet Preston[1], and Russell Witte[1]
[1]*University of Arizona, Tucson, AZ*

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-182
A Rapid Autofocusing Module for Whole Slide Imaging
Alexander Magsam[1], Jun Liao[2], and Guoan Zheng[2]
[1]*University of Nebraska-Lincoln, Lincoln, NE,* [2]*University of Connecticut, Storrs, CT*

SAT-183
Determination of Blood Flow Velocity Profile from Intravital Microscopy Using Digital Image Cross-Correlation
Alfredo Lucas[1], Vivek P. Jani[1], and Pedro Cabrales[1]
[1]*University of California, San Diego, La Jolla, CA*

SAT-184
Linearly Normalized T2w MR Intensities Reveal Chemoradiation-Response Specific Differences within Rectal Tumor and Adjacent Non-Tumor Regions
Amrish Selvam[1], Jacob Antunes[1], Rajat Thawani[1], Kaustav Bera[1], Justin Brady[2], Joseph Willis[2], Raj Paspulati[2], Anant Madabhushi[1], and Satish Viswanath[1]
[1]*Case Western Reserve University, Cleveland, OH,*
[2]*University Hospitals Cleveland Medical Center, Cleveland, OH*

SAT-185
Vcalidation of Multi-Otsu Thresholding for the Quantification of Choroidal Neovascularization (CNV) Lesion Size In Laser-Induced CNV Models
Anessa Puskar[1], Wenqiang Liu[1], and Jennifer Kang-Mieler[1]
[1]*Illinois Institute of Technology, Chicago, IL*

SAT-186
Dual-Tuned Removable Common-Mode Current Suppression Trap for MRI
Angel Enriquez[1] and Joseph Rispoli[2]
[1]*University of Puerto Rico Mayagüez, Anasco, PR, Puerto Rico,* [2]*Purdue University, West Lafayette, IN*

SAT-187
Using Regression Analyses of Multimodal Brain Imaging Data to Predict Change in Depression Severity Following Cognitive Behavioral Therapy
Anthony Chesebro[1], Harry Rubin-Falcone[1,2], Ronit Kishon[1,2], Maria Oquendo[3], John Mann[1,2], Jeffrey Miller[1,2], and Francesca Zanderigo[1,2]
[1]*Columbia University, New York, NY,* [2]*New York State Psychiatric Institute, New York, NY,* [3]*University of Pennsylvania, Philadelphia, PA*

SAT-188
Time Correlated Single Photon Counting using an FPGA Board
Anthony Zilinsky[1], Bassem Faour[1], and Ben Jenkins[1]
[1]*Colorado State University, Fort Collins, CO*

SAT-189
Math Model of Brain Tumor Growth Facilitates Tumor Cell Quantification from Bioluminescence Imaging
April A. Fleming[1,2], Jaime M Chapman[2], Susan Christine Massey[2], Pamela R. Jackson[2], Shiv K. Gupta[3], Ann C. Tuma[3], Lihong He[3], Fang Jin[3], Aaron Johnson[3], Jann N. Sarkaria[3], and Kristin R. Swanson[2]
[1]*Arizona State University, Tempe, AZ,* [2]*Mayo Clinic, Phoenix, AZ,* [3]*Mayo Clinic, Rochester, MN*

SAT-190
Associations Between CT-derived Muscle, Fat, and Bone Metrics During Weight Loss in Older Adults
Arlynn Baker[1], Samantha Schoell[2], Leon Lenchik[3], Daniel Beavers[3], Anthony Marsh[4], Jack Rejeski[4], Ashley Weaver[2], and Kristen Beavers[4]
[1]*Western Carolina University, Cullowhee, NC,* [2]*Virginia Tech-Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC,* [3]*Wake Forest School of Medicine, Winston-Salem, NC,* [4]*Wake Forest University, Winston-Salem, NC*

SAT-191
Inter-subject Variability in Healthy TES Recipients: A Computational Study.
Bakir Mousa[1], Aprinda Indahlastari[1], May Boggess[1], Christopher Saar[1], Kevin Castellano[2], Aditya Kasinadhuni[2], Munish Chauhan[1], Thomas Mareci[2], and Rosalind Sadleir[1]
[1]*Arizona State University, Tempe, AZ,* [2]*University of Florida, Gainesville, FL*

SAT-192
Platform for Skeletal Muscle Tissue Clearing for Fluorescent Reporters and Immunofluorescence Staining
Bhavani Sai Rohit Murakonda[1,2,3,4], Mayank Verma[2,3,4], Yoko Asakura[2,3,4], and Atsushi Asakura[2,3,4]
[1]*University of Minnesota, Minneapolis, MN,* [2]*University of Minnesota-Medical School, Minneapolis, MN,* [3]*Stem Cell Institute, Minneapolis, MN,* [4]*Paul & Shelia Wellstone Muscular Dystrophy Center, Minneapolis, MN*

SAT-193
Methods for Measuring Dry Mass Change in Time-lapse Gradient Light Interference Microscopy
Brittani Carroll[1], Mikhail Kandel[2], Ghazal Kouzehgarani[2], Martha Gillette[2], and Gabriel Popescu[2]
[1]*University of Evansville, Newburgh, IN,* [2]*University of Illinois at Urbana-Champaign, Urbana-Champaign, IL*

SAT-194
The Relationship Between Resting-State fMRI Low Frequency Fluctuations and Cerebral Hemodynamics
Chantelle Lim[1], Baxter Rogers[2], and Victoria Morgan[2]
[1]*University of Rochester, Rochester, NY,* [2]*Vanderbilt University, Nashville, TN*

SAT-195
Magnetoencephalography Analysis of the 40-Hz Auditory Steady-State Response in First Episode Patients with Schizophrenia
Charles Ellis[1], Timothy Gawne[2], Gregory Overbeek[2], Jeffrey Killen[2], David White[2], Meridith Reid[3], and Adrienne Lahti[2]
[1]*Louisiana Tech University, Little Rock, AR,* [2]*University of Alabama Birmingham, Birmingham, AL,* [3]*Auburn University, Auburn, AL*

SAT-196
Simulation-Based Optimization of Ultrasound Adapters for Brain Slice Neuromodulation
Charles Naumann[1], Marshal Phipps[2], and Charles Caskey[3]
[1]*Vanderbilt University School of Engineering, Nashville, TN,*
[2]*Vanderbilt University School of Medicine, Nashville, TN,*
[3]*Vanderbilt University Institute of Imaging Science, Nashville, TN*

POSTER SESSION–SATURDAY

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-197
Cardiac Segmentation approached by Way of Convolutional LSTM Network
Chris Petty[1]
[1]Clemson University, Weston, CT

SAT-198
TwitchRead: Analyzing Contraction in Engineered Skeletal Muscle Tissue Co-Cultured with Neurospheres
Daniel Carbonero[1], Rachel Besser[1], and Ashutosh Agarwal[1]
[1]University of Miami, Coral Gables, FL

SAT-199
A Convolutional Neural Network-based Algorithm for Targeting Relevant Diagnostic Sites in HRME Images
David Brenes[1], Eric Yang[2], Nadarajah Vigneswaran[3], Ann Gillenwater[3], and Rebecca Richards-Kortum[2]
[1]Duke University, Durham, NC, [2]Rice University, Houston, TX, [3]University of Texas, Houston, TX

SAT-200
The Quantitative Assessment of Ultrasound Backscatter in 3D Printed Phantoms
Divya Bhansali[1], Samantha Paulsen[2], Trevor Mitcham[1], Bagrat Grigoryan[2], Wolfgang Stefan[1], Jordan Miller[2], and Richard Bouchard[1]
[1]University of Texas MD Anderson Cancer Center, Houston, TX, [2]Rice University, Houston, TX

SAT-201
Source Localization of Cortico-Cerebellar Activity During a Sensorimotor Control Task
Efrain Torres[1] and Scott Beardsley[2]
[1]Marquette Univeristy, Milwaukee, WI, [2]Marquette University, Milwaukee, WI

SAT-202
Thermal Infrared Imaging for Detection of Pulpal Blood Flow
Elizabeth Budiman[1], Senay Tewolde[1], Justin Bequette[1], and Roy Dory[1]
[1]Naval Medical Research Unit San Antonio, San Antonio, TX

SAT-203
Comparative Analysis of Nanoscale Ultrasound Contrast Agents
Elly Lambert[1], Hannah Cebull[1], Craig Goergen[1], and Luis Solorio[1]
[1]Purdue University, West Lafayette, IN

SAT-204
Collagen Fiber Orientation Mapping with Fourier Ptychography Polarized Light Microscopy
Eric Zhang[1,2], Bin Yang[1], and Ian Sigal[1,2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]University of Pittsburgh School of Medicine, Pittsburgh, PA

SAT-205
Developing an Algorithm to Determine Protein Structure via X-Ray Free Electron Laser Diffraction sans Crystallization
Ethan Kwan[1] and Dilano Saldin[2]
[1]The University of Texas at Austin, Austin, TX, [2]The University of Wisconsin Milwaukee, Milwaukee, WI

SAT-206
Improving Radial GRAPPA Efficiency by Reconstructing Multiple Points from a Single Weight Set
Evan Cummings[1], Dominique Franson[1], Jesse Hamilton[1], and Nicole Seiberlich[1]
[1]Case Western Reserve University, Cleveland, OH

SAT-207
Spiral Catheter With 1550nm Fiber-Bragg Grating and Mach-Zehnder Interferometer Touch Sensors for Accurate Atrial Electroanatomic Mapping
Grace Jeanpierre[1], Li Xu[2], and Mable Fok[2]
[1]San José State University, San José, CA, [2]University of Georgia, Athens, GA

SAT-208
Semi-automated Analysis of Microembolic Lesions in Brain Diffusion Weighted MRI
Gregory Wheeler[1], Loi Do[1], Wei Zhou[1], and Theodore Trouard[1]
[1]University of Arizona, Tucson, AZ

SAT-209
Angiotensin II-Induced Hypertension Does Not Lead to Dissecting Aortic Aneurysms in Apolipoprotein E-Deficient Rats
Hamna Qureshi[1], Evan Phillips[1], and Craig Goergen[1]
[1]Purdue University, West Lafayette, IN

SAT-210
Reducing Error in Ultrasound Elasticity Imaging via 3D Simulation of Human Tendon
Hannah Schmitz[1], Andres Nuncio Zuniga[1], Cindy Fastje[1], Daniel Latt[1], and Russ Witte[1]
[1]The University of Arizona, Tucson, AZ

SAT-211
SERRS Assay for Detection of Biomarkers Using Metallic Nanoparticles
Hannah Smith[1], Andrea Locke[1], and Gerard Cote[1]
[1]Texas A&M University, College Station, TX

SAT-212
Development of a Rodent Restraint System to Study Brain Networks in Absence of Anesthetic Agents
Isak Thomas[1], Hisham Temmar[1], Ayende Ibere[1], Maysam Nezafati[1,2], and Shella Keilholz[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

SAT-213
Transient Optical Scattering as an Imaging Contrast Mechanism for Molecular-Scale Dynamics in Tissues
Janet Sorrells[1,2], Joanne Li[2], Andrew Bower[2], Pin-Chieh Huang[2], and Stephen Boppart[2]
[1]University of Rochester, Rochester, NY, [2]University of Illinois at Urbana-Champaign, Urbana, IL

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-214
Retinal Vascular Permeability Changes in a Rat Model of Diabetic Retinopathy
Jason Wu[1], Patrick Mogianesi[2], Michael Liu[3], Jennifer Kang-Mieler[3], and Kenneth Tichauer[3]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]University of California, Santa Cruz, Santa Cruz, CA, [3]Illinois Institute of Technology, Chicago, IL

SAT-215
3D Murine Brain Cartography: Reconstruction using Spatial Light Interference Microscopy (SLIM)
Javier De Jesus Astacio[1], Patricia Cintora[2], Mikhail Kendal[2], and Catherine Best-Popescu[2]
[1]Univerisity of Puerto Rico at Mayaguez, Trujillo Alto, PR, [2]Univerisity of Illinois at Urbana-Champaign, Urbana, IL

SAT-216
Synthesis of DNA-Antibody Constructs for Studying Nucleic Acid Hybridization Kinetics in Live Cells
Jillian Ortner[1], Yuan-I Chen[2], Yu-An Chen[2], and Tim Yeh[2]
[1]The Georgia Institute of Technology, Atlanta, GA, [2]The University of Texas at Austin, Austin, TX

SAT-217
Microscopy with UV Surface Excitation (MUSE) for Imaging of Mohs Skin Cancer Samples
Jongwan Park[1], Jason Zhang[1], Irene Kuang[1], Marjan Majid[1], James Tunnell[1], Matthew Fox[1], Jason Reichenberg[1], and Kate Sebastian[1]
[1]The University of Texas at Austin, Austin, TX

SAT-218
Automated Artifact Identification in MR Images using Deep Convolutional Neural Networks
Jordan Harrod[1], Morteza Mardani[2,3], Shreyas Vasanawala[4], John Pauly[2], and Lei Xing[3]
[1]Meinig School of Biomedical Engineering, Cornell University, Ithaca, NY, [2]Department of Electrical Engineering, Stanford University, Stanford, CA, [3]Department of Radiation Oncology, Stanford University, Stanford, CA, [4]Department of Radiology, Stanford University, Stanford, CA

SAT-219
Hybrid Spectroscopy Imaging System for *In Vivo* Tissue Differentiation: System Development
Juan Giraldo[1] and Wei-Chiang Lin[1]
[1]Florida International University, Miami, FL

SAT-220
Automatic Bolus Detection for Dynamic Contrast-Enhanced Imaging with Undersampling
Justin Park[1,2], Fatemeh Rezapoor[1,2], Linda B. Andersen[1,2], Richard Frayne[1,2], and R. Marc Lebel[1,2,3]
[1]University of Calgary, Calgary, AB, Canada, [2]Seaman Family MR Centre, Calgary, AB, Canada, [3]GE Healthcare, Calgary, AB, Canada

SAT-221
Use of Wireless Hand Tracking Sensors to Navigate 3D Medical Images
Kalyn Younger[1,2], Josh Tan[2], and Jeffrey Willey[2]
[1]Johns Hopkins University, Baltimore, MD, [2]Wake Forest School of Medicine, Winston Salem, NC

SAT-222
Automated Segmentation Algorithm for Thermal Breast Images
Zainab Mahmood[1], Katharine Fergusson[1], and Nada Kamona[1]
[1]The George Washington University, Washington, DC

SAT-223
Correction of Gibbs Ringing Artifact in DW-MRI with Biomimetic Brain Phantom as Ground Truth
Katherine Rohde[1]
[1]University of Pittsburgh, Pittsburgh, PA

SAT-224
The Investigation of Organ Dose Reduction in Head CT Scans Due to Head Angle Adjustments
Keawepono Wong[1], Molly Golek[1], Charles Bolton[1], Lingyun Chen[2], and Dianna Bardo[2]
[1]Arizona State University, Tempe, AZ, [2]Phoenix Children's Hospital, Phoenix, AZ

SAT-225
Measuring the Change of Mitochondrial Morphology in RSV Infected MH-S Cells using
Kenya Alfaro[1], Abhijit Marar[2], Peter Kner[2], and Jocelyn Grunwell[3]
[1]California State University, Long Beach, Long Beach, CA, [2]University of Georgia, Athens, GA, [3]Emory University, Atlanta, GA

SAT-226
Associations between Functional Connectivity and Walking in Multiple Sclerosis Patients
Kyle Poe[1], Rachel Bollaert[2], Elizabeth Hubbard[3], Curtis Johnson[4], Robert Motl[5], and Bradley Sutton[2]
[1]University of the Pacific, Stockton, CA, [2]University of Illinois at Urbana-Champaign, Urbana, IL, [3]Berry College, Mount Berry, GA, [4]University of Delaware, Newark, DE, [5]University of Alabama, Tuscaloosa, AL

SAT-227
Murine Medial Femoral Condyle Growth Plate Profile Varies with Orientation of Histology Section
Laura Vasquez-Bolanos[1,2], Leening Liu[2], Marisa Keller[2], Felix Hsu[2], Anna Plaas[3], and Robert Sah[2]
[1]Cornell University, Ithaca, NY, [2]University of California, San Diego, San Diego, CA, [3]Rush University Medical Center, Chicago, IL

SAT-228
Aggregation of Copper Sulfide Nanoparticles Around Nanoscale Targets for Photoacoustic Contrast in a Flow Model
Madeleine Howell[1], Joel Lusk[1], Christopher Miranda[1], and Barbara Smith[1]
[1]Arizona State University, Tempe, AZ

SAT-229
Stabilizing a Reference Laser for a Modified Michelson Interferometer
Madelyn Hoying[1], Jahnavee Mittal[1], Bryonna Beeson[2], and Theodore Corcovilos[1]
[1]Duquesne University, Pittsburgh, PA, [2]American Chemical Society Project SEED, Duquesne University, Pittsburgh, PA

POSTER SESSION–SATURDAY

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-230
Oxygen Nanobubble Formation as a Mechanism of Thermally Induced Erythrocyte Aggregation
Joey Blasco[1], Arianne Jean-Francois[1], Samantha Weber-Fishkin[1], Geoffry Gunter[1], Harrison Seidner[1], and Mary Frame[1]
[1]Stony Brook University, Stony Brook, NY

SAT-231
Detection of Newly Formed Blood Vessels Using Label-Free Optical Molecular Imaging
Merci-Pauline Ujeneza[1], Sixian You[2], Jamila Hedhli[2], Eric Chaney[2], Marina Marjanovic[2], and Stephen Boppart[2]
[1]University of Rhode Island, Providence, RI, [2]University of Illinois of Urbana Chaimpaign, Urbana, IL

SAT-232
Fourier Transform Infrared Spectroscopy as a Tool for Analyzing Differential Bile Acid Concentrations in Liver Tissue Biopsy
Miranda Dawson[1,2], Saumya Tiwari[1,2], Bhoomika Mathur[1], Sayee Anakk[1], and Rohit Bhargava[1,2]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Beckman Institute, Urbana, IL

SAT-234
Design and Characterization of Phantom Materials for Ultrasound Elastography Research
Mohamed Salah Mahmoudi[1], Penelope Subervi[1], and Stephen McAleavey[1]
[1]University of Rochester, Rochester, NY

SAT-235
Variability of Image Texture Quantification in Simulated Medical Imaging Systems
Nada Kamona[1,2], Benjamin Berman[2], and Qin Li[2]
[1]The George Washington University, Washington DC, DC, [2]U.S Food and Drug Administration, Silver Spring, MD

SAT-236
Creation of *In Vivo* Imaging Support System Using Additive Manufacturing
Natalie Mueller[1], P. Timothy Doughty[1], and Teresa A. Murray[1]
[1]Louisiana Tech University, Ruston, LA

SAT-237
Optimizing Geometry of a 64-channel RF Head Coil
Neilesh Vinjamuri[1], Tales Santini[1], Sossena Wood[1], and Tamer Ibrahim[1]
[1]University of Pittsburgh, Pittsburgh, PA

SAT-238
MoleLens: Smartphone Based Polarized Imaging
Octavio Cordova Jr.[1], Will Goth[2], and James Tunnell[2]
[1]University of Texas at El Paso, El Paso, TX, [2]University of Texas at Austin, Austin, TX

SAT-239
Multiphoton Microscopy Imaging in Early Detection of Ovarian Cancer
Olivia Austin[1], Caitlin Howard[1], Jen Koevary[1], and Jennifer Barton[1]
[1]University of Arizona, Tucson, AZ

SAT-240
Development of a Brain Stage II-Integration of the Cerebrovascular System
Ryan Branco[1], Peyton Tharp[1], Evan Keating[1], Savannah Dale[1], and Jorge Rodriguez[1]
[1]Clemson University, Clemson, SC

SAT-241
Evaluation of Segmentation Performance with 3T and 7T Magnetic Resonance Imaging using FreeSurfer
Shane McKeon[1], Anusha Rangarajan[1], Minjie Wu[1], Tales Santini[1], Tamer Ibrahim[1], Oscar Lopez[1], and Howard Aizenstein[1]
[1]University of Pittsburgh, Pittsburgh, PA

SAT-242
Characterizing Tissue Autofluorescence To Enhance Visualization of Fluorescent Biomarkers
Su Hyun Lyu[1], Joao Lagarto[1], and Laura Marcu[1]
[1]University of California, Davis, Davis, CA

SAT-243
Cellular Topological Growth Limits Affect Melanoma Phenotype
Than Huynh[1,2], Jamila Hedhli[1,2], Minwoo Kim[1,2], Sixian You[1,2], Junmin Lee[1], Iwona Dobrucka[1,2], Kristopher Kilian[1], Stephen Boppart[1,2], Michael Insana[1,2], and Lawrence Dobrucki[1,2]
[1]University of Illinois at Urbana- Champaign, Urbana, IL, [2]Beckman Institute for Advanced Science and Technology, Urbana, IL

SAT-244
Gesture Based Manipulation of the Prostate Capsule and Lesion on MRI Using Microsoft HoloLens
Yankun Chen[1], Soumya Ghose[1], Lee Ponsky[1], and Anant Madabhushi[1]
[1]Case Western Reserve University, Cleveland, OH

SAT-245
Development of a Dual Modality Gastrointestinal Capsule for Optical Coherence Tomography (OCT) and Near-Infrared Fluorescence (NIRF) Imaging
Yuxiao Wei[1], Joe Gardecki[2], and Gary Tearney[2]
[1]Duke University, Durham, NC, [2]Massachusetts General Hospital, Boston, MA

SAT-246
Kidney as Verification of Microsphere Methods for Validating Diffuse Optical Blood Flow Measurement
Ziping Liu[1], Ashley Proctor[1], Gabriel Ramirez[1], Songfeng Han[1], Tracy Bubel[1], and Regine Choe[1]
[1]University of Rochester, Rochester, NY

Track: Undergraduate Research, Design & Leadership, Cancer Technologies

Cancer Technologies-Undergraduate

SAT-247
Angiogenesis in an *In Vitro* Vascular Model of Inflammatory Breast Cancer
Amber Busher[1], Peter Galie[1], and Mary Alpaugh[1]
[1]Rowan University, Glassboro, NJ

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-248
***In Vitro* Model for Studying the Effects of LPS On Astrocytes in the Brain Tumor Microenvironment**
Andrea Kuliasha[1], Megan Cox[1], Liwu Li[1], and Scott Verbridge[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

SAT-249
Ovarian Cancer Cells Induce the Differentiation and Subsequent Polarization of Monocytes to an Alternatively Activated Macrophage Phenotype.
Andrew Miller[1], Kaitlin Fogg[1], and Pamela Kreeger[1]
[1]University of Wisconsin-Madison, Madison, WI

SAT-250
The Effects of Cold Atmospheric Plasma on Cell Migration and Expression of Adhesion Molecules on Cervical Cancer Cells
Ariel Lanier[1], Nicole Sova[1], Yonry Zhu[1], David Burnette[1], and Monica Burdick[1]
[1]Ohio University, Athens, OH

SAT-251
Characterization of Biocompatible Scaffolds for Modeling Tumor Microenvironments
Carolyna Quiles[1], Troy Comi[2], and Rohit Bhargava[2]
[1]University of Virginia, Charlottesville, VA, [2]University of Illinois at Urbana-Champaign, Urbana, IL

SAT-252
Synthesis Conditions of Iron Oxide Nanoparticles for Magnetic Hyperthermia Therapy
Dalton Kotilinek[1], Lara Heersema[2], Stephanie Hufnagel[2], Zhengrong Cui[2], and Hugh D.C. Smyth[2]
[1]South Dakota School of Mines & Technology, Rapid City, SD, [2]The University of Texas at Austin, Austin, TX

SAT-253
The Effect of Varying Doses and Sources of Radiation on Endothelial Cells
Mary Jane Been[1], Suzanne Bradley[2], Donald Medlin[2], and Delphine Dean[2]
[1]Coe College, Cedar Rapids, IA, [2]Clemson University, Clemson, SC

SAT-254
The Role of the Extracellular Matrix in the Breast Cancer Resistance to Paclitaxel
Donna Murillo[1], Hunter Joyce [2], and Amy Brock[2]
[1]Worcester Polytechnic Institute, Worcester, MA, [2]University of Texas at Austin, Austin, TX

SAT-255
Mechanical Strain Increases Yap/Taz Nuclear Localization and Chemoresistance in Breast Cancer Cells
Gabriel Garcia[1], Adrianne Spencer[2], and Aaron Baker[2]
[1]University of Texas at El Paso, El Paso, TX, [2]The University of Texas at Austin, Austin, TX

SAT-256
Macrophage Response to Stiffness is Environment Dependent
Gabriela Perez-Lozano[1], Shane Allen[1], Aciel Hernandez[2], Alexis Antequera[1], and Laura Suggs[1]
[1]The University of Texas at Austin, Austin, TX, [2]The University of Miami, Miami, FL

SAT-257
Internalization of Near-Infrared-Absorbing Nanorods for the Photomechanical Ablation of Cancer Cells
Ian Davis[1], Hieu Nguyen[2], Austin Moy[2], and James Tunnell[2]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA, [2]The University of Texas at Austin, Austin, TX

SAT-258
Biomimetic and Biophysical Approach to Profile Metastatic Cancer Cell Migration
Jacob Enders[1], Ayush Garg[1], Carlos Castro[1], and Jonathan Song[1]
[1]The Ohio State University, Columbus, OH

SAT-259
Probing the Effect of Cancer-Associated Fibroblasts on Therapeutic Resistance in a 3-D Tumor Model
Jonathan Chang[1], Alex Avendano[1], Christina Ennis[2], Amanda Stratton[3], and Jonathan Song[1]
[1]Ohio State University, Columbus, OH, [2]Kenyon College, Gambier, OH, [3]Lehigh University, Bethlehem, PA

SAT-260
Microfluidic Co-Culture of Breast Cancer Cells and Adipose Stem Cells
Katie A. Render[1], Joshua M. Campbell[1], Sharif M. Rahman[1], Elizabeth C. Martin[1], and Adam T. Melvin[1]
[1]Louisiana State University, Baton Rouge, LA

SAT-261
Optimization of a Microfluidics Device for the Cell Separation of F98 Rat Glioma Cells from Primary Rat Astrocytes
Kylee Klinkowski[1], Meghan Logun[2], Wujun Zhao[2], Leidong Mao[2], and Lohitash Karumbaiah[2]
[1]University of Massachusetts Amherst, Amherst, MA, [2]University of Georgia, Athens, GA

SAT-262
Characterization of the Primary Binding Interactions in CAR-T Therapy
Liam Dow[1], Matthew Dragovich[1], Meaghan Gavey[1], Wenpeng Cao[1], Brendan Curran[1], and X. Frank Zhang[1]
[1]Lehigh University, Bethlehem, PA

SAT-263
Adapting NeuroVascular Unit (NVU) Organ-on-chip to Examine Breast-to-brain Metastases
Emily Schafer[1], Dmitry Markov[1], Phillip Fryman[1], Tyler Moon[1], and Lisa McCawley[1]
[1]Vanderbilt University, Nashville, TN

SAT-264
Agent-based Modeling of the Glioblastoma Tumor Microenvironment
Lynette Sequeira[1], Jessica Yuan[1], Daniel Logsdon[1], and Jennifer Munson[1]
[1]University of Virginia, Charlottesville, VA

POSTER SESSION–SATURDAY

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-265
The Effect of Alternating Current Electric Fields on Microtubule Polymerization *In Vitro*
Madelyn Simon[1], Clyde Salzman[2], Joseph Cleary[3], and William Hancock[4]
[1]*University of Missouri, Columbia, MO,* [2]*Cypress Fairbacks Independent School District, Houston, TX,* [3]*Pennsylvania State University, State College, PA*

SAT-266
A Quantitative Approach for Risk Stratification and Metastatic Potential Modeling in Melanoma Diagnosis
Madelyn O'Gorman[1], Ekaterina Nikolova[1], Joel Heim[1], Ming Li[1], Saranya Wyles[1], Edwin Squirewell[1], Mark Cappel[2], Mark Pittelkow[3], Clark Otley[1], Louis Schenck[1], Amy Weaver[1], Vera Suman[1], and Alexander Meves[1]
[1]*Mayo Clinic, Rochester, MN,* [2]*Mayo Clinic, Jacksonville, FL,* [3]*Mayo Clinic, Scottsdale, AZ*

SAT-267
A Novel High-Throughput, High Content Three-Dimensional Assay for Determination of Tumor Invasion and Dormancy
Mahera Husain[1], TJ Puls[1], and Sherry Voytik-Harbin[1]
[1]*Purdue University, West Lafayette, IN*

SAT-268
Ratiometric Assessment of Intra-Tumor Heterogeneity Using Tumor Targeted SWIR Emitting Nanoprobes
Michael Donzanti[1], Harini Kantamneni[1], Carolina Bobadilla[1], Xinyu Zhao[2], Shuquing He[2], M.C. Tan[2], Mark Pierce[1], Richard Riman[1], Vidya Ganapathy[1], Charles Roth[1], and Prabhas Moghe[1]
[1]*Rutgers University, New Brunswick, NJ,* [2]*Singapore University of Technology and Design, Singapore, Singapore*

SAT-269
Increasing the Affinity of an Antibody that Binds to a Tumor-Specific Glycopeptide
Monika Kizerwetter[1], Preeti Sharma[1], Karen Schreiber[2], Hans Schreiber[2], and David Kranz[1]
[1]*University of Illinois at Urbana-Champaign, Champaign, IL,* [2]*The University of Chicago, Chicago, IL*

SAT-270
Quantifying Negative Margins of Fluorescence-Guided Sarcoma Resection from Fat and Muscle Surgical Phantoms
Niki Tselepidakis[1], Kimberley Samkoe[2], Brent Bates[3], Jason Gunn[1], Brian Pogue[1], and Eric Henderson[2]
[1]*Thayer School of Engineering at Dartmouth, Hanover, NH,* [2]*Dartmouth-Hitchcock Medical Center, Lebanon, NH,* [3]*Geisel School of Medicine at Dartmouth, Hanover, NH*

SAT-271
Efficacy of a Carbon Dioxide-Based Cryoprobe in Treating Mammary Tumors in Rats
Pascal Acree[1], Yixin Clarisse Hu[1], Sean Young[1], Tara Blair[1], Grace Kuroki[1], Evelyn McChesney[1], Shivam Rastogi[1], Bailey Surtees[1], Serena Thomas[1], Guannan Wang[1], Saraswati Sukumar[1], Susan Harvey[1], and Nicolas Durr[1]
[1]*Johns Hopkins University, Baltimore, MD*

SAT-272
Maximizing Thermal Heat Transfer of a Carbon-Dioxide Based Cryoprobe
Pascal Acree[1], Sean Young[1], Clarisse Yixin Hu[1], Tara Blair[1], Grace Kuroki[1], Evelyn McChesney[1], Shivam Rastogi[1], Bailey Surtees[1], Serena Thomas[1], Susan Harvey[1], and Nicolas Durr[1]
[1]*Johns Hopkins University, Baltimore, MD*

SAT-273
Organ-on-a-vine: Spinach Leaves Used as Cancer Model
Ryan Zenhausern[1], Jerome Lacombe[2], and Frederic Zenhausern[2]
[1]*University of Arizona, Honors College, Tucson, AZ,* [2]*University of Arizona, Center for Applied Nanobioscience and Medicine, Phoenix, AZ*

SAT-274
In Vitro Evaluation of Cancer Invasiveness with Microfluidic Layer-By-Layer Collagen Deposition
Sang Sin Lee[1], Kristen Nemes[1], Hao Zhou[1], and Keyue Shen[1,2,3]
[1]*Department of Biomedical Engineering, University of Southern California, Los Angeles, CA,* [2]*Norris Comprehensive Cancer Center, University of Southern California, Los Angeles, CA,* [3]*Department of Stem Cell Biology and Regenerative Medicine, University of Southern California, Los Angeles, CA*

SAT-275
Novel Method for the Deconvolution of Molecular DNA Repair Assemblies into Their Individual Constituents Using Small-Angle Neutron Scattering
Sarah Lucas[1,2], Matthew Cuneo[2], and Xun Lu[2]
[1]*NC State University, Raleigh, NC,* [2]*Oak Ridge National Laboratory, Oak Ridge, TN*

SAT-276
High-throughput Optoepigenetics with Light-Sensitive Histone Deacetylase Inhibitors in Murine Breast Cancer and Melanoma Models
Sarah Schrup[1], Christina Ambrosi[1], Melissa Hadley[1], Andrew Efimov[1], Alejandro Villagra[1], and Emilia Entcheva[1]
[1]*The George Washington University, Washington, DC*

SAT-277
Two-dimensional Micropipette Adhesion Assay for Measurement of TCR Affinity and Single Cell TCR Sequencing
Shin Hyuk Bang[1], Chad M Williams[2], Shu-Qi Zhang[2], Alexandra A. Schonnesen[2], and Ning Jiang[2]
[1]*Cornell University, Ithaca, NY,* [2]*The University of Texas at Austin, Austin, TX*

SAT-278
A Novel Three-dimensional (3D) Tumor Metastasis Model for High-Throughput Drug Discovery
Xiaohong Tan[1], TJ Puls[1], Melissa Fishel[2], Mark Kelley[2], Catherine Whittington[1,3], and Sherry Voytik-Harbin[1]
[1]*Purdue University, West Lafayette, IN,* [2]*Indiana University School of Medicine, Indianapolis, IN,* [3]*Eli Lilly and Company, Indianapolis, IN*

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-279
Validating the Interplay Between Myc and PI3K in Prostate Cancer Evolution
Yutong Liu[1], Grinu Mathew[2], and Lloyd Trotman[2]
[1]*University of California, Berkeley, Berkeley, CA,* [2]*Cold Spring Harbor Laboratory, Cold Spring Harbor, NY*

SAT-280
CRISPR/Cas9-Mediated PARP Disruption to Sensitize BRCA1 Mutated Breast Cancer Cells to Chemotherapy
Rachel Mintz[1], Yeh-Hsing Lao[1], Mingqiang Li[1], Chai Hoon Quek[1], and Kam Leong[1]
[1]*Columbia University, New York, NY*

Track: Undergraduate Research, Design & Leadership, Cardiovascular Engineering

Cardiovascular Engineering-Undergraduate

SAT-281
Controlling Endothelial Cell Growth on Natural, Small-Diameter Tissue Engineered Vascular Grafts
Abhilash Suresh[1], Morgan Elliot[1], Brian Ginn[2], Hai-Quan Mao[1], and Sharon Gerecht[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Johns Hopkins, Baltimore, MD*

SAT-282
CXCL12 Isoform-Specific Effects on Vessel Behavior and Function
Alex Seibel[1], Chia-Wen Chang[1], and Jonathan Song[1]
[1]*The Ohio State University, Columbus, OH*

SAT-283
Quantification of Angiogenic Receptors on Circulating Endothelial Cells
Amanda Craine[1], Yingye (Cheri) Fang[2], and Princess Imoukhuede[2]
[1]*The Pennsylvania State University, Doylestown, PA,* [2]*University of Illinois at Urbana-Champaign, Urbana, IL*

SAT-284
Use of Physiologic and Device Signals in a Hybrid-gating Algorithm for Cardiac Cycle Phase
Brian Chang[1], Kimberly Feng[1], Samantha Russman[1], Steven Keller[1,2], and Elazer Edelman[1,2]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Brigham and Women's Hospital, Harvard Medical School, Boston, MA*

SAT-285
A Benchtop Mock Circulatory Loop Allows for Improved Characterization of Acute Cardiac Disease Conditions for Mechanical Circulatory Support Devices
Brian Chang[1], Samantha Russman[1], Kimberly Feng[1], Sonya Bhavsar[2], Noam Josephy[1,2], Steven Keller[1,3], and Elazer Edelman[1,3]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Abiomed, Danvers, MA,* [3]*Brigham and Women's Hospital, Harvard Medical School, Boston, MA*

SAT-286
Investigating Mesenchymally Transformed Cell Proliferation in the Aortic Valve
Bridget Alber[1], Jonathan Bramsen [1], and Gretchen Mahler[1]
[1]*Binghamton University, Binghamton, NY*

SAT-287
Tracking Cardiomyocytes Proliferation Using Fluorescence Ubiquitination Cell Cycle Indicator (FUCCI)
Catherine Weathered[1], Laura Woo[1], Leigh Bradley[1], Matthew Wolf[1], and Jeffrey Saucerman[1]
[1]*University of Virginia, Charlottesville, VA*

SAT-288
CITED4 Gene Therapy Alters Maladaptive Cardiac Remodeling After Ischemia Reperfusion Injury
Charles Rabolli[1], Carolin Lerchenmueller[2], Dongjian Hu[3], Vassilios Bezzeridis[4], Colin Platt[3], Laura Liu[3], Patrick Most[2], and Anthony Rosenzweig[3]
[1]*Rutgers University, Department of Biomedical Engineering, Piscataway, NJ,* [2]*University of Heidelberg, Department of Cardiology, Heidelberg, Germany,* [3]*Massachusetts General Hospital, Cardiovascular Research Center, Boston, MA,* [4]*Boston's Children's Hospital, Cardiovascular Division, Boston, MA*

SAT-289
Fluid Dynamic Study of Higher Beat Rates in the Penn State Pediatric Ventricular Assist Device
Charlotte Dawson[1], Maureen Gallgher[2], and Keefe Manning[2]
[1]*Oklahoma State University, Catoosa, OK,* [2]*Pennsylvania State University, State College, PA*

SAT-290
Efficacy of Intervention on Treatment of Pulmonary Embolism
Cheyenne Moffett[1] and Charles Hennemeyer[2]
[1]*University of Arizona, Tucson, AZ,* [2]*University Medical Center, Tucson, AZ*

SAT-291
Modeling Blood flow and Heat Transfer Adjacent to a PAC used for Continuous Hemodynamic Monitoring
Marisa Palmeri[1], Merin Kalapurackal[1], and Connie Hall[1]
[1]*The College of New Jersey, Ewing, NJ*

SAT-292
Finite Element Analysis of Fluid Flow in a Model of Kommerell's Diverticulum Aneurysm
Robert Marchese[1] and Daniel Cavanagh[1]
[1]*Bucknell University, Lewisburg, PA*

SAT-293
OCT Validation of Purkinje Fiber Networks in CLARITY Cleared Cardiac Tissue
Devon Guerrelli[1], Jaclyn Brennan[1], Stacey Rentschler[2], Jason Zara[1], and Igor Efimov[1]
[1]*The George Washington University, Washington, DC,* [2]*Washington University in St. Louis, St. Louis, MO*

POSTER SESSION–SATURDAY

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-294
Computation Modeling of Clotting Blood
Emily Sizemore[1], Fracnesco Costanzo[2], Amel Awadelkarim[2], and Michael Mazza[2]
[1]*University of Dayton, Dayton, OH,* [2]*Pennsylvania State University, University Park, PA*

SAT-295
Investigation of Regional Cardiac ECM Derived Hydrogels for Myocardial Infarction Treatment
Sara Salem[1], Emily Mulvany[1], Jinglei Wu[2], Victoria Leigh Messerschmidt[2], Yi Hong[2], and Ge Zhang[1]
[1]*The University of Akron, Akron, OH,* [2]*University of Texas at Arlington, Arlington, TX*

SAT-296
Local Fluid Forces Regulate Endothelial Hydraulic Conductivity
Griffin Spychalski[1], Ehsan Akbari[1], Kaushik Rangharajan[1], Shaurya Prakash[1], and Jonathan Song[1,2]
[1]*The Ohio State University, Columbus, OH,* [2]*The Ohio State University Comprehensive Cancer Center, Columbus, OH*

SAT-297
Novel Approaches to Simultaneously Monitor and Analyze Electrocardiogram of Zebrafish
Ang Sherpa[1], Isaac Clark[1], Silviu Gruber[1], Wyatt Moore[1], Michael Lenning[1], Peter Hofsteen[1], Jingchun Yang[2], Xiaolei Xu[2], and Hung Cao[1]
[1]*University of Washington, Seattle, WA,* [2]*Mayo Clinic, Rochester, MN*

SAT-298
Insights from Physical and Electrical Analogs of Multi-Lymphangion Systems
Benjamin Twigg[1], Benjamin Derleth[1], Luke Riexinger[1], Lance Munn[2], and James Baish[1]
[1]*Bucknell University, Lewisburg, PA,* [2]*Massachusetts General Hospital/ Harvard Medical School, Boston, MA*

SAT-299
Effect of Fetuin-A as Protein Therapy for Calcification of Vascular Smooth Muscle Cells
Jenna Mosier[1], Rachel Hybart[1], Amber Kay[2], James A. Stewart, Jr.[2], and C. LaShan Simpson[1]
[1]*Mississippi State University, Mississippi State, MS,* [2]*University of Mississippi, University, MS*

SAT-300
Design of an Actuated Pressure Waveform Generating Device for In Vitro Cardiovascular Experiments
Kaleigh Neely[1], Ryan Danahy[1], Paul Capobianco[1], Mitra Shabani[1], Masoud Farahmand[1], and Ethan Kung[1]
[1]*Clemson University, Clemson, SC*

SAT-301
Whole Body Cardiovascular Modeling for ECMO Training Simulator
Le Huang[1] and Sanjeev Shroff[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

SAT-302
Ambient UFP Exposure Impairs the Integrity of the Gut Vascular Barrier
Mark Gutin[1], Kyung In Baek[2], Tzung Hsiai[2,3], Li Rongsong[4], and Constantinos Sioutas[5]
[1]*Department of Biology, University of California Los Angeles, Los Angeles, CA,* [2]*Department of Bioengineering, University of California Los Angeles, Los Angeles, CA,* [3]*Division of Cardiology, Department of Medicine, University of California, Los Angeles, Los Angeles, CA,* [4]*Division of Cardiology, Department of Medicine, Los Angeles, CA,* [5]*USC, Los Angeles, CA*

SAT-303
Mechanical and Histological Characterization of Regurgitant Mitral Valve Anterior Leaflets
Michelle Lu[1], Nivedha Ravi[1], Jessica Kim[1], Bruno V. Rego[1], Salma Ayoub[1], and Michael S. Sacks[1]
[1]*Institute for Computational Engineering and Sciences, Austin, TX*

SAT-304
Modeling Heart Disease Using Mechanically Dynamic Magnetorheological PDMS Substrates
Myan Bhoopalam[1], Elise Corbin[1], Alexia Vite[1], and Kenneth Margulies[1]
[1]*University of Pennsylvania Perelman School of Medicine, Philadelphia, PA*

SAT-305
Impact of Collateral Vessels on the Hemodynamics in a Coronary Bypass Graft: A Computational Study
Nadia Francis[1] and Stephanie Geogre[2]
[1]*Fisk University, Nashville, TN,* [2]*East Carolina University, Greenville, NC*

SAT-306
Characterization and Expansion of Human Induced Pluripotent Stem Cells Derived Mural Cells
Nicole Zambrana-García[1], Bria Macklin[2], and Sharon Gerecht[2]
[1]*University of Puerto Rico, San Juan, Puerto Rico,* [2]*Johns Hopkins University, Baltimore, MD*

SAT-307
Histological Assessment of Elastin Fiber Orientation in Non-Human Primate Aortic Valves After Flex- Flow Treatment
Nidhi Suthar[1], Brittany Gonzalez[1], Alejandro Pinero[1], Manuel Perez[1], Ilyas Saytashev[1], Krishna Rivas[2], Pablo Morales[2], Jessica Romella-Roman[1], and Sharan Ramaswamy[1]
[1]*Florida International University, Miami, FL,* [2]*Mannheimer Foundation, Homestead, FL*

SAT-308
Mitral Valve Leaflet Characterization under *In Vivo* Stresses Using a Novel Biaxial Bioreactor
Nivedha Ravi[1], Michelle Lu[1], Brenda Rodriguez[1], Jessica Kim[1], Jordan Graves[1], Salma Ayoub[1], and Michael Sacks[1]
[1]*University of Texas at Austin, Austin, TX*

SAT-309
Recreating Microenvironment of Cardiac Tissue at Different Stages of Cardiac Fibrosis
Phu Nguyen[1], Rashi Porwal[2], Michael Moeller[2], Matthew Sis[2], and Srivatsan Kidambi[2]
[1]*University of Nebraska Lincoln, Lincoln, NE,*
[2]*University of Nebraska-Lincoln, Lincoln, NE*

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-310
Stimulation of Elastic Fiber Proteins by Mesenchymal Stem Cell-Derived Factors
Rachel Sides[1], Kaori Sugiyama[2], Aneesh Ramaswamy[1], David Vorp[1], Hiromi Yanagisawa[2], and Justin Weinbaum[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*University of Tsukuba, Tsukuba, Japan*

SAT-311
Electrospun Poly(-caprolactone) Scaffolds for Tissue Engineered Vascular Grafts (TEVG)
Rachel Young[1] and Justin Brown[2]
[1]*Lafayette College, Easton, PA,* [2]*The Pennsylvania State University, State College, PA*

SAT-312
Optimization of Robust Aortic Valve Cell Culture on Variable Stiffness Substrates for Study of Differential Cellular Response in 3D Hydrogel Systems
Rebecca Nikonowicz[1], Madeline Monroe[1], and Jane Grande-Allen[1]
[1]*Rice University, Houston, TX*

SAT-313
Dual Use of Optical Mapping and Sharp Microelectrodes as a Platform to Study the Electrophysiology of Mouse Hearts
Rosa Araiza[1], Jaclyn Brennan[1], and Igor Efimov[1]
[1]*The George Washington University, Washington, DC*

SAT-314
Developing a Bioink to 3D Print Aortic Valve Leaflets
Siyi Li[1], Aline Yonezawa[1], and Michael Davis[1]
[1]*Georgia Institute of Technology and Emory University, Atlanta, GA*

SAT-315
Slow Release of Growth Factors from Silk-ECM Sponges for Cardiovascular Tissue Engineering
Elizabeth C Bender[1], Whitney L Stoppel[1,2], Jonathan M Grasman[1], Lauren D Black, III[1,3], and David L Kaplan[1]
[1]*Tufts University, Medford, MA,* [2]*University of Florida, Gainesville, FL,* [3]*Tufts Sackler School of Graduate Biomedical Sciences, Boston, MA*

SAT-316
Quantification of Cardiac Function in a Rat Model of Myocardial Infarction Using a Custom MATLAB Script for Pressure-Volume Loop Analysis
Ross C Bretherton[1], Whitney L Stoppel[1,2], Kelly E Sullivan[3,3], Jonathan M Grasman[1], David L Kaplan[1], and Lauren D Black, III[1,4]
[1]*Tufts University, Medford, MA,* [2]*University of Florida, Gainesville, FL,* [3]*Amgen INC, Cambridge, MA,* [4]*Tufts Sackler School of Graduate Biomedical Sciences, Boston, MA*

SAT-317
Assessment of Patient Hemodynamics Pre-left Ventricle Assist Device Implant to Determine Chance of Right Ventricular Failure
Yousif Shwetar[1], Marc Simon[1], and Timothy Bachman[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

SAT-319
Computational Fluid Dynamic Analysis of Neonatal Aortic Valve Post Balloon Valvuloplasty
Denise Medina[1], Sana Nasim[1], Alexander Williams[1], and Sharan Ramaswamy[1]
[1]*Florida International University (FIU), Miami, FL*

SAT-320
An Experimental and Computational Framework to Understand Growth and Remodeling of Blood Vessel Networks During Embryonic Development
Zachary Sexton[1], Joshua Morgan[1], and Jason Gleghorn[1]
[1]*University of Delaware, Newark, DE*

Track: Undergraduate Research, Design & Leadership, Cellular and Molecular Bioengineering

Cellular and Molecular Bioengineering-Undergraduate

SAT-321
Validation of Transfected C2C12 Murine Myoblast Cells with Chrimson Channelrhodopsin
Alexa Regina Avecilla[1], Gelson Pagan-Diaz[2], Lauren Grant[2], and Rashid Bashir[2]
[1]*University of Florida, Gainesville, FL,* [2]*University of Illinois Urbana-Champaign, Urbana, IL*

SAT-322
SK-BR-3 Breast Cancer Cells Exhibit Rolling Behavior When Perfused Over P-Selectin Under Hydrodynamic Flow Conditions
Alexander Ostermann[1], Nathan Reynolds[1], and Monica Burdick[1]
[1]*Ohio University, Athens, OH*

SAT-323
Using CRISPR to Selectively Target Cancer Cell Lines via Synthetic Lethal Interactions
Amanda Hornick[1], Stan Wang[2], and George Church[2]
[1]*University of Rochester, Rochester, NY,* [2]*Harvard Medical School, Boston, MA*

SAT-324
Design and Optimization of a Cholesterol-Binding Peptide Based on the Cholesterol Recognition Amino Acid Consensus Motif
Anxhela Sinani[1], Evan Koufos[2], and Angela Brown[1]
[1]*Lehigh University, Bethlehem, PA,* [2]*Lehigh University, Bethelehem, PA*

SAT-325
Traumatic Brain Injury Induces Endogenous Neural Stem Cell Activation
Audrey Hao[1], Jeremy Anderson[2], and Li Cai[2]
[1]*UC Berkeley, Berkeley, CA,* [2]*Rutgers University, Piscataway, NJ*

SAT-326
Characterization of Cell-Cell Junction Changes Associated with the Formation of a Strong Endothelial Barrier
Benjamin Nguyen[1], MaryPeace McRae[1], Lindsay LaFratta[1], and Daniel Conway[1]
[1]*Virginia Commonwealth University, Richmond, VA*

POSTER SESSION–SATURDAY

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-327
Downregulation of CXCR-1 and CXCR-2 on Human Neutrophils in Extracorporeal Recirculation Through Fibers with Immobilized IL-8
Bianca N. De[1], Alexander D. Malkin[1], William J. Federspiel[1], John A. Kellum[1], and Kai Singbartl[2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Mayo Clinic, Phoenix, AZ

SAT-328
SIRPa Immobilization Inhibits "Self" Signaling & Promotes Solid Tumor Clearance
Brandon Hayes[1], Cory Alvey[1], Jerome Irianto[1], and Dennis Discher[1]
[1]University of Pennsylvania, Philadelphia, PA

SAT-329
Biphasic, Switch-Like Isothermal DNA Amplification
Cara Robertus[1], Burcu Ozay[1], Jackson Negri[1], and Stephanie McCalla[1]
[1]Montana State University, Bozeman, MT

SAT-330
A Small Regulatory RNA Controlling Toxin Secretion in Vibrio cholerae
Caroline Blassick[1], Mona Dotzler[2], and Kai Papenfort[2]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Ludwig Maximilian University, Munich, Germany

SAT-331
Understanding Estradiol Receptor Profiles and Estrogen Responsiveness in Laryngeal Cancer
Chandana Muktipaty[1], Anjali Verma[1], Nofrat Schwartz[2,3], Caroline Bivens[1], Barbara D. Boyan[1,4], and Zvi Schwartz[1,5]
[1]Virginia Commonwealth University, Richmond, VA, [2]Meir Medical Center, Kfar Saba, Israel, [3]Tel Aviv University, Tel Aviv, Israel, [4]Georgia Institute of Technology, Atlanta, GA, [5]University of Texas Health Science Center at San Antonio, San Antonio, TX

SAT-332
Elucidating Epigenetic Readers of H3T45ph in *S. cerevisiae*
Christina Lee[1] and Patrick Grant[1]
[1]University of Virginia, Charlottesville, VA

SAT-333
Role of Nanoparticles' Surface Coating Mechanics in Cellular Uptake
Christopher Lee[1], Matthew Becton[2], Jin Xie[2], and Xianqiao Wang[2]
[1]Carnegie Mellon University, Pittsburgh, PA, [2]University of Georgia, Athens, GA

SAT-334
Impact of Receptor-Receptor Interactions by Uptake by Endocytosis
Daria Bentley[1], Chi Zhao[1], Aaron Alpar[1], and Jeanne Stachowiak[1,2]
[1]University of Texas at Austin, Austin, TX, [2]University of Texas, Austin, TX

SAT-335
Oxygen Inhibits Nitrite Reduction to Nitric Oxide by the Molybdopterin Enzyme mARC 2
Eric Cecco[1], Courtney Sparacino-Watkins[1], and Mark Gladwin[1]
[1]University of Pittsburgh, Pittsburgh, PA

SAT-336
An Engineered Polysaccharide Lyase to Combat Toxic Algal Blooms
Evan Eckersley[1] and Bryan Berger[1]
[1]Lehigh University, Bethlehem, PA

SAT-337
The Role of c-abl in ε-synuclein-induced Cell Death: Efficacy of Nilotinib in Parkinson's Prevention
Haesoo Moon[1,2], Hyun Hee Kim[2], Ted M. Dawson[2], and Valina L. Dawson[2]
[1]University of Missouri, Columbia, MO, [2]Institute for Cell Engineering, Johns Hopkins University School of Medicine, Baltimore, MD

SAT-338
The Impact of Vascular Ehlers-Danlos Syndrome Mutations on Integrin-to-Collagen III Binding
H. Rose Warren[1], Allysa Kemraj[2], Madison Godesky[2], Jean Baum[2], and David Shreiber[2]
[1]University of Vermont, Charlottesville, VA, [2]Rutgers, The State University of New Jersey, New Brunswick, NJ

SAT-339
Optimization of Biotinylated Protein Elution from Streptavidin Conjugated Beads for BioID Analysis
Joleen Cheah[1] and Soichiro Yamada[1]
[1]University of California, Davis, Davis, CA

SAT-340
Analysis of Cell Phenotype Adaptation Following Inducible Cas9 Mediated E-cadherin Knockout
Joleen Cheah[1] and Soichiro Yamada[1]
[1]University of California, Davis, Davis, CA

SAT-341
Genetic Perturbation And Analysis of an NRF2-JUND-p53 Regulatory Network In Breast Epithelia
Joseph Burns[1], Elizabeth Pereira[1], and Kevin Janes[1]
[1]University of Virginia, Charlottesville, VA

SAT-342
PtdSer-Gas6 Interaction Promotes Cell Migration Via AXL
Joshua Mesfin[1], Annelien Zweemer[1], and Douglas Lauffenburger[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

SAT-343
Towards the Development of a Protein-Based Extracellular Tension Sensor
Juilee Malavade[1], Kasie Collins[2], and Brenton Hoffman[2]
[1]Rutgers University, New Brunswick, NJ, [2]Duke University, Durham, NC

SAT-344
Role of Nesprin in Mesenchymal Stem Cell Stretch Mechanosensing
Benjamin Plambeck[1], Eunju Kim[1], and Jung Yul Lim[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-345
A Novel, Graphical Method to Optimizing Incubation Time in Immunoassays
Aaron Sawheb[1], Rebecca Ulrich von Bargen[1,2], and Matthias U. Nollert[1]
[1]University of Oklahoma, Norman, OK, [2]Immunomycologics, Norman, OK

SAT-346
Assessing Intestinal Organoids Drug Response in a Well-Defined Synthetic Basement membrane Microenvironment
Kiara Leeb[2], Arinola Lampejoa[1], Victor Hernandez-Gordilloa[1], Linda Griffitha[1]
[1]Massachusetts Institute of Technology, Cambridge MA, [2]University of Pittsburgh, Pittsburgh, PA

SAT-347
Graded Control of Myosin Light Chain Phosphorylation to Quantitatively Study Mechanobiology
Kirsten Fetah[1], Jasmine Hughes[1,2], and Sanjay Kumar[1]
[1]University of California Berkeley, Berkeley, CA, [2]UC Berkeley-UCSF Graduate Program in Bioengineering, Berkeley, CA

SAT-348
Environmental Influence on Cellular Uptake in Micro-scaled Cell Models
Kendra Hergett[1], Derek Judge[1], Hunter Peterson[1], and Kunze Anja[1]
[1]Montana State University, Bozeman, MT

SAT-349
Effect of Gleevec (Imatinib Mesylate) On Bladder Contractions In Neonatal And Adult Rats
Lea Wenger[1], William de Groat[1], Stepharie Daugherty[1], and Gisel Garcia[1]
[1]University of Pittsburgh, Pittsburgh, PA

SAT-350
Analysis of Immunolabeled Neuronal Cells in a Rodent Model of Intervertebral Disc Degeneration
Matthew Gayoso[1], Elizabeth Leimer[1,2,3], Liufang Jing[1], Munish Gupta[1], and Lori Setton[1,2]
[1]Washington University in St. Louis, St. Louis, MO, [2]Duke University, Durham, NC, [3]Albany Medical College, Albany, NY

SAT-351
Engineering Artificial Cells as Biosensors in a Biofilm Environment
Michelle Mao[1], Yunfeng Ding[1], Luis Eduardo Contreras Llano[1], and Cheemeng Tan[1]
[1]University of California, Davis, CA

SAT-352
Role of Arp 2/3 in Fibrinogen Binding and Distribution in Platelets
Nicole Laschober[1,2], Annachiara Mitrugno[1], Anh Ngo[1], and Owen McCarty[1]
[1]Oregon Health and Science University, Portland, OR, [2]Oregon State University, Corvallis, OR

SAT-353
Intestinal Alkaline Phosphatase Activity Is Altered by Bacterial Exposure in an *In Vitro* Intestinal Epithelium Model
Olivia Parker[1] and Jessica Funnell[1]
[1]Binghamton University, Binghamton, NY

SAT-354
ARF6 GTPase Is Key Modulator of Extracellular Microvesicles Biogenesis in Brain Endothelial Cells
Rogena Azer[1], Annie Son[2], Marquise Cannon[3], Tiffany Smith[4], Roshanak Razmpour[1], Allison Andrews[1], and Servio Ramirez[5]
[1]Temple University, philadelphia, PA, [2]University of Pittsburgh, Philadelphia, PA, [3]Lincoln University, Philadelphia, PA, [4]West Chester University of Pennsylvania, West Chester, PA, [5]Temple University, Philadelphia, PA

SAT-355
Using Traction Force Microscopy to Measure Cell-Cell Adhesion Forces in Cells with Mutant Desmosome Structures
Yukihira Naoe [1], Weiwei Zhao[1], and Ruiguo Yang[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

SAT-356
Comparison of Engineered Multivalent HER3-Targeting Affibodies
Sonya Williams[1], John Schardt[1], Jinan Oubaid[1], and Steven Jay[1]
[1]University of Maryland, College Park, MD

SAT-357
Investigating the Possibility of Dimerization of the FAS Transmembrane Domain and Effects in Signal Transduction
Sophia Szymonski[1], Nagamani Vunnam[1], and Jonathan Sachs[1]
[1]University of Minnesota, Minneapolis, MN

SAT-358
The Role of RhoA/Rock Pathway in the Mechanotransduction of Pre-adipocytes: An Inhibitor Study Using Rock Inhibitor Y27632
Stefanie Blanco[1], Yusef Saad-Eldin[1], Daniel Wong[2], Vihitaben Patel[1], Clinton Rubin[1], and Mei Lin Chan[1]
[1]Stony Book University, Stony Brook, NY, [2]Concordia College, Bronxville, NY

SAT-359
Physical Regulation of Cell Adhesion Strength by Cell-Surface Bound Polymers
Rebecca Keate[1], Patrick Chang[1], and Jennifer Curtis[1]
[1]Georgia Institute of Technology, Atlanta, GA

SAT-361
Disrupting Mutant K-Ras Gene with High Specificity By CRISPR/Cas9
Thomas Etheridge[1], Ciaran M. Lee[1], Anirban Ray[1], and Gang Bao[1]
[1]Rice University, Houston, TX

POSTER SESSION–SATURDAY

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-362
Role of Protease-Activated Receptor 4 in Regulating Platelet Dense Granule Release
Tiffany Chu[1], Rachel Rigg[2], Laura Healy[2], Anh Ngo[2], Annachiara Mitrugno[2], Joseph Aslan[2], András Gruber[2], Craig Lindsley[3], Matthew Duvernay[3], Heidi Hamm[3], and Owen McCarty[2]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Oregon Health and Science University, Portland, OR,* [3]*Vanderbilt University, Nashville, TN*

SAT-363
Wnt Signaling Modulation of & α-Synuclein Aggregation in Synucleinopathies
Virat Goel[1], Jae-Hyeon Park[2], and Pamela McLean[2]
[1]*University of Illinois at Urbana-Champaign, Bloomington, IL,* [2]*Mayo Clinic, Jacksonville, FL*

SAT-364
Optical Control of Escherichia Coli Chemotaxis using the Photoswitchable Protein Dronpa
Vivian Hu[1], William McFadden[1], Ian Carleton[1], Dorsin Chang[1], Gabrielle Gannon[1], Adam Butchy[1], Jason Lohmueller[1], Natasa Miskov-Zivanov[1], Cheryl Telmer[2], Sanjeev Shroff[1], and Alex Deiters[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Carnegie Mellon University, Pittsburgh, PA*

SAT-365
The Role of Post-Translation Modifications on Chemokine Receptor CXCR4 Trafficking Through Clathrin-Coated Pits
Yoani Herrera[1], Luciana Kauer Rosselli[1], and Allen Liu[1]
[1]*University of Michigan, Ann Arbor, MI*

SAT-366
tnfα Increases Isometric Force in Intact Airway Smooth Muscle
Sara Osorio[1], Murat Dogan[1], Young Han[1], Philippe Delmotte[1], and Gary Sieck[1]
[1]*Mayo Clinic, Rochester, MN*

SAT-368
The Effect of Sweeteners on Wound Healing
Zeiny Aubdoollah[1], Sofia Castro-Pedrido[1], and Ronke Olabisi[1]
[1]*Rutgers University Department of Biomedical Engineering, Piscataway Township, NJ*

Track: Undergraduate Research, Design & Leadership, Device Technologies and Biomedical Robotics

Device Technologies and Biomedical Robotics-Undergraduate

SAT-369
Test Bed Development for Adaptive Control of Biological Systems Using Iterative Learning
Adam Terwilliger[1], Christopher Post[2], Jerome McClendon[2], and Jordon Gilmore[2]
[1]*The Citadel, Military College of South Carolina, Charleston, SC,* [2]*Clemson University, Clemson, SC*

SAT-370
Optimizing a Dihydroartemisinin Assay for the Detection of Substandard Medicines
Alana Gonzales[1], Andrew J. Acevedo[2], and Muhammad H. Zaman[2]
[1]*The University of Arizona, Tucson, AZ,* [2]*Boston University, Boston, MA*

SAT-371
Smart Phone-Based Quantification Method for Assessing Sickle Cell Disease Severity
Alex Jolly[1], Kevin Cyr[1], Jennifer Colby[1], and Christina Marasco[1]
[1]*Vanderbilt University, Nashville, TN*

SAT-372
Reflectance-Based Metabolic Sensor
Amaury Perez[1], Jonathan Ehrman[1], and Chrissy Marasco[1]
[1]*Vanderbilt University, Nashville, TN*

SAT-373
Design of "Digital Extenders" Platform for Augmented Digital Intubation
Andrea Afanador[1], Carlyn Abbott[1], Sarah Robinson[1], Corinne Nawn[1], and R. Lyle Hood[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

SAT-374
Characterizing Flow Rates in Nitrocellulose For Multistep Assays
Anna Bird[1], Kristin Byers[1], and Jacqueline Linnes[1]
[1]*Purdue University, West Lafayette, IN*

SAT-375
Non-invasive Skin Patch Sensor to Detect Lower-leg Fluid Volume Shift after Simulated Microgravity
Brandon Eckerman[1], Jacob Griffith[1], Ryan Becker[1], and Kim Cluff[1]
[1]*Wichita State University, Wichita, KS*

SAT-376
Improving Robotic Surgery Training with Bimanual Wrist Squeezing Haptic Feedback
Zachary Patterson[1] and Brett Wolfinger[2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Johns Hopkins University, Baltimore, MD*

SAT-377
Parameter Optimization for the Detection of Nucleotides using Electrochemical Impedance Spectroscopy
Caroline Ladegard[1] and Jeffrey Halpern[1]
[1]*University of New Hampshire, Durham, NH*

SAT-378
Emergency Rapid Injection Device
Zachary Thomas[1], Pamela Johnson[1], Rebecca Osborne[1], Katherine Solley[1], Fatima Rezaei[1], Kevin Grimm[2], Eric Kennedy[1], and Daniel Cavanagh[1]
[1]*Bucknell University, Lewisburg, PA,* [2]*Geisinger Health System, Danville, PA*

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-379
Continued Development of a Solution to Epidural Catheter Dislocation
Hannah Toledo[1] and Daniel Cavanagh[1]
[1]*Bucknell University, Lewisburg, PA*

SAT-380
Development Toward a Tear Lactate Sensor Employing an Engineered Lactate Oxidase
Daniel Matloff[1], Anna Deng[1], Jared Johns[1], Chi Lin[1], Kentaro Hiraka[2], Koji Sode[2], and Jeffrey Labelle[1]
[1]*Arizona State University, Tempe, AZ,* [2]*Tokyo University of Agricultural Technology, Tokyo, Japan*

SAT-381
Impedance Sensors for Early Bacterial Biofilm Detection and Treatment Assessment in Medical Implants
Denis Routkevitch[1], Erkuden Goikoetxea[2], Jordan Green[1], Hans Steenackers[3], and Dries Braeken[2]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*IMEC, Leuven, Belgium,* [3]*Katholieke Universiteit Leuven, Leuven, Belgium*

SAT-382
Characterization of a Custom-Built, Open-Source Micromotion Bioreactor for Testing Gliosis Response
Eric Dubofsky[1] and Jay Sy[2]
[1]*California Polytechnic State University, San Luis Obispo, CA,* [2]*Rutgers University, Piscataway, NJ*

SAT-383
A Clinically Translatable Syringe Adaptor for Delivering A Biomaterial in Spatially Controlled Patterns for Spinal Cord Injury
Geya Kairamkonda[1], Emi Kiyotake[2], and Michael Detamore[2]
[1]*University of Colorado Boulder, Boulder, CO,* [2]*University of Oklahoma, Norman, OK*

SAT-384
Four-Point Fortune-Teller-Inspired Origami Grasper for Increased Dexterity and Less Tissue Damage in Minimally Invasive Surgery
Hannah Liu[1], Bok Seng Yeow[2], and Hongliang Ren[2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*National University of Singapore, Singapore, Singapore*

SAT-385
Pressure Mapping Prosthetic Socket Using Textile Force Sensors
Harrison Nguyen[1], Jonathan Fu[1], William Kim[1], Luke Osborn[1], and Nitish Thakor[1,2]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*National University of Singapore, Singapore, Singapore*

SAT-386
Preliminary Development of A Low-Cost Flexible Endoscope for Robotic Minimally Invasive Nasopharyngoscopy
Jacob Meadows[1], Bok Seng Yeow[2], and Hongliang Ren[2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*National University of Singapore, Singapore, Singapore*

SAT-387
Rapid Prototyping of a Novel Device for Treatment Of Colorectal Anastomotic Leak
Jenna LaColla[1], Andrew Russ[2], Rachel Slappy[2], and Elizabeth Barker[1]
[1]*University of Tennessee, Knoxville, TN,* [2]*University of Tennessee Medical Center, Knoxville, TN*

SAT-388
Rapid Fabrication and Characterization of Pediatric Nitric Oxide (NO) Releasing Catheter
Igor Pachenko[1], Manfang Ying[1], and Kagya Amoako[1]
[1]*University of New Haven, West Haven, CT*

SAT-389
A Portable, Low-Cost Imaging System to Study Long-Term Live Cell Fluorescent Dynamics
Connor Beck[1], Clark Hickman[1,2], Hunter Peterson[1], and Kunze Anja[1]
[1]*Montana State University, Bozeman, MT,* [2]*Gustavus Adolphus College, St. Peter, MN*

SAT-390
The Development of an Electrochemical Impedance Spectroscopy Point-of-Care Glucagon Sensor
Connor Beck[1], Victor Madrid[1], Mukund Khanwalker[1], Aldin Malkoc[1], David Probst[1], Chi lin[1], Jeffrey LaBelle[1], and Curtiss Cook[2]
[1]*Arizona State University, Tempe, AZ,* [2]*Mayo Clinic Arizona, Scottsdale, AZ*

SAT-391
Faradaic Assessment of IGF-1 interference on Insulin to Further the Development of a Point-of-Care Insulin Sensor
Mukund Khanwalker[1], Connor Beck[2], Aldin Malkoc[2], David Probst[2], Chi Lin[2], Jeffrey Labelle[2], Curtis Cook[3], and Victor Madrid[4]
[1]*ArizonaState University, Tempe, AZ,* [2]*Arizona State University, Tempe, AZ,* [3]*Mayo Clinic, Scottsdale, AZ,* [4]*Arizona State University, El Paso, TX*

SAT-392
Wearable Sensor Network Monitors Tibial Loading During Athletic Activity
Navin Balaji[1], Jonathan Ehrman[1], and Christina Marasco[1]
[1]*Vanderbilt University, Nashville, TN*

SAT-393
BioZ Sense: Evaluating Bioimpedance for Non-invasive Lifestyle Activity Monitoring
Nikita Tummalapalli[1]
[1]*University of Illinois at Urbana-Champaign, Bridgewater, NJ*

SAT-394
Texture Simulation with One Degree of Freedom Normal to the Surface using a Loudspeaker
Oliver Snyder[1], George Stetten[1], and Roberta Klatzky[2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Carnegie Mellon University, Pittsburgh, PA*

SAT-395
A Device for Preloaded, Tri-Folded Grafts to Facilitate Descemet's Membrane Endothelial Keratoplasty
Parth Vora[1], Eric Chiang[1], Stephanie Cai[1], Kali Barnes[1], Conan Chen[1], Anshul Subramanya[1], Akash Chaurasia[1], Allison Rosen[1], Amir Manbachi[1], Allen Eghrari[1], and Robert Allen[1]
[1]*Johns Hopkins University, Baltimore, MD*

POSTER SESSION–SATURDAY

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-396
Rapid Prototyping of a Novel Fistula Treatment Device
Rachel Slappy[1], Drew Russ[2], Jenna LaColla[1], and Elizabeth Barker[1]
[1]*University of Tennessee, Knoxville, TN,* [2]*University of Tennessee Medical Center, Knoxville, TN*

SAT-397
A Haptic Video Game Designed to Study How Sensory Feedback Resolution Affects Mental Workload as Measured by Electrodermal Activity (EDA)
Robert Hemmerling[1], Mitchell Young[1], Morgan Manzke[1], Isaac Maze[1], and Reva Johnson[1]
[1]*Valparaiso University, Valparaiso, IN*

SAT-400
Modular Steering and Force Sensing Soft Robotic Actuator
Rudy Montayre[1], Austin Taylor[1], Zion Tse[1], and Zhuo Zhao[1]
[1]*University of Georgia, Athens, GA*

SAT-401
Softening Spinal Cord Stimulator: Evaluation of Chronic Neural Interface
Sydney Sherman[1], Aldo Garcia[1], Ajay Pal[2], Asht Mishra[2], Walter Voit[3], and Jason Carmel[2]
[1]*University of Texas at Dallas, Richardson, TX,* [2]*Burke Medical Research Institute, White Plains, NY,* [3]*University of Texas at Dallas, Richardson, NY*

SAT-402
Development of a 3D Printed, Low Cost Thumb Prosthetic
Tyler Bray[1], Skip Meetze[2], Jon Schull[2], and Alexander Spiess[3]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Rochester e-NABLE Lab, Rochester, NY,* [3]*University of Pittsburgh Medical Center, Pittsburgh, PA*

SAT-403
Compression Profiles of Surgical Staplers Collected Using a Pressure Sensitive Film for Comparison to In Vivo Evaluation
William DeMaria[1], Kevin Fogarty[1], and Marisha Godek[1]
[1]*Medtronic, North Haven, CT*

Track: Undergraduate Research, Design & Leadership, Drug Delivery & Intelligent Systems

Drug Delivery-Undergraduate

SAT-404
Soil Mobility of Tobacco Mild Green Mosaic Virus for the Delivery of Pesticides to Plant Parasitic Nematodes.
Paul Chariou[1], Alan Dogan[1], and Nicole Steinmetz[1]
[1]*Case Western Reserve University, Cleveland, OH*

SAT-405
X-ray Activatable Drug Release of Hybrid Gold Polymersomes for Cancer Chemoradiotherapy
Alexander Chan[1,2], Zijian Zhou[1], and Xiaoyuan Chen[1]
[1]*The National Institutes of Health, Bethesda, MD,* [2]*The Pennsylvania State University, University Park, PA*

SAT-406
The Efficacy of a Novel Nanoparticle as a Delivery Vector for Exogenous miR-7 to Cells *In Vitro*
Amanda Solbach[1,2], Michael Holloway[2], David Devore[2], and Charles Roth[2]
[1]*Texas A&M University San Antonio, San Antonio, TX,* [2]*Rutgers, The State University of New Jersey, Piscataway, NJ*

SAT-407
Localized Drug Delivery of Aspirin to Stent Sites Via Self Assembled Monolayers
Angelo Miskalis[1], Tell Lovelace[1], and Ellen Gawalt[1,2]
[1]*Duquesne University, Pittsburgh, PA,* [2]*McGowan Institute of Regenerative Medicine, Pittsburgh, PA*

SAT-409
Exosomes: A Potential Therapeutic Delivery Device for Multiple Sclerosis (MS)
Ashley Tucker[1], Megha Biljawan[1], Colin Young[1], and Jane Welsh[1]
[1]*Texas A&M University, College Station, TX*

SAT-410
Constant Pressure Controlled Infusions in Agarose Gels
Bianca Montano[1], Egleide Elenes[2], and Christopher Rylander[2]
[1]*University of Texas at El Paso, El Paso, TX,* [2]*The University of Texas at Austin, Austin, TX*

SAT-411
Dissolvable Microneedles for Inhibition of Angiogenesis
Brandon Davis[1], David Kauffman[1], James Coyne[1], and Yong Wang[1]
[1]*The Pennsylvania State University, State College, PA*

SAT-412
Effect of Molecular Weight on Ultrasound-Targeted Drug Delivery
Danyal F. Bhutto[1], Emily M. Murphy[1], Mariah C. Priddy[1], Connor C. Centner[1], Joseph B. Moore IV[1], Roberto Bolli[1], and Jonathan A. Kopechek[1]
[1]*University of Louisville, Louisville, KY*

SAT-413
Sustained Release of Protein Drugs from Polymeric Microneedles for Immunotherapy
David Kauffman[1], Brandon Davis[1], James Coyne[1], and Yong Wang[1]
[1]*Penn State University, University Park, PA*

SAT-414
***In Situ* Collagen Crosslinking to Improve Tendon Strength After Tears**
Dominic Kizek[1], Edgardo Rivera-Delgado[1], Tejas Kashyap[1], Greg Learn[1], and Horst von Recum[1]
[1]*Case Western Reserve University, Cleveland, OH*

SAT-415
Optimization of the Synthesis of Multi-Stage Albumin Nanoparticles for Drug Delivery
Elana Helou[1], Jae You Kim[2], and Debadyuti Ghosh[2]
[1]*Smith College, Northampton, MA,* [2]*The University of Texas at Austin, Austin, TX*

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-416
***In Vitro* Characterization of Melatonin-Loaded Conducting Polymer Coatings for Neural Electrodes**
Eliza Schally[1], Asiyeh Golabchi[1], Kevin Woeppel[1], Ian Taylor[1], and X. Tracy Cui[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

SAT-418
Targeted Delivery of Chemotherapeutics to Human Cancer Cells with Aptamer-conjugated Nanoemulsions
Emily M. Murphy[1], Daniel A. Hodge[1], Paula J. Bates[1], Mohammad T. Malik[1], and Jonathan A. Kopechek[1]
[1]*University of Louisville, Louisville, KY*

SAT-419
Inertial Microfluidic Intracellular Macromolecule Delivery
Erin Maloney[1], Yanxiang Deng[2], and Aram Chung[2]
[1]*University at Buffalo, Buffalo, NY,* [2]*Rensselaer Polytechnic Institute, Troy, NY*

SAT-420
Novel Nanoparticle Growth Factor Delivery System Promotes Cell Proliferation *In Vitro* Novel Growth Factor Delivery System Promotes Cell Proliferation In Vitro
Eti Sinha[1], Jessica Underleiger[1], Cassandra Callmann[1], Nathan Gianneschi[2], and Karen Christmen[1]
[1]*University of California, San Diego, La Jolla, CA,* [2]*Northwestern University, Evanston, IL*

SAT-421
Polymeric Microneedle Patch Loaded with PLGA-Curcumin Microspheres
John Molinski[1], Khanh Tran[2], and Thanh Nguyen[2]
[1]*University of Massachusetts Dartmouth, Dartmouth, MA,* [2]*University of Connecticut, Storrs, CT*

SAT-422
Microtoroid Optical Resonators as a Novel Platform for Selective Drug Detection
Kara Roberts[1], Erol Ozgur[1], and Judith Su[1]
[1]*University of Arizona, Tucson, AZ*

SAT-423
Analysis of Nanoparticle Adhesion Under Flow
Kathleen Lutz[1], Kelly Langert[2], and Eric Brey[2]
[1]*University of Arkansas, Fayetteville, AR,* [2]*Illinois Institute of Technology, Chicago, IL*

SAT-424
Development of Tissue Mimic Models to Study Free Radical-Initiated Polymer Immobilization
Keana R. Mirmajlesi[1], Christopher J. Lowe[1], and David I. Shreiber[1]
[1]*Rutgers, The State University of New Jersey, Piscataway, NJ*

SAT-425
A Biodegradable Multidrug Delivery System for Post-Operative Ocular Management
Kisha Patel[1] and Maziar Mohammadi [1]
[1]*Johns Hopkins University, Baltimore, MD*

SAT-426
A Biomimetic Microfluidic Platform for Anti-Tumor Drug Evaluation
Lara Reid[1], Wentao Shi[1], and Yaling Liu[1]
[1]*Lehigh University, Bethlehem, PA*

SAT-427
Localized Immunosuppression Therapy for Islet Cell Encapsulation
Madeline McLaughlin[1], Clarissa Hernandez[1], and Sherry Harbin[1]
[1]*Purdue University, West Lafayette, IN*

SAT-429
Investigating Chemical Compound Modulators against Vibrio Cholerae's Phosphotransferase System
Mahtab Waseem[1] and Patrick Ymele-Leki[1]
[1]*Howard University, NW, DC*

SAT-430
Enzymatic Activation of Prodrugs for Targeted Drug Delivery
Meghan Hill[1], Mendi Marquez[1], Liliya Frolova[1], and Michaelann Tartis[1]
[1]*New Mexico Institute of Mining and Technology, Socorro, NM*

SAT-431
Elucidating the Roles of Extracellular Vesicle-Associated Long Noncoding RNAs in Breast Cancer
Natalie Livingston[1], Tek Lamichhane[1], and Steven Jay[1]
[1]*University of Maryland, College Park, MD*

SAT-432
Assay Characterizing Mechanical Properties of Long-Acting Implant Seals
Phillip Chung[1], Solange Simpson[1], Lakmini Widanapathirana[1], Samuel Sung[1], and Patrick Kiser[1]
[1]*Northwestern University, Evanston, IL*

SAT-433
The Effect of Pig Lung Extracellular Matrix Nanoparticles on Macrophage Phenotype
Alexandria Ritchie[1], Gabrielle Cotman[1], Michael Valentine[1], Patrick Link[1], and Rebecca Heise[1]
[1]*Virginia Commonwealth University, Richmond, VA*

SAT-434
Tuning Size and Charge of a Multivalent Polymer Library for Enhanced Drug Delivery to Cartilage
Salwan Butrus[1], Brett Geiger[2], Alan Grodzinsky[2], and Paula Hammond[2]
[1]*University of Michigan, Ann Arbor, MI,* [2]*Massachusetts Institute of Technology, Cambridge, MA*

SAT-435
Self-assembling Nanomaterials for Local Delivery of Anti-inflammatory Drugs in Cell Transplantation
Teresa De Toni[1], Diana Velluto[2], and Alice A. Tomei[2,3]
[1]*University of Padova – IT, Padova, Italy,* [2]*University of Miami, Miller School of Medicine – USA, Miami, FL,* [3]*University of Miami-USA, Miami, FL*

POSTER SESSION–SATURDAY

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-436
Heparin/Poly-L-lysine Adhered on 3D-Printed PLGA Scaffold as Drug Carriers for Local Immune Modulation in Bone Regeneration
Tony Nguyen[1]
[1]*Columbia University, New York, NY*

SAT-438
Native Free Radical Mediated Crosslinking of Functionalized PEGs as a Targeted Delivery Mechanism
Victor Manuel Suarez[1], Keana R. Mirmajlesi[2], Christopher J. Lowe[2], and David I. Shreiber[2]
[1]*Kean University, Union, NJ,* [2]*Rutgers, The State University of New Jersey, Piscataway, NJ*

Track: Undergraduate Research, Design & Leadership, Nano and Micro Technologies

Nano to Micro Technologies-Undergraduate

SAT-439
In Cell Western Blotting for Quantifying Protein Expression in 3D Tumor-Stroma Microfluidic Device
Alexander Kratz[1], Danh Truong[1], Toan Nguyen[1], and Mehdi Nikkhah[1]
[1]*Arizona State University, Tempe, AZ*

SAT-440
Hydrogel Microdomain Encapsulation of 4-Mercaptopyridine-Silver-Bovine Serum Albumin for SERS pH and Urea Sensing
Alexander Quinn[1], Yil-Hwan You[1], and Michael McShane[1]
[1]*Texas A&M, College Station, TX*

SAT-441
Microfluidic Magnetic Cell Sorter for Breast Cancer Circulating Tumor Cells
Bryana Harris[1], Yang Liu[2], Wujun Zhao[2], and Leidong Mao[2]
[1]*Auburn University, Montgomery, AL,* [2]*University of Georgia, Athens, GA*

SAT-442
Colistin Functionalization of Carboxylated Nanoparticles
Candace Grisham[1], Stephen Petty Valenzuela[1], Sinead Miller[1], Charleson Bell[1], and Todd Giorgio[1]
[1]*Vanderbilt University, Nashville, TN*

SAT-443
Adapting the MinION Nanopore Platform to Measure the Single-Molecule Movements of a Superhelicase
Daniel Huang[1], Dmitriy Bobrovnikov[2], and Taekjip Ha[2]
[1]*Johns Hopkins University, Hudson, OH,* [2]*Johns Hopkins University, Baltimore, MD*

SAT-444
Design and Synthesis of Nanosponge Loaded Nanofiber for Localized Detoxification
David Cadena[1], Hao Zhuang[2], Oliver Zhang[3], Yue Zhang[3], and Liangfang Zhang[3]
[1]*University of Texas at San Antonio, San Antonio, TX,* [2]*Tsinghua University, Beijing, China, People's Republic of,* [3]*University of California at San Diego, San Diego, CA*

SAT-445
Microfluidic Cell Encapsulation for Single Cell Resolution 3D BioPrinting
David Maginnis[1], Christian Siltanen[2], and Adam Abate[2]
[1]*University of California, Davis, Davis, CA,* [2]*University of California, San Francisco, San Francisco, CA*

SAT-446
Analyzing the Chemical and Physical Properties of Bovine Serum Albumin and Cerium Oxide Nanoparticles Using a Nanopore Sensor
David Mai[1], Sam Bearden[2], and Guigen Zhang[2]
[1]*University of California, Berkeley, Berkeley, CA,* [2]*Clemson University, Clemson, SC*

SAT-447
Viscous Fingering and Lateral Flow Parameters in Rapid Salivary Testing Applications
Devon Rusk[1], Pierce Lieberman[2], and Holly Clingan[1]
[1]*Arizona State University, Tempe, AZ,* [2]*University of Colorado, Boulder, Boulder, CO*

SAT-448
Horseradish Peroxidase (HRP)-mediated Silver Precipitation for Vascular Endothelial Growth Factor (VEGF) Quantification
Dina Shohatee[1], Joshua Keifer[1], and Gargi Ghosh[1]
[1]*University of Michigan, Dearborn, MI*

SAT-449
Comparative Deformability and Microfluidic Perfusion of Human and Nonhuman Red Blood Cells
Pranav Murugan[1], Madeleine Lu[1], Eszter Voros[1], and Sergey Shevkoplyas[1]
[1]*University of Houston, Houston, TX*

SAT-450
Study NanoCluster Beacons using NGS Platform
Guillermo Beckmann[1], Yu-An Chen[2], and Tim Yeh[2]
[1]*University of Texas at El Paso, El Paso, TX,* [2]*University of Texas at Austin, Austin, TX*

SAT-451
DNA Constellations: A High Throughput Microfluidic Assay for Visualizing DNA Holliday Junctions
Harrison Khoo[1] and Sy Redding[2]
[1]*UC Berkeley, Berkeley, CA,* [2]*UC San Francisco, San Francisco, CA*

SAT-452
Development of Flexible pH Sensors Based on Electrodeposited IrOx Thin Films
Lillian Thiel[1], Isaac Clark[1], Paul Marsh[2], Wyatt Moore[2], and Hung Cao[2]
[1]*University of Washington, Seattle, WA,* [2]*University of Washington, Bothell, WA*

SAT-453
Development of Mn@C-Dot Based T1 MRI Contrast Agents
Jessica Aldrich[1], Daye Lee[2], and Jin Xie[2]
[1]*Wichita State University, Wichita, KS,* [2]*University of Georgia, Athens, GA*

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

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SAT-454
A Novel Enzyme Linked Immunosorbent Assay for Magnetic Capture of the Interleukin-6 Biomarker
Jorge Figueras[1], Elena Yarmola[1], and Kyle Allen[1]
[1]*University of Florida, Gainesville, FL*

SAT-455
Development of an Assay for Detecting an Oral Cancer Biomarker Using Surface Enhanced Raman Spectroscopy (SERS)
Luke Oaks[1], Sungyub Han[1], Andrea Locke[1,2], Yi-Shing Lisa Cheng[3], and Gerard Coté[1,2]
[1]*Texas A&M University, College Station, TX,* [2]*Texas A&M Engineering Experiment Station, College Station, TX,* [3]*Texas A&M University, Dallas, TX*

SAT-456
Immunohistological Image Analysis of Microprobe Array Targeting Hippocampus
Madeleine Combs[1], Ahuva Weltman[1], Huijing Xu[2], Kee Scholten[1], Dong Song[1], and Ellis Meng[1]
[1]*University of Southern California, Los Angeles, CA,* [2]*Univerisity of Southern California, Los Angeles, CA*

SAT-457
Oriented Immobilization of Antibodies Through Recombinant Protein-G on Assembled Gold Nanorods for Label-Free Biosensing Applications
Marcelo Vital[1], Víctor Agüero[1], and Liang Tang[1]
[1]*The University of Texas at San Antonio, San Antonio, TX*

SAT-458
Nanoshells Targeting EGFR Enhance the Sensitivity of ELISA-Based Detection Methods
Margaret Billingsley[1], Rachel Riley[1], and Emily Day[1]
[1]*University of Delaware, Newark, DE*

SAT-459
Hydrophobic Porous Si Based Photonic Crystals for the Detection of Ethanol During Fermentation
Michael Gutierrez[1], Hunter Pauker[2], Etienne Palos[3], and Brian Toth[4]
[1]*University of California San Diego, Bakersfield, CA,* [2]*University of California Davis, Davis, CA,* [3]*UNAM, Tijuana, Mexico,* [4]*University of California San Diego, La Jolla, CA*

SAT-460
Temperature Rise of Nanoparticle Doped Silicone within a Perfused Phantom
Naciye Atay[1], Ryan Packett[1], Nicole Levi-Polyachenko[2], and Francis Gayzik[1]
[1]*Wake Forest University, Winston-Salem, NC,* [2]*Wake Forest Baptist Health, Winston-Salem, NC*

SAT-461
Subordinate Oscillator Array Design for Ultrasensitive Mass Detection
Noah Sonne[1], John Sterling[2], Aldo Glean[2], Joseph Vignola[2], and Teresa Ryan[1]
[1]*East Carolina University, Greenville, NC,* [2]*The Catholic University of America, Washington, DC*

SAT-462
Analysis of Growth and Stiffness of Cancer Spheroids Using 3D-Printed Microtweezer Device
Norah Cowley[1], Devina Jaiswal[1], Alexander Almeida[1], Zichao Bian[1], Guoan Zheng[1], Kevin Claffey[2], and Kazunori Hoshino[1]
[1]*University of Connecticut, Storrs, CT,* [2]*University of Connecticut Health Ctr, Farmington, CT*

SAT-463
Raman Spectroscopy and Transmission Electron Microscopy of SixGe1-x-Ge-Si Core-Double-Shell Nanowires
Paola Perez[1], Feng Wen[2], and Emanuel Tutuc[2]
[1]*University of Texas at El Paso, El Paso, TX,* [2]*University of Texas at Austin, Austin, TX*

SAT-464
Single-Cell, Single-Molecule Analysis of tnf-α Signaling with Quantum Dots
Prerana Jaikumar[1], Phuong Le[2], and Andrew Smith[2]
[1]*Case Western Reserve University, Cleveland, OH,*
[2]*University of Illinois at Urbana-Champaign, Champaign, IL*

SAT-465
Comparison of Particle Collection Methods Using Magnetic Capture in Rat Osteoarthritis Model
Samuel Armington[1], Elena Yarmola[1], Yash Shah[1], Brittany Partain[1], and Kyle Allen[1]
[1]*University of Florida, Gainesville, FL*

SAT-466
Optimization of Polyethylenimine-Coated Rare Earth Nanoparticle Biocompatibilit *In Vitro*
Sandra Pelka[1], Harini Kantamneni[1], Xinyu Zhao[2], Shuqing He[2], Vidya Ganapathy[1], Prabhas Moghe[1], and Mei Chee Tan[2]
[1]*Rutgers, The State University of New Jersey, Piscataway, NJ,*
[2]*Singapore University of Technology and Design, Singapore, Singapore*

SAT-467
Cell-laden Hydrogel Microspheres Using 3D Printed Microfluidics
Shannon McLoughlin[1], Sanika Suvarnapathaki[1], Rafael Ramos[1], Stephen Sawyer[1], and Pranav Soman[1]
[1]*Syracuse University, Syracuse, NY*

SAT-468
Microfluidic Assay of Whole-cell And Nuclear Deformability Using Single-cell Physical and Fluorescent Phenotyping
Tridib Biswas[1], Jonathan Lin[1], Lillian Peng[1], Bonnie Yeh[1], and Dino Di Carlo[1]
[1]*University of California-Los Angeles, Los Angeles, CA*

SAT-469
BBB-on-Chip: Optimizing BBB Culture for Microfluidic Modeling of the NVU
Victoria Harbour[1], Bhuvana Mohanlal[1], Roy Samuel[1], Jocelyn Davis[1], Tarun Masimukku[1], and Sagnik Basuray[1]
[1]*New Jersey Institute of Technology, Newark, NJ*

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SAT-470
A 3D Printed, Low Cost, High Capacity Bubble Trap for Microfluidic Applications
Cristian Almendariz[1], Mohammad Raziul Hasan[1], and Vinay Abhyankar[1,2]
[1]UT Arlington Research Institute, Fort Worth, TX, [2]Rochester Institute of Technology, Rochester, NY

SAT-471
Influence of Density on Silica Nanoparticle Toxicity
Zachary Barber[1]
[1]University of Utah, Salt Lake City, UT

Track: Undergraduate Research, Design & Leadership, Neural Engineering

Neural Engineering-Undergraduate

SAT-472
Efficacy Of 50Hz Vs. 30Hz Continuous Theta Burst Transcranial Magnetic Stimulation to Modulate Cerebellar Activity: A Pilot Study
Nicholas Strzalkowski[1], Aaron Chau[1], Liu Shi Gan[1], and Zelma Kiss[1]
[1]University of Calgary, Calgary, AB, Canada

SAT-473
MEG Signal Classification as a Model Free Assessment of Hemispheric Language Dominance: Proof of Principal and Preliminary Evidence
Aditya Singh[1], Mark McManis[2], Fred Perkins[2], Dave Clarke[3], and Paul Ferrari[2]
[1]University of Texas at Austin, Austin, TX, [2]Dell Children's Medical Center of Central Texas, Austin, TX, [3]Dell Medical School/ UT Austin, Austin, TX

SAT-474
Multielectrode Cortical Stimulation Selectively Activates Excitatory Neurons
Alma Halgren[1], Maxim Komarov[1], and Maxim Bazhenov[1]
[1]University of California, San Diego, La Jolla, CA

SAT-475
Characteristic Spike-and-Wave Discharges Link Dystonic Attack Progression and Absence Seizures in EA2 Mouse Model Tottering
Anant Naik[1], Russell Carter[1], and Timothy Ebner[1]
[1]University of Minnesota Twin Cities, Minneapolis, MN

SAT-476
MMP-1 Exposure Increases Neuronal Activity *In Vitro*
Olivia Leavitt[1], Meagan Ita[2], and Beth Winkelstein[2]
[1]WPI, Worcester, MA, [2]University of Pennsylvania, Philadelphia, PA

SAT-477
Nonlinear Analysis of Pre- and Post-Ictal Brain States Using Cross-Frequency Phase-Amplitude Coupling
Christopher Mondragon[1], Diana Escalona-Vargas[2], Aaron S. Kemp[2], Leonidas Iasemidis[1], and Linda Larson-Prior[2]
[1]Louisiana Tech University, Ruston, LA, [2]University of Arkansas for Medical Sciences, Little Rock, AR

SAT-478
Interface Design for Seizure Detection in Zebrafish Larvae
Cristhian Perez[1], Thales Guimaraes Parolari[2], Marina Gonsales[2], Patricia Barbalho[2], Claudia Maurer-Morelli[2], and Nathalia Peixoto[1]
[1]George Mason University, Fairfax, VA, [2]University of Campinas, Campinas, Brazil

SAT-479
Patterns of Motor Cortical Activity Described by the First Latent Dimension Predict Presence of an Object
Delaney Moran[1], Anjelica Herrera[2], John Downey[2], and Jennifer Collinger[2,3]
[1]Middlebury College, Middlebury, VT, [2]University of Pittsburgh, Pittsburgh, PA, [3]Department of Veterans Affairs Medical Center, Pittsburgh, PA

SAT-480
Microfluidic Assay to Identify Neural Circuit Changes During Associative Learning
Dina Abedi[1], Daniel Lawler[2], and Dirk Albrecht[2]
[1]University of California Berkeley, Azusa, CA, [2]Worcester Polytechnic Institute, Worcester, MA

SAT-481
Developing a Retrograde Labeling Protocol in a Rat Sciatic Model to Measure Loss of Axonal Somatotopy Following Nerve Transection
Emily Jackson[1], Nikhil Chancra[1], Ying Yan[1], Manu Stephen[1], Matthew MacEwan[1], and Wilson Ray[1]
[1]Washington University, Saint Louis, MO

SAT-482
Reaction Times to Intracortical Microstimulation in a Person with Tetraplegia are Similar to that of Peripheral Tactile and Visual Stimuli in Able-Bodied Subjects
Grace Brueggman[1], Jeffrey Weiss[2,3], Robert Gaunt[2,3,4], and Jennifer Collinger[2,3,4,5]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, [3]Department of Physical Medicine and Rehabilitation, University of Pittsburgh, Pittsburgh, PA, [4]Center for the Neural Basis of Cognition, Pittsburgh, PA, [5]Department of Veterans Affairs Medical Center, Pittsburgh, PA

SAT-483
Rest-State Cortical Network Differences Associated with First-Episode Schizophrenia-Spectrum Psychosis
Henry Phalen[1], Brian Coffman[2], Dean Salisbury[2], and Ervin Sejdic[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Western Psychiatric Institute and Clinic, University of Pittsburgh School of Medicine, Pittsburgh, PA

SAT-484
Oxidative Stress Following Intracortical Microelectrode Implantation
Jacob Rayyan[1,2], Evon Ereifej[1,2], Griffin Rial[1,2], Cara Smith[1,2], Seth Meade[1,2], Keying Chen[1,2], He Fang[1,2], and Jeffrey Capadona[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Louis Stokes Cleveland Department of Veterans Affairs Medical Center, Cleveland, OH

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SAT-485
The Effect of Brain Micro-Motion on Intracellular Membrane Potentials
Jonathan Duncan[1], Swathy Kumar[2], Arati Sridharan[2], and Jitendran Muthuswamy[2]
[1]Arizona State University, Scottsdale, AZ, [2]Arizona State University, Tempe, AZ

SAT-486
Interactions Between Waveform Shape and Visuomotor Response Properties in Prefrontal Cortex
Jonathan Scott[1], Sanjeev Khanna[1], and Matthew Smith[1]
[1]University of Pittsburgh, Pittsburgh, PA

SAT-487
Assessment of M-Phenylenediamine for Chronic Glutamate Microsensors
Katherine Skartvedt[1], Prabhu Arumugam[2], Shabnam Siddiqui[2], and Chao Tan[2]
[1]Hendrix College, Conway, AR, [2]Louisiana Tech University, Ruston, LA

SAT-488
Procedure for Measuring the Resistivity of the Epineurium Sheath Using Rat Sciatic Nerve
Kathleen Finn[1], Paras Patel[2], Elissa Welle[2], Cinthya Chestek[2], John Seymour[2], Scott Lempka[2], and Tim Bruns[2]
[1]Hope College, Holland, MI, [2]University of Michigan, Ann Arbor, MI

SAT-489
Functional Organization of the Interictal State and Its Impact on Cognition
Kelly Kneale[1], Emilia Toth[2], Diana Pizarro[2], Kristen Riley[2], Roy Marin[2], Leonidas Iasemidis[1], and Sandipan Pati[2]
[1]Louisiana Tech University, Ruston, LA, [2]Univeristy of Alabama at Birmingham, Birmingham, AL

SAT-490
Evaluation of Electrophysiology from Implanted Intracortical Microelectrodes in Rat and Mouse Models
Keying Chen[1,2], Evon Ereifej[1,2], John Hermann[1,2], Hillary Bedell[1,2], Seth Meade[1,2], Jacob Rayyan[1,2], and Jeffery Capadona[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Louis Stokes Cleveland Department of Veterans Affairs Medical Center, Cleveland, OH

SAT-491
Exploring Living Neural Network Activity via Multielectrode Array
Kyle Stapleton[1], Jaden Brandner[1], Kara Smith[1], Lauren Singelmann[1], and Nolan Schwarz[1]
[1]North Dakota State University, Fargo, ND

SAT-492
Biological Signals Processing: Analyzing Neuronal Calcium Signals Using Continuous Wavelet Transform
Lindsay Lehman[1,2,3], Marie-Claude Perreault[2,3], and Brandon LaPallo[2]
[1]The University of Texas at Austin, Austin, TX, [2]Emory University School of Medicine, Atlanta, GA, [3]Georgia Institute of Technology, Atlanta, GA

SAT-493
Protocols for Assessing the Sensory Performance of Peripheral Nerve Macrosieve Interfaces
Luis Ruiz[1], Jake Bergman[2], John O'Malley[3], Nikhil Chandra[1], Matthew MacEwan[4], and Wilson Ray[4]
[1]Washington University in St. Louis, St. Louis, MO, [2]Christopher Newport University, Newport News, VA, [3]University of Alabama, Tuscaloosa, AL, [4]Washington University School of Medicine, St. Louis, MO

SAT-494
Development of Epilepsy-in-a-dish Method for Antiepileptic Drug Discovery
Madison Schenker[1], Jing Liu[1], Shabnam Ghiasvand[1], and Yevgeny Berdichevsky[1]
[1]Lehigh University, Bethlehem, PA

SAT-495
Investigating the Role of Astrocytes in Neuronal Networks In Vitro
Margaret Schroeder[1]
[1]University of Pennsylvania, Philadelphia, PA

SAT-496
Electrical Characterization of Softening Encapsulation Materials in Flexible Thin Film Implantable Devices
Kevin Ong[1], Alexandra Joshi-Imre[2], and Walter Voit[2]
[1]University of Texas at Dallas, Plano, TX, [2]University of Texas at Dallas, Richardson, TX

SAT-497
Fabrication of a Timed-Pressure Regulator (TPR) to Enable the Study of Bladder Pain
Marissa Behun[1], Neal McQuaid[1], Benjamin Goldschmidt[1], and Benedict Kolber[1]
[1]Duquesne University, Pittsburgh, PA

SAT-498
Spatial Memory Maintenance in Dorsal Premotor Cortex
Nathan Fleming[1], Nicholas Pavlovsky[1], and Aaron Batista[1]
[1]University of Pittsburgh, Pittsburgh, PA

SAT-499
Electrical and Histological Characterization Along the Shank of a Silicon Microelectrode Array
Nicholas L. Hilborn[1], Janak Gaire[1], Heui Chang Lee[2], Mary Regan[1], and Kevin J. Otto[1]
[1]University of Florida, Gainesville, FL, [2]University of Texas Southwestern Medical Center, Dallas, TX

SAT-500
Inducing Myelination in Schwann Cells Using Brief Electrical Stimulation In Vitro
Nicole Bohmann[1], Erin Patrick[1], Christine Schmidt[1], and Sahba Mobini[1]
[1]University of Florida, Gainesville, FL

SAT-501
The Effect of Nanopatterned Surfaces on Intracortical Microelectrode Biocompatibility
Seth Meade[1,2], Cara Smith[1,2], Keying Chen[1,2], He Feng[1,2], Jeffery Capadona[1,2], and Evon Ereifej[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Advanced Platform Technology Center, Louis Stokes Cleveland Department of Medical Affairs Medical Center, Cleveland, OH

POSTER SESSION–SATURDAY

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-502
Calcium Oscillations in *In Vitro* Neuronal Cultures after Trauma
Shreya Udani[1], Xinlin Chen[1], Luisa Cacheaux[2], Joseph Moskal[2], Jack Phillips[1], and John Finan[1]
[1]*NorthShore University HealthSystem Research Institute, Evanston, IL,* [2]*Aptinyx, Inc., Evanston, IL*

SAT-503
Novel Application of Spectral Curvature Clustering for Electrode Assignment in SEEG
Taylor Tanita[1]
[1]*UC San Diego, La Jolla, CA*

SAT-504
Development of UV Laser System to Etch Parylene C At The Micron Scale
Yousuf Aslam[1], Guoan Zheng[1], Zichao Bian[1], and Martin Han[1]
[1]*University of Connecticut, Storrs, CT*

SAT-505
Exploring Neuro-Immune Interaction in Chronic Migraine
Zhiyu Zhang[1]
[1]*Washington University in St. Louis, Saint Louis, MO*

SAT-507
Effects of Increasing Ionic Concentrations of Media on Cell Viability and Calcium Transport of Mouse ESC Derived-Hb9+ Motor Neurons and C2C12 Myotubes.
Andrew Rios[1], Jaewon Lee[2], and Shelly Sakiyama-Elbert[2]
[1]*University of Texas at El Paso, El Paso, TX,* [2]*The University of Texas at Austin, Austin, TX*

Track: Undergraduate Research, Design & Leadership, Orthopedic and Rehabilitation Engineering

Orthopaedic and Rehabilitation Engineering-Undergraduate

SAT-508
Stroke Rehabilitation Therapy Video Game Design
Amna Haider[1], Andrew Wu[1], Cindy Leung[1], Clinton T. Rubin[1], and Mei Lin Ete Chan[1]
[1]*Stony Brook University, Stony Brook, NY*

SAT-509
Investigating Wheelchair Seating Parameters and Their Effect on Ramp Propulsion
Andrew Sivaprakasam[1,2], Sarah Bass[1,2], Deepan Kamaraj[1,2], and Alicia Koontz[1,2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Human Engineering Research Laboratories, Pittsburgh, PA*

SAT-510
Biomechanical Effect of Surgical Positions and Pre-tension Forces on Implanted Graft Stress during Outside-in ACL Reconstruction Surgery: A Simulation Study
Byeong Chan Cho[1], Dai-Soon Kwak[2], and Tae Soo Bae[1]
[1]*Jungwon University, Goesan-gun, Korea, Republic of,* [2]*Catholic Institute for Applied Anatomy College of Medicine, The Catholic University of Korea, Seoul, Korea, Republic of*

SAT-511
Material Wear Analysis of a Novel Surface Modification Technique for Titanium Implants
Charles Hayes[1], Sarah Helms[1], and John DesJardins[1]
[1]*Clemson University, Clemson, SC*

SAT-512
LIPUS Treatment with Presence of Polymer Microbubbles Induces Osteogenesis in MC3T3 Cells
Richie Ramdhanie[1], Connor Watson[1], Wonsae Lee[1], Xiaofei Li [1], and Yixian Qin[1]
[1]*Stony Brook University, Stony Brook, NY*

SAT-513
Balance Recovery and Gait Adaptations in Response to Mediolateral Perturbations
Danielle Mara[1], Pierce Lieberman[1], Seong Moon[1], Rahul Soangra[1,2], Victoria Smith[1], Chris Frames[1], and Thurmon Lockhart[1]
[1]*Arizona State University, Tempe, AZ,* [2]*Chapman University, Irvine, CA*

SAT-514
Bone Plates Covered with Electrospun PDGF Mats
Renee Bicaba[1], Danielle Moll[1], Matthew MacEwan[1], and Wilson Ray[1]
[1]*Washington University School of Medicine, St Louis, MO*

SAT-515
Developing Pressure-Adaptive Shoes
Peyton Tharp[1], Sarah McKair[2], John Kerley[2], Lucas Schmidt[2], and Delphine Dean[2]
[1]*Clemson University, Clemosn, SC,* [2]*Clemson University, Clemson, SC*

SAT-516
The Effect Of Anticipatory Postural Adjustments On Balance When Perturbed
Dong In Kim[1], Stephanie Hueng[1], and He Huang[1]
[1]*North Carolina State University, Raleigh, NC*

SAT-517
In Vivo Muscle Arquitecture Data for Musculoskeletal Models of the Human Leg
Felipe Suntaxi[1], James Charles[1], and William Anderst[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

SAT-518
Compensation In The Forelimb After Body Weight Supported Treadmill Training In Spinal Cord Injury Rats
Gabrielle Gehron[1], Shania Shaji[1], Brittany King[2], Jaclyn Witko[2], Jennifer Kadlowec[2], and Anita Singh[1,2]
[1]*Widener University, Chester, PA,* [2]*Rowan University, Glassboro, NJ*

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-519
Design and Use of a Bilateral Grip Strength Device for Assessing Forelimb Function in Rodents
Griffin Kivitz[1], Alex Reiter[1], Ryan Castile[1], Peter Andres[1], Chelsey Dunham[1], Aaron Chamberlain[1], and Spencer Lake[1]
[1]*Washington University in St. Louis, St. Louis, MO*

SAT-520
Effects of Osteoporosis and Bisphosphonate Treatment on the Osseointegration of Titanium Implants in an Aged Rat Model
Irma Nalic[1], Ethan Lotz[1], Regan Ellis[2], D. Joshua Cohen[1], Zvi Schwartz[1,3], and Barbara Boyan[1,4]
[1]*Virginia Commonwealth University, Richmond, VA,* [2]*University of Virginia, Charlottesville, VA,* [3]*University of Texas Health Science Center at San Antonio, San Antonio, TX,* [4]*Georgia Institute of Technology, Atlanta, GA*

SAT-521
The Effects Of Knee-Ankle-Foot Orthosis On The Gait Of Bilateral Achilles Tendon Contractions
Janki Patel[1] and Ha Vo [1]
[1]*Mercer University, Macon, GA*

SAT-522
Variation In Defect Parameters In Aligned Nanofibrous Scaffolds Yields Diverse Strain Attenuation Profiles
Kimberly DeLuca[1,2], Tonia Tsinman[2], and Robert Mauck[2]
[1]*New Jersey Institute of Technology, Newark, NJ,* [2]*University of Pennsylvania, Philadelphia, PA*

SAT-523
Modulating Inflammation Through Cartilage-Derived Extracellular Matrix for Potential Treatments of Cartilage Disease
Madalyn Fritch[1], Rocky Tuan[1], Hang Lin[1], and He Shen[1]
[1]*University of Pittsburgh: CCME, Pittsburgh, PA*

SAT-524
Integrin & $\alpha 7$ & $\beta 1$ Signaling Regulates Myoblast Syncytial Fusion
Mashaba Rashid[1], Michael McClure[1], Joshua Cohen[1], Barbara Boyan[1], and Zvi Schwartz[1]
[1]*Virginia Commonwealth University, Richmond, VA*

SAT-525
The Cardinal Method of High Density Biosensor Display
Nicholas Witham[1,2], Lizhi Pan[2], Ming Liu[2], and He (Helen) Huang[2]
[1]*University of North Carolina at Chapel Hill, Chapel Hill, NC,* [2]*NC State University, Raleigh, NC*

SAT-526
Lubricating Properties of Purified Bovine Lubricin
Nicole Couturier[1], Elizabeth Feeney[2], Rebecca Irwin[2], and Lawrence Bonassar[2]
[1]*University of Maryland, Baltimore County, Baltimore, MD,* [2]*Cornell University, Ithaca, NY*

SAT-527
Revision Reasons and Damage Modes of Metallic Augments Used in Total Knee Arthroplasty
Paula R. Limberg[1,2], Genymphas B. Higgs[2], Daniel W. MacDonald[2], and Steven M. Kurtz[2,3]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL,* [2]*Drexel University Implant Research Center, Philadelphia, PA,* [3]*Exponent, Inc., Philadelphia, PA*

SAT-528
Assessment of EEG to Determine Cortical Activity during Walking with a Robotic Knee Exoskeleton
Rachel Bellisle[1,2], Zachary Lerner[1], Diane Damiano[1], and Thomas Bulea[1]
[1]*National Institutes of Health, Bethesda, MD,* [2]*University of Rhode Island, Kingston, RI*

SAT-529
Analysis Of Postural And Electromyographic Differences In Adolescents With Idiopathic Scoliosis: A Pilot Study
Rachel Teater[1], Micheal De Gregorio[2], Nick Cha[3], Emily Miller[4], Kerry Danelson[2], and Tadhg O'Gara[2]
[1]*The Ohio State University, Columbus, OH,* [2]*Wake Forest School of Medicine, Winston-Salem, NC,* [3]*University of Maryland, College Park, MD,* [4]*Middlebury College, Middlebury, VT*

SAT-530
Relationship Of Muscle Activation Amplitude With Elongation And Mechanical Properties Of The Achilles Tendon
Rene Lopez[1], Jennifer Zellers[2], Sheridan Parker[2], and Karin Grävare Silbernagel[2]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*University of Delaware, Newark, DE*

SAT-531
A Comparative Analysis of Medial Tibial Strains in Mobile and Fixed Bearing Total Knee Replacements
Jacob Alumbaugh[1], Kayla Gerken[1], Erin Minervini[1], and Renee Rogge[1]
[1]*Rose-Hulman Institute of Technology, Terre Haute, IN*

SAT-532
Characterization of Antimicrobial Susceptibility Of Bacterial Biofilms On Cancellous Bone
Rex Moore[1], Vajra Sabhapathy Badha[1], Sandra Zarmer[1], Alex McLaren[2,3], and Derek Overstreet[1,3]
[1]*Arizona State University, Tempe, AZ,* [2]*University of Arizona, College of Medicine, Phoenix, AZ,* [3]*Sonoran Biosciences, Inc., Chandler, AZ*

SAT-533
Determining the Location of Stress and Strain on Proximal Tibia Following Reconstruction
Rita Marino[1]
[1]*Rowan University, Glassboro, NJ*

SAT-534
Using Affinity Interactions to Improve Antibiotic Activity in PMMA Bone Cement
Sara Hurley[1,2], Erika Cyphert[2], and Horst von Recum[2]
[1]*Fordham University, Bronx, NY,* [2]*Case Western Reserve University, Cleveland, OH*

POSTER SESSION–SATURDAY

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-535
VioArm: A Customized Prosthetic Arm
Yasser Alhindi[1], Mona Elkholy[1], Abdelrahman Gouda[1], Racha Salha[1], Ella Novoselsky[1], Laurence Bray[1], Vasiliki Ikonomidou[1], and Wilsaan Joiner[1]
[1]George Mason University, Fairfax, VA

SAT-536
The Preliminary Development of a Novel Lightweight Transradial Prosthetic Able Of Withstanding Mechanical Forces during Human Falls
Sarah McBryan[1], Aldin Malkoc[1], and Jeffrey La Belle[1,2]
[1]Arizona State University, Tempe, AZ, [2]Mayo Clinic Arizona, Tempe, AZ

SAT-537
Gait Compensation While Walking in an Immersive Virtual Environment With and Without Coupled Treadmill-Base Perturbations
Lara Riem[1], Scott Beardsley[1]
[1]Marquette University, Milwaukee, WI

SAT-559
A Novel Approach For Pistoning Evaluation In Lower Limb Amputees
Vibhavari Vempala[1], Ming Liu[1,2], and He (Helen) Huang[1,2]
[1]University of North Carolina at Chapel hill and North Carolina State University, Raleigh, NC, [2]Assist Equipment Development, Inc., Cary, NC

Track: Undergraduate Research, Design & Leadership

Undergraduate-Other/Non-specified

SAT-560
Demineralization of Porcine Cortical Bone to Assess Collagen in its Natural Structure
Amesha Green[1], Frances Su[2], and Joanna McKittrick[2]
[1]North Carolina Agricultural & Technical State University, Greensboro, NC, [2]University of California: San Diego, La Jolla, CA

SAT-561
mHealth Smartphone Application to Measure Risky Driving Behavior and Predict Crashes
Amisha Dave[1,2], Raisa Freidlin[2], Benjamin Espey[2], Sean Stanley[2], Tom Pohida[2], Johnathon Ehsani[3], and Bruce Simons-Morton[4]
[1]University of Connecticut, Storrs, CT, [2]CIT, National Institutes of Health, Bethesda, MD, [3]Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, [4]NICHD, National Institutes of Health, Bethesda, MD

SAT-562
Designing a Thigh Fitness Band with an Integrated Game that Tracks Muscle Activity to Reduce Child Obesity
Brandon Zhuang[1], Steven Crimarco[1], Amna Haider[1], and Mei Lin Chan[1]
[1]Stony Brook University, Stony Brook, NY

SAT-563
Menopause Susceptibility to Pathological Cardiac Remodeling
Danielle Cannon[1]
[1]University of Arizona, Tucson, AZ

SAT-564
Altered Reality Assisted Bronchoscopy
Edward Peterson[1] and Zhen Zhu[2]
[1]Fayetteville State University, Fayetteville, NC, [2]East Carolina University, Greenville, NC

SAT-565
Evaluating the Properties of a Gallium-Conjugated Siderophore Complex as an Antibacterial Treatment
Connie Nguyen[1], Demetri Cendo[1], Parmida Enkeshafi[1], Paul Han[1], Cameron Harner[1], Rae Herman[1], Margo Huffman[1], Faith Lee[1], and Taylor Liu[1]
[1]University of Maryland, College Park, College Park, MD

SAT-566
Effects of Ambient Room Temperature Fluctuations on C57BL/6 Mice on Sensori-Locomotor Behavioral Outcomes
Hana Ulman[1], Jessica Povroznik[1], Elizabeth Engler-Chiurazzi[1], and Candice Brown[1]
[1]West Virginia University, Morgantown, WV

SAT-567
Effect of Salt Component on the Properties of Flow-Assembled Chitosan Membranes
Jesse Williams[1], Christopher Raub[1], and Xiaolong Luo[1]
[1]The Catholic University of America, Washington, DC

SAT-568
Effect of ECM Derived Hydrogel on Peripheral Nerve Injuries
Kathryn LaBelle[1], Ruben Hartogs[1], and Christine Heisler[1]
[1]University of Pittsburgh, Pittsburgh, PA

SAT-569
Barcoding Cells for Multiplexed CyTOF Staining Panel Optimization
Amy Van Deusen[1], Katrina Warner[2], Irene Cheng[1], Chris Deppmann[1], and Eli Zunder[1]
[1]University of Virginia, Charlottesville, VA, [2]University of Washington, Seattle, WA

SAT-570
Tissue Simulant Materials for Studying Blast-induced Traumatic Brain Injury Mechanisms
Kelsea Welsh[1], Anna Wermer[1], Joseph Kerwin[1], Ricardo Mejia-Alvarez[2], Adam Willis[3], and Michaelann Tartis[1]
[1]New Mexico Institute of Mining and Technology, Socorro, NM, [2]Michigan State University, East Lansing, MI, [3]San Antonio Military Medical Center, San Antonio, TX

SAT-571
Optimizing Prosthetic Limbs
Korin Kirkpatrick[1] and Anthony Grippo[1]
[1]Florida Gulf Coast University, Fort Myers, FL

SAT-572
The Effect of Optical Flow on Human Upright Posture Control in a Virtual Reality Environment
Mariah Richards[1], Brian Sylcott[2], and Chia-Cheng Lin[2]
[1]University of North Carolina at Chapel Hill, Hillsborough, NC, [2]East Carolina University, Greenville, NC

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-573
Patient-Specific Cerebral Aneurysm Fixtures for Endovascular Coil Design
Ryan Hess[1]
[1]Arizona State University, Tempe, AZ

SAT-574
Flow Assembly of Chitosan Membranes Cross-linked with Sodium Tripolyphosphate in Microfluidics
Saba Owens[1] and Xiaolong Luo[1]
[1]The Catholic University of America, Washington, DC

SAT-575
Regulatory T Cells Delay Beta Cell Death by Suppressing CD8+ T Cell Cytotoxic Function
Samuel Rosenberg[1], Qian Xu[1], Mustafa Cagdas Ozturk[1], and Ali Cinar[1]
[1]Illinois Institute of Technology, Chicago, IL

SAT-576
Comparing Machine Learning Algorithms for Real-time Continuous Image Processing of Live Cell Cultures
Sarah Mbiki[1], Angela Alexander-Bryant[2], Jerome McClendon[2], and Jordon Gilmore[2]
[1]Appalachain State University, Boone, NC, [2]Clemson University, Clemson, SC

SAT-577
Using Bluetooth Proximity in Creating a Wearable Fitness Tracker for a Family-Based Child Obesity Prevention Strategy
Steven Crimarco[1], Brandon Zhuang[1], Amna Haider[1], Vinoth Mudiyanselage[1], and Mei Lin Chan[1]
[1]Stony Brook University, Stony Brook, NY

SAT-578
In Vitro Osmotic Swelling of the Periodontal Ligament
Theresa Thurston[1], David Nedrelow[2], Kishore Damodaran[2], and Victor Barocas[2]
[1]Oregon State University, Corvallis, OR, [2]University of Minnesota, Minneapolis, MN

SAT-579
Low Intensity Vibration Reduces the Amount of Lipids Per Fat Cell in a Diabetic Environment In 3T3-L1 Differentiated Mature Adipocytes
Yusef Saad-Eldin[1], Maggie Haviland[1], Robert Bruce[1], Karen Wong[1], Vihitaben Patel[1], Clinton Rubin[1], and Meilin (Ete) Chan[1]
[1]Stony Brook University, Stony Brook, NY

Track: Undergraduate Research, Design & Leadership, Respiratory Bioengineering

Respiratory Bioengineering-Undergraduate

SAT-580
Static Dimensional Comparison of Low-Fidelity Airway Trainers to Human Morphometrics
Kelley Kempski[1,2], August Blackburn[3], Robert De Lorenzo[1,4], and Megan Blackburn[1]
[1]US Army Institute of Surgical Research, JBSA Fort Sam Houston, TX, [2]University of Delaware, Newark, DE, [3]University of Rio Grande Valley, Brownsville, TX, [4]University of Texas Health Science Center, San Antonio, TX

SAT-581
tnfα Induces ER Stress with Downstream Effect on Mitochondrial Fragmentation and Mitochondrial Biogenesis in Human Airway Smooth Muscle Cells
Natalie Marin Mathieu[1], Philippe Delmotte[1], and Gary Sieck[1]
[1]Mayo Clinic, Rochester, MN

SAT-582
Novel Airway Epithelium Model Using Electrospun Decellularized Lung Extracellular Matrix
Keerthana Shankar[1], Bethany Young[1], and Rebecca Heise[1]
[1]Virginia Commonwealth University, Richmond, VA

SAT-583
Vocal Fold Identification in Porcine Models Using Computed Tomography for Biomechanics Modeling
Robert Trevino[1], Nikhil Bayya[1], Joseph Pearson[1], Sergio Montelongo[1], Gregory Dion[2], and Teja Guda[1]
[1]University of Texas at San Antonio, San Antonio, TX, [2]San Antonio Military Medical Center, San Antonio, TX

SAT-584
Epithelial Modulation of Fibroblast Function in Airway Organoids
Xiao Yin Ma[1,2], Qi Tan[2], and Daniel Tschumperlin[2]
[1]Cornell University, Ithaca, NY, [2]Mayo Clinic, Rochester, MN

Track: Undergraduate Research, Design & Leadership, Stem Cell Engineering

Stem Cell Engineering-Undergraduate

SAT-585
Harnessing *In Vivo* Biochemical and Biophysical Cues for Stem Cell Biomanufacturing
Anna Gilpin[1], Jiafeng Liu[1], Kai Wang[1], and Yong Yang[1]
[1]West Virginia University, Morgantown, WV

SAT-586
Effects of Immunosuppressive Drugs on the Survival and Beating Patterns of hiPSC Derived Cardiomyocytes
Boeun Hwang[1], Bonnie Arendt[2], Susana Cantero-Peral[2], Frank Secreto[2], and Timothy Nelson[2]
[1]University of Illinois at Urbana-Champaign, Champaign, IL, [2]Mayo Clinic, Rochester, MN

SAT-587
Engineering a New Docking Site in Stem Cells to Easily Target Genetic Circuit Integration
Chelsea Gibbs[1] and Tara L. Deans[1]
[1]University of Utah, Salt Lake City, UT

SAT-588
Engineering a Gene Expression Driver to Uncover Novel Signals Directing Stem Cell Niche Morphogenesis
Julia Harrer[1], Lauren Anllo[2], and Stephen DiNardo[2]
[1]Pennsylvania State University, West Chester, PA, [2]University of Pennsylvania, Philadelphia, PA

POSTER SESSION–SATURDAY

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-589
Nitric Oxide-Based Modulation of Cell Binding
Kelly Williams[1], Bobby Leitmann[2], Katie Homeyer[2], Marcus Goudie[2], Hitesh Handa[2], and Luke Mortensen[2]
[1]*Brown University, Providence, RI,* [2]*University of Georgia, Athens, GA*

SAT-590
Generation and Characterization of Endothelial Cells Derived from Human iPSCs
Kendreze Holland[1], Evan Masutani[2], Jesse Placone[1], and Adam Engler[1]
[1]*University California San Diego, La Jolla, CA,* [2]*UC San Diego, La Jolla, CA*

SAT-591
Exosomes as Novel Effectors of Osteogenic Regeneration
MaryAnne Achieng[1], Cody Wyles[2], Soulmaz Boroumand[2], Mark Li[2], Rodolfo De la Vega Amador[2], Christopher Evans[2], Andre Terzic[2], and Atta Behfar[2]
[1]*University of Rochester, Rochester, NY,* [2]*Mayo Clinic, Rochester, MN*

SAT-592
Identification of Novel Barriers to the Direct Reprogramming of Fibroblasts into Cardiomyocytes
Prashila Amatya[1], Michael Yu[1], Maria A. Missinato[1], Li Wang[2], Li Qian[2], and Alexandre Colas[1]
[1]*Sanford Burnham Prebys Medical Discovery Institute, La Jolla, CA,* [2]*University of North Carolina, Chapel Hill, NC*

SAT-593
The Effects of Low Flow on Insulin Producing Cell Function in Engineered Tissues
Sahiti Seetamraju[1] and Eun Jung Lee[1]
[1]*New Jersey Institute of Technology, Newark, NJ*

SAT-594
Improved Harvest of Equine Cord Blood Mesenchymal Stem Cells from Microcarriers in Stirred Suspension Bioreactors
Tiffany Dang[1], Erin Roberts[1], Thomas G. Koch[2], and Michael S. Kallos[1]
[1]*University of Calgary, Calgary, AB, Canada,* [2]*University of Guelph, Guelph, ON, Canada*

Track: Undergraduate Research, Design & Leadership, Tissue Engineering

Tissue Engineering-Undergraduate

SAT-595
Assessment of Human Stem Cell Retention and Host Cell Invasion in an Implanted Seeded Tubular Scaffold
Abigail Snyder[1], Katherine Lorentz[1], Darren Haskett[1], Kamiel Saleh[1], Antonio D'Amore[1], William Wagner[1], Justin Weinbaum[1], and David Vorp[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

SAT-596
Stem Cell-Derived Endothelial Cells to Model Progeria Vascular Endothelium
Alim Ladha[1], Leigh Atchison[1], and George Truskey[1]
[1]*Duke University, Durham, NC*

SAT-597
Preliminary And Acute Histological Assessment Of Elastin In A Porcine Small-Intestinal Submucosa Replacement Mitral Valve
Antonio Cuellar[1], Brittany Gonzalez[1], Omkar Mankame[1], Sharan Ramaswamy[1], Lilliam Valdez-Cruz[2], Steven Bibevski[2], Frank Scholl[2], Lazaro Hernandez[2], Vincent Brehier[2], Michael Casares[2], Krishna Rivas[3], Pablo Morales[3], Jesus Lopez[3], Sarah Bell[2], and Ivan Baez[2]
[1]*Florida International University, Miami, FL,* [2]*Joe DiMaggio Children's Hospital, Memorial Regional Hospital, Hollywood, FL,* [3]*Mannheimer Foundation, Homestead, FL*

SAT-598
The Effects of Cryopreservation and Lyophilization on the Viability of Spray-On-Cells
Aubrey Hands[1] and Thomas Boland[2]
[1]*New Mexico Institute of Mining and Technology, Socorro, NM,* [2]*The University of Texas at El Paso, El Paso, TX*

SAT-599
Development of Tubular Collagen Scaffolds to Model Vascular Interactions Between Endothelial Cells and Adipose Tissue
Bethany Lefeber[1], Brianna Roux[2], Chengyao Wang[2], Katerina Stojkova[2], Eric Brey[2], and Abhinav Bhushan[2]
[1]*Rose-Hulman Institute of Technology, Terre Haute, IN,* [2]*Illinois Institute of Technology, Chicago, IL*

SAT-600
The Effect of Stiffness and Peptide-binding on SC Adhesion and Proliferation
Carlisle DeJulius[1], Matthew Becker[1], and Rebecca Kuntz Willits[1]
[1]*The University of Akron, Akron, OH*

SAT-601
Effect Of PNS-ECM Hydrogel on Sciatic Functional Index After Peripheral Nerve Injury
Christine Heisler[1], Ruben Hartogs[1], Kathryn Labelle[1], Travis Prest[1,2], and Brian Brown[1,2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA*

SAT-602
Optogenetics for the Maturation of hiPS-CM Microtissues
Christopher Shen[1], Stephen Ma[1], Eugenia White[2], Olaia Vila[1], Timonthy Chen[1], Keith Yeager[1], and Gordana Vunjak-Novakovic[1]
[1]*Columbia University, New York, NY,* [2]*Louisiana State University, Shreveport, LA*

SAT-603
Effect of the Presence of Perlecan on Myotube Formation *In Vitro*
Eileen Ge[1], Rebecca Duffy[1,2], and Adam Feinberg[1]
[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*Massachusetts Institute of Technology, Cambridge, MA*

SAT-604
Developing an Improved *In Vitro* Model of the Human Airway Epithelium
Elise Gubbins[1], Allison Greaney[1], Mahboobe Ghaedi[1], and Laura Niklason[1]
[1]*Yale University, New Haven, CT*

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-605
Evaluation of a Thin Acellular Patch using a Rat Myocardial Infarction Model
Elyse Petek[1], Mickey Shah[1], and Ge Zhang[1]
[1]*The University of Akron, Akron, OH*

SAT-606
Engineering Patient-Driven Models to Examine Breast Cancer Cell Behavior After Metastasis to the Brain
Garrett Beeghly[1], Candace Thomas[1], Jessica Yuan[1], Alexandra Harris[1], and Jennifer Munson[1]
[1]*University of Virginia, Charlottesville, VA*

SAT-607
Cell Proliferation and Viability: The Effects of Fibronectin Treatment on Electrospun Scaffolds
Gary Stockard[1]
[1]*University of Missouri-Columbia, Pickerington, OH*

SAT-608
Development of a Novel Platform to Test Effects of Chemical and Mechanical Cues Jointly and Independently on Cell Migration
Gregory Girardi[1], Hyeonyu Kim[2], and Harry Asada[2]
[1]*University of California Merced, Merced, CA,* [2]*Massachusetts Institute of Technology, Cambrdige, MA*

SAT-609
Creating a 3-D Printed Scaffolding that Provides a Stable Support and Nutrient System using Low Temperature Agarose
Heather Blackwell[1], Carson Joiner[1], and Richard Jenkins[1]
[1]*Santa Fe College, Alachua, FL*

SAT-610
Optimization of Parameters to Develop a Versatile Cross Linker-free 3D Printing Platform for Hydrogels
Janet Canady[1], Akhil Patel[1], Sachin Velankar[1], Vinayak Sant[1], and Shilpa Sant[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

SAT-611
Smooth Muscle Cell-Endothelial Cell Co-Cultured Vascular Tissue Construct
Jasmine Villegas[1,2], Hannah Strobel[1], and Marsha Rolle[1]
[1]*Worcester Polytechnic Institute, Worcester, MA,* [2]*University of Illinois at Chicago, Chicago, IL*

SAT-612
The Effects of Silver Nitrate on Wound Healing
Jeeba Thomas[1], Aliyah Shell[1], and Ronke Olabisi[1]
[1]*Rutgers University, Piscataway, NJ*

SAT-613
EGFR Mediated Migration of Retinal Müller Glia
Juan Pena[1], Nihan Dulger[1], and Maribel Vazquez[1]
[1]*The City College of New York, New York, NY*

SAT-614
Tendon/Ligament Repair Utilizing Stromal Derived Factor Infused Alginate Coated Collagen Fibers
Mario Rossi[1], Kathm Alismail[1], Brian Ziola[1], Anne Tucker[1], Angelica Guardia[1], Therese Bou-Akl[1], Meagan Salisbury[2], Tristan Maerz[3], and Yawen Li[1]
[1]*Lawrence Technological University, Southfield, MI,* [2]*Beaumont Hospital, Royal Oaks, MI,* [3]*University of Michigan, Ann Arbor, MI*

SAT-615
The Effect of Piezoelectricity on Human Mesenchymal Stem Cell Differentiation
Kaylie Sheehan[1], Rabab Chalaby[2], and Ronke Olabisi[2]
[1]*University of North Texas, Denton, TX,* [2]*Rutgers, The State University of New Jersey, Piscataway, NJ*

SAT-616
Aligned Nanofibers of Muscle Extracellular Matrix for Tissue Regeneration
Krishna Patel[1], Koyal Garg[1], Scott Sell[1], Andrew Dunn[1], Gabriel Haas[1], Madison Marcinczyk[1], Muhamed Talovic[1], and Emily Growney Kalaf[1]
[1]*Saint Louis University, Saint Louis, MO*

SAT-617
Modeling 3D Microenvironments for Human Intestinal Enteroids
Lauren Hymel[1], Ganesh Swaminathan[2], and Jane Grande-Allen[2]
[1]*Tulane University, New Orleans, LA,* [2]*Rice University, Houston, TX*

SAT-618
Dextran Sulfate as a Macromolecular Crowding Reagent in Osteoblast Cultures
Logan Verheyen[1], Abdolrasol Rahimi[1], and Natasha Case[1]
[1]*Saint Louis University, Saint Louis, MO*

SAT-619
Effects of Hyaluronic Acid on TGF-beta-Induced Contraction of Valvular Interstitial Cells in 3D gels
Narda Bondah[1,2], Frank Benesch-Lee[1], and Kristen Billiar[1]
[1]*Worcester Polytechnic Institute, Worcester, MA,* [2]*Quisigamond Community College, Worcester, MA*

SAT-620
Injectable Hydrogels with Tunable Degradation Kinetics as Bioactive Cell Carriers
Natalia Fabela[1], Stacy Cereceres[1], and Elizabeth Cosgriff-Hernandez[1,2]
[1]*Texas A&M University, College Station, TX,* [2]*The University of Texas at Austin, Austin, TX*

SAT-621
Development of a Human Tissue-engineered Model of Duchenne Muscular Dystrophy
Alastair Khodabukus[1], Neel Prabhu[1], and Nenad Bursac[1]
[1]*Duke University, Durham, NC*

SAT-622
The Influence of Vitamins on Wound Healing
Nina Ninua[1], Shreya Soni[1], and Ronke Olabisi[1]
[1]*Rutgers University School of Engineering, Piscataway, NJ*

POSTER SESSION–SATURDAY

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-623
Improving Force Generation of *In Vitro* Skeletal Tissue Models
Oluwasanmi Ariyo[1], Onur Aydin[2], and Taher Saif[2]
[1]The Pennsylvania State University, University Park, PA, [2]University of Illinois at Urbana-Champaign, Urbana-Champaign, IL

SAT-624
Designing and Characterizing Fibrin Microthread Composite Layers
Patricia L. Garcia[1], Megan O'Brien[2], Marianne Kanellias[2], and George D. Pins[2]
[1]Florida International University Honors College, Miami, FL, [2]Worcester Polytechnic Institute, Worcester, MA

SAT-625
In Vitro Model of Breast Cancer Metastasis in Bone Microenvironment
Roger Charles[1], Vera Mayo[1], Annie Bowles[1], and Ashutosh Agarwal[1]
[1]University of Miami, Miami, FL

SAT-626
In Situ Production of a Biomimetic Lung-on-a-Chip in a Microfluidic Delivery System
Rosemary Clare Burke[1,2], Shiny Amala Priya Rajan[1,3], Sean Murphy[3], and Adam R. Hall[1,3,4]
[1]Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC, [2]The University of Texas at Austin, Austin, TX, [3]Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC, [4]Comprehensive Cancer Center at Wake Forest Baptist Medical, Winston-Salem, NC

SAT-627
Effect of PNS-ECM Hydrogel on Functional Recovery after Peripheral Nerve Injury
Ruben Hartogs[1], Christine Heisler[1], Kathryn LaBelle[1], Travis Prest[1], and Bryan Brown[1]
[1]University of Pittsburgh, Pittsburgh, PA

SAT-628
Encapsulation of Mesenchymal Stromal Cells in Alginate for the Treatment of Osteoarthritis
Sarah Salter[1]
[1]Rutgers University, Summit, NJ

SAT-629
Complex 3D Tissue Assembly Using Flat High-Density Cell Sheets
Shayla Goller[1], Uma Balakrishnan[1], and Lance Davidson[1]
[1]University of Pittsburgh, Pittsburgh, PA

SAT-630
The Effect of Spinach and Green Tea on Wound Healing
Sheethal Ajakkala[1], Aishwaria Devi[1], and Ronke Olabisi[1]
[1]Rutgers University, Piscataway, NJ

SAT-631
Nutritional Supplementation for Myoblast Proliferation and Differentiation
Sudeepti Vedula[1], Daniel Browe[1], Joseph Freeman[1], Neerav Padliya[2], and Maghsoud Darian[2]
[1]Rutgers, the State University of New Brunswick, Piscataway, NJ, [2]2MYOS RENS Technology Inc., Cedar Knolls, NJ

SAT-632
Optimization and Characterization of 3D Human Prepubertal Testis Organoid System
Sue Zhang[1], Nima Pourhabibi Zarandi[2], Anthony Atala[2,3], and Hoooman Sadri-Ardekani[2,3]
[1]University of Rochester, Rochester, NY, [2]Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC, [3]Department of Urology, Wake Forest School of Medicine, Winston-Salem, NC, NC

SAT-633
A Three-Dimensional Neural Spheroid Model for Studying Ischemic Stroke
Taylor Pullinger[1], Liana Kramer[1], Samantha Zambuto[1], Meghan Buonanno[2], Victor Cox[1], Liane Livi[1], Aurora Washington[1], and Diane Hoffman-Kim[1]
[1]Brown University, Providence, RI, [2]Georgetown University, Washington, DC

SAT-634
Modeling Dual Delivery of Proangiogenic Peptides from Hydrogel Biomaterials for Neovascularization of Ischemic Tissue
Wesley Lo[1]
[1]Illinois Institute of Technology, Chicago, IL

SAT-635
Diffusivity Analysis of Hydrogels for Conformal Coating and Transplantation of Islets of Langerhans
Laura Morales[1], Vita Manzoli[2,3], and Alice Tomei[1,2]
[1]University of Miami, Coral Gables, FL, [2]University of Miami, Miami, FL, [3]Politecnico di Milano, Milano, Italy

SAT-636
Effect of Minerals on Human Mesenchymal Stem Cells
Madyson Muscarello[1], Lauren Cross[1], Jake Carrow[1], and Akhilesh Gaharwar[1]
[1]Texas A&M University, College Station, TX

Track: Undergraduate Research, Design & Leadership, Translational Biomedical Engineering

Translational Biomedical Engineering-Undergraduate

SAT-637
3-D Bioprinted Cancer Models & Spatial Mapping of 3-D Printed Constructs
Jeffrey Chen[1], Waqar Makhani[1], Mu'ath Adlouni[1], Rahul Kumar[1], Christian Bergh[1], Jenny Hong[1], Rachel Krause[1], Jose Rosa[1], Quinn Nguyen[1], Samantha Silva[1], Inimfon Akpabio[1], James Lilly[1], Charles Peak[1], and Akhilesh Gaharwar[1]
[1]Texas A&M University, College Station, TX

SAT-638
Adapalene Loaded Polymeric Nanoparticles as a Novel Therapeutic for the Treatment of Amyotrophic Lateral Sclerosis In SOD1 G93A Mouse Model
Collin Teague[1,2], David Medina[2], Eugene Chung[2], Ricki Ceton[2], Robert Bowser[2], and Rachael Sirianni[2]
[1]Arizona State University, Phoenix, AZ, [2]Barrow Neurological Institute, Phoenix, AZ

Saturday, October 14 | 9:30 am–1:00 pm | Exhibit Hall 300 North

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:30 am

SAT-639
Revisiting CSD Propagation Characteristics with Microelectrode Arrays: From Spiking to Field Potentials
Daniel Rivera[1], Arash Moshkforoush[1], Darlene Ramos[1], Yoichiro Mori[2], and Jorge Riera[1]
[1]Florida International University, Miami, FL, [2]University of Minnesota, Minneapolis, MN

SAT-640
Targeted Removal of Free Hemoglobin Using Zinc Chelating Resin
Elisabeth Rebholz[1,2], Kelli Simms[2], Rosemary Burke[2,3], Daniel Kim-Shapiro[4], Adam Hall[2], and Eleheh Rahbar[2]
[1]Virginia Tech, Blacksburg, VA, [2]Wake Forest University Health Sciences, Winston-Salem, NC, [3]University of Texas, Austin, TX, [4]Wake Forest University, Winston-Salem, NC

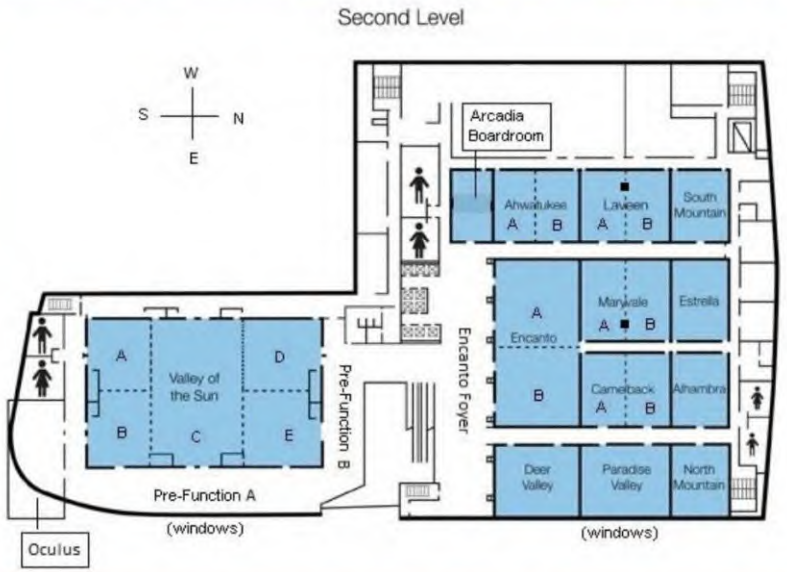
SAT-641
Identification of Volatile Metabolic Biomarkers Correlated to Changes in Hormone Levels
Jarrett Eshima[1] and Barbara Smith[1]
[1]Arizona State University, Tempe, AZ

SAT-642
Selective Binding of BSA in a Silica Matrix in the Presence of Carbon Black
Monica Robles[1], Carolina DeSantiago[2], Supriyo Ray[3], Julio Rincon[3], and Thomas Boland[3]
[1]California State University, Long Beach, Long Beach, CA, [2]Rice University, Houston, TX, [3]University of Texas at El Paso, El Paso, TX

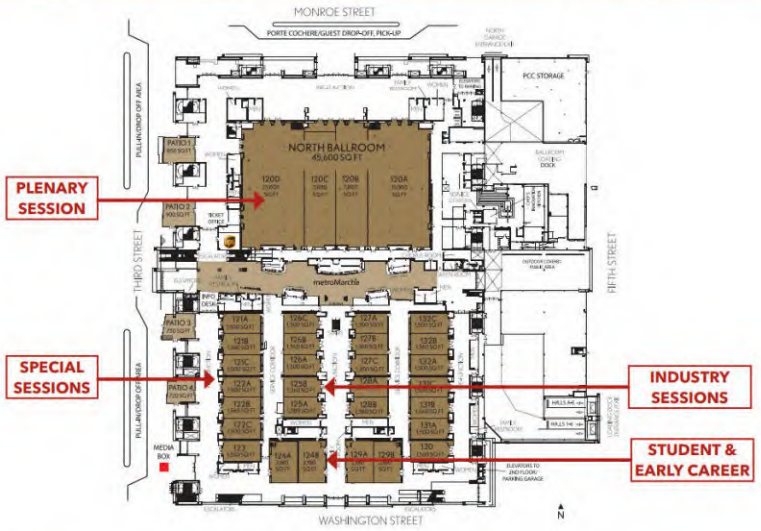
SAT-643
Dantrolene Suppresses Calcification by Valve Interstitial Cells
Vaidya Parthasarathy[1], Reid Wilson[2], Marci Kang[2], and K. Jane Grande-Allen[2]
[1]Clear Lake High School, Houston, TX, [2]Rice University, Houston, TX

POSTER SESSION–SATURDAY

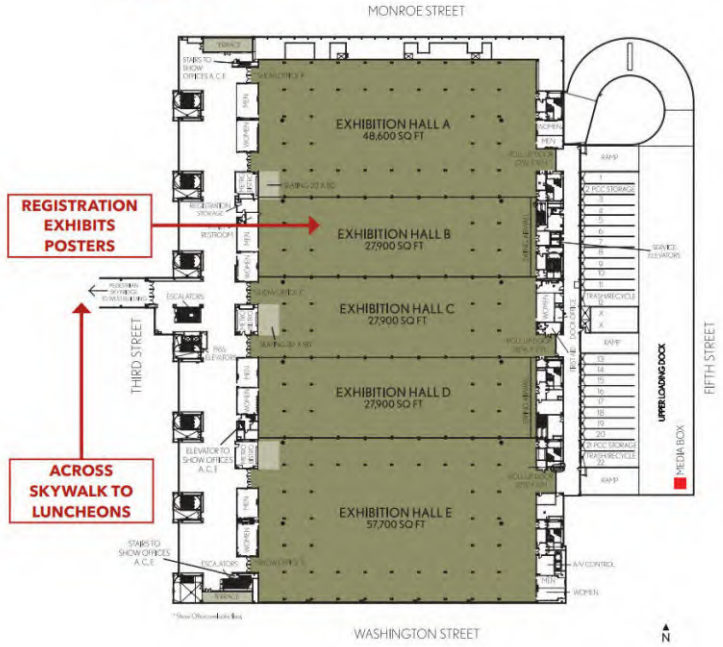
Sheraton Grand Phoenix | 340 North 3rd Street, Phoenix, Arizona 85004



Phoenix Convention Center | 100 North 3rd Street, Phoenix, Arizona 85004



Phoenix Convention Center | 100 North 3rd Street, Phoenix, Arizona 85004



Program At-A-Glance | Thursday | October 12, 2017

TRACK	8:00 am–9:30 am	1:30 pm–3:00 pm	3:45 pm–5:15 pm
BIOINFORMATICS, COMPUTATIONAL AND SYSTEMS BIOLOGY	Genomics, Proteomics and Metabolobics *Room 226A*	Computational Modeling of Cancer *Room 226A*	Computational Modeling of Cell Motility and Proliferation *Room 226A*
BIOMATERIALS *Track sponsored by:* ACS Biomaterials	Biomaterials for Immunoengineering I *Room 224A* 3D Printing and Advanced Biomaterial Manufacturing I *Room 224B*	Biomaterials for Immunoengineering II *Room 224A* 3D Printing and Advanced Biomaterial Manufacturing II *Room 224B*	Biomaterials for Immunoengineering III *Room 224A* Advanced Characterization and Imaging of Biomaterial Environments *Room 224B*
BIOMECHANICS	Head Injury Biomechanics I *Room 229A* Current Topics in Biomechanics *Room 229B* Substrate Effects in Mechanobiology I *Room 222B* Biomechanics and Mechanobiology in Tissue Engineering *Room 221C*	Head Injury Biomechanics II *Room 229A* Computation and Multiscale Modeling in Biomechanics I *Room 229B* Substrate Effects in Mechanobiology II *Room 222B*	Brain Biomechanics and Mechanobiology *Room 229A* Computation and Multiscale Modeling in Biomechanics II *Room 229B* Cellular and Molecular Mechanobiology *Room 222B*
BIOMEDICAL ENGINEERING EDUCATION *Track sponsored by:* NIIT		ABET Criteria Workshop *Room 122C*	
BIOMEDICAL IMAGING & OPTICS	Imaging in Neuroscience and Brain Initiatives *Room 225A*	Optical Coherence Tomography and Adaptive Optics *Room 225A*	Imaging Strategies and Molecular Pofiling in Cancer *Room 225A* Imaging and Translational Respiratory Engineering *Room 228A*
CANCER TECHNOLOGIES	Cancer Immunoengineering *Room 228B* Cancer Mechanobiology I *Room 227C*	Tumor Microenvironment I *Room 228B* Cancer Mechanobiology II *Room 227C* Computational Modeling of Cancer *Room 226A*	Tumor Microenvironment II *Room 228B* Metastasis, Dormancy & Treatment Response *Room 227C* Imaging Strategies and Molecular Profiling in Cancer *Room 225A*
CARDIOVASCULAR ENGINEERING	Angiogenesis and Engineered Vascularization *Room 221A* Cardiovascular Tissue Engineering I *Room 221B*	Cardiac Electrophysiology *Room 221A* Cardiovascular Tissue Engineering II *Room 221B*	Heart Valve Structure, Function, and Disease *Room 221A* Cardiovascular Tissue Engineering III *Room 221B*
CELLULAR & MOLECULAR BIOENGINEERING	Substrate Effects in in Mechanobiology I *Room 222B* Engineering Stem Cell Differentiation and Dedifferentiation *Room 222A*	Substrate Effects in in Mechanobiology II *Room 222B*	Cellular and Molecular Mechanobiology *Room 222B*
DEVICE TECHNOLOGIES AND BIOMEDICAL ROBOTICS	Wearable Sensors I *Room 223*	Wearable Sensors II *Room 223*	Prosthetics and Orthotics *Room 223*
DRUG DELIVERY	Targeted or Responsive Delivery Systems *Room 225B*	Delivery Systems for Proteins and Vaccines *Room 225B*	Multi-scale Strategies for Therapeutic Delivery *Room 225B*
NANO AND MICRO TECHNOLOGIES		Organ-on-Chip Models for Study of Disease and Drug Discovery I *Room 222A*	Organ-on-Chip Models for Study of Disease and Drug Discovery II *Room 222A*

Program At-A-Glance | Thursday | October 12, 2017

TRACK	8:00 am–9:30 am	1:30 pm–3:00 pm	3:45 pm–5:15 pm
NEURAL ENGINEERING	Neural Cell Model Systems *Room 226B* Imaging in Neuroscience and Brain Initiatives *Room 225A*	Neural Injury and Disease Model Systems *Room 226B*	Peripheral Repair *Room 226B*
ORTHOPEDIC AND REHABILITATION ENGINEERING	Devices for Neural and Rehabilitation Engineering *Room 226C*	Orthopedic Mechanobiology *Room 226C*	Spine, Bone, and Associated Tissue *Room 226C* Prosthetics and Orthotics *Room 223*
RESPIRATORY BIOENGINEERING		Modeling of the the Respiratory System *Room 228A*	Imaging and Translational Respiratory Engineering *Room 228A*
STEM CELL ENGINEERING	Engineering Stem Cell Differentiation and Dedifferentiation *Room 222A*	Stem Cells in Tissue Engineering *Room 221C*	
TISSUE ENGINEERING	Cardiovascular Tissue Engineering I *Room 221B* Biomechanics and Mechanobiology in Tissue Engineering I *Room 221C*	Cardiovascular Tissue Engineering II *Room 221B* Stem Cells in Tissue Engineering *Room 221C* Organ-on-Chip Models for Study of Disease and Drug Discovery I *Room 222A*	Cardiovascular Tissue Engineering III *Room 221B* Engineering Replacement Tissues *Room 221C* Organ-on-Chip Models for Study of Disease and Drug Discovery II *Room 222A*
TRANSLATIONAL BIOMEDICAL ENGINEERING	Translational Biomedical Engineering *Room 228A*		Imaging and Translational Respiratory Engineering *Room 228A*
INDUSTRY *Track sponsored by* TAMU Biomedical Engineering	8:00 am–9:00 am Principles of Project Management *Room 125AB* 9:00 am–10:00 am Verification and Validation of Medical Devices *Room 125AB*	1:00pm–2:00pm BMES Special Interest Group Overview *Room 125AB* 2:00pm–5:00pm Entrepreneur Workshop *Ticket purchase required* *Room 125AB*	2:00 pm–5:00 pm Entrepreneur Workshop *Ticket purchase required* *Room 125AB* 7:00 pm–9:00 pm–The Duce Industry and Clinical Mixer *Ticket purchase required* *Sponsored by Brooks Kushman, P.C.*
OTHER	Training New Leaders in Healthcare Innovation: Graduate Training Programs Linking Engineering and Medicine *Room 122B*	Defining Educational Goals of Bioengineering in the 21st Century *Room 122B* NIH Funding Panel Session *Room 121ABC* 2:30 pm–5:30pm The 5th US-Korea Joint BMES Workshop *Room 122A*	Engineering Solutions to *Address Healthcare Disparities* *Room 122B* NIBIB DEBUT Presentations and Awards Sessions *Room 121ABC* Vascular Mechanobiology and Nanotherapeutics *Room 122C* 2:30 pm–5:30pm The 5th US-Korea Joint BMES Workshop *Room 122A*
STUDENT AND EARLY CAREER	10:00 am–11:30 am Networking: A Required Life Skill in a Diverse 21st Century *Room 124AB*	1:00 pm–4:30 pm Coop/Intern and Industrial Relations Workshop–Part II *(by invitation)* *Room 129AB* 1:15 pm–2:15 pm BME Careers in Academia *Room 128AB* 1:30 pm–2:45 pm BME Careers in Industry *Room 124AB* 2:30 pm–3:30 pm Talk to the Industry Executive *Room 128AB*	3:00pm–4:30pm Rapid Resume Review- *Exhibit Hall 300 Level* 4:00 pm–5:15 pm BME Entrepreneurship Careers *Room 124AB* 4:00 pm–5:15 pm BME Alternative Careers *Room 128AB*

Program At-A-Glance | Friday | October 13, 2017

TRACK	8:00 am–9:30 am	1:15 pm–2:45 pm	3:30 pm–5:00 pm
BIOMATERIALS *Track sponsored by:* ACS Biomaterials	**Biomaterials for Regenerative Medicine I** *Room 224A* **Drug Delivering Biomaterials I** *Room 224B* **Integration of Biomaterials with Chips and Devices** *Room 222A* **Engineering the Stem Cell Microenvironment** *Room 227C*	**Biomaterials for Regenerative Medicine II** *Room 224A* **Drug Delivering Biomaterials II** *Room 224B*	**Biomaterials Scaffolds I** *Room 224A* **Drug Delivering Biomaterials III** *Room 224B*
BIOMECHANICS	**The Nucleus and Cytoskeleton in Mechanobiology** *Room 229A* **Cardiovascular Biomechanics** *Room 229B*	**Injury Biomechanics I** *Room 229A* **Hemodynamics and Vascular Mechanics I** *Room 229B*	**Injury Biomechanics II** *Room 229A* **Hemodynamics and Vascular Mechanics II** *Room 229B*
BIOMEDICAL ENGINEERING EDUCATION *Track sponsored by:* NIH	**Assessment of Innovations** *Room 226C*	**Collaborative Programs** *Room 226C*	**Design and Curriculum** *Room 226C*
BIOMEDICAL IMAGING & OPTICS	**Ultrasound** *Room 225A* **Cardiovascular Imaging** *Room 225B*	**Flourescence Imaging** *Room 225A* **MRI** *Room 225B*	**Imaging Techniques in Clinical Translation** *Room 225A* **Applications of MRI and Focused Ultrasound** *Room 225B*
CANCER TECHNOLOGIES	**Cancer Sell Motility and Migration** *Room 228B*	**Tumor Cell-ECM Interactions** *Room 228B* **Circulating Biomarkers: CTCs, Extracellular Vesicles and DNA I** *Room 221A*	**Molecular Profiling in Cancer** *Room 228B* **Circulating Biomarkers: CTCs, Extracellular Vesicles and DNA II** *Room 221A*
CARDIOVASCULAR ENGINEERING *Room 102AB*	**Cardiovascular Biomechanics** *Room 229B* **Thrombosis and Hemostatis** *Room 221A* **Cardiovascular Imaging** *Room 225B*	**Hemodynamics and Vascular Mechanics I** *Room 229B*	**Hemodynamics and Vascular Mechanics II** *Room 229B*
CELLULAR & MOLECULAR BIOENGINEERING	**The Nucleus and Cytoskeleton in Mechanobiology** *Room 229A* **Micro/Nano Tools in Molecular Biology (Genomics,Proteomics)** *Room 221B* **Gene Delivery and Genome Bioengineering** *Room 221B* **Cell Migration** *Room 223*	**Molecular and Cellular Engineering Functional Materials and Sensors** *Room 222B* **CMBE Young Innovators I** *Room 223*	**Engineering Multi-cellular Systems** *Room 222B* **CMBE Young Innovators II** *Room 223*
DEVICE TECHNOLOGIES AND BIOMEDICAL ROBOTICS	**Biosensors I** *Room 228A* **Integration of Biomaterials with Chips and Devices** *Room 222A*	**Biosensors II** *Room 228A*	**Upper Limb Exoskeletons** *Room 228A*
DRUG DELIVERY	**Drug Delivering Biomaterials I** *Room 224B*	**Drug Delivering Biomaterials II** *Room 224B* **Organ-on-a-Chip Models for Drug Discovery and the Study of Disease III** *Room 222A*	**Drug Delivering Biomaterials III** *Room 224B* **Organ-on-a-Chip Models for Drug Discovery and the Study of Disease IV** *Room 222A* **Drug Delivery for Tissue Engineering and Medicine** *Room 221C*

Program At-A-Glance | Friday | October 13, 2017

TRACK	8:00 am–9:30 am	1:15 pm–2:45 pm	3:30 pm–5:00 pm
NANO AND MICRO TECHNOLOGIES	**Micro/Nano Tools in Molecular Biology (Genomics,Proteomics)** *Room 221B* **Integration of Biomaterials with Chips and Devices** *Room 222A*	**Micro/Nano Tools in Medicine** *Room 221B*	
NEURAL ENGINEERING	**Peripheral Nerve Stimulation** *Room 226A* **Deep Brain Stimulation** *Room 226B*	**Motor Control and Rehabilitation** *Room 226A* **Sensory Neuroprostheses** *Room 226B*	**Micro/Nano Tools in Neurosciences** *Room 226A* **Neural Decoding** *Room 226B*
ORTHOPEDIC AND REHABILITATION ENGINEERING			**Upper-Limb Exoskeletons** *Room 228A*
RESPIRATORY BIOENGINEERING			**Respiratory Mechanobiology** *Room 221B*
STEM TISSUE ENGINEERING	**Engineering the Stem Cell Microenvironment** *Room 227C*	**Neural Stem Cell Engineering** *Room 227C*	**Organoid Engineering and Advanced Biomanufacturing** *Room 227C*
TISSUE ENGINEERING	**Immunoengineering and Immunomodulation in Tissue Engineering** *Room 221C*	**Printing and Patterning in Tissue Engineering** *Room 221C* **Organ-on-a-Chip Models for Drug Discovery and the Study of Disease III** *Room 222A*	**Drug Delivery for Tissue Engineering** *Room 221C* **Organ-on-a-Chip Models for Drug Discovery and the Study of Disease IV** *Room 222A* **Engineering Multi-cellular Systems** *Room 222B*
TRANSLATIONAL BIOMEDICAL ENGINEERING		**Micro/Nano Tools in Medicine** *Room 221B*	
INDUSTRY *Track sponsored by* TAMU Biomedical Engineering	**8:00 am–10:00 am** **Tech Transfer Innovation Challenge** *Room 125AB*	**1:00pm–3:00pm** **Clinical Innovations Spotlight** *Room 125AB*	**3:00 pm–5:00 pm** **Investment Pitches and Partnering** *Room 125AB*
OTHER	**Career Options for the BME Graduate Students and Postdoctoral Fellows** *Room 122C*	**Curricular Innovation: Highlighting Your Most Unique or Innovative Course Offerings** *Room 122C* **International Symposium on Biomedical Engineering** *Room 122A* **1:30 pm–4:30 pm** **BMES-NSF Special Session on CAREER and UNSOLICITED Awards** *Room 122A*	**Symposium in Honor of] Dr. and Mrs. Athanasiou** *Room 122A* **1:30 pm–4:30 pm** **BMES-NSF Special Session on CAREER and UNSOLICITED Awards** *Room 122A*
STUDENT AND EARLY CAREER	**9:00 am–10:00 am** **Graduate School Part I: Navigating the Graduate School Application/Financial Aid Process** *Room 124AB* **8:30 am–9:30 am** **BMES Student Chapter Session–Outstanding Chapter Best Practices** *Room 128AB* **9:30 am–10:45 am** **BMES Student Chapter Session–Mentoring, Outreach and Chapter-Industry Best Practices** *Room 128AB*	**1:15–2:15pm** **Graduate School Part II: Surviving, Thriving and Succeeding** *Room 124AB* **1:45pm–3:15pm** **BMES Undergraduate Student Design Competition** *Room 128AB* **2:45pm–4:00pm** **BME Careers in Industry II** *Room 124AB*	

Program At-A-Glance | Saturday | October 14, 2017

TRACK	8:00 am-9:30 am	1:30 pm-3:00 pm	3:15 pm-4:45 pm
BIOINFORMATICS, COMPUTATIONAL AND SYSTEMS BIOLOGY	Systems Biology of Infectious Disease *Room 226A* Stem Cells Systems Biology *Room 227C*	Novel Methods for Systems Biology *Room 226A*	Analysis of Cell Signaling *Room 226A* Computational Modeling in Cardiovascular Systems *Room 221A*
BIOMATERIALS *Track sponsored by* ACS Biomaterials	Biomaterials Scaffolds II *Room 224A* Drug Delivering Biomaterials IV *Room 224B*	Hydrogel Biomaterials I *Room 224A* Natural and Bioinspired Biomaterials I *Room 224B*	Hydrogel Biomaterials II *Room 224A* Natural and Bioinspired Biomaterials II *Room 224B* Biomechanics of Biomaterials *Room 229A*
BIOMECHANICS	Imaging Techniques in Biomechanics *Room 229A* Rehabilitation Biomechanics *Room 229B*	Orthopedic: Mechanobiology and Mechanotransduction *Room 229A* Biomechanics in Cell and Tissue Engineering *Room 229B*	Biomechanics of Biomaterials *Room 229A* Mechanobiology of the Cardiovascular System *Room 229B*
BIOMEDICAL ENGINEERING EDUCATION		Motivatation and Added Value *Room 227C*	
BIOMEDICAL IMAGING & OPTICS	Imaging Techniques in Biomechanics *Room 229A*	Optical Imaging and Nano-Technology *Room 225B*	Biomedical Imaging and Optics *Room 225B*
CANCER TECHNOLOGIES	Cancer Drug Delivery *Room 228B*	Microfluidic Cancer Models *Room 228B*	
CARDIOVASCULAR ENGINEERING	Cardiovascular Devices *Room 221A*	Cardiovascular Regeneration and Stem Cells *Room 221A*	Mechanobiology of the Cardiovascular System *Room 229B* Computational Modeling in Cardiovascular Systems *Room 221A*
CELLULAR & MOLECULAR BIOENGINEERING	Mechanobiology of Cell Adhesion *Room 222A* Molecular and Cellular Immunoengineering I *Room 222B*	Mechanobiology of the Vascular and Nervous System *Room 222A* Molecular and Cellular Immunoengineering II *Room 222B* Biomechanics in Cell and Tissue Engineering *Room 229B*	Molecular Bioengineering *Room 222B*

Program At-A-Glance | Saturday | October 14, 2017

TRACK	8:00 am-9:30 am	1:30 pm-3:00 pm	3:15 pm-4:45 pm
DEVICE TECHNOLOGIES AND BIOMEDICAL ROBOTICS	Implantable Sensors I *Room 228A* Cardiovascular Devices *Room 221A* Translation of Devices from the Lab to the Market *Room 225B*	Implantable Sensors II *Room 228A*	Affordable Health and Frugal Innovation *Room 228A*
DRUG DELIVERY	Nano to Micro Devices in Delivery I *Room 221B* Drug Delivering Biomaterials IV *Room 224B* Cancer Drug Delivery *Room 228B*	Nano to Micro Devices in Delivery II *Room 221B*	Nano to Micro Devices in Delivery III *Room 221B*
NANO AND MICRO TECHNOLOGIES	Nano to Micro Devices in Delivery I *Room 221B* Advances in Micro/Nano Manufacturing *Room 225A*	Nano to Micro Devices in Delivery II *Room 221B* Applications of Nanopores and Nanoparticles *Room 225A*	Nano to Micro Devices in Delivery III *Room 221B*
NEURAL ENGINEERING	Neural Device-Tissue Interfaces *Room 226B*	Neural Device Technology *Room 226B*	CNS Repair and Regeneration *Room 226B*
ORTHOPEDIC AND REHABILITATION ENGINEERING	Articular Cartilage, Meniscus and Joints *Room 223*	Orthopedic: Mechanobiology and Mechanotransduction *Room 229A*	
STEM CELL ENGINEERING	Stem Cell Systems Biology *Room 227C*	Cardiovascular Regeneration and Stem Cells *Room 221A*	
TISSUE ENGINEERING	Naturally-Derived and Extracellular Matrix Biomaterials in Tissue Engineering *Room 221C*	Biomechanics in Cell and Tissue Engineering *Room 229B* Advanced Biomanufacturing in Tissue Engineering *Room 221C* Musculoskeletal Tissue Engineering *Room 223*	
UNDERGRADUATE RESEARCH, DESIGN & LEADERSHIP	Undergraduate Research, Design & Leadership I *Room 226C*	Undergraduate Research, Design & Leadership II *Room 226C*	Undergraduate Research, Design & Leadership III *Room 226C*
OTHER	BMES-NSF Special Session on Graduate Research Fellowships Program *Room 121ABC*		

Schedule At-A-Glance

WEDNESDAY | OCTOBER 11, 2017

12:00 noon – 7:00 pm	Registration	North 300
8:30 am – 4:30 pm	BMES Board of Directors Meeting	126BC
11:30 am – 4:00 pm	AIMBE Board of Directors Meeting *(affiliate event)*	127C
12:30 pm – 3:30 pm	Industry Tours *(preregistration required)*	Leave from Conv Ctr
3:00 pm – 4:30 pm	Mentor Match Up *(preregistration required)*	129AB
3:30 pm – 5:30 pm	Meet the Faculty Candidates	North 300
4:00 pm – 5:00 pm	AIMBE Academic Council Meeting *(affiliate event)*	127C
4:30 pm – 5:30 pm	Perfecting the First-time Student and Early Career Attendee Experience	129AB
4:30 pm – 5:30 pm	Coulter College Steering Committee Meeting	127A
5:30 pm – 7:30 pm	Welcome Reception	300 Level Foyer
7:30 pm – 8:30 pm	Industry Committee Planning Meeting *(invitation only)*	Sheraton-Laveen
7:30 pm – 10:30 pm	Council of Chairs Dinner & Meeting *(invitation only)*	Sheraton-Deer Valley
8:00 pm – 9:00 pm	LGBT Dessert Social *(ticket purchase required)*	Sheraton-Paradise Valley

THURSDAY | OCTOBER 12, 2017

7:00 am – 6:00 pm	Registration	North 300
7:00 am – 8:00 am	Council of Industry Chapter Presidents *(invitation only)*	126A
7:00 am – 8:00 am	BMES Diversity Committee Meeting	127B
8:00 am – 9:30 am	BMES National Meetings Committee Meeting	126BC
8:00 am – 9:00 am	**INDUSTRY SESSION** Principles of Project Management	125AB
8:00 am – 9:30 am	**PLATFORM SESSIONS–THURS-1**	*18 concurrent sessions*
8:00 am – 9:30 am	Training New Leaders in Healthcare Innovation: Graduate Training Programs Linking Engineering and Medicine	122B
8:30 am – 9:30 am	BMES Student Affairs Committee Meeting	127C
9:00 am – 10:00 am	**INDUSTRY SESSION** Verification and Validation of Medical Devices	125AB
9:30 am – 5:00 pm	Exhibit Hall Open	North 300
9:30 am – 5:00 pm	**POSTER SESSION**	North 300
9:30 am – 10:15 am	**POSTER VIEWING WITH AUTHORS & Refreshment Break**	
9:30 am – 10:30 am	BMES Ethics Subcommittee Meeting	127A
10:00 am – 11:30 am	Networking: Getting Started and Networking in a Diverse 21st Century	124AB
10:15 am – 11:30 am	**PLENARY SESSION** State of the Society & Pritzker Award Lecture	North Ballroom BCD
11:45 am – 1:15 pm	Celebration of Minorities in BME Luncheon *(ticket purchase required)*	West Ballroom 301A
11:45 am – 1:15 pm	Lunch on Own	
1:00 pm – 3:00 pm	AEMB–Mentoring for INnovative Design Solutions (MINDS) Workshop–*affiliate event*	123
1:00 pm – 4:30 pm	Coop/Intern and Industrial Relations Workshop–Part II *(by invitation)*	129AB
1:00 pm – 2:00 pm	**INDUSTRY SESSION** BMES Special Interest Group Overview	125AB
1:15 pm – 2:30 pm	BMES 50th Anniversary Committee Meeting	127A
1:15 pm – 2:15 pm	BME Careers in Academia	128AB
1:30 pm – 2:45 pm	BME Careers in Industry I	124AB

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PLENARY SESSION	PLATFORM SESSION	POSTERS	SPECIAL SESSIONS
STUDENT/EARLY CAREER	EXHIBITS	SPECIAL EVENTS	COMMITTEE MEETINGS

Schedule At-A-Glance

THURSDAY | OCTOBER 12, 2017 *(continued)*

1:30 pm – 3:00 pm	**PLATFORM SESSIONS–THURS-2**	*18 concurrent sessions*
1:30 pm – 3:00 pm	ABET Criteria Workshop	122C
1:30 pm – 3:00 pm	NIH Funding Panel Session	121ABC
1:30 pm – 3:00 pm	Defining Educational Goals of the Bioengineering in the 21st Century	122B
2:00 pm – 5:00 pm	**INDUSTRY SESSION** Entrepreneur Workshop *(ticket purchase required)*	125AB
2:30 pm – 3:30 pm	Ask the Industry Expert	128AB
2:30 pm – 5:30 pm	5th US-Korea Joint BMES Workshop	122A
3:00 pm – 3:45 pm	**POSTER VIEWING WITH AUTHORS & Refreshment Break**	North 300
3:00 pm – 4:30 pm	Rapid Resume Review	North 300
3:45 pm – 5:15 pm	Vascular Mechanobiology& Nanotherapeutics	122C
3:45 pm – 5:15 pm	NIBIB DEBUT Presentations and Awards	121ABC
3:45 pm – 5:15 pm	Engineering Solutions to Address Health Care Disparities	122B
3:45 pm – 5:15 pm	**PLATFORM SESSIONS–THURS-3**	*18 concurrent sessions*
4:00 pm – 5:30 pm	AEMB–Annual Grand Meeting *(affiliate event)*	123
4:00 pm – 5:15 pm	BME Entrepreneurship Careers	124AB
4:00 pm – 5:15 pm	BME Alternative Careers	129AB
5:30 pm – 6:30 pm	**PLENARY SESSION** NIBIB Lecture (Feng Zhang, PhD) & BMES Fellows	North Ballroom BCD
7:00 pm – 9:00 pm	Industry and Clinical Mixer *(ticket purchase required)*	The Duce
8:00 pm – 10:00 pm	University Hosted Receptions	Sheraton Grand Phoenix

FRIDAY | OCTOBER 13, 2017

7:00 am – 6:00 pm	Registration	North 300
7:00 am – 8:00 am	BMES Education Committee Meeting	127B
7:00 am – 8:00 am	BMES Industry Advisory Board *(invitation only)*	126A
8:00 am – 9:30 am	BMES 2018 Annual Meeting Planning Committee Meeting	126BC
8:00 am – 9:00 am	BMES International Committee Meeting	127C
8:00 am – 10:00 am	**INDUSTRY SESSION** Tech Transfer Innovation Challenge	125AB
8:00 am – 9:30 am	**PLATFORM SESSIONS–FRI-1**	*18 concurrent sessions*
8:00 am – 9:30 am	Career Options for the BMES Graduate Students and Postdoctoral Fellows	122C
8:30 am – 9:30 am	BMES Student Chapter–Outstanding Chapter Best Practices	128AB
9:00 am – 10:15 am	AEMB Annual Ethics Session–Charting the Landscape of For-profit Stem Cell Clinics in the US *(affiliate event)*	123
9:00 am – 10:00 am	Graduate School Part I: Planning for Graduate School and Getting In	124AB
9:30 am – 10:45 am	BMES Student Chapter–Mentoring and Chapter-Industry Best Practices	128AB
9:30 am – 5:00 pm	Exhibit Hall Open	North 300
9:30 am – 5:00 pm	**POSTER SESSION**	North 300
9:30 am – 10:15 am	**POSTER VIEWING WITH AUTHORS & Refreshment Break**	
10:15 am – 11:15 am	**PLENARY SESSION** Wallace H. Coulter Award for Healthcare Innovation Lecture	North Ballroom BCD

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PLENARY SESSION	PLATFORM SESSION	POSTERS	SPECIAL SESSIONS
STUDENT/EARLY CAREER	EXHIBITS	SPECIAL EVENTS	COMMITTEE MEETINGS

Schedule At-A-Glance

FRIDAY | OCTOBER 13, 2017 *(continued)*		
11:15 am–1:00 pm	Lunch on Own	
11:30 am–1:00 pm	AEMB Annual Reception *(tickets required-affiliate event)*	123
11:30 am–1:00 pm	Women in BME Luncheon *(ticket purchase required)*	West Ballroom 301A
1:00 pm–3:00 pm	**INDUSTRY SESSION** Clinical Innovators Spotlight	125AB
1:15 pm–2:45 pm	**PLATFORM SESSIONS–FRI-2**	*18 concurrent sessions*
1:15 pm–2:15 pm	Graduate School Part II: You're in Graduate School, Now What!	124AB
1:15 pm–2:45 pm	Curricular Innovation: Highlighting Your Most Unique or Innovative Course Offerings	122C
1:15 pm–2:45 pm	International Symposium on Biomedical Engineering	122A
1:30 pm–4:30 pm	BMES-NSF Special Session on CAREER and UNSOLICITED Awards	121ABC
1:45 pm–3:15 pm	BMES Undergraduate Student Design Competition	128AB
2:45 pm–3:00 pm	BMES Careers in Industry II	124AB
2:45 pm–3:30 pm	**POSTER VIEWING WITH AUTHORS & Refreshment Break**	North 300
3:00 pm–4:00 pm	BMES Membership Committee Meeting	127C
3:00 pm–5:00 pm	**INDUSTRY SESSION** Investment Pitches and Partnering	125AB
3:30 pm–5:00 pm	**PLATFORM SESSIONS–FRI-3**	*18 concurrent sessions*
3:30 pm–5:00 pm	Symposium in Honor of Dr. and Mrs. Athanasiou	122A
3:30 pm–4:30 pm	Design Competition Judges	126A
5:15 pm–6:15 pm	**PLENARY SESSION** Diversity Plenary Lecture	North Ballroom BCD
6:30 pm–8:30 pm	University Receptions *(affiliate event)*	Sheraton Grand Phoenix
8:30 pm–10:30 pm	**BMES DESSERT BASH**	Arizona Science Center
SATURDAY | OCTOBER 14, 2017		
7:00 am–2:00 pm	Registration	Convention Center
8:00 am–9:30 am	**PLATFORM SESSIONS–SAT-1**	*17 concurrent sessions*
8:00 am–9:30 am	Undergraduate Research, Design & Leadership Orals #1	226C
8:00 am–9:30 am	BMES-NSF Special Session on Graduate Research Fellowships Program	121ABC
9:00 am–10:00 am	AEMB Public Policy Session–How to Advocate for Biomedical Research Funding *(affiliate event)*	123
9:30 am–1:30 pm	Exhibit Hall Open	North 300
9:30 am–1:00 pm	**POSTER SESSION**	North 300
9:30 am–10:15 am	**POSTER VIEWING WITH AUTHORS & Refreshment Break**	
10:30 am–1:45 am	**PLENARY SESSION** Rita Schaffer Young Investigator Lecture & Student Award Winners	North Ballroom BC
11:45 am–1:15 pm	Lunch on Own	
12:30 pm–3:30 pm	BMES Board of Directors Meeting	126BC
1:30 pm–3:00 pm	**PLATFORM SESSIONS–SAT-2**	*17 concurrent sessions*
1:30 pm–3:00 pm	Undergraduate Research, Design & Leadership Orals #2	226C
3:15 pm–4:45 pm	**PLATFORM SESSION–SAT-3**	*11 concurrent sessions*
3:15 pm–4:45 pm	Undergraduate Research, Design & Leadership Orals #3	226C

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PLENARY SESSION	**PLATFORM SESSION**	**POSTERS**	**SPECIAL SESSIONS**
STUDENT/EARLY CAREER	**EXHIBITS**	**SPECIAL EVENTS**	**COMMITTEE MEETINGS**