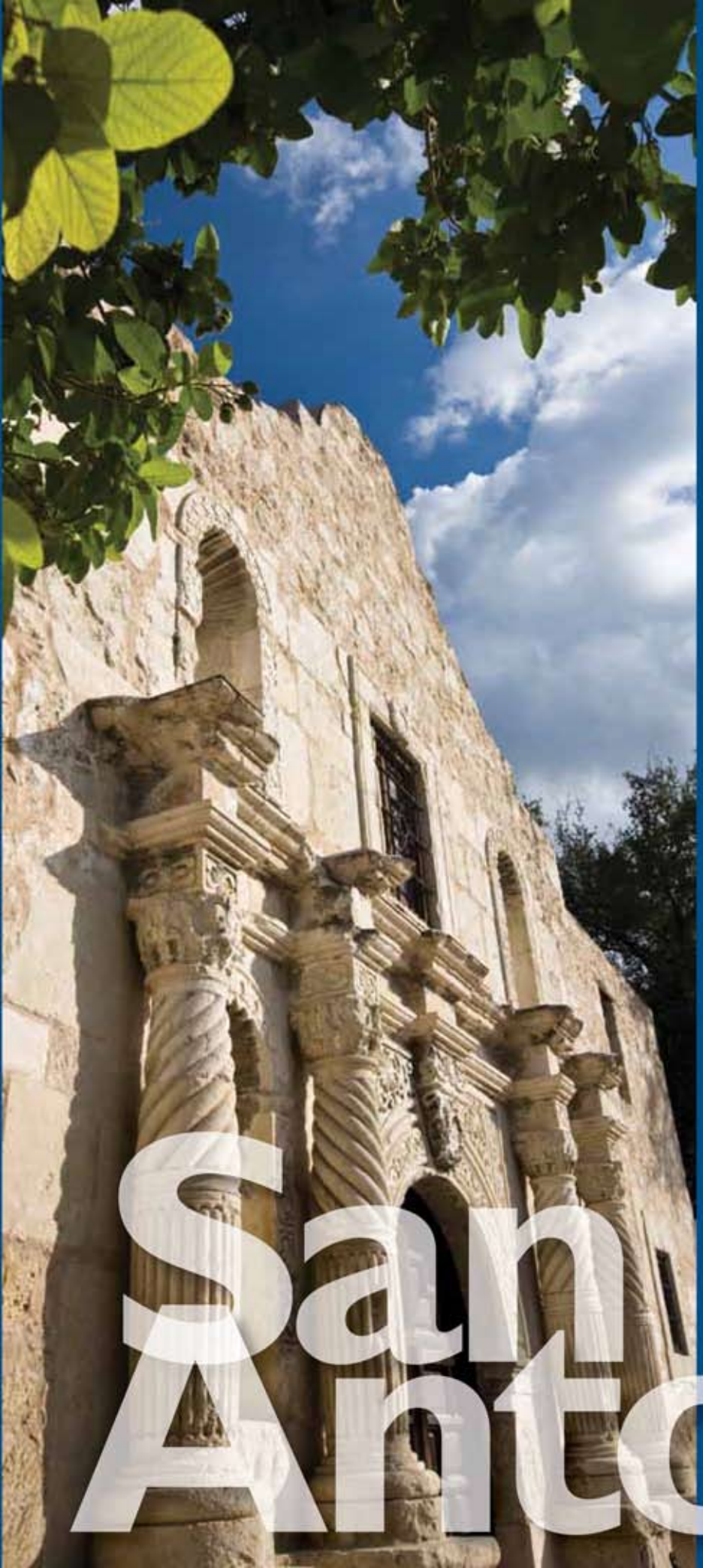

BMES

BIOMEDICAL ENGINEERING SOCIETY™
Advancing Human Health and Well Being™

2014 Annual Meeting

October 22–25, 2014

Bioengineering Innovations to Catalyze Affordable Health Care

Henry B. Gonzalez Convention Center
San Antonio, Texas

San Antonio

BMES

BIOMEDICAL ENGINEERING SOCIETY

Advancing Human Health and Well Being

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October 7-10, 2015
Tampa, Florida

October 5-8, 2016
Minneapolis, Minnesota

October 11-14, 2017
Phoenix, Arizona

October 17-20, 2018
Atlanta, Georgia

October 16-19, 2019
Philadelphia, Pennsylvania

October 14-17, 2020
San Diego, California

October 6-9, 2021
Orlando, Florida

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Available at http://submissions.miracd.com/bmes2014/itinerary

Copies also available at the registration desk.

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Thank you to our other supporters:

Grants have been provided by the National Institute of Biomedical Imaging and Bioengineering and the National Science Foundation for the BMES 2014 Annual Meeting.

NSF

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Gilda A. Barabino, PhD

BMES President

Dean, Grove School of Engineering
The City College of New York

WELCOME TO THE 2014 ANNUAL MEETING of the Biomedical Engineering Society! Our Annual Meeting is the premier event for the Society and the field of biomedical engineering. This year's theme, "Bioengineering Innovations to Catalyze Affordable Health Care," encompasses the breadth of research and education biomedical engineers are involved in toward advancing human health and well being. I urge you to take full advantage of the excellent technical program, plenaries, special events and myriad opportunities for professional development and networking.

The President's Address on the State of the Society will be given at the plenary on Thursday morning and will provide attendees the opportunity to learn about future directions for the Society including new initiatives enabled by our generous $1 million gift from the Coulter Foundation announced at last year's meeting.

BMES 2014 marks the continuation of long-standing traditions and newly established programs to illuminate innovations, recognize achievements, celebrate diversity and develop future biomedical engineers. Coulter College, a training program focused on the translation of biomedical innovations, is partnering with BMES for the third consecutive year. During Coulter College teams participate in a two-and-a-half day workshop focusing on preparing students for translational work.

Capitalizing on the success of the last two year's sessions dedicated to health disparities, this year's session, "Diversity, Health Disparities and Affordable Healthcare" offers to help better inform the broader BME community about health disparities and inequities—and the role biomedical engineers can play in combating them. The session will provide a context for examining health disparities in translational research and discuss historical examples of differential medical treatment and civil rights infringements based on race and ethnicity. Emphasis will be placed on achieving enhanced and affordable healthcare through engineering technologies. BMES 2014 marks the third year of our partnership with NIH NIBIB to deliver the NIBIB Lecture and the DEBUT Awards and our second year of partnering with NSF. This year's BMES-NSF session, "Research in Biomedical Engineering and Grant Writing" 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 grant applications).

Our three Special Interest Groups: Cellular and Molecular Bioengineering (CMBE), Medical Devices, and Advanced BioManufacturing (ABioM) will all hold business meetings during the conference. The Medical Devices SIG will conduct a Thursday afternoon Plenary session entitled "Computational Modeling and Simulation for Medical Devices" and the ABioM will convene a special session on Saturday morning on "Advanced Biomanufacturing: Application towards the Next Generation Therapies and Diagnostics." Formal and informal career development opportunities are abundant throughout the meeting starting with a slate of student and early career sessions on career pathways available Thursday and Friday.

We are now over 7,000 members strong and the involvement of our members at the meeting and throughout the year enables us to continue our unprecedented growth and development. Special thanks are due to Conference Chair, John A. White, and Program Chair, Susan Margulies, BMES Staff, NSF, NIH, Coulter Foundation, our sponsors and our meeting attendees. My very best wishes to you for an enjoyable and productive meeting!

Gilda A. Barabino, PhD
BMES President

BMES 2014 MEETING WELCOME

John A. White, PhD

Annual Meeting Chair, BMES 2014 Annual Meeting

USTAR Professor of Bioengineering
University of Utah

WELCOME TO THE 2014 ANNUAL MEETING of the Biomedical Engineering Society. We are excited to host you, for the first time, in San Antonio, one of the most vibrant and fastest-growing cities in the United States. Our goal is that you learn a great deal, network with your colleagues, and have a great time.

This is the second year that the meeting has been hosted and managed professionally, rather than by a university host. As the meeting has grown in size and impact, the wisdom of this new management model has become increasingly apparent. The logistics and fund-raising have run quite smoothly, mainly due to the efforts of the superb BMES staff, including Meetings Director Debby Tucker, Executive Director Ed Schilling, and Communications Director Doug Beizer.

At the heart of our Annual Meeting is the program. We have been extraordinarily fortunate this year to have Dr. Susan Margulies (University of Pennsylvania) as Program Chair. Susan's dedication to the Society, attention to detail, work ethic, and interpersonal skills are second to none. We received valuable advice at every stage of program planning from our Senior Advisory Board: Dr. Mauli Agrawal, UTSA; Dr. Peter Katona, George Mason University; Dr. John Linehan, Northwestern University; Dr. Kenneth Lutchen, Boston University; Dr. Rebecca Richards-Kortum, Rice University; and Dr. Paul Yock, Stanford University. I also wish to thank the 2014 Track Chairs. They met a number of challenges and deadlines with promptness, efficiency, and good humor.

This year's meeting has some new twists. To improve the experience and recognition of poster presenters, we have added dedicated morning and afternoon sessions for each poster presenter, as well as session chairs for poster sessions. We have also added poster awards, based on reviewers' scores.

I strongly encourage you attend each of our excellent plenary talks. Let me highlight two fantastic speakers whose identities have already been determined. Our Pritzker Distinguished Lecturer is James Collins of Boston University, a founder of the field of synthetic biology. Our plenary speaker on Friday afternoon is Stephen Oesterle, Senior Vice President for Medicine & Technology at Medtronic, who will share his knowledge about how engineering innovation improves the cost and quality of health care.

Finally, take some time to enjoy friendly San Antonio. Our venue is right next to the San Antonio Riverwalk, a cool oasis of restaurants, bars, and shops. The Bash this year will be held at the nearby, unique, and unforgettable Buckhorn Saloon and Museum / Texas Rangers Museum.

Enjoy the meeting!

John A. White, PhD
Annual Meeting Chair

Susan Margulies, PhD

Program Chair, BMES 2014 Annual Meeting

George H. Stephenson Professor
Department of Bioengineering
University of Pennsylvania

WELCOME TO THE 2014 BMES MEETING! Together with our 42 track chairs who represent a diverse set of BMES members from industry and academia, we have introduced many initiatives this year to enhance the quality of the science presented, value of the meeting to attendees and presenters, and engagement of the BMES membership in the planning and execution of the meeting. We welcome your feedback on these features.

The Chairs of our nineteen traditional tracks overhauled and updated the abstract submission topics, informed by the 86 suggestions submitted by BMES members for state-of-the art and interdisciplinary sessions. We are also grateful for the tireless effort of over 300 BMES members who volunteered to review and/or chair oral and poster sessions, actively partnering with the track chairs, John White and myself to improve and expand BMES 2014. With over 2274 abstracts submitted to the general program, and 385 abstract submitted to the undergraduate research program BMES 2014 is one of our largest meetings to date!

This year we have a record-breaking 861 oral presentations in 161 platform sessions, and 1635 posters!

To help attendees find the most relevant science at the meeting, the program now includes secondary track designations to guide attendees to related scientific sessions across all of our traditional tracks. Similarly, the posters are now arranged by scientific theme, to allow viewers to locate all the posters on a topic in a single location, regardless of the track. Be sure to consult the color-coded poster session maps in the program to guide your exploration of the posters.

To expand the scientific exchange in the poster sessions, posters are now up for the entire day, with two dedicated, unopposed opportunities to talk with the authors. This year, we have introduced poster session chairs who will attend both viewing sessions, and lead walk-about discussions of the posters. To recognize the outstanding science presented in our poster sessions, we have introduced the Reviewer's Choice awards, awarded to those posters deemed of the highest quality in each track (top 5%) by the reviewers.

We encourage you to attend the many special events at the meeting, including plenary lectures, student activities, career development presentations, networking events, informational sessions about federal funding opportunities, cutting edge education technology presentations, featured speakers on our meeting theme, and dedicated special scientific presentation sessions organized by the BMES special interest groups (SIGs). Refer to the Program-at-a-Glance to find those events that are of interest to you.

John White and I are deeply grateful to the tireless effort of Debby Tucker and Michele Ciapa who work long hours to transform the meeting from a concept to a reality. Ed Schilling the BMES National Meetings Committee, and the BMES leadership have been very supportive of our many new features at this meeting. We extend our sincere appreciation to our Track Chairs who contributed their time, effort, and creativity to design an engaging and inclusive program. Finally, I am especially grateful to John White for his personal and professional partnership on the many programming aspects of BMES 2014.

It has been my pleasure and privilege to introduce many innovations this year at BMES 2014 – please stop me at the meeting or contact me with your feedback!

Susan Margulies, PhD
Program Chair, BMES 2014 Annual Meeting

BMES ROBERT A. PRITZKER DISTINGUISHED LECTURE

Pritzker Distinguished Lecturer:

James J. Collins, PhD

Howard Hughes Medical Institute Department of Biomedical Engineering & Center of Synthetic Biology, Boston University

Wyss Institute for Biologically Inspired Engineering, Harvard University

THURSDAY, OCTOBER 23, 2014
10:30AM
LILA COCKRELL THEATRE,
HENRY B. GONZALES CONVENTION CENTER

Life Redesigned: The Emergence of Synthetic Biology

SYNTHETIC BIOLOGY IS BRINGING TOGETHER engineers, physicists and biologists to model, design and construct biological circuits out of proteins, genes and other bits of DNA, and to use these circuits to rewire and reprogram organisms. These re-engineered organisms are going to change our lives in the coming years, leading to cheaper drugs, rapid diagnostic tests, and targeted therapies to attack "superbugs". In this talk, we highlight recent efforts to create synthetic gene networks and programmable cells, and discuss a variety of synthetic biology applications in biocomputing, biotechnology and biomedicine.

James J. Collins is a William F. Warren Distinguished Professor, University Professor, Professor of Biomedical Engineering, Professor of Medicine and Director of the Center of Synthetic Biology at Boston University. He is also a core founding faculty member of the Wyss Institute for Biologically Inspired Engineering at Harvard University, and an Investigator of the Howard Hughes Medical Institute. His research group works in synthetic biology and systems biology, with a particular focus on using network biology approaches to study antibiotic action, bacterial defense mechanisms, and the emergence of resistance. Professor Collins' patented technologies have been licensed by over 25 biotech, pharma and medical devices companies, and he has helped to launch a number of companies, including Sample6 Technologies, Synlogic and EnBiotix. He has received numerous awards and honors, including a Rhodes Scholarship, a MacArthur "Genius" Award, an NIH Director's Pioneer Award, a Sanofi-Institut Pasteur Award, as well as several teaching awards. Professor Collins is an elected member of the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine, and the American Academy of Arts & Sciences, and a charter fellow of the National Academy of Inventors.

BMES Special Interest Group: Medical Devices – Computational Modeling and Simulation for Medical Devices

THURSDAY OCTOBER 23, 2014
6:15PM - 7:30PM
LILA COCKRELL THEATRE
HENRY B. GONZALES

Computer Modeling and Simulation for Medical Devices

THE BMES MEDICAL DEVICE Special Interest Group was formed in 2014 as a forum for medical device biomedical engineering interests. The initial focus, Computational Modeling and Simulation for Medical Devices, brings together people from the medical device and simulation software industries and academic, clinical and other researchers to share scientific findings. Today, there are limited models that are shared publically therefore limited common understanding of simulation results and discussion of their interpretation. We aim to provide a symposium for modeling and simulation for medical devices to promote best methods, identify credible boundary and system conditions, share interpretation of simulation results, and encourage future discovery. We focus on applications of modeling and simulation that advance the design, evaluation and production of medical devices. This Special Session at the BMES Annual Meeting will introduce the Medical Devices SIG and explore how modeling and simulation can play a role in:

- ensuring the safety and effectiveness of medical devices,
- speeding the translation of academic models to clinical application,
- improving the regulatory evaluation process providing credible methods to evaluate medical devices.

SESSION CHAIR:

Walt Baxter, Medtronic Co-Chair, BMES-FDA Frontiers in Medical Devices Conference

SPEAKERS:

Modeling and Simulation for Medical Devices: An FDA Perspective

Donna Lochner, FDA Co-Chair, BMES-FDA Frontiers in Medical Devices Conference

Translation of Modeling & Simulation Tools from Research to R&D/Clinical Applications

Anthony Petrella, Colorado School of Mines

Use of Computational Modeling in the Development of Aortic Stent Grafts and Early Clinical Feasibility Studies

Ben Wolf, Medtronic, Endovascular Therapies

Ensuring Models and Simulations are Credibility for Regulatory Decision Making

Tina Morrison, FDA

SPONSORED BY Medtronic

NIH NIBIB LECTURE

NIH National Institute of Biomedical Imaging and Bioengineering Lecture:

David Kaplan, PhD

Stern Family Professor of Engineering
Professor and Chair, Department of Biomedical Engineering
Professor, Department of Chemical Engineering
Director, Bioengineering and Biotechnology Center, Tufts University

FRIDAY, OCTOBER 24, 2014
10:30AM
LILA COCKRELL THEATRE
HENRY B. GONZALES CONVENTION CENTER

Silk Biomaterials – The New Silk Road

THE FIELD OF BIOMATERIALS AND TISSUE ENGINEERING has emerged in terms of scientific and translational impact over the past few decades by embracing intersections between engineering, materials science, biology and medicine. We have focused our efforts on biopolymer engineering to understand structure-function relationships, with studies on self-assembly, biomaterials engineering, tissue engineering and regenerative medicine. Structural proteins, including collagens, elastins, resilins and silks have been our focus, with a particular emphasis on the study of silk-based biomaterials in regenerative medicine, from fundamental studies of the biochemistry, molecular biology and biophysical features of these fibrous proteins to their impact on stem cell functions and complex tissue formation. Tissue engineering and regenerative medicine emerge though control of biomaterials structure-function relationships and 3D tissue co-culture systems to establish and study human tissues in the laboratory and in animal systems.

David Kaplan is a biomedical engineer who has studied biomaterials for his entire career. His group focuses on biopolymers and their engineering for new biomaterials, covering fundamental questions to translational goals. He is the inaugural endowed Stern Professor of Engineering and has been chair of the Department of Biomedical Engineering since its founding in 2002. His B.S. was from SUNY Albany and his PhD from SUNY Syracuse and Syracuse University. His group has published over 600 peer reviewed papers, and generated more than 50 patents that have led to seven startup companies and new FDA approved medical devices.

He has directed the NIH P41 Tissue Engineering Resource Center (TERC) since 2004, a program involving Tufts University and Columbia University. He serves on the editorial boards of numerous journals and is the inaugural Editor in Chief of ACS Biomaterials Science and Engineering. He has received a number of awards for teaching, was Elected Fellow of the American Institute of Medical and Biological Engineering, received the Columbus Discovery Medal and the Society for Biomaterials Clemson Award for contributions to the literature.

Professor Kaplan also holds faculty appointments in the School of Medicine, the School of Dental Medicine, the Department of Chemistry and the Department of Chemical and Biological Engineering at Tufts University. He also has a university professor appointment at Soochow University in China and fosters joint research between institutions. He has an extensive network of collaborators around the world that providing complementary expertise and opportunities for synergistic studies and student exchanges.

Stephen Oesterle, MD

Senior Vice President for Medicine & Technology
Medtronic

FRIDAY, OCTOBER 24, 2014
5:15PM - 6:15PM
LILA COCKRELL THEATRE
HENRY B. GONZALES CONVENTION CENTER

Converging Low Power Microelectronics, IT and Communication Technologies into Implantable Medical Devices

MEDTRONIC IS ONE OF THE WORLD'S largest medical device companies. With more than 50,000 employees, it operates in 140 countries, delivering medical products to more than 10 million people each year. Medtronic must continue to innovate while delivering effective products for less cost. The challenge of developing medical devices for the more than 4 billion people who today have no access to care is immediate. The incorporation of low power and flexible microelectronics into implantable medical devices has substantially broadened applications for these devices while allowing for less invasive delivery and reduced complications. Cardiac pacemakers have been reduced in dimension by magnitudes; the potential to deliver a wafer scale pacemaker will soon be realized. Implantable and wearable physiologic sensors will facilitate remote management of the devices and the patients who use them. Convergence of information and communication technologies into medical devices will catalyze Medtronic's vision to distribute health care to billions of patients who have minimal access to affordable care. Chronic diseases such as heart failure, diabetes and hypertension can be better managed with implanted and wearable microelectronics and adaptive closed loop algorithms. It all starts and ends with engineers.

Stephen N. Oesterle, MD joined the company in 2002 as Senior Vice President for Medicine and Technology. In this role, Steve provides executive leadership for Medtronic scientific research, formation of technological strategies and continued development of strong cooperative relationships with the world's medicinal communities, technical universities, financial institutions and emerging medical device companies.

Previously, Steve served as Associate Professor of Medicine at the Harvard University Medical School and as Director of Invasive Cardiology Services at Massachusetts General Hospital, Boston. A teacher and innovator in the field of cardiac catheterization, he has also developed and directed interventional cardiology programs at Good Samaritan Hospital, Los Angeles; at Georgetown University; and at Stanford University.

Steve is a 1973 *summa cum laude* graduate of Harvard College and received his doctorate from Yale University in 1977. He completed his internship and residency at Massachusetts General Hospital and also served a fellowship in interventional cardiology at Stanford.

RITA SCHAFFER MEMORIAL LECTURE

BMES 2014 Rita Schaffer Memorial - Young Investigator Lecturer:

Kimberly M. Stroka, PhD

Postdoctoral Fellow in the Konstantopoulos Lab
Johns Hopkins University

SATURDAY, OCTOBER 25, 2014
10:30AM
LILA COCKRELL THEATRE
HENRY B. GONZALES CONVENTION CENTER

New Paradigms for Cell Migration in Confined Microenvironments

CELL HOMEOSTASIS AND DIVERSE processes, including migration, are tightly regulated by cell volume. *In vivo*, metastatic tumor cells must navigate complex, heterogeneous microenvironments when migrating through tissues, including longitudinal tracks formed by anatomic structures. Intriguingly, we have discovered that the classical model of cell migration on two-dimensional substrates (relying on actin polymerization, cell adhesion to the substrate, and myosin II-mediated contractility) does not apply to metastatic tumor cells migrating through three-dimensional confined spaces. We therefore hypothesized that an alternate mechanism based on cell volume regulation via ion channels and aquaporins drives cell migration in these confined microenvironments, where cells must deform in order to squeeze through physically restrictive spaces. Using a multidisciplinary approach that integrates microfabrication techniques, molecular biology, live cell imaging, and theoretical modeling based on physics, we have discovered an "Osmotic Engine Model" of cell migration, which demonstrates that osmotically-driven water flow regulates cell migration in confined microenvironments. Importantly, our theoretical model predicts many key non-intuitive experimental results. Collectively, this study represents a new paradigm for cell migration in confined microenvironments and elucidates ion pumps and aquaporins as new molecular targets that may be exploited for future development of cancer therapeutics.

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.

KIMBERLY M. STROKA is a postdoctoral fellow at Johns Hopkins University in the Department of Chemical and Biomolecular Engineering and Institute for NanoBioTechnology. In January 2015 she will begin her appointment as Assistant Professor at the University of Maryland, College Park in the Fischell Department of Bioengineering. Dr. Stroka received her B.S. *summa cum laude* in Physics in 2006 from Denison University. She received her Ph.D. in Bioengineering in 2011 from the University of Maryland-College Park while working with Helim Aranda-Espinoza. In her PhD work, Dr. Stroka developed a novel hydrogel-based in vitro model in order to evaluate the effects of blood vessel stiffening on endothelial cell biomechanics, leukocyte mechanosensing, and leukocyte transmigration, during a normal immune response and in the context of cardiovascular disease. In Dr. Stroka's postdoctoral work in the lab of Konstantinos Konstantopoulos, she has integrated microfabrication, molecular biology, live cell imaging, and theoretical modeling in order to uncover a new mechanism by which metastatic tumor cells migrate through confined microenvironments. This work was recently published in *Cell*.

Dr. Stroka's postdoctoral and predoctoral work has been supported by numerous highly competitive fellowships, including an NIH NRSA F32 postdoctoral fellowship (2013-present), NIH T32 postdoctoral fellowship (2012-2013), NIH NRSA F31 predoctoral fellowship (2010-2011), and NSF Graduate Research Fellowship (2006-2009). Dr. Stroka was also recently awarded the Burroughs Wellcome Career Award at the Scientific Interface (2014-2019) for her proposal on engineering blood-brain barrier mechanobiology in the context of tumor cell metastasis. She is the recipient of 9 different awards for travel to national and international conferences (2008-2011).

Diversity Lecture:

Naomi Chesler, PhD

Vice Chair of Biomedical Engineering
University of Wisconsin-Madison

SATURDAY, OCTOBER 25, 2014
11:15AM
LILA COCKRELL THEATRE
HENRY B. GONZALES CONVENTION CENTER

The Power of Privilege – Using Our Strengths to Overcome Our Weaknesses in Diversity and Inclusivity

THE CURRENT POOL of biomedical engineers is not diverse enough to solve the complex health and medical technology problems facing our society today. In the undergraduate experience, being part of a diverse classroom and community leads to increased student engagement in learning and greater gains in critical thinking, problem solving and self-confidence. Also, motivation to consider multiple perspectives, which is an important skill in teamwork, increases with diversity, as does productivity and innovation. Therefore, increasing the diversity of our discipline will have concrete and significant benefits for the current and future biomedical engineering workforce.

Often, the most visible and vocal proponents of increased diversity and inclusivity are members of under-represented groups. While biomedical engineering has a higher percentage of women than almost any other engineering discipline, most senior leaders in biomedical engineering both in industry and academia are members of the majority. Thus, in order to improve and enhance the diversity and inclusivity of our discipline, I propose we use these strengths – our many majority members – and their privilege. In particular, I challenge our community to use the power of privilege to promote inclusive excellence and thereby improve critical thinking and problem-solving, teamwork and innovation in biomedical engineering.

NAOMI C. CHESLER IS PROFESSOR and Vice Chair of Biomedical Engineering at the University of Wisconsin-Madison. Her research accomplishments are in the areas of cardiovascular biomechanics and engineering education. Her broad contributions to the physical, biological and social sciences have been recognized by courtesy appointments in the Departments of Mechanical Engineering, Medicine, Pediatrics and Educational Psychology at UW-Madison. One key foundation for this wide-ranging impact was her liberal arts education from Swarthmore College, where she earned a BS in engineering (general). She then obtained an MS in Mechanical Engineering from MIT and a PhD in Medical Engineering from the Harvard-MIT joint program in Health Sciences and Technology.

Dr. Chesler's biomechanics research seeks to improve cardiovascular health through the integration of mechanical engineering, vascular biology and imaging tools, to advance knowledge in these fields, and to educate the next generation of leaders in cardiovascular engineering and science. In particular, her lab (vtb.bme.wisc.edu) strives to better understand and prevent ventricular failure by focusing on three aspects of physiology and pathophysiology: ventricular function, blood flow dynamics, and changes in the large and small artery structure and function. She publishes her findings in this area regularly in biomedical and mechanical engineering journals as well as physiology journals and is a recipient of the NSF CAREER Award and funding from the Whitaker Foundation, the American Heart Association and the NIH both independently and collaboratively.

Dr. Chesler also investigates mentoring and curricular change strategies for improving the recruitment and retention of women and underrepresented minorities in engineering. Her scholarly contributions in this area have been published in the Journal of Engineering Education, *Journal of Women and Minorities in Science and Engineering*, *Advances in Engineering Education* and also the BMES flagship journal *Annals of Biomedical Engineering*. She is an integral part of the Epistemic Games Group at UW-Madison (edgaps.org), which is funded by the NSF to design and implement engineering epistemic games for first-year curricula with integrated mentoring and assessment.

She is a Fulbright Scholar, fellow of the American Society of Mechanical Engineers and prior recipient of the Denice D. Denton Emerging Leader Award from the Anita Borg Institute for Women and Computing. She was recently named a Vilas Distinguished Achievement Professor at UW-Madison and is honored to receive the BMES Diversity Award.

BMES
BIOMEDICAL ENGINEERING SOCIETY

BMES Medical Devices
SPECIAL INTEREST GROUP

Frontiers in Medical Devices Conference

Innovations in Modeling and Simulation

Using Modeling and Simulation at Different Stages in the Total Product Life Cycle

May 18-20, 2015
Washington DC

The College Park Marriott Hotel and Conference Center at the University of Maryland

The Biomedical Engineering Society and the US Food and Drug Administration have formed a partnership to co-host the BMES/FDA Frontiers in Medical Devices Conference, a meeting for researchers, engineers, clinicians and other professionals in the fields of designing, building and using medical devices.

A Call for Abstracts is Open!

Papers, presentations and posters highlighting the meeting's theme "Using Modeling and Simulation at Different Stages in the Total Product Life Cycle" are being sought.

www.bmes.org/meddevicesabstracts

Keynote Speakers

Dr. Marco Viceconti, Executive Director of the INSIGNEO institute for in silico medicine and Chair of Biomechanics in the Department of Mechanical Engineering at the University of Sheffield.

Dr. Scott Hollister, Professor of Biomedical Engineering and Mechanical Engineering and Associate Professor of Surgery at the University of Michigan.

Conference Tracks

Model Foundations for Device Design Ideation
Neils Kuster, IT'IS Foundation

Concept Development and Design Optimization
Art Erdman, University of Minnesota

Modeling for Robust Design
Thor Bezier, University of Auckland

Design Verification and Validation
Anita Bestelmeyer, Becton, Dickinson and Company

Patient Specific Design
Matthew Debeule, FEops

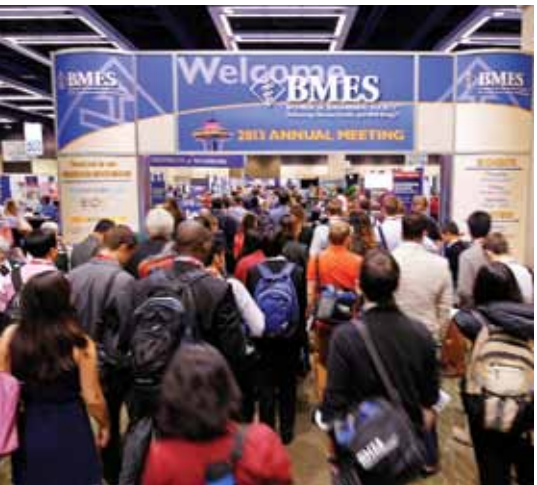
Discussion Panel: How Good is Good Enough?
Tina Morrison, US Food and Drug Administration

Integration of Modeling with Clinical Studies
Tarek Haddad, Medtronic, Inc.

Modeling and Device Commercialization
Charley Taylor, HeartFlow

Please visit www.bmes.org/meddevicessig for additional information about the meeting.

EXHIBITS



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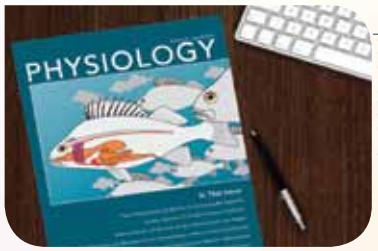

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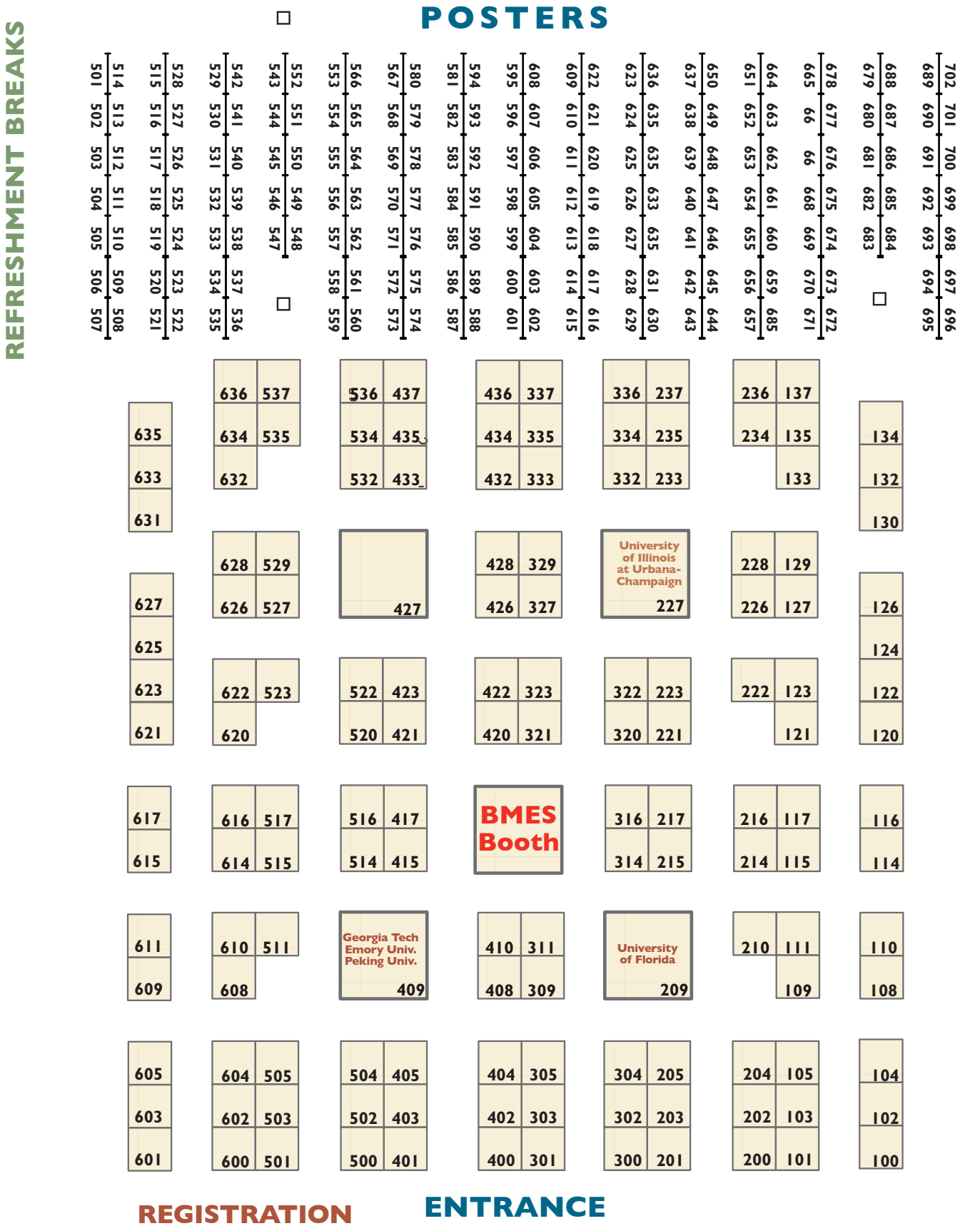
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Web: engineering.asu.edu/sbhse

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DEPARTMENT OF BIOENGINEERING

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The Boston University 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, neural engineering, biomedical optics, respiratory dynamics, tissue engineering, biomaterials and synthetic biology. We boast a wealth of research resources, and have strong ties with the BU School of Medicine, and other top medical research centers in the Boston area.

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CENTER FOR BIOMEDICAL ENGINEERING

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The Center for Biomedical Engineering at Brown University features an interdisciplinary approach in four complementary research areas: Neuroengineering, biosensors/bioplatforms, mechanobiology, and tissue engineering/regenerative medicine. 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.

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DEPARTMENT OF BIOMEDICAL ENGINEERING

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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.

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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.

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Clemson University

DEPARTMENT OF BIOENGINEERING

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The Department of Biomedical Engineering at Columbia University offers biomedical engineering education and research through undergraduate B.S. to 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.

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DEPARTMENT OF BIOMEDICAL ENGINEERING

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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 Department has a close relationship with Weill Cornell Medical College and its associated hospitals in New York City, including an "Immersion Term" during which all Ph.D. students spend 7 weeks in a clinical experience at the Medical College. 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 Finger Lakes Region of upstate New York. A new Engineering campus is opening in New York City located on a site less than 20 minutes from the Medical College which will catalyze further growth in the Department's interactions with the Medical College and hospitals. The Biomedical Engineering Department has close collaborations with a wide variety of other departments in Ithaca, especially with those in the Colleges of Engineering, Veterinary Medicine, Agriculture and Life Sciences, Arts and Sciences, and Human Ecology

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BIOMEDICAL ENGINEERING DEPARTMENT

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The Coulter Foundation endowed Department of Biomedical Engineering at Florida International University in Miami is the only program with doctoral, masters and accredited bachelors among all of the public universities in the State of Florida and amongst the Hispanic and Minority serving universities in the nation. Multiple undergraduate and graduate scholarships support research and entrepreneurship. Senior Design projects are extensively industry sponsored and the MS professional track includes courses in management. New faculty hires, revised doctoral curriculum and extensive links with the Colleges of Medicine, Nursing & Health Sciences and Arts & Sciences allow research focus in Engineered Tissue Model Systems, Diagnostic Bioimaging and Sensor Systems, and Therapeutic and Reparative Neurotechnology.

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DEPARTMENT OF BIOENGINEERING

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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 earned accreditation from ABET in 2012 offers two concentrations: Biomedical Signals & Systems and Bioengineering Healthcare Informatics. The Bioengineering PhD program will begin in January 2015 and is currently accepting applications from outstanding prospective students. The department has 12 primary faculty members with $6.4M of active research in areas ranging from biomedical imaging, nanotechnology, neural engineering, and data-driven biomechanics.

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SCHOOL OF ENGINEERING & APPLIED SCIENCES

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The Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech / Emory University & Peking University

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The Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech and Emory University is inventing the future of healthcare, with breakthrough research in Pediatric Bioengineering, Immunoengineering, Neuroengineering and Cardiovascular engineering. Our programs are consistently ranked among the highest in the nation. BME at Georgia Tech and Emory University is home to five NIH training grants and innovative initiatives that build entrepreneurial confidence in our students. Unique to Georgia Tech and Emory is the BioID Master's program, which focuses on real world training in product development and clinical experience to transform unmet biomedical and clinical needs into practical, usable technologies and products. With world class faculty and new initiatives in research and learning, BME at Georgia Tech/Emory is the go-to place for all those who want to actively shape the world and invent the future of health care!

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Westborough, MA 01581
Phone: 508-768-6400
Email: Thomas.Guenette@malvern.com
Web: www.malvern.com

Malvern supports better characterization/control of proteins/ macromolecules. Charge, size, mass, molecular weight, polydispersity are critical parameters, measured using: Zetasizer, dynamic/static light scattering for size, molecular weight, protein charge; NanoSight Nanoparticle Tracking Analysis, particle-by-particle characterization; Viscotek SEC, molecular weight/ structure; Sysmex FPIA-3000, size/shape analysis of aggregates/ subvisible particles; Viscosizer 200, particle size, concentration, formulation viscosity.

BOOTH # **433**

Marquette University

P.O. Box 1881
Milwaukee, WI 53201
Phone: 414-288-6059
Email: jay.goldberg@mu.edu
Web: www.mu.edu

Healthcare Technologies Management Program (Marquette University and the Medical College of Wisconsin): Unique graduate curriculum combines business, technology, and healthcare to prepare engineers for management positions with medical device companies, hospitals, and healthcare consulting firms. Full time students can earn the MS degree in Healthcare Technologies Management in one year. The graduate program in biomedical engineering at Marquette University offers MS, ME, and PhD degrees in Biomedical Engineering. Research opportunities are available in areas such as rehabilitation engineering, neurosystems, cardiovascular and pulmonary medicine, imaging, biomechanics, orthopedics, and others. The program is recognized for strong industry ties and research collaborations with the Medical College of Wisconsin, Froedtert Hospital, Children's Hospital of Wisconsin, Zablocki VA Medical Center, and Shriner's Hospital (Chicago).

BOOTH # **309**

Mayo Graduate School

BIOMEDICAL ENGINEERING & PHYSIOLOGY

Mayo Clinic Rochester
200 First Street, SW, SMH J04-184
Rochester, MN 55905
Phone: 507-255-8544
Email: kingsleyberg.shirley@mayo.edu
Web: www.mayo.edu/,gs/programs/phd/biomedical-engineering

The Mayo Graduate School, part of the Mayo Clinic, offers a graduate program leading to the Ph.D. and M.D./Ph.D. with an educational background and laboratory experience that prepares them for careers as independent research investigators. The Graduate Program in Biomedical Engineering & Physiology has a long, rich history at Mayo with a tradition of translational research that spans interdisciplinary boundaries and routinely connects the engineering and physical sciences to the biological sciences and clinical practice. The Graduate Program in Biomedical Engineering & Physiology offers a wide range of research opportunities from basic discovery science to clinical research. Students are provided the necessary quantitative tools to become leaders in diverse fields of biomedical sciences.

BOOTH # **117**

McGill University

DEPARTMENT OF BIOENGINEERING

817 Sherbrooke Street West, Room 270
Montreal, Quebec H3A 0C3 Canada
Phone: 514-398-7138
Email: adminoffice.bioeng@mcgill.ca
Web: www.mcgill.ca/bioengineering

McGill University is a leading research-intensive academic institution in Canada. The Department of Bioengineering (Faculty of Engineering) aims to maintain McGill's international reputation of excellence in research and teaching. The Department has a graduate program co-administered with the Department of Biomedical Engineering (Faculty of Medicine) and is developing an undergraduate program.

BOOTH # **422**

Morgan & Claypool Publishers

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Morgan & Claypool is a leading digital publisher of books in biomedical and tissue engineering. All titles are brief, focused treatments of core topics in teaching and research, perfect for beginning or advanced students, practicing researchers, and faculty. Stop by our booth and talk to us about getting access to our online collection, or about becoming an author. Visit us online at www.morganclaypool.com/r/bme.

BOOTH # **226**

National Institute of Biomedical Imaging and Bioengineering

31 Center Drive, Room 1C14
Bethesda, MD 20892
Phone: 301-496-9208
Email: coneyjohnsons@mail.nih.gov
Web: http://www.nibib.nih.gov

The mission of the National Institute of Biomedical Imaging and Bioengineering (NIBIB) is to improve human health by leading the development and accelerating the application of biomedical technologies. The Institute is committed to integrating the physical and engineering sciences with the life sciences to advance basic research and medical care. Stories of exciting research breakthroughs are told through video and web content at www.nibib.nih.gov. In addition to funding research, NIBIB supports a broad range of training programs from undergraduate to post-doctoral students. These programs are designed to support researchers throughout the career continuum, increase the number of clinician-scientists, and enhance the participation of underrepresented populations in biomedical imaging and bioengineering research.

BOOTH # **123**

New Jersey Institute of Technology

DEPARTMENT OF BIOMEDICAL ENGINEERING

Fenster Hall – 6th Floor
323 Dr. Martin Luther King Blvd.
Newark, NJ 07102
Phone: 973-596-5268
Email: treena.arinzeh@njit.edu
Web: http://biomedical.njit.edu/academics/index.php

Biomedical engineering is the youngest engineering department at the New Jersey Institute of Technology (NJIT) and offers bachelor's, master's and doctoral degrees. The program has grown rapidly and today NJIT is among the top producers of biomedical engineering degrees in the region. In addition to the bachelor's program, the graduate programs are also a significant part of the department's total educational offerings. NJIT's master's program is the second largest nationally. Our doctoral program was ranked by the National Research Council 26th out of 76 nationally in curriculum quality and student accomplishment. We have a strong research program with expertise in neural and neuromuscular engineering, and tissue engineering/regenerative medicine.

BOOTH # **115**

The New York Times

613 South Avenue
Weston, MA 02493
Phone: 781-890-2661
Email: kelly@ontheavenuemarketing.com
Web: www.nytimes.com

BOOTH # **632**

North Carolina A&T State University

CHEMICAL, BIOLOGICAL AND BIOENGINEERING DEPARTMENT

1601 E. Market Street
McNair Hall 341
Greensboro, NC 27411
Phone: 336-285-2653
Email: sbknisle@ncat.edu
Web: http://www.ncat.edu/academics/schools-colleges1/coe/cbbe/index.html

NC A&T's Bioengineering BS and MS degree programs, the first at an HBCU, prepare students to address problems at the forefront of biomedical engineering through education and advanced research. Programs emphasize the bioengineering practice and research in biomaterials, biomechanics, tissue engineering and biosensors with musculoskeletal, drug delivery and cardiovascular applications.

BOOTH # **404**

Northwestern University

2145 Sheridan Road
Evanston, IL 60026
Phone: 847-467-2369
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, 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.

BOOTH # **236**

The Ohio State University

DEPARTMENT OF BIOMEDICAL ENGINEERING

270 Bevis Hall, 1080 Carmack Road
Columbus, OH 43210
Phone: 614-292-7152
Email: senitko.1@osu.edu
Web: www.bme.osu.edu

Offering B.S., M.S., Ph.D., and M.D./Ph.D. degrees with research in biomechanics/biotransport; biomaterials; bioimaging; tissue engineering; biomedical devices, and micro/nanotechnology at state-of-the-art facilities including The Ohio State University Wexner Medical Center, Davis Heart and Lung Research Institute, Institute for Materials Research, Comprehensive Cancer Center, and Nationwide Children's Hospital of Columbus.

BOOTH # **421**

Pennsylvania State University

205 Hallowell Building
University Park, PA 16801
Phone: 814-865-1407
Email: mjs436@engr.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 social and economic development through innovative solutions to problems in 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 biology, medical device design, and disease diagnosis, with a goal to translate discovery from academia to society. Come by for a visit. We look forward to meeting you!

BOOTHS # **408 / 410**

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 is undergoing significant programmatic and faculty growth to meet the rising demands of the medical device and biotechnology industries. Opportunities abound in our expanding graduate programs, signature areas of research, and entrepreneurial partnerships. Ask us about our unique specialty programs in Regulatory Affairs for Medical Devices and Biomedical Entrepreneurship. We offer seven major tracks to a graduate degree, including a Professional MS Program. All qualified graduate students are fully funded.

BOOTH # **522**

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 and home to one of the oldest biomedical engineering departments. Educating outstanding academics, industry leaders and research scientists. Research is centered on Biomolecular Science and Engineering, Biomedical Imaging, Musculoskeletal Engineering, Neural Engineering, Systems Biology and Biocomputation, and Vascular Engineering (bme.rpi.edu).

BOOTHS # **535 / 537**

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.

BOOTH # **222**

Rutgers University

599 Taylor Road
Piscataway, NJ 08854
Phone: 848-445-4500
Email: langrana@rci.rutgers.edu
Web: http://biomedical.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.

BOOTH # **137**

Secant Medical, Inc.

700 W. Park Avenue
Perkasie, PA 18944
Phone: 877-774-2835
Email: inquiries@secantmedical.com
Web: www.secantmedical.com

Secant Medical provides advanced biomaterials and biomedical textile structures to the medical device industry. We partner with clients to design, develop, and manufacture high-performance biomedical structures for a variety of applications. We're committed to the future of regenerative medicine and actively engage in research partnerships to advance next-generation biomaterial technology.

BOOTH # **111**

Springer

233 Spring Street
New York, NY 10013
Phone: 212-460-1500
Email: exhibits-ny@springer.com
Web: www.springer.com

Springer is proud to be the publisher of Annals of Biomedical Engineering, Cellular & Molecular Bioengineering and Cardiovascular Engineering and Technology. Visit our booth to explore our full range of print and electronic publications in Biomedical Engineering.

BOOTH # **129**

Stanford Bioengineering

443 Via Ortega
Stanford, CA 94305-4125
Phone: 650-723-8632
Email: bioengineering@stanford.edu
Web: bioengineering.stanford.edu

BOOTH # **120**

Stevens Institute of Technology

Castle Point on Hudson
Hoboken, NJ 07030
Phone: 201-216-5000
Email: anastasia.greene@stevens.edu
Web: www.stevens.edu/sit/

As one of the nation's leading research universities, Stevens displays a unique pedagogical model that includes productive research programs with world-class facilities. Graduate students can choose from 22 PhD programs and 43 master's programs. All Stevens students benefit from a distinguished faculty displaying exacting scientific, academic and entrepreneurial standards.

BOOTH # **335**

Temple University

COLLEGE OF ENGINEERING / BIOENGINEERING

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

Temple's Bioengineering Department officially started back in 2012 with Master's and PhD students. The undergraduate curriculum commenced in the Fall of 2013. Departmental financial support options are available for students. Temple U., in addition, started a Presidential Fellowship program for both graduate and undergraduate students. Faculty expertise includes cellular and regenerative tissue engineering, neuroengineering, biomechanics, biomaterials, molecular engineering, spectroscopy, and microscopy. We have a strong emphasis on interdisciplinary collaborations and translational research, leveraging strategic initiatives and institutional strengths in Medicine, Pharmacy, and Oncology.

BOOTH # **305**

Texas A & M University

DEPARTMENT OF BIOMEDICAL ENGINEERING

3120 TAMU
College Station, TX 77843-4462
Phone: 979-845-2312
Email: bmengradadvisor@tamu.edu
Web: http://engineering.tamu.edu/biomedical

The Department of Biomedical Engineering at Texas A&M University offers an opportunity to participate in ground-breaking research in sensing and imaging, optics, orthopedic biomechanics, biomaterials, tissue engineering and more. The department's award-winning faculty members have strong collaborations with medical and veterinary schools as well as industry. Offering graduate degree options at the master's (M.S. ,M.Eng., M.Eng./MBA) and doctoral (Ph.D. & D.Eng.) levels, this program provides an exceptional academic experience.

BOOTHS # **426 / 428**

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 # **605**

Tulane University

500 Lindy Boggs Bldg.
New Orleans, LA 70118
Phone: 504-314-2926
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 # **336**

The University of Akron

DEPARTMENT OF BIOMEDICAL ENGINEERING

302 Buchtel Common
Akron, OH 44325-0302
Phone: 330-972-6650
Email: bmegrad@uakron.edu
Web: bme.uakron.edu

The Department of Biomedical Engineering at The University of Akron offers two graduate degree programs: a master's degree in engineering with a biomedical specialization and a Ph.D. in engineering. These programs have an individualized curricular approach, designed in coordination with each student's career plans. BME faculty are engaged in a variety of research areas, including but not limited to, instrumentation, biomaterials, biomechanics, and tissue engineering. Our faculty have active collaborations both on campus and with researchers in regional health care institutions and biomedical industry. We encourage interdisciplinary interactions to promote vibrant research activities and to provide an exceptional scholarly atmosphere for learning. The BME Department currently has 17 full-time and joint faculty, including 8 recent hires, 3 endowed chairs, and 2 CAREER award recipients.

BOOTH # **320**

The University of Alabama at Birmingham

DEPARTMENT BIOMEDICAL ENGINEERING

1825 University Boulevard, SHEL 801C
Birmingham, AL 35294-2182
Phone: 205-996-6936
Email: minrob@uab.edu
Web: www.eng.uab.edu/bme

The Biomedical Engineering (BME) Graduate Program at The University of Alabama at Birmingham offers Master's and PhD degrees. The BME Department has a joint status in the School of Engineering and School of Medicine with a strong record of interdisciplinary research in biomaterials, biomechanics, biomedical imaging, cardiac electrophysiology, computational biology, tissue engineering and regenerative medicine. The BME Graduate Program has over 60 primary and secondary faculty training students to develop the next generation of technologies. BME graduates find employment in universities, health care, medical devices, pharmaceuticals, and regulatory agencies.

BOOTH # **322**

The University of Arizona

BIOMEDICAL ENGINEERING / GIDP PROGRAM

P.O. Box 21240
Tucson, AZ 85721
Phone: 520-629-9134
Email: bmedgidp@email.arizona.edu
Web: www.bme.arizona.edu

The University of Arizona's Biomedical Engineering Graduate Interdisciplinary Program offers opportunities to integrate engineering, mathematics, biology, and medicine in a collaborative multi-disciplinary environment with over 60 faculty mentors. Proximity to Medicine, and Health Sciences Colleges facilitates cutting-edge translational research in specialties such as cardiovascular engineering, imaging, nanotechnology, computational modeling and entrepreneurship.

BOOTH # **610**

University of Arkansas

COLLEGE OF ENGINEERING

3189 Bell Engineering Center
Fayetteville, AR 72701
Phone: 479-575-4667
Email: slperry@uark.edu
Web: www.engr.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 # **636**

University of California, Berkeley

306 Stanley Hall #1762
Berkeley, CA 94720-1762
Phone: 510-642-5833
Email: kkurpins@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 BS, MEng (Master of Engineering), MTM (Master of Translational Medicine), and PhD degrees. Come visit the UC Berkeley booth to speak with representatives and learn more about the department.

BOOTH # **337**

The University of California at Davis

DEPARTMENT OF BIOMEDICAL ENGINEERING

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

With 33 primary faculty and a graduate group of ~70 faculty, BME at UC Davis combines exceptional teaching with state-of-the-art research to prepare students for careers in academics and industry. Come learn about our programs in bioinformatics, biomechanics, cellular and molecular systems, imaging, synthetic biology, and tissue engineering and regenerative medicine.

BOOTH # **302**

University of California, Irvine

3120 Natural Sciences II
Irvine, CA 92697-2715
Phone: 949-824-9196
Email: csurp@uci.edu
Web: www.bme.uci.edu

The UCIrvine Department of Biomedical Engineering's mission is to inspire engineering minds for the advancement of human health. Engineering focus areas include biomedical photonics/optoelectronics, biomedical nano- and microscale systems/fabrication, biomedical computation/modeling, and tissue engineering. These technology areas intersect with clinical areas of focus such as cardiovascular disease, the nervous system, cancer, and ophthalmology. Included in these opportunities are major campus research centers at the Beckman Laser Institute (biophotonics), the Edwards Lifesciences Center for Advanced Cardiovascular Technology, the Chao Family Comprehensive Cancer Center, the Integrated Nanosystems Research Facility, the Laboratory of Fluorescence Dynamics, and the Micro/nano Fluidics Fundamentals Focus Center. UCI is located in Orange County, home to more than 300 medical device companies.

BOOTH # **104**

University of California, Riverside

DEPARTMENT OF BIOENGINEERING

900 University Avenue
Riverside, CA 92521
Phone: 951-827-4303
Email: BIG@engr.ucr.edu
Web: www.bioeng.ucr.edu

The Department of Bioengineering, established in 2006, is the fastest growing department at the Bourns College of Engineering. The research vision is to build strength from expertise in biochemistry, biophysics, biology, and engineering to focus on critical themes that impact bioengineering. 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 science 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 # **536**

University of Colorado Denver | Anschutz Medical Campus

DEPARTMENT OF BIOENGINEERING

12700 E. 19th Avenue, Research 2 Building
Room 6018, MS 8607
Aurora, CO 80045
Phone: 303-724-5893
Email: bioengineering@ucdenver.edu
Web: www.ucdenver.edu/bioengineering

Located on a medical campus, we are integrated with world-class hospitals and the nationally ranked CU School of Medicine. In addition to traditional undergraduate and graduate degrees, we offer a dual MS-MBA, MD-MS and MD-PhD. Our students work with top faculty and researchers on projects that range from basic research to clinical applications and commercialization of medical technologies through our entrepreneurship pathway.

BOOTH # **626**

University of Connecticut

BIOMEDICAL ENGINEERING

260 Glenbrook Road, Unit 3247
Storrs, CT 06269
Phone: 860-486-0163
Email: lisae@engr.uconn.edu
Web: www.bme.uconn.edu

The ABET-accredited Undergraduate program and the long-standing MS/PhD Program in Biomedical Engineering at the University of Connecticut are now under the auspices of the Biomedical Engineering Department, which spans the School of Engineering (Storrs) and the Schools of Medicine and Dental Medicine (Farmington), offering our students ready access to cutting-edge research and outstanding faculty members/practitioners on both campuses. We also offer one of the few Clinical Engineering Internship programs (MS) in the country.

BOOTH # **235**

University of Delaware

BIOMEDICAL ENGINEERING

125 E. Delaware Avenue
Newark. DE 19716
Phone: 302-831-2120
Email: delliott@udel.edu
Web: www.bme.udel.edu

University of Delaware Biomedical Engineering offers undergraduate and graduate programs and we welcome intellectually motivated, creative, and diverse individuals who wish to benefit from our educational and research programs. Our research programs cross the following areas: Biomolecular Engineering, Cellular Engineering & Systems Biology; Tissue Engineering, Biomaterials & Drug Delivery; Rehabilitation Engineering & Neuroengineering; Biomechanics; Bioimaging, Bio-computing & Bioelectronics.

BOOTH # **209**

University of Florida

DEPARTMENT OF BIOMEDICAL ENGINEERING

1275 Center Drive
Biomedical Sciences Building JG-56
P.O. Box 116131
Gainesville, FL 32606
Phone: 352-273-9222
Email: info@bme.ufl.edu
Web: www.bme.ufl.edu

UF BME is made possible by the vision and generosity of Dr. J. Crayton Pruitt and his family. Since its inception in 2002, the department continues to excel in interdisciplinary research that merges engineering with biology and medicine. The department offers both a graduate program and an undergraduate program (2012 inaugural class), with particular strengths in Neural Engineering, Imaging and Medical Physics, Biomaterials and Tissue Engineering, and Biomechanics and Modeling. In the past year, the department has grown to 21 faculty and will continue that growth up to 25-30. UF BME is one of only a few departments in the nation to be co-localized with a top-ranked medical school, veterinary school, and dental school. The department is also uniquely positioned to contribute to clinical translation of biomedical technologies because of the outstanding resources for entrepreneurship and commercialization in the Gainesville area.

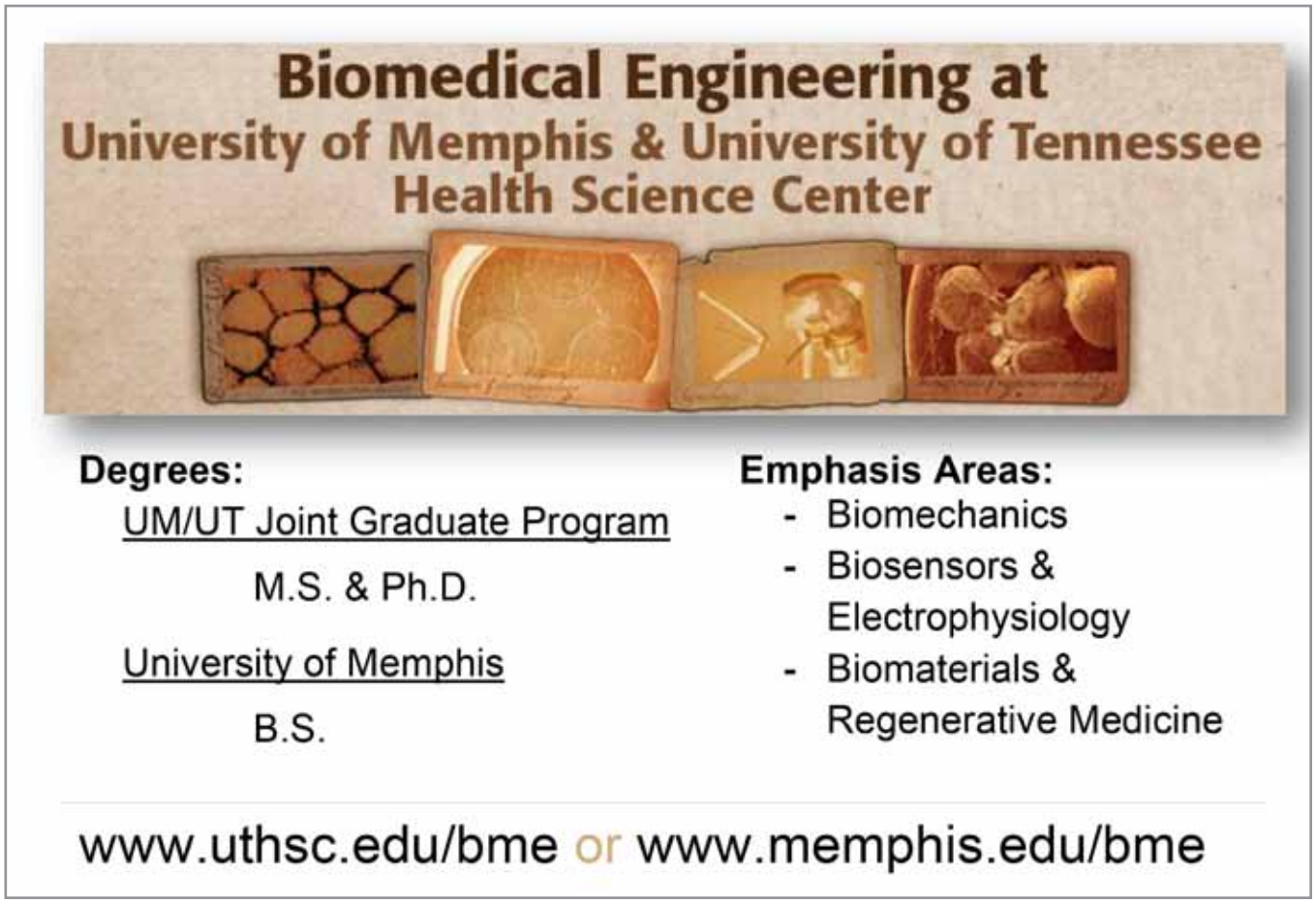
BOOTH # 434

University of Houston

DEPARTMENT OF BIOMEDICAL ENGINEERING

3605 Cullen Blvd.
Houston, TX 77024
Phone: 832-842-8887
Email: tchen23@uh.edu
Web: www.bme.uh.edu

Our main goal is to develop leadership in academia, government, and industry nationally and globally. The importance of global scientific, social, and cultural interaction and the demands of the dynamic, ever-changing global healthcare economy have been strongly emphasized in our undergraduate and graduate programs. The research in the graduate program focuses on three main areas, neural, cognitive, and rehabilitation engineering, biomedical imaging, and bionanoscience.



ENGINEERING AT ILLINOIS

DRIVE YOUR VISION

ENDOWED CHAIRS AND PROFESSORSHIPS IN BIOENGINEERING

Bioengineering is revolutionizing 21st century healthcare worldwide. But to have the greatest impact, the best minds have to work together across a variety of fields. At the University of Illinois at Urbana-Champaign, that interdisciplinary attitude and the desire to deliver safe, effective, affordable medical technologies drive us. They've led to breakaway work in imaging, biosensing, cellular mechanics, and biophysics. Now we're expanding our team. Thanks to the $100 million Grainger Engineering Breakthroughs Initiative, we're creating more than 35 new endowed professorships and chairs in Bioengineering and other fields. If you're ready to drive the future of Bioengineering, Illinois is the place for you.

GraingerInitiative.engineering.illinois.edu

ILLINOIS

BOOTH # **221**

University of Illinois at Chicago

851 S. Morgan Street, Room 28
Chicago, IL 60607-7052
Phone: 312-996-5225
Email: jlin13@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 core faculty who collaborate with leading faculty in five major academic medical centers in Chicago - including UIC, home of the largest medical school in the country.

BOOTH # **227**

University of Illinois at Urbana-Champaign

DEPARTMENT OF BIOENGINEERING

1304 W. Springfield Avenue
Room 1270 Digital Computer Laboratory
Urbana, IL 61801
Phone: 217-333-1867
Email: bioengineering@illinois.edu
Web: www.bioengineering.illinois.edu

The Graduate Program in the Department of Bioengineering at the University of Illinois at Urbana-Champaign provides students with educational and research experiences that integrate the sciences of biology and medicine with the practices and principles of engineering. Areas of focus include Bioimaging; Bio-Micro/Nanotechnology; Molecular, Cellular & Tissue Engineering; Computational Bioengineering; and Synthetic Bioengineering. The department offers studies leading to the Master of Science in Bioengineering and the Doctor of Philosophy in Bioengineering. Beginning in Fall 2015, a professional master's degree in Bioinstrumentation also will be available. Opportunities also exist for specializing in computational science and engineering or in energy and sustainability engineering via the Computational Science and Engineering (CSE) Option and the Energy and Sustainability Engineering (EaSE) Option. And highly qualified Bioengineering students enroll in the Medical Scholars Program (MD/PHD), which integrates the study of medicine with a doctoral degree in Bioengineering.

BOOTH # **432**

University of Iowa

1402 Seamans Center
Iowa City, IA 52242
Phone: 319-335-5632
E-mail: bme.engineering@uiowa.edu
Web: www.engineering.uiowa.edu/bme

The University of Iowa Department of Biomedical Engineering offers graduate research programs in the following research areas: Biomedical Imaging, Biomaterials, Cardiovascular Biomechanics, Bioinformatics, Musculoskeletal Biomechanics, Tissue Engineering and Cellular Analysis. The Department is located close to a tertiary-care teaching hospital, and near the Colleges of Dentistry, Medicine, Nursing, and Public Health. Iowa City is ranked number 4 in the Top 10 College Destinations (AIER), is a UNESCO City of Literature, and is a Top 100 Adventure City (NatGeo Adventure). Stop by our booth for more information.

BOOTH # **327**

University of Kansas

BIOENGINEERING GRADUATE PROGRAM

1520 West 15th, Room 1, Eaton Hall
Lawrence, KS 66045
Phone: 785-864-5258
E-mail: bioe@ku.edu
Web: www.bio.engr.ku.edu

KU Bioengineering is an exciting and dynamic place. Our curriculum is broad and flexible, embracing the interdisciplinary 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 # **223**

University of Maryland

FISCHELL DEPARTMENT OF BIOENGINEERING

2330 Jeong H. Kim Building
College Park, MD 20742
Phone: 301-405-7426
Email: bioe-grad@umd.edu or bioe-undergrad@umd.edu
Web: http://www.bioe.umd.edu

Faculty and students in the Fischell Department of Bioengineering at UMD are committed to making a difference in human health care through education, research, and invention. We have exciting collaborations with the FDA, NIH-NCI, UMB Pharmacy and Medicine, and Children's National Medical Center and offer programs leading to the BS, M.Eng., MS/MD, MD/PhD and PhD degrees.

BOOTH #333

University of Memphis University of Tennessee Health Sciences Center

BIOMEDICAL ENGINEERING

330 Engineering Technology Building
Herff College of Engineering
Memphis, TN 39152-3210
Phone: 901-678-3733
Email: eckstein@memphis.edu
Web: www.memphis.edu/bme

The UM/UT Joint Graduate Program offers M.S. and Ph.D. degrees in biomedical engineering with research specialization in biomaterials, tissue engineering, drug delivery, biomechanics, biomedical sensors, electrophysiology, and bioimaging. Emphasis in these disciplines is in dental/orthopedics, computational models (pulmonary, coronary, and muscoskeletal), sensor nano/microfabrication, and image processing and analyses.

BOOTH # 435

University of Miami

DEPARTMENT OF BIOMEDICAL ENGINEERING

1251 Memorial Drive, MEA #219A
Coral Gables, FL 33146-0621
Phone: 305-284-2445
Email: oozdamar@miami.edu
Web: www.bme.miami.edu

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 biomedical imaging, optics and lasers; neural engineering, biosignals and instrumentation; and biomechanics, biomaterials and tissue engineering.

BOOTH # 301

University of Michigan

DEPARTMENT OF BIOMEDICAL ENGINEERING

1111 Carl A. Gerstacker Building
2200 Bonisteel Blvd.
Ann Arbor, MI 48109-2099
Phone: 734-763-5290
E-mail: sbitzer@umich.edu
Web: www.bme.umich.edu

The University of Michigan Department of Biomedical Engineering provides an outstanding educational experience for engineers in biomedical engineering and develops future leaders in the field. The program's primary emphasis is on biomedical engineering fundamentals, while allowing students to personalize their curriculum to prepare them for a wide variety of careers including biomedical engineering, law, medicine, and business.

BOOTH # 511

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: www.umn.edu/bme

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 LifeScience Alley (home to Medtronic, Boston Scientific, St. Jude Medical, Covidien, plus 500 other FDA-registered medtech companies). Research conducted by the faculty spans the full spectrum, with particular depth in cardiovascular/neural engineering, cell/tissue engineering, cancer bioengineering, and biomedical imaging/optics.

BOOTH # **135**

University of North Carolina at Chapel Hill and NC State University

137 MacNiber Hall
Chapel Hill, NC 27599
Phone: 919-966-8088
Email: vberg@email.unc.edu
Web: www.bme.unc.edu

The Joint Department of Biomedical Engineering is an academic department co-located at the University of North Carolina at Chapel Hill and NC State University and was established on December 1, 2003, linking the School of Medicine at UNC-CH to the College of Engineering at NC State. The graduate program offers joint MS and PhD degrees in Biomedical Engineering. The department has administrative offices on both campuses (NCSU: 4130 Engineering Building III; UNC-CH: 152 MacNider Hall).

BOOTHS # **614 / 616**

University of Pittsburgh

DEPARTMENT OF BIOENGINEERING

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.

A Closely Knit Community

Nestled into Utah's Wasatch Mountain range, the Department of Bioengineering's new home (foreground) is located between the University Hospital & School of Medicine (upper left) and the College of Engineer Campus (just to the right out of frame) providing a clinically immersive engineering experience that is unique among BME training programs. Did you know that the Department of Bioengineering is one of the oldest and yet fastest growing Biomedical training programs in the nation. We rank 7th nationally in median h-index for core faculty as determined by google scholar. With over 125 faculty our research strengths span every inch of Clinical medicine. Not to mention that we are surrounded by unprecedented natural beauty.
Learn more about us at: *http://www.bioen.utah.edu/*

BIOENGINEERING
UNIVERSITY OF UTAH

BOOTH # **323**

University of Rochester

DEPARTMENT OF BIOMEDICAL ENGINEERING

204 Robert E. Georgen Hall
Rochester, NY 14627
Phone: 585-273-2353
Email: judith.principe@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 # **515**

University of Southern California (USC)

VITERBI SCHOOL OF ENGINEERING

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

The USC Viterbi School of Engineering's top 10 ranked graduate program offers Master's and Doctoral programs in a wide range of disciplines. Learn more about our unique programs, including Biomedical Engineering, Medical Imaging, Neuroengineering, Medical Devices and Wireless Health Technology at viterbi.usc.edu/gapp.

BOOTHS # **503 / 505**

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 Mechanical, Aerospace and Biomedical Engineering at the University of Tennessee offers B.S., M.S., and Ph.D. degrees in Biomedical Engineering. Graduate level research in Biomedical Engineering are organized as interdisciplinary and across departmental and college boarders through the Institute of Biomedical Engineering (iBME). In iBME, faculty from the College of Engineering, the Graduate School of Medicine, the College of Veterinary Medicine, and the College of Education, Health, and Human Sciences work collaboratively to teach a wide variety of courses and perform research in seven major thrust groups. Current thrust groups include Healthcare Engineering and Bioinformatics, Systems Modeling and Simulation, Medical Sensors and Devices, Biomechanics, Multi-Scale Imaging, Systems Biology and Molecular Medicine, and Biomaterials and Regenerative Medicine.

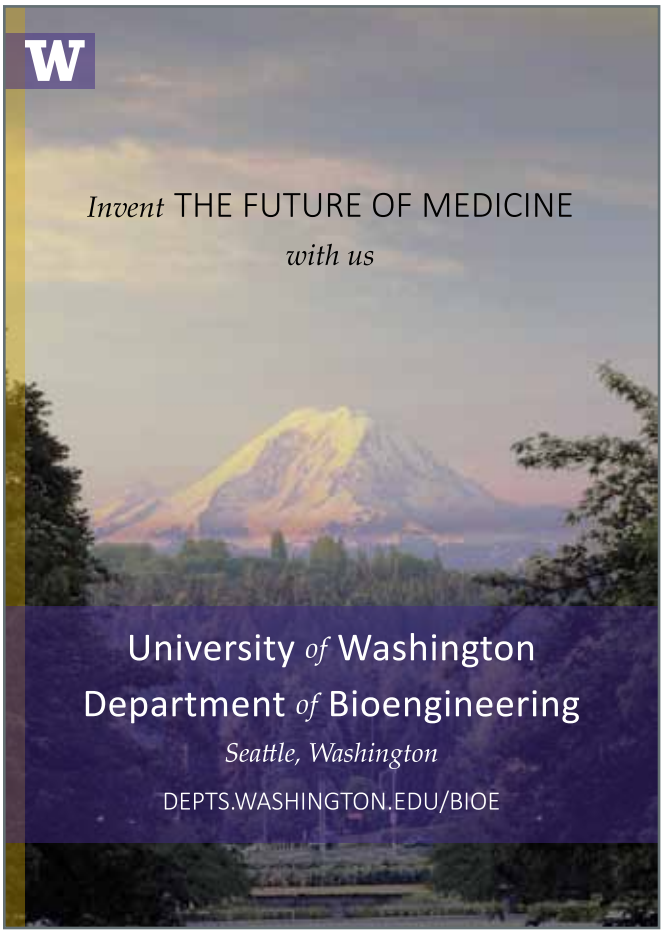
BOOTH # **217**

University of Texas Arlington

BIOENGINEERING DEPARTMENT

500 UTA Blvd., Suite 226
Arlington, TX 76010
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 & Tissue Engineering, Bioinstrumentation, Biomechanics, and Medical Imaging. Graduate students also have the option of earning a joint graduate degree with The University of Texas Southwestern Medical Center at Dallas. Undergraduate students are strongly encouraged to learn more about our new Undergraduate Program in Biomedical Engineering at UT Arlington. Please visit our booth at the exhibit to learn more!



BOOTHS # **214 / 216**

The University of Texas at Austin

DEPARTMENT OF BIOMEDICAL ENGINEERING

107 W. Dean Keeton, C0800
Austin, TX 78712
Phone: 512-475-8623
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.

BOOTHS # **532 / 534**

University of Texas at San Antonio

One UTSA Circle, AET 1.102
San Antonio, TX 78249
Phone: 210-458-7084
Email: anson.ong@utsa.edu
Web: http://engineering.utsa.edu/BME

The UTSA-UTHSCSA Joint Graduate Program in Biomedical Engineering provides a unique environment and state-of-the-art facilities for training of the next generation biomedical engineers, with academic tracks being offered based on segments of biomedical engineering and/or areas of clinical emphasis. A truly joint graduate program administered by both UTSA and UTHSCSA, students are mentored by clinicians, engineers, and/or scientists and are trained to display an in-depth understanding of the concepts that are necessary for critically judging the scientific literature and innovation, for formulating novel hypotheses and/or designing experimental protocols, critically interpreting their results, and contributing to the biomedical field.

BOOTH # **437**

University of Toronto

INSTITUTE OF BIOMATERIALS & BIOMEDICAL ENGINEERING

Rosebrugh Building, 1645 College Street, Room 407
Toronto, Ontario M5S 3G9 Canada
Phone: 416-946-8019
Email: comm.ibbme@utoronto.ca
Web: www.ibbme.utoronto.ca

Collaboration shapes innovation at the University of Toronto's Institute of Biomaterials & Biomedical Engineering (IBBME). Spanning three faculties (Applied Science & Engineering, Medicine and Dentistry) and ten major hospitals, IBBME's unique biomedical and clinical engineering research programs deliver world-class, real world education for students of Canada's top-ranked University.

BOOTH **#523**

University of Utah

DEPARTMENT OF BIOENGINEERING

SCIENTIFIC COMPUTING & IMAGING (SCI) INSTITUTE

3226 Sorenson Molecular Biotechnology Building (SMBB)
36 S. Wasatch Drive, Room 3226
Salt Lake City, UT 84112
Phone: 801-581-8528
Web: www.bioen.utah.edu and www.sci.utah.edu/

The Department of Bioengineering and the SCI Institute are internationally recognized for research in biomaterials, drug delivery, neuroengineering, othropedics, cardiovascular medicine, visualization, scientific computing, and image analysis, respectively. Together they offer BS, MS, and PhD training opportunities in a world class vacation destination located at the base of the Wasatch Range. The highly entrepreneurial and interdisciplinary environment is distinguished by its strong collaborative connections between clinical medicine, engineering and industry; a place where researchers can work and play hard.

BOOTH # **109**

University of Virginia

DEPARTMENT OF BIOMEDICAL ENGINEERING

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

Join a vibrant network of engineers, clinicians, basic scientists and entrepreneurs. U. Virginia Biomedical Engineering offers a rare blend of Engineering and Medicine, with an exceptionally supportive, collaborative training environment for translational research and the basic sciences. UVA: Explore, Discover, Invent.

BOOTH # **303**

University of Washington

DEPARTMENT OF BIOENGINEERING

3720 15th Avenue NE
Box 355061
Seattle, WA 98195
Phone: 206-685-2000
Email: bioeng@uw.edu
Web: http://depts.washington.edu/bioe/index.html

Please visit the University of Washington at booth 303 to discover how we are inventing the future of medicine. Our faculty and students are eager to talk to you!

BOOTH # **108**

Valtronic

29200 Fountain Pkwy
Solon, OH 44139
Phone: 440-349-1239
Email: info@valtronic.com
Web: www.valtronic.com

BOOTH # **210**

Vanderbilt University

DEPARTMENT OF BIOMEDICAL ENGINEERING

VU Station B, Box 351631
Nashville, TN 37235
Phone: 615-343-1099
Email: tina.shaw@vanderbilt.edu
Web: engineering.vanderbilt.edu/BiomedicalEngineering.aspx

VU BME bridges Vanderbilt's engineering, basic science departments, and its renowned medical center; an ideal location for engineering research at the interface of technology and medicine. Research strengths include image-based technologies, nanobiotechnology, biophotonics, modeling, biomaterials, bioregenerative engineering, bioMEMs. VU BME stimulates high impact research and provides unique educational opportunities.

BOOTH # **127**

Virginia Commonwealth University

401 W. Main Street
Richmond, VA 23284
Phone: 804-828-7956
Email: biomedicalengr@vcu.edu
Web: biomedical.engr.vcu.edu

"Located on a thriving urban campus, VCU Biomedical Engineering has strong ties with the VCU Medical Center, School of Medicine, School of Dentistry, and Massey Cancer Center, and offers degrees at the Bachelor's, Master's, and Doctoral level. Research specialties include mechanobiology, regenerative medicine, orthopaedic biomechanics, rehabilitation engineering, and biomaterials."

BOOTHS # **200 / 202 / 204 / 201 / 203 / 205**

Virginia Tech-Wake Forest University

SCHOOL OF BIOMEDICAL ENGINEERING & SCIENCE

VT-WFU SBES:
317 Kelly Hall (MC0298)
Blacksburg, VA 24061
Phone: 540-231-8191
E-mail: headbiomed@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, imaging, biomechanics, medical physics, nano-medicine, & nanobioengineering, neuroengineering, translational oncology, cardiovascular engineering, and other emerging fields.

BOOTH # **321**

Washington University in St. Louis

DEPARTMENT OF BIOMEDICAL ENGINEERING

One Brookings Drive, Box 1097
St. Louis, MO 63130
Phone: 314-935-6164
Email: bme@seas.wustl.edu
Web: http://bme.wustl.edu/

In partnership with our world-class medical school, our department emphasizes interdisciplinary training from top-notch faculty. Our main research areas are biomaterials and tissue engineering; cardiovascular engineering; imaging; molecular, cell and systems engineering; and neural engineering. Our department has more than 75,000 sq. ft. of state-of-the-art facilities. We offer BS, MS, MS/MBA, PhD and MD/PhD degrees.

BOOTHS # **314 / 316**

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, MS, PhD and MD/PhD degrees. It is involved in some of the newest ground breaking research in the field. From the use of biomaterials to aid in the regeneration of nerves and the tailoring of these materials to optimize cellular response, to the use of advanced human modeling to study the biomechanics of impact injuries, and the study of sports related injuries and prevention of these injuries, Wayne State will play a major role in the development of new standards to better the quality of human life. Our past research has led to improvement in the standards of the automotive industry, better safer equipment for our soldiers, and a better understanding of injury biomechanics to help prevent and repair damage from these injuries.

BOOTH # **215**

Whitaker International Program

809 United Nations Plaza
New York, NY 10017
Phone: 212-984-5442
Email: saltaf@iie.org
Web: www.whitaker.org

The Whitaker International Program provides funding to emerging U.S.-based leaders in biomedical engineering, with a goal of building international bridges. Grant projects – including research, coursework, public policy work – are intended to enhance both the recipient's career and the BME field. Administered by the Institute of International Education.

BOOTH # **420**

Worcester Polytechnic Institute

100 Institute Road
Worcester, MA 01609
Phone: 508-831-5301
Email: bme-web@wpi.edu
Web: www.wpi.edu/+gradbme

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

BOOTH # **234**

Yale University

BIOMEDICAL ENGINEERING

55 Prospect Street
New Haven, CT 06511
Phone: 203-432-4262
Email: deanna.lomax@yale.edu
Web: www.seas.yale.edu/bme

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.

SOMETHING *NEW*

Virginia Tech
Wake Forest University

School of **Biomedical Engineering and Sciences**

www.sbes.vt.edu

Meeting Location

Henry B. Gonzales Convention Center
200 East Market Street
San Antonio, TX 78205
(210) 207-8500

Marriott Rivercenter | *co-headquarters*
101 Bowie Street
San Antonio, TX 78205
(210) 223-1000

Marriott Riverwalk | *co-headquarters*
889 East Market Street
San Antonio, TX 78205
(210) 224-4555

Registration

Paid registration is required for admission to all meeting functions including scientific sessions, posters, exhibits, breaks and the BMES BASH at the Buckhorn Saloon & Museum. 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 22	11:00am – 7:00pm
Thursday, October 23	7:00am – 6:00pm
Friday, October 24	7:00am – 6:00pm
Saturday, October 25	7:00am – 2:00pm

Exhibits

Exhibit Hall A, Henry B. Gonzales Convention Center

Exhibits are located in the Exhibit Hall A in the Henry B. Gonzales Convention Center. Exhibits will be open:

Thursday, October 23	9:30am – 5:00pm
Friday, October 24	9:30am – 5:00pm
Saturday, October 25	9:30am – 1:30pm

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 Scientific Program:

Thursday	9:30-10:30am and 3:30-4:30pm
Friday	9:30-10:30am and 4-5pm
Saturday	9:30-10:30am

All posters will be in the Exhibit Hall A in the Henry B. Gonzales Convention Center. Posters are numbered with a card corresponding to the numbers assigned in the program.

Speaker Ready Room

Registration Area, Exhibit Hall A, Henry B. Gonzales 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 22	11:00am – 5:00pm
Thursday, October 23	7:00am – 5:00pm
Friday, October 24	7:00am – 5:00pm
Saturday, October 25	7:00am – 2:30pm

Program Highlights

Don't Miss These Events

WEDNESDAY, October 22

Meet the Faculty Candidate Forum

3:30pm - 5:30pm

West Registration Hall, Henry B. Gonzales Convention Center

The "Meet-the-Faculty Candidate" poster session provides a great opportunity for faculty, recruiters, and Department Chairs to speak directly with current graduate students and postdoctoral researchers who are seeking faculty positions.

The BMES 2014 Annual Meeting MEET THE FACULTY CANDIDATE FORUM was only open to those who are actively on the market for the 2014-2015 recruiting cycle. Candidates submitted for consideration in August. The accepted candidates' CVs can be viewed at www.bmes.org.

WEDNESDAY, October 22

Welcome Reception

5:30pm - 7:00pm

Grotto, River Level, Henry B Gonzales Convention Center

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

THURSDAY, October 23

BMES State of the Society Address & Fellows Induction

10:30am

Lila Cockrell Theatre, Henry B. Gonzales Convention Center

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

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.

Thursday afternoon refreshment break sponsored by

Medtronic

Friday afternoon refreshment break sponsored by

Bioengineering AT ILLINOIS
Engineering For Life
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

FRIDAY, October 24

BMES Bash at Buckhorn Saloon & Texas Rangers Museum

7:00pm - 10:00pm

318 E. Houston Street
San Antonio TX 78205
(210) 247-4000

The Buckhorn Museum features wildlife specimens from all over the world; including fish from the seven seas, animals from every continent and strange animal oddities which have been collected for over 100 years! The exhibit halls are comprised of over 520 species of wildlife—many of which are record holders. Look for your school's mascot. **The school posting the largest number of Twitter pictures with their mascot will win a prize**.

Connected to the Buckhorn, The Texas Ranger Museum features hundreds of authentic Texas Ranger artifacts including automatic handguns, shotguns, badges and more. The museum also features a recreation of San Antonio at the turn of the century in Ranger Town. The town includes a replica Buckhorn Saloon, a jail cell, blacksmith and a replica of the 1934 Ford V8 Deluxe—the famous Bonnie & Clyde getaway car.

Shuttle buses will run continuously from 6:30pm -10:00pm between the Marriott Rivercenter and the BMES Bash. Buses will be staged at the Commerce Street exit of the hotel.

THURSDAY, October 23

Celebration of Minorities in BME Luncheon*

12:30-1:45pm

Ballroom A, Henry B. Gonzales Convention Center

***additional registration and $25 ticket required**

This is the fifth year of this event 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 on Saturday and the Women in BME Luncheon on Friday.

This year's lead speaker is Provost Lisa Firmin. Provost Firmin is the Associate Provost for Faculty and Student Diversity and Recruitment at The University of Texas at San Antonio. In this role, she coordinates efforts between Academic and Student Affairs to attract a high quality, diverse student population. Additionally, she works at the strategic level to address faculty diversity and placement goals.

FRIDAY, October 24

Women in BME Luncheon*

12:15pm - 1:30pm

Ballroom A, Henry B. Gonzales Convention Center

***additional registration and $25 ticket required**

Speakers:

"Innovations and the Road to Commercialization"

Zoraida P. Aguilar, PhD, MS, CTO/President, *Zystein, LLC*

"Trading Tenure for Translation"

Kevin D. Nelson, PhD, Founder & CSO *TissueGen, Inc.*

Additional Panelists:

Subashini Asokan, PhD, Technology Licensing Associate, *The University of Texas at San Antonio*

Athanassios Sambanis, PhD, Program Director, Biomedical Engineering Chemical, Bioengineering, Environmental, and Transport Systems Division, *National Science Foundation*
Professor, School of Chemical & Biomolecular Engineering, *Georgia Institute of Technology*

Translation is within Your Reach

Too often our individual or team successes are summarized in publications and fail to reach the community we hope to impact. At this luncheon, we will showcase two outstanding scientists, Drs. Aguilar and Nelson, who embraced opportunities in entrepreneurship. They will share key lessons in fundraising, product development, and business planning. Drs. Asokan and Sambanis will answer questions on technology licensing and federal funding opportunities. Translating your next big idea may not be as far off as you think. Come meet the speakers and ask questions about your next step towards translation.

Women in BMES activities have made a visible impact at the meeting, creating a forum for exchange across disciplines, between industry and academia, and between senior leaders in the field and junior faculty, trainees, and students.

Women in BME Luncheon Sponsored by CLEMSON BIOENGINEERING

Additional Meetings

Wednesday, October 22

BMES Board of Directors Meeting
8:30am – 4:30pm
Convention Center, Room 102 AB
Organizer: Gilda Barabino

AIMBE Board of Directors Meeting
11:00am - 4:00pm
Convention Center, Room 003AB
Organizer: Milan Yager

AIMBE Council Meeting
3:00pm – 4:00pm
Convention Center, Room 003AB
Organizer: Milan Yager

Annals of Biomedical Engineering - Editorial Board
7:00pm - 10:00pm
Marriott Rivercenter, Conference Rooms 13/14
Organizer: Christina Dzikowski

Council of Chair Dinner & Meeting
6:15pm - 9:00pm
Marriott Rivercenter, Room
Organizer: John Troy

Thursday, October 23

BMES National Meetings Committee Meeting
7:00am - 8:00am
Convention Center, Room 003A
Organizer: Christine Schmidt

BMES Diversity Committee Meeting
7:00am - 8:00am
Convention Center, Room 003B
Organizer: Michele Ciapa

Cellular and Molecular Bioengineering – Editorial Board
12noon – 1:30pm
Marriott Rivercenter, Conference Rooms 13/14
Organizer: Christina Dzikowski

Medical Devices SIG Business Meeting
12:45pm – 1:45pm
Convention Center, Room 003A
Organizer: Leticia Marquez

BMES Membership Committee Meeting
1:30pm - 2:30pm
Convention Center, Room 003A
Organizer: Jennifer Edwards

Friday, October 24

2015 BMES Annual Meeting Committee Meeting
7:00am - 8:00am
Convention Center, Room 003A
Organizer: Steve George

ABioM SIG Business Meeting
7:00am - 8:00am
Convention Center, Room 102AB
Organizer: Kaiming Ye

BMES Education Committee
7:00am - 8:00am
Convention Center, Room 003B
Organizer: Michele Ciapa

CMBE SIG Business Meeting
12:00noon - 1:30pm
Convention Center, Room 003B
Organizer: Cheng Dong

BMES International Affairs Committee Meeting
1:30pm - 2:30pm
Convention Center, Room 003A
Organizer: Jennifer Edwards

BMES Industry Affairs Committee Meeting
4:00pm - 5:00pm
Convention Center, Room 003A
Organizer: Jennifer Edwards

Saturday, October 25

BMES Student Affairs Committee Meeting
12:30pm - 1:30pm
Convention Center, Room 003A
Organizer: Elizabeth DaSilva

BMES Board of Directors Meeting & New Board Orientation
1:00pm - 3:30pm
Convention Center, Room 102AB
Organizer: Rich Hart

Hosted Receptions

Marriott Rivercenter and Marriott Riverwalk

Thursday, October 23

Individual organizations have set their own times for their private receptions. Please consult your invitation for the specific time. Generally receptions are from 8:00-9:30pm.

Arizona State University
Travis Room,
Marriott Marriott Riverwalk

Biomedical Engineering Opportunities in India
Alamo F,
Marriott Riverwalk

Clemson University
Conference Room Rm 11,
Marriott Rivercenter

Cornell University
Alamo C, Marriott Riverwalk

Duke University
Conference Room Rm 12,
Marriott Rivercenter

Florida International University
Conference Room 15,
Marriott Rivercenter

Georgia Institute of Technology
Salon KL, Marriott Rivercenter

Johns Hopkins University
Salon C,
Marriott Rivercenter

Rensselaer Polytechnic Institute
Alamo D,
Marriott Riverwalk

Rice University
Salon D,
Marriott Rivercenter

University of Akron
Conference Room Rm 1,
Marriott Rivercenter

University of California Berkeley
Conference Room Rm 17,
Marriott Rivercenter

University of California Irvine
Alamo E,
Marriott Riverwalk

University of California Los Angeles
Conference Room Rm 7.
Marriott Rivercenter

University of California, San Diego
Conference Room Rm 18,
Marriott Rivercenter

University of Illinois at Chicago
Conference Room, Rm 2
Marriott Rivercenter

University of Illinois at Urbana-Champaign
Salon J,
Marriott Rivercenter

University of Pennsylvania
Conference Room Rm 13-14,
Marriott Rivercenter

University of Pittsburgh
Conference Room Rm 3-4,
Marriott Rivercenter

University of Rochester
Alamo B,
Marriott Riverwalk

University of Southern California
Alamo A,
Marriott Riverwalk

University of Texas Austin
Salon E,
Marriott Rivercenter

University of Texas at San Antonio
Atrium,
Marriott Rivercenter

University of Utah
Conference Room Rm 8,
Marriott Rivercenter

University of Virginia
Conference Room Rm 5,
Marriott Rivercenter

University of Washington
Salon I,
Marriott Rivercenter

University of Wisconsin Madison
Salon B,
Marriott Rivercenter

Vanderbilt University
Riverview,
Marriott Riverwalk

Whitaker International Reception
Conference Room 16,
Marriott Rivercenter

Save the dates!

CAREER | CONNECTIONS

2015 Biomedical Engineering Career Conferences

WBECC 2015

Western Biomedical Engineering Career Conference

UC San Diego - La Jolla, CA

Spring 2015

SEBECC 2015

Southeast Biomedical Engineering Career Conference

Durham Convention Center - Durham, NC

Friday, October 23, 2015

Attend the 2015 BME career conferences to:

- **Learn about BME Career opportunities**
- **Network with employers and students/alumni of BME programs in and around the region**
- **Showcase ongoing research at BME programs**
- **Present your poster abstract**
- **Tour a BME department**
- **Get advice from experienced professionals on how to advance your career**
- **Have your resume reviewed, critiqued and edited**

For more information and updates:

www.bmes.org/careerevents/

terry@bmes.org

Or call: (301) 459-1999

Career Connections is a career development resource of:

BMES
BIOMEDICAL ENGINEERING SOCIETY™
Advancing Human Health and Well-Being™

www.bmes.org

CAREER AND PROFESSIONAL DEVELOPMENT SESSIONS

The career and professional development sessions offer career guidance for job seekers ranging from entry level to experienced professionals. The sessions will highlight both traditional and alternative careers available to BMEs.

Thursday, October 23

What Do Biomedical Engineers Actually Do? What Are the Specialization Areas?

9:00am - 10:30am

Convention Center, Room 103A

This session will begin with the facilitator describing what a biomedical engineer is; what they do, where they work, what positions they hold, what projects they work on, and what their career prospects are. Our panelists who have backgrounds in various specialty areas will share their educational backgrounds, career pathways, detailed experiences, and insights. In addition, you will have an opportunity to ask our panelists questions to help guide you on your own career path. At the end of this session, you will have a clearer understanding of what biomedical engineers actually do and possibly even know how you'll fit in.

How to Get Your First Job

1:30pm - 2:45pm

Convention Center, Room 103A

Whether you are searching for your first job or you're a young professional eager for a change, this session will show you the RIGHT way to job search. Avoid the mistakes and excuses that sabotage your chance to WIN a job in today's competitive market. Are you sending out tons of résumés and getting no responses? Are you worried about interviewing? Fasten your seatbelts for an instructional session from a career coach and ex-Microsoft hiring manager! You will leave this session with the skills you need to conduct your job search more effectively and land that job sooner.

sponsored by BIOE

Networking Effectively —Social Media & Face-to-Face

3:15pm – 4:30pm

Convention Center, Room 103A

Do you feel awkward about networking? Do you just want to hide in the corner at events? Are you nervous about contacting a senior professional you don't know via LinkedIn? Ever been tongue-tied trying to describe what type of job you are looking for? Ever wonder how best to sell yourself to someone who doesn't understand biomedical engineering? You're not alone. Fifty percent of the world is made up of introverts! Because networking is a requirement for getting and excelling in a job today, this workshop will guide you through the steps to face networking head-on. You will leave this session with the skills to connect with total strangers, make an impact, and get the results you are hoping for. You will also gain an understanding of when and how to use social media, email, and the telephone for networking.

Resume Review and Critique

Have your resume reviewed and critiqued by career professionals and take away writing tips.

Thursday, October 23
2:00pm - 4:00pm

Friday, October 24
2:00pm - 4:00pm

Convention Center, Room Room 102AB

Mock Interview Demonstration

5:00pm – 6:15pm

Convention Center, Room 103A

If you don't ace the interview, you won't get the job! It's way more than just making a good first impression. As with every skill you've ever learned, you have to learn the techniques and then prepare, prepare, prepare. Sure, there are books and YouTube videos on interviewing, but this high-energy session is interactive and you will see firsthand what happens in a great interview (and a not-so-great interview). Seeing it live will help you perfect your technique while getting the coaching you need. Learn what interviewers are looking for, the dos and don'ts, what defines a strong candidate, and how to prepare for an interview. Come and get a powerful handout you will use again and again!

Friday, October 24

BMES Student Chapter Outstanding Chapter Best Practices

8:30am – 9:30am

Convention Center, Room 103A

This workshop will feature the BMES Student Chapter from San José State University (awarded the BMES Outstanding Student Chapter Award), along with the BMES Student Chapter from The Ohio State University (awarded the Commendable Achievement Award). The workshop will provide information on chapter best-practices, allowing students to ask questions, exchange ideas and implement goals for the upcoming year.

BMES Student Chapter—Outreach and Mentoring Best Practices

9:30am - 10:30am

Convention Center, Room 103A

This workshop will feature the BMES Student Chapter from the University of California, Davis (awarded the BMES Outstanding Mentoring Award) and the BMES Student Chapter from the University of Pennsylvania (awarded the BMES Outstanding Outreach Award). The workshop will provide information on chapter best-practices, allowing students to ask questions, exchange ideas and implement goals for the upcoming year.

Owning Your Career & Using Mentors

1:30pm - 2:30pm

Convention Center, Room 103A

Take control of your career! Whether you are employed or searching for a job, this session will provide a structured "roadmap" to help you develop and execute a short-term career plan. Learn action-packed steps to get started with and apply a new approach throughout your career. In addition, this session will teach you how to build a mentorship base. Who should your mentors be? Learn your role as the "mentee" and what to expect from your mentors. These are tips you will be able to implement successfully right away. Remember: nobody cares about your career more than you do; you owe it to yourself to learn new ways to get ahead!

STUDENT CHAPTER TABLES

Stop by the Student Chapter Booths inside the Registration area in Exhibit Hall A to see what's going on "on campus"!

Cornell University

LeTourneau University

Louisiana Tech University

Purdue University

San Jose State University

Stony Brook University

University of California, Davis

University of Illinois at Urbana-Champaign

University of North Carolina, Chapel Hill

University of Tennessee – Knoxville

University of Texas, Austin

University of Wisconsin – Madison

Vanderbilt University

Virginia Commonwealth University

Virginia Tech/Wake Forest University

Register Today!

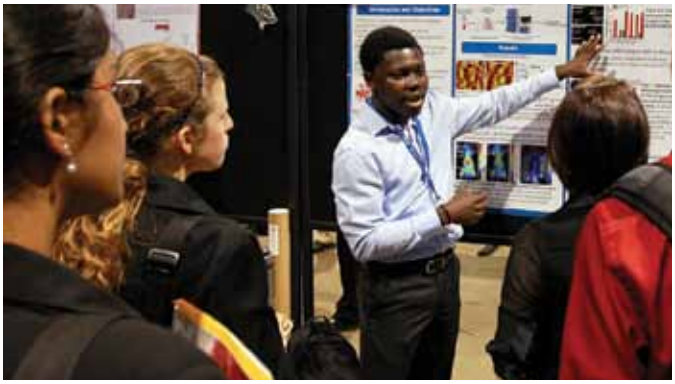
www.bmes.org/MBECC14registration

CAREER | CONNECTIONS

Biomedical Engineering Society

2014 Midwest Biomedical Engineering Career Conference

Hosted by Wayne State College of Engineering



November 7, 2014

McGregor Conference Center
Detroit, MI

Visit the 2014 MBECC website at www.bmes.org/MBECC14

- **More information about the conference**
- **A full list of activities**
- **Sponsorship and exhibit opportunities**

- **Have your resume reviewed, critiqued and edited**
- **Be mentored by practicing bioengineers**
- **Hear how to improve your BMES student chapter**
- **NETWORK**
- **Topics covered:**
  - Biomedical Industry Careers
  - Clinical and Academic Careers
  - Alternative Careers
  - Marketing Yourself for Your First Job
  - BME Entrepreneurship and Translational Research
  - Bridging Research to Career: Safety and Injury Biomechanics
  - Bridging Research to Career: Imaging and Image Analysis
  - Bridging Research to Career: Tissue Engineering/Nanotechnology

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Alpha Eta Mu Beta (AEMB) Programs

Alpha Eta Mu Beta Annual Grand Meeting

Thursday, October 23
4:00pm - 5:30pm
Convention Center, Room 002AB

Session Co-chairs: Dominic E. Nathan PhD, Rupak Dua, PhD, Stephanie Naufel, MS, Rachel Hanks, BS, Rafeed Chaudhury, BS, Marcia A. Pool, PhD and Anthony McGoron 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). This year we will be holding national elections. 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.

Alpha Eta Mu Beta Reception
(Invitation Only)

Thursday, October 23
6:00pm - 8:00pm
The Annual AEMB reception will be held at The Republic of Texas Restaurant (429 E Commerce St San Antonio, TX 78205).

Session Co-chairs: Rupak Dua, MS, Rafeed Chaudhury, BS, Stephanie Naufel, MS, Rachel Hanks, BS, Marcia Pool, PhD and Dominic E. Nathan, PhD.

We will be presenting the national awards and charters for new chapters during this session. Furthermore, this session is a networking opportunity to meet with other fellow members from AEMB chapters, representatives from industry and academia. This session is open to all AEMB student and faculty members, however tickets are required. For tickets, please contact aemb@alphaetamubeta.org

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Ethics in Tissue-Biomaterials Engineering (Annual Alpha Eta Mu Beta Ethics Session)

Friday, October 24
9:00am - 10:00am
Convention Center, Room 002AB

Session Chairs: Anson Joo L. Ong, PhD and Rupak Dua, PhD

Tissue-biomaterials interactions have always been in the mind of researchers when focusing on developing or modifying biomaterials and tissue engineering constructs for optimal properties. These newly developed or modified materials are often evaluated in cell culture systems or in animal models. As a result, ethical issues related to biomaterials and tissue engineering research needs to be considered during their testing phase. Ethical concerns in pre-clinical testing have always involved the types of tissues or cells used. Self-regulated oversights have been provided at institutions to ensure compliance of the US federal law and to oversee animal care and use within the institutions. As funding is also shifting from federal agencies to the biomedical industries, other potential ethical concerns have also emerged, including conflict of interest between the industry and the researchers. These conflicts are often managed by the investigator's institution. As such, it is imperative that researchers are aware of the moral and ethical concerns prior to embarking on their experimental designs.

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 Anson Joo L. Ong, Ph.D. is currently the USAA Distinguished Professor and Chairman for the Department of Biomedical Engineering at the University of Texas at San Antonio. He is also the Program Director for the Joint Graduate Program in Biomedical Engineering as well as an Adjunct Professor in the Department of Comprehensive Dentistry at the University of Texas Health Science Center at San Antonio. Aside from his current academic appointments, Dr. Ong is also the Associate Editor for the Journal of Biomedical Materials Research, Part B. He received his bachelor's degree from the University of Iowa in 1987, and his M.S. and Ph.D. from the University of Alabama at Birmingham in 1990 and 1994, respectively.

Dr. Ong's primary research interests focus the modification and characterization of the implant biomaterials surfaces for dental and orthopedic applications, modification of tissue engineered ceramic scaffolds, protein-biomaterials interactions, and bone-biomaterials interactions. His work has been funded by the National Institute of Health, National Science Foundation, the Whitaker Foundation, Implant Dentistry Research and Education Foundation, Academy of Prosthodontics, American Association for Dental Research, and US Army, as well as numerous biomedical industries. Dr. Ong has authored/co-authored over 100 articles published in refereed journals and over 200 conference abstracts. In addition, he has given invited lectures and keynote lectures at national and international meetings, served as a manuscript reviewer for several biomedical engineering related scientific journals, and continues to serve as a grant reviewer for the National Institutes of Health, National Science Foundations, Department of Defense, and other international funding agencies. Dr. Ong has served on numerous committees in professional societies, including the Society for Biomaterials, Biomedical Engineering Society, and the International Association for Dental Research. He is currently on the editorial board of several biomedical related journals and was the Past Program Chair for the Society for Biomaterials and the Past President of the Implantology Research Group in the International Association for Dental Research.

Understanding Why Congress Doesn't Fund Research

Friday, October 24
1:30pm - 3:00pm
Convention Center, Room 002AB

Session Chair: Teresa Murray, PhD

How will sequestration budget cuts impact the biomedical In halls of Congress. Widespread agreement exists about the role of R&D in the success of the America's most innovative corporations. However, many view government models of discovery from NASA to public university research labs as obsolete and costly superstructures in today's dot com marketplace. What happened to the case for public exploration and discovery and why shouldn't the private sector be trusted to find the cure for Grandma's dementia or Mark's brain tumor? Long-time Washington political insider, former lobbyist, Administration appointee, and AIMBE's Executive Director, Milan Yager, will reveal the hidden truth about why Congress doesn't fund needed medical research. 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, reduce obesity, or manage chronic disease. Arm yourself with the strategies for changing the policy landscape; it might provide the key to funding for your next discovery.

This session features a panel of experts who routinely communicate with Congress, anchored by Milan Yager, Executive Director, American Institute for Medical and Biological Engineering. We will have a lively, moderated discussion after the panelists' presentations. We particularly encourage students and early career members to participate, but all are welcome to attend.

AIMBE represents the top 2% of medical and biological engineers from industry, government, universities and clinical practice. AIMBE is the leading voice for public policy supporting medical and biological engineering innovation to improve public health. AIMBE staff and fellows regularly meet with key administration officials, Congress, and monitor trends in public policy impacting the field. AEMB members represent the top BME students across the US. Starting in 2006, we have sponsored the Student Ethics Session training future BMEs to evaluate the broader impacts of emerging biomedical innovations. Last year, we initiated the first student public policy session at BMES with our co-sponsor, AIMBE.

Whitaker International Program: Funding Opportunity for Young Biomedical Engineers

Friday, October 24
8:00am - 9:30am
Convention Center, Room 204A

The Whitaker International Program, founded in 2005 provides funding to emerging U.S.-based leaders in biomedical engineering to conduct a study and/or research project, with the underlying objective of building international bridges. Grant projects—including research, coursework, and public policy work—are intended to enhance both the recipient's public career and the BME field. The goal of the Whitaker Program is to assist the development of professional leaders who are not only superb scientists, but who will advance the profession through an international outlook. The Whitaker Program has three sub-programs: Fellows and Scholars Program, Summer Program, and an Undergraduate Program. For more information, including program details, the online application and deadlines, visit: http://www.whitaker.org.

1. **Sabeen Altaf (Session Chair)**
   Senior Program Manager, Science and Technology Programs
   Institute of International Education

2. **Sandra Baker**
   Whitaker International Fellow, 2013-14
   Host Institution: Institute of Bioengineering of Catalonia
   Title: Development of a multi-photon microscopy system for measuring traction forces during in vivo aniogenesis

3. **David Bradway**
   Whitaker International Scholar, 2012-13
   Host Institution: Technical University of Denmark
   Title: Cardiovascular velocity vector imaging: real-time processing and pre-clinical trials

4. **Cassandra Harn**
   Whitaker International Fellow, 2012-13
   Host Institution: Bionnovate Ireland
   Title: An opportunity in innovation training in medical device development and how it has directed my future

5. **Samantha Paulsen**
   Whitaker International Fellow, 2012-13
   Host Institution: ETH Zurich
   Title: Optimizing bioreactor and blood vessel geometries for improved mass transport using computational fluid dynamics

6. **Justine Roberts**
   Whitaker International Scholar, 2013-14
   Host Institution: University of New South Wales
   Title: The design of bio-synthetic, heparin-poly (vinyl alcohol) hydrogels for wound healing applications

Whitaker International Program: Fellows, Scholars & Summer Programs

Grants For Biomedical Engineering Study or Research Abroad

The **Whitaker International Program** provides young biomedical engineers, and those in a related field, the opportunity to expand their geographic and academic horizons.

Potential activities to pursue overseas include:

- conducting research at an academic institution or with a corporation
- interning at a policy institute
- studying for a post-baccalaureate degree
- pursuing post-doctoral work

For more information, including program details, application requirements, and the online application, visit our website.

ACTIVITIES

A Whitaker International grant experience will ideally advance your career, while also advancing the goal of increased international collaboration in BME.

Activities could include:

Type of Awards:

- **Fellows Award: one year award after receiving your bachelor's degree.**
- **Scholars Award: for post-doctoral work.**
- **Summer Award: for BME coursework or research towards your Master's or Ph.D. degree.**

Phone: +212-984-5442

www.whitaker.org

INSTITUTE OF INTERNATIONAL EDUCATION

Institute of International Education, 809 United Nations Plaza, New York, NY 10017
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Cellular and Molecular Bioengineering

Congratulates the 2014 CMBE Young Innovators!

September 2014 issue, edited by David Mooney, Cynthia Reinhart-King and David Schaffer

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Carnegie Mellon
Tom Gaborski
Rochester Inst. Tech.
Pamela Kreeger
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Allen Liu
U. Michigan
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Kathryn Miller-Jensen
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Colorado School of Mines
Krishanu Saha
U. Wisconsin
Ankur Singh
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Junghae Suh
Rice U.
Hossein Tavana
U. Akron

See the Young Innovators present their work on Sat., October 25, 2014

- **Become a 2015 CMBE Young Innovator! Next competition is underway.**
- **Accepted authors will be invited to present their work in a special two-part platform session at the 2015 BMES Annual Meeting.**
- **To be eligible, candidates must be BMES members and hold a position at the Assistant Professor level or equivalent.**
- **Self nominations should include manuscript title with 200-word abstract, and a 2-page NIH-style biosketch, emailed to mike.king@cornell.edu.**

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Key Dates for 2015 Young Innovators issue:
Nomination Deadline: November 15, 2014
Abstract Acceptance: December 15, 2014
Manuscript Submission: February 15, 2015
Print Publication: September 2015

2014 Awards Recipients

One of the more important — and most enjoyable — tasks of the Society is to recognize contributions to the intellectual and professional development of the 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 and for the high quality of their nominees. Congratulations to the following award winners.

Robert A. Pritkzer Distinguished Award Lecture

James Collins, PhD
Boston University

NIBIB Lecture

David Kaplan, PhD
Tufts University

Rita Schaffer Young Investigator Award Lecture

Kimberly Stroka, PhD
Johns Hopkins University

Diversity Award Lecture

Naomi Chesler, PhD
University of Wisconsin-Madison

Annals of Biomedical Engineering (ABME) Awards

Most Downloaded Article

Ann Biomed Eng. 2013 May;41(5):873-82. doi: 10.1007/s10439-012-0731-0

Brain Injury Prediction: Assessing the Combined Probability of Concussion Using Linear and Rotational Head Acceleration
Steven Rowson, Stefan Duma

Most Cited Article

Ann Biomed Eng. 2013 Jan;41(1):68-77. doi: 10.1007/s10439-012-0630-4

Cationic Nanoparticles have Superior Transvascular Flux into Solid Tumors: Insights from a Mathematical Model
Triantafyllos Stylianopoulos, Konstantinos Soteriou, Dai Fukumura, Rakesh K. Jain

BMES Extended Abstracts: Design and Research Awards:

Graduate Students

Lauren Barney
University of Massachusetts, Amherst

Justin Lo
Massachusetts Institute of Technology

Yekaterina Miroshnikova
University of California San Francisco

Fatemeh Mokhtari
Wake Forest University

Andrew Warren
Massachusetts Institute of Technology

Undergraduate Students

Gregory Danchik
Bucknell University

Daniel Greenshields
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Malvi Hemani
Johns Hopkins University

Veronica Ibarra
Illinois Institute of Technology

Rene Olivares-Navarrete
Virginia Commonwealth University

Gireesh Reddy
Virginia Commonwealth University

Simone Siegel
The University of Texas at Austin

BMES Student Chapter Awards

2014 Outstanding Achievement Award

BMES Student Chapter at San Jose State University

2014 Commendable Achievement Award

BMES Student Chapter at the Ohio State University

2014 Outreach Program Award

BMES Student Chapter at University of Pennsylvania

2014 Outstanding Mentoring Award

BMES Student Chapter at University of California, Davis

2013 Fleetest Feet Award

BMES Student Chapter - Virginia Tech/Wake Forest University
53 Students – 117,580 Miles

2014 TRACK CHAIRS

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University of Virginia

Kristen Naegle
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Michael Davis
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Vittoria Flamini
Steven George
Craig Goergen
Anjelica Gonzalez
Yi Hong
Marc Horner
Tzung Hsiai
Patrick Hsieh
Jeffrey Jacot
Javier Jo
Mehmet Kaya
Srivatsan Kidambi
Hyunjoon Kong
Sándor J. Kovács
Jun Liao
Shu Liu
David Long
Sundararajan Madihally
Arash Mahboobin
Gretchen Mahler
Gil Marom
Stuart Mitchell
Jonathan Mynard
Sriram Neelamegham
Keith Neeves
Mehdi Nikkhah
Joseph Palladino
Anthony Passerini
Abhijit Patwardhan
Robert Peattie
Julie Phillippi
Manu Platt
Raj Prabhu
Milica Radisic
Michael Regnier
David Rubenstein
Michael Sacks
Chander Sadasivan
Alisha Sarang-Sieminski
Narine Sarvazyan
Jeff Saucerman
Saravan Kumar Shanmugavelayudam
Jawaad Sheriff
Agneta Simionescu
Dan Simionescu
Craig Simmons
Saion Sinha
Joao Soares
Kevin Soucy
Wei Tan
Charles Taylor
W Robert Taylor
Lian Tian
Mark Van Dyke
Sara Vasconcrelos
Sihong Wang
Zhijie Wang
Saami Yazdani
Wei Yin
Huidan (Whitney) Yu
Ji Zhang

CELLULAR AND MOLECULAR BIOENGINEERING

Michael Davis
Tara Deans
Junsang Doh
Lindsay Fitzpatrick
John Frampton
Jason Gleghorn
Heather Hayenga
Brian Helmke
Jeffrey Hubbell
Gregory Hudalla
Sha Jin
Roland Kaunas
Tamara Kinzer-Ursem
Konstantinos Konstantopoulos
Piyush Koria
James Lai
Nic Leipzig
Allen Liu
Shu Liu
David Long
Hongyan Ma
Robert Mauck
Teresa Murray
Jiro Nagatomi
Sriram Neelamegham
Kaushik Parthasarathi
Anthony Passerini
Julie Phillippi
Michelle Previtera
Anand Ramasubramanian
Michael Regnier
Jeff Saucerman
Keyue Shen
Adrian Shieh
Richard Sinden
John Slater
Junghae Suh
Melody Swartz
Leo Wan
Jun Wang
Peter Yingxiao Wang
Yun Wang

DEVICE TECHNOLOGIES AND BIOMEDICAL ROBOTICS

Animesh Agarwal
James Antaki
Lemont Baker
Tamara Baynham
Lissett Bickford
Hung Cao
J-C Chiao
Youngjae Chun
Jennifer Currey
Rafael Davalos
Jaydip Desai
Arielle Drummond
Juan Hincapie
Marc Horner
Samir Iqbal
Juan Jiménez
Matt Kay
Mehmet Kaya
Massoud Khraiche
Wen Ko
Jeffrey La Belle
James Lai
Jinseok Lee
Janie Mandrusov
Keefe Manning
Mike McShane
Stuart Mitchell
Mansoor Nasir
Dominic Nathan
Chris Pulliam
James Rains
Arthur Ritter
Chander Sadasivan
Sergey Shevkoplyas
Kevin Soucy
Sihong Wang
Paul Yoo
Bailin Zhang
John Zhang
Weiying Zhao

DRUG DELIVERY

Jorge Almodovar
Debra Auguste
Lauren Black III
Amy Brock
Beata Chertok
J-C Chiao
Youngjae Chun
Rhima Coleman
Daniel Conway
Guohao Dai
Michael Davis
Emily Day
Tara Deans

Erik Dreaden
Craig Duvall
Mario Fabiilli
Akhilesh Gaharwar
Gargi Ghosh
Jason Gleghorn
Anjelica Gonzalez
Jordan Green
Jianjun Guan
Mariah Hahn
Jered Haun
Tamara Kinzer-Ursem
Hyunjoon Kong
Konstantinos Konstantopoulos
Wenge Liu
Manu Platt
Narasimhan Rajaram
Anand Ramasubramanian
Kathryn Whitehead
Saami Yazdani
Kaiming Ye
Wei Yin
Edmond Young
Yang Yun
Lijie Grace Zhang

NANO AND MICRO TECHNOLOGIES

Kyle Allen
Shyam Aravamudhan
Natalie Artzi
Hung Cao
Hao Cheng
Beata Chertok
J-C Chiao
Youngjae Chun
Rohan Fernandes
Elain Fu
Thomas Gaborski
Akhilesh Gaharwar
Jason Gleghorn
SJ Claire Hur
Samir Iqbal
Salman Khetani
Massoud Khraiche
Srivatsan Kidambi
Devrim Kilinc
Jungkyu (Jay) Kim
Pilnam Kim
YongTae Kim
Wei Li
Elizabeth Loboa
Xiaolong Luo
Sundararajan Madihally
Stuart Mitchell
Aaron Mohs
Mansoor Nasir
Keith Neeves
Narasimhan Rajaram
Anand Ramasubramanian
Smitha Rao
Daniel Ratner
Jai Rudra
Erkin Seker
Saravan Kumar Shanmugavelayudam
Keyue Shen
Sergey Shevkoplyas
Saion Sinha
John Slater
Nathan Sniadecki
Leo Wan
Jun Wang
Sihong Wang
Shannon Weigum
Yun Wu
Woon-Hong Yeo
Edmond Young
Lijie Grace Zhang
Chao Zhong
Pavel Zrazhevskiy

NEURAL ENGINEERING

Shyam Aravamudhan
Randolph Ashton
Hung Cao
Jeffrey Capadona
J-C Chiao
Jaydip Desai
Jaimie Dougherty
Lisa Flanagan
John Frampton
Ryan Gilbert
Matthew Johnson
Jennifer Kang-Mieler
Mehmet Kaya
Massoud Khraiche
Srivatsan Kidambi
Devrim Kilinc
Srinivas Kota
Teresa Murray
Dominic Nathan
Kevin Otto
Chris Passaglia
Matthew Schiefer
Erkin Seker
Anita Singh
Sarah Stabenfeldt
Katherine Steele
Deanna Thompson
Stuart Tobet
Mark Van Dyke
Pamela VandeVord
Stephanie Willerth
Rebecca Willits

NEW FRONTIERS AND SPECIAL TOPICS

James Abbas
Taby Ahsan
Shyam Aravamudhan
Beata Chertok
Elain Fu
Jason Gleghorn
Ranu Jung
James Lai
Chenzhong Li
Susan Lin
Tan Liu
Stuart Mitchell
Ashwin Nair
Nozomi Nishimura
Anand Ramasubramanian
Matthew Reilly
Saravan Kumar Shanmugavelayudam
Sergey Shevkoplyas
Dan Simionescu
Nathan Sniadecki
Leo Wan
Jun Wang
Chao Zhong
Pavel Zrazhevskiy

ORTHOPEDIC AND REHABILITATION ENGINEERING

Animesh Agarwal
Andrew Anderson
Don Anderson
Silvia Blemker
Larry Bonassar
Robert Bowles
Stephanie Bryant
Joel D Bumgardner
John Cotton
Eric Darling
Tara Deans
Kyle Allen
Dawn Elliott
F. Scott Gayzik
Heath Henninger
Christopher Hernandez
Clark Hung
Matthew Johnson
Jeffrey La Belle
Spencer Lake
William Ledoux
Amy Lerner
Gregory Lewis
Lucas Lu
Wendy Murray
Rachael Oldinski
James Rains
Robert Sah
Katherine Saul
Lori Setton
Katherine Steele
Joel Stitzel
Karen Troy
Pamela VandeVord
Diane Wagner
Jeffrey Weiss
Lise Worthen-Chaudhari
Lijie Grace Zhang

RESPIRATORY BIOENGINEERING

Said Audi
Jason Bates
Konstantin Birukov
William Federspiel
Marcel Filoche
Donald Gaver
F. Scott Gayzik
Samir Ghadiali
Jason Gleghorn
Rebecca Heise
Geoff Maksym
Celeste Nelson
Kaushik Parthasarathi
Carrie Perlman
Arthur Ritter
Bela Suki
Daniel Weiss
Tilo Winkler

STEM CELL ENGINEERING

Taby Ahsan
Randolph Ashton
Lauren Black III
Stuart Campbell
Rhima Coleman
Guohao Dai
Tara Deans
Thomas Gaborski
Akhilesh Gaharwar
Tzung Hsiai
Jeffrey Jacot
Robert Mauck
Jin Nam
Syam Nukavrapu
Julie Phillippi
Eduardo Silva
Deanna Thompson
Gregory Underhill
Leo Wan
Stephanie Willerth
Janet Zoldan

ABSTRACT REVIEWERS

TISSUE ENGINEERING

Kyle Allen
Deirdre Anderson
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Natalie Artzi
Randolph Ashton
Samira Azarin
Brendon Baker
Lauren Black III
Gary Bowlin
Joel D Bumgardner
Gulden Camci-Unal
Stuart Campbell
Rhima Coleman
Guohao Dai
Eric Darling
Michael Davis
Tara Deans
Meng Deng
Craig Duvall
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Jason Gleghorn
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Sheila Grant
Jianjun Guan
Teja Guda
Mariah Hahn
Rebecca Heise
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Tzung Hsiai
Patrick Hsieh
Rita Issa
Jeffrey Jacot
Sha Jin
Roland Kaunas
Salman Khetani
Srivatsan Kidambi
Megan Killian
Pilnam Kim
YongTae Kim
Matt Kipper
Hyunjoon Kong
Piyush Koria
Joydip Kundu
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Jennifer Munson
Jiro Nagatomi
Ashwin Nair
Jin Nam
Hung Nguyen
Mehdi Nikkhah
Syam Nukavrapu
Grace O'Connell
Rachael Oldinski
Rene Olivares-Navarrete
Emmanuel Opara
Robert Peattie
Raquel Perez-Castillejos
Julie Phillippi
George Pins
Michael Regnier
David Rubenstein
Wajeeh Saadi
Alisha Sarang-Sieminski
Scott Sell
Blanka Sharma
Vassilios Sikavitsas
Eduardo Silva
Agneta Simionescu
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Sihong Wang
Yun Wang
Zhijie Wang
Stephanie Willerth
Rebecca Willits
Kaiming Ye
Lijie Grace Zhang
Wujie Zhang
Chao Zhong
Janet Zoldan

CONGRATULATIONS TO THE BMES 2014 CLASS OF FELLOWS

BETH WINKELSTEIN, PHD
University of Pennsylvania

CHENG ZHU, PHD
Georgia Institute of Technology

DEBORAH LECKBAND, PHD
University of Illinois

DONALD GAVER, PHD
Tulane University

GUILLERMO AMEER, PHD
Northwestern University

HANJOONG JO, PHD
Georgia Institute of Technology

ROBERT SAH, MD, SCD
University of California, San Diego

SONG LI, PHD
University of California, Berkeley

TEJAL DESAI, PHD
University of California, San Francisco

BMES Fellow status is awarded to members who demonstrate exceptional achievements and experience in the field of biomedical engineering, and a consistent record of membership and participation in the Society.

PROGRAM

NOTES

TODAY'S HIGHLIGHTS

PLATFORM SESSIONS Thurs-1 8:00am - 9:30am
See pages 71-77, HBGCC

EXHIBIT HALL OPEN 9:30am - 5:00pm
HBGCC, Exhibit Hall A

POSTER SESSION 9:30am - 5:00pm
See pages 93-124 , HBGCC, Exhibit Hall A
Poster Viewing with Authors & Refreshment Break 9:30am - 10:30am

PLENARY SESSION
10:30am - 12:15pm
HBGCC, Lila Cockrell Theatre
State of the Society Fellows Presentation
Gilda Barabino, PhD

Robert A. Pritzker Distinguished Lecture
LIFE REDESIGNED: THE EMERGENCE OF SYNTHETIC BIOLOGY
James Collins, PhD

Celebration of Minorities in BME Luncheon 12:30pm - 1:45pm
Additional ticket purchase required
HBGCC, Ballroom A

PLATFORM SESSIONS Thurs-2 2:00pm - 3:30pm
See pages 78-84, HBGCC

Poster Viewing with Authors & Refreshment Break 3:30pm - 4:30pm
HBGCC, Exhibit Hall A

PLATFORM SESSIONS Thurs-3 4:30pm - 6:00pm
See pages 85-91, HBGCC

PLENARY SESSION 6:15pm - 7:30pm
Computational Modeling and Simulation for Medical Devices
HBGCC, Lila Cockrell Theatre

Hosted Receptions–Marriott Rivercenter and Marriott Riverwalk
See page 62 for list

THURSDAY, October 23, 2014

8:00 AM - 9:30 AM
PLATFORM SESSIONS – THURS - 1

PLATFORM SESSIONS **Th-1**

Track: Tissue Engineering, Cardiovascular Engineering

OP-Thurs-1-1 - Room 001A

Blood Vessel Tissue Engineering

Chairs: Kent Leach, Peter McFetridge

8:00AM
Human Tissue-Engineered Blood Vessels for *In Vitro* Drug Response Testing
C. Fernandez[1], R. Yen[1], W. Reichert[1], and G. Truskey[1]
[1]Duke University, Durham, NC

8:15AM
Pericyte-Derived Matrix Alters Endothelial Cell Angiogenic Properties and Inflammatory Function
P. Sava[1], I. Cook[1], B. Walker[1], and A. Gonzalez[1]
[1]Yale University, New Haven, CT

8:30AM
Dynamically-Perfused Multi-Scale Vascular Network Created within Thick Hydrogel using 3D Bio-Printing Technology
V. Lee[1], P. Vincent[2], S-S. Yoo[3], and G. Dai[1]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Albany Medical College, Albany, NY, [3]Brigham and Women's Hospital, Harvard Medical School, Boston, MA

8:45AM
Fabrication of Highly Vasoreactive and Robust Tissue Engineered Vascular Media Using Doxycycline Treatment: Implication for Vascular Tissue Engineering
V. Bajpai[1], P. Mistriotis[1], Z. Chamanzar[1], R. Carpenter[1], and S. Andreadis[1]
[1]SUNY Buffalo, Amherst, NY

9:00AM
Accelerating Cellular Spheroid Fusion Using Magnetic Forces to Fabricate a Vascular Tissue
T. Olsen[1], M. Casco[1], D. Simionescu[1], R. Visconti[2], and F. Alexis[1]
[1]Clemson University, Clemson, SC, [2]Medical University of South Carolina, Charleston, SC

9:15AM
Acellular Small Diameter Vascular Graft Evaluated In a Pre-clinical Animal Model
M. Koobatian[1], R. Smith[1], S. Row[1], S. Andreadis[1], and D. Swartz[1]
[1]State University of New York at Buffalo, Amherst, NY

Track: Tissue Engineering, Stem Cell Engineering

OP-Thurs-1-2 - Room 001B

Microfabrication and 3D Printing for Tissue Engineering

Chairs: Adam Feinberg, Akhilesh Gaharwar

8:00AM
3D Printed Biological Machines Powered by Skeletal Muscle
C. Cvetkovic[1], R. Raman[1], M. Rich[1], R. Swetenburg[2], B. Williams[1], S. Stice[2], H. Kong[1], T. Saif[1], and R. Bashir[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]The University of Georgia, Athens, GA

8:15AM
Hierarchical Assembly for Guided Morphogenesis of Scaffold-free Tissues
K. Stevens[1] and S. Bhatia[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

8:30AM
Rapid Formation of Multicellular Spheroids with Controllable Microenvironment in Microfluidics-Generated Double Emulsion Droplets and Its Applications in Tissue Engineering
H. Chan[1] and K. Leong[1]
[1]Duke University, Durham, NC

8:45AM
3D Printing Facilitated Scaffold-free Tissue Unit Fabrication
Y. Tan[1], D. Richards[1], and Y. Mei[1,2]
[1]Clemson University, Charleston, SC, [2]Medical University of South Carolina, Charleston, SC

9:00AM
3D Printing of Complex Biological Scaffolds Using Freeform Reversible Embedding of Suspended Hydrogels (FRESH)
T. Hinton[1] and A. Feinberg[1]
[1]Carnegie Mellon University, Pittsburgh, PA

9:15AM
Robotic Microcontact Printing (R- CP)
J. McNulty[1], T. Klann[1], G. Knight[1], M. Salick[1], L-S. Turng[1], and R. Ashton[1]
[1]University of Wisconsin Madison, Madison, WI

Track: Biomaterials, Tissue Engineering
OP-Thurs-1-3 - Room 006A
Biomaterial Scaffolds I

Chairs: Dan Simionescu, Jai Rudra

8:00AM *Invited*
Biomaterials Track Overview
R. Carrier[1]
[1]Northeastern University, Boston, MA

8:15AM
Osseointegration Capability of Direct Metal Laser Sintered Titanium Implants With Unique Surface Characterization: An *In Vitro* and *In Vivo* Evaluation
S. Hyzy[1], D. Cohen[1], R. Clohessy[1], A. Cheng[2,3,4], B. Boyan[1,2], and Z. Schwartz[1,5]
[1]Virginia Commonwealth University, Richmond, VA, [2]Georgia Institute of Technology, Atlanta, GA, [3]Emory University, Atlanta, GA, [4]Peking University, Beijing, China, People's Republic of, [5]University of Texas Health Science Center, San Antonio, TX

8:30AM
Effect of Capillary Action on Bone Regeneration in Micro-Channel Ceramic Scaffolds
Y. Kim[1], M-H. Hong[2], C. Bae[3], Y. Kim[4], K. Kim[4], and D. Oh[5]
[1]Trinity School, New York, NY, [2]Columbia University, New York, NY, [3]Chonnam National University, Gwangju, Korea, Republic of, [4]Kyung Hee University, Yongin, Korea, Republic of, [5]Columbia Unoversity, New York, NY

8:45AM
Elastomeric and Mechanically Stiff Nanocomposites for Bone Tissue Engineering
P. Keratitayanan[1] and A. Gaharwar[1]
[1]Texas A&M University, College Station, TX

9:00AM
Solid Freeform Fabrication of Biomaterials Scaffolds via Photopolymerization of High Internal Phase Emulsions
N. Sears[1], J. Robinson[1], M. Whitely[1], and E. Cosgriff-Hernandez[1]
[1]Texas A&M University, College Station, TX

9:15AM
Enabling Surgical Placement of Hydrogels Through Achieving Paste-Like Rheological Behavior Prior to Crosslinking
E. Beck[1], B. Lohman[1], S. Kieweg[1], S. Gehrke[1], C. Berkland[1], and M. Detamore[1]
[1]University of Kansas, Lawrence, KS

Track: Biomaterials
OP-Thurs-1-4 - Room 006B
Bioinspired and Self Assembling Biomaterials I

Chairs: George Pins, Jordan Green

8:00AM
Suppression of Osteoarthritis via Molecular Engineering of an Aggrecan Mimetic
A. Panitch[1], C. Goergen[1], G. Breur[1], P. Snyder[1], N. Vazquez-Portalatin[1], and S. Sharma[1]
[1]Purdue University, WEST LAFAYETTE, IN

8:30AM
Harnessing Cellular-Derived Forces to Control the Synthesis and Alignment of Novel ECM Materials
J. Schell[1], B. Wilks[1], X. Cao[2], V. Shenoy[2], and J. Morgan[1]
[1]Brown University, Providence, RI, [2]University of Pennsylvania, Philadelphia, PA

8:45AM
Glycosylated Peptide Nanofibers to Modulate Galectin Bioactivity
A. Restuccia[1], Y. Tian[2], J. Collier[3], and G. Hudalla[1]
[1]University of Florida, Gainesville, FL, [2]Illinois Institute of Technology, Chicago, IL, [3]University of Chicago, Chicago, IL

9:00AM
RNA Localization to Phospholipid Membranes with Nucleolipids
N. Kamat[1] and J. Szostak[1]
[1]Harvard University and Massachusetts General Hospital, Boston, MA

9:15AM
Injectable Oxidation-Responsive Fibrillar Assemblies are Processed by CD11c+ Populations in Skin
C. Brubaker[1], D. Bonner[1], E. Phelps[1], and J. Hubbell[1]
[1]Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland

Track: Drug Delivery, Nano to Micro Technologies
OP-Thurs-1-5 - Room 006C
Nano/Micro Drug Delivery

Chairs: Craig Duvall, Jered Haun

8:00AM
Glucose-Responsive Insulin Delivery by Biomimetic Synthetic Vesicles
Z. Gu[1], W. Tai[1], J. Di[1], R. Mo[1], and V. Subramanian[1]
[1]University of North Carolina at Chapel Hill and North Carolina State University, Raleigh, NC

8:15 AM
Nanostructured Polycaprolactone Thin Films For Enhanced Ocular Drug Delivery
J. Kim[1], C. Fox[2], and T. Desai[3]
[1]UCB-UCSF Graduate Program in Bioengineering, San Francisco, CA, [2]Pharmaceutical Sciences and Pharmacogenomics Graduate Program in UCSF, San Francisco, CA, [3]Department of Bioengineering and Therapeutic Sciences in UCSF, San Francisco, CA

8:30AM
Nanostructured Mucoadhesive Microparticles for Their Enhanced Retention in Gastrointestinal Tract
C. Park[1], B. Huh[1], M. Park[1], S. Lee[1], H. Hong[1], and Y. Choy[1]
[1]Seoul National University, Seoul, Korea, Republic of

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

8:45AM
A Dendrimer/Lipid Gene Delivery System for Ocular Gene Therapy
D. Sun[1], H. Maeno[1], A. Malamas[1], G. Yu[1], T. Maeda[1], A. Maeda[1], K. Palczewski[1], and Z-R. Lu[1]
[1]*Case Western Reserve University, Cleveland, OH*

9:00AM
Novel Electrospun Gelatin/insulin Formulation for Transbuccal Insulin Delivery
L. Xu[1], N. Sheybani[1], S. Ren[1], G. Bowlin[2], W. Yeudall[1], and H. Yang[1]
[1]*Virginia Commonwealth University, Richmond, VA,* [2]*University of Memphis, Memphis, TN*

9:15AM
Transport Studies of Nanoscale Bacteria Enabled Autonomous Drug Delivery Systems (NanoBEADS) in an *In-vitro* Tumor Model
M. Traore[1] and B. Behkam[1]
[1]*Virginia Tech, Blacksburg, VA*

Track: Biomechanics, Cellular and Molecular Bioengineering
OP-Thurs-1-6 - Room 006D
Cell Biomechanics I

Chairs: Elizabeth Loboa, Christopher Lemmon

8:00AM
Nanotopography Modulated Nuclear Deformation
X. Yu[1], A. Bruce[1], R. Mezan[1], L. Wang[2], P. Fulay[1], Y. Rojanasakul[1], and Y. Yang[1]
[1]*West Virginia University, Morgantown, WV,* [2]*The National Institute for Occupational Safety and Health, Morgantown, WV*

8:15 AM
Platelet Mechanosensing on Collagen-Conjugated Substrates
M. Kee[1], Y. Qiu[1], D. Myers[1,2], R. Tran[1], Y. Sakurai[1,2], and W. Lam[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

8:30AM
Vascular Smooth Muscle Cell Behavior on Patterned PDMS Substrates
R. Chen[1] and D. Dean[1]
[1]*Clemson University, Clemson, SC*

8:45AM
Impact of Membrane Cholesterol on Monocyte Biomechanics
A. Saha[1] and A. Ramasubramanian[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

9:00AM
Membrane Deformation and Bioeffects in Single Cells Produced by High Strain-Rate Loading Associated with Tandem Bubble Interaction
F. Yuan[1], C. Yang[1], Y. Zhang[1], G. Sankin[1], and P. Zhong[1]
[1]*Duke University, Durham, NC*

9:15AM
Dynamic Traction Forces of Spreading and Adherent Human Neutrophils
S. Henry[1], C. Chen[2], J. Crocker[1], and D. Hammer[1]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*Boston University, Boston, MA*

Track: Cancer Technologies
OP-Thurs-1-7 - Room 007A
Cancer Mechanobiology

Chairs: Michael King, Christopher Lemmon

8:00AM *Invited*
Advancing Convergence and Innovation in Cancer Research: National Cancer Institute Center for Strategic Scientific Initiatives (CSSI)
E. Greenspan[1], M. Berny-Lang[1], and J. Lee[1]
[1]*National Cancer Institute, NIH, Bethesda, MD*

8:15 AM
Nuclear Limits to 3D Migration and Survival
D. Discher[1]
[1]*University of Pennsylvania, Philadelphia, PA*

8:30AM
Matrix-Stiffness-Dependent Upregulation Of MT1-MMP Promotes An Invasive Epithelial Phenotype
S. Carey[1], K. Martin[1], and C. Reinhart-King[1]
[1]*Cornell University, Ithaca, NY*

8:45AM
Loss of Giant Obscurins Alters Breast Epithelial Cell Mechanobiology
K. Stroka[1], M. Shriver[2], B. Wong[1], K. Konstantopoulos[1], and A. Kontrogianni-Konstantopoulos[2]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*University of Maryland, Baltimore, Baltimore, MD*

9:00AM
Extracellular Matrix Stiffness Protects Carcinoma Cells from Sorafenib via JNK Signaling
T. Nguyen[1], M. Sleiman[1], T. Moriarty[1], W. Herrick[1], and S. Peyton[1]
[1]*University of Massachusetts Amherst, Amherst, MA*

9:15AM
Contractility as a Biophysical Signature of Metastasis for Primary Human Colon Cancer Cells
M. Ali[1], K. Tangella[2], D. Ramkumar[2], and T. Saif[3]
[1]*University of Illinois, Champaign, IL,* [2]*Provena Covenant Medical Centre, Urbana, IL,* [3]*University of Illinois at Urbana-Champaign, Urbana, IL*

Track: Cardiovascular Engineering
OP-Thurs-1-8 - Room 007B
Hemodynamics and Vascular Mechanics I

Chairs: Daniel Bluestein, Keith Neeves

8:00AM
Platelet Thrombin Generation Under Flow
W. Yin[1], K. Bond[1], V. Ngo[1], and D. Rubenstein[1]
[1]*Stony Brook University, Stony Brook, NY*

8:15 AM
Stress-induced Platelet Activation Potential in Abdominal Aortic Aneurysms
K. Hansen[1], A. Arzani[1], and S. Shadden[1]
[1]*University of California, Berkeley, CA*

8:30AM
Stiff Substrates Enhance Monocyte Recruitment from Flow
J. MacKay[1] and D. Hammer[1]
[1]*University of Pennsylvania, Philadelphia, PA*

8:45AM
Simvastatin Ameliorates Substrate Stiffness Dependent Endothelial Dysfunction
M. Lampi[1], C. Faber[1], J. Huynh[1], J. Jones[1], N. Nishimura[1], and C. Reinhart-King[1]
[1]Cornell University, Ithaca, NY

9:00AM
Refrigerated Platelets Respond to Physiologic Inhibitors, Evidence That Cold-Induced Activation Is Unlikely to Result in Disseminated Intravascular Coagulation
K. Reddoch[1], H. Pidcoke[2], A. Cap[2], and A. Ramasubramanian[1]
[1]The University of Texas at San Antonio, San Antonio, TX, [2]US Army Institute of Surgical Research, Fort Sam Houston, TX

9:15AM
Fibrin Generation and Transthrombus Pressure Gradients Regulate Thrombin Mediated Clot Growth
R. Muthard[1] and S. Diamond[1]
[1]University of Pennsylvania, Philadelphia, PA

Track: Cellular and Molecular Bioengineering
OP-Thurs-1-9 - Room 007C
Cell Adhesion

Chairs: Sriram Neelamegham, Eric Boder

8:00AM
When Affinity Is not Enough: Strong Ideal Bonds with the Gate Mechanism
W. Thomas[1], O. Yakovenko[1], and K. Johnson[1]
[1]University of Washington, Seattle, WA

8:15AM
Kinetic Properties govern Mucin 16 (MUC16) and Podocalyxin (PODXL) adhesion to E- and L-selectins in Shear Flow
D. Shea[1], K. Stebe[2], and K. Konstantopoulos[1,3,4,5]
[1]Johns Hopkins University, Baltimore, MD, [2]Department of Chemical and Biomolecular Engineering, University of Pennsylvania, Philadelphia, PA, [3]Johns Hopkins Institute for NanoBioTechnology, Baltimore, MD, [4]Johns Hopkins Physical Sciences-Oncology Center, Baltimore, MD, [5]Johns Hopkins Center of Cancer Nanotechnology Excellence, Baltimore, MD

8:30AM
ST3Gal-4 is the Primary (2,3) Sialyltransferase Regulating the Biosynthesis of E-, P- and L-selectin Ligands in Human Leukocytes
S. Neelamegham[1], N. Mondal[1], A. Buffone Jr.[2], and J. Lau[2]
[1]State University of New York at Buffalo, Buffalo, NY, [2]Roswell Park Cancer Institute, Buffalo, NY

8:45AM
Allosteric Regulation of Cadherin-mediated Intercellular Adhesion by Inside-out Signaling
D. Leckband[1], N. Shashikanth[1], J. Newhall[1], Y. Petrova[2], M. Spano[2], and B. Gumbiner[2]
[1]University of Illinois, Urbana, IL, [2]University of Virginia College of Medicine, Charlottesville, VA

9:00AM
Catch Bond In TCR-CD3 Interaction
C. Ge[1] and C. Zhu[1]
[1]Georgia Institute of Technology, Atlanta, GA

9:15AM
An ECM Fibronectin Matricryptic Site Contributes To Mechanosignaling In Endothelial Cells Under Flow
W. Okech[1], D. Hocking[1], and I. Sarelius[1]
[1]University of Rochester, Rochester, NY

Track: Cellular and Molecular Bioengineering, Biomechanics
OP-Thurs-1-10 - Room 007D
Mechanotransduction I

Chairs: Brenton Hoffman, Nic Leipzig

8:00AM
α-Catenin Cytomechanics: Role in Cadherin-Dependent Adhesion and Mechanotransduction
J. Wu[1], A. Barry[1], H. Tabdili[1], I. Muhamed[1], N. Shashikanth[1], G. Gomez[2], A. Yap[2], C. Gottardi[3], J. Rooij[4], N. Wang[1], and D. Leckband[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]University of Queensland, St. Lucia, Brisbane, Australia, [3]Northwestern University, Chicago, IL, [4]University Medical Center Utrecht, Utrecht, Netherlands

8:15 AM
Cyclic Anisotropic Strain Mediates TGF β Activation in a Time-Dependent Manner by Potentiating SMAD2 and RhoA
L. Pagnozzi[1] and J. Butcher[1]
[1]Cornell University, Ithaca, NY

8:30AM
Cellular Tension Regulates TGF β Signaling Through Discrete Spatial Organization Of TGF β Receptors
J. Rys[1], C. DuFort[2], M. Baird[3], M. Davidson[3], and T. Alliston[2]
[1]UC Berkeley - UCSF, San Francisco, CA, [2]UCSF, San Francisco, CA, [3]Florida State University, Tallahassee, FL

8:45AM
Tissue Mechanics in Glioma Aggression
Y. Miroshnikova[1], J. Phillips[1], K. Lobo[1], H. Laklai[1], T. McKnight[1], and V. Weaver[1]
[1]UCSF, San Francisco, CA

9:00AM
Determining Force Sensitive Protein-Protein Interactions in Focal Adhesions
A. LaCroix[1] and B. Hoffman[1]
[1]Duke University, Durham, NC

9:15AM
Rationally-Designed FRET-based Molecular Tension Sensors
A. LaCroix[1] and B. Hoffman[1]
[1]Duke University, Durham, NC

Track: Nano to Micro Technologies, Translational Biomedical Engineering
OP-Thurs-1-11 - Room 008A
BioMEMS I

Chairs: James Tunnell, Catherine Klapperich

8:00AM *Invited*
Nano to Micro Technologies Track Overview
C. Klapperich[1]
[1]Boston University, Boston, MA

8:15 AM *Invited*
High-throughput High-content Developmental Biology and Neurogenetics
H. Lu[1]
[1]Georgia Institute of Technology, Atlanta, GA

8:45AM
A Microdevice for Simultaneous Applications of Topographic Cues and Cyclic Tensile Strains to Live Cells
Q. Wang[1], K. Wei[1], and Y. Zhao[1]
[1]Ohio State University, Columbus, OH

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

9:00AM
An Ultrathin Flexible Carbon Nanotube Microelectrode Array for Neural Recording and Stimulation
W. Yi[1], Z. Feng[1], C. Zhou[1], J. Cavanaugh[1], C. Chen[1], and M-C. Cheng[1]
[1]*Wayne State University, Detroit, MI*

9:15AM
Nanomagnetic Actuation: Remote Control of Cell Signaling
J. Dobson[1], A. Monsalve[1], B. Hu[2], and A. El Haj[2]
[1]*University of Florida, Gainesville, FL,* [2]*Keele University, Stoke on Trent, United Kingdom*

Track: Nano to Micro Technologies, Cellular and Molecular Bioengineering
OP-Thurs-1-12 - Room 008B

Microfluidic Platforms I

Chairs: Xiaolong Luo, Edmond Young

8:00AM
Microfluidic Platforms Overview
M. Vazquez
The City College of New York (CUNY), New York, NY

8:15 AM
A Chemotaxis-Based Microfluidic Sorting Platform
S. Suh[1], M. Traore[1], and B. Behkam[1]
[1]*Virginia Tech, Blacksburg, VA*

8:30AM
Spontaneous Neutrophil Migration Patterns in Burn Patients during Sepsis
C. Jones[1,2,3], M. Moore[1], L. Dimisko[1,2], A. Alexander[1], A. Ibrahim[1], B. Hassell[2], R. Tompkins[1], S. Fagan[1], and D. Irimia[1,2,3]
[1]*Massachusetts General Hospital and Harvard Medical School, Boston, MA,* [2]*BioMEMS Resource Center, Center for Engineering in Medicine and Surgical Services, Boston, MA,* [3]*Shriners Hospital for Children, Boston, MA*

8:45AM
Shear-free Microfluidic Platform for the Chemotaxis and Rapid Labeling of Cells
H. Chung[1], C. Chan[1,2], T. Khire[1], G. Marsh[1], A. Clark[1], R. Waugh[1], and J. McGrath[1]
[1]*University of Rochester, Rochester, NY,* [2]*Simpore Inc., West Henrietta, NY*

9:00AM
Nanowire Electrophysiology For Cell Sorting And Screening
A. Bell[1], D. Vercosa[1], and J. Robinson[1,2]
[1]*Rice University, Houston, TX,* [2]*Baylor College of Medicine, Houston, TX*

9:15AM
A Standing Surface Acoustic Wave (SSAW)-based Cell Co-culture Platform
S. Li[1], F. Guo[1], Y. Chen[1], X. Ding[1], P. Li[1], C. Cameron[1], and T. Huang[1]
[1]*The Pennsylvania State University, University Park, PA*

Track: Device Technologies and Biomedical Robotics, New Frontiers and Special Topics
OP-Thurs-1-13 - Room 201

Implantable Devices and Implantable Electronics

Chairs: Rafael Davalos, Lemont Baker

8:00AM *Invited*
Overview of Development and Commercialization of Implantable Vagus Nerve Stimulation Systems
M. Morris[1]
[1]*Cyberonics, Inc., Houston, TX*

8:30AM
Liquid Crystal Polymer (LCP)-based Device Packaging for Auditory and Visual Prostheses
S. Kim[1], J. Kim[1], and J. Jeong[1]
[1]*Seoul National University, Seoul, Korea, Republic of*

8:45AM
Compensating For Tissue Changes In Ultrasonic Transcutaneous Energy Transfer Systems
H. Vihvelin[1], J. Leadbetter[1], J. Brown[1], and R. Adamson[1]
[1]*Dalhousie University, Halifax, NS, Canada*

9:00AM
Reconfigurable Analog-to-Digital Converter for Implantable Bioimpedance Monitoring
T. Randall[1], I. Mahbub[1], F. Quaiyum[1], and S. Islam[1]
[1]*University of Tennessee, Knoxville, Knoxville, TN*

9:15AM
Surface Plasmon Resonance Imaging of Materials that Reduce Staphylococcus aureus Contamination
P. Abadian[1] and E. Goluch[1]
[1]*Northeastern University, Boston, MA*

Track: Biomechanics, Neural Engineering
OP-Thurs-1-14 - Room 103B

Head Injury

Chairs: Stefan Duma, Beth Winkelstein

8:00AM *Invited*
Biomechanics Track Overview
S. Margulies[1]
[1]*University of Pennsylvania, Philadelphia, PA*

8:15 AM
Blast Induced Neurotrauma Leads To Changes In The Epigenome
Z. Bailey[1], S. Sajja[1], W. Hubbard[1], E. Ereifej[1], and P. VandeVord[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

8:30AM
Brain Deformation, Structural Damage, and Biochemical Alterations in Mild Blast-Induced TBI in Rats
N. Race[1,2], M. Walls[1], S. Vega-Alvarez[1], S. Song[1], A. Kim[1], T. Zhang[1], G. Kuziel[1], Y. Gu[1], B. Ziaie[1], and R. Shi[1]
[1]*Purdue University, West Lafayette, IN,* [2]*Indiana University School of Medicine, Indianapolis, IN*

8:45AM
Blast Injury Augments Pro-inflammatory Phenotype in Rat Hippocampus
M. Waters[1], S. Sajja[2], P. VandeVord[1], and M. Van Dyke[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA,* [2]*Johns Hopkins School of Medicine, Baltimore, MD*

9:00AM
TBSS Analysis of White Matter Changes related to Head Impacts in High School Football
N. Bahrami[1], E. Davenport[1], C. Whitlow[1], J. Urban[1], Y. Jung[1], M. Espeland[1], D. Rosenbaum[1], C. Vaughan[2], G. Gioia[2], A. Powers[1], J. Stitzel[1], and J. Maldjian[1]
[1]Wake Forest University School of Medicine, Winston Salem, NC, [2]Children's National Medical Center, Washington, DC

9:15AM
High Intensity Sound Wave Transduction from the Ear Canal to Middle Ear
R. Gan[1], D. Nakmali[1], and Z. Yokell[1]
[1]University of Oklahoma, Norman, OK

Track: Bioinformatics, Computational and Systems Biology
OP-Thurs-1-15 - Room 202A
Single Cell, Heterogeneity, Noise

Chairs: Kyung Kim, Jun Wang

8:00AM *Invited*
Paracrine Signaling Reduces Cell-to-Cell Heterogeneity and Amplifies Macrophage Response to TLR4 Stimulation
Q. Xue[1], Y. Lu[1], M. Eisele[1,2], N. Khan[1], R. Fan[1], and K. Miller-Jensen[1]
[1]Yale University, New Haven, CT, [2]University of Stuttgart, Stuttgart, Germany

8:30AM
Systematic Analysis of Drug-Induced Adaptive Response in Melanoma
M. Fallahi-Sichani[1], N. Moerke[1], M. Niepel[1], T. Zhang[1], N. Gray[1], and P. Sorger[1]
[1]Harvard Medical School, Boston, MA

8:45AM
Nonlinear Biochemical Signal Processing via Noise Propagation
K. Kim[1], H. Qian[1], and H. Sauro[1]
[1]University of Washington, Seattle, WA

9:00AM
Fluorescent *In-Situ* Sequencing of Single-Cells by Sequential Fish
A. Coskun[1] and L. Cai[1]
[1]Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, CA

9:15AM
Single-Cell Analysis for Predicting Tumor Structure
J. Wang[1]
[1]SUNY Albany, Albany, NY]

Track: Orthopaedic and Rehabilitation Engineering, Biomechanics
OP-Thurs-1-16 - Room 202B
Skeletal Muscle Mechanics

Chairs: Silvia Blemker

8:00AM *Invited*
Opportunities in Biomedical Engineering for Solving Clinical Problems Associated with Skeletal Muscle Health
S. Blemker[1]
[1]University of Virginia, Charlottesville, VA

8:15 AM
Brachioradialis Muscle Volume and Pinch Force Following Tendon Transfer
W. Murray[1], K. Saul[2], M. Johanson[3], G. Gold[4], and V. Hentz[4]
[1]Northwestern University, Chicago, IL, [2]North Carolina State University, Raleigh, NC, [3]VA Palo Alto Health Care System, Palo Alto, CA, [4]Stanford University, Palo Alto, CA

8:30AM
Muscle Progenitor Cell Regenerative Capacity in the Torn Rotator Cuff
G. Meyer[1], A. Farris[2], E. Sato[3], J. Lane[3], S. Ward[3], and A. Engler[3]
[1]Washington University in St. Louis, St. Louis, MO, [2]The University of Kansas, Lawrence, KS, [3]UCSD, La Jolla, CA

8:45AM
The Role of Dystrophins on Force Transmission in Skeletal Muscle
C. Zhang[1] and Y. Gao[1]
[1]Cornell University, Ithaca, NY

9:00AM
Spatial Distribution and Clustering of Fatty Infiltration Following Rotator Cuff Tear in the Elderly
K. Saul[1], A. Santago[2], and M. Vidt[2]
[1]North Carolina State University, Raleigh, NC, [2]Wake Forest School of Medicine, Winston-Salem, NC

9:15AM
Eccentric Contractions in Gait Lead to Selective Muscle Degeneration in Duchenne Muscular Dystrophy
X. Hu[1], S. Peirce[1], and S. Blemker[1]
[1]University of Virginia, Charlottesville, VA

Track: Biomedical Imaging and Optics, Translational Biomedical Engineering
OP-Thurs-1-17 - Room 203A
Applied Biomedical Imaging Techniques

Chairs: Debadyuti (Rana) Ghosh, Vikram Kodibagkar

8:00AM
Photoacoustic Monitoring to Stratify Photodynamic Therapy Response in Glioblastoma
S. Mallidi[1], K. Watanabe[2], D. Timerman[1], and T. Hasan[1]
[1]Harvard Medical School, Boston, MA, [2]Canon USA Inc, Boston, MA

8:15 AM
Chemical Imaging in Assessment of Diseases: Fourier Transform Infrared Imaging Accurately Determines Cardiac Transplant Rejection
S. Tiwari[1,2], V. Reddy[3], J. Raman[3], and R. Bhargava[1,2]
[1]University of Illinois at Urbana Champaign, Urbana, IL, [2]Beckman Institute for Advanced Science and Technology, Urbana, IL, [3]Rush University Medical Center, Chicago, IL

8:30AM
Laser Speckle Imaging To Detect Pulsatile Flow In The Teeth
C. Regan[1], B. Yang[1], K. Mayzel[1], P. Wilder-Smith[1], and B. Choi[1]
[1]University of California, Irvine, Irvine, CA

8:45AM
In vivo Ultrasound and Functional Photoacoustic Imaging of the Development of Birth Defects
C. Bayer[1], B. Wlodarczyk[1], G. Luke[1], R. Finnell[1], and S. Emelianov[1]
[1]The University of Texas at Austin, Austin, TX

9:00AM
Dual-Modality Approach with Rod-Shaped Viral Nanoparticles for Targeting and Treatment of Thrombosis
A. Wen[1], Y. Wang[2], K. Jiang[1], A. Yang[1], H. Gao[2], X. Yu[1], D. Simon[2], and N. Steinmetz[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Case Cardiovascular Center, Cleveland, OH

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

9:15AM
Targeted Gold Nanoparticles For Contrast-Enhanced Detection of Breast Microcalcifications
L. Cole[1], T. Vargo-Gogola[2], and R. Roeder[1]
[1]University of Notre Dame, Notre Dame, IN, [2]Indiana University School of Medicine - South Bend, South Bend, IN

Track: Biomedical Engineering Education (BME)
OP-Thurs-1-18 - Room 203B
Innovations in BME Education

Chairs: Naomi Chesler, Conrad Zapanta

8:00AM
Integrating Improvisational Acting and Inventive Problem Solving in Biomedical Engineering
J. Antaki[1] and J. Zell[2]
[1]Carnegie Mellon University, Pittsburgh, PA, [2]Steel City Improv, Pittsburgh, PA

8:15 AM
Incorporating Anatomical Modeling with 3D Printing into the Biomedical Curriculum
J. MacDonald[1] and S. Sharma[1]
[1]DeVry Univeristy, Chicago, IL

8:30AM
Ethics in Engineering Education
K. Reyer[1], M. Cantwell[1], P. Lam[1], R. Rafferty[1], and K. Billiar[1]
[1]Worcester Polytechnic Institute, Worcester, MA

8:45AM
Immediate Feedback on Computer Code Improves Problem Success
E. Greenwald[1] and J. Saucerman[1]
[1]University of Virginia, Charlottesville, VA

9:00AM
Unique Hospital and Patient-based Design Course Encompassing STEM Interactive Learning Activities
E. Hardy[1,2,3], W. Newstetter[2], and W. Lam[1,2,3]
[1]Emory University, Atlanta, GA, [2]Georgia Institute of Technology, Atlanta, GA, [3]Children's Healthcare of Atlanta, Atlanta, GA

9:15AM
"Boot Camp" Training In Cellular Bioengineering To Accelerate Research Immersion For REU Participants
D. Shreiber[1], P. Moghe[1], and C. Roth[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ

Track: Translational Biomedical Engineering, Device Technologies and Biomedical Robotics
OP-Thurs-1-19 - Ballroom A
Biomedical Products and Devices

Chairs: Mehdi Nikkhah, Robert Mauck

8:00AM *Invited*
Invention and Innovations with Aspirin: From Willow Bark to PolyAspirin
K. Uhrich[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ

8:30AM
Field Validation of a Mobile Phone Microscope as a Screening Tool for Oral Cancer in India
A. Skandarajah[1], C. Reber[1], P. Gurpur[2], A. Jennifer[3], G. Paladini[4], M. Kollegal[2], L. Ladic[5], and D. Fletcher[1]
[1]University of California, Berkeley, Berkeley, CA, [2]Siemens, Bangalore, India, [3]Christian Medical College, Vellore, India, [4]Siemens, Princeton, NJ, [5]Siemens, Tarrytown, NY

8:45AM
A Novel ROS Responsive Polymer Based Lab-on-a-Chip Sensor for Detection of Circulating Lipid Hydroperoxides
K. Aran[1], J. Paredes[1], A. Acharya[1], J. Yau[1], D. Liepmann[1], and N. Murthy[1]
[1]University of California Berkeley, berkeley, CA

9:00AM
On-demand Biofilm-removal Urinary Catheter
V. Levering[1], Q. Wang[1], P. Shivapooja[1], X. Zhao[1], and G. López[1]
[1]Duke University, Durham, NC

9:15AM
Cold Platelets Demonstrate Superior Clotting Properties Compared To Standard-Of-Care At Room Temperature
P. Nair[1], K. Reddoch[1], C. Nguyen[1], H. Pidcoke[2], A. Cap[2], and A. Ramasubramanian[1]
[1]University of Texas at San Antonio, San Antonio, TX, [2]U.S Army, San Antonio, TX

Professional Integrity Workshop: Best Practices for Publishing Your Work (Authorship)

(Pre-Registration Required)

8:00am - 9:30am
Henry B. Gonzalez Convention Center, Room 102AB

BMES, Alpha Eta Mu Beta (AEMB) National BME Honor Society and the American Physiological Society (APS) are hosting a professional development workshop designed for early career students who plan to publish their research and want to learn best practices in publication ethics. The topic of this year's session is Authorship. Join us to discuss best practices for deciding authorship, revising authorship order, resolving authorship disputes, and utilizing available resources to publish your work with confidence. This session material is based upon work supported by the National Science Foundation to APS/BMES/SBE under Grant No. SES-1238368.

THURSDAY, October 23, 2014

2:00 PM - 3:30 PM
PLATFORM SESSIONS – THURS - 2

Track: Tissue Engineering
OP-Thurs-2-1 - Room 001A

Tissue Engineering of Models for Study of Disease and Drug Discovery

Chairs: Elizabeth Loboa, Roland Kaunas

2:00PM
Modeling Genetic Hypertrophic Cardiomyopathy *In Vitro* with Isogenic, Engineered Cardiac Micro-Tissues
N. Huebsch[1], M. Mandegar[1], P. Loskill[2], Z. Ma[2], L. Judge[1], J. Yoo[1], A. Sheehan[1], A. Truong[1], N. Devishar[2], J. Wang[2], P. Lizarraga[1], P-L. So[1], K. Healy[2], and B. Conklin[1]
[1]*Gladstone Institute of Cardiovascular Disease, San Francisco, CA,* [2]*University of California, Berkeley, Berkeley, CA*

2:15PM
Molecular and Functional Roles of Cardiac Fibroblasts in Pressure-overload Induced Heart Failure
Y. Li[1], H. Asfour[1], L. Mao[1], H. Rockman[1], and N. Bursac[1]
[1]*Duke University, Durham, NC*

2:30PM
A Retinoic Acid-Enhanced Human Blood-Brain Barrier Coculture Model from Scalable Cell Sources
E. Lippmann[1], A. Al Ahmad[1], S. Azarin[1], S. Palecek[1], and E. Shusta[1]
[1]*University of Wisconsin, Madison, WI*

2:45PM
Bioengineered Livers as a Model to Study Cancer Metastasis
E. Moran[1,2], B. Gaston[1], P. Baptista[1], J. Sparks[3], D. Ruderman[4], S. Mumenthaler[4], P. Macklin[4], and S. Soker[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,* [3]*Miami University, Oxford, NC,* [4]*University of Southern California, Los Angeles, CA*

3:00PM
An Osteochondral Microphysiological System To Study The Pathogenesis Of Osteoarthritis And The Effect Of Hormonal Exposure
R. Gottardi[1,2], L. Hang[1], T. Lozito[1], P. Alexander[1], K. Clark[1], E. Sefton[3], T. Woodruff[3], and R. Tuan[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Ri.MED Foundation, Palermo, Italy,* [3]*Northwestern University, Chicago, IL*

3:15PM
Long Term *In Vitro* Culture of Mature White Adipose Tissue
R. Abbott[1], R. Wang[1], K. Burke[1], and D. Kaplan[1]
[1]*Tufts University, Medford, MA*

Track: Tissue Engineering, Biomaterials
OP-Thurs-2-2 - Room 001B

Scaffolds and Surfaces for Tissue Engineering I

Chairs: Meng Deng, Craig Duvall

2:00PM
Microcryogels As Injectable 3-D Cellular Microniches For Site-directed And Augmented Cell Therapy
Y. Du[1], W. Liu[1], and Y. Li [1]
[1]*Tsinghua University, Beijing, China, People's Republic of*

2:15PM
Hydrogel-based, Microstructural Building Blocks for Fabricating Scaffolds that Support Organized Tissues Formation in 3D
L-H. Han[1], X. Tong[1], and F. Yang[1,2]
[1]*Stanford University School of Medicine, Stanford, CA,* [2]*Stanford University, Stanford, CA*

2:30PM
Generating an Off-the-Shelf *In Vivo* Cell Capture System on a Decellularized Biomaterial using Modified Antibodies for Venous Valve Replacement
D. Anderson[1], J. Glynn[1], D. Pavcnik[1], and M. Hinds[1]
[1]*Oregon Health & Science University, Portland, OR*

2:45PM
Gold Nanoparticle-Collagen Templates Enhance Stability and Cell Infiltration in an *In Vivo* Study
S. Grant[1], J. Zhu[2], and D. Grant[1]
[1]*University of Missouri, Columbia, MO,* [2]*EternoGen, LLC, Columbia, MO*

3:00PM
PEGDA Microencapsulated Insulin-Secreting Cells Accelerate Wound Closure
A. Aijaz[1], R. Faulknor[1], F. Berthiaume[1], and R. Olabisi[1]
[1]*Rutgers, The State University of New Jersey, New Brunswick, NJ*

3:15PM
Capture of VEGFR-expressing Stem Cells under Flow
R. Smith Jr.[1], M. Koobatian[1], D. Swartz[1], and S. Andreadis[1,2]
[1]*State University of New York, University at Buffalo, Buffalo, NY,* [2]*Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY*

Track: Biomaterials
OP-Thurs-2-3 - Room 006A

Therapeutic and Theranostic Biomaterials I

Chairs: Elizabeth Loboa, Smitha Rao

2:00PM
A Novel Thermoresponsive Polydiolcitrate for Transcatheter Arterial Embolization Therapy
J. Yang[1], S-K. Lee[2], M. Niekrasz[2], A. Chang[2], B. Shah[2], and G. Ameer[1,3]
[1]*Northwestern University, Evanston, IL,* [2]*University of Chicago, Chicago, IL,* [3]*Feinberg School of Medicine, Chicago, IL*

2:30PM
Silver Nanoparticle-Embedded Polymersome Nanocarriers for the Treatment of Antibiotic-Resistant Infections
B. Geilich[1] and T. Webster[1]
[1]*Northeastern University, Boston, MA*

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

2:45PM
Polyanhydride Nanoparticle Delivery Platform Enables Enhanced Killing of Filarial Worms
A. Binnebose[1], R. Martin[1], S. Haughney[1], B. Narasimhan[1], and B. Bellaire[1]
[1]*Iowa State University, Ames, IA*

3:00PM
Dialysis-like Treatment of Sepsis Through Cleansing Pathogens from the Blood Stream using Functionalized Polysulfone Hollow Fibers
T. Didar[1], A. Watters[1], D. Leslie[1], J. Kang[1], M. Cartwright[1], A. Graveline[1], A. Waterhouse[1], M. Super[1], and D. Ingber[1]
[1]*Wyss Institute at Harvard University, Boston, MA*

3:15PM
Tunable Staged Release Of Therapeutics From Layer-By-Layer Coating With Clay Interlayer Barrier
J. Min[1,2], R. Braatz[1], and P. Hammond[1,2]
[1]*MIT, Cambridge, MA,* [2]*Koch Institute of Integrative Cancer Research, Cambridge, MA*

Track: Biomaterials, Cellular and Molecular Bioengineering
OP-Thurs-2-4 - Room 006B
Biomaterials for Controlling Cell Environment I

Chairs: Mariah Hahn, Blanka Sharma

2:00PM
Magneto-Active Dynamic Screening for Drug Discovery
A. Lisella[1], A. El Haj[1], and J. Dobson[2]
[1]*Keele University, Stoke on Trent, United Kingdom,* [2]*University of Florida, Gainesville, FL*

2:15PM
A Mechanistic Investigation Of How A Decorin Mimic Controls Intimal Hyperplasia
R. Scott[1] and A. Panitch[1]
[1]*Purdue University, West Lafayette, IN*

2:30PM
Spatiotemporal Control of Stem Cell Fate via Photoreversible Protein Patterning of Hydrogels
C. DeForest[1,2] and D. Tirrell[2]
[1]*University of Washington, Seattle, WA,* [2]*California Institute of Technology, Pasadena, CA*

2:45PM
3D Spatially Organized PEG-based Hydrogels as an Aortic Valve Co-culture Model to Study Valve Disease
D. Puperi[1], L. Balaoing[1], J. West[2], and J. Grande-Allen[1]
[1]*Rice University, Houston, TX,* [2]*Duke University, Durham, NC*

3:00PM
Spatiotemporal Delivery of Growth Factors to Hepatocytes via Polyelectrolyte Multilayers
C. Lin[1], K. Ballinger[1], M. Kipper[1], and S. Khetani[1]
[1]*Colorado State University, Fort Collins, CO*

3:15PM
Modulating Sub-cellular Processing of Single Wall Carbon Nanotubes by Controlling Dispersing Agent
B. Holt[1], K. Dahl[1], and M. Islam[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

Track: Drug Delivery, Tissue Engineering
OP-Thurs-2-5 - Room 006C
Drug Delivery in Tissue Engineering I

Chairs: Anjelica Gonzalez, Rhima Coleman

2:00PM
Ultra-Thin Polymer Coatings for Sustained Localized RNA Interference to Improve Diabetic Wound Healing
S. Castleberry[1], B. Almquist[1], and P. Hammond[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

2:15PM
Controlled Release Through Physical Collagen Modification mediated by Collagen Mimetic Peptides
M. Urello[1], M. Sullivan[1], and K. Kiick[1]
[1]*University of Delaware, Newark, DE*

2:30PM
Controlled Release of TGF β Receptor II Inhibitor to Control Cardiac Fibrosis
Z. Fan[1], M. Fu[1], Z. Li[1], X. Li[1], Y. Xu[1], and J. Guan[1]
[1]*The Ohio State University, Columbus, OH*

2:45PM
Growth Factors Engineered for Super-affinity to the Extracellular Matrix Enhance Tissue Healing
M. Martino[1], P. Briquez[2], E. Guc[2], F. Tortelli[2], W. Kilarski[2], S. Metzger[2], J. Rice[3], G. Kuhn[4], R. Muller[4], M. Swartz[2], and J. Hubbell[2]
[1]*Osaka University, Osaka, Japan,* [2]*EPFL, Lausanne, Switzerland,* [3]*Tennessee Tech University, Cookeville, TN,* [4]*ETHZ, Zurich, Switzerland*

3:00PM
Sustained Release and Bioactivity of Antibiotics from Keratin Hydrogels *In Vitro* and in a Porcine Wound Model
D. Roy[1,2], R. Hall[3], L. Burnett[2], S. Tomblyn[2], R. Christy[1], and J. Saul[3]
[1]*U.S. Army Institute for Surgical Research, Fort Sam Houston, TX,* [2]*KeraNetics, LLC, Winston-Salem, NC,* [3]*Miami University, Oxford, OH*

3:15PM
Local Delivery of Aspirin-Triggered Resolvin D1 for Inflammation Modulation in Regenerative Medicine
C. Powell[1] and E. Botchwey[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

Track: Biomechanics, Cellular and Molecular Bioengineering
OP-Thurs-2-6 - Room 006D
Cell Biomechanics II

Chairs: Deborah Leckband, Jiro Nagatomi

2:00PM
Cyclic Stress-Relaxation Paradigm Causes Cell Stiffening
H. Babahosseini[1], J. Strobl[1], and M. Agah[1]
[1]*Virginia Tech, Blacksburg, VA*

2:15PM
Mechanosensing of Shear Stress Requires VE-cadherin Tyrosine 658
D. Conway[1] and M. Schwartz[2]
[1]*Virginia Commonwealth University, Richmond, VA,* [2]*Yale University, New Haven, VA*

2:30PM
Progesterone Alters the Mechanobiology of Primary Human Cervical Fibroblasts
V. Shukla[1], M. Schickel[1], D. Kniss[1], and S. Ghadiali[1]
[1]*The Ohio State University, Columbus, OH*

2:45PM
Activation of IGF1-RUNX2 Pathway Reveals Changes in Cellular Phenotype in Non-Syndromic Forms of Craniosynostosis.
Z. Al-Rekabi[1,2], A. Leonard[1], S. Park[2], J. Gustafson[2], C. Clarke[2], M. Cunningham[1,2], and N. Sniadecki[1]
[1]University of Washington, Seattle, WA, [2]Seattle Children's Research Institute, Seattle, WA

3:00PM
Heterogeneity of Infarct Collagen Orientation Emerges In Silico Based on Long-range Cell Interaction
W. Richardson[1], A. Rouillard[2], and J. Holmes[1]
[1]University of Virginia, Charlottesville, VA, [2]Icahn School of Medicine at Mount Sinai, New York, NY

3:15PM
Mechanical Origins of Axial Rotation in Chick Embryos
Z. Chen[1], Q. Guo[2], E. Dai[1], N. Forsch[1], and L. Taber[1]
[1]Washington University in St. Louis, St. Louis, MO, [2]Fuzhou University, Fuzhou, China, People's Republic of

Track: Cancer Technologies
OP-Thurs-2-7 - Room 007A
Tumor Microenvironment I

Chairs: Konstantinos Konstantopoulos, Vassilios Sikavitsas

2:00PM *Invited*
The NCI's Provocative Questions Initiative: Program Overview and Evaluation Efforts
M. Berny-Lang[1], J. Lee[1], and E. Greenspan[1]
[1]National Cancer Institute, NIH, Bethesda, MD

2:15PM
Suicide Gene-Engineered Stromal Cells Reveal a Dynamic Regulation of Cancer Metastasis
K. Shen[1], S. Luk[1], J. Elman[1], R. Murray[1], M. Yarmush[1,2], and B. Parekkadan[1,3]
[1]Harvard Medical School and Massachusetts General Hospital, Boston, MA, [2]Rutgers University, Piscataway, NJ, [3]Harvard Stem Cell Institute, Cambridge, MA

2:30PM
Macrophage-released TNFα and TGF β Synergistically Enhance Cancer Cell Migration Directedness via the Induction of MMP-1 in Cancer Cells
R. Li[1] and R. Kamm[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

2:45PM
A 3D Microphysiological System of Tumor Tissue for Realistic Therapeutic Modeling
A. Sobrino Gregorio[1], D. Phan[1], S. George[2], and C. Hughes[1,2]
[1]University of California, Irvine, Irvine, CA, [2]The Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA

3:00PM
Speed Matters: Cadherin-11 Expressing Cancer Cells Hijack Fibroblasts for High-speed Invasion
Z. Gu[1,2], E. Tonkova[2], Y-H. Hsu[3], S. Alexander[3], Z. Han[3], M-C. Hung[3], P. Friedl[3], K. Konstantopoulos[1], and M. Brenner[2]
[1]Johns Hopkins University, Baltimore, MD, [2]Harvard Medical School, Boston, MA, [3]The University of Texas MD Anderson Cancer Center, Houston, TX

3:15PM
Matrix Stiffening Primes Increased Permeability in Tumor Vasculature in Response to Pro-Tumorigenic Extracellular Cues
D. LaValley[1], B. Mason[1], J. Huynh[1], and C. Reinhart-King[1]
[1]Cornell University, Ithaca, NY

Track: Cardiovascular Engineering
OP-Thurs-2-8 - Room 007B
Hemodynamics and Vascular Mechanics II

Chairs: Shu Liu, B. Rita Alevriadou

2:00PM
Flow Alters Genome-wide DNA Methylation, Regulating Endothelial Ggene Expression and Atherosclerosis
J. Dunn[1], H. Qiu[1], S. Kim[1], D. Jjingo[2], R. Hoffman[1], C. Kim[1], I. Jang[1], D. Son[1], D. Kim[1], C. Pan[2], Y. Fan[2], K. Jordan[2], and H. Jo[1]
[1]Georgia Institute of Technology & Emory University, Atlanta, GA, [2]Georgia Institute of Technology, Atlanta, GA

2:15PM
Atypical Mechanosensitive MicroRNA-712 Derived From Pre-ribosomal RNA Induces Endothelial Inflammation and Atherosclerosis
S. Kumar[1], D. Son[1], W. Takabe[1], C-W. Ni[1], C. Kim[1], I. Jang[1], N. Alberts-Grill[1], and H. Jo[2]
[1]Emory University, Atlanta, GA, [2]Georgia Tech and Emory University, Atlanta, GA

2:30PM
Association Between RV-PA Functional Phenotype and NT-proBNP in Pediatric Pulmonary Hypertension
V. Kheyfets[1,2], J. Dunning[1,2], U. Truong[2], D. Ivy[2], K. Hunter[1,2], and R. Shandas[1,2]
[1]University of Colorado Denver, Aurora, CO, [2]Children's Hospital Colorado, Aurora, CO

2:45PM
Effects of Age on the Mechanical Properties and Structural Characteristics of the Human Femoropopliteal Arteries
A. Kamenskiy[1], I. Pipinos[1], N. Phillips[1], Y. Dzenis[2], and J. MacTaggart[1]
[1]University of Nebraska Medical Center, Omaha, NE, [2]University of Nebraska-Lincoln, Lincoln, NE

3:00PM
Artery Remodeling under Axial Twist in Three Day Organ Culture
G. Wang[1,2], A. Voorhees[1], Y. Xiao[1], Z-L. Jiang[2], and H-C. Han[1,2]
[1]University of Texas at San Antonio, San Antonio, TX, [2]Shanghai Jiaotong University, Shanghai, China, People's Republic of

3:15PM
Structural Remodeling of the Bovine Aorta During Pregnancy
S. Wells[1], A. Prosterman[1], A. MacKenzie[1], and C. Van Iderstine[1]
[1]Dalhousie University, Halifax, NS, Canada

Track: Cellular and Molecular Bioengineering -
OP-Thurs-2-9 - Room 007C
Cell Adhesion and the Extracellular Matrix Interactions

Chairs: Michael Smith, Jennifer Munson

2:00PM
A High-Throughput Array to Assess Dynamic, Intracellular Signaling Responses to Biomaterial-Mediated Adhesive and Mechanical Cues
S. Seidlits[1], B. Peñalver Bernabé[2], S. Shin[2], L. Broadbelt[2], and L. Shea[2]
[1]University of California Los Angeles, Los Angeles, CA, [2]Northwestern University, Evanston, IL

2:15PM
Altered Biological Properties Result from Bond Breakage within Mechanically Stressed Fibronectin Fibers
B. Hubbard[1], J. Buczek-Thomas[1], M. Nugent[2], and M. Smith[1]
[1]Boston University, Boston, MA, [2]University of Massachusetts, Lowell, Lowell, MA

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

2:30PM
Local ECM Alignment Directs Initial Cell Spreading To Promote Cell Migration In 3D
S. Carey[1], Z. Goldblatt[1], and C. Reinhart-King[1]
[1]*Cornell University, Ithaca, NY*

2:45PM
Analysis of the Cytoskeleton and Mechanics of Migrating Cells in Engineered 3D Extracellular Matrix
C. Choi[1,2], B. Trappmann[1,2], S. Alimperti[1,2], D-H. Nguyen[3], S. Stapleton[3], and C. Chen[1,2]
[1]*Boston University, Boston, MA,* [2]*Wyss Institute for Biologically Inspired Engineering at Harvard University, Boston, MA,* [3]*University of Pennsylvania, Philadelphia, PA*

3:00PM
Fibronectin Mechanics and Signaling in Epithelial to Mesenchymal Transition
L. Griggs[1], M. Zhao[1], R. Malik [1], L. Elmore[1], and C. Lemmon[1]
[1]*Virginia Commonwealth University, Richmond, VA*

3:15PM
Focal Adhesion Complex Activity is Important for the Maintenance of Chondrogenic Phenotypes
H. Shin[1], M. Lee[1], J. Choung [1], and J. Shin[1]
[1]*KAIST, Daejeon, Korea, Republic of*

Track: Cellular and Molecular Bioengineering, Biomechanics
OP-Thurs-2-10 - Room 007D
Mechanotransduction II

Chairs: Alesha Castillo, Nathan Sniadecki

2:00PM
Primary Cilia Under Ultrasound
G. Budhiraja[1] and A. Subramanian[1]
[1]*University of Nebraska, Lincoln, NE*

2:15PM
Molecular Targeting and Localized Mechanochemical Stimulation of ErbB Receptors with Fe-Au Nanorods
D. Kilinc[1], A. Lesniak[1], S. Rashdan[2], D. Gandhi[1], A. Blasiak[1], P. Fannin[3], A. von Kriegsheim[1], W. Kolch[1], and G. Lee[1]
[1]*University College Dublin, Dublin, Ireland,* [2]*University of Bahrain, Manama, Bahrain,* [3]*Trinity College Dublin, Dublin, Ireland*

2:30PM
Sideways Microscopy for Viewing Nuclear Deformation
K. Beicker[1], M. Falvo[1], E. O'Brien III[1], and R. Superfine[1]
[1]*University of North Carolina at Chapel Hill, Chapel Hill, NC*

2:45PM
Endothelial Cell Aging Elevates Traction Forces and Permeability
T. Cheung[1], J. Yan[1], J. Huang[1], F. Yuan[1], and G. Truskey[1]
[1]*Duke University, Durham, NC*

3:00PM
Investigation of T Cell Mechanosensing Using Microfabricated Elastomer Pillars
W. Jin[1], K. Bashour[1], and L. Kam[1]
[1]*Columbia University, New York, NY*

3:15PM
The Effects Of Intermittent And Incrementally Increasing Strain Amplitude Cyclic Stretching On Collagen Production In Fibrin-Based Engineered Cardiovascular Tissues
J. Schmidt[1] and R. Tranquillo[1]
[1]*University of Minnesota, Minneapolis, MN*

Track: Nano to Micro Technologies
OP-Thurs-2-11 - Room 008A
BioMEMS II

Chairs: Rafael Davalos, Erkin Seker

2:00PM
Track Etched Magnetic Micropores to Efficiently Sort Rare Pathogens from Large Volume, Unprocessed Clinical and Environmental Samples
M. Muluneh[1], W. Shang[1], and D. Issadore[1]
[1]*University of Pennsylvania, Philadelphia, PA*

2:15PM
Multiplexed Free-standing Nanowire Transistor Bioprobe for Intracellular Recording: A General Fabrication Strategy
Q. Qing[1], L. Xu[2], Z. Jiang[2], and L. Mai[3]
[1]*Arizona State University, Tempe, AZ,* [2]*Harvard University, Cambridge, MA,* [3]*Wuhan University of Technology, Wuhan, China, People's Republic of*

2:30PM
A Microdevice For Studying Intercellular Electromechanical Transduction In Adult Cardiac Myocytes
X. Zhang[1] and Y. Zhao[1]
[1]*Ohio State University, Columbus, OH*

2:45PM
Measuring the Growth Rate of Cancerous Human Breast Cells
E. Corbin[1] and R. Bashir[1]
[1]*University of Illinois Urbana-Champaign, Urbana, IL*

3:00PM
Microfluidic Blood Sorting For Improved Blood Quality Over Prolonged Storage
S. Huang[1], H. Hou[1], T. Kanias[2], J. Sertorio[2], H. Chen[3], M. Gladwin[2], and J. Han[1]
[1]*MIT, Cambridge, MA,* [2]*University of Pittsburgh, Pittsburgh, PA,* [3]*Harvard School of Public Health, Boston, MA*

3:15PM
A Cell-based Fluid Shear Sensor
S. Varma[1] and J. Voldman[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

Track: Nano to Micro Technologies, Cellular and Molecular Bioengineering
OP-Thurs-2-12 - Room 008B
Microfluidic Platforms II

Chairs: John Slater, Jungkyu (Jay) Kim

2:00PM
Vortex-assist Electroporation for Combinatorial Drug Screenings
D. Vickers[1] and S. Hur[1]
[1]*Rowland Institute at Harvard University, Cambridge, MA*

2:15PM
Aqueous Two-Phase System-Mediated Antibody Micropatterning for Multiplex Protein Biomarker Detection
J. Frampton[1,2], J. White[2], A. Simon[2], M. Tsuei[2], S. Paczesny[3], and S. Takayama[2]
[1]*Dalhousie University, Halifax, NS, Canada,* [2]*University of Michigan, Ann Arbor, MI,* [3]*Indiana University, Indianapolis, IN*

2:30PM
A Microfluidic Virus Capture and Sensing Device for HIV Viral Load Measurements
G. Damhorst[1], J. Kooiman[1], R. Chaves[1], M. Sobieraj[1], T. Ghonge[1], and R. Bashir[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

2:45PM
KS-Detect: A Solar-Powered Smartphone-Based System for Diagnosing Kaposi's Sarcoma in Resource-Limited Settings
L. JIANG[1], A. GARDNER[1], Z. LU[1], G. AKAR[2], E. CESARMAN[2], AND D. ERICKSON[1]
[1]*Cornell University, Ithaca, NY,* [2]*Weill Cornell Medical College, New York, NY*

3:00PM
Cell Affinity Chromatography And Electrical Measurements To Detect Cancer Cells In Microfluidics
M. ISLAM[1], M. BELLAH[1], Y-T. KIM[1], AND S. IQBAL[1]
[1]*University of Texas at Arlington, Arlington, TX*

3:15PM
Microfluidic Protein Encapsulation in Monodisperse Drug-based Polymer Microspheres
W. YU[1], M. ZHENG[1], J. ZAHN[1], AND K. UHRICH[1]
[1]*Rutgers University, Piscataway, NJ*

Track: Device Technologies and Biomedical Robotics, Cardiovascular Engineering
OP-Thurs-2-13 - Room 201
Cardiovascular Devices: Intelligent Design Using Computations and Experiments

Chairs: Keefe Manning, James Antaki

2:00PM
The Long and Strange Trip from Bench to Bedside: Lessons Learned from the Pediaflow Magnetically Levitated Rotodynamic Blood Pump
J. ANTAKI[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

2:30PM
Cardiovascular Devices: From the Bench and Computer to the Bedside/Bassinet
A. YOGANATHAN[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

2:45PM
Cardiovascular Devices: From the Bench and Computer to the Bedside/Bassinet
A. YOGANATHAN[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

3:00PM
Design Methodology for Blood Pumps
K. MANNING[1,2], C. SIEDLECKI[1,2], S. DEUTSCH[1], AND G. ROSENBERG[1,2]
[1]*The Pennsylvania State University, University Park, PA,* [2]*Penn State Hershey Medical Center, Hershey, PA*

3:15PM
CFD-Based Multi-Objective Modeling of Artificial Lung Devices
J. ZHANG[1], Z. CHEN[1], B. GRIFFITH[1], AND Z. WU[1]
[1]*University of Maryland School of Medicine, Baltimore, MD*

Track: Biomechanics, Orthopaedic and Rehabilitation Engineering
OP-Thurs-2-14 - Room 103B
Spine Biomechanics

Chairs: John Cotton, Teja Guda

2:00PM
Biomechanical Effects of Age-related Changes in Cartilaginous Endplates Morphology on Lumbar Discs
M. HUSSAIN[1] AND C. DEGEER[1]
[1]*Logan University, Chesterfield, MO*

2:15PM
Characterization of Cortical Bone Thickness Changes in the Thoracic Skeleton with Age and Gender
S. LYNCH[1], A. WEAVER[1], AND J. STITZEL[1]
[1]*Virginia Tech - Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC*

2:30PM
Laxity Of The Lumbar Spine
N. BATTAGLIA[1], M. MAHFOUZ[1,2], R. KOMISTEK[1,2], AND C. CARR[1]
[1]*University of Tennessee, Knoxville, TN,* [2]*Institute of Biomedical Engineering, Knoxville, TN*

2:45PM
A Finite Element Model of *In Vivo* Lumbar Facet Capsular Ligament Motion Based on Fluoroscopic Data from Healthy Subjects
A. CLAESON[1] AND V. BAROCAS[1]
[1]*University of Minnesota, Minneapolis, MN*

3:00PM
Effect Of Implant Design And Material On Subsidence Following Dynamic Loading of Intervertebral Devices
A. VALDEVIT[1], P. ULLRICH[2], M. GALLAGHER[3], AND J. SCHNEIDER[3]
[1]*Stevens Institute of Technology, Hoboken, NJ,* [2]*NeuroSpine Center of Wisconsin, Appleton, WI,* [3]*Titan Spine, LLC, Mequon, WI*

3:15PM
Machine Learning Predicts Degenerative Pathology
N. BATTAGLIA[1], M. MAHFOUZ[1,2], R. KOMISTEK[1,2], AND C. CARR[1]
[1]*University of Tennessee, Knoxville, TN,* [2]*Institute of Biomedical Engineering, Knoxville, TN*

Track: Bioinformatics, Computational and Systems Biology
OP-Thurs-2-15 - Room 202A
Multiscale Modeling

Chairs: Stacey Finley, Heather Hayenga

3:00PM *Invited*
Agent Based Model for Predicting Angiogenic Sprout Frequency and Location in 3D Culture
J. WALPOLE[1], J. CHAPPELL[2], J. CLUCERU[2], F. MAC GABHANN[3], V. BAUTCH[2], AND S. PEIRCE[1]
[1]*University of Virginia, Charlottesville, VA,* [2]*University of North Carolina Chapel Hill, Chapel Hill, NC,* [3]*Johns Hopkins University, Baltimore, MD*

2:30PM
A Whole-body PKPD Model for Multimodal Reversal of Cardiotoxicity by Intravenous Lipid Dispersions
B. AKPA[1]
[1]*University of Illinois at Chicago, Chicago, IL*

2:45PM
Multiscale Model of Lung Inflammation
R. PIDAPARTI[1], R. HEISE[2], R. COOPER[2], T. ROLLE[2], AND A. REYNOLDS[2]
[1]*University of Georgia, Athens, GA,* [2]*Virginia Commonwealth University, Richmond, VA*

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

3:00PM
Modeling Blood Flow Control in the Kidney
A. Ford Versypt[1], J. Arciero[2], L. Ellwein[3], E. Makrides[4], and A. Layton[5]
[1]Oklahoma State University, Stillwater, OK, [2]Indiana University-Purdue University Indianapolis, Indianapolis, IN, [3]Virginia Commonwealth University, Richmond, VA, [4]Brown University, Providence, RI, [5]Duke University, Durham, NC

3:15PM
Comprehensive Computational Analysis of Tissue Remodeling in the Rat Brain After Traumatic Injury
K. Grama[1], M. Megjhani[1], Y. Lu[1], B. Roysam[1], J. Redell[2], P. Dash[2], and D. Maric[3]
[1]University of Houston, Houston, TX, [2]University of Texas Health Science Center at Houston, Houston, TX, [3]National Institute of Neurological Disorders and Stroke, Bethesda, MD

Track: Orthopaedic and Rehabilitation Engineering, Biomedical Imaging and Optics
OP-Thurs-2-16 - Room 202B
Musculoskeletal Imaging

Chairs: Andrew Anderson , Jeff Weiss

3:00PM *Invited*
3D Dual Echo Steady State (DESS) MRI Accurately Quantifies Acetabular Cartilage Thickness
C. Abraham[1], N. Bangerter[2], L. McGavin[1], C. Peters[1], A. Drew[1], C. Hanrahan[1], and A. Anderson[1]
[1]University of Utah, Salt Lake City, UT, [2]Brigham Young University, Provo, UT

2:15PM
Impaired Muscular Loading During Post-natal Growth Leads to Altered Structure of the Developing Murine Hip
C. Ford[1], S. Thomopoulos[1], and M. Killian[1]
[1]Washington University, St Louis, MO

2:30PM
Near Infrared Optical Imaging of Bone Cell Activity and Skeletal Drug Delivery
K. Kozloff[1]
[1]University of Michigan, Ann Arbor, MI

2:45PM
Can Extended Field-of-View Ultrasound Imaging Be Used to Measure Differences in Upper Extremity Fascicle Lengths?
C. Nelson[1,2], J. Dewald[1], and W. Murray[1,2,3]
[1]Northwestern University, Chicago, IL, [2]Rehabilitation Institute of Chicago, Chicago, IL, [3]Edward Hines, Jr. VA Hospital, Hines, IL

3:00PM
Use of Portable Ultrasound to Measure Dynamic Motion of Cervical Spine *Ex-Vivo* and *In-Vivo*
M. Zheng[1,2], A. Masoudi[2], D. Buckland[2,3], T. Szabo[1], and B. Snyder[2,4]
[1]Boston University, Boston, MA, [2]Beth Israel Deaconess Medical Center, Boston, MA, [3]Massachusetts Institute of Technology, Cambridge, MA, [4]Boston Children's Hospital, Boston, MA

3:15PM
Contrast-enhanced Characterization of Intervertebral Disc Degeneration using Equilibrium Partitioning of an Ionic Contrast Agent Micro Computed Tomography (EPIC)-μCT
T. Maerz[1], K. Kristof[1], M. Newton[1], O. Motovylyak[1], J. Fischgrund[1], D. Pakr[1], and K. Baker[1]
[1]William Beaumont Hospital, Royal Oak, MI

Track: Biomedical Imaging and Optics
OP-Thurs-2-17 - Room 203A
Molecular Probes I

Chairs: Aaron Mohs, Efstathios Karathanasis

2:00PM
Stabilized Paramagnetic Porousliposomes
Z. Cheng[1], C. Aspinwall[2], and A. Tsourkas[1]
[1]University of Pennsylvania, philadelphia, PA, [2]University of Arizona, Tucson, AZ

2:15PM
Genetically Encoded MRI Sensor of ATP
G. Sun[1], A. Mukherjee[2], X. Zhang[2], D. Schaffer[1], and M. Shapiro[2]
[1]University of California, Berkeley, Berkeley, CA, [2]California Institute of Technology, Pasadena, CA

2:30PM
Single-Molecule Tracking Using Different Fluorescent Labels
C. Liu[1], Y-L. Liu[1], E. Perillo[1], Q. Zhuang[1], and H-C. Yeh[1]
[1]University of Texas at Austin, Austin, TX

2:45PM
Development of ROS Ratiometic Optical Nanoprobes for *In Vivo* Imaging of Wound Inflammation
J. Zhou[1], H. Weng[1], A. Nair[1], W. Hu[2], and L. Tang[1]
[1]University of Texas at Arlington, Arlington, TX, [2]Progenitec, Arlington, TX

3:00PM
An Activatable Nanoparticle Probe for Molecular Imaging of Protease Activity by Dual Energy CT
J. Ashton[1], C. Badea[2], and J. West[1]
[1]Duke University, Durham, NC, [2]Duke University Medical Center, Durham, NC

3:15PM
An EDB Fibronectin Specific Peptide Probe for Molecular Imaging of Cancer EMT
Z. Han[1], M. Gujrati[1], Z. Zhou[1], X. Shi[1], and Z. Lu[1]
[1]Case Western Reserve University, Cleveland, OH

Track: Biomedical Engineering Education (BME)
OP-Thurs-2-18 - Room 203B
Teaching in a Flipped Classroom

Chairs: Matthew Glucksberg, Donald Gaver

2:00PM
Integration of Video Demonstrations into an Undergraduate Tissue Culture Laboratory Course
A. Saterbak[1], B. Ghosn[1], and M. Wettergreen[1]
[1]Rice University, Houston, TX

2:15PM
Implementation and Assessment of Flipped Classroom Paradigm in Biomedical Engineering Course
J-M. Maarek[1], A. Ayiotis[1], and G. Ragusa[1]
[1]University of Southern California, Los Angeles, CA

2:30PM
Expected and Unexpected Barriers to Learning in a Flipped Biotransport Course
S. Williams-Duncan[1] and B. Helmke[1]
[1]University of Virginia, Charlottesville, VA

2:45PM
Efficacy of Simple, Flipped Classroom Techniques in Biomedical Engineering Education: Comparative Analysis of Traditional and Flipped Biofluid Mechanics Course
J. Lippmann[1]
[1]University at Buffalo, State University of New York, Buffalo, NY

SPECIAL SESSION
2:00 PM – 6:00 PM
Room 004

BMES-NSF Special Session on Research in Biomedical Engineering and Grant Writing

(Pre-Registration Required)

BMES and the National Science Foundation (NSF) will convene a special session focusing 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 grant applications. The research areas where the NSF Biomedical Engineering Program supports fundamental and transformative research will also be discussed. Participants at all levels 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 – 1444074.

SPECIAL SESSION
2:00 PM – 3:30 PM
Room 204A

Overcoming Challenges and Obstacles for Clinical Translation: From Bench to Bedside

The panel session will cover a broad range of issues related to translating research findings to the clinic. The four panelists are at different stages of the process and have different approaches to addressing clinical unmet needs. Each panelist will describe their experiences and decision making processes to stimulate discussion with the audience regarding strategies on how to overcome barriers for translation.

PANELISTS:

ED DAMIANO (BOSTON UNIVERSITY)
"A Bionic Pancreas for Type 1 Diabetes Management"
Inspired by his son's diabetes, Dr. Damiano has developed the world's first fully autonomous bihormonal bionic pancreas, which is currently in clinical trials. Damiano hopes to complete clinical trials by the end of 2016 and submit the device for FDA approval by 2017.

MAURIS N DESILVA (NAVAL MEDICAL RESEARCH UNIT SAN ANTONIO)
"Novel Strategies for Prevention of Infections Post Cranioplasty"
Dr. DeSilva›s research focuses on novel prophylactic strategies for postoperative infections following cranioplasty to treat traumatic head injuries such as those seen in the recent conflicts in Iraq and Afghanistan.

CATHERINE KLAPPERICH (BOSTON UNIVERSITY)
"Low Cost Diagnostics for Cancer and Infectious Disease"*Dr. Klapperich has developed several technologies for minimally instrumented diagnostics. Her technology is the basis for a new startup company Micro Analysis Integration (Los Angeles, CA).*

CHRISTINE SCHMIDT (UNIVERSITY OF FLORIDA)
"Regenerating Nerve Tissue and Managing Scar Tissue in Wound Healing"
Dr. Schmidt's development of decellularized nerve tissue (licensed and utilized in AxoGen (Alachua, FL) Inc.'s AVANCE™ nerve graft) has impacted thousands of patients who suffer from peripheral nerve injuries. Dr. Schmidt's technology is also the basis for a start-up company Alafair Biosciences (Austin, TX) that develops cross-linked polysaccharide hydrogel films to address postsurgical adhesions.

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= Reviewer Choice Award

THURSDAY, October 23, 2014

4:30 PM - 6:00 PM

PLATFORM SESSIONS – THURS - 3

Track: Tissue Engineering, Biomaterials
OP-Thurs-3-1 - Room 001A

Hepatic, Pancreatic, Digestive and Renal Tissue Engineering

Chairs: Salman Khetani, Sundararajan Madihally

4:30PM

Encapsulation of Beta Cells Within Ligand Functionalized Scaffolds Improve Insulin Secretion Function

S. Kizilel[1], T. Bal[1], and G. Cinay[1]

[1]*KOC University, Istanbul, Turkey*

4:45PM

CD31 Antibody Conjugation Improves Re-endothelialization of Acellular Kidney Scaffolds for Whole Organ Engineering

I. Ko[1], M. Abolbashari[1], J. Huling[1], J. Zambon [1], C. Kim[1], G. Orlando[1], M. Moradi[1], T. AbouShwareb[1], J. Jackson[1], A. Atala[1], and J. Yoo[1]

[1]*Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC*

5:00PM

Long Term Co-culture Strategies for Primary Hepatocytes and Liver Sinusoidal Endothelial Cells

S. Bale[1], I. Golberg[1], R. Jindal[1], W. McCarty[1], M. Luitje[1], M. Hegde[1], A. Bhushan[1], O. Usta[1], and M. Yarmush[1]

[1]*Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School and Shriners Burns Hospital, Boston, MA*

5:15PM

Dynamic Interplay of Flow and Collagen Stabilizes Primary Hepatocytes in a Microfluidic Platform

A. Bhushan[1,2], M. Hegde[1,2], R. Jindal[1,2], S. Bale[1,2], W. McCarty[1,2], I. Goldberg[1], B. Usta[1,2], and M. Yarmush[1,2]

[1]*Massachusetts General Hospital, Boston, MA,* [2]*Harvard Medical School, Boston, MA*

5:30PM

A 3D Microfluidic Human Liver-on-a-chip as a Physiological Model of Liver Acinus

A. Bhushan[1,2], R. Jindal[1,2], L. Prodanov[1,2], S. Bale[1,2], M. Hegde[1,2], W. McCarty[1,2], I. Goldberg[1], B. Usta[1,2], and M. Yarmush[1,2]

[1]*Massachusetts General Hospital, Boston, MA,* [2]*Harvard Medical School, Boston, MA*

5:45PM

A Biomimetic PEG Hydrogel to Create Liver-Specific Vasculature and Evaluate Hepatocyte Bioactivity

H. Bearat[1], S. Higbee[2], and J. West[1]

[1]*Duke University, Durham, NC,* [2]*Rice University, Houston, TX*

Track: Tissue Engineering, Biomaterials
OP-Thurs-3-2 - Room 001B

Scaffolds and Surfaces for Tissue Engineering II

Chairs: Joseph Freeman, Edward Botchwey

4:30PM

Micro-Patterning Directional ECM Cues in Hydrogel-based Scaffolds for Cardiac Tissue Engineering

Q. Jallerat[1] and A. Feinberg[1]

[1]*Carnegie Mellon University, Pittsburgh, PA*

4:45PM

Towards Controlling Chondrogenesis using Novel Thermo-Sensitive Hydrogels

O. Baruti[1], L. Bonassar[2], and J. Mendenhall[1]

[1]*Morehouse College, Atlanta, GA,* [2]*Cornell University, Ithaca, NY*

5:00PM

Development of a Hyaluronic Acid-Laminin Hydrogel to Increase Neural Stem Cell Response to SDF-1α

C. Addington[1], C. Millar-Haskell[1], J. Heffernan[1], R. Sirianni[2], and S. Stabenfeldt[1]

[1]*Arizona State University, Tempe, AZ,* [2]*St. Joseph's Hospital and Medical Center, Phoenix, AZ*

5:15PM

Poly(thioketal) polymers and their use in the formation of hydrophobic and hydrophilic cell-degradable tissue engineering scaffolds

J. Martin[1], M. Gupta[1], J. Page[1], F. Yu[1], J. Davidson[1], S. Guelcher[1], and C. Duvall[1]

[1]*Vanderbilt University, Nashville, TN*

5:30PM

Fabrication Of Poly(ε-caprolactone) Scaffolds With Nanofibrous Chitosan Networks

X. Jing[1,2], T. Cordie[1,3], M. Salick[1,4], and L-S. Turng[1,2]

[1]*Wisconsin Institutes for Discovery, University of Wisconsin, Madison, WI,* [2]*Department of Mechanical Engineering, University of Wisconsin, Madison, WI,* [3]*Department of Biomedical Engineering, University of Wisconsin, Madison, WI,* [4]*Department of Engineering Physics, University of Wisconsin, Madison, WI*

5:45PM

Synthesis and Cell Attachment Evaluation of Hybrid Materials with Peptide-Synthetic Polymer-Silica

Y. Hirano[1], A. Hattori[1], A. Terada[1], and S. Fujii[2]

[1]*Kansai University, Suita, Japan,* [2]*Osaka Institute of Technology, Osaka, Japan*

Track: Biomaterials
OP-Thurs-3-3 - Room 006A

Therapeutic and Theranostic Biomaterials II

Chairs: Srivatsan Kidambi, Aaron Baker

4:30PM

Engineering a Multipurpose "Virus Trap and Safety Net" Microbicide

S. Aniagyei[1] and J. Steinbach[1]

[1]*University of Louisville, Louisville, KY*

5:00PM

Syndesomes-Based Therapeutic for Enhanced Wound Healing in Diabetic Mice

S. Das[1], G. Singh[1], M. Martinez[1], A. Dunn[1], and A. Baker[1]

[1]*University of Texas, Austin, Austin, TX*

5:15PM

Photo-Carbon Monoxide Releasing Molecules within Electrospun Meshes for Engineering Vascular Grafts

E. Michael[1], N. Abeyrathna[1], K. Birthare[1], Y. Liao[1], and C. Bashur[1]

[1]*Florida Institue of Technology, Melbourne, FL*

5:30PM

Incorporation of the Anti-Cancer Agent Tannic Acid Into Biomaterials Used For Breast Reconstruction

H. Shah[1], J. Park[1], B. Inskeep[1], T. Ngobili[1], K. Burg[1], and B. Booth[1]

[1]*Clemson University, Clemson, SC*

5:45PM
Multifunctional Unimolecular Micelles Loaded With the Anti-cancer Drug Aminoflavone for Triple Negative Breast Cancer Therapy
G. Chen[1], A. Brinkman[2,3], N. Sherer[2], W. Xu[2,3], and S. Gong[1,4]
[1]Materials Science Program and Wisconsin Institute for Discovery, University of Wisconsin–Madison, Madison, WI, [2]McArdle Laboratory for Cancer Research, University of Wisconsin–Madison, Madison, WI, [3]Molecular and Environmental Toxicology Center, University of Wisconsin–Madison, Madison, Madison, WI, [4]Department of Biomedical Engineering, University of Wisconsin–Madison, Madison, Madison, WI

PLATFORM SESSIONS **Th-3**

Track: Biomaterials, Cellular and Molecular Bioengineering
OP-Thurs-3-4 - Room 006B
Biomaterials for Controlling Cell Environment II

Chairs: Janet Zoldan, Meng Deng

4:30PM
Interplay of Material Stiffness and Protein Tethering in Mechanically Based Differentiation
A. Engler[1,2]
[1]UC San Diego, La Jolla, CA, [2]Sanford Consortium for Regenerative Medicine, La Jolla, CA

4:45PM
Dynamic Modulation Of Myofibroblast/Osteoblast Differentiation And Biomechanical Remodeling By Valve Interstitial Cells By Initial Tissue Stiffness
B. Duan[1], Z. Yin[2], L. Hockaday[1], R. Magin[2], and J. Butcher[1]
[1]Cornell University, Ithaca, NY, [2]University of Illinois at Chicago, Chicago, IL

5:00PM
Physical Stabilization for the Viable Preservation of Whole Blood
K. Wong[1], R. Sandlin[1], T. Carey[1], A. Khankhel[1], A. Shank[1], J. Walsh[1], D. Irimia[1], S. Maheswaran[1], D. Haber[1], S. Stott[1], and M. Toner[1]
[1]Massachusetts General Hospital, Harvard Medical School, Charlestown, MA

5:15PM
Characterization of Mechanical/Chemical Properties of Calcium Responsive Composite Hydrogels and Assessment of Astrocytic Response
C. McKay[1], C. Johnson[1], R. Pomrenke[1], N. Schaub[1], E. DeSimone[1], J. McLane[1], L. Ligon[1], and R. Gilbert[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

5:30PM
Engineered Fibrillar Microenvironments for the Study of Mesenchymal Stem Cell Mechanosensing
B. Baker[1], B. Trappmann[1], A. Nair[2], I. Kim[2], J. Burdick[2], V. Shenoy[2], and C. Chen[1]
[1]Boston University, Boston, MA, [2]University of Pennsylvania, Philadelphia, PA

5:45PM
Dynamic Photo-Tunable Hydrogels for Temporal Control of Stiffness
R. Stowers[1] and L. Suggs[1]
[1]University of Texas at Austin, Austin, TX

Track: Drug Delivery, Tissue Engineering
OP-Thurs-3-5 - Room 006C
Drug Delivery in Tissue Engineering II

Chairs: Piyush Koria, Joel D Bumgardner

4:30PM
Modeling Local Drug Delivery Near Orthopaedic Implants
M. Giers[1], R. McLemore[2], A. McLaren[2], and M. Caplan[1]
[1]Arizona State University, Tempe, AZ, [2]Banner Good Samaritan Medical Center, Phoenix, AZ

4:45PM
Ultrasonic and Physical Characterizations of Acoustically Responsive Scaffolds
A. Moncion[1], K. Arlotta[1], O. Kripfgans[1], P. Carson[1], J. Fowlkes[1], and M. Fabiilli[1]
[1]University of Michigan, Ann Arbor, MI

5:00PM
Synthesis of Cell Penetrating Peptides (CPPs) for Drug Delivery Applications
G-W. Jin[1], F. Ghasemi Tahrir[1], W. Ma[1], G. Cidonio[1], and W. Suh[1]
[1]Temple University, Philadelphia, PA

5:15PM
Growth Factor Delivery Through Synthetic Fibrin-Mimetic Matrix Promotes Wound Healing
P. Briquez[1], M. Martino[2], and J. Hubbell[1]
[1]Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland, [2]Osaka University, Osaka, Japan

5:30PM
Long Term Doxycycycline Release to Prevent Infection and MMP Mediated Cellular Invasion in Implantable Biomaterials.
E. Rivera-Delgado[1] and H. von Recum[1]
[1]Case Western Reserve University, Cleveland, OH

5:45PM
Delivery of siRNA from Fibrin Hydrogels for mRNA Knockdown of the BMP-2 Antagonist Noggin
C. Kowalczewski[1,2] and J. Saul[1]
[1]Miami University, Oxford, OH, [2]Virginia Tech-Wake Forest University, Winston-Salem, NC

Track: Biomechanics, Cardiovascular Engineering
OP-Thurs-3-6 - Room 006D
Heart Valve Biomechanics

Chairs: Jiro Nagatomi, Yi Hong

4:30PM
Quantification and Simulation of the Mechanical Roles of Collagen and Elastin in Mitral Valve Leaflets
W. Zhang[1], C. Carruthers[2], J. Liao[3], and M. Sacks[1]
[1]University of Texas at Austin, Austin, TX, [2]Medtronics, Pittsburgh, PA, [3]Mississippi State University, Starkville, MS

4:45PM
Biomechanical Analysis of Transcatheter Valve Migration in Patient-Specific Models
M. Bianchi[1], T. Claiborne[1], G. Marom[1], R. Ghosh[1], D. Bluestein[2], M. Poon[3], M. Musani[4], E. Feldmann[4], L. Gruberg[4], H. Fernandez[4], and J. Taylor Jr.[4]
[1]Stony Brook University, StonyBrook, NY, [2]Stony Brook University, Stony Brook, NY, [3]Stony Brook Medicine, StonyBrook, NY, [4]Stony Brook Medicine, Stony Brook, NY

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

5:00PM
Bending Properties Of Porcine Mitral, Tricuspid, Aortic, And Pulmonary Valve Leaflets
B. Brazile[1], B. Wang[1], G. Wang[1], R. Bertucci[1], R. Prabhu[1], S. Patnaik[1], J. Butler[1], A. Claude[1], E. Brinkman-Ferguson[1], L. Williams[1], and J. Liao[1]
[1]*Mississippi State University, Mississippi State, MS*

5:15PM
An Inverse Modeling-Based Diagnostic Tool for Heart Valves Leaflets Biomechanical Properties
A. Aggarwal[1] and M. Sacks[1]
[1]*University of Texas at Austin, Austin, TX*

5:30PM
Image-based Immersed Boundary/Finite Element Model of the Human Mitral Valve
X. Ma[1], H. Gao[1], N. Qi[2], C. Berry[1], B. Griffith[3,4], and X. Luo[1]
[1]*University of Glasgow, Glasgow, United Kingdom,* [2]*University of Glasgow, glasgow, United Kingdom,* [3]*University of North Carolina at Chapel Hill, Chapel Hill, NC,* [4]*University of North Carolina School of Medicine, Chapel Hill, NC*

5:45PM
Turbulent Eddy Properties from CFD and Hemolysis Re-examined
M. Ozturk[1], E. O'Rear III[1], and D. Papavassiliou[1]
[1]*University of Oklahoma, Norman, OK*

Track: Cancer Technologies
OP-Thurs-3-7 - Room 007A
Tumor Microenvironment II

Chairs: Adrian Shieh, Michelle Berny-Lang

4:30PM
Combining Peripheral Vaccination with Microenvironment Immunomodulation: A Two-Pronged Approach for Cancer Immunotherapy
P. Pradhan[1], J. Leleux[1], J. Liu[1], H. Qin[2], L. Kwak[2], and K. Roy[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*M. D. Anderson Cancer Center, Houston, TX*

4:45PM
Contact Inhibition of Locomotion in a Fibrillar-like Microenvironment
D. Milano[1] and A. Asthagiri[1]
[1]*Northeastern University, Boston, MA*

5:00PM
3D Glioma Platform for Therapy-Resistant Cell Targeting Using High Frequency Electric Fields
J. Ivey[1], M. Sano[2], I. Nakano[3], R. Davalos[1], and S. Verbridge[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*Stanford University School of Medicine, Stanford, CA,* [3]*Ohio State University, Columbus, OH*

5:15PM
Integrin Expression and Phenotype Predict Breast Cancer Metastasis
L. Barney[1], E. Dandley[2], L. Jansen[1], and S. Peyton[1]
[1]*University of Massachusetts, Amherst, Amherst, MA,* [2]*North Carolina State University, Raleigh, NC*

5:30PM
Malignant Melanoma Cells Assemble a Tumor Biofilm That Promotes Survival and Resistance in Response to Drug Treatment
A. Afasizheva[1], Y. Kotobuki[1], H. Tillman[1], W. Vieira[1], K-L. Fung[1], E. Chen[2], and K. Tanner[1]
[1]*National Cancer Institute, Bethesda, MD,* [2]*Columbia University, Stony Brook, NY*

5:45PM
Bioreactor-derived Fluid Flow Promotes Epithelial-to-Mesenchymal Transition in Breast Cancer Cells
K. Fuh[1], B. Kooistra[1], R. Shepherd[1], and K. Rinker[1]
[1]*University of Calgary, Calgary, AB, Canada*

Track: Cardiovascular Engineering, Biomechanics
OP-Thurs-3-8 - Room 007B
Cardiovascular Flow Modeling in Health and Disease

Chairs: Robert Peattie, Wei Yin

4:30PM
CFD Analysis of Cerebral Sidewall Aneurysm Hemodynamics
J. Lindsay[1], P. Nair[1], H. Babiker[1], J. Ryan[1], and D. Frakes[1]
[1]*Arizona State University, Tempe, AZ*

4:45PM
Computational Analysis of Low-Porosity Stent Effects on Idealized Sidewall Aneurysms
D. DeJeu[1], P. Nair[1], H. Babiker[1], J. Ryan[1], and D. Frakes[1]
[1]*Arizona State University, Tempe, AZ*

5:00PM
High Resolution Immersed Boundary-finite Element Models of the Native and Prosthetic Aortic Root
V. Flamini[1], A. DeAnda[2], and B. Griffith[3]
[1]*New York University Polytechnic School of Engineering, Brooklyn, NY,* [2]*New York University School of Medicine, New York, NY,* [3]*University of North Carolina at Chapel Hill, Chapel Hill, NC*

5:15PM
Aortic Blood Flow Simulations in Turner Syndrome Patient and Age-matched Control
W. Stoddard[1], G. Mylavarapu[1], E. Gutmark[1], and I. Gutmark-Little[2]
[1]*University of Cincinnati, Cincinnati, OH,* [2]*Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

5:30PM
Determining the Influence of Aneurysm Geometry and Location on Flow through a Carotid Bifurcation
E. Pallares[1], S. Kudernatsch[1], S. Nidadavolu[2], and D. Peterson[1]
[1]*University of Connecticut Health Center, Farmington, CT,* [2]*CD-adapco, Melville, NY*

5:45PM
A Unified Computational Tool for Patient-Specific Hemodynamics --- from radiological images to *in vivo* flow structure in human arteries
H. Yu[1], Z. Wang[2], C. Zhang[3], N. Chen[1], A. Sawchuk [4], Y. Zhao[2], Y. Cheng[3], and M. Dalsing[4]
[1]*Indiana University-Purdue University Indianapolis, Indianapolis, IN,* [2]*Kent State University, Kent, OH,* [3]*Wuhan University, Wuhan, China, People's Republic of,* [4]*School of Medicine, Indiana University, Indianapolis, IN*

Track: Cellular and Molecular Bioengineering -
OP-Thurs-3-9 - Room 007C
Cell Interactions with the Extracellular Matrix

Chairs: Mehdi Nikkhah, Adrian Shieh

4:30PM
Hydrogels with Tunable Stress Relaxation Properties to Regulate Stem Cell Fate
O. Chaudhuri[1], L. Gu[2], D. Klumpers[2], M. Darnell[2], S. Bencherif[2], J. Weaver[2], N. Huebsch[3], and D. Mooney[2]
[1]*Stanford University, Stanford, CA,* [2]*Harvard University, Cambridge, MA,* [3]*UCSF gladstone Institute, San Francisco, CA*

4:45PM
Orthogonal patterning of matrix stiffness and ligand density for high-throughput stem cell mechanobiology
A. Rape[1], M. Zibinsky[1], N. Murthy[1], and S. Kumar[1]
[1]*University of California, Berkeley, Berkeley, CA*

5:00PM
Relationship Between Basement Membrane Development and Sarcomerogenesis on Single Cardiomyocyte
H. YANG[1], T. BORG[2], AND B. GAO[1]
[1]Clemson University, Clemson, SC, [2]Medical University of South Carolina, Charleston, SC

5:15PM
Platelets Use Glycoprotein Ib-IX-V Complex to Squeeze Tight onto VWF
S. FEGHHI[1], A. MUNDAY[2], W. TOOLEY[1], S. RAJSEKAR[1], J. LOPEZ[1,2], AND N. SNIADECKI[1]
[1]University of Washington, Seattle, WA, [2]Puget Sound Blood Center, Seattle, WA

5:30PM
Mechanical Signaling in Keratinocyte Colony Formation
H. ZARKOOB[1], J. SELBY[1], S. PONNALURI[1], K. MESSINGHAM[1], J. FAIRLEY[1], AND E. SANDER[1]
[1]University of Iowa, Iowa City, IA

5:45PM
Mechanical Analysis of Rat Trabecular Meshwork
J. HUANG[1], L. CAMRAS[1], AND F. YUAN[1]
[1]Duke University, Durham, NC

Track: Cellular and Molecular Bioengineering, Bioinformatics, Computational and Systems Biology
OP-Thurs-3-10 - Room 007D
Engineering Cells and Pathways via Synthetic and Systems Biology

Chairs: Karmella Haynes, Feilim Mac Gabhann

4:30PM
Epigenetic Engineering of Human Cells with DNA-packing Actuators and Sensors
K. HAYNES[1], C. HOM[1], B. DAMADZADEH[1], AND D. BARCLAY[1]
[1]Arizona State University, Tempe, AZ

4:45PM
Targeting HBV DNA With CRISPR/Cas Leads to cccDNA Destruction in Infected Cells
V. RAMANAN[1], D. COX[1], A. SHLOMAI[2], R. SCHWARTZ[1], C. RICE[2], F. ZHANG[1,3], AND S. BHATIA[1,4,5]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]The Rockefeller University, New York, NY, [3]Broad Institute, Cambridge, MA, [4]Brigham and Women's Hospital, Boston, MA, [5]Howard Hughes Medical Institute, Cambridge, MA

5:00PM
Synthetic Chromatin-Based Transcriptional Logic, Spatial Genomic Regulation, And Memory
A. KEUNG[1], C. BASHOR[1], S. KIRIAKOV[2], J. COLLINS[1,3], AND A. KHALIL[2]
[1]Boston University/HHMI, Boston, MA, [2]Boston University, Boston, MA, [3]Wyss Institute for Biologically Inspired Design, Boston, MA

5:15PM
Protocells as a Platform for Bottom-up Synthetic Biology
J. SUN[1], J. TOWNSON[2], Y-S. LIN[2], B. KAEHR[3], C. BRINKER[2], Y. WANG[4], AND E. JAKOBSSON[1]
[1]University of Illinois at Urbana Champaign, Urbana, IL, [2]University of New Mexico, Albuquerque, NM, [3]Sandia National Lab, Albuquerque, NM, [4]University of California San Diego, La Jolla, CA

5:30PM
Novel Divalent Aptamer Assembly For Controlled VEGF Receptor Activation
V. RAMASWAMY[1], A. MONSALVE[1], B. DOLLINGER[1], J. DOBSON[1], AND J. ALLEN[1]
[1]University of Florida, Gainesville, FL

5:45PM
Quantifying the Dynamics and Spatial Organization of TGF β receptors with Single Particle Tracking Photoactivated Localization Microscopy
C. DUFORT[1], J. RYS[2], M. BAIRD[3], M. DAVIDSON[3], AND T. ALLISTON[1]
[1]UCSF, San Francisco, CA, [2]UC Berkeley - UCSF, San Francisco, CA, [3]Florida State University, Tallahassee, FL

Track: Nano to Micro Technologies, Translational Biomedical Engineering
OP-Thurs-3-11 - Room 008A
Paper Fluidics

Chairs: Jungkyu (Jay) Kim, Daniel Ratner

4:30PM
Simultaneously Concentrating And Detecting Biomarkers On Paper
R. CHIU[1], E. JUE[1], A. YIP[1], A. BERG[1], S. WANG[1], A. KIVNICK[1], P. NGUYEN[1], AND D. KAMEI[1]
[1]UCLA, Los Angeles, CA

5:00PM
Paper-based Assay for Point-of-care Quantification of HbS Content in Blood of Sickle Cell Disease Patients
N. PIETY[1], X. YANG[1], B. DINU[2], A. GEORGE[2], AND S. SHEVKOPLYAS[1]
[1]University of Houston, Houston, TX, [2]Baylor College of Medicine, Houston, TX

5:15PM
Paper-Based Diagnostic for Influenza A Detection
C. HOLSTEIN[1], S. BENNETT[1], E-M. STRAUCH[1], A. CHEVALIER[1], E. FU[2], D. BAKER[1], AND P. YAGER[1]
[1]University of Washington, Seattle, WA, [2]Oregon State University, Corvallis, OR

5:30PM
Purification and Concentration of Nucleic Acids in Porous Membranes for Point-of-Care Applications
S. BYRNES[1], J. BISHOP[1], L. LAFLEUR[1], J. BUSER[1], B. LI[2], C. OLSEN[2], B. LUTZ[1], AND P. YAGER[1]
[1]University of Washington, Seattle, WA, [2]GE Global Research Center, Niskayuna, NY

5:45PM
Bacterial Cell Filtration, Amplification, and Detection in Paper Matrices for Molecular Diagnostics at the Point of Care
J. LINNES[1], C. ELLENSON[1], AND C. KLAPPERICH[1]
[1]Boston University, Boston, MA

Track: Nano to Micro Technologies, Cellular and Molecular Bioengineering
OP-Thurs-3-12 - Room 008B
Microfluidic Platforms III

Chairs: Anand Ramasubramanian, Leo Wan

4:30PM
Influence of Microfluidic Geometry on Micro-droplet formation
S. GULATI[1], W. GOOD[1], K. VIJAYAKUMAR[2], W. TAMAYO[1], X. NIU[3], J. EDEL[2], AND A. DEMELLO[4]
[1]University of the Pacific, Stockton, CA, [2]Imperial College London, London, United Kingdom, [3]University of Southampton, Southampton, United Kingdom, [4]ETH Zürich, Zürich, Switzerland

4:45PM
MECs: Microfluidic "Building Blocks" for Custom Bioinstruments
D. HILL[1], L. ANDERSON[1], C. HILL[1], AND W. GROVER[1]
[1]University of California, Riverside, Riverside, CA

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

5:00PM
Inertial Focusing in Curved Channels: Towards Precision Biofluid Processing
J. Martel[1] and M. Toner[1]
[1]Massachusetts General Hospital, Charlestown, MA

5:15PM
Using Nanoporous Silicon Nitride Membranes as Electro-osmotic Pumps and Nanofluidic Transistors
K. Smith[1] and J. McGrath[1]
[1]University of Rochester, Rochester, NY

5:30PM
On-chip Fingerprinting Surface Enhanced Raman Scattering (SERS) Spectra Of Living Cells Via Ag@ZnO Nanocomplex Fabricated By Optothermal Effect
Y. Xie[1] and T. Huang[1]
[1]The Pennsylvania State University, University Park, PA

5:45PM
Flexible Microfluidic Device with Microporous Walls for Perfusion Cell Culture
C. Chan[1], V. Goral[2], M. DeRosa[2], T. Huang[1], and P. Yuen[2]
[1]Pennsylvania State University, University Park, PA, [2]Corning Incorporated, Corning, NY

Track: Device Technologies and Biomedical Robotics
OP-Thurs-3-13 - Room 201
Medical Device Technologies

Chairs: Kevin Soucy, Chander Sadasivan

4:30PM
Laser Stenting of Injectable Biodegradable Elastomers for Cardiovascular Disease
J. Yang[1], M. Albaghdadi[2], M. Kibbe[2], and G. Ameer[1,2,3]
[1]Northwestern University, Evanston, IL, [2]Northwestern University, Chicago, IL, [3]Feinberg School of Medicine, Chicago, IL

4:45PM
Inferior Vena Cava Strut Perforation Leads to Further Strut Perforation
J. Dowell[1], J. Castle[1], M. Schickel[2], G. Guy[1], X. Yang[1], and S. Ghadiali[1,2]
[1]Wexner Medical Center, The Ohio State University, Columbus, OH, [2]The Ohio State University, Columbus, OH

5:00PM
Physiological Assessment and Recharging for a Fetal Pacemaker
A. Vest[1] and G. E. Loeb[1]
[1]University of Southern California, Los Angeles, CA

5:15PM
Toxin Clearance In A Compact Hemodialysis Device Enabled By Ultra-thin Nanomembranes
D. Johnson[1] and J. McGrath[1]
[1]University of Rochester, Rochester, NY

5:30PM
Membrane Separation As Novel Solution For CO 2 Removal in Anesthesia Circuits
F. Wilfart[1], D. Roach[1], J. Haelssig[1], and M. Schmidt[1]
[1]Dalhousie University, Halifax, NS, Canada

5:45PM
Effects of a Biventricular, Non-Blood Contacting Transmural Cardiac Assist Device on Aortic Pressure and Pulmonary Artery Pressure in an Acute Failure Model
E. Hord[1], C. Bolch[2], E. Tuzun[3], and J. Criscione[1]
[1]Texas A&M University, College Station, TX, [2]CorInnova, Inc., College Station, TX, [3]Texas A&M Institute for Preclinical Studies, College Station, TX

Track: Biomechanics
OP-Thurs-3-14 - Room 103B
Methods for Assessing Injury and Injury Risk

Chairs: Joel Stitzel, Andrew Kemper

4:30PM
Head Injury Risk In Oblique Frontal Motor Vehicle Crashes
R. Chen[1] and H. Gabler[1]
[1]Virginia Tech, Blacksburg, VA

4:45PM
Assessment of Angular Rate Sensors to Measure Rotational Head Acceleration during Impact Testing
S. Rowson[1], R. Daniel[1], B. Cobb[1], and S. Duma[1]
[1]Virginia Tech, Blacksburg, VA

5:00PM
Methods for Studying Brain Motion During Head Impact in a Gottingen Minipig Model
A. Hermundstad[1], E. Fievisohn[1], P. VandeVord[1], C. Untaroiu[1], and W. Hardy[1]
[1]Virginia Polytechnic and State University, Blacksburg, VA

5:15PM
Rotational Moment Of Inertia Improves Predictions Of Axonal Injury
L. Atlan[1], S. Sullivan[1], and S. Margulies[1]
[1]University of Pennsylvania, Philadelphia, PA

5:30PM
Injury Risk Curves for Specific Injuries and Body Regions in Frontal Motor Vehicle Crashes
A. Weaver[1], K. Swett[2], J. Talton[2], R. Barnard[2], S. Schoell[1], and J. Stitzel[1]
[1]Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC, [2]Wake Forest University School of Medicine, Winston-Salem, NC

5:45PM
Simulation of Pressure Wave Transmission in Human Ear with Viscoelastic Tympanic Membrane Model
T. Hawa[1] and R. Gan[1]
[1]The University of Oklahoma, Norman, OK

Track: Bioinformatics, Computational and Systems Biology
OP-Thurs-3-15 - Room 202A
Cell Regulatory Circuits

Chairs: Amy Brock, Princess Imoukhuede

4:30PM *Invited*
A Spatiotemporal microRNA Circuit Controlling Cancer Stem Cell Division
X. Shen[1] and P. Bu[1]
[1]Cornell University, Ithaca, NY

5:00PM
Gene Regulatory Networks in Mesendoderm Differentiation of Human Embryonic Stem Cells
R. Carpenedo[1,2] and W. Stanford[2,3]
[1]Ottawa Hospital Research Institute, Ottawa, ON, Canada, [2]University of Ottawa, Ottawa, ON, Canada, [3]Ottawa Hospital Research Institute, Ottawa, Canada

5:15PM
A Dynamic Regulatory Circuit in Single Breast Epithelial Cells and Basal-like Premalignancies
C-C. Wang[1], S. Bajikar[1], L. Jamal[1,2], K. Atkins[1], and K. Janes[1]
[1]University of Virginia, Charlottesville, VA, [2]UC San Diego, La Jolla, CA

5:30PM
A Logic-Based Model of Cardiac Fibroblast Signaling Predicts Switch-Like Behavior
A. Zeigler[1], W. Richardson[1], J. Holmes[1], and J. Saucerman[1]
[1]University of Virginia, Charlottesville, VA

5:45PM
Mechanistic Insights into Early Endoderm Differentiation of Human Embryonic Stem Cells using Systems Level Analysis of Signaling Interactions
S. Mathew[1], S. Sundararaj[1], H. Mamiya[1], and I. Banerjee[1,2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]McGowan Institute for Regenerative Medicine, Pittsburgh, PA

PLATFORM SESSIONS **Th-3**

Track: Orthopaedic and Rehabilitation Engineering, Tissue Engineering
OP-Thurs-3-16 - Room 202B
Structure-Function Relationships in Musculoskeletal Tissues

Chairs: Dawn Elliott ,Virginia Ferguson

4:30PM *Invited*
Multiscale Mechanical Testing of Intact and Notched Tendon to Quantify Shear Load Transfer Between Collagen Fibrils
S. Szczesny[1] and D. Elliott[2]
[1]University of Pennsylvania, Philadelphia, PA, [2]University of Delaware, Newark, DE

4:45PM
Relating Tribological Function of Cartilage to Pproperties and Structure
D. Burris[1] and A. Moore[1]
[1]University of Delaware, Newark, DE

5:00PM
Elastin Dominates Extracellular Matrix Mechanics in Ligament
H. Henninger[1], W. Valdez[1], S. Scott[1], and J. Weiss[1]
[1]University of Utah, Salt Lake City, UT

5:15PM
Reverse Engineering of the Osteochondral Interface
V. Ferguson[1], B. Harley[2], and S. Bryant[1]
[1]University of Colorado at Boulder, Boulder, CO, [2]University of Illinois at Urbana-Champaign, Urbana Champaign, IL

5:30PM
Elastin Deficiency Corresponds to Dose-Dependent Reduction in Tendon Mechanics
M. Espinosa[1], Q. Wu[1], I. Stoilov[1], R. Mecham[1], and S. Lake[1]
[1]Washington University in St. Louis, St. Louis, MO

5:45PM
Strain Transfer from Tissue to Cells in Meniscus is Dependent on Maturity and Microstructure
W. Han[1], S-J. Heo[1], T. Driscoll[1], L. Smith[1], R. Duncan[2], R. Mauck[1], and D. Elliott[2]
[1]University of Pennsylvania, Philadelphia, PA, [2]University of Delaware, Newark, DE

Track: Biomedical Imaging and Optics
OP-Thurs-3-17 - Room 203A
Molecular Probes II

Chairs: Zhiliang Cheng,Amber Doiron

4:30PM
Hyaluronic Acid Derived Nanoparticles with Activatable Fluorescence for Image-Guided Tumor Surgery
A. Mohs[1,2,3], T. Hill[1], S. Kelkar[1], F. Marini[2,3], and E. Levine[3]
[1]Wake Forest - Virginia Tech School of Biomedical Engineering and Sciences, Winston-Salem, NC, [2]Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC, [3]Comprehensive Cancer Center of Wake Forest University, Winston-Salem, NC

4:45PM
Magneto-Acoustic Micro-platform for Gene Delivery and Image-Based Prediction of Therapeutic Response
B. Chertok[1]
[1]University of Michigan, Ann Arbor, MI

5:00PM
Sortase-Tag Expressed Protein Ligation (STEPL): Combining Protein Purification and Site-Specific Bioconjugation Into a Single Step
R. Warden-Rothman[1] and A. Tsourkas[1]
[1]University of Pennsylvania, Philadelphia, PA

5:15PM
Synthesis of Various MnF2 Nanostructures with Single-Band Red Emission
Z. Bai[1] and N. Hashemi[1]
[1]Iowa State University, Ames, IA

5:30PM
Treatment of Cancer Micrometastasis Using a Chain-like Nanoparticle
P. Peiris[1], A. Abramowski[1], R. Toy[1], L. Bauer[1], E. Doolittle[1], W. Schiemann[1], K. Ghaghada[2], M. Griswold[1], and E. Karathanasis[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Texas Children's Hospital, Houston, TX

5:45PM
Gold Core Polyphosphazene Nanospheres as Biodegradable Contrast Agents for Computed Tomography
R. Cheheltani[1], P. Chhour[1], M. Akhter [1], R. Ezzibdeh [1], C. Blundell [1], P. Naha [1], V. Ferrari [1], H. Allcock [2], and D. Cormode [1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Pennsylvania State University, University Park, PA

Track: Biomechanics, Orthopaedic and Rehabilitation Engineering
OP-Thurs-3-18 - Room 204A
Orthopaedic Biomechanics

Chairs: Sriram Balasubramanian, Spencer Lake

4:30 PM - 4:45 PM
Statistical Shape Modeling of Cortical Bone Thickness in Patients with Femoroacetabular Impingement
P. Atkins[1], P. Mukherjee[1], S. Singla[1], S. Elhabian[1], M. Harris[1], J. Weiss[1], R. Whitaker[1], and A. Anderson[1]
[1]University of Utah, Salt Lake City, UT

4:45PM
Nano-mechanical Variation of Orthogonal Directions in Normal and Osteoporotic Cortical Bone
K. Grover[1], M. Hu[1], L. Lin[1], and Y. Qin[1]
[1]Stony Brook University, Stony Brook, NY

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

5:00PM
Determine Proteoglycan Content of Articular Cartilage Using Indentation Test and a Nonlinear Inhomogeneous Triphasic Model
X. CHEN[1], B. ZIMMERMAN[1], L. RUGGIERO[1], AND X. LU[1]
[1]University of Delaware, Newark, DE

5:15PM
Point-of-Failure Prediction in a High-Energy Femoral Neck Fracture Model
G. FEUER[1], R. PIVEC[1], S. HOSSAIN[1], S. SAHA[1], AND C. PAULINO[1]
[1]SUNY Downstate, Brooklyn, NY

5:30PM
Bone Fragment Motion with Lag and Locking Volar Plate Fixation of Distal Radius Fractures
A. EBERHARDT[1], C. WISE[1], T. MARSHALL[1], J. SCHWERTZ[1], AND N. CHAUDHARI [1]
[1]University of Alabama at Birmingham, Birmingham, AL

5:45PM
Biomechanical Comparison of Two Schatzker Type II Tibial Split Depression Repairs
P. BROWN[1], M. DAVIS[1], J. YANIK[2], M. LANGFITT[3], S. SAUNDERS[3], E. CARROLL[3], AND J. STITZEL[1]
[1]WFU-VT School of Biomedical Engineering and Sciences, Winston Salem, NC, [2]Wake Forest University School of Medicine, Winston Salem, NC, [3]Wake Forest Baptist Medical Center, Winston Salem, NC

Track: Biomedical Engineering Education (BME)
OP-Thurs-3-19 - Room 203B
Effective Use of Technology in the BME Classroom

Chairs: Ann Saterbak, Damir Khismatullin

The purpose of the special session is to disseminate best practices around using the wide range of available technology to support and enhance student learning for biomedical engineering education. Technology includes innovative tools for hands-on and experiential learning; mathematical modeling tools; simulation and visualization tools; personal response systems (i.e., clickers); mobile applications; videos during, before or after class, including a flipped classroom model; social media; and others. The session will include speakers, technology demonstrations, and a panel. This special session is hosted by the BMES Education Committee and will follow the Thursday afternoon BMES Education track abstract-driven platform session focusing on teaching in a flipped classroom.

SPEAKERS:
RICHARD HART, PHD, *Chair, Department of Biomedical Engineering, The Ohio State University*

CATHY WICKS, *Texas Instrument*

NAOMI CHESLER, *PhD, University of Wisconsin-Madison*

KURT THOROUGHMAN, *PhD, Associate Professor, Department of Biomedical Engineering, Washington University in St. Louis*

4:00 PM – 7:30 PM
Convention Center, Ballroom A
Korea-US Joint Workshop in Biomedical Engineering

The goal of the Joint Workshop between the Korean Society of Medical and Biological Engineering (KOSOMBE) and BMES is to promote cooperation, collaboration and networking between the two societies and their members.

4:00-5:10PM INVITED ORALS SESSION 1
Chairs: Jungwook Shin (Inje Univ. Pusan, Gyeongsangnam-do, Korea)
James Moon (Univ. Michigan, Ann Arbor, MI, USA)

4:00PM
Introductory Remarks
HANJOONG JO , *Georgia Tech and Emory University, Atlanta, GA, USA*

4:05PM
Dynamic Nanocarriers for Biologic Drug Delivery
PATRICK S. STAYTON, *University of Washington, Seattle, WA, USA*

4:20PM
Tissue Regeneration and Drug Delivery using in situ forming Hydrogels
KI DONG PARK , *Ajou University, Suwon, Gyeonggi-do, Korea*

4:35PM
Big Image Data Analytics to Predict Stem Cell Fate
MICHAEL CHO, *University of Illinois in Chicago, Chicago, IL, USA*

4:50PM
Prohealing Multifunctional Endothelium Mimicking Nanomatrix
HO-WOOK JUN, *University of Alabama, Birmingham, AL, USA*

5:00PM
Nano-Engineering of 3D Complex Tissues with Controllable Architecture and Function
DEOK-HO KIM, *University of Washington, Seattle, WA, USA*

5:10-6:00PM POSTER SESSION

6:00-7:10 INVITED ORAL SESSION 2

Chairs: Luke Lee (UC Berkeley, Berkeley, CA, USA)
Minho Kim (Kent State Univ. Kent, OH)

6:00PM
Microfluidic Assays for Cells, Tissues, and Artificial Organs
JE-KYUN PARK *KAIST, Daejeon, Chungcheongnam-do, Korea*

6:15PM
Microsystems for Shaping and Sensing Cell
ALEXANDER REVZIN, *UC Davis, Davis, CA, USA*

6:30PM
Activatable Nanoprobes For Molecular Imaging
ICK CHAN KWON *KIST, Seoul, Korea*

6:45PM
Synthetic Virology: Reprogramming Viruses Into Controllable Nanodevices
JUNGHAE SUH, *Rice University, Houston, TX, USA*

7:00PM
Shape Memory External Supports For Vascular Grafting
HAK-JOON SUNG, *Vanderbilt University, Nashville, TN, USA*

7:10-7:30PM
Closing Remarks & Announcements
KWIWON CHOI , *KIST, Seoul, Korea*

PLATFORM SESSIONS **Th-3**

THURSDAY

REFRESHMENT BREAKS

REFRESHMENT BREAKS

REFRESHMENT BREAKS

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BIOINFORMATICS

300 259 298 297 296 295 294 293 292 291
281 282 283 284 285 286 287 288 289 290

MULTI SCALE MODELS

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AND

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BIO MECHANICS

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MUSCULOSKELETAL INJURY

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AND

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MECHANICS

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TISSUE ENGINEERING

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REGENERATION AND REHAB

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DEVICES

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AND

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SENSORS

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POSTERS

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CELLULAR

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AND

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MOLECULAR

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FUNCTION

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TISSUE EN'G

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DRUG

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DELIVERY

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CANCER

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POSTERS

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BME

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EDUCATION

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IMAGING

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EMERGING

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TECHNOLOGIES,

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567 568 569 570 571 572 573

APPROACHES

566 565 564 563 562 561 560
553 554 555 556 557 558 559

AND

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MATERIALS

542 541 540 539 538 537 536
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POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM, 3:30PM - 4:30PM

THURSDAY, October 23, 2014

9:30 AM - 5:00 PM

POSTER SESSIONS – THURS

Track: Bioinformatics, Computational and Systems Biology

Algorithms for Computational and Systems Biology

Chairs: Michael Fenn, Kristen Naegle

P-Th-281
RVD2: A Variant Detection Model For Heterogeneous Next-generation Sequencing Data
Y. He[1] and P. Flaherty[1]
[1]*Worcester Polytechnic Institute, Worcester, MA*

P-Th-282
The Use of Kernel PCA For The Channelization Of The Hotelling Model Observer
G. Wen[1,2] and M. Markey[1,2]
[1]*The University of Texas at Austin, Austin, TX,* [2]*The University of Texas MD Anderson Cancer Center, Houston, TX*

P-Th-283
Nonlinear Model Development and Optimization of Glucose Affinity Sensors
L. Reis[1] and E. Guilbeau[1]
[1]*Louisiana Tech University, Ruston, LA*

P-Th-284
Computational Saliency Maps of Medical Images to Predict Radiologists' Gaze Fixations
F. Pecen[1], G. Wen[1,2], T. Ganapathi[1], D. Vining[2], T. Haygood[2], and M. Markey[1,2]
[1]*University of Texas at Austin, Austin, TX,* [2]*University of Texas MD Anderson Cancer Center, Houston, TX*

P-Th-285
A Neural Network based Human Platelet Calcium Calculator trained by Pairwise Agonist Scanning
M. Lee[1] and S. Diamond[1]
[1]*University of Pennsylvania, Philadelphia, PA*

P-Th-286
Identifying MRI Markers On Newly Diagnosed Glioblastoma Multiforme To Distinguish Patients With Long And Short Term Survival
J. Patel[1], P. Prasanna[1], P. Tiwari[1], and A. Madabhushi[1]
[1]*Case Western Reserve University, Cleveland, OH*

Track: Bioinformatics, Computational and Systems Biology

Dynamics of Biological Systems

Chairs: Chun-Chao Wang, Janet Barzilla

P-Th-287
Belief Propagation in Genotype-Phenotype Networks
J. Moharil[1], P. May[1], D. Gaile[1], and R. Hageman Blair[1]
[1]*State University of New York-University at Buffalo, Buffalo, NY*

P-Th-288
Characterizing Collagen Network Mechanics And Cell-Mediated Remodeling Using An Agent-Based Model
J. Reinhardt[1] and K. Gooch[1]
[1]*The Ohio State University, Columbus, OH*

P-Th-289
Spatial Organization in Molecularly-Tethered Lipid Bilayers
S. Abel[1]
[1]*University of Tennessee, Knoxville, TN*

P-Th-290
Key Features of the Gut Microbiome Revealed by Topological and Dynamic Network Analysis
M. Biggs[1], S. Steinway[2], J. Papin[1], and R. Albert[3]
[1]*University of Virginia, Charlottesville, VA,* [2]*Pennsylvania State College of Medicine, Hershey, PA,* [3]*Pennsylvania State University, University Park, PA*

P-Th-291
A Model for Metabolism in Ischemic Cardiomyocytes
A. McDougal[1], D. Sosnovik[2], and C. Dewey[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Massachusetts General Hospital, Boston, MA*

POSTER SESSION **Th**

See page 92 for Poster floor plan

P-Th-292
Mechanistic Characterization of the Thioredoxin System in the Removal of Hydrogen Peroxide
V. Pannala[1] and R. Dash[1]
[1]Medical College of Wisconsin, Milwaukee, WI

P-Th-293
Cathepsin Cannibalism Reduces Collagen And Elastin Degradation In Matrix Remodeling
M. Ferrall[1] and M. Platt[1]
[1]Georgia Institute of Technology and Emory University, Atlanta, GA

P-Th-294
Nucleotide and Phosphate Regulation of Mitochondrial Oxidative Phosphorylation
J. Bazil[1], F. Van den Bergh[1], D. Beard[1], R. Wiseman[2], and K. Vinnakota[1]
[1]University of Michigan, Ann Arbor, MI, [2]Michigan State University, East Lansing, MI

P-Th-295
Strategic Priming with Several Antigens Yields Multiple Memory Paradigms
C. Ziraldo[1], C. Gong[1], D. Kirschner[1], and J. Linderman[1]
[1]University of Michigan, Ann Arbor, MI

P-Th-296
Comparison of New Agent-Based Model to a Classical Discrete Model of Angiogenesis
M. Kelly-Goss[1], B. Corliss[1], C. Pelland[1], and S. Peirce-Cottler[1]
[1]University of Virginia, Charlottesville, VA

Track: Bioinformatics, Computational and Systems Biology

Multiscale Modeling

Chairs: Shayn Peirce, Ashlee Ford Versypt

P-Th-270
Mathematical Model of Protein Delivery Within the Urinary Bladder
S. Smith[1], S. Ravindranathan[1], K. Nguyen[1], and D. Zaharoff[1]
[1]University of Arkansas, Fayetteville, AR

P-Th-271
The Influence of Glycosaminoglycan Distribution in Collagen on Its Mechanical Property
Y. Bi[1], P. Patra[1], and X. Xiong[1]
[1]University of Bridgeport, Bridgeport, CT

P-Th-272
Mathematical Modeling and Experimental Validation of Cancer Cell Migration in a Three-Dimensional Tumor Matrix
S. Boukhris[1] and Y. Feng[1]
[1]The University of Texas at San Antonio, San Antonio, TX

P-Th-273
Mixture Theory Data Reduction for Cerebral Blood Flow Predictions
I. Gould[1] and A. Linninger[1]
[1]University of Illinois at Chicago, Chicago, IL

P-Th-274
A Multiscale Adhesive Dynamics Model to Study the Interaction of Neutrophils with the Endothelium
A. Rocheleau[1], R. Sumagin[2], and M. King[1]
[1]Cornell University, Ithaca, NY, [2]Emory University, Atlanta, GA

P-Th-275
Development of a Simplified and Computationally Efficient Human Body Finite Element Model
D. Schwartz[1,2], D. Moreno[1,2], J. Stitzel[1,2], and S. Gayzik[1,2]
[1]Wake Forest School of Medicine, Winston Salem, NC, [2]Virginia Tech – Wake Forest University Center for Injury Biomechanics, Winston Salem, NC

P-Th-276
An *In Silico* Multi-Compartment Model of VEGF165 and VEGF165b in Peripheral Arterial Disease
G. Chen[1], L-H. Chu[1], B. Annex[2], and A. Popel[1]
[1]Johns Hopkins University, Baltimore, MD, [2]University of Virginia, Charlottesville, VA

P-Th-277
Characterization and Comparative Analysis of the Kinetics of Cardiac Cytosolic and Mitochondrial Malate Dehydrogenase Isoforms
S. Dasika[1], K. Vinnakota[1], and D. Beard[1]
[1]University of Michigan, Ann Arbor, MI

P-Th-278
Simulation of Dependence of Radiative Energy Transport on Tissue Optical Properties
S. Miller[1] and K. Mitra[1]
[1]Florida Institute of Technology, Melbourne, FL

P-Th-279
Influence of Transport in the Glomerular Mesangium
S. Hunt[1], Y. Segal[1], K. Dorfman[1], and V. Barocas[1]
[1]University of Minnesota, Minneapolis, MN

P-Th-280
Evaluating the Consistency of Cardiomyocyte Self-assembly
N. Drew[1], D. Baldo [1], and A. Grosberg[1]
[1]University of California, Irvine, Irvine, CA

Track: Bioinformatics, Computational and Systems Biology

Signaling Systems Analysis

Chairs: Kathryn Miller-Jensen, Jeff Saucerman

P-Th-476
Regulation of Store-Operated Calcium Entry in Endothelial Flow-Induced Nitric Oxide Production
T. Muzorewa[1], D. Jaron[1], D. Buerk[1], and K. Barbee[1]
[1]Drexel University, Philadelphia, PA

P-Th-477
Feedback From IGFBP2 to HIF1α Determines Glioblastoma Progression
K. Lin[1], A. Liao[1], and A. Qutub[1]
[1]Rice University, Houston, TX

P-Th-478
Intracellular T Cell Signaling: Experimental And Computational Tools For A Frequency Response Analysis Approach
A. Kniss[1], L. Chingozha[2], H. Lu[1,2], and M. Kemp[1]
[1]Georgia Institute of Technology and Emory University, Atlanta, GA, [2]Georgia Institute of Technology, Atlanta, GA

P-Th-479
Spatial Differentiation Patterns Evaluated Via Rules Governing Intercellular Communication
C. Glen[1,2], T. C. McDevitt[1,2], and M. L. Kemp[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Th-480
Quantitative Modeling of the Alternative Pathway of the Complement System Activation
D. Morikis[1], R. Gorham[1], and N. Zewde[1]
[1]*University of California, Riversdie, Riverside, CA*

Track: Bioinformatics, Computational and Systems Biology, New Frontiers and Special Topics

Systems Approaches to Therapy and Therapeutics

Chairs: Cheemeng Tan, Mohammad Fallahi-Sichani

P-Th-569
In silico Development of Complement System Biomarkers
R. Gorham Jr.[1] and D. Morikis[1]
[1]*University of California, Riverside, Riverside, CA*

P-Th-570
High Bacterial Burden And Sub-optimal Antibiotic Concentrations Result In Failed TB Treatment
E. Pienaar[1], N. Cilfone[1], P. Lin[2], V. Dartois[3], J. Mattila[4], R. Butler[5], J. Flynn[4], D. Kirschner[1], and J. Linderman[1]
[1]*University of Michigan, Ann Arbor, MI,* [2]*University of Pittsburgh Medical Center, Pittsburgh, PA,* [3]*The State University of New Jersey, Neward, NJ,* [4]*University of Pittsburgh, Pittsburgh, PA,* [5]*Adventist University of Health Sciences, Orlando, FL*

P-Th-571
PADPIN: Protein-Protein Interaction Networks of Angiogenesis, Arteriogenesis, and Inflammation in Peripheral Arterial Disease
L-H. Chu1, B. Annex2, J. Bader1, and A. Popel1
1Johns Hopkins University, Baltimore, MD, 2University of Virginia, Charlottesville, VA

P-Th-572
Psychometric Analysis of Alzheimer's Disease Assessment Scale
N. Verma1,2 and M. Markey1,3
1The University of Texas at Austin, Austin, TX, 2NeuroTexas Institute, St. David's HealthCare, Austin, TX, 3The University of Texas MD Anderson Cancer Center, Houston, TX

P-Th-573
A Mechanistic Model of Chimeric Antigen Receptor (CAR) T Cell Activation
J. Rohrs[1], P. Wang[1], and S. Finley[1]
[1]*University of Southern California, Los Angeles, CA*

P-Th-574
Quantitative Analysis of Hemodynamics in a Novel Standardized Geometry Reveals Inconsistencies between Newtonian and Non-Newtonian Constitutive Models
J. Weddell[1], J. Kwack[1], A. Masud[1], and P. Imoukhuede[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

P-Th-575
Cytoskeletal Fingerprinting of Human Stem Cell Populations to Reduce Heterogeneity
A. Paul[1], K. Danielson[1], and M. Cho[1]
[1]*University of Illinois at Chicago, Chicago, IL*

Track: Bioinformatics, Computational and Systems Biology, Cellular and Molecular Bioengineering

Understanding Molecular Functions from Systems and Computational Approaches

Chairs: Kevin Janes, Jason Papin

P-Th-409
Integrated Network Analysis of CD133+ Colon Cancer Stem Cell
K-Y. Chen[1], X. Liu[1], P. Bu[1], C-S. Lin[1], N. Rakhilin[1], J. Locasale[1], and X. Shen[1]
[1]*Cornell University, Ithaca, NY*

P-Th-410
Principal Component Analysis of the Regulation of Osteoclastogenesis by Salubrinal and Guanabenz
A. Chen[1], K. Hamamura[2], N. Tanjung[2], and H. Yokota[2]
[1]*Purdue University, West Lafayette, IN,* [2]*Indiana University Purdue University Indianapolis, Indianapolis, IN*

P-Th-411
Mechanistic Insights into Major Human Muscular Diseases
S. Gupta[1], S-M. Kim[1], Y. Wang[1], A. Dinasarapu[2], and S. Subramaniam[1]
[1]*University of California, San Diego, La Jolla, CA,* [2]*University of Florida, Gainesville, FL*

P-Th-412
Meta-analysis for Identifying Gene Expression Patterns in Head and Neck Cancer
C. Kaddi[1], S. Mishra[1], and M. Wang[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Th-413
System Characterization of microRNAs in the Mouse Model of Peripheral Arterial Disease
C. Chen[1], L-H. Chu[1], B. Annex[2], and A. Popel[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*University of Virginia, Charlottesville, VA*

P-Th-414
Reverse Engineering of Genome-Scale Biological Networks in MCF-7 Breast Cancer Cell Line
R. Thiagarajan[1], D. Wu[2], J. Bazil[1], S. Kron[2], and D. Beard[1]
[1]*University of Michigan Medical School, Ann Arbor, MI,* [2]*The University of Chicago, Chicago, Illinois, Chicago, IL*

P-Th-415
Identification and Characterization of the Monoclonal Antibodies Comprising the Serological Response to Seasonal Influenza Vaccines
J. Lee[1], D. Boutz[1], C. Vollmers[2], B. DeKosky[1], A. Horton[1], G. Ippolito[1], E. Marcotte[1], S. Quake[2], and G. Georgiou[1]
[1]*University of Texas at Austin, Austin, TX,* [2]*Stanford University, Stanford, CA*

P-Th-416
Genital Tract Inflammation Perturbs Mucosal Integrity Proteins: Implications for HIV Susceptibility
K. Arnold[1], A. Burgener[2,3], K. Bersie[2], L. Dunphy[1], K. Shahabi[4], J. Kwatampora[5], J. Kimani[2,5], R. Kaul[4], D. Lauffenburger[1], and L. McKinnon[6]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*University of Manitoba, Winnipeg, MB, Canada,* [3]*National Microbiology Lab, Winnipeg, MB, Canada,* [4]*University of Toronto, Toronto, ON, Canada,* [5]*University of Nairobi, Nairobi, Kenya,* [6]*Centre for the AIDS Programme of Research in South Africa, Durban, South Africa*

P-Th-417
Linking Magnetic Relaxation to Protein Folding
P. Liu[1], R. Kulwin[1], and R. Lee[1]
[1]*University of Chicago, Chicago, IL*

POSTER SESSION **Th**

See page 92 for Poster floor plan

Track: Biomaterials

Intelligent/Multifunctional Biomaterials

Chairs: Meng Deng, Wei Li

P-Th-585
Characterization of a Multi-functional Hydrogel Tissue Adhesive Containing Chitosan

L. Sanders[1], K. Webb[1], T. Mefford[1], and J. Nagatomi[1]

[1]Clemson University, Clemson, SC

P-Th-586
Collecting of Circulating Tumor Cells with Biocompatible/thermo-responsive PMEA analogous surfaces

T. Orui[1], K. Sato[1], T. Hoshiba[1], and M. Tanaka[1]

[1]Yamagata University, Yonezawa, Japan

P-Th-587
Recombinant Spider Silks for Delivery of Therapeutic Nucleic Acids

O. Tokareva[1,2], D. Glettig[1], R. Abbott[1], and D. Kaplan[1]

[1]Tufts Unoversity, Medford, MA, [2]Massachusetts Institute of Technology, Cambridge, MA

P-Th-588
Shape-Controlled Synthesis of Degradable Polymeric Microfibers

Z. Bai[1], F. Sharifi[1], and N. Hashemi[1]

[1]Iowa State University, Ames, IA

P-Th-589
Characterization Of Poly-Dimethylsiloxane As a Non-hermetic Micropackaging Material For Chronic Implantable Microsystems

D. Sun[1], L. Shem[1], P. Wang[1], C. Zorman[1], P. Feng[1], and W. Ko[1]

[1]Case Western Reserve University, Cleveland, OH

P-Th-590
Self-Cleaning, Mechanically Robust Membranes for Implanted Glucose Biosensors

A. Means[1], R. Fei[1], J. George[1], J. Park[1], A. Abraham[1], G. Cote[1], and M. Grunlan[1]

[1]Texas A&M University, College Station, TX

P-Th-591
Click-Chemistry Based Molecularly Responsive Hydrogel as Biodegradable Scaffolds for 3D Cell Culture

R. Navarro[1], K. Beaven[1], J. McKenzie[1], R. Hall[1], K. Knutson[1], and T. Betancourt[1]

[1]Texas State University, San Marcos, TX

Track: Biomaterials, Nano to Micro Technologies

Micro and Nanostructured Materials

Chairs: Meng Deng, Wei Li

P-Th-592
Dependence of Nanostructures on Surface Energy for the Enhanced Differentiation and Maturation of Osteoblastic Lineage Cells on Micro-rough Titanium Surfaces

E. Lotz[1], R. Olivares-Navarrete[1], S. Hyzy[1], S. Berner[2], Z. Schwartz[1,3], and B. Boyan[1,4]

[1]Virginia Commonwealth University, Richmond, VA, [2]Institut Straumann AG, Basel, Switzerland, [3]University of Texas Health Science Center at San Antonio, San Antonio, TX, [4]Georgia Institute of Technology, Atlanta, GA

P-Th-593
Microfabricated Nanoporous Gold Coatings Promote Cortical Cell Type-Dependent Surface Attachment

C. Chapman[1], H. Chen[1], M. Stamou[1], M. Biener[2], P. Lein[1], and E. Seker[1]

[1]University of California, Davis, Davis, CA, [2]Lawrence Livermore National Laboratory, Livermore, CA

P-Th-594
Biological Nanowires: Silver-mediated Base Pairing for Conductivity-enhanced DNA/ single Ion Intercalation Chains in (microbial) DNA

E. Toomey[1], S. Vecchioni[2], M. Capece[3], N. Le[1], A. Ray[3], A. Greenberg[3], G. Wessel[1], and L. Rothschild[4]

[1]Brown University, Providence, RI, [2]Columbia University, New York, NY, [3]Stanford University, Stanford, CA, [4]NASA Ames Research Center, Mountain View, CA

P-Th-595
Bio-inspired Hybrid Nanosack for Pancreatic Islet Transplantation in the Omentum

P. Hwang [1], D-J. Lim[1], A. Tambralli[1], S. Gilbert[1], L. Tian[1], A. Shalev[1], and H-W. Jun[1]

[1]University of Alabama at Birmingham, Birmingham, AL

P-Th-596
Antibacterial Effect and Osteogenetic Properties of TiO2 nanotubes Incorporated with ZnO

W. Liu[1,2], P. Su[3], S. Chen[4], Z. Zhang[4], H. Liu[3], and T. Webster[1]

[1]Northeastern University, BosTON, MA, [2]Capital Medical University, Beijing, China, People's Republic of, [3]Beijing University of Technology, BEIJING, China, People's Republic of, [4]Capital Medical University, BEIJING, China, People's Republic of

P-Th-597
Impact of Hirschsprung's Disease on the Barrier Properties of Colonic Mucus

T. Carlson[1], H. Yildiz[1], A. Goldstein[2], and R. Carrier[1]

[1]Northeastern University, Boston, MA, [2]Massachusetts General Hospital, Boston, MA

P-Th-598
Nanoparticle-Protein Separations with Nanoporous Silicon Nitride Membranes

J. Winans[1], J-P. DesOrmeaux[2], S. Wayson[1], T. Gaborski[3], T. Khire[1], C. Striemer[2], and J. McGrath[1]

[1]University of Rochester, Rochester, NY, [2]SiMPore, West Henrietta, NY, [3]Rochester Institute of Technology, Rochester, NY

P-Th-599
Overcoming CARPA while Stopping Internal Bleeding with Hemostatic Nanoparticles

D. Hickman[1], A. Shoffstall[1], R. Groynom[1], E. Shoffstall[1], and E. Lavik[1]

[1]Case Western Reserve University, Cleveland, OH

P-Th-600
Towards Safer Nanomaterials: Investigating Endothelial Cell Mechanical Properties and Barrier Function

Y. Liu[1]

[1]Binghamton University, Binghamton, NY

P-Th-601
Metal Binding Properties of Adeno-associated Virus with Hexahistadine Capsid Functionalization

J. Zhao[1], C. Dempsey[1], A. Nixon[1], and J. Suh[1]

[1]Rice University, Houston, TX

P-Th-602
Three-dimensional All-carbon Scaffolds for Stem Cell Maintenance

G. Lalwani[1], A. Gopalan[1], M. D'Agati[1], M. Rao[1], J. Schneller[1], and B. Sitharaman[1]

[1]Stony Brook University, Stony Brook, NY

P-Th-603
Selenium Nanoparticle Coatings for Alteration in Cancer Cell Activity

M. Stolzoff[1] and T. Webster[1]

[1]Northeastern University, Boston, MA

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Th-604
Fabrication of Novel In Situ Crosslinked Carbon Nanomaterial Thin Films for Biomedical Applications
S. Patel[1], G. Lalwani[1], and B. Sitharaman[1]
[1]*Stony Brook University, Stony Brook, NY*

P-Th-605
Considerations for Solvent Retention in Electrospun Fibers
N. Schaub[1], E. Franze[1], and R. Gilbert[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

P-Th-606
Facile Fabrication and Hydrophilic/hydrophobic Patterning of an Electrospun poly(methyl methacrylate) Cellular Filter
L. Lee[1], C. Nguyen[1], A. Sharma[1], B. Taussig[1], S. Rao[1], V. Lin[1], and J-C. Chiao[1]
[1]*UT Arlington, Arlington, TX*

P-Th-607
Mechanically Stable And Smart Titania Nanotubes On Ti-V Bone Implant Alloys
S. Patel[1] and T. Shokuhfar[1,2]
[1]*Michigan Technological University, Houghton, MI,* [2]*University of Illinois at Chicago, Chicago, IL*

Track: Biomaterials, Translational Biomedical Engineering

Therapeutic and Theranostic Bomaterials

Chairs: Hitesh Handa, Michael Fenn

P-Th-576
An Amnion-based Barrier Membrane For Guided Bone Regeneration In Dental Implant Application
W. Li[1], B. Wang[2], G. Ma[1], B. Brazile[3], and J. Liao[3]
[1]*Dalian Medical University, Liaoning, China, People's Republic of,* [2]*Northwestern University, Chicago, IL,* [3]*Mississippi State University, Mississippi State, MS*

P-Th-577
Improved Serum Stability of Collagen Mimetic Peptides Through Structure Modification
D. Smith[1], L. Bennink[1], and S. Yu[1]
[1]*University of Utah, Salt Lake City, UT*

P-Th-578
Bioabsorabable Bone Plates Enabled with Local, Sustained Delivery of Alendronate
M. Park[1], W. Hur[2], M. Kim[1], S. Choi[1], S. Lee[1], C. Park[1], H. Min[1], T. Choi[1], and Y. Choy[1]
[1]*Seoul National University, Seoul, Korea, Republic of,* [2]*Seoul National University Hospital, Seoul, Korea, Republic of*

P-Th-579
Hematological Effects of Graphene Nanoribbons
J. Fang[1], S. Chowdhury[1], and B. Sitharaman[1]
[1]*SUNY Stony Brook University, Stony Brook, NY*

P-Th-580
Transepithelial Transport of PAMAM Dendrimers Across Isolated Intestinal Tissue
D. Hubbard[1], H. Ghandehari[1], and D. Brayden[2]
[1]*University of Utah, Salt Lake City, UT,* [2]*University College Dublin, Dublin, Ireland*

P-Th-581
Passivation of pNIPAM Nanogels through Surface Hydrolysis Mediated PEGylation
A. Blanchard[1], J. Peters[2], S. Verghese[2], and N. Peppas[2]
[1]*University of Texas at Austin, Rockwall, TX,* [2]*University of Texas at Austin, Austin, TX*

P-Th-582
Iron Oxide Nanoflakes for Hyperthermia and Magnetic Resonance Imaging
A. Cervadoro[1,2], M. Cho[1], J. Key[1], C. Cooper[3], C. Stigliano[1], S. Aryal[1], A. Brazdeikis[4], J. Leary[3], and P. Decuzzi[1]
[1]*Houston Methodist Research Institute, Houston, TX,* [2]*Politecnico di Torino, Torino, Italy,* [3]*Purdue University, West Lafayette, NJ,* [4]*University of Houston, Houston, TX*

P-Th-583
Effect of Magnesium and Other Alloying Elements on Endothelial Cells
N. Zhao[1], J. Ma[1], and D. Zhu[1]
[1]*North Carolina A&T State University, Greensboro, NC*

P-Th-584
Influence of Ionizing Radiation on Medical Device Materials
S. Cooke[1], D. Meleason[2], S. Mange[2], S. Myers[2], and A. Whittington[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA,* [2]*Lewis Gale Medical Center, Salem, VA*

POSTER SESSION **Th**

Track: Biomaterials

Biomaterials – Other

Chairs: Vassilios Sikacitsas, Daniel Alge

P-Th-608
Cell Selection through the Attachment on PMEA Analogs with Different Intermediate Water Contents
T. Hoshiba[1], K. Sato[1], and M. Tanaka[1]
[1]*Yamagata University, Yonezawa, Japan*

P-Th-609
Development of an *In Vitro* Model for Single Species and Mixed Fungal-Bacterial Biofilms on Titanium Dental Implants
D. Montelongo[1], A. Srinivasan [1], A. Ramasubramanian[1], and J. Lopez-Ribot[1]
[1]*The University of Texas at San Antonio, San Antonio, TX*

P-Th-610
Improving Properties of In Situ Forming PLGA Implants via Poly(β-amino ester) and Hydroxyapatite Additives
P. Fisher[1], T. Milbrandt[1], Z. Hilt[1], and D. Puleo[1]
[1]*University of Kentucky, Lexington, KY*

P-Th-611
Evaluation and Control of Alginate Microbead Stability for Islet Encapsulation
V. Ibarra[1], A. Appel[1], S. Somo[1], M-H. Cheng[2], S-W. Kao[2], M. Anastasio[3], A. Garson[3], E. Opara[4], and E. Brey[1]
[1]*Illinois Institute of Technology, Chicago, IL,* [2]*Chang Gung Memorial Hospital, Linkou, Taiwan,* [3]*Washington University, St.Louis, MO,* [4]*Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC*

P-Th-612
Maintenance of Liver Function via Hepatocyte Morphology Regulation on Blood-compatible Polymers
T. Otaki[1], T. Hoshiba[1], and M. Tanaka[1]
[1]*Yamagata University, Yonezawa, Japan*

P-Th-613
Increased Cellular Neurogenesis on Graphene Substrate
J. Lee[1], A. Lipatov[1], L. Ha[1], A. Sinitskii[1], and J. Lim[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE*

P-Th-614
Adhesion and Proliferation of Stem Cells on Polymers with Different Intermediate Water Contents
E. Nemoto[1], T. Hoshiba[1], K. Sato[1], and M. Tanaka[1]
[1]*Yamagata University, Yonezawa, Japan*

See page 92 for Poster floor plan

P-Th-615
Enhancement of Citrate-Based Biodegradable Elastomer through the Application of Click Chemistry
B. Jahanshahi[1], J. Guo[1], and J. Yang[1]
[1]*Pennsylvania State University, state college, PA*

P-Th-616
LKB1 and MO25 Demonstrate Significant Interaction with Myofilament Protein
M. Lopez-Pier[1], J. Konhilas[1], and S. Behunin[1]
[1]*University of Arizona, Tucson, AZ*

Track: Biomechanics, Orthopaedic and Rehabilitation Engineering

POSTER SESSION **Th**

Clinical, Rehabilitation and Sports Biomechanics

Chairs: Katherine Steele, Noah Rosenblatt

P-Th-190
Study of the Urethral Support Function in Women with a Computational Modeling Approach
Y. Peng[1] and Y. Zhang[1]
[1]*University of Houston, Houston, TX*

P-Th-191
Gait Analysis For Early Fall Prediction
L. Petku[1], A. Alsamarae[1], and M. Nasir[1]
[1]*Lawrence Technological University, Southfield, MI*

P-Th-192
Fragile X-Associated Tremor/Ataxia Syndrome - A Case Study
J. Lee[1], R. Imamura[1], N. Merrier[2], and S. Shimada[2]
[1]*CSU Sacramento, Sacramento, CA,* [2]*Biomechanical Consultants of CA, Davis, CA*

P-Th-193
Sensitivity of Lumbopelvic Rhythm to Risk Factors of Low Back Pain
M. Vazirian[1], A. Agarwal[1], B. Koch[1], R. Tromp[1], and B. Bazrgari[1]
[1]*University of Kentucky, Lexington, KY*

P-Th-194
Gender Differences In How Older Adults Regulate Angular Momentum During Stair Descent
K. Singhal[1], J. Kim[2], J. Casebolt[2], S. Lee[2], K-H. Han[2], and Y-H. Kwon[2]
[1]*University of North Texas Health Science Center, Fort Worth, TX,* [2]*Texas Woman's University, Denton, TX*

P-Th-195
Effect of Sagittal Imbalance and Compensatory Mechanisms on Postural Stability in Spinal Deformity Patients
M. Paliwal[1], N. Grosland[1], and S. Mendoza[1]
[1]*University of Iowa, Iowa City, IA*

P-Th-196
Effects of Visual Feedback Distortion on Gait Speed
S-J. Kim[1], M. Ogilvie[1], N. Shimabukuro[1], and T. Stewart[1]
[1]*California Baptist University, Riverside, CA*

P-Th-197
Lateral Trunk Position Can Increase Risk of Elbow Injury in Collegiate Baseball Pitchers
M. Solomito[1], E. Garibay[1], J. Woods[1], S. Ounpuu[1], and C. Nissen[1]
[1]*Connecticut Children's Medical Center, Farmington, CT*

P-Th-198
Biomechanical Evaluation of Knee Movements During Skilled and Unskilled Golf Swing
A. Choi[1], H. Kim[1], and J. Mun[2]
[1]*The University of Texas Health Science Center at Houston, Houston, TX,* [2]*Sungkyunkwan University, Suwon, Korea, Republic of*

P-Th-199
Subject Ability To Accurately Characterize G's In Relation To Activities Of Daily Living
W. Lee[1], S. Perumal[1], B. Patel[1], and K. Konnaiyan[1]
[1]*University of South Florida, Tampa, FL*

P-Th-200
Quantitative Analysis of Dummy Headform Shape for Impact Testing with Football Helmets
B. Cobb[1], A. MacAlister[1], T. Young[1], A. Kemper[1], S. Rowson[1], and S. Duma[1]
[1]*Virginia Tech-Wake Forest University, Blacksburg, VA*

P-Th-201
Regulation of Horizontal Reaction Forces Across Clubs During the Golf Swing
T. Peterson[1], P. Requejo[1,2], H. Flashner[1], and J. McNitt-Gray[1]
[1]*University of Southern California, Los Angeles, CA,* [2]*Rancho Los Amigos National Rehabilitation Center, Downey, CA*

P-Th-202
Stress And Strain Analysis on L4-L5 Lumbar Spine While Performing Sit-Ups.
A. Syed[1], R. Mohammed[1], B. Mohammed[1], W. Mohammed[1], and Y. Al-Smadi[1]
[1]*Texas A&M University-Kingsville, Kingsville, TX*

P-Th-203
Pneumatic Muscle Actuator Use in Leg Extension Exercise
E. Diller[1], B. Rinehart[1], J. Allen[1], T. Merrell[1], D. Reynolds[1], and C. Phillips[1]
[1]*Wright State University, Dayton, OH*

P-Th-204
Hip Biomechanics of Ballet Dancers in Closing First, Third and Fifth Position
A. Lopez[1], S. Carey[1], and M. Morris[1]
[1]*University of South Florida, Tampa, FL*

P-Th-205
Hockey Skating Kinematics and the Effect of Skate Design
R. Tidman[1], L. Lambert[2], D. Cruikshank[2,3], and B. Silver-Thorn[1]
[1]*Marquette University, Milwaukee, WI,* [2]*DC Hybrid Skating, Milwaukee, WI,* [3]*Easton Hockey, Van Nuys, CA*

P-Th-206
Human Motion Analysis While Climbing Cliff
S. Julakanti[1], A. Mohammed[1], S. Mohammed[1], and Y. M Al-Smadi[1]
[1]*Texas A&M University, Kingsville, TX*

P-Th-207
Inverse Dynamic and Kinetic Analysis of Seated Leg Curl Exercise
V. Nekkanti[1], P. Murugesu[1], R. Mamidi[1], R. Tondapu[1], D. Patel[1], and Y. M. Al-Smadi[1]
[1]*Texas A&M University Kingsville, Kingsville, TX*

P-Th-208
Dynamic and Kinetic Analysis of a Human Body During Push-Ups
D. Joy[1], R. Patel[1], H. Shekhawat[1], B. Ayodele[1], P. Murugesu[1], D. Patel[1], and Y. M. Al-Smadi[1]
[1]*Texas A&M University Kingsville, Kingsville, TX*

P-Th-209
Musculoskelatal Simulation of Archery
A. Reddy[1], N. Kilanil[1], A. Shah[1], and Y. M. Al-Smadi[1]
[1]*Texas A&M University- Kingsville, Kingsville, TX*

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Th-210
Age-Related Lower-Extremity Muscle Fatigue During A Moderate-Intensity Cycling Exercise
K. Stratton[1], K. Momeni[1], and P. Faghri[1]
[1]*University of Connecticut, Storrs, CT*

P-Th-211
Comparison of Neuromuscular Activity during the Lateral Step Task in Younger and Older Adults
T. Bejarano[1], A. Thota[1], D. Brunt[1], and R. Jung[1]
[1]*Florida International University, Miami, FL*

Track: Biomechanics

Injury Biomechanics

Chairs: Jennifer Currey, Yahia Al-Smadi

P-Th-212
A Computational Method for Analyzing Military Boot Designs at Blast Conditions
R. Bertucci[1], R. Prabhu[1], S. Clark[1], M. Horstemeyer[1], J. Liao[1], and L. Williams[1]
[1]*Mississippi State University, Starkville, MS*

P-Th-213
Comparison Of Head Impact Accelerations Based On Ground Cover Of Playgrounds
G. Danchik[1], C. DiDomenico[1], and E. Kennedy[1]
[1]*Bucknell University, Lewisburg, PA*

P-Th-214
Sub-rupture Trauma of Blast Overpressure
J. Hernandez[1]
[1]*UTSA, Houston, TX*

P-Th-215
Intracranial Deformation Sensor for Blast-Induced Traumatic Brain Injury
S. Song[1], A. Kim[1], T. Zhang[1], N. Race[1,2], Y. Gu[1], R. Shi[1], and B. Ziaie[1]
[1]*Purdue University, West Lafayette, IN,* [2]*Indiana University School of Medicine, Indianapolis, IN*

P-Th-216
Evaluation of Human Body and Anthropomorphic Test Device (ATD) Injury Responses to Underbody Blast (UBB) Events
C. Weaver[1], K. Danelson[1], and J. Stitzel[1]
[1]*Wake Forest University, Winston-Salem, NC*

P-Th-217
Injury Simulation *In Vivo* in Diabetic Foot
H. Ranu[1]
[1]*American Orthopaedic Biomechanics Research Institute, Atlanta, GA*

P-Th-218
Quantitative Analysis of Biomechanical Data with Random Measurement Error
B. Cobb[1], S. Rowson[1], and S. Duma[1]
[1]*Virginia Tech-Wake Forest University, Blacksburg, VA*

P-Th-219
Quantification of Toy Sword Kinematics with Male and Female Pediatric Volunteers
S. Beeman[1], S. Rowson[1], and S. Duma[1]
[1]*Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Blacksburg, VA*

P-Th-220
Stress State and Strain Rate Dependency in Porcine Lung Parenchyma
C. Mahaffey[1], B. Weed[1], S. Patnaik[1], J. Liao[1], R. Prabhu[1], and L. Williams[1]
[1]*Mississippi State University, Starkville, MS*

P-Th-221
A Computational Model of the Porcine Eye
R. Watson[1,2], W. Gray[1], R. Glickman[1,3], B. Lund[4], W. Sponsel[1,5], and M. Reilly[1]
[1]*UTSA, San Antonio, TX,* [2]*BRC, San Antonio, TX,* [3]*UTHSCSA, San Antonio, TX,* [4]*USAISR, San Antonio, TX,* [5]*UIW, San Antonio, TX*

P-Th-222
Lateral Impact and Injury Tolerance of the Lumbar Spine
N. Merrier[1] and S. Shimada[1]
[1]*Biomechanical Consultants of California, Davis, CA*

P-Th-223
Probability of Fall Due To Trip Hazard Via Computer Simulations
H. Chittam[1], K. Das[1], B. Pavan[1], and W. Lee[1]
[1]*University of South Florida, Tampa, FL*

P-Th-224
Fundamental Limitation of Conventional Helmets in Mitigating Injury
K. Laksari[1], H. Shi[1], L. Wu[1], E. Ortega[2], and D. Camarillo[1]
[1]*Stanford University, Stanford, CA,* [2]*East Side College preparatory school, Stanford, CA*

P-Th-225
Influence of Age and Gender on Lateral Cervical Impact Response and Injury Tolerance
N. Merrier[1] and S. Shimada[1]
[1]*Biomechanical Consultants of California, Davis, CA*

P-Th-226
Identification of Trauma-Related Biomarkers Following Torsional Indirect Traumatic Optic Neuropathy (TITON)
B. Asemota[1], R. Glickman[1,2], and M. Reilly[1]
[1]*University of Texas San Antonio, San Antonio, TX,* [2]*University of Texas Health Science Center at San Antonio, San Antonio, TX*

P-Th-227
Blast Induced Traumatic Brain Injury: Detection Through Immunocytochemistry and MALDI
K. Jones[1], B. Lund[2], R. Glickman[3], W. Sponsel[4], W. Gray[5], and M. Reilly[6]
[1]*University of Texas at San Antonio, San Antonio, TX,* [2]*USAISR Ft. Sam Houston, San Antonio, TX,* [3]*Ophthalmology, University of Texas Health Science Center at San Antonio, San Antonio, TX,* [4]*Biomedical Engineering University of Texas at San Antonio; Visual Science, Rosenberg School of Optometry, University of the Incarnate Word; WESMD Professional Associates; Primary Investigator with the Australian Research Council Centre of Excellence in Vision Science (ACEVS), San Antonio, TX,* [5]*Geologial Sciences, University of Texas at San Antonio, San Antonio, TX,* [6]*Biomedical Engineering, University of Texas at San Antonio, San Antonio, TX*

P-Th-228
Response of Isolated Whole Human Lungs in Compression: Effect of Loading Rate
A. Kemper[1], A. Santago[1], J. Stitzel[1], J. Sparks[1], and S. Duma[1]
[1]*Virginia Tech - Wake Forest University, School of Biomedical Engineering and Sciences, Blacksburg, VA*

P-Th-229
The Effect of Acoustic Pollution on Marine Mammals
S. Clark[1,2], R. Bertucci[1,2], J. Liao[1,2], R. Prabhu [1,2], and L. Williams[1,2]
[1]*Mississippi State University, Starkville, MS,* [2]*Center for Advanced Vehicular Systems, Starkville, MS*

P-Th-230
Determination of Empirical Relations Between Shock Tube Geometry and Pressure Profiles
A. Robbins[1], P. Anumolu[1], R. van Loon[2], and M. Moreno[1]
[1]*Texas A&M University, College Station, TX,* [2]*Swansea University, Swansea, United Kingdom*

P-Th-231
Minimum Time to Collision at Braking from the 100-Car Naturalistic Driving Study
J. Montgomery[1], K. Kusano[1], and H. Gabler[1]
[1]*Virginia Tech, Blacksburg, VA*

POSTER SESSION **Th**

See page 92 for Poster floor plan

Track: Biomechanics

Multiscale Modeling in Biomechanics

Chairs: Rebecca Heise, Stuart Campbell

P-Th-258
Analysis of Toe-In Gait Modification for Patients with Knee Osteoarthritis
T. Schlotman[1], P. Shull[2], and J. Reinbolt[1]
[1]The University of Tennessee, Knoxville, TN, [22]Shanghai Jiao Tong University, Shanghai, China, Shanghai, China, People's Republic of

P-Th-259
Viscoelasticity of Tau Proteins Leads to Strain Rate-Dependent Breaking of Microtubules during Axonal Stretch Injury: Predictions from a Mathematical Model
H. Ahmadzadeh[1], D. Smith[1], and V. Shenoy[1]
[1]University of Pennsylvania, Philadelphia, PA

P-Th-260
Multi-Scale Finite Element Modeling of Human Tympanic Membrane in Normal and Diseased Ears
S. Jiang[1], X. Wang[1], and R. Gan[1]
[1]University of Oklahoma, Norman, OK

P-Th-261
A Multiscale Framework for Simulation of Hemodynamics in a Patient-Specific Coronary Artery Bypass Graft Surgery
A. B. Ramachandra[1], A. Kahn[1], and A. Marsden[1]
[1]UCSD, La Jolla, CA

P-Th-262
Development of Age and Sex-Specific Thorax Finite Element Models
S. Schoell[1], A. Weaver[1], and J. Stitzel[1]
[1]Virginia Tech- Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC

P-Th-263
Use of Simplified Vehicle Finite Element Models to Assess Occupant Injury in Crash Reconstructions
J. Gaewsky[1,2], C. Weaver[1,2], A. Weaver[1,2], K. Danelson[1,2], and J. 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

P-Th-264
Microstructure-Sensitive Investigation of Age-Related Changes in Pediatric Long Bone
D. Christe[1], S. Reddy[2], A. Kontsos[1], and S. Balasubramanian[2]
[1]Drexel University, Philadelphia, PA, [2]Drexel University, School of Biomedical Engineering and Health Systems, Philadelphia, PA

P-Th-265
Building Three-Dimensional Statistical Shape Models of Human Liver
Y-C. Lu[1] and C. Untaroiu[1]
[1]Virginia Tech and Wake Forest University, Blacksburg, VA

P-Th-266
Development Of An Atlas-Based Finite Element Head Model
L. Miller[1], J. Urban[1], E. Lillie[1], and J. Stitzel[1]
[1]Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC

P-Th-267
A Multiscale Approach For The Simultaneous Analysis Of Continuum And Micro-FE Models
J. Johnson[1] and K. Troy[1]
[1]Worcester Polytechnic Institute, Worcester, MA

P-Th-268
POPC Phospholipid Bilayer Failure Under Strip Biaxial Stretching Using Molecular Dynamics
M. Murphy[1], M. Horstemeyer[1], S. Gwaltney[1], J. Liao[1], L. Williams[1], and R. Prabhu[1]
[1]Mississippi State University, Mississippi State, MS

P-Th-269
Volume Decrease of Schlemm's Canal in an FEA Model of Elevated IOP in the Human Eye
R. Wilkes[1] and M. Reilly[1]
[1]University of Texas at San Antonio, San Antonio, TX

Track: Biomechanics, Orthopaedic and Rehabilitation Engineering

Musculoskeletal Biomechanics

Chairs: Rita Issa

P-Th-168
Response of Trabecular Bone to Elevated Loading Frequencies
H. Sidoti[1], A. Ritter[1], and A. Valdevit[1]
[1]Stevens Institute of Technology, Hoboken, NJ

P-Th-169
Characterization of a Multi-Strain Profile for Cellular Mechanotransduction Studies
J. King[1], K. Shah[1], P. Sethu[2], and M. Saunders[1]
[1]The University of Akron, Akron, OH, [2]The University of Alabama at Birmingham, Birmingham, AL

P-Th-170
Loading And Zoledronic Acid Protect Against Disuse-Induced Bone Strength Loss In The Femoral Neck
J. Brezicha[1], R. Boudreaux[1], S. Lenfest[1], A. Narayanan[2], S. Bloomfield[1], and H. Hogan[1]
[1]Texas A&M University, College Station, TX, [2]Texas A&M Health Science Center, College Station, TX

P-Th-171
Development and Characterization of a Pure Uniaxial Microloading Device for Biologic Testing
J. King[1], D. Hayes[1], J. McPherson[1], S. York[1], and M. Saunders[1]
[1]The University of Akron, Akron, OH

P-Th-172
Assessment of Total Shoulder Arthroplasty Glenoid Stability During Simulated Rocking Horse Motion
S. Helms[1], G. Colbath[2], J. Gagliano[3], R. Hawkins[2], L. Pietrykowski[1], A. Barrett[1], B. Przestrzelski[1], and J. DesJardins[1]
[1]Clemson University, Clemson, SC, [2]Steadman Hawkins, Greenville, SC, [3]Steadman Hawkins, Denver, CO

P-Th-173
Laserectomy of the Human Spinal Disc to Relieve Low-back Pain - A Technique
H. Ranu[1]
[1]American Orthopaedic Biomechanics Research Institute, Atlanta, GA

P-Th-174
Cadaveric Thumb-tip Forces Produced by Extrinsic and Intrinsic Muscles are More Sensitive to Joint Angles than Muscle Moment Arms and Bone Lengths
J. Towles[1] and V. Hentz[2]
[1]University of Wisconsin-Madison, Madison, WI, [2]Stanford University, Redwood City, CA

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Th-175
Osteocytes' Response to Mechanical Loading Supports Breast Cancer Cell Growth and Migration
Y-H. MA[1] AND L. YOU[1]
[1]*University of Toronto, Toronto, ON, Canada*

P-Th-176
Bisphosphonate Treatment During Initial Unloading Protects Against Bone Loss for Second Unloading
S. LENFEST[1], J. BREZICHA[1], R. BOUDREAUX[1], C. SCHAEFER[1], S. BLOOMFIELD[1], M. ALLEN[2], AND H. HOGAN[1]
[1]*Texas A&M University, College Station, TX,* [2]*Indiana University School of Medicine, Indianapolis, IN*

P-Th-177
Tribology of IL-1 Stimulated Cartilage Explants: Restoration of Chondroprotection by rhPRG4
K. LARSON[1], K. ELSAID[2], B. FLEMING[1], T. SCHMIDT[3], AND G. JAY[1]
[1]*Brown University, Providence, RI,* [2]*MCPHS University, Boston, MA,* [3]*University of Calgary, Calgary, AB, Canada*

P-Th-178
Development and Validation of Finite Element Model of a 16-Year Old Osteo-Ligamentous Thoracic Spine
P. HADAGALI[1] AND S. BALASUBRAMANIAN[1]
[1]*Drexel University, Philadelphia, PA*

P-Th-179
Mechanical Characterization of Gough Island Mice Femora
D. GERBER[1], C. HABEN[1], C. VINYARD[2], AND M. SAUNDERS[1]
[1]*University of Akron, Akron, OH,* [2]*Northeast Ohio Medical University, Rootstown, OH*

P-Th-180
Comparing Cartilage T2 Relaxation Times and Joint Contact Pressures of Normal and Injured Wrists
I. CHAPPELL[1], P. LEE[2], T. MCIFF[2], E. TOBY[2], AND K. FISCHER[1,2]
[1]*University of Kansas, Lawrence, KS,* [2]*University of Kansas Medical Center, Kansas City, KS*

P-Th-181
The Biomechanical Effect of Stabilizing Material for Dynamic Compression Plate on Human Cadaveric Humerous
V. NGUYEN[1] AND H. VO[1]
[1]*Mercer University, Macon, GA*

P-Th-182
Determination of the Mechanical Properties of the Porcine Temporomandibular Joint Disc in Unconfined Compression at Slow Strain Rate
R. MORTIMER[1], J. LOWE[1], AND A. ALMARZA[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P-Th-183
Mapping Biomechanical Properties of Mice Articular Surfaces Using Indentation: Preliminary Results
J-F. LAVOIE[1,2], S. SIM[3,4], A. MOREAU[2,5], C-É. AUBIN[5,6], E. QUENNEVILLE[7], M. GARON[7], AND M. BUSHMANN[3]
[1]*CHU Ste-Justine/Université de Montreal, Montreal, QC, Canada,* [2]*Universite de Montreal, Montreal, QC, Canada,* [3]*Polytechnique Montreal, Montreal, QC, Canada, Montreal, QC, Canada,* [4]*Biomomentum, Laval, QC, Canada,* [5]*CHU Ste-Justine Research Center, Montreal, QC, Canada,* [6]*Polytechnique Montreal, Montreal, QC, Canada,* [7]*Biomomentum Inc, Laval, QC, Canada*

P-Th-184
Computational Modeling of Wound Healing Based on Continuum Mixture Theory
M. Rahman1, J. Zhou2, A. Nordquist1, and Y. Feng1
[1]UNIVERSITY OF TEXAS, SAN ANTONIO, TX, [2]UNIVERSITY OF TEXAS, AUSTIN, TX

P-Th-185
An Experimental and Theoretical Model of Simplified Childbirth
A. BAUMER[1], A. LEHN[1], J. GROTBERG[2], AND M. LEFTWICH[1]
[1]*The George Washington University, Washington, DC,* [2]*University of Michigan, Ann Arbor, MI*

P-Th-186
Mathematical Rendering of Trabecular Bone: Orientation Distribution of Trabeculae
A. MORSHED[1], J. WANG[2], X. GUO[2], AND X. WANG[1]
[1]*University of Texas at San Antonio, San Antonio, TX,* [2]*Columbia University, New York City, NY*

P-Th-187
Effect of Osteoactivin on the Mechanical Properties of Mouse Bone
D. HAYES[1], K. NOVAK[2], F. SAFADI[2], AND M. SAUNDERS[1]
[1]*University of Akron, Akron, OH,* [2]*Northeast Ohio Medical University, Rootstown, OH*

P-Th-188
Biomechanical Effects Of Angled Screw Placement On The Fixation Stability Of Long Bone Shaft Fractures
B. NGUYEN[1] AND H. VO[1]
[1]*Mercer University, Macon, GA*

P-Th-189
Mathematical Analysis Of The Fatigue Failure Of An Intramedullary Rod Distal Locking Screw
D. BAILEY[1], J. KADLOWEC[1], AND D. BRENNAN[2]
[1]*Rowan University, Glassboro, NJ,* [2]*Rowan University, Rowan University, NJ*

POSTER SESSION **Th**

Track: Biomedical Engineering Education (BME)

Biomedical Engineering Education

Chairs: John Desjardins, Craig Goergen

P-Th-663
A New Model For Introductory Biomedical Engineering Education Emphasizing Clinical Innovation
S. SRIDHAR[1], M. DOSHI[1], S. SRIDHAR[2], A. NGUYEN[1], N. PENDYALA[1], N. JAMALI[1], AND V. PIZZICONI[1]
[1]*Arizona State University, Tempe, AZ,* [2]*University of Arizona College of Medicine - Phoenix, Phoenix, AZ*

P-Th-664
Service Learning Projects to Engage Students in Biomedical Engineering at a School which Does Not Offer a Biomedical Engineering Degree
J. REY[1], O. LEDEZMA[1], D. WON[1], J. CASTANEDA[1], A. NABILSI[1], E. ORELLANA[1], AND M. MO[1]
[1]*California State University Los Angeles, Los Angeles, CA*

P-Th-665
A Comprehensive Meta-analysis of Skeletal Muscle Architecture Performed by Undergraduate BME Course
C. PELLAND[1], B. [42801], M. [42801], K. VIRGILIO[1], J. MILLER[1], J. GOETSCHIUS[1], L. SLATER[1], G. NORTE[1], A. STERN[1], AND S. BLEMKER[1]
[1]*University of Virginia, Charlottesville, VA*

P-Th-666
Multiphysics Simulation of the Krogh Tissue Cylinder System for Undergraduate Education
D. CASTAÑEDA[1] AND B. HAWKINS[1]
[1]*San Jose State University, San Jose, CA*

P-Th-667
Creating a World Class Institute for Biomedical Engineering and Nano-Biomedicine in Saudi Arabia
H. RANU[1], A. ALMEJRAD[1], AND K. AL-IBRAHIM[1]
[1]*University of Hail, Hail, Saudi Arabia*

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P-Th-668
Establishment of an Interdisciplinary Biomedical Engineering Programme In Nigeria: Preliminary Observations From The University Of Lagos
A. Osuntoki[1], O. Olawale[1], E. Ajibola[1], C. Esezobor[1], and S. Nwaneri[1]
[1]*University of Lagos, Lagos, Nigeria*

P-Th-669
A Tutoring Program for First Semester BME Students
D. Gaitan-Leon[1], P. Navas[1], and J. Briceno[1]
[1]*Universidad de los Andes, Bogota, Colombia*

P-Th-670
A Model for a Successful Collaborative Capstone Design Course
M. Oden[1], E. Richardson[1], G. Woods[1], A. Dick[1], and M. O'Malley[1]
[1]*Rice University, Houston, TX*

P-Th-671
Best Practices in Teaching Entrepreneurship to Bioengineers: An Evaluation of Two New Overseas Medical Entrepreneurship Fellowship Programs Based in Ireland and Denmark
G. Smith[1]
[1]*Arizona School of Dentistry and Oral Health, Mesa, AZ*

P-Th-672
Preliminary Experience in Flipping Biothermodynamics
J. Patzer II[1], R. Clark[1], and M. Besterfield-Sacre[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P-Th-673
Inquiry-Based Education of Fluid Mechanics Principles Using Hemodynamics
A. Rocheleau[1], C. Wilson[2], S. Archer[1], and M. King[1]
[1]*Cornell University, Ithaca, NY,* [2]*Southside High School, Elmira, NY*

P-Th-674
The DEN (Design and Entrepreneurship Network): A Multi-disciplinary Program to Develop and Apply Entrepreneurship Experiences for BME Students
B. Przestrzelski[1] and J. DesJardins[1]
[1]*Clemson University, Clemson, SC*

P-Th-675
Using Discussion Boards to Improve Student Professionalism and Field Knowledge
M. Pool[1], C. Peak[2], J. Hale[2], and A. Sieving[2]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL,* [2]*Purdue University, West Lafayette, IN*

P-Th-676
Design and Development of a Laser-CT: A Medical Imaging Training System
J. Fang[1], M. Lupp[1], and W. Zhao[1]
[1]*University of Miami, Coral Gables, FL*

P-Th-677
Using iBooks and iTunesU for a Sophomore-Level Class: Numerical Simulations in BME
R. Hart[1]
[1]*The Ohio State University, Columbus, OH*

P-Th-678
How Broad Should Biomedical Engineering Educational Programs Be?
P. Johansen[1]
[1]*Aarhus University, Aarhus N., Denmark*

P-Th-679
Effects of Audience Response Systems on Student Attendance and Participation
C. Goergen[1]
[1]*Purdue University, West Lafayette, IN*

P-Th-680
Using Social Media to Communicate Science to the Public: A Case Study of Science Sunday
R. Bowles[1,2]
[1]*Duke University, Durham, NC,* [2]*ScienceSunday, Durham, NC*

P-Th-681
Inquiry Based Additive Manufacturing: Bridging the Gap Between Advanced Techniques and the Classroom
J. Jones[1], E. Sharpsteen[2], C. Schaffer[1], and N. Nishimura[1]
[1]*Cornell University, Ithaca, NY,* [2]*Onondaga High School, Onondaga, NY*

P-Th-682
A Novel Online/Onsite Lab Course in Biomedical Engineering Practice and Innovation
E. Logsdon[1], A. Maybhate[1], and E. Haase[1]
[1]*Johns Hopkins University, Baltimore, MD*

P-Th-683
The DREAM in Teaching Computational Molecular Systems Biology
K. Naegle[1]
[1]*Washington University in St Louis, St Louis, MO*

P-Th-684
CANCELLED BY AUTHOR

P-Th-685
Developing a Transmedia Archival Exhibit for Artificial Hearts: Genuine Stories
A. Chang[1], M. Han[1], E. Statham[1], S. Igo[2], and J. Grande-Allen[1]
[1]*Rice University, Houston, TX,* [2]*Houston Methodist DeBakey Heart & Vascular Institute, Houston, TX*

P-Th-686
A BME based Inquiry Module: Gelatin and Chemical bonding for Healing a Wounded Soldier
S. Iyer[1], J. Saroka[2], S. Archer[1], and Y. Gao[1]
[1]*Cornell University, Ithaca, NY,* [2]*Lansing High School, Lansing, NY*

P-Th-687
Effective Engagement of Inquiry Based Learning in the K-12 Science Classroom: An Ex Ovo Chick Culture for the Study of Ethanol on Embryonic Development
C. Gregg[1], J. Browne[2], S. Archer[1], and J. Butcher[1]
[1]*Cornell University, Ithaca, NY,* [2]*Binghampton City School District, Binghamton, NY*

P-Th-688
Breast Tissue Engineering Module for Girl Scout STEM Career Enrichment Event
S. Rowlinson1, W. Bridges1, and K. Burg1
[1]*Clemson University, Clemson, SC*

P-Th-689
Designing a K-12 Outreach Activity: Newton's Laws of Motion
V. Alphonse[1], S. Beeman[1], and S. Duma[1]
[1]*Virginia Tech - Wake Forest University Center for Injury Biomechanics, Blacksburg, VA*

P-Th-690
Introducing Biomedical Engineering to a K-8 Audience using a Scalable, Hands-On Biomaterial Testing and Design Module
T. Dorsey[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Th-691
Research-Intensive Community to Create a Large-Scale, Low-Cost Undergraduate Research Program
R. DONGAONKAR[1], R. STEWART[1], AND C. QUICK[1]
[1]*Michael E. DeBakey Institute, Texas A&M University, College Station, TX*

P-Th-692
Early Virtual Design Experience Enhances Relevance of Courses in BME Curriculum
M. CAPLAN[1], D. FRAKES[1], J. LA BELLE[1], AND V. PIZZICONI[1]
[1]*Arizona State University, Tempe, AZ*

Track: Biomedical Imaging and Optics, Device Technologies and Biomedical Robotics

Diagnostic Devices and Biosensors

Chairs: Elizabeth Vargis

P-Th-70
Optical Skin Perfusion Monitor for Correction of Circulating Indocyanine Green Concentration Measured with a Skin Probe
Y-H. PENG[1] AND J-M. MAAREK[1]
[1]*University of Southern California, Los Angeles, CA*

P-Th-71
Enhanced Interferometric Detection of Individual Nanorods for Multiplexed Sensitive Molecular Assays
D. SEVENLER[1], G. DAABOUL[1], R. ADATO[1], AND S. UNLU[1]
[1]*Boston University, Boston, MA*

P-Th-72
A Colorimetric Quantification Method For Immunochromatographic Assays
J. PARK[1]
[1]*Kyungil University, Gyeongsan-si, Korea, Republic of*

P-Th-73
Rapid, Single-step, Droplet-based Bacterial Assay on a Nanofibrous Substrate
A. NICOLINI[1], C. FRONCZEK[1], AND J-Y. YOON[1]
[1]*The University of Arizona, Tucson, AZ*

P-Th-74
Optical Detection of Clot Contractile Forces
N. TAPARIA[1], L. TING[1], A. SMITH[1], AND N. SNIADECKI[1]
[1]*University of Washington, Seattle, WA*

P-Th-75
Chemical Signal Amplification for Paper-Based Assays for Influenza A Detection
K. ABE[1] AND P. YAGER[1]
[1]*University of Washington, Seattle, WA*

P-Th-76
Multi-branched Gold Nanoparticles For The Detection Of EGFR On The Surface Of Esophageal Epithelial Cells Using Surface Enhanced Raman Scattering
J. JOHNSTON[1], E. TAYLOR[1], R. GILBERT[1], AND T. WEBSTER[1]
[1]*Northeastern University, Boston, MA*

P-Th-77
Visual Detection of Akt-mTOR-HIF-1 Signaling Pathway in Living Cell Using the Hairpin DNA Modified Gold Nanoparticle Beacon
S. LI[1] AND Y. GU[1]
[1]*China Pharmaceutical University, Nanjing, China, People's Republic of*

P-Th-78
Novel Device to Diagnose Otitis Media Using Spectroscopy and Digital Imaging
K. LONGO[1], D. PETERSON, PHD, MS[1], AND T. VALDEZ, MD[2]
[1]*University of Connecticut Health Center, Farmington, CT,* [2]*Connecticut Children's Medical Center, Hartford, CT*

P-Th-79
Reduced Field Curvature with Curved Sample Chamber in Wide Field-of-View Fluorescence Imaging for Point-of-Care CD4 Test
M. SHOURAV[1], M. KIM[1], AND J. KIM[1]
[1]*Kookmin University, Seoul, Korea, Republic of*

Track: Biomedical Imaging and Optics

Imaging Applications

Chairs: Walter O'Dell

P-Th-621
Identifying PET/MRI Parameters for Early Treatment Response in Renal Cell Carcinoma
J. ANTUNES[1], S. VISWANATH[2], A. SHER[2], N. AVRIL[2], AND A. MADABHUSHI[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Case Western Reserve University, CLEVELAND, OH*

P-Th-622
Hyperspectral Imaging of Cardiac Ablation Lesions
D. GIL[1], L. SWIFT[1], R. MAZHARI[1], AND N. SARVAZYAN[1]
[1]*The George Washington University, Washington, DC*

P-Th-623
Automatic Quantification of Endothelial Nitric Oxide Levels in a Microvessel with and without Tumor Cell Adhesion
J. WEI[1], L. ZHANG[1], AND B. FU[1]
[1]*The City College of the City University of New York, New York, NY*

P-Th-624
Measurement of Cardiomyocyte Contractility Parameters in Biomimetic Microenvironment Using Image Registration
J. TEO[1], N. ALWAHAB[1], AND N. CHRISTOFOROU[1]
[1]*Khalifa University, Abu Dhabi, United Arab Emirates*

P-Th-625
A Multimodal Noninvasive Medical Imaging Phantom Material: Mechanical and Imaging Properties
B. BELMONT[1], W. LI[1], AND A. SHIH[1]
[1]*University of Michigan, Ann Arbor, MI*

P-Th-626
A Multi-Modality Imaging Approach to Generate a CAD Dataset of the 5th Percentile Female for Modeling Applications
M. DAVIS[1], J. STITZEL[1], AND F. GAYZIK[1]
[1]*Wake Forest University - Virginia Tech Center for Injury Biomechancis, Winston Salem, NC*

P-Th-627
Numerical FSI Simulations of Acoustic Radiation Force Impulse on Human Aortas with Atherosclerotic Plaque
H. LI[1], K. LIN[1], AND D. SHAHMIRZADI[1]
[1]*Stevens Institute of Technology, Hoboken, NJ*

P-Th-628
Optical Spectroscopy and Narrowband Imaging for Improved Identification of the Parathyroid Glands
L. HIGGINS[1], T. DAVIDOV[2], AND M. PIERCE[1]
[1]*Rutgers, The State University of New Jersey, Piscataway, NJ,* [2]*Robert Wood Johnson University Hospital, New Brunswick, NJ*

POSTER SESSION **Th**

See page 92 for Poster floor plan

P-Th-629
Studying Thermo-Mechanical Effects of Pulsed Laser Irradiation on Tissues
M. Ganguly[1] and K. Mitra[1]
[1]*Florida Institute of Technology, Melbourne, FL*

Track: Biomedical Imaging and Optics

Image Processing and Analysis

Chairs: Tilo Winkler

P-Th-630
Image Processing Algorithm for Automated Grading of Vitreous Haze
C. Passaglia[1], E. Stevenson[1], E. Greenberg[1], D. Richards[1], and B. Madow[1]
[1]*University of South Florida, Tampa, FL*

POSTER SESSION **Th**

P-Th-631
Prediction Model Using Clinical and MRI-based Features for Pelvic Organ Prolapse Diagnosis
S. Onal[1], S. Lai-Yuen[2], P. Bao[2], A. Weitzenfeld[2], and S. Hart[2]
[1]*Southern Illinois University – Edwardsville, Edwardsville, IL,* [2]*University of South Florida, Tampa, FL*

P-Th-632
Filtered Back-Projection With A Precise Weighting Function For Photoacoustic Image Reconstruction
H. Huang[1], G. Bustamante[1], R. Peterson[1], and J. Ye[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

P-Th-633
Automatic Initialization of 2D/3D Medical Image Registration Using A Hybrid Classifier
J. Wu[1], E. Abdel Fatah[1], and M. Mahfouz[1]
[1]*The University of Tennessee, Knoxville, TN*

P-Th-634
Organ-Wide Multiscale Vessel filtering for Cerebral Vasculature Modeling
C-Y. Hsu[1], B. Schneller[1], and A. Linninger[1]
[1]*University of Illinois at Chicago, Chicago, IL*

P-Th-635
The Use of Stochastic Resonance to Improve Detectability in CT Images
N. Zweifel[1], R. Strahle[1], S. Scheidegger[1], R. Fuchslin[1], and S. Rhodes[2]
[1]*Zurich University of Applied Sciences, Winterthur, Switzerland,* [2]*Grand Valley State University, Grand Rapids, MI*

P-Th-636
Automation of Microcapsule Evaluation and Characterization for Use in Islet Transplantation
R. Krishnan[1], M. Alexander[1], K. Chan[1], A. Wolcott[1], C. Foster III[1], and J. Lakey[1]
[1]*University of California Irvine, Orange, CA*

P-Th-637
Guidewire Enhancement Using a Multi-stage Order Statistic Filter in Digital X-ray Fluoroscopy
Y. Jiang[1]
[1]*University of Central Oklahoma, Edmond, OK*

P-Th-638
Electron Microscopy Image Restoration and Resolution Improvement using an Example-based Super-Resolution Algorithm
S. Hashemi Amroabadi[1], S. Khayyer[2], A. Quach[2], H. Farooq[2], A. Bargriz Farshi[2], and S. Beheshti[2]
[1]*University of Toronto, Toronto, ON, Canada,* [2]*Ryerson University, Toronto, ON, Canada*

P-Th-639
Laser Diffraction Imaging of Bacteria
K. Konnaiyan[1], A. Lam[1], D. Covert[1], and A. Sebuka[1]
[1]*University of South Florida, Tampa, FL*

P-Th-640
Quantifying Biological Functions Using Fluorescent Dyes in 3D Spheroids
E. Leary[1] and J. Morgan[1]
[1]*Brown University, Providence, RI*

P-Th-641
Automated Quantification of Caudal Vein Plexus in Zebrafish to Study Vascular Disruptors
C. Hans[1], C. McCollum[1], M. Bondesson[1], J-A. Gustafsson[1], S. Shah[1], and F. Merchant[1]
[1]*University of Houston, Houston, TX*

P-Th-642
Surface Data of the Human Body Acquired Using Long Range Three Dimensional Laser Scanners
D. Schwartz[1,2], N. Hristov[3], and F. Gayzik[1,2]
[1]*Wake Forest University School of Medicine, Winston-Salem, NC,* [2]*Virginia Tech - Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC,* [3]*Center for Design Innovation, Winston-Salem, NC*

Track: Biomedical Imaging and Optics

Magnetic Resonance Imaging

Chairs: Stephen LeConte

P-Th-643
Enhanced Delivery and Imaging of Neurotherapeutics via US, MRI, SPECT and Acoustically Activated Nanoparticles
M. Valdez[1], E. Yoshimaru[1], S. Yuan[1], A. Halawani[1], P. Ingram[1], T. Matsunaga[1], R. Witte[1], L. Furenlid[1], and T. Trouard[1]
[1]*University of Arizona, Tucson, AZ*

P-Th-644
Nephrotoxicity Assessment of A Novel Graphene-Based Magnetic Resonance Imaging Contrast Agent in Chronic Renal Failure Rodent Models
S. Lee[1], J. Toussaint[1], S. Kanakia[1], S. Chowdhury[1], W. Moore[1], K. Shroyer[1], and B. Sitharaman[1]
[1]*Stony Brook University, Stony Brook, NY*

P-Th-645
Array Coil for Carbon-13 MRS at 7 Tesla
J. Rispoli[1], I. Dimitrov[2,3], S. Cheshkov[2], S. Ogier[1], C. Malloy[2], S. Wright[1], and M. McDougall[1]
[1]*Texas A&M University, College Station, TX,* [2]*University of Texas Southwestern Medical Center, Dallas, TX,* [3]*Philips Medical Systems, Cleveland, OH*

P-Th-646
Temporal SNR of Myocardial ASL does not Increase with Improved Spatial Consistency of Background Suppression
T. Jao[1], H. Do[1], and K. Nayak[1]
[1]*University of Southern California, Los Angeles, CA*

P-Th-647
Adapting ^{1}H Receivers for Multi-Nuclear MRS by Frequency Translation
S. Ogier[1], N. Hollingsworth[1], J. Rispoli[1], M. McDougall[1], and S. Wright[1]
[1]*Texas A&M University, College Station, TX*

P-Th-648
Mathematical Modeling of Multiply Connected Structures for Elastographic Imaging
B. Schwartz[1], Z. Yin[1], and R. Magin[1]
[1]*University of Illinois at Chicago, Chicago, IL*

P-Th-649
Preparation of Cationic Macrocyclic Ligand for MR Imaging of Cartilage
K. Nwe[1]
[1]*University of Pennsylvania, Philadelphia, PA*

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Th-650
Nanomanufacturing of Targeted Rod- and Spherical Shaped Viral Nanoparticle MRI Contrast Agents for *In Vivo* Detection of Atherosclerotic Plaques in Mice
M. Bruckman[1], L. Randolph[1], A. VanMeter[1], K. Jiang[1], E. Simpson[2], L. Luyt[2], X. Yu[1], and N. Steinmetz[1]
[1]Case Western Reserve University, Cleveland, OH, [2]The university of western ontario, London, ON, Canada

P-Th-651
Improving Low-SNR Perfusion and Inflammation MRI with a Constrained Model-Based Reconstruction
S. Fielden[1], L. Zhao[1], M. Wintermark[1], A. Klibanov[1], B. French[1], F. Epstein[1], and C. Meyer[1]
[1]University of Virginia, Charlottesville, VA

P-Th-652
Design of Interpolymer Complex-Superparamagnetic Iron Oxide Nanoparticles (IPC-SPIOs) with Potential for MR Molecular Imaging
E. Yoo[1]
[1]Binghamton University (SUNY), Binghamton, NY

P-Th-653
Classifying Head-Impact Related Changes in Brain Connectivity after a Single Season of High School Football: A Support Vector Machine Recursive Feature Elimination Approach
F. Mokhtari[1], E. Davenport[1], J. Urban[1], C. Whitlow[1], S. Natarajan[2], J. Stitzel[1], and J. Maldjian[1]
[1]Wake Forest University, Winston Salem, NC, [2]Indiana University, Bloomington, IN

P-Th-654
Optimization of Oxygen Extraction Fraction in MRI Human Brain Using Augmented Lagrangian Joint Estimation
N. Bahrami[1], M. Johnston[1], and Y. Jung[2]
[1]Wake Forest University, Winston Salem, NC, [2]Wake Forest University School of Medicine, Winston Salem, NC

Track: Biomedical Imaging and Optics

Molecular Probes

Chairs: Beata Chertok

P-Th-655
Two Photon Excitation Spectra of Proteolytic Beacons - A Preliminary Study
D. Haskett[1], U. Utzinger[1], D. McGrath[1], O. McIntyre[2], and J. Vande Geest[1]
[1]University of Arizona, Tucson, AZ, [2]Vanderbilt University, Nashville, TN

P-Th-656
Development of Fibrin-Targeting Paramagnetic Nanoparticles for Brain Injury Applications
K. Rumbo[1], V. Bharadwaj[1], V. Kodibagkar[1], and S. Stabenfeldt[1]
[1]Arizona State University, Tempe, AZ

P-Th-657
Investigating the Response of the Family of NIR aza-BODIPY-based Fluorescent Dyes to Microenvironmental Changes
B. Saremi[1,2], M. Wei[1,2], V. Bandi[3], Y. Liu[1,2], B. Cheng[1,2], F. D'Souza[3], K. Nguyen[1,2], Y. Hong[1,2], and B. Yuan[1,2]
[1]University of Texas at Arlington, Arlington, TX, [2]The University of Texas Southwestern Medical Center at Dallas, Dallas, TX, [3]University of North Texas, Denton, TX

P-Th-658
NIR Lead Sulfide Quantum Dots Targeted to Vascular Endothelial Growth Factor Receptor 2 for Colorectal Cancer Imaging
J. Carbary[1], J. Barton[1], and U. Utzinger[1]
[1]University of Arizona, Tucson, AZ

P-Th-659
Fast Imaging of Cancer Receptor Expression using Zwitterionic Tracers
X. Xu[1], R. Patil[1], H. Choi[2], and K. Tichauer[1]
[1]Illinois Institute of Technology, Chicago, IL, [2]Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA

P-Th-660
Prussian Blue Nanoparticles For Multimodal Imaging Of Pediatric Brain Tumors
M. Dumont[1], S. Yadavilli[1], R. Sze[1,2], J. Nazarian[1,2], and R. Fernandes[1,2]
[1]Children's National Health System, Washington, DC, [2]George Washington University, Washington, DC

P-Th-661
Discoidal Polymeric Nanoconstructs For Multimodal Cancer Imaging
J. Key[1], A. Palange[1], S. Aryal[1], C. Stigliano[1], and P. Decuzzi[1]
[1]Houston Methodist Research Institute, Houston, TX

P-Th-662
Progressive Tumor Accumulation of Positron Emitting Magnetic Nanoconstructs
S. Aryal[1], J. Key[1], C. Stigliano[1], D. Lee[1], and P. Decuzzi[1]
[1]Houston Methodist Research Institute, Houston, TX

POSTER SESSION **Th**

Track: Cancer Technologies

Engineering of Cancer

Chairs: Amit Pathak, Srivatsan Kidambi

P-Th-301
Extracellular Mechanical Cues Drive Vinculin Mediated PI3-kinase Signaling to Enhance Cell Invasion in 3D
M. Rubashkin[1], L. Cassereau[1], R. Bainer[1], C. Dufort[1], Y. Yui[1], G. Ou[1], M. Paszek[1,2], M. Davidson[3], Y-Y. Chen[1], and V. Weaver[1]
[1]University of California - San Francisco, San Francisco, CA, [2]Cornell University, Ithaca, NY, [3]Florida State University, Tallahassee, FL

P-Th-302
3D Printing Biomimetic Bone Model for *In Vitro* Study of Breast Cancer Bone Invasion
W. Zhu[1] and L. Zhang[1]
[1]The George Washington University, Washington, DC

P-Th-303
Differential Response to Matrix Rigidity Correlates with Aggressive Phenotype of Breast Cancer Cells
J. Li[1], Y. Wu[1], M. Al-Ameen[1], and G. Ghosh[2]
[1]University of Michigan Dearborn, Dearborn, MI, [2]University of Michigan, Dearborn, Dearborn, MI

P-Th-304
Adding a Temperature-dependent Time Delay Improves the Accuracy of Arrhenius Models of Cell Death
J. Pearce[1]
[1]Univ. of Texas at Austin, Austin, TX

P-Th-305
Elucidating Brain Tumor-Niche Interactions In 3D Using Biomimetic Hydrogels
C. Wang[1], X. Tong[1], and F. Yang[1]
[1]Stanford University, Stanford, CA

P-Th-306
Engineered High-throughput Cellular Models of Prostate Cancer Resistance, Dormancy and Relapse using Novel Antibiotic Hydrogels
T. Grandhi[1], T. Potta[2], J. Faust[1], and K. Rege[1]
[1]Arizona State University, Tempe, AZ, [2]Marlyn Nutraceuticals, Tempe, AZ

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P-Th-307
Hydrogel-based Multicellular Cancer Spheroid Models for Drug Screening Applications
S. Zustiak[1], A. Ashraf[1], A. Branyi[2], and Y. Kim[2]
[1]Saint Louis University, St Louis, MO, [2]University of Alabama, Tuscaloosa, AL

P-Th-308
Cell Spheroids As Microscopic Models for Macroscopic Problems
M. Joyce[1] and A. Brock[1]
[1]The University of Texas at Austin, Austin, TX

P-Th-309
Superior Methods To Examine Bone Tumor And Host Tissue Interactions Using Micro-Gravity Bioreactors
A. Tondon[1], C. Haase[1], R. Reese[1], C. Dodson[1], C. Gregory[2], and R. Kaunas[1]
[1]Texas A&M University, College station, TX, [2]Institute for Regenerative Medicine, Texas A&M Health Science Center, Temple, TX

P-Th-310
A Murine Model for Breast Microcalcifications in Radiographically Dense Mammary Tissue
L. Cole[1], T. Vargo-Gogola[2], and R. Roeder[1]
[1]University of Notre Dame, Notre Dame, IN, [2]Indiana University School of Medicine - South Bend, South Bend, IN

P-Th-311
Three-dimensional Microfluidic Co-culture Model of the Bone Marrow Microenvironment for the Study of Acute Lymphoblastic Leukemia
A. Bruce[1], R. Evans[1], R. Mezan[1], K. Martin[1], L. Gibson[1], and Y. Yang[1]
[1]West Virginia University, Morgantown, WV

P-Th-312
Effect of Methylcellulose on Breast Cancer Cellular Spheroid Biomechanics
J. Rodriguez-Devora[1], A. Desai[1], N. Nosoudi[1], and D. Dean[1]
[1]Clemson University, Clemson, SC

P-Th-313
Extracellular Matrix Stiffness Differentially Regulates Cell Population Dynamics And Drug Response of Myeloid Leukemias
J-W. Shin[1] and D. Mooney[1]
[1]Harvard University, Cambridge, MA

P-Th-314
A 3D *in vitro* Tumor Spheroid Model to Study Spatial Variation of Protein Expression in Cancers
S. Rao[1], P. Karande[1], and P. Underhill[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

P-Th-315
Melanoma Induces Endothelial Junction Disruption By Co-opting Endothelial Cell Contractility
V. Aragon Sanabria[1], S. Pohler[1], E. Gomez[1], and C. Dong[1]
[1]The Pennsylvania State University, University Park, PA

P-Th-316
Tissue-Engineered Models of Tumor-Vascular Interactions
P. DelNero[1], S. Verbridge[2], Y. Zheng[3], B. Kwee[1], A. Stroock[1], and C. Fischbach[1]
[1]Cornell University, Ithaca, NY, [2]Virginia Tech-Wake Forest University, Blacksburg, VA, [3]University of Washington, Seattle, WA

P-Th-317
A High Throughput Platform for Assaying Cancer Cell Adhesion under Physiologic Flow
A. Shearer[1], V. Le[1], C. Spruell[1], S. Nandi[1], M. Creixell[1], and A. Baker[1]
[1]University of Texas at Austin, Austin, TX

Track: Cancer Technologies, New Frontiers and Special Topics

Nanotechnologies for Cancer

Chairs: Rohan Fernandes, Beata Chertok

P-Th-318
A Nanoparticle-Based Combination Chemotherapy Delivery System for Enhanced Tumor Killing by Dynamic Rewiring of Signaling Pathways
S. Morton[1], M. Lee[1], Z. Deng[1], E. Dreaden[1], E. Siouve[1], K. Shopsowitz[1], N. Shah[1], M. Yaffe[1], and P. Hammond[1]
[1]MIT, Cambridge, MA

P-Th-319
Characterization of Novel Chitosan/Polyelectrolyte Nanoparticles
M. Mertz[1], B. Koppolu[1], and D. Zaharoff[1]
[1]University of Arkansas- Fayetteville, Fayetteville, AR

P-Th-320
Drugging Metastatic and Locally-Disseminated Solid Tumors Using RNAi Combination Chemotherapy
E. Dreaden[1], Y. Kong[1], M. Yaffe[1], and P. Hammond[1]
[1]MIT - Koch Institute for Integrative Cancer Research, Cambridge, MA

P-Th-321
Efficacy Of Active Targeting Nanodevice For Anticancer Drug Delivery To Breast Cancer Cells
A. Satsangi[1,2], S. Roy[1], R. Satsangi[3], R. Vadlamudi[1], and J. Ong[2]
[1]University of Texas Health Science Center at San Antonio, San Antonio, TX, [2]University of Texas at San Antonio, San Antonio, TX, [3]RANN Research Corporation, San Antonio, TX

P-Th-322
Gold Nanoparticle Mediated Antigen and Adjuvant Delivery for Cancer Immunotherapy
J. Mattos Almeida[1], A. Lin[1], E. Figueroa[1], A. Foster[2], and R. Drezek[1]
[1]Rice University, Houston, TX, [2]Bellicum Pharmaceuticals, Houston, TX

P-Th-323
Improving Efficiency and Reliability of Nanoparticle Amplification for Molecular Cancer Diagnostics
M. Rahim[1], R. Kota[1], and J. Haun[1]
[1]University of California Irvine, Irvine, CA

P-Th-324
Superparamagnetic Iron Oxide Nanoparticle Actuation Decreases Astrocyte Viability
N. Schaub[1], D. Rende[1], Y. Yuan[1], R. Gilbert[1], and D-A. Borca-Tasciuc[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

P-Th-325
Polymeric Micelle as a Drug and Gene Delivery Carrier for Spinal Cord Tumor
S-J. Gwak[1], J. Nice[1], B. Green[1], and J. Lee[1]
[1]Department of Bioengineering, Clemson University, Clemson, SC

P-Th-326
The Effect of Surface Functionalization and Temperature on Nanoparticle Penetration into Tumor Spheroids
A. Nagesetti[1], D. Estumano[2], H. Orlande[2], M. Colaço[2], G. Dulikravich[1], and A. McGoron[1]
[1]Florida International University, Miami, FL, [2]Federal University of Rio de Janeiro, Rio de Janeiro, Brazil

P-Th-327
Folate-targeted MMP-cleavable Nanobeacons: Toward Imaging Delivery in Solid Tumors
I. McFadden[1], J. Duan[1], B. Fingleton[1], T. Giorgio[1], and J. McIntyre[1]
[1]Vanderbilt University, Nashville, TN

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Th-328
Isolation of Circulating Tumor Cells Using Electrospun Nanofibers Integrated Lab-on-a-Disc
C-J. Kim[1], V. Sunkara[1], J. Park[1], and Y-K. Cho[1]
[1]*Ulsan National Institute of Science and Technology, Ulsan, Korea, Republic of*

P-Th-329
Conductive Polymer-Based Nanostructures for Photothermal Ablation of Cancer: Synthesis and *In Vitro* Evaluation
T. Cantu[1], K. Walsh[1], V. Pattani[2], J. Tunnell[2], J. Irvin[1], and T. Betancourt[1]
[1]*Texas State University, San Marcos, TX,* [2]*The University of Texas at Austin, Austin, TX*

P-Th-330
Optimizing Nanoparticle Transport in Tumour Extracellular Matrix: Towards Patient Specific Targeting
C. Sarsons[1], K. Terefe[1], E. Sykes[2], Q. Dai[2], J. Chen[2], J. Rocheleau[2], D. Hwang[2], D. Cramb[1], G. Zheng[2], W. Chan[2], and K. Rinker[1]
[1]*University of Calgary, Calgary, AB, Canada,* [2]*University of Toronto, Toronto, ON, Canada*

P-Th-331
[60]Fullerenes Combined With Radiofrequency Exposure Cause Cell Death in HCC Through Apoptosis
P. Gehlot[1,2], Y. Mackeyev[2], and S. Curley[2]
[1]*University of Michigan, Michigan, MI,* [2]*MD Anderson Cancer Center, Houston, TX*

P-Th-332
Novel Magnetic Calcium Phosphate Nanoparticles for Cancer Treatment
X. Cheng[1] and J. Salcido[1,2]
[1]*Southwest Research Institute, San Antonio, TX,* [2]*University of Texas at San Antonio, San Antonio, TX*

P-Th-333
Electrospun Fibers as a Platform for T Cell Expansion.
S. De Leo[1], D. Bogdanowicz[1], P. Chuang[1], A. Dang[1], H. Lu[1], and L. Kam[1]
[1]*Columbia University, New York, NY*

P-Th-334
Nanoparticle Charge Influences Serum Protein Adsorption, Circulation Time, and Biodistribution
A. Bohorquez[1], K. Court[2], L. Santiago[2], M. Latorre[2], E. Mora[3], E. Juan[2], M. Torres-Lugo[2], and C. Rinaldi[1]
[1]*University of Florida, Gainesville, FL,* [2]*University of Puerto Rico, Mayaguez, Mayaguez, PR,* [3]*University of Puerto Rico Comprehensive Cancer Center, San Juan, PR*

Track: Cardiovascular Engineering

Cardiac Electrophysiology and Mechanics

Chairs: Charles Taylor, Milica Radisic

P-Th-232
Assessment of Ventricular Function in Zebrafish Heart Regeneration by Interfacing Surface Electrical Conduction with Intracardiac Hemodynamics
N. Jen[1], J. Lee[1], H. Cao[1], B. Kim[2], K. Shung[2], and T. Hsiai[1]
[1]*UCLA, Los Angeles, CA,* [2]*USC, Los Angeles, CA*

P-Th-233
Optically Mapping the Effects of Light-Activated Norepinephrine Release from Cardiac Sympathetic Neurons
A. Wengrowski[1], X. Wang[1], S. Tapa[1], D. Mendelowitz[1], and M. Kay[1]
[1]*The George Washington University, Washington, DC*

P-Th-234
Experimental Investigation On Spatial Dynamics Of Bifurcation To Alternans In Paced Rabbit Hearts
K. Kulkarni[1], R. Visweswaran[1], S. Tan[1], X. Zhao[2], and E. Tolkacheva[1]
[1]*University of Minnesota, Minneapolis, MN,* [2]*University of Tennessee, Knoxville, TN*

P-Th-235
Wireless Recording of Arterial Pulses
W. Shi[1], C. Nguyen[1], and J-C. Chiao[1]
[1]*University of Texas at Arlington, Arlington, TX*

P-Th-236
Border-collision Bifurcation of Calcium Cycling Dynamics in Cardiac Myocytes
X. Zhao[1] and E. Tolkacheva[2]
[1]*University of Tennessee, Knoxville, TN,* [2]*University of Minnesota, Minneapolis, MN*

P-Th-237
Optical Mapping of Beating Heart
H. Zhang[1], K. Iijima[1], P. Estep[1], L. Raju[1], G. Walcott[1], and J. Rogers[1]
[1]*University of Alabama at Birmingham, Birmingham, AL*

P-Th-238
Quantitative Analysis of Electrophysiological Ventricular Heart Failure Cell Model in 1D Tissue
M. Elshrif[1], E. Cherry[1], and P. Shi[1]
[1]*Rochester Institute of Technology (RIT), Rochester, NY*

P-Th-239
The Long and Short of It
A. Greer-Short[1] and S. Poelzing[1]
[1]*Virginia Tech Carilion Research Institute, Roanoke, VA*

P-Th-240
Non-Invasive Image-Based Assessment of Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes
C. Heylman[1], R. Datta[1], Y. Kurokawa[1], D. Tran[1], B. Conklin[2], E. Gratton[1], and S. George[1]
[1]*University of California, Irvine, Irvine, CA,* [2]*Gladstone Institutes, San Francisco, CA*

P-Th-241
Classification of Atrial Fibrillation and Sinus Rhythm with a Gaussian Mixture Model
T. Lye[1], V. Iyer[2], and C. Hendon[1]
[1]*Columbia University, New York, NY,* [2]*Columbia University Medical Center, New York, NY*

P-Th-242
The Emission Isosbestic Point of Di-4-ANEPPS as a Function of Excitation Wavelength in Myocardium
H. Zhang[1], J. Powell[1], R. Densmore[1], G. Walcott[1], and J. Rogers[1]
[1]*University of Alabama at Birmingham, Birmingham, AL*

P-Th-243
Non-invasive Holter Monitor Suit for Recording Electrocardiograms in Conscious, Unanesthitized, Behaving Mice
J. Marmerstein[1], K. Holzem[1], and I. Efimov[1]
[1]*Washington University in St. Louis, St. Louis, MO*

P-Th-244
Visible Light Absorbance Spectroscopy of Excised Perfused Hearts Reveals Increased Myocardial and Mitochondrial Oxygenation with Perfluorocarbon Perfusate
R. Jaimes III[1], S. Kuzmiak-Glancy[1], R. Covian[2], A. Wengrowski[1], B. Glancy[2], R. Balaban[2], and M. Kay[1]
[1]*The George Washington University, Washington, DC,* [2]*National Institutes of Health, Bethesda, MD*

P-Th-245
Effects of Acellular Microheterogeneities on Macroscopic Impulse Conduction in Regimes of Normal and Reduced Excitability
H. Asfour[1], S. Verma[1], C. Henriquez[2,3], and N. Bursac[1]
[1]*Duke University, Durham, NC,* [2]*Duke Univeristy, Durham NC, NC,* [3]*Duke Univeristy, Durham, NC*

POSTER SESSION **Th**

See page 92 for Poster floor plan

P-Th-246
Efficient Modeling of Three-Dimensional Cardiac Bidomain with Model Order Reduction
D. Vu[1] and K. Ng[1]
[1]*New Mexico State University, Las Cruces, NM*

P-Th-247
The Mechanism of Reentry in an Inhomogeneous Sheet of Ventricular Myocardium
S. Kandel[1] and B. Roth[1]
[1]*Oakland University, Rochester, MI*

P-Th-248
Linking Between Cardiac trabeculation Development and Wall Shear Stress with 4-Dimenstional Single Plane Illumination Microscopy
J. Lee[1], P. Fei[1], H. Xu[2], C-M. Ho[1], J. Kuo[2], N. Chi[3], and T. Hsiai[1]
[1]*University of California, Los Angeles, Los Angeles, CA,* [2]*University of Southern California, los angeles, CA,* [3]*University of California, San Diego, La Jolla, CA*

P-Th-249
Metabolic Model of Right Ventricular Dysfunction under High Afterload and Hypoxia
M. Lee[1], B. Faliks[2], C. Scipione[2], K. Koch[2], A. Vo[3], and K. Cook[4]
[1]*Mackay Memorial Hospital, HsinChu branch, Hsinchu City, Taiwan,* [2]*University of Michigan, Ann Arbor, MI,* [3]*Northwestern University, Chicago, IL,* [4]*Carnegie Mellon University, Pittsburgh, PA*

P-Th-250
Synchronization of Mechanically Coupled Cardiomyocytes on Thin Films
B. Williams[1] and T. Saif[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

P-Th-251
Validation of Finite Element Models of Cardiac Structure and Kinematics via CINE, Displacement-Encoded, and Diffusion MRI.
A. Gomez[1], C. Welsh[1], S. Merchant[1], and E. Hsu[1]
[1]*University of Utah, Salt Lake City, UT*

P-Th-252
Effects Of Engineered SDF-1a On Infarcted Myocardium Under Dynamic Loading Conditions
A. Trubelja[1], B. Freedman[1], J. MacArthur, Jr[1], M. Hast[1], J. Sarver[2], J. Cohen[1], W. Hiesinger[1], P. Atluri[1], and Y. Woo[3]
[1]*University of Pennsylvania Perelman School of Medicine, Philadelphia, PA,* [2]*Drexel University, Philadelphia, PA,* [3]*Stanford University School of Medicine, Stanford, CA*

P-Th-253
Quantification of Left Ventricular Pressure and Contractility as a Means to Assess Bisphenol A Cardiac Toxicity
D. Brooks[1], M. Kay[1], and N. Posnack[1]
[1]*George Washington University, Washington, DC*

P-Th-254
Sarcomere-length Variations During *In-vitro* Sarcomerogenesis
Z. Wang[1], H. Yang[1], T. Borg[2], and B. Gao[1]
[1]*Clemson University, Clemson, SC,* [2]*Medical University of South Carolina, Charleston, SC*

P-Th-255
New Concept for Measuring the Forces in Mitral Valve Annuloplasty Rings
S. Nielsen Skov[1,2], D. Mathilde Røpcke[1], A. W. Siefert[3], C. Ilkjær[1], M. Juan Tjørnild[1], A. Yoganathan[3], H. Nygaard[1], S. Lyager Nielsen[1], and M. Jensen[3]
[1]*Department of Cardiothoracic and Vascular Surgery, Aarhus University Hospital, Aarhus, Denmark,* [2]*Department of Engineering, Faculty of Science and Technology, Aarhus University, Aarhus, Denmark,* [3]*Department of Biomedical Engineering, Georgia Institute of Technology and Emory University, Atlanta, GA*

P-Th-256
Modulation of Mechanical Response of Micropatterned Cardiomyocytes Using Atomic Force Microscopy
N. Nagarajan[1], V. Vyas[1], Y. Kutes[1], B. Huey[1], and P. Zorlutuna[1]
[1]*University of Connecticut, Storrs, CT*

P-Th-257
Stress Production in Locally Organized, Globally Disorganized Cardiac Tissues
M. Knight[1] and A. Grosberg[1]
[1]*University of California, Irvine, Irvine, CA*

Track: Cellular and Molecular Bioengineering

Cell Adhesion and Motility

Chairs: Leo Wan, Kapil Pant

P-Th-418
The Effect of Exogenous Zinc Concentration on the Migration of Osteoblast-like and Osteosarcoma Cells
D. Rammelkamp[1], K. Dorst[1], E. Farquhar[2,3], M. Chance[2,3], and Y. Meng[1]
[1]*Stony Brook University, Stony Brook, NY,* [2]*Case Western Reserve University, Cleveland, OH,* [3]*National Synchrotron Light Source, Upton, NY*

P-Th-419
Molecular Model of Actin-Myosin Energy Landscapes Based on Non-Linear Cross-Bridge Stiffness
S. Mijailovich[1], M. Prodanovic[1,2], M. Svicevic[3], R. Gilbert[1], and B. Stojanovic[3]
[1]*Northeastern University, Boston, MA,* [2]*Illinois Institute of Technology, Chicago, IL,* [3]*University of Kragujevac, Kragujevac, Yugoslavia*

P-Th-420
Uncovering Cell-type Specific Plasticity in Contact Guidance Efficiency
J. Wang[1], J. Petefish[1], A. Hillier[1], and I. Schneider[1]
[1]*Iowa State University, Ames, IA*

P-Th-421
Dynein Arm Mutations Modify the Effects of Increased Viscous Forces on the Flagellar Waveform
K. Wilson[1], O. Gonzalez[1], S. Dutcher[1], and P. Bayly[1]
[1]*Washington University in St. Louis, St. Louis, MO*

P-Th-422
A Perinuclear Actin Cap Mediates Tight Coupling Between Nucleus and Cell Migration
D-H. Kim[1,2] and D. Wirtz[1,2]
[1]*Johns Hopkins Physical Sciences – Oncology Center, Baltimore, MD,* [2]*Johns Hopkins University, Baltimore, MD*

P-Th-423
Investigation of the Role of ECM Mimicking Biophysical Cues and Biochemical Cueson Single Cell Migration
A. Kim[1], M. Traore[1], E. Smith[1], A. Myers[1], A. Nain[1], and B. Behkam[1]
[1]*Virginia Tech, Blacksburg, VA*

P-Th-424
Tubulin Modification Regulates The Motility Of Axonemal Dynein
J. Alper[1,2], F. Decker[2], B. Agana[1,2,3], and J. Howard[1,2]
[1]*Yale University, New Haven, CT,* [2]*Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany,* [3]*Missouri State University, Springfield, MO*

P-Th-425
Superparamagnetic Iron Oxide Nanoparticle-labeled Cells for Magnetically Directed Cell Motility
D. Sotto[1], C. Jreige[1], and G. Bao[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Th-426
Signal Enhancing Effect of Serum on the Spontaneous Activity of Chick Forebrain Neuron Culture on a Microelectrode Array
X. Yang[1], S. Kuang[1], and B. Gao[1]
[1]*Clemson University, Clemson, SC*

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Th-427
How Actomyosin Contraction Contributes to Cancer Cell Migration in Full Confinement - A Poroelasticity-based Model
J. Wright[1] and C-J. Chuong[1]
[1]*University of Texas at Arlington, Arlington, TX*

P-Th-428
Microtubules Stabilize Cell Polarity By Mediating The Localization Of Rear Signals
J. Zhang[1], W-H. Guo[1], and Y-L. Wang[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

P-Th-429
Chemotactic Migration of Clustered Central Nervous System Progenitor Cells
S. McCutcheon[1], J. Uchenna[2], M. Vazquez[1], and S. Redenti[2]
[1]*The City College of New York, New York, NY,* [2]*Lehman College, New York, NY*

P-Th-430
The Organ-Specific Migratory Response of Prostate Cancer
L. Lee[1], S. Bean[1], S. Loh[1], S. Rao[1], V. Lin[1], and J-C. Chiao[1]
[1]*UT Arlington, Arlington, TX*

P-Th-431
Role of Neutrophils in the On-set of Systemic Vaso-occlusion in the Blood of Sickle Cell Disease Patients
M. Jimenez[1] and P. Sundd[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P-Th-432
H_2O_2-Upregulated RAGE on Aβ -Induced Oxidative Pathway and Membrane Phase Changes in bEnd.3 Cells
C. Est[1], H. Wang[1], and J. Lee[1]
[1]*University of Missouri-Columbia, Columbia, MO*

P-Th-433
Activation of CD11c Primes Foamy Monocytes for Recruitment on VCAM-1 Under Shear
G. Foster[1], H. Wu[2], and S. Simon[1]
[1]*University of California Davis, Davis, CA,* [2]*Baylor College of Medicine, Houston, TX*

P-Th-434
The Role Of The Glycocalyx In Leukocyte Adhesion To Endothelial Cells *In Vitro*
K. McDonald[1], S. Cooper[2], and R. Leask[1]
[1]*McGill University, Montreal, QC, Canada,* [2]*McGill University, Montreal, Canada*

P-Th-435
A Strategy for Human Tissue Self-Organization that is Robust to Heterogeneous and Changing Cell-Cell Interactions
A. Cerchiari[1], J. Garbe[2], M. Todhunter[3], N. Jee[3], K. Broaders[3], M. Thomson[3], M. LaBarge[2], T. Desai[3], and Z. Gartner[3]
[1]*UC Berkeley - UCSF, San Francisco, CA,* [2]*Lawrence Berkeley National Laboratory, Berkeley, CA,* [3]*UCSF, San Francisco, CA*

P-Th-436
Assessing Inhibitory Capability of Zosteric Acid and Sodium Benzoate on Mouse and Human Fibroblast Cell Attachment and Proliferation
D. Parajuli[1] and B-M. Zhang Newby[1]
[1]*The University of Akron, Akron, OH*

P-Th-437
Bioinspired Microfluidic Assay for *In Vitro* Modeling of Leukocyte-Endothelium Interactions
G. Lamberti[1], B. Prabhakarpandian[2], C. Garson[2], A. Smith[2], K. Pant[2], B. Wang[3], and M. Kiani[1]
[1]*Temple University, Philadelphia, PA,* [2]*CFD Research Corporation, Huntsville, AL,* [3]*Widener University, Philadelphia, PA*

P-Th-438
Investigating Electrotaxis of the Non-Transformed MCF-10A Mammary Epithelial Cell Line
M. Lalli[1] and A. Asthagiri[1]
[1]*Northeastern University, Boston, MA*

Track: Cellular and Molecular Bioengineering

Mechanotransduction

Chairs: Taby Ahsan, Lauren Black III

P-Th-439
Non-Invasive Measurement of Interstitial Fluid Pressure In Microscale Gels and Tissues
O. Ozsun[1], R. Thompson[1], J. Tien[1], and K. Ekinci[1]
[1]*Boston University, Boston, MA*

P-Th-440
Effects Of Substrate Stiffness On Direct Reprogramming From Fibroblasts To Neurons
S. Wong[1,2], J. Soto[1,2], J. Chu[1], and S. Li[1,2]
[1]*University of California, Berkeley, Berkeley, CA,* [2]*University of California, San Francisco, San Francisco, CA*

P-Th-441
Crosstalk of Physiological Mechanical Cues in Endothelial Cell Signaling
D. Zhou[1], F. Bordeleau[1], J. Kohn[1], A. Zhou[1], B. Mason[1], M. Mitchell[1], M. King[1], and C. Reinhart-King[1]
[1]*Cornell University, Ithaca, NY*

P-Th-442
Patterned Mechanical Stiffening of PEG Hydrogels by NIR laser
Y. Choi[1,2], K. Hribar[2], M. Ondeck[2], A. Engler[2], and S. Chen[2]
[1]*University of Sydney, St Leonards, Australia,* [2]*University of California, San Diego, La Jolla, CA*

P-Th-443
Emerging Determinants of Cytosolic Calcium Homeostasis in the Sheared Endothelium
C. Scheitlin[1,2], J. Julian[1,2], and R. Alevriadou[1,2]
[1]*The Ohio State University, Columbus, OH,* [2]*Davis Heart & Lung Research Institute, Columbus, OH*

P-Th-444
TLR4 is Involved in Mechanosensin
M. Previtera[1,2] and A. Sengupta[1]
[1]*New Jersey Neuroscience Institute at JFK Medical Center, Edison, NJ,* [2]*Seton Hall University, Edison, NJ*

P-Th-445
Matrix Rigidity Mediates Myofibroblast Activation by Controlling MRTF-A Signaling
J. O'Connor[1] and E. Gomez[1]
[1]*The Pennsylvania State University, University Park, PA*

P-Th-446
Metastatic Cancer Mechanical Tropsim Is Controlled By Cytoskeletal Tension
D. McGrail[1], Q. Kieu[1], J. Iandoli[1], and M. Dawson[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Th-447
A Prestress Dependent Mechanotransduction Connecting Adhesive Receptors
I. Muhamed[1], J. Wu[1], X. Kong[1], N. Wang[1], and D. Leckband[1]
[1]*University of Illinois Urbana Champaign, urbana, IL*

POSTER SESSION **Th**

See page 92 for Poster floor plan

P-Th-448
Syndecan-1 Mediates Endothelial Shear Mechanotransduction Response and Inflammatory Phenotype
P. Voyvodic[1], E. Williams[1], R. Liu[1], D. Min[1], and A. Baker[1]
[1]*The University of Texas at Austin, Austin, TX*

P-Th-449
Determining the Relationship Between Protein Deformation and Protein Dynamics in Focal Adhesions
K. Rothenberg[1] and B. Hoffman[1]
[1]*Duke University, Durham, NC*

P-Th-450
Antiplatelet Drug Efficacy Under Dynamic Device-Related Shear Conditions
J. Sheriff[1], P. Tran[2], L. Valerio[3], R. Ghosh[1], W. Brengle[2], E. Zhang[1], M. Hutchinson[2], D. Bluestein[1], and M. Slepian[2],[4,5]
[1]*Biomedical Engineering, Stony Brook University, Stony Brook, NY,* [2]*Biomedical Engineering, University of Arizona, Tucson, AZ,* [3]*Bioengineering, Politecnico di Milano, Milan, Italy,* [4]*Sarver Heart Center, University of Arizona, Tucson, AZ,* [5]*Stony Brook University, Stony Brook, NY*

P-Th-451
Force Generation During Primary Human Macrophage Migration on Compliant Surfaces
L. Hind[1], M. Dembo[2], and D. Hammer[1]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*Boston University, Boston, MA*

P-Th-452
Fluid Flow Affects Vascular Endothelial Cell Drug Response
L. Tamez[1], R. Shepherd[1], K. Fuh[1], S. Baranzini[2], R. Moore[1], and K. Rinker[1]
[1]*University of Calgary, Calgary, AB, Canada,* [2]*University of California San Francisco, San Francisco, CA*

P-Th-453
Enhancement of Glycocalyx Mediated Endothelial Mechanotransduction Using Drug-Loaded Nanoparticles
H. Homayoni[1], M. Cheng[1], R. Kumar[2], S. Sridhar[2], T. Webster[1], and E. Ebong[1]
[1]*Department of Chemical Engineering, Northeastern University, Boston, MA,* [2]*Department of Physics, Northeastern University, Boston, MA*

P-Th-454
POR1 Geometry Sensing of Nanofiber Diameter Regulates Rac1 Activity and Osteoblast Differentiation
A. Higgins[1] and J. Brown[1]
[1]*The Pennsylvania State University, University Park, PA*

P-Th-455
"Effects of Clinically Relevant Mechanical Forces on Vascular Smooth Muscle Cells Under Hyperglycemia: An *In Vitro* Dynamic Disease Model"
V. Chawla[1], A. Simionescu[1], E. Langan III[2], and M. LaBerge[1]
[1]*Clemson University, Clemson, SC,* [2]*Greenville Health System (GHS), Greenville, SC*

P-Th-456
Imaging Cellular and Molecular Stretch in an *in vivo* Cellular Tube Using Filamin::stFRET.
J. Bouffard[1], A. Asthagiri[1], and E. Cram[1]
[1]*Northeastern University, Boston, MA*

P-Th-457
Accelerations at Sonic Frequencies Mimic Thyroid Epithelial Cells Response to TSH
A. Wagner[1], I. Titze[1,2], and E. Sander[1]
[1]*University of Iowa, iowa city, IA,* [2]*University of Utah, Salt Lake City, UT*

P-Th-458
A Role for ER Stress in the Modulation of VCAM-1 Expression by Shear Stress and Dietary Lipoproteins
K. Bailey[1], Y. Wang[1], G. Foster[1], S. Simon[1], and A. Passerini[1]
[1]*University of California, Davis, Davis, CA*

Track: Cellular and Molecular Bioengineering

Cellular and Molecular Bioengineering - Other

Chairs: Julie Phillippi, Anand Ramasubramanian

P-Th-459
Pancreatic β cell function and Mass in Pubertal Hyperinsulinemia
J. Faust[1], I. Malenica[1], M. Doshi[1], R. Stepanek[1], J. Brower[1], K. Sweazea[1], M. Caplan[1], and R. Herman[1]
[1]*Arizona State University, Tempe, AZ*

P-Th-460
High Spatio-temporal ERK Activity in Response to Mechano-chemical Stimuli in Rat Mesenchymal Stem Cells
A. Dharmarajan[1], M. Floren[2], and W. Tan[2]
[1]*University of Colorado at Boulder, Louisville, CO,* [2]*University of Colorado at Boulder, Boulder, CO*

P-Th-461
On-Chip Multi-Frequency Current Mode Lock-in Amplifier for Impedance Sensing
N. McFarlane[1] and J. Gu[1]
[1]*University of Tennessee, Knoxville, TN*

P-Th-462
Kupffer Cell Mediated Cardiovascular Disease Development
D. Rubenstein[1] and W. Yin[1]
[1]*Stony Brook University, Stony Brook, NY*

P-Th-463
Dictyostelium Phenylalanine Hydroxylase Is Activated by Its Substrate Phenylalanine
H. Kim[1], Y. Park[2], Y. Kim[3], Y. Yang[3], Y. Kang[1], S. Park[1], J. Shin[1], Y. Kim[1], and J-W. Shin[1,3,4]
[1]*Department of biomedical engineering, Inje university, Gimhae-si, Korea, Republic of,* [2]*Department of biological sciences, Inje university, Gimhae-si, Korea, Republic of,* [3]*Department of health science and technology, Inje university, Gimhae-si, Korea, Republic of,* [4]*Cardiovascular and Metabolic Disease Center /Institute of Aged Life Redesign/UHRC, Inje University, Gimhae-si, Korea, Republic of*

P-Th-464
Proliferative Signals in Gradients of Soluble Growth Factors
E. Gong[1] and A. Asthagiri[1]
[1]*Northeastern University, Boston, MA*

P-Th-465
Microfluidic Assay of Hemophilic Blood Clotting: Distinct Deficits in Platelet and Fibrin Deposition at Low Factor levels
T. Colace[1], P. Fogarty[1], K. Panckeri[1], R. Li[1], and S. Diamond[1]
[1]*University of Pennsylvania, Philadelphia, PA*

P-Th-466
A Rapid UV/Vis Spectroscopy Method for Detecting Protein-Centered Radicals using DMPO
B. Hollins[1]
[1]*Louisiana Tech University, Ruston, LA*

P-Th-467
Loss of Endothelial Surface Glycocalyx in Early Sepsis
J. Fan[1], W. Yen[1], M. Zeng[1], J. Chen[2], B. Ratliff[2], J. Tarbell[1], M. Goligorsky[2], and B. Fu[1]
[1]*The City College of the City University of New York, New York, NY,* [2]*New York Medical College, Valhalla, NY*

P-Th-468
Phospholipase A2 in Aβ clearance by microglia
L. Dong[1], C. Est[1], K. Henderson[1], and J. Lee[1]
[1]*University of Missouri-Columbia, Columbia, MO*

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Th-469
Fibronectin Decreases Fibroblast Migration After Electrical Stimulation
S. Snyder[1] and R. Willits[1]
[1]*University of Akron, Akron, OH*

P-Th-470
Increased Sphingomyelinase Activity in Sickled Red Blood Cells during Sickle Cell Disease
Y. Zhang[1], A. Awojoodu[1], and A. Lane[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

Track: Device Technologies and Biomedical Robotics, Translational Biomedical Engineering

Biomedical Sensors & Actuators

Chairs: Samir Iqbal, Tony Akl

P-Th-40
The Design and Implementation of a 4 DOF Robotic Manipulator for Automated Venipuncture
M. Balter[1] and A. Chen[1]
[1]*Rutgers University, Piscataway, NJ*

P-Th-41
Acoustic Manipulation of Protein Microcrystals for X-ray Crystallography
F. Guo[1], J. French [2], P. Li[1], Z. Mao[1], N. Yennawar[1], and T. Huang [1]
[1]*Penn state university, state college, PA,* [2]*Stony Brook University, Stony Brook, NY*

P-Th-42
Measurement of Blast Reflected & Incident Overpressures with the Blast Gauge™ System
G. Lee[1], U. Da Silva[2], M. Ostertag[3], M. Kenyon[3], K. Allpress[4], G. Katselis[4], D. Borkholder[3],[5], and G. Kamimori[1]
[1]*Walter Reed Army Institute of Research, Silver Spring, MD,* [2]*Naval Medical Research Center, Silver Spring, MD,* [3]*BlackBox Biometrics, Inc., Rochester, NY,* [4]*Defence Science and Technology Organisation, Edinburgh, Australia,* [5]*Rochester Institute of Technology, Rochester, NY*

P-Th-43
On Site Thermoelectric Cooling Device for Therapeutic Applications
W. Hejl[1], J. Lee[1], N. Babaria[1], S. Koshnevis[1], and K. Diller[1]
[1]*University of Texas at Austin, Austin, TX*

P-Th-44
Reducing Motion Artifact From Driver's PPG Using On-line Empirical Mode Decomposition
K. Lee[1], C. Park[1], H. Kim[2], S. Kim[2], and B. Lee[1]
[1]*Gwangju Institute of Science and Technology, Gwangju, Korea, Republic of,* [2]*Hyundai Motor Group, Hwaseong, Korea, Republic of*

P-Th-45
A Novel Wearable Cardioverter-Defibrillator for Increased Patient Compliance
S. Subramanian[1], P. Kang[1], C-M. So[1], M. Chen[1], T. Lam[1], C. Romanczyk[1], Q. Salditch[1], and A. Premkumar[1]
[1]*Johns Hopkins University, Baltimore, MD*

P-Th-46
An Auditory Feedback Study on the Object Localization and Tracking System
N. Mante[1], G. Medioni[1], A. Tanguay[1], and J. Weiland[1]
[1]*University of Southern California, Los Angeles, CA*

P-Th-47
Conducting Polymer PEDOT Nanofibers for Sensitive Detection of Glucose
G. Yang[1], K. Kampstra[1], and M. Abidian[1]
[1]*Pennsylvania State University, State College, PA*

P-Th-48
Development of A Rapid and Label-free Affinity Sensor for On-site Biomolecular Detection
H. Cui[1], C. Cheng[1], Q. Yuan[1], J. Wu[1], and S. Eda[1]
[1]*University of Tennessee, Knoxville, TN*

P-Th-49
Bioimpedance Analysis Detects Lower Leg Muscle Atrophy in Patients with Charcot-Marie-Tooth Disease
J. Woods[1], M. Solomito[1], and E. Garibay[1]
[1]*Connecticut Children's Medical Center, Farmington, CT*

P-Th-50
Monitoring Phospholipase A2 Activity Using Gd-encapsulated Phospholipid Liposomes
Z. Cheng[1] and A. tsourkas[1]
[1]*University of Pennsylvania, philadelphia, PA*

P-Th-51
An Organic Light-Emitting Diode for Oxygen Sensing Based on Phosphorescence Lifetime
Y. Ando[1], Y. Yanagisawa[1], and K. Tsukada[1]
[1]*Keio University, Yokohama, Japan*

P-Th-52
Fluorescence Quenching by Varying Sized Gold Nanorods for Multiplexed Plasmonic Biochip
Y. Wang[1] and L. Tang[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

P-Th-53
Study Interactions Of FvTox1 With Synthetic Peptides Using A Label-free Biosensor And Molecular Simulations
B. Zhang[1], B. Wang[2], A. Morales[1], J. Tamez-Vela[1], J. Scudder[1], M. Bhattacharyya[2], and J. Ye[1]
[1]*University of Texa at San Antonio, San Antonio, TX,* [2]*Iowa State University, Ames, IA*

P-Th-54
Readout Circuitry for Monitoring Temperature Variations in Biological Fluids
F. Quaiyum[1], L. Taylor[1], S. Pullano[2], I. Mahbub[1], A. Fiorillo[2], C. Britton[1], and S. Kamrul Islam[1]
[1]*University of Tennessee Knoxville, Knoxville, TN,* [2]*University Magna Græcia of Catanzaro, Catanzaro, Italy*

P-Th-55
Ratiometric Nanocapsule Sensors Fabricated From Sacrificial $CaCO_3$ Nanoparticles
A. Biswas[1], A. Nagaraja[1], and M. McShane[1]
[1]*Texas A&M University, College StationTX*

P-Th-56
A Reconfigurable Bio-Impedance Sensing Platform With Array-Based Detection Algorithm for 3D Tissue Characterization and Delineation
C. Kim[1], C. Zhu[1], J. Zhang[2], and H. Wang[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*University of Kentucky, Lexington, KY*

P-Th-57
Paper-based Biosensor for Colorimetric Detection of PSA Biomarker
A. Drew[1] and H. Kwon[1]1Andrews
University, Berrien Springs, MI

P-Th-58
A SERS Sensing System based on Encapsulation of Gold Nanoparticles in Microporous Alginate Hydrogels
Y-H. You[1], A. Liu[1], J. Roberts[1], and M. McShane[1]
[1]*Texas A&M University, College Station, TX*

P-Th-59
Differential Immuno-Capture Assay to Electrically Enumerate Blood Cells
U. Hassan[1], G. Damhorst[1], T. Ghonge [1], O. Sonoiki[1], L. Orlandic[2], B. Reddy[1], and R. Bashir[1]
[1]*University of Illinois at Urbana Champaign, Urbana, IL,* [2]*University Laboratory High School, Urbana, IL*

POSTER SESSION **Th**

See page 92 for Poster floor plan

P-Th-60
Surface Engineering for Aptamer-Based Chemical Sensors
R. Harwell[1], G. Barker[1], H. Marks[1], G. Coté[1], G. Jackson[2], and M. Pishko[1]
[1]Texas A&M University, College Station, TX, [2]Base Pair Biotechnologies, Pearland, TX

P-Th-61
A Study of Nano-scale Coatings on Planar Gold Microelectrodes for Bioimpedance Measurements
V. Srinivasaraghavan[1], J. Strobl[1], D. Wang[1], J. Heflin[1], and M. Agah[1]
[1]Virginia Tech, Blacksburg, VA

P-Th-62
A Photodiode-Integrated Microfluidic Bioreactor for Real-Time pH Monitor of Organs-on-Chip
Y. Zhang[1,2,3], N. Shams[1,2,3], M. Dokmeci[1,2,3], and A. Khademhosseini[1,2,4]
[1]Harvard Medical School, Cambridge, MA, [2]Brigham and Women's Hospital, Boston, MA, [3]Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA, [4]Wyss Institute for Biologically Inspired Engineering, Boston, MA

P-Th-63
In Vitro and *In Vivo* Evaluation of Copolymer Hydrogels as Enzyme-based Luminescence Glucose Sensors
R. Unruh[1], S. Nichols[2], N. Wisniewski[2], and M. McShane[1]
[1]Texas A&M University, College Station, TX, [2]PROFUSA, Inc., South San Francisco, CA

P-Th-65
Enhanced Electrical Label-Free Detection of Pathogens Through Isothermal DNA Amplification Using True Dual-Gated ISFETs
C. Duarte-Guevara[1], F-L. Lai[2], C. Cheng[2], B. Reddy[1], E. Salm[1], V. Swaminathan[1], Y-S. Liu[2], and R. Bashir[1]
[1]UIUC, Urbana, IL, [2]TSMC, Hsinchu, Taiwan

P-Th-66
Development of Fructose Dehydrogenase-Ferrocene Redox Polymer Films for Biosensor and Biofuel Cell Applications
J. Chen[1], D. Bamper[1], D. Glatzhofer[1], and D. Schmidtke[1]
[1]University of Oklahoma, Norman, OK

P-Th-67
Microelectronic Point-Of-Care Diagnostics For Early Phase Rickettsial Infections
W. Zhang[1], K. Patel[1], K. Macaluso[2], and A. Radadia[1]
[1]Louisiana Tech University, Ruston, LA, [2]Louisiana State University, Baton Rouge, LA

P-Th-68
Specific Surface Termination of Nano-textured ZnO for Label-free Electrochemical Bio-sensing
R. Munje[1], S. Muthukumar[1], M. Jacobs[1], B. Quadri[1], and S. Prasad[1]
[1]University of Texas at Dallas, Richardson, TX

P-Th-69
Graphene-Based Biofet for Real–time Sensing
A. Radadia[1] and B. Hou[1]
[1]Louisiana Tech University, Ruston, LA

Track: Device Technologies and Biomedical Robotics, Cardiovascular Engineering

Cardiovascular Devices, Implantable Devices and Implantable Technologies

Chairs: Dominic Nathan, Mehmet Kaya

P-Th-1
A Thin Film Pressure Transducer for Intravascular Blood Pressure Sensing
P. Starr[1,2], K. Bartels[2,3], M. Agrawal[2], and S. Bailey[1,2]
[1]University of Texas Health Science Center at San Antonio, San Antonio, TX, [2]University of Texas at San Antonio, San Antonio, TX, [3]Southwest Research Institute, San Antonio, TX

P-Th- 2
Design and Characterization of an Endovascular Mechanical Thrombectomy Device
J. Szafron[1], A. Muschenborn[1], and D. Maitland[1]
[1]Texas A&M University, College Station, TX

P-Th-3
Design and Characterization of a Resistively Heated Shape Memory Polymer Micro-Release Device
L. Nash[1], M. Wierzbicki[1], and D. Maitland[1]
[1]Texas A&M University, College Station, TX

P-Th-4
Thermal Evaluation of Bipolar Radiofrequency Ablation for Treatment of Resistant Hypertension
L. Hobbs[1], L. Shaw Klein[2], W. Grande[2], and G. Gdowski[1]
[1]University of Rochester, Rochester, NY, [2]Micropen Technologies, Honeoye Falls, NY

P-Th-5
Simulation of Cooling Preservation Systems for Human Hearts Destined for Transplantation
A. Abdoli[1], G. Dulikravich[1], C. Bajaj[2], D. Stowe[3], and M. Jahania[4]
[1]Florida International University, Miami, FL, [2]University of Texas at Austin, Austin, TX, [3]Medical College of Wisconsin, Milwaukee, WI, [4]Wayne State University, Detroit, MI

P-Th-6
Impact of Bifurcation Stenting on Endothelial Shear Stress
H. Chen[1], I. Moussa[2], C. Davidson[3], and G. Kassab[4]
[1]Indiana Univ. Purdue Univ., Indianapolis, IN, [2]University of Texas Health Science Center, San Antonio, TX, [3]Northwestern University, Chicago, IL, [4]IUPUI, Indianapolis, IN

P-Th-7
Finite Element Analysis Of A Double Opposed PLLA Helical Stent Expansion And Arterial Wall Interaction
T. Welch[1], S. VeeramReddy[1], J. Wang[1], A. Nugent[1], and J. Forbess[1]
[1]UT Southwestern Medical Center of Dallas, Dallas, TX

P-Th-8
Long-Term Implant Evaluation of Non-hermetic Micropackage Technology
P. Wang[1], S. Majerus[1], J. Anderson[1], M. Damaser[2], C. Zorman[1], and W. Ko[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Advanced Platform Technology Center, Louis Stokes Cleveland VA Medical Center, Cleveland, OH

P-Th-9
A Multilayer PDMS Microchannel Scaffold for Efficient IHC Analysis and Neural Interfacing
E. Ibarra[1], B. Kim[1], B. Garza [1], R. Luna [1], and Y. Choi [1]
[1]University of Texas – Pan American, Edinburg, TX

P-Th-10
A Polymer-based Depth-type Neural Probe with Four Sided Contacts
S. Shin[1], S. Lee[1], J. Jeong[1], S. Ahn[1], J. Kim[1], K. Eom[1], J. Park[1], C. Koh[2], H-C. Shin[2], and S. Kim[1]
[1]Seoul National University, Seoul, Korea, Republic of, [2]Hallym University, Gangwon, Korea, Republic of

P-Th-11
Ultrasonic Dry Coupling Through Tissue
J. Norman[1], J. Leadbetter[1], H. Vihvelin[1], J. Brown[1], and R. Adamson[1]
[1]Dalhousie University, Halifax, NS, Canada

P-Th-12
A Low Power Implantable Glucose Monitoring System
I. Mahbub[1], T. Randall[1], F. Quaiyum[1], and S. Islam[1]
[1]University of Tennessee, Knoxville, TN

P-Th-13
Biofabrication of Implantable Microfabricated Biotransducers for Dual Sensing of Glucose and Lactate
A. Guiseppi-Elie[1,2], O. Karunwi[1,2], F. Alam[1,2], and M. Gaillard[1,2]
[1]Clemson University, Clemson, SC, [2]Center for Bioelectronics, Biosensors and Biochips (C^3B), Anderson, SC

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Th-14
Reversible and Photo-Activated Artificial Iris
F. Shareef[1], S. Sun[1], M. Kotecha[1], D. Azar[1], and M. Cho[1]
[1]University of Illinois at Chicago, Chicago, IL

P-Th-15
Parylene-based EC-MEMS Patency Sensor for Detection of Hydrocephalus Shunt Obstruction
B. Kim[1], C. Lee[1], L. Yu[1], and E. Meng[1]
[1]University of Southern California, Los Angeles, CA

P-Th-16
Implementation of a Primitive Neural Stimulator with Simulated Post-Synaptic and Action Potentials
A. Parodi[1] and J-W. Choi[1]
[1]Louisiana State University, Baton Rouge, LA

Track: Device Technologies and Biomedical Robotics

Medical Device Development and Computational Models

Chairs: Rafael Davalos, Sergey Shevkoplyas

P-Th-17
Preclinical Development and Mechanical Testing of a Load Transfer Implant (LTI) for Knee Joint Arthroplasty
C. Bergerson[1], Z. Paulson[1], C. Davis[1], L. Sonoqui[1], J. Hunt[2], and M. Moreno[1]
[1]Texas A&M University, College Staion, TX, [24]Web, Frisco, TX

P-Th-18
Finite Element Analysis of Bore-Cone Taper Junctions in Modular Total Knee Replacements
J. Hernandez[1], K. Snethen[1], and M. Harman[1]
[1]Clemson University, Clemson, SC

P-Th-19
Preventing Pedicle Probe Injuries During Spinal Fusion Surgeries
A. Annadanam[1], R. Gaddipati[1], L. Herrera[1], B. Isaacs[1], E. Xie[1], C. Andrews[1], A. Malla[1], and E. Schwarz[1]
[1]Johns Hopkins, Baltimore, MD

P-Th-20
Lift Walker: Developing an Inexpensive and Lightweight Stand-Assist Device
T. Rist[1], C. Bateman[1], J. Barretta[1], J. Flores[1], J. Galloway[1], M. Kassner[1], J. Bumgardner[1], H. Lin[1], T. Tan[1], and R. Mulvany[2]
[1]The University of Memphis, Memphis, TN, [2]The University of Tennessee Health Science Center, Memphis, TN

P-Th-21
A Design of a Multi-degree Freedom Patient Platform for IGRT
F. Zhang[1], L. Sun[1], S. Kuang[1], S. Yu[1], and Y. Feng[1]
[1]Soochow University, SuZhou, China, People's Republic of

P-Th-22
Hand Held Force Magnifier for Microsurgery
M. Luo[1], R. Lee [1], C. Wong [1], R. Klatzky [2], and G. Stetten [1,2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Carnegie Mellon University, Pittsburgh, PA

P-Th-23
Venipuncture with Vibrated Needle Yields Lower and Less Variable Corticosterone Levels in Rats
R. Clement[1], Z. Krieger[1], E. Unger[2], S. Cavigelli[3], R. Sheehan[1], R. Bagwell[1], and M. Mulvihill[1]
[1]Actuated Medical, Inc., Bellefonte, PA, [2]Lebanon Valley College, Annville, PA, [3]Pennsylvania State University, University Park, PA

P-Th-24
The Development Of A Dynamic Adaptive Driving Simulator
S. Tudor[1], S. Carey[1], and R. Dubey[1]
[1]University of South Florida, Tampa, FL

P-Th-25
Micro Magnetic Resonance Relaxometry for Label-free, Rapid Malaria Diagnosis
W. Peng[1], C. Ng[1], T. Kong[1], L. Chen[1], T. Loh[2], P. Preiser[1,3], and J. Han [1,4]
[1]Singapore-Massachusetts Institute of Technology Alliance For Research And Technology(SMART), Singapore, Singapore, [2]National University of Hospital, Singapore, Singapore, [3]Nanyang Technological University, Singapore, Singapore, [4]Massachusetts Institute of Technology, Cambridge, MA

P-Th-26
Computational Model of Light Propagation in Skin and Subcutaneous Blood Vessels for Vein Imaging Devices
R. Polski[1] and H. Kwon[1]
[1]Andrews University, Berrien Springs, MI

P-Th-27
Model And Method Of Extravasation Detection
J. Kantor[1], M. Lasch[2], and Y. Feng[1]
[1]University of Texas at San Antonio, San Antonio, TX, [2]University of Texas at San Antonio, Schertz, TX

P-Th-28
Analyzing Lysed Whole Blood via "Microfluidic Drifting" Based Flow Cytometery Chip"
A. Nawaz[1], R. Nissly[1], P. Li[1], L. Wang[2], Y. Shariff[3], and T. Huang[1]
[1]Pennsylvania State University, State College, PA, [2]Ascent Bio-Nano Technologies, State College, PA, [3]Taibah University, Madina, Saudi Arabia, Madina, Saudi Arabia

P-Th-29
Standing Surface Acoustic Wave (SSAW) Based Multi-parametric Microflow Cytometer
Y. Chen[1], S. Li[1], P. Li[1], A. Nawaz[1], L. Wang[2], Y. Shariff[3], and T. Huang[1]
[1]Penn state university, State College, PA, [2]Ascent BioNano Inc., State College, PA, [3]Taibah University, Madina, Saudi Arabia

P-Th-30
A Wireless Sensor for Wound Strain Monitoring Using Laser Patterning on a Commercial Dressing
R. Rahimi[1], M. Ochoa[1], and B. Ziaie[1]
[1]Purdue University, West lafayette, IN

P-Th-31
Investigation of Wall Effects for Particle Viscometer
A. Botting[1], A. Plumber[1], G. Bustamante[1], and J. Ye[1]
[1]University of Texas at San Antonio, San Antonio, TX

P-Th-32
Interdigitated Electrode To Treat Micro-Metastases By High-Frequency Irreversible Electroporation
D. Sweeney[1], E. Latouche[2], P. Roberts[2], E. Schmelz[2], and R. Davalos[1]
[1]Virginia Tech-Wake Forest University, Blacksburg, VA, [2]Virginia Tech, Blacksburg, VA

P-Th-33
Mossbauer Studies of Rechargeable Na-ion Batteries for Medical Applications.
H-Y. Hah[1]
[1]University of Tennessee Space Institute, Tullahoma, TN

P-Th-34
Designing a Low-Cost Otoscope for Developing Countries Using a Non-traditional Power Source
S. Robb[1], D. Wells[1], J. Leipheimer[1], D. Cesario[1], N. Stone[1], and B. Campbell[1]
[1]Robert Morris University, Moon Township, PA

POSTER SESSION **Th**

See page 92 for Poster floor plan

P-Th-35
Design and Construction of a Blood Glucose Meter for Use in Nigeria
A. Zubair[1], E. Ebere-Dinnie [1], and A. Coker[1]
[1]University of Ibadan, Ibadan, Nigeria

P-Th-36
Design and Construction of a Portable Low Cost Electrical Safety Analyzer for Biomedical Devices
A. Zubair[1], O. Ibe[1], and A. Coker[1]
[1]University of Ibadan, Ibadan, Nigeria

P-Th-37
Device for Aid in Neonatal and Infant Resuscitation
M. Hemani[1], B. Gu[1], B. Kim[1], T. Lam[1], and A. Cruz[1]
[1]Johns Hopkins University, Baltimore, MD

P-Th-38
Development Of A Predictive Maintenance GUI For Medical Linear Accelerators
C. Nguyen[1,2], C. Able[2], A. Baydush[2], and M. Munley[1,2]
[1]Virginia Tech - Wake Forest School of Biomedical Engineering and Sciences, Winston Salem, NC, [2]Wake Forest School of Medicine, Winston Salem, NC

P-Th-39
ECG Signal Transmission Through GSM Voice Channel
S. Dehghanojamahalleh[1], B. Pliskow[1], and M. Kaya[1]
[1]Florida Institute of Technology, Melbourne, FL

Track: Drug Delivery, New Frontiers and Special Topics

Responsive and Targeted Drug Delivery

Chairs: Jeffrey Capadona, Jill Steinbach

P-Th-335
pH-Responsive P(IA-co-NVP) Hydrogels for the Oral Delivery of High Isoelectric Point Proteins
M. Koetting[1], A. Zhang[1], and N. Peppas[1]
[1]The University of Texas at Austin, Austin, TX

P-Th-336
Tumor-Targeted Magnetic Nanoparticles for Thermo-Controlled Drug Release
J. Caminero[1] and M. Domenech[1]
[1]University of Puerto Rico at Mayaguez, Mayaguez, PR, Puerto Rico

P-Th-337
Controlled Release of Lipoplexes using Acoustic Droplet Vaporization
M. Pilon[1], C. Wilson[1], D. Jones[1], R. Franceschi[1], and M. Fabiilli[1]
[1]University of Michigan, Ann Arbor, MI

P-Th-338
pH-Responsive Polymeric Particulate Systems for Micronutrients Fortification of Salt
X. Xu[1], R. Langer[1], and A. Jaklenec[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

P-Th-339
Development of pH-Responsive Hydrogel Carriers for Oral Vaccine Delivery
L. Sharpe[1], Y. Khairandish[1], and N. Peppas[1]
[1]The University of Texas at Austin, Austin, TX

P-Th-340
Anti-Cancer Drug Delivery With DNA Nano-Ball
W. Sun[1,2], R. Mo[1,2], and Z. Gu[1,2]
[1]The University of North Carolina at Chapel Hill, Chapel Hill, NC, [2]North Carolina State University, Raleigh, NC

P-Th-341
Optimization of pH-Responsive Hydrogels for Delivery of HMW Proteins
S. Horava[1] and N. Peppas[1]
[1]The University of Texas at Austin, Austin, TX

P-Th-342
Ultrasound-triggered Disruption and Self-healing of Reversibly-crosslinked Hydrogels for Drug Delivery and Enhanced Chemotherapy
N. Huebsch[1,2], C. Kearney[1,2], X. Zhao[1,2], J. Kim[1,2], C. Cezar[1,2], Z. Suo[1], and D. Mooney[1,2]
[1]Harvard University, Cambridge, MA, [2]Wyss Institute for Biologically Inspired Engineering, Cambridge, MA

P-Th-343
Temperature-sensitive Nanoparticles for Lung Cancer Treatment
J. Menon[1,2], K. Vu[1], D. Nguyen[1,2], and K. Nguyen[1,2]
[1]University of Texas at Arlington, Arlington, TX, [2]University of Texas Southwestern Medical Center at Dallas, Dallas, TX

P-Th-344
Modeling the Effect of Oleic Acid Absorption on Bioavailable Griseofulvin Concentration
Y. Yeap[1] and R. Carrier[1]
[1]Northeastern University, Boston, MA

P-Th-345
MMPs-responsive Release of SiRNA from 4-arm PEG-siRNA Conjugate
H. Kim[1] and H. Yoo[1]
[1]Kangwon National University, Chuncheon, Korea, Republic of

P-Th-346
Single Molecule Mechanics of Peptide-condensed DNA: Dynamic Regulation by pH and Zn2
A. Lee[1], A. Karcz[1], R. Akman[1], T. Zheng[1], S. Kwon[1], S-T. Chou[1], S. Sucayan[1], L. Tricoli[1], J. Hustedt[1], J. Kahn[1], A. Mixson[2], and J. Seog[1]
[1]University of Maryland, College Park, MD, [2]University of Maryland School of Medicine, Baltimore, MD

P-Th-347
Ultrasound-Triggered Noninvasive Regulation of Blood Glucose Levels Using Microgels Integrated with Insulin Nanocapsules
J. Di[1], Y. Jing[2], and Z. Gu[1]
[1]University of North Carolina at Chapel Hill | North Carolina State University, Raleigh, NC, [2]North Carolina State University, Raleigh, NC

P-Th-348
Development of Multi-Functional Core-Shell NPs for Targeted Lung Cancer Dual Therapy
J. Menon[1], A. Kuriakose[1], E. Hernandez[2], L. Gandee[2], S. Zhang[2], M. Takahashi[2], Z. Zhang[2], D. Saha[2], and K. Nguyen[1]
[1]University of Texas at Arlington, Arlington, TX, [2]University of Texas Southwestern Medical Center, Dallas, TX

P-Th-349
Developing a Targeted Oral Drug Carrier Using a Layer-by-Layer Chitosan and Alginate Enteric Coating
G. Mosley[1], S. Cheng[1], K. Chen[1], and D. Kamei[1]
[1]UCLA, Los Angeles, CA

P-Th-350
Modeling Release Behaviors Of Stimuli-Responsive Polyelectrolyte Multilayer Films
J. Min[1,2], R. Braatz[1], and P. Hammond[1,2]
[1]MIT, Cambridge, MA, [2]Koch Institute of Integrative Cancer Research, Cambridge, MA

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Th-351
Development of "Smart" Particles Based on DNA-Crosslinked Hydrogels for Drug Delivery
R. Danso[1], K. Abdelrahman[1], and T. Betancourt[1]
[1]*Texas State University, San Marcos, TX*

P-Th-352
Iron Oxide Nanoparticles-Embedded Polymeric Microgels for Magnetic Responsive Drug Delivery
B. Sung[1], H. Yan[1], S. Shaffer[1], C. Kim[1], and M-H. Kim[1]
[1]*Kent State University, Kent, OH*

P-Th-353
Enhanced Colorectal Drug Delivery Using Hypotonic Enema Formulations
K. Maisel[1], T. Moench[2], C. Hendrix[1], R. Cone[1], L. Ensign[1], and J. Hanes[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*ReProtect Inc., Baltimore, MD*

P-Th-354
Development of a Material Platform for Hypoxia-Targeted Gene Delivery
J. Madrigal[1], S. Rezvani[1], A. Koubeissi[2], K. Bouhadir[2], and E. Silva[1]
[1]*University of California Davis, Davis, CA,* [2]*American University of Beiruit, Beirut, Lebanon*

P-Th-355
Determining the Specificity of a Multivalent Polymeric Antigen-Specific Immunotherapy for Multiple Sclerosis
B. Hartwell[1], J. Sestak[1], B. Sullivan[1], D. Moore[1], H. Shinogle[1], T. Siahaan[1], and C. Berkland[1]
[1]*University of Kansas, Lawrence, KS*

P-Th-356
Genipin Releasing Suture Coatings For Reducing The Occurrence Of Suture Pull-Out Through Damaged Connective Tissue
S. Sundararaj[1], P. Slusarewicz [1], and T. Hedman[1,2]
[1]*Orthopeutics L.P., Lexington, KY,* [2]*University of Kentucky, Lexington, KY*

P-Th-357
Targeting Metastatic Prostate Cancer Using Engineered Ligands
K. Mayle[1], R. Chiu[1], S. Wang[1], K. Dern[1], A. Wu[1], A. Mason[2], and D. Kamei[1]
[1]*University of California Los Angeles, Los Angeles, CA,* [2]*University of Vermont, Burlington, VT*

P-Th-358
Targeted Liposomes Containing Superoxide Dismutase and Fasudil Reduces Chronic Symptoms in PAH Rats
N. Gupta[1], C. Woods[2], E. Nozik-Grayck[2], and F. Ahsan[1]
[1]*Texas Tech University Health Sciences Center, Amarillo, TX,* [2]*University of Colorado Denver, Aurora, CO*

P-Th-359
Nanoparticle-mediated Therapies for Pediatric Brain Diseases
E. Nance[1], F. Zhang[1], M. Mishra[1], S. Pramodh-Kamb hamp ati[1], K. Rangaramanujam[1], and S. Kannan[1]
[1]*Johns Hopkins University, Baltimore, MD*

P-Th-360
EGF-Conjugated Dendrimers For Local, Sustained And Targeted Delivery Of Chemotherapeutic Drugs For Treatment Of Breast Cancer
N. Oliva-Jorge[1], E. Edelman[1,2], and N. Artzi[1,2]
[1]*MIT, Cambridge, MA,* [2]*Brigham and Women's Hospital, Harvard Medical School, Boston, MA*

P-Th-361
Evaluating Effects Of Convection And Diffusion On A Gadolinium Tracer In Convection-Enhanced Delivery
J. Foo[1], C. Schaffer[1], and W. Olbricht[1]
[1]*Cornell University, Ithaca, NY*

P-Th-362
Biophysical simulation of targeted nanoparticle adhesion dynamics to optimize delivery
M. Wang[1] and J. Haun[1]
[1]*UC Irvine, Irvine, CA*

P-Th-363
A Smart Capsule with GI Tract Location Specific Payload Release
W. Yu[1], R. Rahimi[1], M. Ochoa[1], and B. Ziaie[1]
[1]*Purdue University, West Lafayette, IN*

P-Th-364
Functionalized Particle Adhesion Depends on Bifurcation Angle
G. Lamberti[1], A. Smith[2], M. Kiani[1], B. Prabhakarpandian[2], and K. Pant[2]
[1]*Temple University, Philadelphia, PA,* [2]*CFD Research Corporation, Huntsville, AL*

P-Th-365
Liposome-Conjugated Monoclonal Antibody Lability to Ultraviolet Sterilization Introduced by Lysyl Residue Derivatization
M. Klegerman[1], E. Golunski[1], and D. McPherson[1]
[1]*University of Texas Health Science Center - Houston, Houston, TX*

P-Th-366
Characterization of the *In Vitro* Interactions of a Liver Cancer-Specific Aptamer
M. Sutton[1], E. Barnes[1], S. Mitchell[1], T. Betancourt[1], and S. Weigum[1]
[1]*Texas State University, San Marcos, TX*

P-Th-367
Magnetic Field-enhanced Cell Uptake of Doxorubicin-loaded Magnetic Nanoparticles for Tumor Treatment
I. Venugopal[1], S. Pernal[1], H. Engelhard[2], and A. Linninger[1]
[1]*University of Illinois at Chicago, Chicago, IL,* [2]*University of Illinois College of Medicine at Chicago, Chicago, IL*

P-Th-368
Electrokinetically Assisted Targeted Drug Delivery System For *In-vitro* Drug-cell Interaction Studies
R. Taruvai Kalyana Kumar[1], A. Wangzhou[1], D. Kinnamon[1], and S. Prasad[1]
[1]*University of Texas at Dallas, Richardson, TX*

P-Th-369
Controlled Dual Release of Dexamethasone Sodium Phosphate and Dexamethasone from Electrospun Membranes for Prevention of Peritoneal Adhesion
C. Ma[1], C. Xiong[2], and X. Liu[1]
[1]*Baylor College of Dentistry, Dallas, TX,* [2]*University of Chinese Academy of Sciences, Chengdu, China, People's Republic of*

Track: Nano to Micro Technologies, Biomaterials

BioMEMS, Tissue and Organs on a Chip, Cell Behavior in Micro/Nano Devices, Paperfluidics

Chairs: Maribel Vazquez, Lance Kam

P-Th-530
Use of Physiologically-Based *in vitro* Models of the Gastrointestinal Tract to Study TiO_2 and SiO_2 Nanoparticle Interactions with Mineral Absorption
Z. Guo[1], E. Tako[2], and G. Mahler[3]
[1]*Binghamton University, Binghamton, NY,* [2]*Plant, Soil and Nutrition Laborator, Agricultural Research Services, U.S. Department of Agriculture, Ithaca, NY, Ithaca, NY,* [3]*Binghamton Univsersity, Binghamton, NY*

POSTER SESSION **Th**

See page 92 for Poster floor plan

P-Th-531
Development of a Perfusable 3D Tumor Platform to Study Nanoparticle Transport
M. DeWitt[1], R. Newsome[2], A. Pekkanen[1], and N. Rylander[1,2]
[1]Virginia Tech-Wake Forest, Blacksburg, VA, [2]Virginia Tech, Blacksburg, VA

P-Th-532
3D Microfluidic Device to Study the Neurotrophic Effect of Mesenchymal Stem Cells for Enhanced Human Neural Stem Cell Differentiation
K. Yang[1], H-J. Park[1], J. Kim[1], S. Han[2], S. Chung[2], and S-W. Cho[1]
[1]Department of Biotechnology, Yonsei University, Seoul, Korea, Republic of, [2]School of Mechanical Engineering, Korea University, Seoul, Korea, Republic of

P-Th-533
Development of a Novel, Physiologically and Anatomically Realistic *in vitro* Pediatric Blood Brain Barrier on a Chip
S. Deosarkar[1], B. Augeli[1], P. Pandian[2], B. Krynska[1], and M. Kiani[1]
[1]Temple University, Philadelphia, PA, [2]CFD Research Corporation, Huntsville, AL

P-Th-534
Gelatin Electrospun Nanofibrous Composite for use in Organ-on-a-chip Microfluidics
A. Nicolini[1] and J-Y. Yoon[1]
[1]The University of Arizona, Tucson, AZ

P-Th-535
A Novel *In Vitro* Blood Brain Barrier Platform for Preliminary Drug Studies
C. Hovell[1], G. Barabino[2], L. Taite[1], and Y. Kim[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]City College of New York, New York, NY

P-Th-536
Biomimetic Modifications to Microfluidic Silk Spinning
D. Li[1], D. Backman[1], M. Jacobsen[1], N. Rim[1], D. Kaplan[2], and J. Wong[1]
[1]Boston University, Boston, MA, [2]Tufts University, Medford, MA

P-Th-537
Three-Compartment Microfluidic Device For Generating Heterogeneous Shear Stress Pattern
X. Zhang[1] and Y. Zhao[1]
[1]Ohio State University, Columbus, OH

P-Th-538
BioMEMS Device Intergrated With CNxCNT Membrane For Blood Plasma Extraction
Y-T. Yeh[1], N. Perea-Lopez[1], M. Terrones[1], and S. Zheng[1]
[1]The Pennsylvania State University, University Park, PA

P-Th-539
Development of a Cell-Based Model of the Ocular Fundus within a Microfluidic Device
H. Kaji[1], S. Ito[1], K. Nagamine[1], M. Nishizawa[1], N. Nagai[1], and T. Abe[1]
[1]Tohoku University, Sendai, Japan

P-Th-540
Human Induced Pluripotent Stem Cell Derived 3D Cardiac Tissue Model for Drug Screening
A. Mathur[1], P. Loskill[1], K. Shao[1], S. Hong[1], N. Marks[1], L. Lee[1], B. Conklin[2], and K. Healy[1]
[1]University of California, Berkeley, Berkeley, CA, [2]University of California, San Francisco, San Francisco, CA

P-Th-541
Study of Renal Function in a Kidney-on-a-chip with Curved Geometry
S. Yu[1], Y. Kim[1], J. Park[1], W. Lee-Kwon[1], Y-K. Cho[1] and J. Kim[1]
[1]Ulsan National Institute of Sicence and Technology, Ulsan, Korea, Republic of

P-Th-542
An Arrayed Microfluidic Hanging Drop System for EB Formation and Culture
H-W. Wu[1] and H. Chia-hsien[1]
[1]National Health Research Institutes, Miaoli County, Taiwan

P-Th-543
The Effect of Fluid Perfusion on Human Umbilical Vein Endothethial Cell Tube Formation
C. Chan[1], V. Goral[2], P. Yuen[2], and T. Huang[1]
[1]Pennsylvania State University, University Park, PA, [2]Corning Incorporated, Corning, NY

P-Th-544
A Microfluidic Device to Model Active and Passive Transport Functions of the Human Kidney
C. Sakolish[1], J. Cohen[1], M. Reiss[1], and G. Mahler[1]
[1]Binghamton University, Binghamton, NY

P-Th-545
Do Substrate Cleaning Methods Affect Cellular Response?
B. Kirkland[1], K. Hafner[1], M. Kennedy[1], and D. Dean[1]
[1]Clemson University, Clemson, SC

P-Th-546
Microstructured Multi-Well Plate for Three-Dimensional Packed Cell Seeding and Culture
V. Goral[1], S. Au[2], R. Faris[1], and P. Yuen[1]
[1]Corning Incorporated, Corning, NY, [2]Massachusetts General Hospital, Charlestown, MA

P-Th-547
Detection of Neural Responses Using The *In Vitro* Chip-Based Human Investigational Platform (iCHIP)
H. Enright[1], E. Mukerjee[1], N. Fischer[1], S. Felix[1], W. McNerney[1], J. Osburn[1], F. Qian[1], A. Chang[1], S. Baker[1], E. Wheeler[1], K. Kulp[1], J. Zhang[2], G. Page[2], P. Miller[2], A. Ghetti[2], and S. Pannu[1]
[1]Lawrence Livermore National Lab, Livermore, CA, [2]Anabios, Inc, San Diego, CA

P-Th-548
Engineering Microchip Modules for Monitoring Vascular Permeability
Y. Sei[1] and Y. Kim[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Th-549
Monolithic Droplet Generator and Microarray for Screening Islet Beta Cells
Z. Zhao[1], R. Liu[1], D. Hu[1], and J. Lo[1]
[1]University of Michigan-Dearborn, dearborn, MI

P-Th-550
Microengineered Biomimetic Liver Sinusoids-on-a-Chip for Drug Toxicity Studies
Y. Kim[1] and Y-K. Cho [1]
[1]Ulsan National Institute of Science and Technology, Ulsan, Korea, Republic of

P-Th-551
Quantitative Analysis of CCL19-induced Chemotaxis of Human Dendritic Cells in 3D Microenvironment
H. Hwang[1], C. Shin[1], J. Park[1], Y. Do[1], and Y-K. Cho[1]
[1]Ulsan National Institute of Science and Technology, Ulsan, Korea, Republic of

P-Th-552
Metabolism-Induced Toxicity Screening on a Micropillar/Microwell Chip Platform Using THLE-2 Cells Expressing Combinations of Drug Metabolizing Enzymes
S. Kwon[1], D. Lee[2], B. Ku[2], D. Clark[3], J. Dordick[1], and M-Y. Lee[4]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Samsung Electro-Mechanics Co, Suwon, Korea, Republic of, [3]University of California at Berkeley, Berkeley, CA, [4]Cleveland State University, Cleveland, OH

P-Th-553
A Microfluidic System to Study the Effects of Mechanically Loaded Osteocytes on Osteoclastogenesis and Recruitment
K. Middleton[1] and L. You[1]
[1]University of Toronto, Toronto, ON, Canada

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Th-554
Chemotactic Gradients to Induce Photoreceptor Transplantation
S. Mishra[1], J. Unachukwu[2], S. Redenti[2], and M. Vazquez[1]
[1]City College of New York, New York, NY, [2]The Graduate School and University Center, City University of New York, New York, NY

P-Th-555
Modeling Spiral Oxygen Gradient for Simultaneous Hypoxic Stimulation and Cell Respiration Monitoring
M. Zhou[1], K. Milliman[1], Z. Zhao[1], M. Wang[1], J. Lo[1], and N. Chakraborty[1]
[1]The University of Michigan-Dearborn, Dearborn, MI

P-Th-556
Microvasculature Mimetic Device to Model Physiological Barrier Properties in Sepsis
T. Khire[1], L. Salas Estrada[1], R. Waugh[1], and J. McGrath[1]
[1]University of Rochester, Rochester, NY

P-Th-557
Single Cell, High Efficiency Analysis of Rare T cell Response using a Magnetic Sieving Device
J. Lee[1], M. Dustin[2], and L. Kam[1]
[1]Columbia University, New York, NY, [2]The University of Oxford, Oxford, United Kingdom

P-Th-558
A Microfluidic Oxygen Landscape Device Demonstrates Modulation of Hypoxic Signaling via Crosstalk between Normoxic and Hypoxic Endothelial Cells
M. Rexius[1], D. Eddington[1], and J. Rehman[1]
[1]University of Illinois at Chicago, Chicago, IL

P-Th-559
Unidirectional Electrical Pulses For Cell Alignment In A Closed Microfluidic Chamber
D. Loufakis[1], Z. Cao[1], S. Ma[1], D. Mittelman[1,2], and C. Lu[1]
[1]Virginia Tech, Blacksburg, VA, [2]Virginia Bioinformatics Institute, Blacksburg, VA

P-Th-560
Rapid Bacteria Capture In Capillary-driven Microfluidic Device
A. Olanrewaju[1] and D. Juncker[1]
[1]McGill University, Montreal, QC, Canada

P-Th-561
CANCELLED BY AUTHOR

P-Th-562
Optimizing the Aspect Ratio of PLGA Nano-grooves for Controlling Cell Division Axis and Migration
Y-H. Su[1,2], P-C. Chiang[1], L-J. Cheng[1,3], C-H. Lee[1,4], N. Swami[2], and C-F. Chou[1]
[1]Academia Sinica, Taipei, Taiwan, [2]University of Virginia, Charlottesville, VA, [3]Oregon State University, Corvallis, OR, [4]National Yang-Ming University, Taipei, Taiwan

P-Th-563
Single Wall Carbon Nanotube Interactions with F-actin
B. Holt[1], M. Islam[1], and K. Dahl[1]
[1]Carnegie Mellon University, Pittsburgh, PA

P-Th-564
Investigation of the Format-dependent Spatial Distribution of Binding in a Malaria Antigen Assay; Implications for Higher-sensitivity Detection
T. Liang[1], G. Fridley [1], P. Yager [1], and E. Fu[1,2]
[1]University of Washington, Seattle, WA, [2]Oregon State University, Corvallis, OR

P-Th-565
Nonplanar Three-Dimensional Paper Microfluidic Circuits Constructed with Patterned Adhesive
B. Kalish[1] and H. Tsutsui[1]
[1]University of California, Riverside, Riverside, CA

P-Th-566
Concentrating a Urinary Tuberculosis Biomarker by Heated Evaporation on a Paper Microfluidic Device
S. Wong[1], M. Cabodi[1], and C. Klapperich[1]
[1]Boston University, Boston, MA

P-Th-567
Predicting Wicking in Wax-bound Paper Microfluidic Channels
C. Castro[1], C. Rosillo[1], and H. Tsutsui[1]
[1]University of California, Riverside, Riverside, CA

P-Th-568
Modeling Drug Clearance and Drug-Drug Interactions in Long-Term Engineered Human Liver Cultures
C. Lin[1], J. Shi[2], A. Moore[2], and S. Khetani[1]
[1]Colorado State University, Fort Collins, CO, [2]Hepregen Corporation, Medford, MA

POSTER SESSION **Th**

Track: Neural Engineering, Device Technologies and Biomedical Robotics

Neural Engineering I: BCI, Devices, and Rehab

Chairs: Lisa Flanagan, Jaydip Desai

P-Th-80
Non-invasive Brain-Computer Interface for Prosthetic Control
T. Callahan[1], A. Ritter[1], and T. Sigler[1]
[1]Stevens Institute of Technology, Hoboken, NJ

P-Th-81
Chronic CNS Recording Studies in an Aged Rat Model
M. Christensen[1], N. Nolta[1], and P. Tresco[1]
[1]University of Utah, Salt Lake City, UT

P-Th-82
Investigation of the Neuroinflammatory Response to Antioxidant-Releasing Mechanically-Compliant Implants
J. Nguyen[1,2], K. Buchanan[1,2], M. Jorfi[3], E. Foster[3], C. Weder[3], and J. Capadona[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Louis Stokes Cleveland VA Medical Center, Cleveland, OH, [3]University of Fribourg, Marly, Switzerland

P-Th-83
Detection of Early Alzheimers Disease Using Nonlinear State Space Reconstruction of EEG
J. McBride[1], X. Zhao[1], N. Munro[2], G. Jicha[3], F. Schmitt[3], R. Kryscio[3], C. Smith[3], and Y. Jiang[3]
[1]University of Tennessee, Knoxville, TN, [2]Oak Ridge National Laboratory, Oak Ridge, TN, [3]University of Kentucky, Lexington, KY

P-Th-84
Exploring Differences in Concentration Levels While Playing Games
A. Copeman[1] and B. Campbell[1]
[1]Robert Morris University, Moon Township, PA

P-Th-85
Open Vs. Closed Loop EEG-Based Control Using Binaural Stimulation
C. Beauchene[1] and A. Leonessa[1]
[1]Virginia Tech, Blacksburg, VA

P-Th-86
Peripheral Sensory Feedback to Improve Gait with a Feline Hindlimb Prosthesis
H. Park[1], B. Prilutsky[1], and S. DeWeerth[1]
[1]Georgia Institute of Technology, Atlanta, GA

See page 92 for Poster floor plan

P-Th-87
Stability and Sub-chronic Biocompatibility of Carbon Nanotube Fiber Microelectrodes
F. Vitale[1], S. Summerson[1], B. Aazhang[1], C. Kemere[1], and M. Pasquali[1]
[1]Rice University, Houston, TX

P-Th-88
neuroPG: Open Source Software For Optical Pattern Generation And Data Acquisition
B. Avants[1], D. Murphy[1], J. Robinson[1], and J. Dapello[2]
[1]Rice University, Houston, TX, [2]Hampshire College, Amherst, MA

P-Th-89
A Study on NMDA Dose-Response Effect on Chick Forebrain Neuron Culture on an MEA
X. Yang[1], S. Kuang[1], and B. Gao[1]
[1]Clemson University, Clemson, SC

P-Th-90
Development of Electrical Switch System for Desynchronizing Abnormal Neural Activity
D. Kim[1], H. Jung[1], and Y. Nam[1]
[1]KAIST, Daejeon, Korea, Republic of

P-Th-91
Novel Micropatterns on a Microelectrode Array Using Agarose Hydrogel for Neural Network Design
N. Hong[1], S. Joo[1], and Y. Nam[1]
[1]KAIST, Daejeon, Korea, Republic of

P-Th-92
Fabrication and Evaluation of Brain Drug Delivery Microdevices
J. Sy[1], K. Spencer[1], R. Langer[1], and M. Cima[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

P-Th-93
Reinforcement of Platinum Black Structure Through Polydopamine Incorporation
R. Kim[1] and Y. Nam[1]
[1]KAIST, Daejeon, Korea, Republic of

P-Th-94
Simply Fabricated Protruding Microelectrode Array using Liquid Crystal Polymer (LCP)
J. Jeong[1], C. Kim[1], S. Ahn[1], G. Kim[1], T. Gwon[1], J. Seo[1], and S. Kim[1]
[1]Seoul National University, Seoul, Korea, Republic of

P-Th-95
Improving the Performance of Intracortical Microelectrodes via Structural Modifications and Biochemical Intervention Strategies
H. Lee[1], J. Gaire[1], M. McDermott[1], J. Zhang[1], K. Otto[1], and K. Otto[1]
[1]Purdue University, West Lafayette, IN

P-Th-97
A Quantitative Tool For Identifying The Epileptogenic Zone Using Network Connectivity Analysis
J. Gurisko[1], R. Bossemeyer[1], S. Rhodes[1], P. Fishback[2], and K. Elisevich[3]
[1]Grand Valley State University, Grand Rapids, MI, [2]Grand Valley State University, Allendale, MI, [3]Spectrum Health System, Grand Rapids, MI

P-Th-98
Nonlinear Identification of Functional Spike-Timing-Dependent Plasticity from Simulated Spiking Activity
B. Robinson[1], D. Song[1], and T. Berger[1]
[1]University of Southern California, Los Angeles, CA

P-Th-99
Understanding Synchrony in Networks of Neurons that are Noise-Dominated
J. Bauer[1], F. Fernandez[1], and J. White[1]
[1]University of Utah, Salt Lake City, UT

P-Th-100
Mental Activation of a Light Bulb Using Inexpensive Neural Interface Technology
J. Leipheimer[1], D. Cesario[1], L. Zearing[1], and B. Campbell[1]
[1]Robert Morris University, Moon Township, PA

P-Th-101
Nonlinear Method to Assess Autonomic Function in Diabetic patients Type 2
A. Kamal[1]
[1]Tennessee Tech University, Cookeville, TN

P-Th-102
Learned Stimulus Response in Experimental and Simulated Neural Networks
K. O'Neill[1], G. Mattson[1], T. Shinbrot[1], and B. Firestein[1]
[1]Rutgers University, Piscataway, NJ

P-Th-103
Modelling Gait Syndrome in Huntington's disease: the Genetic Algorithm Approach
O. Ajibola[1], F. Ogunwolu[1], O. Ibidapo-Obe[1], V. Olunloyo[1], and A. Osuntoki[1]
[1]University of Lagos, Lagos, Nigeria

P-Th-104
Effect Of Transcranial Direct Current Stimulation On Behavior Impairments Following Neonatal HIE Stroke
C. Anderson[1], T. DeMarse[1], P. Carney[1], M. Weiss[1], and M. Douglas-Escobar[1]
[1]University of Florida, Gainesville, FL

P-Th-105
Novel Supination Assessment Task In A Rat Model Of Ischemic Stroke
E. Meyers[1], A. Sindhurakar[2], S. Hays[1], A. Sloan[1], M. Kilgard[1], J. Carmel[2], and R. Rennaker[1]
[1]University of Texas at Dallas, Richardson, TX, [2]Burke-Cornell Medical Research Institute, White Plains, NY

P-Th-106
EMG Measurement of Middle Ear Muscle Reflex in Chinchillas
Z. Yokell[1], D. Nakmali[1], S. Jiang[1], X. Guan[1], and R. Gan[1]
[1]University of Oklahoma, Norman, OK

P-Th-107
Characterization Of Neuropathic Pain In Amputation Neuroma Model
R. Granja-Vazquez[1], B. Johnston[1], M. Le[2], S. Trinh[2], and M. Romero-Ortega[1]
[1]UT Arlington & UT Southwestern Medical Center, Arlington, TX, [2]UT Arlington, Arlington, TX

P-Th-108
A Novel Substrate for *In Vitro* Optogenetics Experiments
A. Hammack[1], A. Avendano-Bolivar[1], H. Jia[1], and B. Gnade[1]
[1]University of Texas at Dallas, Richardson, TX

P-Th-109
Electrostimulation with Subnanosecond Pulses
S. Xiao[1], A. Pakhomov[1], I. Semenov[1], D. Kang [1], S. Polisetty[1], and K. Schoenbach[1]
[1]Frank Reidy Research Center for Bioelectrics, Old Dominion University, Norfolk, VA

P-Th-110
Development Of An Implantable System For Controlling Rat Eye Pressure
S. Bello[1], C. Passaglia[1], X. Tang[1], and S. Malavade[1]
[1]University of South Florida, Tampa, FL

P-Th-111
Transcranial Direct Current Stimulation to Enhance Motor Learning in Healthy Subjects
P. Oldani[1], C. Hogan[1], S. Sharma[1], S. Michalovic[1], and R. Ohrbach[1]
[1]University at Buffalo, Buffalo, NY

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Th-112
Low Stress Sleep Deprivation Using Vibration Table Method
F. Decuir[1]
[1]*Louisiana Tech University, Ruston, LA*

P-Th-113
High-throughput Mapping of Brain-wide Activities In Awake and Drug-responsive Vertebrates
X. Lin[1], S. Wang[1], X. Yu[1], and P. Shi[1]
[1]*City University of Hong Kong, Kowloon, Hong Kong*

Track: New Frontiers and Special Topics, Translational Biomedical Engineering

Global Health

Chairs: TBD

P-Th-501
Normalizing Smart Phone Detection of Flourescence for Global Health
V. Barker[1], M. Lipowicz[1], C. Smith[1], A. Moskowitz[1], C. Van Bussum[1], and A. Garcia[1]
[1]*Arizona State University, Tempe, AZ*

P-Th-502
Assessing the Feasibility of Local Production of Medical Devices in Sub-Saharan Africa
J. Abbas[1], M. Poluta[2], A. Sabet Sarvestani[3], and A. Velazquez-Berumen[4]
[1]*Arizona State Unviersity, Tempe, AZ,* [2]*University of Cape Town, Rondebosch, South Africa,* [3]*University of Michigan, Ann Arbor, MI,* [4]*World Health Organization, Geneve, Switzerland*

P-Th-503
Defining Head-Tilt Position for Neonatal and Infant Resuscitation
M. Hemani[1], B. Gu[1], B. Kim[1], A. Cruz[1], T. Lam[1], and U. Bhalala[2]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Johns Hopkins Hospital, Baltimore, MD*

P-Th-504
Magnetic Bead-Based Enhancement of Rapid Diagnostic Tests
N. Adams[1], K. Davis[1], D. Wright[1], and F. Haselton[1]
[1]*Vanderbilt University, Nashville, TN*

P-Th-505
Paper-Based Diagnostic Accelerates Phase Separation of a Micellar Aqueous Two-Phase System
D. Pereira[1], R. Chiu[1], A. Thach[1], and D. Kamei[1]
[1]*UCLA, Los Angeles, CA*

P-Th-506
Uterine Contraction Monitoring: Improving Labor Management in Low Resource Settings
M. Lamberti[1], M. Babb[1], and J. Hunt[1]
[1]*Johns Hopkins University, Baltimore, MD*

P-Th-507
Understanding the Design Constraints of the Tanzanian Health Care System
J. Kohn[1], M. McCorry[1], and L. Bonassar[1]
[1]*Cornell University, Ithaca, NY*

P-Th-508
Independent Dielectrophoretic Monitoring of Clostridium difficile Strains on a Microfluidic Device
Y-H. Su[1], C. Warren[1], R. Guerrant[1], and N. Swami[1]
[1]*University of Virginia, Charlottesville, VA*

P-Th-509
Polymer-coated Gold Nanoprobes For The Concentration And Detection Of Protein Biomarkers For Resource-poor Settings
R. Chiu[1], P. Nguyen[1], J. Wang[1], E. Jue[1], A. Thach[1], B. Wu[1], and D. Kamei[1]
[1]*University of California, Los Angeles, Los Angeles, CA*

P-Th-510
Three Dimensions of Measurements for Global Health Diagnostics
M. Script[1]
[1]*Inspire Living, Inc., Fairfax Station, VA*

P-Th-511
3D Printed Fluorometer For Global Health
M. Lipowicz[1] and A. Garcia[1]
[1]*Arizona State University, Tempe, AZ*

P-Th-512
Paper-based Diagnostic Devices for Measuring the Level of Organophosphate Poisoning in Human Serum of Patients
K-H. Chen[1], S-T. Fan[1], T-H. Yen[2], Y-F. Huang[1], and C-M. Cheng[1]
[1]*National Tsing Hua University, Hsinchu, Taiwan,* [2]*Chang Gung University and School of Medicine, Taoyuan, Taiwan*

POSTER SESSION **Th**

Track: New Frontiers and Special Topics, Biomaterials

Smart Materials/Emerging Tech

Chairs: James Abbas, Anand Ramasubramanian

P-Th-513
MG63 Morphology and Behavior on Shape-Memory Polymer for Osteoblast Differentiation
E. Hewett[1], K. Smith[2], K. Gall[1], Z. Schwartz[3,4], and B. Boyan[1,3]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*MedShape Solutions, Inc., Atlanta, GA,* [3]*Virginia Commonwealth University, Richmond, VA,* [4]*University of Texas Health Science Center, San Antonio, TX*

P-Th-514
Engineering *in Vitro* Models to Elucidate the Effect of Microcavitation in Astrocytes
S. Sun[1], D. Kang[2], S. Xiao[2], and M. Cho[1]
[1]*University of Illinois at Chicago, Chicago, IL,* [2]*Old Dominion University, Norfolk, VA*

P-Th-515
A Compact Acoustic Tweezers System for Cell Trapping and In Vivo Applications
Y. Li[1], K. Lee[1], B. Zhu[2], Y. Li[1], and K. Shung[1]
[1]*NIH Ultrasonic Transducer Resource Center and Department of Biomedical Engineering, University of Southern California, Los Angeles, CA,* [2]*School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China, People's Republic of*

P-Th-516
A Novel and Highly Efficient Method for Intracellular Delivery and Accumulation of Trehalose
A. Abazari[1], L. Meimetis[1], D. Moore[2], S. Hand[2], R. Weissleder[1], and M. Toner[1]
[1]*Massachusetts General Hospital - Harvard Medical School, Boston, MA,* [2]*Louisiana State University, Baton Rouge, LA*

P-Th-517
nBioChip (nano-Biofilm Chip) - A Platform for Ultra-high-throughput Drug Discovery of Antimicrobial Drugs Against Polymicrobial Biofilms
A. Srinivasan[1,2], K. Leung[3], J. Lopez-Ribot[1,2], and A. Ramasubramanian[1,2]
[1]*The University of Texas at San Antonio, San Antonio, TX,* [2]*South Texas Center for Emerging Infectious Diseases, San Antonio, TX,* [3]*US Army Institute of Surgical Research, FortSam Houston, TX*

P-Th-518
CFD-Guided Experimental Investigation of Corneal Biomechanics in Microgravity
D. Sathyanarayan[1], N. Do[2], G. Girish[2], J. Grewal[2], R. Kowalchuk[1], N. Quintero[2], G. Truskey[1], S. Gangadharan[2], B. Dikici[2], and E. Divo[2]
[1]*Duke University, Durham, NC,* [2]*Embry-Riddle Aeronautical University, Daytona Beach, FL*

See page 92 for Poster floor plan

P-Th-519
The Role of Skin Dendritic Cells in Nanoparticle Transport in SKH-1 Hairless Mice
S. JATANA[1] AND L. DELOUISE[1]
[1]University of Rochester, Rochester, NY

P-Th-520
Lignocellulosic-based Analytical Devices
C-M. KUAN [1] AND C-M. CHENG[1]
[1]NanoEngineering and MicroSystems, Hsinchu, Taiwan

P-Th-521
Neurostimulation of the Cholinergic Anti-Inflammatory Pathway Reduces Endoscopy Score in Rat Colitis
Y. LEVINE[1], K. BLACK[1,2], AND M. FALTYS[1]
[1]SetPoint Medical Corporation, Valencia, CA, [2]Ra Pharmaceuticals, Cambridge, MA

POSTER SESSION **Th**

P-Th-522
Creating a Geometrically Distinct Human Body FEM Using Radial Basis Function Interpolation
N. VAVALLE[1,2], S. SCHOELL[1,2], A. WEAVER[1,2], J. STITZEL[1,2], AND F. GAYZIK[1,2]
[1]Wake Forest School of Medicine, Winston-Salem, NC, [2]Wake Forest Center for Injury Biomechanics, Winston-Salem, NC

P-Th-523
Biohybrid Soft Robotics Flagellum Enables Free Swimming
B. WILLIAMS[1], J. RAJAGOPALAN[2], AND T. SAIF[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Arizona State University, Tempe, AZ

P-Th-524
Coordination of Ventilatory Mechanisms in the Madagascar Hissing Cockroach and Potential Bio-Inspired Microfluidic Systems
J. GARRETT[1] AND J. SOCHA[1]
[1]Virginia Tech, Blacksburg, VA

P-Th-525
What Happens When Pupae Pump? Internal Effects of Abdominal Pumping in the Beetle Zophobas morio
M. KENNY[1], H. PENDAR[1], AND J. SOCHA[1]
[1]Virginia Tech, Blacksburg, VA

P-Th-526
Development and Characterization of Antibodies to Nanoparticles to Enhance their Detection in Human Skin
S. RAVICHANDRAN[1], M. SULLIVAN[1], AND L. DELOUISE[1]
[1]University of Rochester, Rochester, NY

P-Th-527
Little Joey - Development of a Personalized Toy to Improve Cognitive, Sensory, and Motor Skills in a Neurologically Disabled Child
N. AHMED[1], J. SELLMAN[1], L. BRAY[1], AND N. PEIXOTO[1]
[1]George Mason University, Fairfax, VA

P-Th-528
3D Printed Glass for the Correction of Eye Defects
S. PERUMAL[1]
[1]University of South Florida, tampa, FL

P-Th-529
A Battery-less Pressure Driven Smart Pill for Oral to Systemic Protein Delivery
K. ARAN[1], J. PAREDES[1], K. LEE[1], A. ACHARYA[1], D. LIEPMANN[1], AND N. MURTHY[1]
[1]University of California, Berkeley, CA

Track: Orthopaedic and Rehabilitation Engineering, Biomechanics

Biomechanics and Rehabilitation of the Upper Limb

Chairs: Wendy Murray, Katherine Saul

P-Th-156
Gestural Navigation of Virtual Exercise Environments for People with Mobility Impairments
S. POOL[1], L. MALONE[2], J. RIMMER[1], AND A. EBERHARDT[1]
[1]University of Alabama at Birmingham, Birmingham, AL, [2]Lakeshore Foundation, Birmingham, AL

P-Th-157
Robotics Based Human Body Model for Improvement of Upper Extremity Prostheses
D. MENYCHTAS[1], D. LURA[2], S. CAREY[1], AND R. DUBEY[1]
[1]University of South Florida, Tampa, FL, [2]Florida Gulf Coast University, Fort Mayers, FL

P-Th-158
Development of Prosthetic Fingertips for Improved Touch Screen Interactions
J. HEASLEY[1], A. AZANAW[1], K. SLIS[1], D. KISKA[1], AND B. CAMPBELL[1]
[1]Robert Morris University, Moon, PA

P-Th-159
Functional Task Analysis for Human-Machine Performance Limits
R. PATTERSON[1], J. STANFORD[2], C. YOUNG[1], D. POPA[2], AND N. BUGNARIU[1]
[1]University of North Texas Health Science Center, Fort Worth, TX, [2]University of Texas at Arlington, Arlington, TX

P-Th-160
Mathematical simulation of multi-insertion site tendon transfer surgery for lateral pinch throughout thumb flexion-extension plane
S. O'LEARY[1], N. SALYAPONGSE[1], D. THELEN[1], AND J. TOWLES[1]
[1]University of Wisconsin-Madison, Madison, WI

P-Th-161
Target Postures for Maximum Voluntary Contraction of Extrinsic Thumb Muscles During Intramuscular EMG
M. DE BRUIN[1,2], S. WOHLMAN[2], AND W. MURRAY[1,2]
[1]Rehabilitation Institute of Chicago, Chicago, IL, [2]Northwestern University, Chicago, IL

P-Th-162
Elbow Stiffness at High Torque Levels
D. LUDVIG[1,2], H. LEE[1], AND E. PERREAULT[1,2]
[1]Rehabilitation Institute of Chicago, Chicago, IL, [2]Northwestern University, Chicago, IL

P-Th-163
Biomechanical Simulation Of Pinch Forces From Experimental Muscle Activations
S. WOHLMAN[1] AND W. MURRAY[1]
[1]Northwestern University, Chicago, IL

P-Th-164
Design of a 3-D Printed Exoskeleton Glove to Passively Move a Paralyzed Hand
E. AUSTIN, JR.[1], Y-H. SHIN[1], W. WANG[1], AND J-W. CHOI[1]
[1]Louisiana State University, Baton Rouge, LA

P-Th-165
Design and Development of a 3D Printed Dexterous Prosthetic Hand
P. MURUGESU[1] AND Y. M. AL-SMADI[1]
[1]Texas A&M University Kingsville, TX

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Th-166
Modeling Influence of Whole Body Vibration on Upper Extremity Neuromuscular Performance During Space Vehicle Launch
T. Deleon-Nwaha[1] and D. Peterson[1]
[1]*University of Connecticut Health Center, Farmington, CT*

P-Th-167
Preventing Hand-Arm Vibration Injuries by Selecting Gloves Based on Tool-Specific Vibrations
T. Asaki[1], S. Kudernatsch[1], and D. Peterson[1]
[1]*University of Connecticut Health Center, Farmington, CT*

Track: Orthopaedic and Rehabilitation Engineering, Cellular and Molecular Bioengineering

Mechanobiology, Tissue Engineering and Regenerative Medicine, Musculoskeletal Pain

Chairs: Lijie Grace Zhang, Kyle Allen

P-Th-125
Tunable Low Intensity Pulsed Ultrasound for Improving Stem Cell Functions in 3D Printed Scaffolds
C. O'Brien[1], M. Aliabouzar[1], K. Sarkar[1], and L. Zhang[1]
[1]*The George Washington University, Washington, DC*

P-Th-126
Comparing Cyclic Tensile Properties of Native and Decellularized Porcine Knee Meniscus
E. Lakes[1], M. Diaz[1], P. McFetridge[1], and K. Allen[1]
[1]*University of Florida, Gainesville, FL*

P-Th-127
Multi-approach Assessments of BMSCs Transplantation After Nerve Crush Injury
S. Liu[1], H. Cai[1], A. Hoke[1], and X. Jia[1,2]
[1]*Johns Hopkins University School of Medicine, Baltimore, MD,* [2]*University of Maryland School of Medicine, Baltimore, MD*

P-Th-128
Anisotropy Promotes Myogenic Differentiation Via Integrins
M. McClure[1,2], R. Olivares-Navarrete[2], Z. Schwartz[2], and B. Boyan[2]
[1]*Hunter Holmes Veterans Affairs Medical Center, Richmond, VA,* [2]*Virginia Commonwealth University, Richmond, VA*

P-Th-129
Does Collagen Crosslinking in Ageing and Diabetes Modulate Overload Damage to Tendon Collagen?
A. Brown[1], S. Veres[1,2], and J. Lee[1]
[1]*Dalhousie University, Halifax, NS, Canada,* [2]*Saint Mary's University, Halifax, NS, Canada*

P-Th-130
Use of a Novel Behavioral Device to Measure Orofacial Mechanical Allodynia in Rats
E. Rohrs[1], K. Kapernaros[1], A. Jenkins[1], J. Neubert[1], and K. Allen[1]
[1]*University of Florida, Gainesville, FL*

P-Th-131
Low-intensity Vibration Amplifies Beneficial Effects of Sleeve Gastrectomy on Bone Marrow Niche
A. Yang[1], G. Pagnotti[1], V. Patel[1], M. Altieri[2], A. Pryor[2], D. Telem[2], M. Chan[1], and C. Rubin[1]
[1]*Stony Brook University, Stony Brook, NY,* [2]*Stony Brook University School of Medicine, Stony Brook, NY*

P-Th-132
The Effect of IL-1Beta on Axonal Growth Potential Induced by Interplay Between Annulus Fibrosus and DRG Neurons
H. Kim[1], T. Caspar[1], S. Shah[2], and A. Hsieh[1,3]
[1]*University of Maryland, College Park, MD,* [2]*University of California-San Diego, La Jolla, CA,* [3]*University of Maryland, Baltimore, MD*

P-Th-133
Effects of Membrane Cholesterol Enrichment on Osteoblast Responsiveness to Hydrodynamic Pressures
K. Lough[1] and H. Shin[1]
[1]*University of Kentucky, Lexington, KY*

P-Th-134
Mechanical Stimulation of a Healing Fracture in Mice Using An External Fixator
J. Currey[1], M. Mancuso[1], and S. Kalikoff[1]
[1]*Union College, Schenectady, NY*

POSTER SESSION **Th**

Track: Orthopaedic and Rehabilitation Engineering, Biomechanics

Musculoskeletal Imaging

Chairs: Wendy Murray, Katherine Saul

P-Th-617
Regional Characterization of Effective Joint Space & Hip-joint Capsule Volume from Magnetic Resonance Imaging
P. Menon[1], P. Albal[1], B. Mosier[2], L. Maynard[2], and J. Christoforetti[2]
[1]*Sun Yat-sen University - Carnegie Mellon University Joint Institute of Engineering, Pittsburgh, PA,* [2]*Allegheny Health Network, Pittsburgh, PA*

P-Th-618
The Effect of Skin Motion on Dynamic Musculoskeletal Ultrasound
D. Lipps[1], S. Lee[1], B. Wang[1], and E. Perreault[1]
[1]*Northwestern University, Chicago, IL*

P-Th-619
Contrast Enhanced Computed Tomographic Analysis of the Biochemical and Biomechanical Properties of Human Articular Cartilage: Cationic vs. Anionic Contrast
R. Stewart[1,2], B. Cooper[1], B. Lakin[1,2], J. Freedman[1,2], M. Grinstaff[1], and B. Snyder[2]
[1]*Boston University, Boston, MA,* [2]*Beth Israel Deaconess Medical Center, Boston, MA*

P-Th-620
Accuracy and Feasibility of Dual Fluoroscopy: *In-Vivo* Kinematics of Tibiotalar and Subtalar Joints
K. Roach[1], B. Wang[1], A. Kapron[1], N. Fiorentino[1], M. Singer[1], C. Saltzman[1], and A. Anderson[1]
[1]*University of Utah, Salt Lake City, UT*

Track: Orthopaedic and Rehabilitation Engineering, Device Technologies and Biomedical Robotics

Technology, Computer Interfaces and Wearable Devices

Chairs: James Rains, Yahia Al-Smadi

P-Th-114
Automatic Parameter Generation for Therapeutic Games Using Patient Assessment and Performance Data
N. Sunny[1] and J. Farris[1]
[1]*Grand Valley State University, Grand Rapids, MI*

See page 92 for Poster floor plan

P-Th-115
EOG Based Human-Computer Interface for the Operation of a Text-To-Speech App on Android Devices
J. Lara[1], V. Contreras[1], A. Heredia[2], and R. Ambrosio[1]
[1]Universidad Autónoma de Ciudad Juárez (UACJ), IIT, Ciudad Juárez, Mexico, [2]Universidad Popular Autónoma del Estado de Puebla (UPAEP), Puebla, Mexico

P-Th-116
Utilization of Video Recording to Analyze Cognitive and Physical Facets of Children with Autism
W. Goodwin[1], J. Thakore[1], J. McMahon[1], A. N'goan[1], and D. Shahmirzadi[1]
[1]Stevens Institute of Technology, Hoboken, NJ

P-Th-117
A Wearable Navigator For The Visually Impaired And Blind Population
H. He[1] and J. Tan[1]
[1]The University of Tennessee, Knoxville, TN

P-Th-118
Novel Eye-Tracking System for Control of Motorized Wheelchairs
J. Ward[1] and M. McCarthy[2]
[1]Tulane University, Lake Charles, LA, [2]Tulane University, Commerce Township, LA

P-Th-119
Blink Controlled Brain Computer Interface Using EEG
O. Yetkin[1], C. Mont[1], K. Wallace[1], and M. Romero[1]
[1]University of Texas at Arlington, Arlington, TX

P-Th-120
Motor Rehabilitation Care for Children with Cerebral Palsy Using Telemedicine.
P. Rodriguez[1], E. Hernandez[1], S. Montes[1], and K. Bustamante[1]
[1]ITESM Chihuahua, Chihuahua, Mexico

P-Th-121
Translational Research in the Development of Gait Rehabilitation Trainer
M. Lee[1], W. Song[1], S. Sagong[1], J. Seo[1], and S. Eun[1]
[1]National Rehabilitation Center, Seoul, Korea, Republic of

P-Th-122
Novel Design of an Anterior Cruciate Ligament (ACL) Injury Prevention Brace
D. Greenshields[1], R. Porter[1], J. Killewald[1], and E. Meyer[1]
[1]Lawrence Technological University, Southfield, MI

P-Th-123
Variable Resistance Rehabilitative Knee Brace
S. Dreyer[1], D. O'Neill[1], U. Acar[1], K. Izak[1], A. Patel[1], and S. Piller[1]
[1]University of Illinois at Chicago, Chicago, IL

P-Th-124
MEMS Flexible Strain Sensors for Arthritis Diagnosis
K. Shinde[1], J. Julius[1], S. Rao[1], and J-C. Chiao[1]
[1]UT Arlington, Arlington, TX

Track: Tissue Engineering

Hepatic, Pancreatic, Digestive and Renal Tissue Engineering

Chairs: Gregory Underhill, Srivatsan Kidambi

P-Th-391
Evaluation of Oxygen Demand in Three Dimensional Culture of Pancreatic beta-cells
J. McReynolds[1], X. Li[2], J. Guan[2], and S. Jin[1,3]
[1]University of Arkansas, Fayetteville, AR, [2]The Ohio State University, Columbus, OH, [3]Current: SUNY at Binghamton, Binghamton, NY

P-Th-392
Organotypic 3D Liver Models for Investigating Drug Toxicity
S. Orbach[1], M. Cassin[1], and P. Rajagopalan[1]
[1]Virginia Tech, Blacksburg, VA

P-Th-393
Designing an Inflamed and Fibrotic Microenvironment to Investigate Changes in Liver Sinusoidal Endothelial Function
A. Ford[1] and P. Rajagopalan[1]
[1]Virginia Tech, Blacksburg, VA

P-Th-394
Effect of Decellularized Liver Matrix Proteins on Porcine Hepatocytes *in Vitro*
R. Coronado[1,2,3], J. Ong[1], R. Christy[3], W. Washburn[2], and G. Halff[2]
[1]University of Texas at San Antonio, San Antonio, TX, [2]University of Texas Health Science Center at San Antonio, San Antonio, TX, [3]US Army Institute of Surgical Research, JBSA Fort Sam Houston, TX

P-Th-395
Novel Integrated *In Vitro* Gastrointestinal and Hepatic Models for Investigating Drug Toxicity
R. Less[1] and P. Rajagopalan[1]
[1]Virginia Tech, Blacksburg, VA

P-Th-396
Analysis Of Perfusion-Enhanced Diffusion, Shear Damage And Metabolic Function In Spheroid-Seeded And Suspension-Seeded Hepatocyte Scaffolds
D. Alzebdeh[1] and H. Matthew[1]
[1]Wayne State University, Detroit, MI

P-Th-397
Decellularized Liver Matrix Coating and Hydrogel for Culture and Transplantation of Hepatocytes
J. Lee[1], K. Lee[1], J. Shin[1], and S-W. Cho[1]
[1]Yonsei University, Seoul, Korea, Republic of

P-Th-398
Is Hanging Monoculture of Primary Hepatocytes Better?
Y. Kang[1], J. Lamontagne[1], Y. Cai[1], M. Bouchard[1], and H. Noh[1]
[1]Drexel University, Philadelphia, PA

Track: Tissue Engineering

Neural, Epithelial and Adipose Tissue Engineering

Chairs: Sarah Stabenfeldt, John Frampton

P-Th-401
Neurotrophic Factor Gradient Delivery to Direct Schwann Cell Migration
K. Krick[1], Y-J. Huang[2], R. Martin[2], P. Searson[2], A. Khademhosseini[3], A. Hoke[1], and H-Q. Mao[2]
[1]Johns Hopkins School of Medicine, Baltimore, MD, [2]Johns Hopkins University, Baltimore, MD, [3]Harvard-MIT, Cambridge, MA

P-Th-402
Inducing Inner Ear Hair Cell Development by Seeding Reprogrammed Human Wharton's Jelly Cells on Decellularized Cochlea

P-Th-403
FGF-Immobilized Multifunctional Microspheres for the Delivery of Neural Stem Cells
N. Skop[1], F. Calderona[1], C. Gandhi[1], S. Levison[1], and C. Cho[2]
[1]Rutgers University, Newark, NJ, [2]New Jersey Institute of Technology, Newark, NJ

P-Th-404
Development of an *In Vitro* 3D Neuroinflammation Model
H. Cho[1] and Y. Lee[1]
[1]Virginia Tech, Blacksburg, VA

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Th-405
Nanochannel-Based Electrotransfection of Skin Cells In Situ
D. Gallego-Perez[1], S. Ghatak[1], D. Pal[1], N. Ahmed[1], V. Malkoc[1], X. Zhao[1], J. Ma[1], X. Wang[1], S. Gnyawali[1], S. Khanna[1], C. Rink[1], J. Otero[1], L. Lee[1], and C. Sen[1]
[1]*The Ohio State University, Columbus, OH*

P-Th-406
Coordinated Cellular Interplay in 3D Reorganization of Human Parotid Salivary Gland Cells
D. Wu[1], S. Pradhan-Bhatt[2], D. Harrington[1], R. Witt[3], and M. Farach-Carson[1]
[1]*Rice University, Houston, TX,* [2]*University of Delaware, Newark, DE,* [3]*Thomas Jefferson University, Philadelphia, PA*

P-Th-407
The Effect of Enzymatic Pretreatment on Adipose Tissue Graft Viability
Y. Cao[1], S. Seaman[1], S. Tannan[1], K. Lin[1], and S. Peirce[1]
[1]*University of Virginia, Charlottesville, VA*

Track: Tissue Engineering, Orthopaedic and Rehabilitation Engineering

Skeletomuscular Tissue Engineering

Chairs: Sangamesh Kumbar, John Fisher

P-Th-135
Characterization f Polysaccharide Based Micro-Nano Structured Scaffolds for Osteoinductivity
A. Aravamudhan[1,2], D. Ramos[1], M. Harmon[1], and S. Kumbar[1]
[1]*Institute For Regenerative Engineering, Farmington, CT,* [2]*University of Connecticut, Farmington- Storrs, CT*

P-Th-136
Assessing the Osteogenic Differentiation of Human Mesenchymal Stem Cells Co-Cultured with Human Vein Endothelial Cells on a Peptide Amphiphile Nanomatrix
D. Patel [1], L. Deng[1], J. Vines[1], and H-W. Jun[1]
[1]*University of Alabama at Birmingham, Birmingham, AL*

P-Th-137
The Development and Characterization of a Pre-Vascularized Biomimetic Cortical Bone Scaffold
B. Taylor[1] and J. Freeman[1]
[1]*Rutgers, the State University of New Jersey, Piscataway, NJ*

P-Th-138
Dual Differentiation of Mesenchymal Stem Cells Can Be Obtained by Scaffold Characteristics
H. Park[1], S. Park[2], Y. Kang[2], J. Shin[2], S. Gu[1], Y-R. Wu[2], and J-W. Shin[1,2,3]
[1]*Department of Helth Science and Techonology, Inje University, Gimhae-si, Korea, Republic of,* [2]*Department of Biomedical Engineering, Inje University, Gimhae-si, Korea, Republic of,* [3]*Cardiovascular and Metabolic Disease Center/Institute of Aged Life Redesign/UHRC, Gimhae-si, Korea, Republic of*

P-Th-139
Chondroinductive Microsphere Based Scaffolds With Decellularized Cartilage For Cartilage Tissue Engineering
A. Sutherland[1], V. Gupta[1], and M. Detamore[1]
[1]*University of Kansas, Lawrence, KS*

P-Th-140
Topographical Cues on Biomimetic Electrospun Scaffolds for Bone Tissue Engineering
S. Cameron[1], S. Ayad[1], B. Vendra[1], D. Mason[1], I. Khatri[1], and R. Olivares-Navarrete[1]
[1]*Virginia Commonwealth University, Richmond, VA*

P-Th-141
MgO Nanoparticles Enhance Osteoblast Functions on Hydroxyapatite Nanocomposites for Antibacterial Orthopedic Tissue Engineering Applications
D. Hickey[1], B. Ercan[1], L. Sun[1], and T. Webster[1]
[1]*Northeastern University, Boston, MA*

P-Th-142
Tissue Engineered Cartilage Interaction in Healthy and Diseased Environment Using Hydroxyapatite Nanoparticles
R. Dua[1], C. Siyambalapitiya[1], A. Agarwal[1], and S. Ramaswamy[1]
[1]*Florida International University, Miami, FL*

P-Th-143
Utilizing Engineered Microporosity to Support Recellularization and Prepare a Porcine Derived Temporomandibular Joint Disc Scaffold for Tissue Engineering
A. Matuska[1] and P. McFetridge[1]
[1]*University of Florida, Gainesville, FL*

P-Th-144
In Vitro Evaluation of the Endochondral Bone Formation on PCL Ceramic Composites
S. Schussler[1]
[1]*New Jersey Institute of Technology, Newark, NJ*

P-Th-145
Enhancing Bone Regeneration with Composite Microspheres that Reflect the Osteogenic Niche
C. Haase[1], C. Dodson[1], C. Gregory[2], and R. Kaunas[1]
[1]*Texas A&M University, College Station, TX,* [2]*Institute for Regenerative Medicine Texas A&M Health Science Center, Temple, TX*

P-Th-146
Modeling the Effects of Matrix Stiffness on Cartilage Formation in 3D Hydrogels
D. Zhu[1], A. Buganza Tepole[1], E. Kuhl[1], and F. Yang[1]
[1]*Stanford. University, Stanford, CA*

P-Th-147
Effects of Proteoglycan Removal on Decellularization of Articular Cartilage
C. Bautista[1], H. Park[1], and B. Bilgen[2,3]
[1]*Brown University, Providence, RI,* [2]*Providence VA Medical Center, Providence, RI,* [3]*The Warren Alpert Medical School of Brown University & Rhode Island Hospital, Providence, RI*

P-Th-148
Vascularized Bone Grafts: Scaffold Design and Characterization
C. Piard[1] and J. Fisher[1]
[1]*University of Maryland, College Park, MD*

P-Th-149
Patterns of IHP Can Effectively Control Osteogenesis of hMSCs Rather than Osteogenic Media
Y. Kang[1], S. Park[1], J. Shin[1], S. Gu[2], H. Park[2], H. Ban[1], and J-W. Shin[1,2,3]
[1]*Department of Biomedical Engineering, Inje University, Gimhae-si, Korea, Republic of,* [2]*Department of Health Science and Technology, Inje University, Gimhae-si, Korea, Republic of,* [3]*Cardiovascular and Metabolic Disease Center /Institute of Aged Life Redesign/UHRC, Inje University, Gimhae-si, Korea, Republic of*

P-Th-150
Engineered Bone Tissue Through Short-term Administration of an Osteogenic Small Molecule
E. Carbone[1], H. Kan[1], C. Laurencin[1], and W. Lo[1]
[1]*UConn Health Center, Farmington, CT*

P-Th-151
Tendon Differentiation Using Human Recombinant Insulin
D. Ramos[1,2], C. Laurencin[1,2], and S. Kumbar[1,2]
[1]*Institute For Regenerative Engineering, Farmington, CT,* [2]*University of Connecticut, Farmington-Storrs, CT*

P-Th-152
Multilayered Electrospun Silk Scaffolds Capable Of Eluting Platelet-Rich Plasma For Ligament Engineering
P. Somasundaram[1] and S. Sell[1]
[1]*Saint Louis University, St. Louis, MO*

P-Th-153
The Fabrication of Dense, Porous and Aligned Collagen Scaffolds using Novel 2D Plastic Compression and Porogen Based Techniques
S. Reese[1], J. Zitnay[2], D. Rojas-Leon[1], and J. Weiss[1]
[1]*University of Utah, Salt Lake City, UT,* [2]*University of Minnesota, Minneapolis, MN*

POSTER SESSION **Th**

See page 92 for Poster floor plan

P-Th-154
Human Skeletal Muscle Bundle Model and Perfusion System
B. Davis[1], J. Santoso[1], and G. Truskey[1]
[1]*Duke University, Durham, NC*

P-Th-155
Development of Spatially Patterned Extracellular Matrix Cues to Direct the Differentiation and Alignment of Human Skeletal Muscle Tissue
R. Duffy[1], L. Friedman[1], and A. Feinberg[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

Track: Tissue Engineering

Tissue Engineering of Models for Study of Disease and Drug Discovery

POSTER SESSION **Th**

Chairs: Agneta Simoinescu, Scott Verbridge

P-Th-370
Analysis of Non-Enzymatic Collagen Crosslinks in Engineered Cell-Secreted Extracellular Matrices
D. Mitra[1], H. Fatakdawala[1], L. Marcu[1], and J. Leach[1]
[1]*University of California, Davis, CA*

P-Th-371
Tissue Engineering an *In Vitro* Model of Fibrosis in Skeletal Muscle
A. Marinkovic[1,2], C. Neville[1], O. Mwizerwa[1], K. Vivanco[3], I. Pomerantseva[1], J. Kohn[2], J. Vacanti[2], and C. Sundback[1]
[1]*Massachusetts General Hospital, Boston, MA,* [2]*New Jersey Center for Biomaterials, Piscataway, NJ,* [3]*Massachusetts Institute of Technology, Cambridge, MA*

P-Th-372
Improving Anastomosis Between Microfluidic Channels And Perfused Capillary Networks In Cultured 3D Human Microtissues.
D. Phan[1,2], X. Wang[1,2], A. Lee[1], S. George[1,2], and C. Hughes[1,2]
[1]*University of California, Irvine, Irvine, CA,* [2]*The Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA*

P-Th-373
The Inhibitory Effects of Fibrosis on Muscle Regeneration in a Self-Assembled Tissue Engineered Model of Skeletal Muscle
J. Krieger[1], J. Rankenberg[1], B-W. Park[2], J. Forte[2], M. Rolle[2], R. Page[2], and C. Malcuit[1]
[1]*Kent State University, Kent, OH,* [2]*Worcester Polytechnic Institute, Worcester, MA*

P-Th-374
Investigating the Influence of Intercellular Signaling on Angiogenesis
M. Gadde[1], M. Rylander[1], and
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

P-Th-375
Controlling Ferrofluid Permeability Across the *in vitro* Blood-Brain Barrier Model via Different Coatings
D. Shi[1], L. Sun[1], G. Mi[1], S. Bhattacharya[2], S. Nayar[2], and T. Webster[1]
[1]*Northeastern University, Boston, MA,* [2]*CSIR-National Metallurgical Laboratory, Jamshedpur, India*

P-Th-376
Improving Liver Functions of Hepatic Cell Lines *in vitro* by Co-Culture with Stromal Support Cells
K. Ballinger[1], A. Bailey[1], and S. Khetani[1]
[1]*Colorado State University, Fort Collins, CO*

P-Th-377
Exploring Chronic Drug Dosing in Engineered Human Liver Cultures Using Global Expression Profiling
D. Berger[1], M. McVay[2], and S. Khetani[1]
[1]*Colorado State University, Fort Collins, CO,* [2]*Hepregen Corporation, Medford, MA*

P-Th-378
Long-Term Engineered Cultures of Primary Mouse Hepatocytes for Genotype-Phenotype Studies
B. Ware[1], V. Soldatow[2], D. Berger[1], E. LeCluyse[2], and S. Khetani[1]
[1]*Colorado State University, Fort Collins, CO,* [2]*The Hamner Institutes for Health Sciences, Research Triangle Park, NC*

P-Th-379
Mimicking Chronic Hypo- and Hyper-glycemia in Engineered Cultures of Human Hepatocytes
M. Davidson[1], K. Ballinger [1], and S. Khetani[1]
[1]*Colorado State University, Fort Collins, CO*

P-Th-380
Tissue Engineering Models for the Study of Diabetic Cardiomyopathy
L. McCallum[1], J. Schulte[1], and A. Simionescu[1]
[1]*Clemson University, Clemson, SC*

P-Th-381
Magnetic Nanoshuttle for the Rapid Assembly of Functional Multicellular Cardiac Aggregates
M. Hogan[1], G. Souza[2], and R. Birla[1]
[1]*University of Houston, Houston, TX,* [2]*Nano3D Biosciences, Houston, TX*

P-Th-382
Investigation Of Circadian Rhythms Perturbation by Metabolic Stimulation in Peripheral Tissues through Microfluidic Technology
O. Gagliano[1,2]
[1]*University of Padova, Padova, Italy,* [2]*Venetian Institute of Molecular Medicine, Padova, Italy*

P-Th-383
Development of An Integrated Bronchio-Alveolar Organ Construct for Understanding Pulmonary Drug Toxicity
J-H. Huang[1], P. Nath[1], A. Arefin[2], J. Harris[1], and R. Iyer[1]
[1]*Los Alamos National Laboratory, Los Alamos, NM,* [2]*University of New Mexico, Albuquerque, NM*

P-Th-384
3D Tumor Microtissue for Drug Discovery
E. Atefi[1], S. Lemmo[1], D. Fyffe[1], and H. Tavana[1]
[1]*The University of Akron, Akron, OH*

P-Th-385
An *in-vitro* Biomimetic, Fluid-Dynamic 3D Model of the Human Intestine for Evaluating Oral Drug Delivery
E. Schlesinger[1], A. Cerchiari[1], J. Kim[1], and T. Desai[2]
[1]*UC Berkeley - UCSF, San Francisco, CA,* [2]*University of California, San Francisco, San Francisco, CA*

P-Th-386
Porous Poly Urethane Microspheres as a 3-D Culture Model for *In Vitro* Drug Screening
J. Menon[1], A. Kuriakose[1], K. Pokhrel[1], A. Sharma[1], Y. Hong[1], and K. Nguyen[1]
[1]*University of Texas at Arlington, University of Southwestern Medical Center at Dallas, Arlington, TX*

P-Th-387
Ex Vivo Tissue Test Systems: Novel Layered Scaffold Design Offers Unique Analysis
S. Rowlinson[1], K. Kwist[1], and K. Burg[1]
[1]*Clemson University, Clemson, SC*

P-Th-388
Acoustic Characterization of a Novel Scaffold-Based System for Investigations on Sonoporation
A. Aleid[1], A. Alassaf [1], O. Wilson, Jr.[1], and V. Frenkel[1]
[1]*The Catholic University of America, Washington, DC*

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

TODAY'S HIGHLIGHT

PLATFORM SESSIONS Fri-1
8:00am - 9:30am
See pages 125-131, HBGCC

EXHIBIT HALL OPEN 9:30am - 5:00pm
WSCC, Exhibit Hall A

POSTER SESSION Fri 9:30am - 5:00pm
See pages 1429-173, WSCC, Exhibit Hall A

Poster Viewing with Authors & Refreshment Break 9:30am - 10:30am

PLENARY SESSION
10:30am - 12:00noon
HBGCC, Lila Cockrell Theatre
NIH NIBIB Lecture
David Kaplan, PhD

WOMEN IN BME Luncheon 12:15pm - 1:30pm
HBGCC, Ballroom A
Additional ticket purchase required

PLATFORM SESSIONS Fri-2 1:45pm - 2:45pm
See pages 132-136, HBGCC

PLATFORM SESSION Fri-3 3:00pm - 4:00pm
See pages 137-140, HBGCC

Poster Viewing with Authors & Refreshment Break 4:00pm - 5:00pm
HGBCC, Exhibit Hall A

PLENARY SESSION
5:15pm - 6:15pm
HBGCC, Lila Cockrell Theatre
Stephen Oesterle, MD

BMES BASH 7:00pm - 10:00pm
Buckhorn Saloon
& Texas Ranger Museum

FRIDAY, October 24, 2014

8:00 AM - 9:30 AM
PLATFORM SESSIONS – FRI - 1

Track: Tissue Engineering, Neural Engineering
OP-Fri-1-1 - Room 001A

Neural Tissue Engineering

Chairs: Stuart Tobet, Deanna Thompson

8:00AM
Engineering Personalized Neural Tissue by Combining Induced Pluripotent Stem Cells with Fibrin Scaffolds
A. Montgomery[1], A. Wong[1], N. Gabers[1], and S. Willerth[1]
[1]University of Victoria, Victoria, BC, Canada

8:30AM
Rapid 3D Assays for Combinatorial Screening of Biomaterials
C. Bertucci[1], S. Ramamoorthy[1], P. Karande[1], and D. Thompson[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

8:45AM
Ocular Tissue Engineering with Fetal Brain Derived Extracellular Matrix Bioscaffolds
C. Medberry[1], V. Reddy[1], A. Faust[1], F. Mehdi[1], and M. Steketee[1]
[1]University of Pittsburgh, Pittsburgh, PA

9:00AM
A 3D Electrospun Fiber and Hydrogel Composite Scaffold for Brain Regeneration
C. Johnson[1], C. Rivet[1], K. Zhou[2], R. Gilbert[1], D. Finkelstein[3], and J. Forsythe[2]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Monash University, Melbourne, Australia, [3]University of Melbourne, Melbourne, Australia

9:15AM
Hydrophilic Surface Modification of Electrospun Fibers for Nerve Guidance
N. Schaub[1], C. Le Beux[2], J. Maio[1], R. Linhardt[1], J. Alauzun[2], D. Laurencin[2], and R. Gilbert[1]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Institut Charles Gerhardt de Montpellier, Montpellier, France

Track: Neural Engineering
OP-Fri-1-2 - Room 001B

CNS injury: SCI, TBI and Concussion

Chairs: Mark Van Dyke, Randolph Ashton

8:00AM
Sustained *In Vivo* Dual Drug Delivery of Anti-Inhibitory Molecules for Spinal Cord Injury Treatment
T. Wilems[1], C. Ingram[1], and S. Sakiyama-Elbert[1]
[1]Washington University in St. Louis, St. Louis, MO

8:15AM
Digitally Controlling the Biomechanics of Fluid Percussion Injury
M. Long[1,2], N. Peloso[1], and B. Pfister[1]
[1]New Jersey Institute of Technology, Newark, NJ, [2]Rutgers Biomedical and Health Sciences, Newark, NJ

8:30AM
Local and Sustained Delivery of BDNF Mediates Spinal Learning after Injury
Z. Khaing[1], J. Park [2], J. Grau[3], K. Lee[3], A. Niemerski[3], and C. Schmidt[2]
[1]University of Florida, Gainesville, FL, [2]University of Florida, Gainesville, GA, [3]Texas A&M, College Station, TX

8:45AM
Local Delivery of Minocycline from Injectable Hydrogel Loaded with Self-Assembled Complexes Effectively Promotes Neuroprotection after Contusive Spinal Cord Injury
Z. Wang[1], K. Wofford[1], Z. Zhang[1], and Y. Zhong[1]
[1]Drexel University, Philadelphia, PA

9:00AM
Evaluation of Nanocarrier Delivery and a Novel Anti-inflammatory Drug for Spinal Cord Injury
T. Saxena[1], K. Loomis[1], B. Pai[1], L. Karumbaiah[1], E. Gaupp[1], K. Patil[1], R. Patkar[1], and R. Bellamkonda[1]
[1]Georgia Institute of Technology, Atlanta, GA

9:15AM
Transient Hypoxia in a Model of Distraction Spinal Cord Injury Results in a Reduction of Ventral Motor Neuron Size
J. Seifert[1,2], J. Bell[1,2], D. Sucato[3], and M. Romero[1,2]
[1]UT Arlington, Arlington, TX, [2]UT Southwestern, Dallas, TX, [3]Texas Scottish Rite Hospital for Children, Dallas, TX

PLATFORM SESSIONS
Fri-1

Track: Biomaterials, Cellular and Molecular Bioengineering
OP-Fri-1-3 - Room 006A
Intelligent/Multifunctional Biomaterials

Chairs: Melissa Grunlan, Craig Duvall

8:00AM
Biomimetic, Monocyte-targeting Supramolecular Micellar Assemblies for Atherosclerosis Theranostics
E. Chung[1], L. Mlinar[2], K. Nord[1], M. Sugimoto[1], E. Wonder[1], C. Zhang[1], C-H. Kuo[1], J. Andrade[1], Y. Fang[1], L. Huang[1], F. Alenghat[1], and M. Tirrell[1]
[1]University of Chicago, Chicago, IL, [2]University of California, Berkeley, Berkeley, CA

8:15AM
Non-Invasive Deep Tissue Imaging of Polymer Degradation Using X-Ray
T. Olsen[1], D. Whitehead[1], B. Van Horn[2], and F. Alexis[1]
[1]Clemson University, Clemson, SC, [2]College of Charleston, Charleston, SC

8:30AM
Molecularly Responsive Biomaterials Based on DNA-Crosslinked Hydrogels: Assembly and Applications
T. Betancourt[1], R. Navarro[1], R. Danso[1], K. Beaven[1], R. Hall[1], K. Knutson[1], and K. Abdelrahman[1]
[1]Texas State University, San Marcos, TX

8:45AM
Thiol-ene Networks As Hydrolytically Stable, Ultra-soft Neural Prosthetic Substrates
R. Reit[1], D. Simon[1], B. Lund[1], T. Ware[1], and W. Voit[1]
[1]University of Texas at Dallas, Richardson, TX

9:00AM
Magnetic Mesoporous Hollow Carbon Microspheres for Rapid Capture of Low-concentration Peptides
G. Cheng[1], M-D. Zhou[1], and S-Y. Zheng[1]
[1]Penn State University, State College, PA

9:15AM
Electrochemically Modulated Nitric Oxide (NO) Releasing Biomedical Devices via Copper(II)-Tri(2-pyridylmethyl)amine Mediated Reduction of Nitrite
H. Ren[1], J. Wu[1], C. Xi[1], N. Lehnert[1], T. Major[1], R. Bartlett[1], and M. Meyerhoff[1]
[1]University of Michigan, Ann Arbor, MI

Track: Cardiovascular Engineering
OP-Fri-1-4 - Room 006B
Cardiac Electrophysioloy and Mechanics

Chairs: Adam Engler, Jeffrey Jacot

8:00AM
Ephaptic Coupling and Its Complex Role in Maintaining Cardiac Conduction
S. George[1], K. Sciuto[2], J. Lin[3], M. Salama[2], J. Keener[2], R. Gourdie[1,4], and S. Poelzing[1,4]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA, [2]University of Utah, Salt Lake City, UT, [3]California Polytechnic State University, San Luis Obispo, CA, [4]Virginia Tech Carilion Research Institute, Roanoke, VA

8:15AM
Cell Size and Shape as Determinants of Ion Channel Distribution and Function
S. Sengupta[1], B. Hoffman[1], and N. Bursac[1]
[1]Duke University, Durham, NC

8:30AM
Recellularized Cardiac Tissue Slices Produce Aligned Cells and Anisotropic Conduction
A. Blazeski[1], G. Kostecki[1], and L. Tung[1]
[1]Johns Hopkins University, Baltimore, MD

8:45AM
Cycle Length Restitution and Spontaneous Action Potential Dynamics in Sinoatrial Node Disease
P. Glynn[1], B. Onal[1], and T. Hund[1]
[1]The Ohio State University, Columbus, OH

9:00AM
Control of Cardiac Alternans using Boundary Pacing and Mechanical Perturbations Control
A. Hazim[1], S. Dubljevic[1], and Y. Belhamadia[1]
[1]University of Alberta, Edmonton, AB, Canada

9:15AM
Effect of Substrate Stiffness on Cardiac Fibroblasts Isolated from Volume-Overload Induced Heart Failure
R. Childers[1], P. Lucchesi[2], and K. Gooch[1]
[1]The Ohio State University, Columbus, OH, [2]Research Institute of Nationwide Children's Hospital, Columbus, OH

Track: Drug Delivery
OP-Fri-1-5 - Room 006C
Nucleic Acid Delivery

Chairs: Debra Auguste, Blanka Sharma

8:00AM *Invited*
DNA and RNA Release Surfaces for Systemic and Localized Delivery Applications
P. Hammond[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

8:30AM
Antibody-conjugated Nanoparticle Platform for Targeted Delivery of SiRNA to HER2+ Breast Cancer
W. Ngamcherdtrakul[1], J. Morry[1], S. Gu[1], D. Castro[1,2], T. Sangvanich[1], S. Goodyear[1], Z. Hu[1], J. Gray[1], and W. Yantasee[1,2]
[1]Oregon Health and Science University, Portland, OR, [2]PDX Pharmaceuticals, LLC, Lake Oswego, OR

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

8:45AM
Silencing of Tumor Necrosis Factor Receptor-1 in Human Lung Microvascular Endothelial Cells Using Particle Platforms for siRNA Delivery
J. Sakamoto[1], L. Bai[1], D. Chan[1], S. Shamsudeen[1], and R. Serda[2]
[1]Houston Methodist, Houston, TX, [2]Baylor College of Medicine, Houston, TX

9:00AM
Engineering Exosomes for DNA Delivery
T. Lamichhane[1], R. Raiker[1], and S. Jay[1]
[1]University of Maryland, College Park, MD

9:15AM
Nasal Delivery of MicroRNA-486 via Surfactant Protein-C Targeted Lipoplexes in Lung Cancer Treatment
Y. Wu[1,2], A. Gaughan[3], J. Ma[2], S. Nana-Sinkam[2], L. Lee[2], and I. Davis[3]
[1]State University of New York at Buffalo, Buffalo, NY, [2]The Ohio State University, Columbus, OH, [3]The Ohio State Unviersity, Columbus, OH

Track: Translational Biomedical Engineering, Nano to Micro Technologies
OP-Fri-1-6 - Room 006D

Bio-nanomedicine in Healthcare

Chairs: Kent Leach, Manu Platt

8:00AM *Invited*
Translating Promising Academic Medical Concepts to Products: Consider Success Criteria Beforehand
A. Coury[1]
[1]Northeastern University, Boston, MA

8:30AM
Platform Anti-NF-&[kappa]B Nanotechnology for Virally Driven Adult T-Cell Leukemia/Lymphoma
H. Pan[1], K. Hou[1], D. Rauch[1], J. Harding[1], L. Ratner[1], and S. Wickline[1]
[1]Washington University School of Medicine, St Louis, MO

8:45AM
Intravenously Administered Nanoparticles Improve Cognitive Outcomes Following Blast Trauma
W. Hubbard[1], M. Lashof-Sullivan[2], C. Hall[1], E. Lavik[2], and P. VandeVord[1,3]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA, [2]Case Western Reserve University, Cleveland, OH, [3]Salem VA Medical Center, Research & Development Service, Salem, VA

9:00AM
Inhibition of Various Bacterial Growth on Selenium Nanoparticle Coated Paper Towels
Q. Wang[1] and T. Webster[1]
[1]Northeastern University, Boston, MA

9:15AM
TheraBlob for Ultrasound-mediated Ablation Therapy
S. Misra[1,2], M. Ye[1,2], P. Ray[2], and D. Pan[1,2,3]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Carle Foundation Hospital, Urbana, IL, [3]Beckman Institute, Urbana, IL

Track: Cancer Technologies
OP-Fri-1-7 - Room 007A

Engineered Models of Cancer I

Chairs: Nastaran Kuhn, Esther Gomez

8:00AM
An Agent-Based Model Based On Breast Cancer Receptor Heterogeneity
K-A. Norton[1], N. Pandey[1], and A. Popel[1]
[1]Johns Hopkins University, Baltimore, MD

8:15AM
Development of a Versatile Platform to Analyze Glioma Specimens
S. Pedron[1], M. Schroeder[2], J. Sarkaria[2], and B. Harley[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Mayo Clinic, Rochester, MN

8:30AM
Multiplex Fluorescence Lifetime Imaging of Kinase activity in Live Cells with Peptide Biosensors
N. Damayanti[1], L. Parker[1], and J. Irudayaraj[1]
[1]Purdue University, West Lafayette, IN

8:45AM
Genome Edited Cell Models to Investigate Epigenetic Fluctuation and Cancer Initiation
I. Xhangolli[1], J. Chen[1], Y. Wu[1], Y. Maruvka[2], F. Michor[2], and R. Fan[1]
[1]Yale University, New Haven, CT, [2]Dana Farber Cancer Institute, Boston, MA

9:00AM
Physical Intimacy of Breast Cancer Cells and Mesenchymal Stem Cells Regulates Drug Resistance Pathways
A. Daverey[1], A. Drain[1], K. Brown[1], and S. Kidambi[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

9:15AM
3D Bone Marrow Mimics to Study Stem Cell-Mediated Breast Cancer Spread
L. Jansen[1], L. Barney[1], T. McCarthy[1], and S. Peyton[1]
[1]University of Massachusetts Amherst, Amherst, MA

Track: Cardiovascular Engineering, Device Technologies and Biomedical Robotics
OP-Fri-1-8 - Room 007B

Cardiovascular Assist Devices

Chairs: Marc Horner, Danny Bluestein

8:00AM
Physiological Characterization of the Total Artificial Heart
J. Crosby[1], K. DeCook[1], P. Tran[1], R. Smith[1], D. Burkhoff[2], and M. Slepian[1]
[1]The University of Arizona, Tucson, AZ, [2]Columbia University, New York, NY

8:15AM
Numerical Model of Full Cardiac Cycle Hemodynamics in Syncardia Total Artificial Heart
G. Marom[1], W-C. Chiu[1], S. Prabhakar[2], M. Horner[3], M. Slepian[1,4], and D. Bluestein[1]
[1]Stony Brook University, Stony Brook, NY, [2]Ansys Fluent India Pvt. Ltd, Pune, India, [3]Ansys, Inc., Evanston, IL, [4]University of Arizona, Tucson, AZ

8:30AM
Demonstration of Low Frequency Speed Modulation of Miniature Rotary Blood Pumps in a Large Animal Model
K. Soucy[1], G. Giridharan[1], M. Sobieski[1], M. Slaughter[1], and S. Koenig[1]
[1]University of Louisville, Louisville, KY

8:45AM
High Speed Flow Visualization Reveals Thrombogenic Pathlines in Axial Flow Blood Pump
F. YANG[1] AND J. ANTAKI[1]
[1]Carnegie Mellon University, Pittsburgh, PA

9:00AM
Reduced Platelet Aggregation Following High Shear Exposure
A. HOUZELLE[1], C. LEWIS[1], T. SNYDER[2], AND D. SCHMIDTKE[1]
[1]University of Oklahoma, Norman, OK, [2]Integris, Oklahoma City, OK

9:15AM
Investigating VWF Degradation as a Result of Integrated Shear Stress Patterns
S. YANG[1] AND V. TURITTO[1]
[1]Illinois Institute of Technology, Chicago, IL

Track: Cellular and Molecular Bioengineering
OP-Fri-1-9 - Room 007C
Molecular and Cell Engineering I

Chairs: Nic Leipzig, Eric Boder

8:00AM
Molecular Mechanism of Suppressed Cell Spreading in Tumor Repopulating Cells
F. CHOWDHURY[1], N. WANG[1], AND T. HA[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

8:15AM
Flu X-Hemagglutinin with Ablated Immunodominant Epitopes Protects Mice Against Lethal H5N1 Challenge
S. BOCK[1], A. LU[1], R. DELA CRUZ[1], J. JENSON[1], J. MARCOS[1], D. BARNARD[2], AND B. TARBET[2]
[1]University of Utah, Salt Lake City, UT, [2]Utah State University, Logan, UT

8:30AM
Engineering Immune Cell Function Using a Vector-Free Microfluidic Delivery Platform
A. SHAREI[1,2,3], R. TRIFONOVA[1], S. JHUNJHUNWALA[3], S. MAO[3], G. HARTOULAROS[3], A. EYERMAN[3], P. BASTO[3], J. LIEBERMAN[1], D. IRVINE[3], D. ANDERSON[3], U. VON ANDRIAN[1], R. LANGER[3], AND K. JENSEN[3]
[1]Harvard Medical School, Boston, MA, [2]Ragon Institute, Cambridge, MA, [3]Massachusetts Institute of Technology, Cambridge, MA

8:45AM
Engineering T Lymphocytes with Protein Nanogels for Cancer Immunotherapy
L. TANG[1], Y. ZHENG[1], AND D. IRVINE[1,2]
[1]MIT, Cambridge, MA, [2]Howard Hughes Medical Institute, Chevy Chase, MD

9:00AM
Increasing CRISPR Specificity For Therapeutic Applications
C. LEE[1], Y. LIN[1], M. PREININGER[2], R. COTTLE[1], T. CRADICK[1], AND G. BAO[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

9:15AM
Enhancing Biomolecular Screening By Combining Yeast Surface Display and Noncanonical Amino Acids
J. VAN DEVENTER[1], R. KELLY[1], D. LE[1], J. ZHAO[1], AND K. WITTRUP[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

Track: Orthopaedic and Rehabilitation Engineering
OP-Fri-1-10 - Room 007D
Pain

Chairs: Lori Setton, Beth Winkelstein

8:00AM
Optogenetic Methods to Stimulate and Inhibit Pain in Mice
S. IYER[1], K. MONTGOMERY[1], AND S. DELP[1]
[1]Stanford University, Stanford, CA

8:15AM
Luminescent IVIS Imaging of NF-1κ B Activity as a Biomarker of Inflammation Driven Pain
R. BOWLES[1] AND L. SETTON[1]
[1]Duke University, Durham, NC

8:30AM
Experimental Disc Herniation Radiculopathy Requires Intraneural Macrophage Infiltration and can be Blocked by Strategies Limiting Macrophage Function
M. SHAMJI[1,2], Y. TU[3], AND M. SALTER[3]
[1]University of Toronto, Toronto, ON, Canada, [2]Toronto Western Hospital, Toronto, ON, Canada, [3]Hospital for Sick Children, Toronto, ON, Canada

8:45AM
Neuronal Activity in the CNS Modulates Persistent Pain: Mechanisms & Therapeutic Potential
B. WINKELSTEIN[1], N. CROSBY[1], P. SYRE[1], K. NICHOLSON[1], AND C. WEISSHAAR[1]
[1]University of Pennsylvania, Philadelphia, PA

9:00AM
Reducing Pain and Improving Function in Patellofemoral Pain Synchome through Offaxis Training
L-Q. ZHANG[1] AND L. TSAI[1]
[1]Northwestern University, Chicago, IL

9:15AM
Advancing Gait Analysis Techniques for the Assessment of Pain and Disability in Rodent Preclinical Models of Joint Disease
K. ALLEN[1], H. KLOEFKORN[1], AND B. JACOBS[1]
[1]University of Florida, Gainesville, FL

Track: Nano to Micro Technologies
OP-Fri-1-11 - Room 008A
Nanobiointerfaces

Chairs: Akhilesh Gaharwar, Adam Hall

8:00AM
Evaluation of High-efficiency Optoelectronic Nanowires in Rabbits
M. KHRAICHE[1], L. CHEN[1], Y. JING[1], W. FREEMAN[1], AND G. SILVA[1]
[1]University of San Diego California, La Jolla, CA

8:30AM
Probing Astrocytes with Carbon Nanotubes and Assessing the Role of Glial Fibrillary Acidic Protein in their Effects on Astrocytic Morphology and Proliferation
M. GOTTIPATI[1], E. BEKYAROVA[2], M. BRENNER[1], R. HADDON[2], AND V. PARPURA[1]
[1]University of Alabama, Birmingham, AL, [2]University of California, Riverside, CA

8:45AM
Detecting Single Molecule Dynamics Using a ZMW/Microfluidic Hybrid Chip
Y. ZHAO[1], D. CHEN[1], S. BENKOVIC[1], AND T. HUANG[1]
[1]Pennsylvinia State University, State College, PA

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

9:00AM
Heat-Shrunken Hierarchical Silica Nanomembrane for Solid Phase DNA Extraction
Y. Zhang[1], Y. Zhang[1], K. Liu[2], and T-H. Wang[1,3,4,5]
[1]Department of Biomedical Engineering, Johns Hopkins University School of Medicine, Baltimore, MD, [2]Circulomics Inc., Baltimore, MD, [3]Department of Mechanical Engineering, Johns Hopkins University, Baltimore, MD, [4]Sidney Kimmel Comprehensive Cancer Center, Johns Hopkins University, Baltimore, MD, [5]Johns Hopkins Institute for NanoBioTechnology, Johns Hopkins University, Baltimore, MD

9:15AM
Probing Single-Bacterium Level Charge Transport in Microbial Fuel Cells
X. Jiang[1], J. Hu[2], J. Biffinger[3], L. Fitzgerald[3], E. Petersen[4], C. Jackan[1], A. Lieber[1], B. Ringeisen[3], and C. Lieber[1]
[1]Harvard University, Cambridge, MA, [2]Institute of Chemistry, Chinese Academy of Sciences, Beijing, China, People's Republic of, [3]US Naval Research Laboratory, Washington, DC, [4]Nova Research, Inc., Alexandria, VA

Track: Tissue Engineering, Biomaterials
OP-Fri-1-12 - Room 008B
Bone and Cartilage Tissue Engineering I

Chairs: Fan Yang, Rene Olivares-Navarrete

8:00AM
Composite Tissue-Engineered Scaffolds for Cervical Disc Replacement in a Pre-Clinical Canine Model
J. Mojica-Santiago[1], P. Grunert, MD[2], Y. Moriguchi, MD, PhD[2], R. Hartl, MD[2], and L. Bonassar, PhD[1]
[1]Cornell University, Ithaca, NY, [2]Weill Cornell Medical College, New York, NY

8:15AM
Small Peptide Isolated from Enamel Extracellular Matrix Induces Osteoblastic Differentiation in Mesenchymal Stem Cells
R. Olivares-Navarrete[1], S. Hyzy[1], K. Vesper[2], Z. Schwartz[1], and B. Boyan[1]
[1]Virginia Commonwealth University, Richmond, VA, [2]Georgia Regents University, Augusta, GA

8:30AM
Diabetic Bone Regeneration Enhanced by Biodegradable Drug-Based Polymer and its Mechanisms
W. Yu[1], K. Wada[2], M. Mattos[2], D. Graves[2], and K. Uhrich[1]
[1]Rutgers University, Piscataway, NJ, [2]University of Pennsylvania, Philadelphia, PA

8:45AM
Lysophosphatidic Acid Presentation From Engineered Fibrin Gels for Cell-Based Bone Formation
B. Binder[1], M. Wilkinson[1], and J. Leach[1]
[1]University of California, Davis, Davis, CA

9:00AM
Inhibiting Inflammatory Signals Improves Stem Cell-based Bone Regeneration
M. Martino[1], K. Maruyama[1], R. Muller[2], and S. Akira[1]
[1]Osaka University, Osaka, Japan, [2]ETHZ, Zurich, Switzerland

9:15AM
Citrate-Based Biphasic Scaffolds For The Repair Of Large Segmental Bone Defects
R. Tran[1], Y. Guo[2], D. Xie[2], D. Nguyen[1], X. Bai[2], and J. Yang[1]
[1]The Pennsylvania State University, University Park, PA, [2]Southern Medical University, Guangzhou, China, People's Republic of

Track: Device Technologies and Biomedical Robotics, New Frontiers and Special Topics
OP-Fri-1-13 - Room 201
Wearable Technology

Chairs: Youngjae Chun, John Hanks

8:00AM
Test Platform Accelerates Design of Fitness Bands, Smart Watches, and Wearable Devices
J. Hanks[1]
[1]Texas A&M University, College Station, TX

8:30AM
Spectral Analyses as a Measure of Limb Coordination
E. Wade[1] and J. Chen[1]
[1]University of Tennessee, Knoxville, TN

8:45AM
Design and Validation of a Smart Knee Fixture for Measuring Knee Balancing
C. Bell[1], P. Meere[1], I. Borukhov[1], and P. Walker[1]
[1]NYU Hospital for Joint Diseases, New York, NY

9:00AM
Helmet Device for Optimized Mechanical Optical Clearing Enhancement of Near-Infrared Spectroscopy
C. Idelson[1], P. Repisky[2], S. LaConte[2,3,4], B. King-Casas[2,3,4], and C. Rylander[1,2]
[1]University of Texas, Austin, TX, [2]Virginia Tech, Blacksburg, VA, [3]Virginia Tech Carilion School of Medicine, Roanoke, VA, [4]Virginia Tech Carilion Research Institute, Roanoke, VA

9:15AM
Wearable Biomechanical Sensor System for Vibration Exposure and Grip Force Measurements
S. Kudernatsch[1], T. Asaki[1], and D. Peterson[1]
[1]University of Connecticut Health Center, Farmington, CT

Track: Biomechanics, Biomaterials
OP-Fri-1-14 - Room 103B
Mechanics of Biomaterials

Chairs: Natalie Artzi, Wei Tan

8:00AM
Morphological and Mechanical Behavior of Fibrin Clots in Healthy, Diabetic, and Sickle Cell Anemia Disease States
N. Fan[1], M. Platt[1], and R. Averett[1]
[1]Georgia Institute of Technology, Atlanta, GA

8:15AM
Theoretical Analysis and Finite Element Implementation of a Transversely Isotropic Material Model for Soft Tissue with Two Anisotropic Invariants
Y. Feng[1], R. Okamoto[2], G. Genin[2], L. Taber[2], and P. Bayly[2]
[1]Soochow University, SuZhou, China, People's Republic of, [2]Washington University in Saint Louis, Saint Louis, MO

8:30AM
Stress-Relaxation Behavior of a Novel Alginate/Polyacrylamide Hydrogel Material with Tunable Properties
M. Fitzgerald[1], J. Berberich[1], and J. Sparks[1]
[1]Miami University, Oxford, OH

8:45AM
Response of Isolated Bioprosthetic Heart Valve Biomaterials to *In-Vivo* Stress
K. Feaver[1], W. Zhang[1], H. Tam[2], M. Lee[3], J. McGarvey[3], C. Aoki[3], S. Takebayashi[3], N. Kondo[3], R. Gorman[3], J. Gorman III[3], N. Vyavahare[2], and M. Sacks[1]
[1]*University of Texas at Austin, Austin, TX,* [2]*Clemson University, Clemson, SC,* [3]*University of Pennsylvania, Philadelphia, PA*

9:00AM
Biaxial Analysis of Synthetic Scaffolds for Hernia Repair Demonstrates Variability in Mechanical Anistropy, Non-linearity, and Hysteresis
C. Deeken[1], D. Thompson[1], R. Castile[1], and S. Lake[1]
[1]*Washington University in St. Louis, St. Louis, MO*

9:15AM
Synchrotron X-Ray Scattering Reveals a Pivotal Role of Water in the Ultrastructural Mechanics of Bone
J. Samuel[1] and X. Wang[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

PLATFORM SESSIONS
Fri-1

Track: Bioinformatics, Computational and Systems Biology
OP-Fri-1-15 - Room 202A
Signaling Systems Analysis

Chairs: Benjamin Cosgrove, Scott Diamond

8:00AM *Invited*
Systems Biology: High-throughput, Multiscale and Patient Specific
S. Diamond[1]
[1]*University of Pennsylvania, Philaldelphia, PA*

8:30AM
AKAP7γ Amplifies but Decelerates Localized PKA Signaling Kinetics
E. Greenwald[1], M. Gildart[2], J. Saucerman[1], and K. Dodge-Kafka[3]
[1]*University of Virginia, Charlottesville, VA,* [2]*University of Saint Joseph, West Hartford, CT,* [3]*University of Connecticut Health Center, Farmington, CT*

8:45AM
The AXL Receptor is a Sensor of Ligand Spatial Heterogeneity
A. Meyer[1], C. Riley[1], F. Gertler[1], and D. Lauffenburger[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

9:00AM
Growth-differentiation Factor 11 (GDF11) as a Therapeutic Target in Basal-like Breast Cancers
S. Bajikar[1] and K. Janes[1]
[1]*University of Virginia, Charlottesville, VA*

9:15AM
Systems Analysis of Cytokine Profiles Identifies Key Cellular Contributors to HIV Immune Response
K. Arnold[1], G. Szeto[1], G. Alter[2], D. Irvine[1,2], and D. Lauffenburger[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Ragon Institue of MGH, MIT and Harvard, Cambridge, MA*

Track: Biomedical Imaging and Optics
OP-Fri-1-16 - Room 202B
Magnetic Resonance Imaging I

Chairs: Bruce Damon, Timothy Duong

8:00AM
Imaging Renal Perfusion in Acute Kidney Injury at 3T Using 19F/1H MRI of Perfluorocarbon Nanoparticles
M. Goette[1], J. Chen[1], C. Vemuri[1], J. Allen[1], S. Caruthers[1,2], G. Lanza[1], and S. Wickline[1]
[1]*Washington University in St. Louis, St. Louis, MO,* [2]*Philips Healthcare, Cleveland, OH*

8:15AM
Magnetic Resonance Imaging of Cardiac Activation in Heart Failure Patients with Left Bundle Branch Block
D. Auger[1], S. Cui[1], X. Chen[1], K. Bilchick[1], and F. Epstein[1]
[1]*University of Virginia, Charlottesville, VA*

8:30AM
Chronic Toxicity of Dextran Functionalized Graphene Nanoparticles and Their Potential as Highly Efficacious Blood Pool Contrast Agent for Magnetic Resonance Imaging
S. Kanakia[1], D. Minh Hoang[2], J. Toussaint[1], S. Mullick Chowdhury[1], S. Lee[1], K. Shroyer[1], W. Moore[1], Y. Zaim Wadhgiri[2], and B. Sitharaman[1]
[1]*Stony Brook University, Stony Brook, NY,* [2]*NYU School of Medicine, New York, NY*

8:45AM
Monitoring Bone Repair in a Mouse Calvarial Defect Model Using Magnetic Resonance Imaging
V. Khalilzad-Sharghi[1], K. Wartella[1], M. Kelso[2], H. Xu[1], and S. Othman[1]
[1]*University of Nebraska-Lincoln, Lincoln, NE,* [2]*University of Nebraska Medical Center, Omaha, NE*

9:00AM
Imaging Metastasis Using a Targeted Nanoparticle and MRI
E. Doolittle[1], P. Peiris[1], A. Abramowski[1], R. Toy[1], and E. Karathanasis[1]
[1]*Case Western Reserve University, Cleveland, OH*

Track: Biomedical Imaging and Optics, Device Technologies and Biomedical Robotics
OP-Fri-1-17 - Room 203A
Diagnostic Devices and Biosensors I

Chairs: Jing Yong Ye, Mehmet Kaya

8:00AM
In Vivo Imaging of Wound Infection Using a Bacteria-targeting Optical Nanoprobe
E. Tang[1], A. Nair[1], D. Baker[1], W. Hu[2], L. Tang[1], and J. Zhou[1]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*Progenitec Inc., Arlington, TX*

8:15AM
Noninvasive Frequency Domain Tissue Collagen Detection
R. Liu[1], Z. Zhao[1], M. Zhou[1], A. Argento[1], Q. Fang[2], and J. Lo[1]
[1]*University of Michigan at Dearborn, Dearborn, MI,* [2]*McMaster University, Hamilton, Canada*

8:30AM
Photoacoustic Spectroscopic Determination of Met-Hb Concentration Ratio Using an Open-Microcavity Photonic Crystal Ultrasound Sensor
R. Peterson[1], J. Ling[2], C. Whitney[1], and J. Ye[1]
[1]*The University of Texas at San Antonio, San Antonio, TX,* [2]*Southwest Research Institute, San Antonio, TX*

8:45AM
NutriPhone: Vitamin D Testing on Your Smartphone
S. Lee[1], S. Mehta[1], and D. Erickson[1]
[1]*Cornell University, Ithaca, NY*

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

9:00AM
Fiber-Coupled Microcavity Probe for Label-Free Biosensing: A Demonstration with DNA Hybridization
N. Leartprapun[1], E. Toomey[1], and J. Xu[1]
[1]*Brown University, Providence, RI*

9:15AM
Handheld Spatial Frequency Domain Imaging System for Skin Imaging
B. Yang[1], J. Lesicko[1], M. Sacks[1], and J. Tunnell[1]
[1]*University of Texas at Austin, Austin, TX*

Track: Biomechanics, Cellular and Molecular Bioengineering
OP-Fri-1-18 - Room 203B
Cell-Cell Interactions and Intercellular Forces

Chairs: Roland Kaunas, Leo Wan

8:00AM
Visualizing Mechanotransduction at Intercellular Junctions.
D. Leckband[1], T. Kim[1], J. Sun[1], I. Muhammed[1], and Y. Wang[2]
[1]*University of Illinois at Urbana, Urbana, IL,* [2]*UC San Diego, La Jolla, CA*

8:15AM
Protrusive Activity-dependent Inter-cellular Forces Determine Cell-cell Contact Stability
V. Maruthamuthu[1,2] and M. Gardel[2]
[1]*Old Dominion University, Norfolk, VA,* [2]*University of Chicago, Chicago, IL*

8:30AM
Intercellular Stresses Guide Endothelial Cell Polarization Under Laminar Fluid Shear Stress
R. Steward Jr.[1], D. Tambe[1], and J. Fredberg[1]
[1]*Harvard University, Boston, MA*

8:45AM
Cell-induced Nanoscale Displacements Reveal Localized, Autonomous Forces Exerted By Fibroblasts
S. Knoll[1] and T. Saif[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

9:00AM
Suspended Fused-Fiber Nanonets as Force Sensors
A. Nain[1]
[1]Virginia Tech, Blacksburg, VA

9:15AM
Finite Element Simulation of Valvular Interstitial Cells under Atomic Force Microscopy and Microindentation Experiments
Y. Sakamoto[1] and M. Sacks[1]
[1]*The University of Texas at Austin, Austin, TX*

SPECIAL SESSION
8:00 AM – 9:30 AM
Convention Center, Room 204A

Whitaker International Program: Funding Opportunity for Young Biomedical Engineers

The Whitaker International Program, founded in 2005 provides funding to emerging U.S.-based leaders in biomedical engineering to conduct a study and/or research project, with the underlying objective of building international bridges. Grant projects – including research, coursework, public policy work – are intended to enhance both the recipient's career and the BME field. The goal of the Whitaker Program is to assist the development of professional leaders who are not only superb scientists, but who will advance the profession through an international outlook. The Whitaker Program has three sub-programs: Fellows and Scholars Program, Summer Program, and an Undergraduate Program. For more information, including program details, the online application and deadlines, visit: http://www.whitaker.org.

WHITAKER International Program

FRIDAY, October 24, 2014

1:45 PM - 2:45 PM

PLATFORM SESSIONS – FRI - 2

Track: Tissue Engineering, Stem Cell Engineering

OP-Fri-2-1 - Room 001A

Epithelial and Adipose Tissue Engineering

Chairs: George Pins, Piyush Koria

1:45PM

The Ups and Downs of 3D Skin Models: Engineering the Keratinocyte Microniche *in vitro*

A. Clement[1], T. Moutinho[1], J. Molignano[1], and G. Pins[1]

[1]*Worcester Polytechnic Institute, Worcester, MA*

2:00PM

Elastin like Peptides (ELPs) Modulate Cellular Behavior through interaction with Cell Surface Glycosaminoglycans

Y. Yuan[1] and P. Koria[1]

[1]*University of South Florida, Tampa, FL*

2:15PM

In Vitro Engineering of Functional Salivary Gland Cells Using Silk Fibroin Scaffolds

H. Wang[1], B-X. Zhang[1,2], L. Alan[1], D. Dean[1], M. Pilia[3], A. Ong[3], X-D. Chen[1], and C-K. Yeh[1,2]

[1]*UT Health Science Center at San Antonio, San Antonio, TX,* [2]*GRECC & Research Service, South Texas Veterans Health Care System, San Antonio, TX,* [3]*University of Texas at San Antonio, San Antonio, TX*

2:30PM

Phenotypic Characterization of Adipose Derived Stem Cells Differentiated Toward Urothelial Lineage

J. Turner[1], T. Matt[1], and J. Nagatomi[1]

[1]*Clemson University, Clemson, SC*

Track: Neural Engineering, Device Technologies and Biomedical Robotics

OP-Fri-2-2 - Room 001B

Peripheral Neural Interfaces: Stimulation & Recording

Chairs: Pamela VandeVord, Shyam Aravamudham

1:45PM

Partial Restoration of Sensorimotor Function After Hand Amputation Using Multiple Electrode Arrays

S. Wendelken[1], D. Page[1], T. Davis[1], H. Wark[1], D. Warren[1], R. Normann[1], D. Hutchinson[1], B. Greger[2], and G. Clark[1]

[1]*University of Utah, Salt Lake City, UT,* [2]*Arizona State University, Tempe, AZ*

2:00PM

Reestablishment of the blood nerve barrier in Regenerative Multielectrode Interfaces

A. Kanneganti[1], G. Bendale[1], J. L Seifert[1], V. Desai[1], and M. Romero-Ortega[1]

[1]*Univ. Of Texas at Arlington, Arlington, TX*

2:15PM

A Stretchable Microneedle Electrode Array for Electrical Muscle Stimulation

G. Guvanasen[1], A. Cheek[1], R. Aguilar[2], C. Shafor[2], S. Rajaraman[2], T. Nichols[1], and S. DeWeerth[1,3]

[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Axion BioSystems, Atlanta, GA,* [3]*Emory University, Atlanta, GA*

2:30PM

Osseointegrated Prosthesis Mount with High-Channel-Count Peripheral Neural Interface Capability

D. Kluger[1], G. Clark[1], D. Warren[1], D. Hutchinson[1], and K. Bachus[1]

[1]*University of Utah, Salt Lake City, UT*

Track: Biomaterials, Tissue Engineering

OP-Fri-2-3 - Room 006A

Biomaterial Scaffolds II

Chairs: Jai Rudra, Mark Van Dyke

1:45PM

In Vivo Assessment of Tissue Engineered Myocardial Patch for the Repair of Full-thickness RVOT Surgery

S. Pok[1] and J. Jacot[1]

[1]*Rice University, Houston, TX*

2:00PM

Characterization of Sequential Collagen-Poly(ethylene glycol) Diacrylate Interpenetrating Networks for Vascular Tissue Engineering

D. Munoz-Pinto[1], A. Jimenez-Vergara[1], T. Gharat[1], and M. Hahn[1]

[1]*Rensselaer Polytechnic Institute, Troy, NY*

2:15PM

Enabling Surgical Placement of Hydrogels Through Achieving Paste-Like Rheological Behavior Prior to Crosslinking

E. Beck[1], B. Lohman[1], S. Kieweg[1], S. Gehrke[1], C. Berkland[1], and M. Detamore[1]

[1]University of Kansas, Lawrence, KS

2:30PM

Thermoresponsive Nanonets for Improving Wound Healing in Diabetes

Y. Zhu[1], R. Hoshi[1], and G. Ameer[1]

[1]*Northwestern University, Evanston, IL*

Track: Biomedical Engineering Education (BME)

OP-Fri-2-4 - Room 006B

Design in BME Education

Chairs: Colin Drummond, Joe Tranquillo

1:45PM

A Program in Clinical Needs Finding, Medical Device Innovation and Design

G. Truskey[1] and B. Barnes[1]

[1]*Duke University, Durham, NC*

2:00PM

Retrospective Analysis of Factors Impacting Senior Design Project Translation

A. Sieving[1], M. Pool[2], A. Brightman[1], and A. Rundell[1]

[1]*Purdue University, West Lafayette, IN,* [2]*University of Illinois at Urbana-Champaign, Urbana, IL*

2:15PM

The Teaching Dead

J. La Belle[1] and S. Maxwell[1]

[1]*Arizona State University, Tempe, AZ*

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

2:30PM
Development of Design-Oriented BME Degree Programs In Nigeria
M. Glucksberg[1], A. Coker[2], A. Osuntoki[3], T. Douglas[4], and R. Murphy[5]
[1]Northwestern University, Evanston, IL, [2]University of Ibadan, Ibadan, Nigeria, [3]University of Lagos, Lagos, Nigeria, [4]University of Cape Town, Cape Town, South Africa, [5]Northwestern University, Chicago, IL

Track: Drug Delivery
OP-Fri-2-5 - Room 006C
Novel Materials and Self Assembly

Chairs: Robert Peattie, Mario Fabilli

1:45PM
Controlled Delivery of HB-EGF Accelerates Healing of Diabetic Wounds
N. Johnson[1,2] and Y. Wang[1,2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]McGowan Institute for Regenerative Medicine, Pittsburgh, PA

2:00PM
Exploring the Synthesis, Self-Assembly, and Delivery of Concatameric siRNA-Polymer Nanoparticles
K. Shopsowitz[1], S. Morton[1], E. Dreaden[1], and P. Hammond[1]
[1]MIT, Cambridge, MA

2:15PM
Gap Junction Liposomes for Direct Therapeutic Delivery to the Cellular Cytoplasm
A. Gadok[1], D. Busch[1], and J. Stachowiak[1]
[1]University of Texas at Austin, Austin, TX

2:30PM
Controlling the Single Wall Carbon Nanotube Dispersing Agent for Bioactive Molecule Delivery
B. Holt[1], P. Boyer[1], K. Dahl[1], and M. Islam[1]
[1]Carnegie Mellon University, Pittsburgh, PA

Track: New Frontiers and Special Topics, Translational Biomedical Engineering
OP-Fri-2-6 - Room 006D
Bioelectronics

Chairs: Ranu Jung, Tejal Desai

1:45PM
How Are We Galvanising The Interdisciplinary Research Community Into Developing High Precision Medicines That Target Peripheral Nerves?
K. Famm[1]
[1]GSK, London, United Kingdom

2:00PM
Stimulation Design for the First Human Study of an Implanted Neurostimulator in Rheumatoid Arthritis
Y. Levine[1], A. Caravaca[1], M. Faltys[1], and R. Zitnik[1]
[1]SetPoint Medical Corporation, Valencia, CA

2:15PM
Control of Ankle Movement by Stimulating with Longitudinal Intrafascicular Electrodes
A. Thota[1], R. Siu[1], S. Ganeswarathas[2], L. Lykholt[2], J. Abbas[3], and R. Jung[1]
[1]Florida International Univeristy, Miami, FL, [2]Aalborg University, Aalborg, Denmark, [3]Arizona State University, Tempe, AZ

2:30PM
Spatial Distribution of Light-Sensitive Cells Determines Effectiveness of Optogenetics-Based Termination of Atrial Arrhythmias
P. Boyle[1] and N. Trayanova[1]
[1]Johns Hopkins University, Baltimore, MD

Track: Cancer Technologies
OP-Fri-2-7 - Room 007A
Engineered Models of Cancer II

Chairs: Shelly Peyton, Jennifer Munson

1:45PM
Tumor Metastasis At High Spatiotemporal Resolution: Examining Role Of Wnt Signalling In Colon Cancer
V. Shirure[1], M. Waterman[1], and S. George[1]
[1]University of California, Irvine, Irvine, CA

2:00PM
Investigation of Paracrine Signaling in the Ovarian Cancer Microenvironment using a Novel Culture System
M. Carroll[1], L. Stopfer[1], A. Desotell[1], O. Velazquez[1], and P. Kreeger[1]
[1]University of Wisconsin, Madison, WI

2:15PM
Taxol Resistance Exacerbates Ovarian Cancer Progression By Altering Adhesion Kinetics And Strength
D. McGrail[1], M. Qi[1], K. Patel[1], N. Khambhati[1], and M. Dawson[1]
[1]Georgia Institute of Technology, Atlanta, GA

2:30PM
Breast Cancer Cells Alter Nuclear Envelope Composition To Aid Migration Through Narrow Constrictions
R. Gilbert[1], C. Denais[1], M. Krause[2], K. Wolf[2], and J. Lammerding[1]
[1]Cornell University, Ithaca, NY, [2]Radboud University Nijmegen Medical Center, Nijmegen, Netherlands

Track: Cardiovascular Engineering, Biomedical Imaging and Optics
OP-Fri-2-8 - Room 007B
Cardiovascular Flow Imaging and Modeling in Health and Disease

Chairs: W Robert Taylor, Hsiai Tzung

1:45PM
MRI-based Computational Modeling of Blood Flow and Nanomedicine Depositionin Patients with Peripheral Arterial Disease
S. Hossain[1], J. Zhang[2], X. Fu[2], G. Brunner[3], J. Singh[4], T. Hughes[5], D. Shah[4], and P. Decuzzi[4]
[1]Texas Heart Institute, Houston, TX, [2]Carnegie Mellon University, Pittsburgh, PA, [3]Baylor College of Medicine, Houston, TX, [4]Houston Methodist Research Institute, Houston, TX, [5]The University of Texas at Austin, Austin, TX

2:00PM
Changing Vorticity in the Main Pulmonary Artery is Associated With RV-PA Decoupling in Pulmonary Hypertension
V. Kheyfets[1], J. Smyser[2], A. Honeyman[2], J. Browning[3], J. Hertzberg[3], J. Schroeder[2], B. Fenster[2], and R. Shandas[1]
[1]University of Colorado Denver, Aurora, CO, [2]National Jewish Health, Denver, CO, [3]University of Colorado Boulder, Boulder, CO

2:15PM
Right Ventricular Diastolic Dysfunction and Vorticity In The Right Human Heart
J. HERTZBERG[1], J. BROWNING[1], B. FENSTER[2,3], AND J. SCHROEDER[2,3]
[1]University of Colorado Boulder, Boulder, CO, [2]National Jewish Health, Denver, CO, [3]University of Colorado Denver School of Medicine, Aurora, CO

2:30PM
Investigation of Spatio-Temporal Coupling Applied to Computational Models of Virtual Surgery
A. RANDLES[1,2], E. DRAEGER[1], AND F. MICHOR[2]
[1]Lawrence Livermore National Laboratory, Livermore, CA, [2]Dana-Farber Cancer Institute, Boston, MA

Track: Cellular and Molecular Bioengineering
OP-Fri-2-9 - Room 007C
Molecular and Cell Engineering II

Chairs: Evan Scott

1:45PM
PKA Controlled Regulation of SK Channel Expression Detected by Force Nanoscopy
K. ABIRAMAN[1], A. TZINGOUNIS[1], AND G. LYKOTRAFITIS[1]
[1]University of Connecticut, Storrs, CT

2:00PM
Real-Time Imaging of Histone H3 Lysine 9 Tri-Methylation in Living Cells
Q. PENG[1,2], Y. WANG[2], AND Y. WANG[1]
[1]University of California, San Diego, La Jolla, CA, [2]Chongqing University, Chongqing, China, People's Republic of

2:15PM
Engineering an Integrin-Based, Chimeric Protein for Ligand-Regulated Binding
J. PRICE[1], N. CARBERRY[1], C. BARNES[1], L. PEPPER[2], AND E. BODER[1]
[1]University of Tennessee, Knoxville, TN, [2]Whitehead Institute for Biomedical Research, Cambridge, MA

2:30PM
Helix Insertion Drives Membrane Bending by Enabling Protein-Protein Crowding
W. SNEAD[1], N. MOMIN[1], AND J. STACHOWIAK[1]
[1]The University of Texas at Austin, Austin, TX

Track: Orthopaedic and Rehabilitation Engineering
OP-Fri-2-10 - Room 007D
Rehabilitation Engineering: Prosthetics and Wearable Devices

Chairs: Eric Perreault , David Lipps

1:45PM
Generalizability of Control for a Powered Knee and Ankle Prosthesis on Level and Inclined Surfaces at User-Modulated Walking Speeds
N. FEY[1,2], A. SIMON[1,2], AND L. HARGROVE[1,2]
[1]Rehabilitation Institute of Chicago, Chicago, IL, [2]Northwestern University, Chicago, IL

2:00PM
Structure Design and Algorism Strategy for Exoskeleton Powered Knee Devices
C. CHEN[1], J. KOEHLER[1], V. YALDO [1], Z. FENG[1], C. ZHOU[1], J. CAVANAUGH[1], AND W. CHEN[2]
[1]Wayne State University, Detroit, MI, [2]Wayne State University, Grosse Pointe, MI

2:15PM
Interface Strength of a Percutaneous Prosthetic Attachment Implant
G. NOBLE[1], A. LITSKY[1], M. ALLEN[1], N. FITZPATRICK[2], AND R. HART[1]
[1]The Ohio State University, Columbus, OH, [2]Fitzpatrick Referrals, Surrey, United Kingdom

2:30PM
Validation Of PVS Impression Molds For Profilometric Analysis Of Modular Joint Replacement Tapers
K. SCHWARTZMAN[1], P. PANIGRAHI[1], AND M. HARMAN[1]
[1]Clemson University, Clemson, SC

Track: Nano to Micro Technologies, New Frontiers and Special Topics
OP-Fri-2-11 - Room 008A
Diagnostics

Chairs: Tzahi Cohen-Karni , Lilie Grace Zhang

1:45PM
Enhancing Diagnostic Assays via Stimuli-Responsive Reagents
J. LAI[1], S. SRINIVASAN[1], I. ANDREWS[1], B. NEHILLA[2], B. LUTZ[1], T. SCHULTE[2], AND P. STAYTON[1]
[1]University of Washington, Seattle, WA, [2]Nexgenia Inc., Redmond, WA

2:15PM
Disease Detection by Ultrasensitive Quantification of Microdosed Synthetic Urinary Biomarkers
A. WARREN[1], S. GAYLORD[2], K. NGAN[2], M. MILUTINOVIC[2], G. KWONG[1], S. BHATIA[1], AND D. WALT[2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Tufts University, Medford, MA

2:30PM
A Highly Sensitive Microsphere-Based Assay for Early Detection of Type I diabetes
S. BALE[1], G. PRICE[1], M. CASALI[1], N. SAEIDI[1], A. BHUSHAN[1], AND M. YARMUSH[1]
[1]Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School and Shriners Burns Hospital, Boston, MA

Track: Tissue Engineering, Biomaterials
OP-Fri-2-12 - Room 008B
Bone and Cartilage Tissue Engineering II

Chairs: Kathryn Uhrich, Syam Nukavrapu

1:45PM
Enhanced Cartilage Formation *In Vivo* via Harnessing the Interplay Between Chondrocytes and Stem Cells
J. LAI[1], L. DEVEZA[1], S. YU[1], S. JEEAWOODY[1], R. SMITH[2], W. MALONEY[2], AND F. YANG[1,2]
[1]Stanford University, Stanford, CA, [2]Stanford School of Medicine, Stanford, CA

2:00PM
Patient-Specific Auricular Cartilage Constructs Using High-Density Collagen for Ear Reconstruction
B. COHEN[1], R. HOOPER[2], J. PUETZER[1], R. NORDBERG[1], A. GOLAS[2], O. ASANBE[2], K. HERNANDEZ[2], J. SPECTOR[2], AND L. BONASSAR[1]
[1]Cornell University, Ithaca, NY, [2]Weill Cornell Medical College, New York, NY

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

2:15PM
Mimicking Cartilage Tissue Zonal Organization by Engineering Hydrogels with Gradient Niche Cues
D. Zhu[1], X. Tong[1], J. Lai[1], and F. Yang[1]
[1]*Stanford. University, Stanford, CA*

2:30PM
Human Mesenchymal Stem Cell Spheroids in Fibrin Hydrogels Exhibit Improved Cell Survival and Potential for Bone Healing
K. Murphy[1] and J. Leach[1]
[1]*University of California, Davis, CA*

Track: Device Technologies and Biomedical Robotics
OP-Fri-2-13 - Room 201
Verification and Validation of Computational Models of Medical Devices

Chairs: Marc Horner, Dawn Bardot

1:45PM *INVITED*
Modeling Hemodynamics in Patient Specific Intracranial Aneurysms
D. Dragomir-Daescu[1], S. Hodis[1], and D. Kallmes[1]
[1]*Mayo Clinic, Rochester, MN*

2:15PM
Computational Fluid Dynamics Modeling Of The FDA Nozzle Using The V&V 20 Standard
G. D'Souza[1], P. Hariharan[2], R. Malinauskas[2], R. Banerjee[1], and M. Horner[3]
[1]*University of Cincinnati, Cincinnati, OH,* [2]*Food and Drug Administration, Silver Spring, MD,* [3]*ANSYS Inc., Evanston, IL*

2:30PM
Identifying Uncertainties in Models and Experiments for Model Verification and Validation
D. Riha[1]
[1]*Southwest Research Institute, San Antonio, TX*

Track: Biomechanics
OP-Fri-2-14 - Room 103B
Impact and Injury Biomechanics

Chairs: F. Scott Gayzik, Ruth Ochia

1:45PM
Astrocytic Thrombospondin-4 May Mediate Painful Facet Capsule Injury: Insights from *In Vivo* and *In Vitro* Studies
N. Crosby[1] and B. Winkelstein[1]
[1]*University of Pennsylvania, Philadelphia, PA*

2:00PM
Morphological Changes in the Adult Skull with Age and Sex
J. Urban[1,2], A. Weaver[1,2], E. Lillie[1,2], J. Maldjian[2], C. Whitlow[2,3], and J. Stitzel[1,2]
[1]*Virginia Tech - Wake Forest University, Winston Salem, NC,* [2]*Wake Forest School of Medicine, Winston Salem, NC,* [3]*Translational Science Institute, Wake Forest University, Winston Salem, NC*

2:15PM
Discrete Plasticity in Collagen Fibrils: Surprisingly Common in Unusual Places
S. Veres[1,2], B. Scott[3], S. Wells[3], and J. Lee[3]
[1]*Saint Mary's University, Halifax, NS, Canada,* [2]*Dalhousie University, Halifax, Canada,* [3]*Dalhousie University, Halifax, NS, Canada*

2:30PM
Modeling Stretching and Tearing of Human Liver using Finite Element Optimization and Cohesive Zone Modeling Techniques
C. Untaroiu[1] and Y-C. Lu[1]
[1]*Virginia Tech, Blacksburg, VA*

Track: Bioinformatics, Computational and Systems Biology
OP-Fri-2-15 - Room 202A
Systems Proteomics: Measurement and Computation

Chairs: Sriram Neelamegham, Christopher Barnes

1:45PM
A Computational Platform to Analyze High Throughput Tandem Mass Spectrometry Based Glycoproteomics Experiments
S. Neelamegham[1], C. Lo[1], J. Qu[1], and G. Liu[1]
[1]*State University of New York at Buffalo, Buffalo, NY*

2:00PM
Identification of Novel Direct Kinase-Substrate Associations with Peptide Phosphorylation and Mass Spectrometry
C. Barnes[1], A. Maiolica[1], S. Wanka[2], T. Schmidlin[1], C. von Mering[2], and R. Aebersold[1]
[1]*ETH Zurich, Zurich, Switzerland,* [2]*University of Zurich, Zurich, Switzerland*

2:15PM
The Activation State Of The Breast Cancer Kinome: Characterization Of Subtypes And Identification Of Key Regulatory Kinases
K. Collins[1], T. Stuhlmiller[1], T. Pham[1], S. Angus[1], J. Duncan[1], M. Whittle[1], L. Graves[1], G. Johnson[1,2], and S. Gomez[1]
[1]*University of North Carolina at Chapel Hill, Chapel Hill, NC,* [2]*Lineberger Comprehensive Cancer Center, Chapel Hill, NC*

2:30PM
Improved Clustering of Molecular Measurements Using Ensemble Approaches
K. Naegle[1]
[1]*Washington University in St Louis, St Louis, MO*

Track: Biomedical Imaging and Optics
OP-Fri-2-16 - Room 202B
Magnetic Resonance Imaging II

Chairs: Mary McDougall, Omid Veiseh

1:45PM
Mapping Multiscale Myoarchitecture *In Vivo* With Generalized Q-Space MRI
E. Taylor[1] and R. Gilbert[1]
[1]*Northeastern University, Boston, MA*

2:00PM
Biomimetic Neural Fiber MRI Phantom Exhibits Anomalous Diffusion
A. Ye[1], P. Hubbard Cristinacce[2], F-L. Zhou[2], Z. Yin[1], G. Parker[2], and R. Magin[1]
[1]*University of Illinois at Chicago, Chicago, IL,* [2]*University of Manchester, Manchester, United Kingdom*

2:15PM
Developing Support Vector Machine Classification Of Associative Memory For Real-Time fMRI
H. Deshpande[1,2], A. Eklund[2], J. Lisinski[2], C. Mueller[2], B. King-Casas[1,2], and S. LaConte[1,2]
[1]*Virgnia Tech, Blacksburg, VA,* [2]*Virgnia Tech Carilion Research Institute, Roanoke, VA*

2:30PM
Frequent Cognitive Activity for Non-demented Elderly Adults is Associated with Higher Brain Microstructural Integrity
C. BARTH[1], R. WILSON[2], A. CAPUANO[2], S. ZHANG[2], D. BENNETT[2], AND K. ARFANAKIS[1,2]
[1]Illinois Institute of Technology, Chicago, IL, [2]Rush University, Chicago, IL

Track: Biomedical Imaging and Optics, Device Technologies and Biomedical Robotics
OP-Fri-2-17 - Room 203A
Diagnostic Devices and Biosensors II

Chairs: Mahsa Ranji, Bilal Malik

1:45PM
Quantitative Mercury Sensing and Spatiotemporal Mapping Using a Smartphone
Q. WEI[1], R. NAGI[1], K. SADEGHI[1], S. FENG[1], D. TSENG[1], AND A. OZCAN[1]
[1]University of California, Los Angeles, Los Angeles, CA

2:00PM
Skin Cancer Detection with Diffuse Reflectance Spectroscopy
R. HENNESSY[1], S. MAITY[1], S. LIM[2], J. TUNNELL[1], AND M. MARKEY[1,3]
[1]The University of Texas at Austin, Austin, TX, [2]University Health Network, Toronto, ON, Canada, [3]The University of Texas MD Anderson Cancer Center, Houston, TX

2:15PM
Characterizing Perimeter Gated Single Photon Avalanche Diodes for Bioluminescence Applications
M. HABIB[1] AND N. MCFARLANE[1]
[1]University of Tennessee, Knoxville, TN

2:30PM
Shrink Wrap Multi-scale Silica Structures Used to Enhance Fluorescence Detection for DNA Microarrays
H. SHARMA[1], J. WOOD[1], S. LIN[1], R. CORN[1], AND M. KHINE[1]
[1]University of California, Irvine, Irvine, CA

Track: Respiratory Bioengineering, Biomechanics
OP-Fri-2-18 - Room 203B
Computational Modeling of the Respiratory System

Chairs: Sarah Vigmostad, Tilo Winkler

1:45PM
An Agent-Based Network Model of Pulmonary Fibrosis Development
T. WELLMAN[1], J. BATES[2], G. DAVIS[2], AND B. SUKI[1]
[1]Boston University, Boston, MA, [2]University of Vermont, Burlington, VT

2:00PM
Airway-Parenchymal Interactions During Heterogeneous Bronchoconstriction
T. WINKLER[1] AND R. HARRIS[1]
[1]Massachusetts General Hospital and Harvard Medical School, Boston, MA

2:15PM
Comparison of Homogeneity and Efficiency of Surfactant Delivery into the Lung
M. FILOCHE[1] AND J. GROTBERG[2,3]
[1]Ecole Polytechnique, Palaiseau, France, [2]University of Michigan, Ann Arbor, MI, [3]INSERM, Créteil, France

2:30PM
A Fully Resolved Glottal Flow Simulation In a Patient-specific Geometry of the Human Larynx
M. FARAHANI[1], J. MOUSEL[1], S. VIGMOSTAD[1], AND F. ALIPOUR[1]
[1]The University of Iowa, Iowa City, IA

SPECIAL SESSION
2:00 PM – 4:00PM
Convention Center, Room 204A

Diversity, Health Disparities and Affordable Healthcare

Chairs: Gilda Barabino, Cato Laurencin

This session will be offered to better inform the broader BME community about health disparities and inequities and the role biomedical engineers can play in combating them. The session will provide a context for examining health disparities in translational research and will discuss historical examples of differential medical treatment and civil rights infringements based on race and ethnicity. Emphasis will be placed on achieving enhanced and affordable healthcare through engineering technologies.

Moderator: Gilda Barabino, PhD, The City College of New York

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

FRIDAY, October 24, 2014

3:00 PM - 4:00 PM

PLATFORM SESSIONS – FRI - 3

Track: Stem Cell Engineering, Cellular and Molecular Bioengineering
OP-Fri-3-1 - Room 001A
Engineering Stem Cell Environments

Chairs: Tara Deans, Leo Wan

3:00PM

Incorporating Instructive Cues Within a Biomaterial to Engineer Hematopoietic Stem Cell Bioactivity

B. Mahadik[1], S. Pedron[1], L. Skertich[1], and B. Harley[1,2]

[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Institute for Genomic Biology, Urbana, IL

3:15PM

Development Of A Controlled Oxygen Delivery System To Increase Adipose Stem Cell Survival

D. Santiesteban[1], A. Hannah[1], L. Suggs[1], and S. Emelianov[1]

[1]UT Austin, Austin, TX

3:30PM

Native Tissue-Specific ECMs Exhibit Distinct Mechanical Properties Affecting the Fate of hMSCs

M. Marinkovic[1], T. Block[1], R. Rakian[1], D. Dean[1], M. Reilly[1] and X-D. Chen[1]

[1]University of Texas Health Science Center at San Antonio, San Antonio, TX

3:45PM

Controlled Cell-Cell Interactions Enhance Functional Maturation of iPSC-Derived Human Hepatocytes

D. Berger[1], B. Ware[1], M. Davidson[1], and S. Khetani[1]

[1]Colorado State University, Fort Collins, CO

Track: Neural Engineering
OP-Fri-3-2 - Room 001B
Neural Control and Modeling

Chairs: Katherine Steele, Eric Perreault

3:00PM

Stroke Reduces Neuromotor Control Bandwidth at the Elbow: A Pilot Study

M. Bengtson[1], L. Mrotek[1,2], T. Stoeckmann[1], C. Ghez[3], and R. Scheidt[1,4]

[1]Marquette University, Milwaukee, WI, [2]University of Wisconsin Oshkosh, Oshkosh, WI, [3]Columbia University, New York, NY, [4]Northwestern University, Evanston, IL

3:15PM

Weak Electric Field Effects From Sham Transcranial Magnetic Stimulation on EEG Dynamics

J. Mueller[1], A. Opitz[2,3], W. Legon[2], A. Barbour[2], W. Bickel[2], W. Paulus[3], and W. Tyler[1,2]

[1]Virginia Tech, Blacksburg, VA, [2]Virginia Tech Carilion Research Institute, Roanoke, VA, [3]Georg-August-University, Gottingen, Germany

3:30PM

Autaptic Connections Shift Network Excitability and Bursting

L. Wiles[1], D. Bassett[1], and D. Meaney[1]

[1]University of Pennsylvania, Philadelphia, PA

3:45PM

Linear Decoders of Retinal Spike-trains Yield Ideal-Observer Performance for Broad Classes of Visual Tasks

A. Iyer[1] and N. Grzywacz[1]

[1]University of Southern California, Los Angeles, CA

Track: Biomaterials
OP-Fri-3-3 - Room 006A
Bioinspired and Self Assembling Biomaterials II

Chairs: Michael Yu, Gargi Ghosh

3:00PM

Thromboresistant Collagen-mimetic Hydrogels as Coatings for Cardiovascular Devices

V. Guiza-Arguello[1], S. Becerra-Bayona[1], S. Malmut[1], B. Russell[2], M. H??k[2], E. Cosgriff-Hernandez[3], and M. Hahn[1]

[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Texas A&M Health Science Center, Houston, TX, [3]Texas A&M University, College Station, TX

3:15PM

The Design of Antimicrobial and Wound Healing Detachable Thin Films

M. Cassin[1], D. Susanti[1], B. Mukhopadhyay[1], and P. Rajagopalan[1]

[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

3:30PM

Virus-inspired Self-assembling Peptide Nanoparticle Vaccines

C. Chesson[1], R. Appavu[1], and J. Rudra[1]

[1]Department of Pharmacology and Toxicology, Sealy Center for Vaccine Development, University of Texas Medical Branch, Galveston, TX

3:45PM

Collagen Mimetic Peptide Conjugated Nanoparticles For Targeting Denatured Collagens

B-H. San[1], Y. Li[1], and M. Yu[1]

[1]University of Utah, Salt Lake, UT

Track: Neural Engineering
OP-Fri-3-4 - Room 006B
Neural Engineering: Controlling Cell Behavior

Chairs: Erin Lavik, J-C Chiao

3:00PM

Hemostatic Nanoparticles: New Approaches for CNS Injuries

E. Lavik[1]

[1]Case Western Reserve University, Cleveland, OH

3:15PM

Conducting Polymer Films with Various Biomolecules for Cellular Adhesion and Growth

S. Park[1], G. Yang[1], D. Nocera[1], M. Abidian[1], and S. Majd[1]

[1]Pennsylvania State University, University Park, PA

3:30PM

Remote Regulation Of Neural Activity With Localized Release From Photo-sensitive Microgels

W. Li[1], R. Luo[2], L. Yan[3], A. Jadhav[1], X. Chen[3], C-H. Chen[2], and P. Shi[1]

[1]City University of Hong Kong, Kowloon, Hong Kong, [2]National University of Singapore, Singapore, Singapore, [3]Cityu University of Hong Kong, Kowloon, Hong Kong

3:45PM

Quercetin And Derivatives Reduce Nuclear Factor-κB Activation Associated With Alzheimer's Disease

K. Pate[1], M. Rogers[1], J. Clegg[1], and M. Moss[1]

[1]University of South Carolina, Columbia, SC

Track: Drug Delivery
OP-Fri-3-5 - Room 006C
Multifunctional Drug Delivery

Chairs: Lola Eniola-Adefeso, YongTae Kim

3:00PM
In Vivo Delivery of Transcription Factors by Multifunctional Oligonucleotides Suppress Liver Failure
M. Rafi[1], K. Lee[1], X. Feng[1], R. Tang[1], N. Lingampalli[1], and N. Murthy[1]
[1]*University of California Berkeley, Berkeley, CA*

3:15PM
Bioengineered Nanoporous Silicon with Leukocyte Membrane Promotes Endothelial Adhesion
M. Evangelopoulos[1], R. Palomba[1], C. Corbo[1], A. Parodi[1], S. Acciardo[1], and E. Tasciotti[1]
[1]*Houston Methodist Research Institute, Houston, TX*

3:30PM
Light-activated Collapse of Sub-micron Gold Nanoplate/Polymer Shell Composite Particles for Drug Delivery Applications
M. O'Toole[1], K. James[1], D. Patel[2], and R. Keynton[1]
[1]*University of Louisville, Louisville, KY,* [2]*Energy Delivery Solutions, Jefersonville, IN*

3:45PM
Controlled Delivery of an Anticonvulsant Drug Pregabalin Through Visible-Light-Cured pH Responsive Composite Hydrogels
S. Kizilel[1], O. Cevik[1], and D. Gidoni[1]
[1]*KOC University, Istanbul, Turkey*

PLATFORM SESSIONS
Fri-3

Track: Translational Biomedical Engineering, Stem Cell Engineering
OP-Fri-3-6 - Room 006D
Translational Therapeutics for Regenerative Medicine

Chairs: Robert Mauck, Mark Van Dyke

3:00PM
Injection of Matrilin-3/Nanotube Matrix for Treatment of Growth Plate Cartilage Injury *in Vivo*
Y. Chen[1], P. McClure[1], S. McAllister[1], T. Albright[1], H. Yu[1], L. Eric[1], D. Moore[1], H. Fenniri[2], M. Ehrlich[1], and Q. Chen[1]
[1]*Brown University, Providence, RI,* [2]*Northeastern University, Boston, MA*

3:15PM
The Story of Hepregen Corporation: Bringing Engineered Liver Devices to the Marketplace
S. Khetani[1]
[1]*Colorado State University, Fort Collins, CO*

3:30PM
Glypisomes: A Novel Construct for Enhancing of Growth Factor Activity for Therapeutic Angiogenesis
A. Monteforte[1], B. Lam[1], A. Dunn[1], and A. Baker[1]
[1]*University of Texas at Austin, Austin, TX*

3:45PM
Exogenous Nitric Oxide Production Using Dielectric Barrier Discharge Plasma for Enhanced Osteoblasts Activity
M. Elsaadany[1], G. Subramanian[1], H. Ayan[1], and E. Yildirim-Ayan[1,2]
[1]*University of Toledo, Toledo, OH,* [2]*University of Toledo Medical Center, Toledo, OH*

Track: Cancer Technologies, Biomedical Imaging and Optics
OP-Fri-3-7 - Room 007A
Imaging Strategies in Cancer

Chairs: Javier Jo, Vikram Kodibagkar

3:00PM
Down to 200 Cancer Cells Detected in Tumor-Draining Lymph Nodes by Dual-Tracer Fluorescence Imaging
K. Tichauer[1], K. Samkoe[2], J. Gunn[2], S. Kanick[2], P. Hoopes[2], R. Barth[2], P. Kaufman[2], T. Hasan[3], and B. Pogue[2]
[1]*Illinois Institute of Technology, Chicago, IL,* [2]*Dartmouth College, Hanover, NH,* [3]*Massachusetts General Hospital, Boston, MA*

3:15PM
Multicolor Three-Dimensional Tracking of Single Epidermal Growth Factor Receptors
Y-L. Liu[1], E. Perillo[1], C. Liu[1], Y-A. Chen[1], M-C. Hung[2,3,4], A. Dunn[1], and H-C. Yeh[1]
[1]*Department of Biomedical Engineering, University of Texas at Austin, Austin, TX,* [2]*Department of Molecular and Cellular Oncology, The University of Texas M.D. Anderson Cancer Center, Houston, TX,* [3]*Graduate School of Biomedical Sciences at Houston, The University of Texas, Houston, TX,* [4]*Center for Molecular Medicine and Graduate Institute of Cancer Biology, China Medical University, Taichung, Taiwan*

3:30PM
Image-guided Photodynamic Therapy and Irinotecan Chemotherapy Combination for Pancreatic Cancer Treatment
S. Mallidi[1], H-C. Huang[1], C-T. Chiang[1], Z. Mai[1], I. Rizvi[1], and T. Hasan[1]
[1]*Harvard Medical School, Boston, MA*

3:45PM
Design of Biofunctionalized Rare-Earth Albumin Nanocomposites for Tumor Microlesion Detection and Tracking
M. Zevon[1], V. Ganapathy[1], P. Kim[1], D. Naczynski[2], M-C. Tan[3], R. Riman[1], C. Roth[1], and P. Moghe[1]
[1]*Rutgers University, Piscataway, NJ,* [2]*Stanford University, Stanford, CA,* [3]*Singapore University of Technology and Design, Singapore, Singapore*

Track: Cardiovascular Engineering
OP-Fri-3-8 - Room 007B
Structure-function Relationship in the Cardiovascular System

Chairs: Manu Platt, Michael Davis

3:00PM
An *In Vitro* Study of the Effect of the Craya-Curtet Number on Contrast Injections during Angiography
A. Pagano[1], C. Sadasivan[1], D. Fiorella[1], H. Woo[1], and B. Lieber[1]
[1]*Stony Brook University, Stony Brook, NY*

3:15PM
Quantifying Myocardial Structure and Function Following Infarction Through Multiphoton Microscopy
K. Quinn[1], K. Sullivan[1], Z. Ballard[1], I. Georgakoudi[1], and L. Black[1,2]
[1]*Tufts University, Medford, MA,* [2]*Tufts University School of Medicine, Boston, MA*

3:30PM
Myoarchitectural Differences Between the Right and Left Ventricles of the Mouse Heart Determined by Generalized Q-space (GQ) MRI
E. Taylor[1], S. Mijailovich[1], A. Abrishamchi[1], M. Hoffman[1], and R. Gilbert[1]
[1]*Northeastern University, Boston, MA*

P = Poster Session
OP = Oral Presentation

3:45PM
The Influence of Input Variables on Size Outcome in the Rabbit Elastase-Induced Aneurysm Model
R. Dholakia[1], C. Sadasivan[1], L. Peeling[1], D. Fiorella[1], H. Woo[1], and B. Lieber[1]
[1]*Stony Brook University, Stony Brook, NY*

Track: Cellular and Molecular Bioengineering
OP-Fri-3-9 - Room 007C
Cell Motility

Chairs: William Guilford, Cynthia Reinhart-King

3:00PM
Equations of Inter-doublet Separation during Flagella Motion Explain Propagation of Dynein Activity
P. Bayly[1] and K. Wilson[1]
[1]*Washington University in Saint Louis, Saint Louis, MO*

3:15PM
The Motile System Of A Parasite Measured In Live Cells At The Level Of Single Molecules
R. Stadler[1], L. White[1], K. Hu[2], B. Helmke[1], and W. Guilford[1]
[1]*University of Virginia, Charlottesville, VA,* [2]*Indiana University, Bloomington, IN*

3:30PM
Dimensionality and Contact Guidance Affect Tumor Cell Migration and Decision Making
C. Paul[1,2,3], M. Mahoney[1], and K. Konstantopoulos[1,2,3,4]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Institute for NanoBioTechnology, Baltimore, MD,* [3]*Physical Science-Oncology Center, Baltimore, MD,* [4]*Center of Cancer Nanotechnology Excellence, Baltimore, MD*

3:45PM
Filling the Gap: Relative Role of Proliferation versus Migration in Response to Injury of Vascular Endothelial and Smooth Muscle Cells
K. Ammann[1], K. DeCook[1], P. Tran[1], and M. Slepian[1]
[1]*University of Arizona, Tucson, AZ*

Track: Orthopaedic and Rehabilitation Engineering, Biomechanics
OP-Fri-3-10 - Room 007D
Translational Research Relevant to Common Orthopaedic Injuries

Chairs: F. Scott Gayzik, Grace O'Connell

3:00PM
Epimuscular Fat in the Human Rotator Cuff is a Novel Brown Fat Depot Influenced by Cuff State
G. Meyer[1], M. Gibbons[2], E. Sato[2], J. Lane[2], S. Ward[2], and A. Engler[2]
[1]*Washington University in St. Louis, St. Louis, MO,* [2]*UCSD, La Jolla, CA*

3:15PM
The Effect of Size and Location of Tears in the Supraspinatus Tendon on Potential Tear Propagation
S. Damle[1], J. Thunes[1], S. Pal[1], R. Miller[1], R. Debski[1], and S. Maiti[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

3:30PM
Surgical Design and Graft-Tunnel Interaction: An Analytical examination of ACL reconstruction
S. Salehghaffari[1] and Y. Dhaher[1]
[1]*Northwestern University, Chicago, IL*

3:45PM
Knee Biomechanics of Adolescent Athletes Returning to Sports Following ACL Reconstruction
E. Garibay[1], M. Milewski[1], S. Ounpuu[1], J. Woods[1], N. Giampetruzzi[1], and D. Suprenant[1]
[1]*Connecticut Children's Medical Center, Farmington, CT*

Track: Nano to Micro Technologies
OP-Fri-3-11 - Room 008A
Nanoparticles and Theranostics

Chairs: Carlos Rinaldi, Hyun Joon Kong

3:00PM
Facile Method for the Site-Specific, Covalent Attachment of Full-Length IgG onto Nanoparticles
J. Hui[1] and A. Tsourkas[1]
[1]*University of Pennsylvania, Philadelphia, PA*

3:15PM
New Design Strategies for Multicolor NanoCluster Beacons
J. Obliosca[1], M. Babin[1], C. Liu[1], Y-L. Liu[1], R. Batson[1], and H-C. Yeh[1]
[1]*University of Texas at Austin, Austin, TX*

3:30PM
A New Methodology for Preparation of Uniformly Sized Cell Membrane Mimicking Vesicles
Y. Kang[1], H. Wostein[1], and S. Majd[1]
[1]*Pennsylvania State University, University Park, PA*

3:45PM
A Multifunctional Nanoplatform for the Enhancement and Prediction of Therapeutic Response to External Beam Radiation Therapy
A. Al Zaki[1], C. McQuade[1], G. Kao[1], J. Dorsey[1], and A. Tsourkas[1]
[1]*University of Pennsylvania, Philadelphia, PA*

Track: Tissue Engineering, Biomaterials
OP-Fri-3-12 - Room 008B
Scaffolds and Surfaces for Tissue Engineering III

Chairs: Taby Ahsan, Sheila Grant

3:00PM
Mechanical Properties Of Decellularized Lung Extracellular Matrix Tissue Scaffold Electospun With PLLA
B. Blakeney[1], G. Schreyack[1], R. Pouliot[1], and R. Heise[1]
[1]*Virginia Commonwealth University, Richmond, VA*

3:15PM
Electrochemically Compacted Collagen Matrices for Corneal Repair
R. Iyer[1] and V. Kishore[1]
[1]*Florida Institute of Technology, Melbourne, FL*

3:30PM
Bundled Gel Fibers Fabricated with a Combination of Microfluidic Device and Phase-Separated Polymer Solution
Y. Matsunaga[1] and Y-J. Kim[1]
[1]*The University of Tokyo, Tokyo, Japan*

3:45PM
Tailoring Silk Fibroin Degradation using Embedded Proteolytic Enzymes
J. Coburn[1], B. Marelli[1], F. Omenetto[1], and D. Kaplan[1]
[1]Tufts University, Medford, MA

Track: Device Technologies and Biomedical Robotics
OP-Fri-3-13 - Room 201
Biomedical Robotics

Chairs: Arthur Ritter, Jaydip Desai

3:00PM
Design of a Compact Manipulator with Six Degrees-of-Freedom for Flexible Access Surgery
C. Bryson[1], A. Orekhov[1], and D. Rucker[1]
[1]University of Tennessee, Knoxville, TN

3:15PM
3D Printed Optogenetic Skeletal Muscle-Powered Biological Machines
R. Raman[1], C. Cvetkovic[1], B. Williams[1], S. Uzel[2], R. Platt[2], R. Kamm[2], M. Saif[1], and R. Bashir[1]
[1]University of Illinois at Urbana-Champaign, Champaign, IL, [2]Massachusetts Institute of Technology, Cambridge, MA

3:30PM
Haptic Robot and Human Ppsychophysical Studies: A Complementary Framework to Decode Haptic Perception
Z. Su[1] and G. Loeb[1,2]
[1]University of Southern California, Los Angeles, CA, [2]Syntouch LLC, Los Angeles, CA

3:45PM
Portable Robot for Autonomous Venipuncture using 3D Near Infrared and Ultrasound Guidance
A. Chen[1], M. Balter[1], and T. Maguire[1]
[1]Rutgers University, Piscataway, NJ

Track: Biomechanics
OP-Fri-3-14 - Room 103B
Countermeasures for Bone Loss and Injury

Chairs: Russell Main, Oran Kennedy

3:00PM
Early Axial Compressive Loading Delays Mineralization and Remodeling of a Tibial Cortical Defect in Mice
R. Carrera[1], D. Wagner[2], B. George[3], P. Leucht[3], D. Hunter[3], J. Helms[3], G. Beaupre[2], and A. Castillo[2,3]
[1]Stanford University, Palo Alto, CA, [2]VAPAHCS, Palo Alto, CA, [3]Stanford University School of Medicine, Palo Alto, CA

3:15PM
Photoacoustic Stimulation Enhances Bone Fracture Healing in Rats
Y. Talukdar[1], J. Rashkow[1], S. Patel[1], G. Lalwani[1], and B. Sitharaman[1]
[1]Stony Brook University, Stony Brook, NY

3:30PM
Both Bone Quality and Quantity of Obese Mice are Enhanced by Low Intensity Vibrations
B. Nguyen[1], M. Chan[1], L. Lin[1], Y-X. Qin[1], and C. Rubin[1]
[1]Stony Brook University, Stony Brook, NY

3:45PM
Trabecular Bone Response to Elevated Loading Frequencies
R. Chung[1], M. Niemiera[1], A. Ritter[1], T. Errico[2], and A. Valdevit[1,2]
[1]Stevens Institute of Technology, Hoboken, NJ, [2]NYU Langone Medical Center, New York, NY

Track: Bioinformatics, Computational and Systems Biology
OP-Fri-3-15 - Room 202A
Prokaryotic Systems Biology

Chairs: Ranjan Srivastava, Cheemeng Tan

3:00PM
Comparative Systems Analysis Of Persistent Cystic Fibrosis Pathogens
J. Bartell[1], J. Thøgersen[2], J. Thykær[2], K. Nielsen[2], S. Molin[2], L. Jelsbak[2], and J. Papin[1]
[1]University of Virginia, Charlottesville, VA, [2]Technical University of Denmark, Lyngby, Denmark

3:15PM
In Silico Analysis of Bacillus Anthracis Predicts Link Between Quorum Sensing Circuit And Iron Metabolism
E. Bautista[1] and R. Srivastava[1]
[1]University of Connecticut, Storrs, CT

3:30PM
Systems Analysis of Pseudomonas aeruginosa to Identify Drug Targets and Virulence Factor Dependencies
J. Bartell[1], A. Blazier[1], P. Yen[1], J. Thøgersen[2], P. Jensen[3], and J. Papin[1]
[1]University of Virginia, Charlottesville, VA, [2]Technical University of Denmark, Lyngby, Denmark, [3]Boston College, Chestnut Hill, MA

3:45PM
Phenotypic Signatures Arising from Unbalanced Bacterial Growth
C. Tan[1], R. Smith[2], M-C. Tsai[3], R. Schwartz[3], and L. You[4]
[1]University of California Davis, Davis, CA, [2]Nova Southwestern, Fort Lauderdale, FL, [3]Carnegie Mellon University, Pittsburgh, PA, [4]Duke University, Durham, NC

P = Poster Session
OP = Oral Presentation

FRIDAY

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REFRESHMENT BREAKS

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TRANSLATION,

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TISSUE ENGINEERING

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AND

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SYNTHETIC BIOLOGY

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BIOMATERIALS,

160 159 158 157 156 155 154 153 152 151
141 142 143 144 145 146 147 148 149 150

MICRO ENVIRONMENTS

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AND

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CONTROLLING

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CELL BEHAVIOR

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POSTERS

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REFRESHMENT BREAKS

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DRUG

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DELIVERY

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CARDIOVASCULOR

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ENGINEERING

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IMAGING

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NEURAL ENG'G

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REFRESHMENT BREAKS

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MICRO

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TECHNOLOGY

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CARDIOPULMONARY

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ORTHOPAEDIC

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BIOMECHANICS

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FRIDAY, October 24, 2014

9:30 AM - 5:00 PM

POSTER SESSIONS

POSTER SESSION **Fri**

Track: Biomaterials

Bioinspired and Self Assembling Biomaterials

Chairs: Meng Deng, Wei Li

P-Fri-27
Mechanical Flows Govern the Architecture of Actin Bundle Structures
S. Jo[1] and H. Lee[1]
[1]Yonsei University, Seoul, Korea, Republic of

P-Fri-28
Polydopamine-coated Implantable Metallic Seed for Migration Prevention
W. Lee[1], H. Lee[1], M. Park[1], C. Park[1], J. Park[1], S-J. Ye[2], and Y. Choy[3]
[1]Seoul National University, Seoul, Korea, Republic of, [2]Seoul National University Hospital, Seoul, Korea, Republic of, [3]Seoul National University College of Medicine, Seoul, Korea, Republic of

P-Fri-29
Bio-inspired Functional Collagen-Cellulose Hydrogel Nanocompositeas a Potential Scaffold in Cardiovascular Tissue Engineering
P. Pooyan[1], R. Tannenbaum[1], and H. Garmestani[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Fri-30
Assessing the Biological Activity of an Ester-modified, Self-assembling RGD Peptide as the Basis for Highly Degradable, Cell-instructive Hydrogel Biomaterials
K. Eckes[1], C. Laramy[1], M. Ruehle[1], and L. Suggs[1]
[1]The University of Texas at Austin, Austin, TX

P-Fri-31
Bioinspired Tannin Complexes for Redox Responsive Biomaterials
H. Cheng[1], C. Drinnan[1], M. MacPherson[1], and O. Fisher[1]
[1]Temple University, Philadelphia, PA

P-Fri-32
Novel Free Form Fabrication Using a Modified, Thermo-reversible, Type-I Collagen
K. Drzewiecki[1], W. Ko[1], A. Chavkin[1], D. Giordano[1], and D. Shreiber[1]
[1]Rutgers University, Piscataway, NJ

P-Fri-33
Self-assembly of Individual Cyclic Peptide Nanotubes (ICPNs) for *In Vivo* Sensing
L. Sun[1], Y. Wang[1], Y. Huang[1], and M. Zhang[1]
[1]The Ohio State University, Columbus, OH

P-Fri-34
The Effect of L-Arginine on Platelet Adhesion using Bovine Whole Blood on a Novel Biointerface: d-LbL
R. Porter[1], J. Adangai[1], and M. Watson[1]
[1]LeTourneau University, Longview, TX

P-Fri-35
Hydrogen Peroxide Generation and Cytotoxicity of Hydrogel-bound Mussel Inspired Adhesives
H. Meng[1] and B. Lee[1]
[1]Michigan Technological University, Houghton, MI

P-Fri-36
Targeted Delivery of SV40 Virus-Like Particles for Vaccine Vehicles
M-C. Hsieh[1] and M. Pishko[1]
[1]Texas A&M University, College Station, TX

Track: Biomaterials

Biomaterial Scaffolds

Chairs: Vassilios Sikacitsas, Daniel Alge

P-Fri-89
Increasing Scaffold Attenuation with Hydroxyapatite Enhances an Ultrasound-induced Gene Switch
R. Phanse[1], M. Fabiilli[1], A. Moncion[1], J. Fowlkes[1], and R. Franceschi[1]
[1]University of Michigan, Ann Arbor, MI

P-Fri-90
Porated $PDMS_{star}$-PEG Hydrogels for Osteochondral Tissue Engineering
R. Sehnert[1], E. Gacasan[1], B. Basagaoglu[1], B. Bailey[1], and M. Grunlan[1]
[1]Texas A&M University, College Station, TX

P-Fri-91
Electrospinning Silk With Selenium Nanoparticles For Antibacterial Skin Applications
S. Chung[1], M. Stolzoff[1], B. Ercan[1], and T. Webster[1]
[1]Northeastern University, Boston, MA

P-Fri-92
Development of Gel Injectable Matrix for Treatment of Muscle Degeneration
K. Wilson[1] and J. Wolchok[1]
[1]University of Arkansas, Fayetteville, AR

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Fri-93
In Vitro Investigation of a Novel Genipin-Nanoparticle-Collagen Template
Z. Beach[1], J. Bradley[1], D. Grant[1], and S. Grant[1]
[1]University of Missouri, Columbia, MO

P-Fri-94
Characterization of a Nanomaterial-Tissue Patch for Vascular and Cardiac Reconstruction
A. Ostdiek[1], R. Gopaldas[2], and S. Grant[1]
[1]University of Missouri, Columbia, MO, [2]Prairie Cardiovascular, Springfield, IL

P-Fri-95
Self-Fitting Shape Memory Polymer Scaffolds For Bone Defect Repair
L. Nail[1], D. Zhang[1], K. Peterson[1], O. George[1], J. Reinhard[1], H. Glidewell[1], and M. Grunlan[1]
[1]Texas A&M University, College Station, TX

P-Fri-96
Characterizing the Cellular Response of Electrospun Manuka Honey-eluting Scaffolds
B. Minden-Birkenmaier[1], E. Growney Kalaf[1], R. Flores[1], B. Janowiak[1], and S. Sell[2]
[1]Saint Louis University, St. Louis, MO, [2]Saint Louis University, St Louis, MO

P-Fri-97
Characterization Of Pullulan As A Novel Material For Peripheral Nerve Conduits
J. Simmons[1], Z. Snow[1], M. Grinter[1], and P. VandeVord[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

P-Fri-98
Degradable and Semi-Interpenetrating Hydrogels from PEG and Collagen for Tissue Scaffolds
C. Peak[1], S. Nagar[1], R. Watts[1], and G. Schmidt[1]
[1]Purdue University, West Lafayette, IN

P-Fri-99
Stimulating Cell Recruitment on Fibrin Microthreads to Enhance Skeletal Muscle Regeneration
J. Grasman[1], R. Page[1], T. Dominko[1], and G. Pins[1]
[1]Worcester Polytechnic Institute, Worcester, MA

P-Fri-100
Scaffold HA/TCP Coated by Gelatin: *In Vitro* Test
L. Rodrigues[1,2], C. Zavaglia[2,3], and C. Lombello[1]
[1]Federal University of ABC, Santo Andre, Brazil, [2]INCT-Biofabris, Campinas, Brazil, [3]Mechanical Engineering - State University of Campinas, Campinas, Brazil

P-Fri-101
Functional Lymphatics That Drain Collagen-Based Scaffolds
R. Thompson[1], B. Coisman[1], and J. Tien[1]
[1]Boston University, Boston, MA

P-Fri-102
Directing Bone Formation Using Nacre Proteins Patterned on Poly(ethylene glycol) Substrates
K. White[1], C. Franco[2], J. West[3], and R. Olabisi[1]
[1]Rutgers University, Piscataway, NJ, [2]Twister Biotech, Houston, TX, [3]Duke University, Durham, NC

P-Fri-103
Raw Material-Directed Differentiation Of Rat Bone Marrow Stromal Cells In Microsphere Based Gradient Scaffolds
V. Gupta[1] and M. Detamore[1]
[1]University of Kansas, Lawrence, KS

P-Fri-104
Fabrication of Biodegradable hydroxyapatite-PLGA-collagen Biomaterial for Bone Regeneration
D. Bhuiyan[1], J. Middleton[1], R. Tannenbaum[2], and T. Wick[1]
[1]University of Alabama at Birmingham, Birmingham, AL, [2]Stony Brook University, Stony Brook, NY

P-Fri-105
Electrospinning of Arabinoxylan as a Novel Nanofiber Scaffold
D. Aduba, Jr.[1], W. Yeudall[1], and H. Yang[1]
[1]Virginia Commonwealth University, Richmond, VA

P-Fri-106
Cytotoxicity of Boron Nitride Reinforced Polymeric Scaffolds.
B. Farshid [1], G. Lalwani[1], and B. Sitharaman[1]
[1]Stony Brook University, Stony Brook, NY

P-Fri-107
Response of Hydroxyapatite and Tricalcium Phosphate Bone Scaffolds to Elevated Loading Frequencies
C. Maglaras[1], A. Ritter[1], D. Kalyon[1], A. Ergun-Butros[1], and A. Valdevit[1]
[1]Stevens Institute of Technology, Hoboken, NJ

P-Fri-108
Development of PLLA Hollow Fiber Scaffold by Electrospinning for Cartilage Regeneration
K. Minamimoto[1], Y. Morita[1], T. Katayama[1], and E. Nakamachi[1]
[1]Doshisha University, Kyotanabe, Japan

P-Fri-109
Gelatin Foam Production: *In Vitro* Test
L. Rodrigues[1,2], D. Ferraraz[1], M. Nascimento[1], and C. Lombello[1]
[1]Federal University of ABC - UFABC, Santo Andre, Brazil, [2]INCT-BioFabris, Campinas, Brazil

Track: Biomaterials

Biomaterials Design

Chairs: Hitesh Handa, Michael Fenn

P-Fri-13
Stiffness Enhancement of Ultra-flexible Implantable Microsensor Array with Biodegradable Materials
C. Nguyen[1], L. Lee[1], S. Rao[1], and J-C. Chiao[1]
[1]University of Texas at Arlington, Arlington, TX

P-Fri-14
Biodegradable Sponge Fabrication For Use In Negative Pressure Wound Therapy
H. Warner[1,2], R. Wang[1,2], J. Jordan[2], M. Morykwas[1,2], L. Argenta[2], and W. Wagner[1,2]
[1]Wake Forest University-Virginia Tech, Winston-Salem, NC, [2]Wake Forest Baptist Hospital, Winston-Salem, NC

P-Fri-15
Water Structure in Hydrated Poly(2-methoxyethyl acrylate) Analogues Possessing Blood Compatibility
K. Sato[1], S. Kobayashi[1], T. Hoshiba[1], S. Watahiki[1], M. Oikawa[1], and M. Tanaka[1]
[1]Yamagata University, Yonezawa, Japan

P-Fri-16
The Role of Substrate Materials in Controlled Culture of Endothelial Cells
W. Wosik[1], S. Das[1], Z. Zuo[1], and F. Merchant[1]
[1]University of Houston, Houston, TX

P-Fri-17
Iron Oxide and Selenium Nanoparticles Combined with Methotrexate to Inhibit Bone Cancer Growth
E. Alpaslan[1] and T. Webster[1]
[1]Norheastern University, Boston, MA

P-Fri-18
Reduction Induced Biodegradable Polyurethane Elastomers for Biomedical Applications
C. Xu[1,2] and Y. Hong[1,2]
[1]University of Texas at Arlington, Arlington, TX, [2]The University of Texas Southwestern Medical Center at Dallas, Dallas, TX

See page 141 for Poster floor plan

P-Fri-19
Enhanced Protein Resistance of Silicones Containing PEG-silane Amphiphiles as Surface Modifying Additives
M. Rufin[1], J. Gruetzner[1], M. Hurley[1], M. Hawkins[1], E. Raymond[1], J. Raymond[1], and M. Grunlan[1]
[1]Texas A&M University, College Station, TX

P-Fri-20
Electrosprayed Polyethylene Glycol Hydrogel Microspheres for Platelet Rich Plasma Delivery in Knee Osteoarthritis
E. Jain[1], K. Scott[1], S. Sheth[1], S. Zustiak[1], and S. Sell[1]
[1]Saint Louis University, St. Louis, MO

P-Fri-21
Spun Silk-Fibronectin Protein Alloy Fibers for Improved Cellular Adhesion
M. Jacobsen[1], D. Li[1], N. Rim[1], N. Hall[1], M. Smith[1], and J. Wong[1]
[1]Boston University, Boston, MA

P-Fri-22
Polycaprolactone Nanofibrous Materials as an Efficient Dry Eye Test Strip
K. Patel[1], V. Kandala[2], A. Aphale[2], and P. Patra[2]
[1]University of Bridgeport, bridgeport, CT, [2]University of Bridgeport, Bridgeport, CT

P-Fri-23
Manipulation of Hydrogel Structure Using the Mechanical Flow Induced by Surface Acoustic Wave
B. Kang[1], S. Jo[1], Y. Jeon[1], and H. Lee[1]
[1]Yonsei University, Seoul, Korea, Republic of

P-Fri-24
Influence of Gallium Incorporation on Wettability of Glass Polyalkenoate Cements
A. Alhalawani[1], D. Curran[1], and M. Towler[1]
[1]Ryerson University, Toronto, ON, Canada

P-Fri-25
Site-Specific and Enzyme-Mediated Modular Construction of Protein Complexes
N. Bhokisham[1], Y. Liu[1], H. Pakhchanian[1], G. Payne[1], and W. Bentley[1]
[1]University of Maryland, College Park, MD

P-Fri-26
Quantification of Stresses in Hydrogels using Photoelasticity
G. Feuer[1], M. Pendola[1], and S. Saha[1]
[1]SUNY Downstate, Brooklyn, NY

POSTER SESSION Fri

Track: Biomaterials

Biomaterials for Controlling Cell Environment

Chairs: Hitesh Handa, Michael Fenn

P-Fri-136
Encoding PEG Hydrogel Mechanics through Peptide Sequence to Regulate Endothelial Cell Morphogenesis
R. Schweller[1] and J. West[1]
[1]Duke University, Durham, NC

P-Fri-137
Dual-crosslinked Hydrogel Microwell System for Formation and Culture of Multicellular Human Mesenchymal Stem Cell Spheroids
O. Jeon[1], D. Wolfson[1], and E. Alsberg[1]
[1]Case Western Reserve University, Cleveland, OH

P-Fri-138
Patterning Cellular Microenvironments with a Hybrid Photopatterned Enzymatic Reaction (HyPER) Cell-compatible Platform
D. Griffin[1], N. Darling[1], and T. Segura[1]
[1]UC Los Angeles, Los Angeles, CA

P-Fri-139
Osseo-integration and Biofilm Formation on Different Ti-surfaces in a Post-operative Infection Model
N. Ghimire[1], B. Foss[1], Y. Sun[2], and Y. Deng[1]
[1]The University of South Dakota, Sioux Falls, SD, [2]The University of Massachusetts, Lowell, MA

P-Fri-140
Assessing the Osteoinductivity of Engineered Biomimetic Periosteum on Cortical Bone Allografts
R. Romero[1], L. Chubb[1], E. Asbury[1], A. Pennybaker[1], J. Travers[1], N. Ehrhart[1], and M. Kipper[1]
[1]Colorado State University, Fort Collins, CO

P-Fri-141
Development of an *in vitro* Bladder Cancer Tissue Mimic and the Response to Cisplatin Treatment
B. Balhouse[1], A. Pekkanen[1], M. Rylander[1], and P. Vlachos[2]
[1]Virginia Tech, Blacksburg, VA, [2]Purdue University, West Lafayette, IN

P-Fri-142
Designing a Dynamically Tunable Photoresponsive Hydrogel for Studying Mechanotransduction
W. Zhong[1], C. Petchprayoon[1], S. Li[1], and G. Marriott[1]
[1]University of California, Berkeley, Berkeley, CA

P-Fri-143
Poly-L-Arginine Based Materials As Instructive Substrates for Fibroblasts Synthesis of Collagen
K. Bratlie[1]
[1]Iowa State University, Ames, IA

P-Fri-144
Strain-Based Detachment of Intact Tissue Modules from Shape-changing Hydrogel
O. Akintewe[1], S. DuPont[1], M. Cross[1], K. Elineni[1], R. Toomey[1], and N. Gallant[1]
[1]University of South Florida, Tampa, FL

P-Fri-145
Conformal Nanopatterning of Extracellular Matrix Proteins onto Topographically Complex Surfaces
Q. Jallerat[1], Y. Sun[1,2], J. Szymanski[1], and A. Feinberg[1]
[1]Carnegie Mellon University, Pittsburgh, PA, [2]Beihang University, Beijing, China, People's Republic of

P-Fri-146
Influence of Sparse Electrospun Fibers on the Differentiation of Mesenchymal Stem Cells in Collagen Gels
P. Thayer[1], E. Tong[1], D. Plessl[1], L. Dahlgren[1], and A. Goldstein[1]
[1]Virginia Tech, Blacksburg, VA

P-Fri-147
A Mechanistic Study of Collective Fibroblast Migration
P. Sharma[1], A. Kim[1], C. Ng[1], B. Behkam[1], and A. Nain[1]
[1]Virginia Tech, Blacksburg, VA

P-Fri-148
Rational And Combinatorial Biomaterial Screening Platform For Development Of Optimal Tissue Specific Biomaterials
S. Ramamoorthy[1], R. Jacobson[1], J. Malcovitch[1], C. Bertucci[1], G. Saunders[1], D. Thompson[1], and P. Karande[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Fri-149
Reducing Axon Retraction Events With Patterned Biomaterial Cues
M. Wrobel[1] and H. Sundararaghavan[1]
[1]*Wayne State University, Detroit, MI*

P-Fri-150
Electroconductive Hyaluronic Acid Hydrogel for Neuronal Differentiationof Human Neural Stem Cells
J. Shin[1], E. Choi[2], K. Yang[1], C. Song[2], and S-W. Cho[1]
[1]*Yonsei University, seoul, Korea, Republic of,* [2]*Sungkyunkwan University, Suwon, Korea, Republic of*

P-Fri-151
Photo-Patterning Gelatin Hydrogels Using Caged Collagen Mimetic Peptides
Y. Li[1], J. Kessler[1], and S. Yu[1]
[1]*University of Utah, Salt Lake City, UT*

P-Fri-152
Carboxymethylcellulose Hydrogels Support CNS-derived Tumor Cell Chemotactic Migration
T. Singh[1], C. Kothapalli[2], D. Varma[1], S. Nicoll[1], and M. Vazquez[1]
[1]*City College of New York-CUNY, New York, NY,* [2]*Cleveland State University, Cleveland, OH*

P-Fri-153
Orthopedic Implant Coating for Improved Osseointegration and Reduced Biofilm Formation
L. Actis[1], A. Srinivasan[1], A. Ramasubramanian[1], and J. Ong[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

P-Fri-154
Engineered Hydrogel System for Bone Regeneration Through Endochondral Ossification
P. Mikael[1] and S. Nukavarapu[2]
[1]*University of Connecticut, Farmington, CT,* [2]*University of Connecticut Health, Farmington, CT*

P-Fri-155
Enhancing Neurite Outgrowth By Electrical Stimulation Through Conductive Nanofibers
E. Steel[1] and H. Sundararaghavan[1]
[1]*Wayne State University, Detroit, MI*

P-Fri-156
Fabrication of MgSiO3 Thin Film by RF Magnetron Sputtering Method to Accelerate Bone Formation
S. Nakasaki[1], Y. Morita[1], T. Katayama[1], and E. Nakamachi[1]
[1]*Doshisha University, Kyotanabe, Japan*

P-Fri-157
Synthesis of a thermoreversible hydrogel for passaging adherent cells in three-dimensional culture
J. Heffernan[1,2], D. Overstreet[1], S. Srinivasan[2], B. Vernon[2], and R. Sirianni[1,2]
[1]*Barrow Neurological Institute, Phoenix, AZ,* [2]*Arizona State University, Tempe, AZ*

P-Fri-158
Fibroblast and Macrophage Cell Viability on Polyelectrolyte Complex
S. Mistry[1], K. Desai[1], R. Schloss[1], and N. Langrana[1]
[1]*Rutgers University, Piscataway, NJ*

P-Fri-159
Biofilm Accumulation on Medical Device Materials With Varied Surface Roughness
A. Macaluso[1], A. Crites[1], and M. Harman[1]
[1]*Clemson University, Clemson, SC*

P-Fri-160
The Study of Platelet Adhesions using Bovine Whole Blood versus Platelet Rich Plasma Comparing Percent Surface Aggregate Coverage
G. Williamson[1], A. Bujana[1], M. Rush[1], and M. Watson[1]
[1]*LeTourneau University, Longview, TX*

Track: Biomaterials

Biomaterials for Immunoengineering

Chairs: Vassilios Sikacitsas, Daniel Alge

P-Fri-37
Bacterial Outer Membrane Vesicle Vaccines Carrying Arah2 Confer Prophylactic Protection Against Peanut Allergy
T. Leung[1], J. Rosenthal[1], K. Mineta[1], M. DeLisa[1], and D. Putnam[1]
[1]*Cornell University, Ithaca, NY*

P-Fri-38
Microneedle-Based Immune Monitoring Platform Samples Cells and Interstitial Fluid from Tissue In Situ
A. Mandal[1], J. Van[1], D. Irvine[1,2,3,4], and P. Hammond[1,5]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Koch Institute for Integrative Cancer Research, Cambridge, MA,* [3]*Ragon Institute of MGH, MIT, and Harvard, Cambridge, MA,* [4]*Howard Hughes Medical Institute, Chevy Chase, MD,* [5]*Koch Inst. for Integrative Cancer Research, Cambridge, MA*

P-Fri-39
Cellular Mechanisms of Tolerance Involved in a Microparticle Vaccine for Type 1 Diabetes
J. Stewart[1], J. Lewis[1], and B. Keselowsky[1]
[1]*University of Florida, Gainesville, FL*

P-Fri-40
Preventing Fibrosis of Hydrogels Implanted in Mice Using Immuno-modulatory Agents
S. Jhunjhunwala[1], D. Lavin[1], S. Aresta-DaSilva[1], A. Santiago-Lopez[1], R. Langer[1], and D. Anderson[1]
[1]*MIT, Cambridge, MA*

P-Fri-41
Regulation of Macrophage Inflammatory Response by Immunomodulatory Poly(ethylene glycol) Hydrogels
Y-T. Chen[1], J. Schlosser[1], Y. Kim[1], and W. Liu[1]
[1]*University of California, Irvine, Irvine, CA*

P-Fri-42
Reprogramming Macrophages by Engineering Polymer Surface Properties
K. Bratlie[1]
[1]*Iowa State University, Ames, IA*

P-Fri-43
Young Porcine Islets Encapsulated in Alginate Microcapsules can maintain Prolonged Euglycemia after Transplantation into Diabetic Athymic Nude Mice
R. Krishnan[1], B. Buder[1], M. Alexander[1], C. Foster III[1], and J. Lakey[1]
[1]*University of California Irvine, Orange, CA*

P-Fri-44
Electrospun Microfiber Nanotopography Alters Macrophage Polarization
N. Schaub[1], E. Harmon[2], M. Lennartz[2], and R. Gilbert[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*Albany Medical College, Albany, NY*

P-Fri-45
Macrophage Response to Titanium Surface Characteristics
K. Hotchkiss[1], Z. Schwartz[1], S. Hyzy[1], B. Boyan[1], and R. Olivares-Navarrete[1]
[1]*Virginia Commonwealth University, Richmond, VA*

P-Fri-46
Assessment And Control Of Anti-Microbial And Anti-Inflammatory Response Of Macrophages to Different Surface Nanomodifications
G. Bhardwaj[1] and T. Webster[1]
[1]*Northeastern University, Boston, MA*

POSTER SESSION **Fri**

See page 141 for Poster floor plan

P-Fri-47
Antigen-Specific Immune Response of a PLGA Microparticle-Based DNA Vaccine against Ureaplasma
Q. Wang[1], L. Weisman[1,2], A. Leeming[1,2], and M. Heffernan[1]
[1]Baylor College of Medicine, Houston, TX, [2]Texas Children's Hospital, Houston, TX

P-Fri-48
Endotoxin Contamination In Chitosan And Its Effect On Immune Response
S. Ravindranathan[1], S. Smith[1], B. Koppolu[1], S. Kurtz[1], and D. Zaharoff[1]
[1]University of Arkansas, Fayetteville, Fayetteville, AR

Track: Biomechanics, Cardiovascular Engineering

Cardiovascular Biomechanics

Chairs: Aaron Baker, Jun Liao

P-Fri-596
Effect of Annuloplasty Ring Size: Patient-Specific Finite Element Evaluation
A. Choi[1], Y. Rim[1], D. McPherson[1], and H. Kim[1]
[1]The University of Texas Health Science Center at Houston, Houston, TX

P-Fri-597
Hemodynamic Shear Stress And Biochemical Regulation Of Cathepsin K Activity In Sickle Cell Disease
S. Anbazhakan[1], P. Keegan[1], and M. Platt[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Fri-598
Numerical Modeling of Magnetic Micropump for Biogenic Bulk Transport in a Biomimetic Microchannel
E. Ige[1], A. Dare[1], and A. Coker[1]
[1]University of Ibadan, Ibadan, Nigeria

P-Fri-599
Measurement of Endothelial Permeability Under Chronic Applied Shear Stress in a Bioreactor
S. Gray[1], P. Weinberg[1], D. Overby[1], and A. Randi[1]
[1]Imperial College London, London, United Kingdom

P-Fri-600
Experimental Validation of an Algorithm for the Zero Pressure Geometry Derivation of Blood Vessels
G. Vimalatharmaiyah[1], S. Chandra[1], J. Rodriguez[2], and E. Finol[1]
[1]University of Texas at San Antonio, San Antonio, TX, [2]Universidad de Zaragoza, Zaragoza, Spain

P-Fri-601
On the Biomechanical Behavior of the Layers of the Mitral Valve Anterior Leaflet
S. Ayoub[1] and M. Sacks [1]
[1]The University of Texas at Austin, Austin, TX

P-Fri-602
Active Stresses In The Porcine Common Carotid Artery
B. Zhou[1], T. Shazly[1], G. Brower[2,3], H. Doviak[2,3], and F. Spinale[2]
[1]University of South Carolina, Columbia, SC, [2]University of South Carolina School of Medicine, Columbia, SC, [3]WJB DORN Veteran Affairs Medical Center, Columbia, SC

P-Fri-603
Effects of Arterial Wall Local Softening on Pulse Wave Propagations and Velocities
I. Inga[1] and D. Shahmirzadi[1]
[1]Stevens Institute of Technology, Hoboken, NJ

P-Fri-604
Experimental Validation of CFD Simulations of a Patient-Specific Pulmonary Vascular Model Using Stereoscopic Particle Image Velocimetry
M. Leroux[1], V. Kheyfets[1], and E. Finol[1]
[1]University of Texas at San Antonio, San Antonio, TX

P-Fri-605
Changes in Cardiac Tissue Properties Relative to the Applications of Radiofrequency or Cryo Ablative Therapies
S. Quallich[1], K. Kriege[1], and P. Iaizzo[1]
[1]University of Minnesota, Minneapolis, MN

P-Fri-606
Structural Constitutive Model For Smooth Muscle Contraction
T. Tan[1] and R. De Vita[1]
[1]Virginia Tech, Blacksburg, VA

P-Fri-607
Development of User Interactive Toolkit for Modeling Patient Specific Geometries without Volumetric Mesh
L. Shrestha[1], V. Magnotta[1], N. Grosland[1], D. Calceterra[1], and S. Vigmostad[1]
[1]The University of Iowa, Iowa City, IA

P-Fri-608
Artery Buckling Analysis using A Four-Fiber Wall Model
Q. Liu[1], M. Mottahedi[1], and H-C. Han[1]
[1]University of Texas at San Antonio, San Antonio, TX

P-Fri-609
Finite Element Analysis of the Mechanics of Neovessels with Intraplaque Hemorrhage in Carotid Atherosclerosis
J. Lu[1] and A. Qiao[1]
[1]Beijing University of Technology, Beijing, China, People's Republic of

P-Fri-610
Prior Distribution of Material Parameters for a Computational Model of the Abdominal Aorta
S. Seyedsalehi[1], L. Zhang[1], J. Choi[1], and S. Baek[1]
[1]Michigan State University, East Lansing, MI

P-Fri-611
Fluid Structure Interaction Human Left Ventricular Modelling Using an Immersed Boundary-Finite Element Method
H. Gao[1], D. Carrick[1], C. Berry[1], B. Griffith[2,3], and X. Luo[1]
[1]University of Glasgow, Glasgow, United Kingdom, [2]University of North Carolina at Chapel Hill, Chapel Hill, NC, [3]University of North Carolina School of Medicine, Chapel Hill, NC

P-Fri-612
Microfluidic Stiffness-Dependent Separation of Aged Erythrocytes for Improved Blood Storage and Purification
R. Byler[1,2], K. Patel[2], L. Hall[2], A. Zhen[2], and T. Sulchek[2]
[1]Yale University, New Haven, CT, [2]Georgia Institute of Technology, Atlanta, GA

P-Fri-613
Computational Evaluation of Restoration of Mitral Valve Function Following Quadrangular Leaflet Resection and Ring Annuloplasty
Y. Rim[1], A. Choi[1], D. McPherson[1], and H. Kim[1]
[1]The University of Texas Health Science Center at Houston, Houston, TX

POSTER SESSION Fri

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

Track: Biomechanics, Cellular and Molecular Bioengineering

Cell Biomechanics

P-Fri-614
Mechanical Biomarkers of Embryo Viability
L. Zarnescu[1], J. Han[1], B. Behr[1], R. Reijo Pera[1], and D. Camarillo[1]
[1]*Stanford University, Stanford, CA*

P-Fri-615
Depletion of Linker Histone H1 Increases Cellular and Nuclear Young's Moduli
T. Bongiorno[1], T. McDevitt[1,2], Y. Fan[1], and T. Sulchek[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

P-Fri-616
Intrinsically Disordered Proteins Drive Membrane Curvature of Clathrin Coated Vesicles
D. Busch[1], J. Houser[1], S. Jafri[1], J. Jose[1], and J. Stachowiak[1]
[1]*University of Texas at Austin, Austin, TX*

P-Fri-617
The Effect Of Soluble Factors Released By Mechanically Stimulated Osteocytes On the Mineralization Capacity Of Osteoblasts
J. McPherson[1], S. York[1], A. Sewell[1], and M. Saunders[1]
[1]*University of Akron, Akron, OH*

P-Fri-618
Acoustic Radiation Force Based Clot Stiffness Assessment Is Highly Sensitive to Platelet Number and Activation
C. Wang[1], M. Perez[1], B. Helmke[1], F. Viola[1], and M. Lawrence[1]
[1]*University of Virginia, Charlottesville, VA*

P-Fri-619
How Single Stress Fiber Mechanics Depend on Length and Adhesive Spacing
E. Kassianidou[1] and S. Kumar[2]
[1]*UC Berkeley -UCSF Joint Program in Bioengineering, Berkeley, CA,* [2]*University of California, Berkeley, CA*

P-Fri-620
The Cell as a Pump: Cytoskeletal Contractions Drive Intercellular Fluid Flow
S. Zehnder[1], A. Dunn[1], J. Urueña[1], W. Sawyer[1], and T. Angelini[1]
[1]University of Florida, Gainesville, FL

P-Fri-621
Characterizing Dendritic Cell Motility on PDMS Surfaces
A. Chevalier[1] and D. Hammer[1]
[1]*University of Pennsylvania, Philadelphia, PA*

P-Fri-622
Understanding Cell Viability and Mechanics of Actin Filament Response of NIH/3T3 Fibroblasts Under Biaxial Stretch
H. Ghazizadeh[1], S. Ravari[2], A. Hung[1], D. LaJeunesse[2], and S. Aravamudhan[1]
[1]North Carolina A&T State University, Greensboro, NC, [2]University of North Carolina at Greensboro, Greensboro, NC

P-Fri-623
Designing Next Generation Stem Cell Mechanics Studies for Prospective Guidance of Lineage Commitment
H. Chang[1], M. Song[2], and M. Knothe Tate[3]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*University of Pennsylvania, Philadelphia, PA,* [3]*University of New South Wales, UNSW Sydney, Australia*

P-Fri-624
Finite Element Modeling of 3D Cell Migration through a Fibrous Matrix
R. Zielinski[1] and S. Ghadiali[1,2]
[1]*The Ohio State Univeristy, Columbus, OH,* [2]*The Dorothy M. Davis Heart & Lung Research Institute, Columbus, OH*

P-Fri-625
Mechanical Properties of Erythrosensors
S. Bustamante Lopez[1], S. Ritter[1], and K. Meissner[1]
[1]*Texas A&M, College Station, TX*

P-Fri-626
Effect of Substrate Stiffness on Force Generation by Airway Smooth Muscle Cells
H. Parameswaran[1], S. Polio[1], E. Canovic[1], B. Harvey[1], B. Suki[1], M. Smith[1], and K. Lutchen[1]
[1]*Boston University, Boston, MA*

P-Fri-627
Osteocyte Viability Changes In Response To Microdamage
S. York[1], J. King[1], A. Pietros[1], B-M. Zhang Newby[1], P. Sethu[2], and M. Saunders[1]
[1]*University of Akron, Akron, OH,* [2]*University of Alabama Birmingham, Birmingham, AL*

P-Fri-628
Mechanics of Epithelial to Mesenchymal Transition in Cancer and Non-Cancer Models
L. Volakis[1], D. Kniss[2], and S. Ghadiali[2]
[1]*The Ohio State University, Columbus, OH,* [2]*The Wexner Medical Center at The Ohio State University, Columbus, OH*

P-Fri-629
Rest Periods May Increase Mechanically Stimulated MSC's Promotion of Osteoblast Proliferation
B. Yu[1], G. Lee[2], A. Yang[2], M. Chan[2], and C. Rubin[2]
[1]*Stony Brook University, Tarrytown, NY,* [2]*Stony Brook University, Stony Brook, NY*

P-Fri-630
Contribution of Different Collagen IV Isoforms to Glomerular Basement Membrane Mechanics
L. Gyoneva[1], Y. Segal[1], K. Dorfman[1], and V. Barocas[1]
[1]*University of Minnesota - Twin Cities, Minneapolis, MN*

P-Fri-631
Measurement Of Cell Traction Force With A Thin PDMS Cantilever
M. Holley[1], E. Song[1], A. Moll[1], D. Hayes[1], W. Monroe[1], J-W. Choi[1], and K. Park[1]
[1]*Louisiana State University, Baton Rouge, LA*

P-Fri-632
F-Actin Arrangement as an Indicator of Stiffness in Undifferentiated Mesenchymal Stem Cells
J. Kazlow[1,2], T. Bongiorno[1], and T. Sulchek[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

P-Fri-633
Shear Stimulated Differentiation of Bone Marrow Derived hMSCs Towards the Chondrocytic Lineage
A. Adeniran-Catlett[1] and S. Murthy[1]
[1]*Northeastern University, Boston, MA*

P-Fri-634
Resistive-Pulse Differentiation of Metastatic and Non-metastatic Tumor Cells with Solid-state Micropores
W. Ali[1], A. Ilyas[1], Y-T. Kim[1], and S. Iqbal[1]
[1]*University of Texas at Arlington, Arlington, TX*

P-Fri-635
Characterization Of A Microloading Platform For *In Vitro* Mechanotransduction Studies
S. York[1] and M. Saunders[1]
[1]*University of Akron, Akron, OH*

P-Fri-636
Quantification Of Gap Junction Communication And Sclerostin Expression In Microdamaged Osteocytes
S. York[1], P. Sethu[2], and M. Saunders[1]
[1]*University of Akron, Akron, OH,* [2]*University of Alabama Birmingham, Birmingham, AL*

POSTER SESSION **Fri**

See page 141 for Poster floor plan

P-Fri-637
Computational Model of Fluid Flow During Cyclic Mechanical Loading of Cultured Cells
J. Lee[1], Q. Smith[1], and A. Baker[1]
[1]University of Texas at Austin, Austin, TX

P-Fri-638
Bio-mechanical Characteristics of Normal and Cancerous Cells - A Computational Study
T. Brady[1] and V. Unnikrishnan[1]
[1]The University of Alabama, Tuscaloosa, AL

P-Fri-639
A Microfluidic Device for Investigation of Cellular Migration and Invasion in Response to Chemical and Physical Stimuli
S. Bean[1], L. Lee[1], S. Rao[1], V. Lin[1], and J-C. Chiao[1]
[1]UT Arlington, Arlington, TX

P-Fri-640
Probing Microalgal Response Using Atomic Force Microscopy
K. Warren[1], J. Mpagazehe[1], C. Higgs III[1], and P. LeDuc[1]
[1]Carnegie Mellon University, Pittsburgh, PA

P-Fri-641
Migratory Behavior of Breast Cancer Cells in Conditioned Medium from Human Osteosarcoma Cells
S. Loh[1], L. Lee[1], S. Bean[1], S. Rao[1], V. Lin[1], and J-C. Chiao[1]
[1]UT Arlington, Arlington, TX

P-Fri-642
Biomechanical Characterization of Algal Motility in Response to Medium Viscosity
K. Clark[1], D. Fijalka[1], J. Johnson[1], M. Mashburn[1], S. Karpowicz[1], and G. Xu[1]
[1]University of Central Oklahoma, Edmond, OK

POSTER SESSION **Fri**

P-Fri-643
Squishy DNA Nanoparticles
S. Cook[1], K. Curtis[2], S. Beharie[2], E. Dimitriadis[3], F. Horkay[3], and P. Chandran[2]
[1]Case Western Reserve University, Cleveland, OH, [2]Howard University, Washington, DC, DC, [3]National Institutes of Health, Bethesda, MD

P-Fri-644
Model of Oxidative Stress in the Aging Lens
C. Gutierrez Candano[1]
[1]UTSA, San Antonio, TX

P-Fri-645
Nanomechanics of Human Adipose Stem Cells in Micromass during Chondrogenesis
C. Quisenberry[1], A. Nazempour[1], B. Van Wie[1], and N. Abu-Lail[1]
[1]Washington State University, Pullman, WA

Track: Biomechanics, Biomaterials

Mechanics of Biomaterials

Chairs: Vittoria Flamini, Jason Gleghorn

P-Fr-1
Shear Properties of PNIPAAm-g-CS Hydrogels
T. Mauriello[1], S. Gossert[1], G. Feil[1], A. Vernengo[1], and J. Kadlowec[1]
[1]Rowan University, Glassboro, NJ

P-Fr-2
Development and Characterization of Tissue-mimicking Anisotropic Gel for MR Elastography
C. Walker[1], M. Mahoney[1], M. Mathison[1], S. Raven[1], J. Schmidt[1], R. Okamoto[1], and P. Bayly[1]
[1]Washington University in Saint Louis, Saint Louis, MO

P-Fr-3
Probing Mechanical Tension in Human Fibroblast Collagen Lattices
L. Tinnin[1], C. Anderson[1], M. Vaughan[1], and G. Xu[1]
[1]University of Central Oklahoma, Edmond, OK

P-Fr-4
Effect of Amyloid Beta on Mechanical Properties and Structure of Extracellular Matrix
Y. Jeon[1], S. Jo[1], B. Kang[1], and H. Lee[1]
[1]Yonsei University, Seoul, Korea, Republic of

P-Fr-5
Numerical Analysis of Vortex Entrapment of Particles with Respect to Bacterial Adhesion on Implants
H. Basagaoglu[1], J. Carrola[1], C. Freitas[1], B. Basagaoglu[2], and M. DeSilva[3]
[1]Southwest Research Institute, San Antonio, TX, [2]Texas A&M University, College Station, TX, [3]Navy Medical Research Unit, Fort Sam Houston, TX

P-Fr-6
Pull-off Stress Evaluation of Commercially Available Wound-Treatment Polymers
R. Thornton[1], V. Kheyfets[2], and E. Finol[1]
[1]University of Texas at San Antonio, San Antonio, TX, [2]University of Colorado Denver, Denver, CO

P-Fr-7
Long Range Force Transmission Enabled by Formation of Aligned Fibers in Collagen Matrices
V. Shenoy[1], H. Wang[1], A. Nair[1], and R. Wells[1]
[1]University of Pennsylvania, Philadelphia, PA

P-Fr-8
Removal of Proteoglycans from Bone Matrix Significantly Reduce its In Situ Toughness
H. Xu[1], A. Sheldrake[1], J. Jiang[2], and X. Wang[1]
[1]University of Texas at San Antonio, San Antonio, TX, [2]University of Texas Health Science Center at San Antonio, San Antonio, TX

P-Fr-9
Dynamic Drying Mechanics of Human Stratum Corneum and the Effects of Moisturization
X. Liu[1] and G. German[1]
[1]Binghamton University, Binghamton, NY

P-Fr-10
Comparison Of Microstructural, Biomechanical and Suture Retention Strength Of Ovine Vaginal Patches Obtained From Three Types Of Decellularization Protocols.
S. Patnaik[1], J. Butler[1], B. Brazile[1], B. Weed[1], V. Dandolu[2], D. Christiansen[1], P. Ryan[1], and J. Liao[1]
[1]Mississippi State University, Mississippi State, MS, [2]University of Nevada School of Medicine, Las Vegas, NV

P-Fr-11
Quantifying The Effects of Decellularization on Liver Perfusion Dynamics
K. Nishii[1], E. Moran[2], G. Reese[1], and J. Sparks[1]
[1]Miami University, Oxford, OH, [2]VT-WFU School of Biomedical Engineering and Sciences, Winston Salem, NC

P-Fr-12
Modeling Strain Distributions in Uniaxially Mechanically Loaded Acellular ECM-based Scaffolds
B. Seifer[1] and C. Wagner[1]
[1]The College of New Jersey, Ewing, NJ

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

Track: Biomedical Imaging and Optics

Novel Approaches to Biomedical Imaging

Chairs: Craig Goergen

P-Fri-329
Single Molecule Tracking *In Vivo* Using Spatiotemporally Multiplexed Two-Photon Microscopy
K. Huynh[1], E. Perillo[1], Y-L. Liu[1], H-C. Yeh[1], and A. Dunn[1]
[1]*The University of Texas at Austin, Austin, TX*

P-Fri-330
Complex Voltage Measurements With Active Electrodes In Electrical Impedance Tomography
M. Mellenthin[1], E. Darío León Bueno de Camargo[2], F. Silva de Moura[2], T. Batista Rattis Santos[2], J. Mueller[1], and R. Gonzalez Lima[2]
[1]*Colorado State University, Fort Collins, CO,* [2]*Universidade de São Paulo, São Paulo, Brazil*

P-Fri-331
Gold Nanoparticles as Exogenous Soft Tissue Contrast for Live *In Vivo* MicroCT Imaging of Avian Morphogenesis
C. Gregg[1], H. Zhao[1], and J. Butcher[1]
[1]*Cornell University, Ithaca, NY*

P-Fri-332
Nanoporous Magnesium Fluoride Substrates for Raman-Compatible Cell Culture
G. Madejski[1] and J. McGrath[1]
[1]*University of Rochester, Rochester, NY*

P-Fri-333
Near-Infrared Switchable Fluorescent Nano-capsules for Temperature Sensing and USF Imaging
M. Wei[1,2], B. Cheng[1,2], V. Bandi[2,3], Y. Liu[1,2], F. D'Souza[3], K. Nguyen[1,2], Y. Hong[1,2], and B. Yuan[1,2]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*The University of Texas Southwestern Medical Center at Dallas, Dallas, TX,* [3]*University of North Texas, Denton, TX*

P-Fri-334
Quantification of TiO2 Nanoparticle Uptake by Single Cells and Distribution Across a Population by Synchrotron X-ray Fluorescence
J. Rashkow[1], S. Patel[1], R. Tappero[2], and B. Sitharaman[1]
[1]*Stony Brook University, Stony Brook, NY,* [2]*National Synchrotron Light Source, Upton, NY*

P-Fri-335
Fluorescent Based Fiber Optics Imaging On Electrospun Scaffold
E. Sapoznik[1,2], G. Niu[2], P. Lu[3], Y. Zhou[2], T. Criswell[2], F. Marini[2], Y. Xu[3], and S. Soker[1,2]
[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]*Virginia Tech, Blacksburg, VA*

P-Fri-336
3D Surface Imaging of the Human Female Torso in Upright to Supine Positions
G. Reece[1], F. Merchant[2], H. Khatam[1,3], K. Ravi-Chandra[3], J. Weston[1], M. Fingeret[1], C. Lane[4], K. Duncan[4], and M. Markey[1,3]
[1]*The University of Texas MD Anderson Cancer Center, Houston, TX,* [2]*University of Houston, Houston, TX,* [3]*The University of Texas at Austin, Austin, TX,* [43]*dMD, LLC, Atlanta, GA*

P-Fri-337
Deeper Two-Photon Microscopy Imaging through Brain Tissue using S_2 State of Chl α in Spinach Leaf
L. Shi[1], A. Rodriguez-Contreras[1], and R. Alfano[1]
[1]*City College of New York, New York, NY*

Track: Biomedical Imaging and Optics

Optical Imaging and Microscopy

Chairs: Kaushik Parthasarathi

P-Fri-338
Near-Infrared Spectroscopic Photoacoustic Microscopy using a Pulsed Multi-Color Source based on Stimulated Raman Scattering
B. Wilkinson[1], T. Sheehan[1], and T. Buma[1]
[1]*Union College, Schenectady, NY*

P-Fri-339
Spectroscopic Photoacoustic Microscopy with a Multi-Color Pulsed Laser using a Multimode Optical Fiber
T. Sheehan[1], B. Wilkinson[1], and T. Buma[1]
[1]*Union College, Schenectady, NY*

P-Fri-340
Well Resolved Two-Phase Optical Clearing by Hyperosmotic Agents: Application for High Resolution Deep Brain Imaging
L. Ochoa[1], A. Kholodnykh[1], L. Vergara[1], G. Vargas[1], and M. Motamedi[1]
[1]*University of Texas Medical Branch, Galveston, TX*

P-Fri-341
Tracking Cerebrospinal Fluid Flow in Murine Lateral Ventricles
A. Magold[1,2], J. Teo[3], and M. Swartz[1]
[1]*Swiss Federal Institute of Technology, Lausanne, Switzerland,* [2]*The Weizmann Institute of Science, Rehovot, Israel,* [3]*Khalifa University of Science, Abu Dhabi, United Arab Emirates*

P-Fri-342
Simultaneous Imaging of Oxygen Tension and Blood Flow During Stroke Using a Digital Micromirror Device
C. Sullender[1], A. Mark[1], and A. Dunn[1]
[1]*The University of Texas at Austin, Austin, TX*

P-Fri-343
Using Bayesian Analysis to Improve Flow Velocity Measurement Precision in Optical Coherence Tomography
K. Zhou[1], B. Huang[1], and M. Choma[1]
[1]*Yale University, New Haven, CT*

P-Fri-344
Three-photon Excitation Spectra of Fluorescent Dyes for *In Vivo* Imaging
D. Miller[1], F. Cianchetti[1], and A. Dunn[1]
[1]*The University of Texas at Austin, Austin, TX*

Track: Biomedical Imaging and Optics

Ultrasound

Chairs: Mario Fabilli

P-Fri-345
Relationship between Secondary Radiation Force, Targeted Adhesion, and Microbubbles Acoustic Response in Large Blood Vessels
S. Wang[1], C. Wang[1], F. Mauldin Jr[1], and J. Hossack[1]
[1]*University of Virginia, Charlottesville, VA*

P-Fri-346
Ultrasound Imaging of Microfluidic-Produced Microbubbles Directly Injected Into A Mouse Via A Tail Vein Catheter
A. Dixon[1], A. Dhanaliwala[1], D. Lin[1], A. Klibanov[1], and J. Hossack[1]
[1]*University of Virginia, Charlottesville, VA*

P-Fri-347
High-frequency Side-looking Phased Array for Colorectal Ultrasound Imaging
N. Cabrera-Munoz[1], H. Kim[1], J. Williams[1], and K. Shung[1]
[1]*University of Southern California, Los Angeles, CA*

See page 141 for Poster floor plan

P-Fri-348
A Single-Element Ultrasound Viscoelastography System for Point-of-Care Edema Quantification
J. Pitre[1], L. Kozoil[1,2], G. Kruger[1], W. Weitzel[1,2], and J. Bull[1]
[1]University of Michigan, Ann Arbor, MI, [2]VA Medical Center, Ann Arbor, MI

P-Fri-349
High Frequency Optoacoustic Sensor Based on a Microsphere Resonator
K. Hammer[1] and T. Buma[1]
[1]Union College, Schenectady, NY

P-Fri-350
Optically Activated Ultrasound Contrast Agents for Diagnostic Imaging
A. Hannah[1] and S. Emelianov[1]
[1]University of Texas at Austin, Austin, TX

P-Fri-351
High Frequency Ultrasound Array in Biopsy Needle for Breast Cancer Imaging
T. Cummins[1], H. Choi[1], P. Eliahoo[1], H. Kim[1], M. Yamashita[1], L. Larsen[1], J. Lang[1], S. Sener[1], J. Vallone[1], S. Martin[1], and K. Shung[1]
[1]University of Southern California, Los Angeles, CA

P-Fri-352
Low-Frequency Radial Imaging Array for Ultrasound-Navigated Spinal Fusion Surgery
A. Manbachi[1], H. Ginsberg[1,2], and R. Cobbold[1]
[1]University of Toronto, Toronto, ON, Canada, [2]St. Michael's Hospital, Toronto, ON, Canada

P-Fri-353
Automatic Real-Time Reconstruction of 3D Patient Specific Bones from RF Ultrasound Data
M. Mahfouz[1], E. Abdel Fatah[1], and G. To[1]
[1]University of Tenenssee, Knoxville, TN

POSTER SESSION **Fri**

P-Fri-354
Synergy Between High-intensity Focused Ultrasound and Ethanol Injection in Thyroid Cancer Ablation *In Vitro* and *In Vivo*
H. Murad[1], N. Hoang[1], K. Tsumagari[1], E. Kandil[1], and D. Khismatullin[1]
[1]Tulane University, New Orleans, LA

P-Fri-355
Development and Characterization of Tissue-Mimicking Gelatin Phantoms for use with MRgFUS
A. Farrer[1], H. Odéen[1], J. de Bever[1], B. Coats[1], D. Christensen[1], and A. Payne[1]
[1]University of Utah, Salt Lake City, UT

Track: Biomedical Imaging and Optics

X-ray, CT and Nuclear Medicine

Chairs: Ted Trouard

P-Fri-356
Interior Micro-CT for Radiation Dose Reduction
H. Gong[1] and G. Cao[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

P-Fri-357
Hippocampus Layers Imaging of Mouse by Phase Contrast X-Ray CT
T-T. Lwin[1], A. Yoneyama[2], R. Shirai[1], M. Taguchi[1], S. Esashi[1], T. Matsushima[1], H. Maruyama[1], K. Hyodo[3], and T. Takeda[1]
[1]Kitasato University, Sagamihara, Japan, [2]Hitachi Ltd, Saitama, Japan, [3]High Energy Accelerator Research Organization, Tsukuba, Japan

P-Fri-358
3D White Matter Imaging of Rat Obtained by Phase-Contrast X-Ray CT
T. Takeda[1], T-T. Lwin[1], A. Yoneyama[2], J. Wu[1], R. Shirai[1], M. Taguchi[3], S. Esashi[3], T. Matsushima[3], H. Maruyama[1], and K. Hyodo[4]
[1]Kitasato University, Sagamihara, Japan, [2]Hitachi Ltd, Sitama, Japan, [3]Kitasato Univercity, Sagamihara, Japan, [4]Accelerator Research Organization, Tsukuba, Japan

P-Fri-359
Structural Change of Rat's Spleen by Phase-Contrast X-Ray CT
S. Esashi[1], A. Yoneyama[2], T-T. Lwin[1], M. Taguchi[1], T. Matsushima[1], H. Maruyama[1], K. Hyodo[3], and T. Takeda[1]
[1]Kitasato University, Sagamihara, Japan, [2]Hitachi Ltd, Saitama, Japan, [3]High Energy Accelerator Research Organization, Tsukuba, Japan

P-Fri-360
Freeze-Thaw Kidney Imaging by Phase-contrast X-ray CT
M. Taguchi[1], A. Yoneyama[2], S. Takeya[3], T-T. Lwin[1], S. Esashi[1], H. Maruyama[1], K. Hyodo[4], and T. Takeda[1]
[1]Kitasato University, Sagamihara, Japan, [2]Hitachi Ltd, Saitama, Japan, [3]National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan, [4]High Energy Accelerator Research Organization, Tsukuba, Japan

P-Fri-361
An Optimized Thresholding Reconstruction Approach for the Lp (0<p<1) Regularization Problem
C. Miao[1] and H. Yu[1]
[1]Wake Forest University, Winston-Salem, NC

P-Fri-362
Exploring the Spatial Resolution Limits of Positron Emission Tomography Imaging
A. Varshney[1,2], T. Cao[1,2], and P. Vaska[1,2]
[1]SUNY - Stony Brook University, Stony Brook, NY, [2]Brookhaven National Laboratory, Upton, NY

P-Fri-363
Arterial vs Venous Input Function: Full Quantification of 11C-ABP using Positron Emission Tomography
S. Rossano[1] and C. DeLorenzo[1]
[1]Stony Brook University, Stony Brook, NY

P-Fri-364
An Image Processing Protocol for Assessing Longitudinal Growth of Coil Embolized Cerebral Aneurysms and their Corresponding Coil Masses
A. Hoppe[1], D. Hasan[1], and M. Raghavan[1]
[1]University of Iowa, Iowa City, IA

P-Fri-365
Functional Connectivity Mapping Across The Rodent Cerebral Cortex: Method And Implementation For Animal Autoradiographic Imaging
Y-H. Peng[1], D. Holschneider[1], Y. Guo[1], Z. Wang[1], and J-M. Maarek[1]
[1]University of Southern California, Los Angeles, CA

Track: Cancer Technologies, Nano to Micro Technologies

Microtechnologies for Cancer

Chairs: Kapil Pant, Aram Chung

P-Fri-176
A Microfluidic Device for Dissociating Tumor Tissue into Single Cells
X. Qiu[1], J. De Jesus[1], M. Pennell[1], M. Troiani[1], and J. Haun[1]
[1]University of California, Irvine, Irvine, CA

P-Fri-177
A Microfluidic Platform to Evaluate the Role of Vessel Permeability in Tumor Cell Extravasation
L. Blaha[1], C. Zhang[1], R. Alani[2], M. Cabodi[1], and J. Wong[1]
[1]Boston University, Boston, MA, [2]Boston University School of Medicine, Boston, MA

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Fri-178
Tagless Discrimination And Detection Of Cancer Cells Using Solid-State Micropores
A. Ilyas[1], W. Ali[1], J-T. Hsieh[2], Y. Lotan[2], Y-T. Kim[1], and S. Iqbal[1]
[1]University of Texas at Arlington, Arlington, TX, [2]University of Texas Southwestern Medical Center at Dallas, Dallas, TX

P-Fri-179
Double-Filter Based Enrichment of Circulating Tumor Cells Increases Efficiency and Purity of Captured CTCs
A. Sanati Nezhad[1], J. Hernandez-Castro[1], K. Turner[1], and D. Juncker[1]
[1]McGill University, Montreal, QC, Canada

P-Fri-180
A Microfluidic Device to Analyze Vascular Dynamics in a Heterogeneous Brain Tumor Microenvironment
M. Cox[1] and S. Verbridge[1]
[1]Virginia Tech, Blacksburg, VA

P-Fri-181
A Microchip Platform for Interrogating Tumor-Immune Cell Communication at the Single-Cell
M. Elitas[1], K. Brower[2], Y. Lu[1], J. Chen[1], and R. Fan[1]
[1]Yale Unv., New Haven, CT, [2]Isoplexis Inc, New Haven, CT

P-Fri-182
Development of a Microfluidic Device to Study the Role of Mechanobiology on Endothelial to Mesenchymal Transformation
S. Mina[1], W. Wang[1], Q. Cao [1], B. Murray [1], P. Huang [1], and G. Mahler [1]
[1]Binghamton University, Binghamton, NY

P-Fri-183
A poly(dimethyl siloxane) Microfluidic Device for *in situ* Imaging of Cellular Migration and Invasion in Response to Chemical Signaling
L. Lee[1], S. Rao[1], V. Lin[1], and J-C. Chiao[1]
[1]UT Arlington, Arlington, TX

P-Fri-184
High Throughput 3D Cell Migration Assay to Elucidate the Underlying Mechanisms of Metastasis
M-E. Brett[1] and D. Wood[1]
[1]University of Minnesota, Minneapolis, MN

P-Fri-185
Measuring Oxygenation In Intuitive Tumor Tissue Model Using a Gold Microelectrode Array
A. Bubie[1] and M. Gratzl[2]
[1]Case Western Reserve University, Cleveland Heights, OH, [2]Case Western Reserve University, Cleveland, OH

P-Fri-186
Label-Free Viable-Enrichment of Circulating Tumor Cells From Clinical Blood Samples with the FMSA Device
R. Harouaka[1], M. Zhou[1], Y-T. Yeh[1], W. Khan[1], and S. Zheng[1]
[1]The Pennsylvania State University, University Park, PA

P-Fri-187
Live Imaging of Microfiltration to Optimize the Purity of Isolated Circulating Tumor Cells
K. Turner[1,2], A. Sanati Nezhad[1,2], J. Alejandro Hernandez-Castro[1,2], and D. Juncker[1,2]
[1]McGill University, Montreal, QC, Canada, [2]Genome Quebec Innovation Centre, Montreal, QC, Canada

P-Fri-188
Automated, High Throughput 3D Culture Microtechnology for Anticancer Drug Testing
S. Lemmo[1] and H. Tavana[1]
[1]University of Akron, Akron, OH

P-Fri-189
Circulating Pancreatic Cells for Risk Stratification of Patients with Precancerous Pancreatic Cyst Lesions
F. Thege[1], T. Lannin[1], T. Saha[2], K. Das[3], A. Rhim[2], and B. Kirby[1,4]
[1]Cornell University, Ithaca, NY, [2]University of Michigan School of Medicine, Ann Arbor, MI, [3]Massachusetts General Hospital & Harvard Medical School, Boston, MA, [4]Weill Cornell Medical College, New York, NY

P-Fri-190
Novel Tunable Functionalized Surface for the Isolation of Tumor Associated Cells
A. Ansari[1] and P. Imoukhuede[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

Track: Cancer Technologies

Personalized Medicine, Imaging, and Immunoengineering Strategies in Cancer

Chairs: Catherine Whittington, Gregory Hudalla

P-Fri-191
Novel Immunosensor: Dual Ionophore Concept Based on an Ion Selective Electrode
X. Li[1], C. Berkman[1], J. Geruntho[1], B. Van Wie (PI)[1], and D. Kidwell[2]
[1]Washington State University, Pullman, WA, [2]Naval Research Laboratory, SW, DC

P-Fri-192
Decreased T2 Relaxation and Increased Calcification In Articular Cartilage Following Modelled Therapeutic Irradiation At Long-Term Followup
I. Hutchinson[1], J. Olson[1], A. Lindburg[1], B. Collins[2], T. Smith[1], M. Munley[1], K. Wheeler[1], and J. Willey[1]
[1]Wake Forest Baptist Health, Winston Salem, NC, [2]North Carolina A&T State University, Greensboro, NC

P-Fri-193
A Gold Nanoparticle Contrast Agent for Lung Cancer CT Imaging Using Novel EGFR-Specific VHH Domains
J. Ashton[1], E. Gottlin[2], E. Patz[2], J. West[1], and C. Badea[2]
[1]Duke University, Durham, NC, [2]Duke University Medical Center, Durham, NC

P-Fri-194
Development of Shape Coded Hydrogel Micro-particles for Simultaneous Detection of Multiple Biomolecules
M. Al-Ameen[1], J. Li[1], and G. Ghosh[1]
[1]University of Michigan Dearborn, Dearborn, MI

P-Fri-195
Study of Synergisticcryo-thermal Treatment Modality Against Metastatic Breast Cancer Through Induction of Long-lasting Immune Responses
P. Liu[1], J. Liu[1], and L. Xu[1]
[1]School of Biomedical Engineering, Shanghai Jiao Tong University, Shanghai, China, People's Republic of

P-Fri-196
Exploring Biomarkers for Point of Care Bladder Cancer Detection
C. Walker[1], S. Smith[1], and D. Zaharoff[1]
[1]University of Arkansas, Fayetteville, Fayetteville, AR

P-Fri-197
In Vivo Capture and Label-free Detection of Early Metastatic Cells
J. Yi[1], S. Azarin[1], L. Shea[1], and V. Backman[1]
[1]Northwestern University, Evanston, IL

P-Fri-198
Circulating microRNAs Detection in Patients with Hepatocelluar Carcinoma by Tethered Lipoplex Nanoparticles (TLN)
X. wang[1], Z. Yang[1], J. ma[1], K. Kwak [1], R. Sullivan[1], C. Schmidt[1], and J. Lee[1]
[1]The Ohio State University,Columbus, OH

POSTER SESSION **Fri**

See page 141 for Poster floor plan

P-Fri-199
Tri Partite Motif E3 Ubiquitin Ligase Family Proteins Role in Cancer Mechanics
L. Volakis[1], J. Alloush[1], N. Weisleder[2], and S. Ghadiali[2]
[1]The Ohio State University, Columbus, OH, [2]The Wexner Medical Center at The Ohio State University, Columbus, OH

P-Fri-200
Monitoring Protein Synthesis in Live Multiple Myeloma Cells
C. Tu[1], Z. Smilansky[2], N. Raje[3,4], and J. Zoldan[1]
[1]University of Texas at Austin, Austin, TX, [2]Anima Cell Metrology, Bernardsville, NJ, [3]Massachusetts General Hospital, Boston, MA, [4]Harvard Medical School, Boston, MA

P-Fri-201
Individual CAR+ T cells Recycle Effector Functions by Conjugating to Multiple Tumor Cells
N. Varadarajan[1], I. Liadi[1], H. Singh[2], N. Rey-Villamizar[1], G. Romain[1], B. Roysam[1], and L. Cooper[2]
[1]University of Houston, Houston, TX, [2]UT MD Anderson Cancer Center, Houston, TX

P-Fri-202
Hyaluronic Acid Derived Fluorescent Imaging Agents with Tunable NIR Emission
S. Kelkar[1,2], T. Hill[1,2], and A. Mohs[1,2,3]
[1]Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC, [2]Wake Forest - Virginia Tech School of Biomedical Engineering and Sciences, Winston-Salem, NC, [3]Comprehensive Cancer Center of Wake Forest University, Winston-Salem, NC

P-Fri-203
Analysis of Single Cell Progenies of MDA-MB-231 Cells Reveals Prognostic Gene Signature for Breast Cancer Patients
P-H. Wu[1], D. Gilkes[1], J. Philips[1], M-H. Lee[1], and D. Wirtz[1]
[1]Johns Hopkins University, Baltimore, MD

P-Fri-204
Irreversible Electroporation: Prostate and Pancreatic Cancer Cell Death Threshold Characterization
A. Rolong[1], K. Prokop[1], P. Garcia[1], C. Arena[1], and R. Davalos[1]
[1]Virginia Tech, Blacksburg, VA

P-Fri-205
Development of Novel Phase Change Electrodes with Metal Foams for Irreversible Electroporation Therapy
K. Nithyanandam[1] and R. Mahajan[1]
[1]Virginia Tech, Blacksburg, VA

P-Fri-206
Improved Early Detection Of Ovarian Cancer Using Microfluidic Capture Of Circulating Tumor Cells
M. Godla[1], I. Cardle[1], D. Gupta[2], and B. Kirby[1]
[1]Cornell University, Ithaca, NY, [2]Weill Cornell Medical College, New York, NY

P-Fri-208
Enhanced Imaging of Breast Cancer Through Nanodiamonds
L. Moore[1,2], T. Towsend[1], T. Meade[1,2], and D. Ho[3,4]
[1]Northwestern University, Evanston, IL, [2]Northwestern University, Chicago, IL, [3]UCLA School of Dentistry, Los Angeles, CA, [4]UCLA, Los Angeles, CA

Track: Cancer Technologies

Tumor Microenvironment

Chairs: Edmond Young, Scott Verbridge

P-Fri-161
BRCA1 Repair Complexes in Hereditary Breast Cancer
C. Winton[1,2], B. Gilmore[2], A. Demmert[3], and D. Kelly[1,2]
[1]Virginia Tech, Blacksburg, VA, [2]Virginia Tech Carilion Research Institute, Roanoke, VA, [3]Virginia Tech, Roanoke, VA

P-Fri-162
Substratum Compliance Regulates Tetraploidy in Breast Cancer Cells
A. Simi[1], D. Radisky[2], and C. Nelson[1]
[1]Princeton University, Princeton, NJ, [2]Mayo Clinic Cancer Center, Jacksonville, FL

P-Fri-163
Tumor Activation Alters the Mechano-responsiveness, Capillary Formation, and Drug Sensitivity of Endothelial Cells in Synthetic Matrices
Y. Wu[1], B. Guo[1], and G. Ghosh[2]
[1]University of Michigan Dearborn, Dearborn, MI, [2]University of Michigan, Dearborn, Dearborn, MI

P-Fri-164
How Normal Breast Epithelial Cells Induce a Highly Protrusive and Invasive Phenotype in Breast Carcinoma Cells
M. Lee[1], P-H. Wu[1], and D. Wirtz[1]
[1]Johns Hopkins University, Baltimore, MD

P-Fri-165
Malignant Breast Tumor Cell Adhesion and Transmigration through Organ-specific Microvascular Endothelium
J. Fan[1] and B. Fu[1]
[1]The City College of the City University of New York, New York, NY

P-Fri-166
Cancer Cell Migration in Response to Soluble Chemical Gradient and Micropatterned Surface Cues
R. Natividad[1] and A. Asthagiri[1]
[1]Northeastern University, Boston, MA

P-Fri-167
Effects of Glucose Concentration on Fibrillogenesis in Breast Epithelial Cells
B. Martinez[1], L. Griggs[1], M. Zhao[2], L. Elmore[2], and C. Lemmon[1]
[1]Virginia Commonwealth University, Richmond, VA, [2]Virginia Commonwealth University Health System, Richmond, VA

P-Fri-168
CANCELLED BY AUTHOR

P-Fri-169
The Role of Adhesive Interactions with Osteoblasts for *Ex Vivo* Maintenance of Patient Multiple Myeloma Cells
W. Zhang[1], J. Zilberberg[2], Y. Gu[1], Q. Sun[1], P. Tolias[1], and W. Lee[1]
[1]Stevens Institute of Technology, Hoboken, NJ, [2]Hackensack University Medical Center, Hackensack, NJ

P-Fri-171
MAP Kinase Drug Therapies Differentially Effect Melanoma Adhesion and the ECM During Metastasis
B. Blehm[1], Y. Kotobuki[1], A. Afasizheva[1], W. Vieira[1], and K. Tanner[1]
[1]National Institutes of Health, Bethesda, MD

P-Fri-172
Fibroblast Mediated Matrix Remodeling and Cancer Metastasis
V. Shukla[1], M. Schickel[1], Z. Feliciano-Muniz[1], and S. Ghadiali[1,2]
[1]The Ohio State Univeristy, Columbus, OH, [2]Wexner Medical Center at The Ohio State University, Columbus, OH

P-Fri-173
Obesity-Associated Inflammation And Its Effect On Adipose Stromal Cells
N. Springer[1], B. Seo[1], and C. Fischbach[1]
[1]Cornell University, Ithaca, NY

P-Fri-174
Investigating Breast Cancer Cell Behavior Using Tissue Engineering Scaffolds
K. Guiro[1] and T. Arinzeh[1]
[1]New Jersey Institute of Technology, Newark, NJ

POSTER SESSION Fri

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Fri-175
Endothelial Cell Invasion Dependency on Extracellular Matrix Microstructure and Geometry
Y. Hosseini[1], S. Verbridge[1], and M. Agah[1]
[1]*Virginia Tech, Blacksburg, VA*

Track: Cardiovascular Engineering

Angiogenesis, Microvasculature and Lymphatics

Chairs: Hyunjoon Kong, Keith Neeves

P-Fri-397
Investigating the Role of Sphingosine-1-Phosphate and Hypoxia on Mature and Progenitor Endothelial Cells
P. Williams[1] and E. Silva[1]
[1]*University of California, Davis, Davis, CA*

P-Fri-398
Large Scale Microscopy Reveals New Mechanisms of Angiogenesis
U. Utzinger[1], B. Baggett[1], J. Weiss[2], and J. Hoying[3]
[1]*University of Arizona, Tucson, AZ,* [2]*University of Utah, Utah, UT,* [3]*University of Louisville, Louisville, KY*

P-Fri-399
Porous Microparticles for Cell Delivery in Tissue Regeneration
A. Kuriakose[1], J. Menon[1], and K. Nguyen[1]
[1]*University of Texas at Arlington, Arlington, TX*

P-Fri-400
Urethane Doped Polyester (UPE) Based Nanoparticle Scaffolds for the Treatment of Peripheral Arterial Disease
D. Thakore[1], P. Punnakitikashem[1], R. Tran[2], J. Yang[2], and K. Nguyen[1]
[1]*The University of Texas at Arlington, Arlington, TX,* [2]*The Pennsylvania State University, University Park, PA*

P-Fri-401
Peristaltic Flow in the Glymphatic System
J. Grotberg[1] and V. Suresh[2]
[1]*University of Michigan, Ann Arbor, MI,* [2]*University of Auckland, Auckland, New Zealand*

P-Fri-402
A Novel Approach to Study Contraction-Induced Relaxation in Lymphatic Vessels
A. Rosales[1], F. Yu[1], Y. Thakker[1], T. Lam[1], T. Hood[1], C. Quick[1], and R. Dongaonkar[1]
[1]*Michael E. DeBakey Institute, Texas A&M University, College Station, TX*

P-Fri-403
Filariasis Millifluidic Platform for Minimizing Blood Volume During Mosquito Feeding
T. Spencer[1], A. Moorhead[2], and B. Dixon[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*UGA College of Veterinary Medicine, Athens, GA*

P-Fri-404
Characterizing the Simultaneous Effects of Shear Stress and Transmural Pressure on Lymphatic Pumping
H. Pariseau[1], D. Dang[1], J. White[1], C. Quick[1], and R. Dongaonkar[1]
[1]*Michael E. DeBakey Institute, Texas A&M University, College Station, TX*

P-Fri-405
Calcium Oscillations and Waves in Vascular Cells: Mechanisms of Initiation and Modulation
J. Parikh[1], A. Kapela[1], and N. Tsoukias[1]
[1]*Florida International University, Miami, FL*

P-Fri-406
Non-invasive Assessment of an Engineered Endothelium via Iron Oxide Nanoparticles and Magnetic Resonance Imaging
B. Jiang[1], D. Kats[1], T. Meade[1], and G. Ameer[1]
[1]*Northwestern University, Evanston, IL*

P-Fri-407
Mechanisms of Flow-dependent Endothelial COX-2 and PGI_2 Expression
S. Russell-Puleri[1], E. Ebong[2], and J. Tarbell[1]
[1]*City College of New York, New York, NY,* [2]*Northeastern University, Boston, MA*

P-Fri-408
Microvascular Degeneration Predicted from Reduced Pulsatility
S. Ahmed[1], T. Bimal[1], P. Nguyen[1], E. Tuzun[1], S. Coquis-Knezek[1], and C. Quick[1]
[1]*Michael E. DeBakey Institute, Texas A&M University, College Station, TX*

P-Fri-409
Endothelial Cells are Influenced by Simvastatin Therapy when Exposed to Static and Laminar Flow Conditions
M. Dick[1,2], J-C. Tardif[2], and R. Leask[1,2]
[1]*McGill University, Montreal, QC, Canada,* [2]*Montreal Heart Institute, Montreal, QC, Canada*

Track: Cardiovascular Engineering, Tissue Engineering

Cardiovascular Regeneration and Functional Restoration

Chairs: Milica Radisic, Jun Liao

P-Fri-366
A Thermo-Responsive, Self-Adhesive Injectable Scaffold for iPSC-Derived Cardiomyocyte Delivery
X. Wang[1], L. Zhong[1], Y. Chun[1], C. Lim[1], C. Hong[1], S. Maltais[1], and H-J. Sung[1]
[1]*Vanderbilt University, Nashville, TN*

P-Fri-367
Mitochondrial Transfer From a Stem Cell to a Cardiomyocyte via Tunneling Nanotube
H. Yang[1], R. Runyan[2], T. Borg[3], R. Markwald[3], and B. Gao[1]
[1]*Clemson University, Clemson, SC,* [2]*University of Arizona, Tucson, AZ,* [3]*Medical University of South Carolina, Charleston, SC*

P-Fri-368
Engineered Cell Therapy with Embryonic Stem Cell-derived Cardiomyocytes Encapsulated in Injectable Nanomatrix Gel Enhanced Engraftment and Promoted Cardiac Repair in Experimental Myocardial Infarction
K. Ban[1], H-J. Park[1,2], S. Kim[1], A. Andukuri[1], H-W. Jun[3], and Y-S. Yoon[1]
[1]*Emory University, Atlanta, GA,* [2]*The Catholic University, Seoul, Korea, Republic of,* [3]*University of Alabama, Birmingham, AL*

P-Fri-369
Wireless Electrical Signal Recording for Neonatal Mouse Model of Heart Regeneration
T. Beebe[1], Y. Zhao[2], H. Cao[3], H. Zhang[4], X. Zhang[2], H. Chang[4], C-L. Lien[5], Y-C. Tai[2], and T. Hsiai[1,3]
[1]*UCLA School of Engineering & Applied Sciences, Los Angeles, CA,* [2]*California Institute of Technology, Pasadena, CA,* [3]*UCLA School of Medicine, Los Angeles, CA,* [4]*Northwestern Polytechnical University, Xi'an, China, People's Republic of,* [5]*Children's Hospital Los Angeles, Los Angeles, CA*

P-Fri-370
Differentiation of Human Progenitor Cells on Decellularized Cardiac Tissue
R. Thibault[1], E. Chau[1], A. Gordon[2], A. Gobin[1], M. Resende[1], R. Schwartz[1], and D. Taylor[1]
[1]*Texas Heart Institute, Houston, TX,* [2]*Rice University, Houston, TX*

POSTER SESSION **Fri**

See page 141 for Poster floor plan

P-Fri-371
An Injectable Hydrogel with bFGF Release to Augment Cardiosphere-derived Cell Survive and Angiogenesis Under Ischemic Conditions
X. Li[1], Z. Fan[1], M. Fu[1], Y. Xu[1], and J. Guan[1]
[1]Ohio State University, Columbus, OH

P-Fri-372
Investigation of Drug-Induced Congenital Heart Defects Using Human Pluripotent Stem Cell Derived Cardiomyocytes
C. Rigdon[1], P. Kerscher[1], and E. Lipke[1]
[1]Auburn University, Auburn University, AL

P-Fri-373
Preclinical Performance of the PediaFlow® Pediatric VAD - A Potential Breakthrough Clinical Device
S. Olia[1,2], V. Shankarraman[2], T. Maul[1,2,3], E. Kocyildirim[2], S. Snyder[4], J. Verkaik[4], D. Paden[4], W. Wagner[1,2], J. Antaki[2,5], M. Kameneva[1,2], P. Wearden[2,3], and H. Borovetz[1,2]
[1]University of Pittsburgh Department of Bioengineering, Pittsburgh, PA, [2]McGowan Institute for Regenerative Medicine, Pittsburgh, PA, [3]Children's Hospital of Pittsburgh, Pittsburgh, PA, [4]Launchpoint Technologies, Goleta, CA, [5]Carnegie Mellon University Department of Biomedical Engineering, Pittsburgh, PA

P-Fri-374
Total Artificial Heart and Mock Circulation System: A Training Tool for Ventricular Assist Devices
K. DeCook[1], J. Gamboa[1], P. Tran[1], R. Smith[1], D. Burkhoff[2], and M. Slepian[1]
[1]University of Arizona, Tucson, AZ, [2]Columbia University, New York, NY

P-Fri-375
Prohealing Multifunctional Endothelium Nanomatrix Coated Stents
G. Alexander[1], A. Andukuri[1], Y-D. Sohn[2], Y-S. Yoon[2], B. Brott[1], P. Anderson[1], and H-W. Jun[1]
[1]University of Alabama at Birmingham, Birmingham, AL, [2]Emory University, Atlanta, GA

P-Fri-376
Cardiovascular Assist Device Shear Stresses Induce Pro-thrombotic Microparticle Formation
A. Meyer[1], R. Kamucheka[1], P. Nair[2], K. Reddoch[2,3], R. Montgomery[3], B. Parida[3], A. Cap[3], N. Mackman[4], and A. Ramasubramanian[2]
[1]UT Health Science Center, San Antonio, TX, [2]UT San Antonio, San Antonio, TX, [3]U.S. Army Institute of Surgical Research, San Antonio, TX, [4]University of North Carolina, Chapel Hill, NC

P-Fri-377
Potential Thrombogenic Impacts of the Radial Orientations of Inflow and Outflow Cannulae with Respect to the HeartMate II VAD
W-C. Chiu[1], S. Einav[1], A. McLarty[1], M. Slepian[1,2], and D. Bluestein[1]
[1]Stony Brook University, Stony Brook, NY, [2]University of Arizona, Tucson, AZ

P-Fri-378
Reynolds Stress Assessment in the LVAD-Assisted Heart using High-Speed PIV
M. Razaz Zadeh[1], A. Falahatpisheh[2], A. Kheradvar[2], and K. May-Newman[1]
[1]San Diego State University, San Diego, CA, [2]University of California, Irvine, Irvine, CA

P-Fri-379
Effect of Environmental Dynamics on Bioresorbable Vascular Scaffold Performance
J. Ferdous[1], V. Kolachalama[2], N. Fatematuzzahan[1], and T. Shazly[1]
[1]University of South Carolina, Columbia, SC, [2]Charles Stark Draper Laboratory, Cambridge, MA

P-Fri-380
Comparison of Blood Damage Indices in a Heart Assist Device Using CFD with Different Flow Models
M. Heck[1], T. Snyder[2], D. Papavassiliou[1], E. O'Rear[1], and D. Schmidtke[1]
[1]University of Oklahoma, Norman, OK, [2]VADovations, Inc., Norman, OK

P-Fri-381
3D Printed Heart Models and Their Potential in Heart Surgery
K. Das[1] and H. Chittam[1]
[1]University of South Florida, Tampa, FL

P-Fri-382
Efficiency of Protease-Activatable Viruses for Cardiovascular Disease Tuned via Incorporation of Wild-type Capsid Subunits
M. Ho[1], M. Lam[1], M. Yamagami[1], and J. Suh[1]
[1]Rice University, Houston, TX

Track: Cardiovascular Engineering

Heart Valves and Stents

Chairs: Aaron Baker, Craig Goergen

P-Fri-383
Effects Of Short-term Exposure of Estrogen On Smooth Muscle Cells Proliferation
J. Betala[1], J. Lee [1], E. Langan[2], and M. LaBerge[1]
[1]Clemson University, Clemson, SC, [2]Greenville hospital system, Greenville, SC

P-Fri-384
Hydroxyapatite Nanoparticles Enhance Osteoblastic Differentiation of Valvular Interstitial Cells in 3D Culture
J. Richards[1], J. Russ[1], L. Estroff[1], and J. Butcher[1]
[1]Cornell University, Ithaca, NY

P-Fri-385
Nutrient Transport During Engineered Heart Valve Tissue Exposure to Steady Flow
M. Salinas[1], V. Unnikrishnan[2], and S. Ramaswamy[1]
[1]Florida International University, Miami, FL, [2]The University of Alabama, Tuscaloosa, AL

P-Fri-386
Aortic Valve Endothelial to Mesenchymal Transformation is Induced by Altered Extracellular Matrix Composition
S. Dahal[1] and G. Mahler[1]
[1]Binghamton University, Binghamton, NY

P-Fri-387
Porcine Pericardium As A Biomaterial For Bioprosthetic Venous Valves
L. Maganini[1] and N. Vyavahare[1]
[1]Clemson University, Clemson, SC

P-Fri-388
Valve Interstitial Cell Remodeling Under Abnormal Mechanical Stress Is Mediated By 5HT and FGF2 Signaling
N. Lam[1], J. Carradini[1], S. Sharma[2], and K. Balachandran[1]
[1]University of Arkansas, Fayetteville, AR, [2]University of Arkansas for Medical Sciences, Little Rock, AR

P-Fri-389
Coaxially Electrospun Biohydrid Nanofibrous Scaffolds for Vascular Regeneration
N. Nagiah[1] and W. Tan[1]
[1]University of Colorado, Boulder, CO

P-Fri-390
Properties of Graphene-Silicone Prosthetic Heart Valves
M. Lordeus[1], A. Estrada[1], D. Stewart[1], R. Dua[1], C. Zhang[1], A. Agarwal[2], and S. Ramaswamy[1]
[1]Florida International University, Miami, FL, [2]Indian Institute of Technology, New Delhi, India

P-Fri-391
Novel Magnesium-based Stent Biomaterials with Anticorrosion and Drug-eluting Coatings
J. Ma[1], N. Zhao[1], and D. Zhu[1]
[1]North Carolina A&T State University, Greensboro, NC

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Fri-392
Effective Gene Delivery to Heart Valve Cells Using Adeno-associated Virus
F. Wong[1], M. Ho[1], J. Suh[1], and J. Grande-Allen[1]
[1]*Rice University, Houston, TX*

P-Fri-393
Pharmacokinetic Evaluation of Non-Stent Drug Delivery: An *In Vitro* System For Rapid Evaluation
M. Atigh[1] and S. Yazdani[1]
[1]*University of South Alabama, Mobile, AL*

P-Fri-394
Tricuspid Valve Leaflet Force on the Annulus after Clover Repair
A. Basu[1] and Z. He[1]
[1]*Texas Tech University, Lubbock, TX*

P-Fri-395
Fabrication Of Human Serum Albumin Nanofilm For Enhanced Hemocompatibility And Vascular Smooth Muscle Cell Response
A. Khanna[1], I. Luzinov[1], F. Vatansever[1], E. Langan III[2], and M. LaBerge[1]
[1]*Clemson University, Clemson, SC,* [2]*Greenville Health System, Greenville, SC*

P-Fri-396
Design of an Echocardiographic Benchtop Testing Phantom Replicating Tricuspid Regurgitation (TR)
H. O' Grady[1], M. Gilmore[2], and P. Delassus[1]
[1]*Galway Mayo Institute of Technology (GMIT), Galway, Ireland,* [24]*TECH Cardio Ltd., Galway, Ireland*

Track: Cardiovascular Engineering, Biomechanics

Hemodynamics, Vascular Mechanics and Flow Modelling

Chairs: Eno Ebong, Danial Shahmirzadi

P-Fri-557
Evaluation of the Time Course of Aortic Aneurysm Residual Stress in Apolipoprotein E-deficient Mice
R. Peattie[1], C. Kahn[2], Y. Zhang[1], J. Galper[1], and L. Dorfmann[2]
[1]*Tufts Medical Center, Boston, MA,* [2]*Tufts University, Medford, MA*

P-Fri-558
Maximum Circumference Detects Nonhomogeneous Sac ExpansionIn Abdominal Aortic Aneurysm
R. S. Nomoto[1], M. Iafrati[2], L. Dorfmann[3], and R. Peattie[2]
[1]*Tufts University, Boston, MA,* [2]*Tufts Medical Center, Boston, MA,* [3]*Tufts University, Medford, MA*

P-Fri-559
Feasibility of Pulsatile Flow in *Ex Vivo* Lung Perfusion
K. Zoeller[1], E. Schumer[1], P. Linsky[1], M. Sobieski II[1], G. Monreal[1], K. Soucy[1], G. Giridharan[1], S. Koenig[1], M. Slaughter[1], and V. van Berkel[1]
[1]*University of Louisville, Louisville, KY*

P-Fri-560
Integrating Biomechanics and Mechanobiology to Predict Cardiac Contractility in a Closed-Loop System
C. Nwokocha[1], J. Schueler[1], M. Villarreal[1], D. Westra[1], T. Duong[1], C. Quick[1], and R. Stewart[1]
[1]*Michael E. DeBakey Institute, Texas A&M University, College Station, TX*

P-Fri-561
Cardiovascular Mechanical Properties Affect Regression of the Ductus Arteriosus
H. Ahmed[1], F. Hise[1], U. Chikhliya[1], C. Quick[1], and R. Stewart[1]
[1]*Michael E. DeBakey Institute, Texas A&M University, College Station, TX*

P-Fri-562
Regulation of Vascular Tone via Localized Calcium Signaling in Myoendothelial Projections
J. Parikh[1], A. Kapela[1], and N. Tsoukias[1]
[1]*Florida International University, Miami, FL*

P-Fri-563
Dynamic Models of Cerebral Hemodynamics used for Diagnosis of Alzheimer's Disease
Y. Kang[1], D. Shin[1], J. Claassen[2], R. Zhang[3], and V. Marmarelis[1]
[1]*University of Southern California, Los Angeles, CA,* [2]*Radboud University, Nijmegen Medical Center, Nijmegen, Netherlands,* [3]*University of Texas, Southwestern Medical Center, Dallas, TX*

P-Fri-564
Assumed Pressure Pulse Augmentation Can Originate from the Heart
P. Theriot[1], G. Osa[1], T. Dunn[1], S. Wallooppillai[1], M. Mohuiddin[1], and C. Quick[1]
[1]*Michael E. DeBakey Institute, Texas A&M University, College Station, TX*

P-Fri-565
Survival Analysis for Estimating Abdominal Aortic Aneurysm Rupture
M. Thirugnanasambandam[1] and E. Finol[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

P-Fri-566
Increasing Differential Sensitivity to Preload and Afterload of LVADs Operated in Pulsatile Mode
M. McDowall[1], A. Workman[1], H. Adeleke [1], O. Sarwar[1], S. Coquis-Knezek[1], and C. Quick[1]
[1]*Michael E. DeBakey Institute, Texas A&M University, College Station, TX*

P-Fri-567
Effects Of Hemodynamic Factors On Hemolysis In Shear Flows
Q. Nguyen[1], E. O' Rear[1], D. Schmidtke[1], D. Papavassiliou[1], and T. Snyder[2]
[1]*The University of Oklahoma, Norman, OK,* [2]*Advanced Cardiac Care, INTEGRIS Baptist Medical Center, Oklahoma city, Oklahoma, OK*

P-Fri-568
Design and Calibration of Transducers for Aortic Root Force Measurement
T. Bechsgaard[1,2], S. Laugesen[2], J. Honge[2], H. Nygaard[2], S. Nielsen[2], and P. Johansen[1,2]
[1]*Aarhus University, Aarhus N, Denmark,* [2]*Aarhus University Hospital, Aarhus N, Denmark*

P-Fri-569
Elevated Arterial Wall Permeability May Cause Vulnerable Plaque Formation In Mice
Z. Mohri[1], E. Rowland[2], L. Clarke[2], A. De Luca[2], V. Peiffer[2], S. Sherwin[2], R. Krams[2], and P. Weinberg[2]
[1]*Imperial College London, London, United Kingdom,* [2]*Imperial College London, Lonodn, United Kingdom*

P-Fri-570
Renal Blood Flow Distribution Assayed by Indicator-Dilution Method and Morphometric Model Analysis.
J. Bukowy[1], L. Evans[1], A. Cowley[1], and D. Beard[2]
[1]*Medical College of Wisconsin, Milwaukee, WI,* [2]*University of Michigan, Ann Arbor, MI*

P-Fri-571
The Structural Determinants of Hemostatic Thrombi
J. Welsh[1], T. Stalker[1], L. Brass[1], and S. Diamond[1]
[1]*University of Pennsylvania, Philadelphia, PA*

P-Fri-572
A Quantitative Test of the Efficient Transport Network Hypothesis in the Cerebral Vasculature
D. Kudlik[1] and P. Drew[1]
[1]*Pennsylvania State University, University Park, PA*

P-Fri-573
Modeling Compensatory Mechanisms to Maintain Homeostasis During Moderate Blood Loss
M. Wu[1], Y. Tong[1], K. Dupree[1], T. Stiles[1], and C. Quick[1]
[1]*Michael E. DeBakey Institute, Texas A&M University, College Station, TX*

See page 141 for Poster floor plan

P-Fri-574
A Novel Approach to Modeling Acute Normovolemic Hemodilution
B. Pliskow[1] and M. Kaya[1]
[1]Florida Institute of Technology, Melbourne, FL

P-Fri-575
Simple Analytical Model to Predict Critical Hemodynamic Parameters in Fontan Patients
O. Okose[1], M. Shimazaki[1], J. Nguyen[1], K. McFadden[1], M. Mohuiddin[1], and C. Quick[1]
[1]Michael E. DeBakey Institute, Texas A&M University, College Station, TX

P-Fri-576
Novel Approach to Optimize both Simplicity and Accuracy when Simplifying Complex Algebraic Models
C. Mason[1], W. Wilder[1], A. Wilkerson[1], A. Garcia[1], M. Mohuiddin[1], R. Stewart[1], and C. Quick[1]
[1]Michael E. DeBakey Institute, Texas A&M University, College Station, TX

P-Fri-577
Mechanical Determinants of Acceptable Blood Volume Ranges in Heart Failure Patients
A. Morfin[1], F. Dalal[1], S. Kamp[1], A. Armstrong[1], M. Richter[1], T. Stiles[1], and C. Quick[1]
[1]Michael E. DeBakey Institute, Texas A&M University, College Station, TX

P-Fri-578
Patient-specific Computational Fluid Dynamic Modelling of Pulmonary Artery Stenosis
M. Dong[1], E. Kung[1], J. Feinstein[2], and A. Marsden[1]
[1]University of California, San Diego, La Jolla, CA, [2]Stanford University, Stanford, CA

P-Fri-579
Patient Specific Models of Aortic Dissection
V. Flamini[1], S. Gallot Lavallee[1,2], S. Maddalo[3], A. DeAnda[3], and B. Griffith[3,4]
[1]New York University, Brooklyn, NY, [2]La Sapienza, Universita; di Roma, Rome, Italy, [3]New York University, New York, NY, [4]University of North Carolina, Chapel Hill, Chapel Hill, NC

POSTER SESSION **Fri**

P-Fri-580
The Effect of Vascular Curvature on Blood Flow and Oxygen Transport in Arterio-Venous Fistulae
L. Grechy[1], F. Iori[1], R. Corbett[1], W. Gedroyc[2], N. Duncan[1], C. Caro[1], and P. Vincent[1]
[1]Imperial College London, London, United Kingdom, [2]St Mary Hospital, London, United Kingdom

P-Fri-581
Stiffening Right Ventricle Helps Relieving Respiratory Failure After Acute Kidney Injury (AKI)
Z. Meng[1], H. Crawford[1], L. Tufts[1], C. Hahn[1], S. Johnson[1], and B. Poskevich[1]
[1]Michael E. DeBakey Institute, Texas A&M University, College Station, TX

P-Fri-582
Regulation of ATP and ROS Production by Stretch Fluctuations in Vascular Smooth Muscle Cells
E. Bartolak-Suki[1] and B. Suki[1]
[1]Boston University, Boston, MA

P-Fri-583
Mechanisms of Phenotypic Change of Vascular Smooth Muscle Cells to Osteoblast Like Cells in Vascular Calcification
P. Nahar[1], N. Gohad[1], and N. Vyavahare[1]
[1]Clemson University, clemson, SC

P-Fri-584
Force Derived Applanation Tonometry for High and Low Deflections In a Phantom Vessel
G. Drzewiecki[1], G. Sathish Krishna[1], and H. Katta[1]
[1]Rutgers University, Piscataway, NJ

P-Fri-585
Effect of Sleep Apnea Event Duration on Concomitant Rise in Blood Pressure and Cerebral Blood Flow
S. Manchikatla[1], R. Alex[1], D. Watenpaugh[2,3], R. Zhang[4], E. Altuwaijri[1], and K. Behbehani[1]
[1]UT Arlington, Arlington, TX, [2]Sleep Consultants, Ft. Worth, TX, [3]Sleep Consultants, Fort Worth, TX, [4]UT Southwestern Medical Center Dallas, Dallas, TX

P-Fri-586
Melding Experimental Protocol and Mathematical Representation in the Fürth-Ornstein-Taylor Equation
E. Eckstein[1], M. Leggas[2], B. Ma[3], J. Lavine[4], and J. Goldstein[1]
[1]University of Memphis, Memphis, TN, [2]University of Kentucky, Lexington, KY, [3]University of Vermont, Burlington, VT, [4]Bunker Hill Community College, Charlestown, MA

Track: Cellular and Molecular Bioengineering

Immunoengineering and Extracellular Matrix Interactions

Chairs: Kent Leach, Hanjoong Jo

P-Fri-49
Design and Selection of an MBP-Specific T-Cell Receptor in order to Abrogate Autoreactive Immune Attack in Multiple Sclerosis
E. Leonard[1], K. Entzminger[1], J. Fogarty[1], B. Roy[1], and J. Maynard[1]
[1]University of Texas at Austin, Austin, TX

P-Fri-50
High Fc Density Particles Result in Binary Complement Activation but Tunable Macrophage Phagocytosis
T. Sulchek[1], P. Pacheco[1], C. Pantoja[1], A. Mylarapu[1], and D. White[2]
[1]Georgia Tech, Atlanta, GA, [2]USDA, Ames, GA

P-Fri-51
Accurate and Quantitative Immune Repertoire Sequencing using Unique Molecular Identifiers
N. Jiang[1], D. Wu[1], M. Qu[1], and B. Wendel[1]
[1]The University of Texas at Austin, AUSTIN, TX

P-Fri-52
Sinusoidal Wavy Surfaces for Curvature-guided Migration of T Lymphocytes
K. Song[1], S. Park[1], D. Kim[1], and J. Doh[1]
[1]POSTECH, Pohang, Korea, Republic of

P-Fri-53
Substrate Stiffness Promotes Endothelial Senescence
J. Fu[1], T. Cheung[1], and G. Truskey[1]
[1]Duke University, Durham, NC

P-Fri-54
Single-cell Force Spectroscopy as a Technique to Quantify Erythrocyte Cytoadhesion and Biochemical Modulation
J. Maciaszek[1,2], K. Partola[1], B. Andemariam[3], and G. Lykotrafitis[1]
[1]University of Connecticut, Storrs, CT, [2]St. Jude Children's Research Hospital, Memphis, TN, [3]University of Connecticut Health Center, Farmington, CT

P-Fri-55
Dynamic Micropatterning of Cells on Nanostructured Surfaces Using a Cell-friendly Photoresist
S. Kweon[1], K. Song[1], J. Choi[1], and J. Doh[1]
[1]POSTECH, pohang, Korea, Republic of

P-Fri-56
Connexin43 Mimetic Peptides for use in Breast Reconstructive Scar Reduction
K. Degen[1], M. Rhett[2], M. Yost[2], K. Moyer[3], and R. Gourdie[1,4]
[1]Virginia Tech, Blacksburg, VA, [2]Medical University of South Carolina, Charleston, SC, [3]Carilion Clinic, Roanoke, VA, [4]Virginia Tech Carilion Research Institute, Roanoke, VA

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Fri-57
The Induction of EMT In Correlation With The Secretion of LTBP-1 In Mammary Epithelial Cells
R. Malik[1], L. Griggs[1], and C. Lemmon[1]
[1]*Virginia Commonwealth University, Richmond, VA*

P-Fri-58
Embolism Coil Geometry Modulates Cell-Matrix Interactions
B. Earnest[1], E. Nagel[1], A. Evans[1], and B. Helmke[1]
[1]*University of Virginia, Charlottesville, VA*

P-Fri-59
PMEDSAH is a Polyzwitterionic, Non-fouling Material that Supports Pluripotent Cell Growth
T. Aydin[1], L. Villa[1], R. Kumar[1], J. Lahann[1], and P. Krebsbach[1]
[1]*University of Michigan, Ann Arbor, MI*

P-Fri-60
Sphingolipid Dysregulation Initiates Myeloid Cell Activation in Sickle Cell Disease
A. Lane[1], A. Awojoodu[1], Y. Zhang[1], and E. Botchwey[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Fri-61
Exogenous Delivery of Indoleamine 2,3 Dioxygenase for the Induction of Tolerance
E. Bracho-Sanchez[1], J. Lewis[1], and B. Keselowsky[1]
[1]*University of Florida, Gainesville, FL*

P-Fri-62
A Microwell System for Detection of Cytokines Secreted by Single Adherent Macrophages
F. McWhorter[1] and W. Liu[1]
[1]*University of California, Irvine, Irvine, CA*

Track: Cellular and Molecular Bioengineering, Bioinformatics, Computational and Systems Biology

Molecular Bioengineering, Systems and Synthetic Biology

Chairs: B. Rita Alevriadou, Stacey Finley

P-Fri-272
A Small Molecule-Peptide Hybrid Screening Technique Using Selenocysteine Phage Display
J. Beech[1], H. Figler[1], J. Linden[2], C. Noren[3], L. Saleh[3], and K. Kelly[1]
[1]*University of Virginia, Charlottesville, VA,* [2]*La Jolla Institute, La Jolla, CA,* [3]*New England Biolabs, Ipswich, MA*

P-Fri-273
Scaffold Residues of Monobody-Maltose Binding Protein 74 (MBP74) are Critical for Binding with its Ligand
D. Shea[1], L-L. Cheung[1,2,3], N. Nicholes[1], A. Date[1], M. Ostermeier[1,2], and K. Konstantopoulos[1,2,3,4]
[1]*Department of Chemical and Biomolecular Engineering, The Johns Hopkins University, Baltimore, MD,* [2]*Johns Hopkins Institute for NanoBioTechnology, Baltimore, MD,* [3]*Johns Hopkins Physical Sciences-Oncology Center, Baltimore, MD,* [4]*Johns Hopkins Center of Cancer Nanotechnology Excellence, Baltimore, MD*

P-Fri-274
Characterization Of Autocatalytic Activation Of Influenza Hemagglutinin
M. Valverde[1], M. Baltz[2], J. Price[3], J. Lee[4], and E. Boder[1]
[1]*University of Tennessee, Knoxville, TN,* [2]*Cornell University, Ithaca, NY,* [3]*University of Delaware, Newark, DE,* [4]*MedImmune, Inc., Gaithersburg, MD*

P-Fri-275
Green and Black Tea Polyphenols Mechanistically Inhibit Amyloid-β Aggregation in Alzheimer's Disease
S. Chastain[1], K. Pate[1], and M. Moss[1]
[1]*University of South Carolina, Columbia, SC*

P-Fri-276
RNA Enzymes as Potential Tools for Artificial Gene Regulation
R. Poudyal[1], M. Callaway[1], and D. Burke[1]
[1]*University of Missouri, Columbia, MO*

P-Fri-277
Quantitative Profiling of Angiogenic Receptors on Human Dermal Fibroblasts
S. Chen[1] and P. Imoukhuede[1]
[1]*University of Illinois at Urbana-Champaign, Champaign, IL*

P-Fri-278
Intracellular Delivery of Macromolecules Using Ultrahigh Frequency Ultrasound
S. Yoon[1], M. Kim[1], N. Cabrera-Munoz[1], H. Kim[1], and K. Shung[1]
[1]*University of Southern California, Los Angeles, CA*

P-Fri-279
Engineering Quorum-sensing Crosstalk to Generate Complex Responses of Synthetic Gene Networks
F. Wu[1], D. Menn[1], and X. Wang[1]
[1]*Arizona State University, Tempe, AZ*

P-Fri-280
Tuning Molecular Self-Assembly by Leveraging Synthetic Biology to Optimize Biomedical Materials
R. Zhang[1] and W. Ruder[1]
[1]*Virginia Tech, blacksburg, VA*

P-Fri-281
Spatial Segregation of Synthetic Biological Circuit Output using Droplet-based Microfluidics
S-H. Paek[1] and W. Ruder[1]
[1]*Virginia Tech, Blacksburg, VA*

P-Fri-282
Aglycosylated Antibody Engineering for Novel Effector Functions
T. Kang[1], S. Jung[2], W. Kelton[1], and G. Georgiou[1]
[1]*The University of Texas at Austin, Austin, TX,* [2]*Kookmin University, Seoul, Korea, Republic of*

P-Fri-283
Creation of CTX-M-14/CTX-M-15 Gene Fusions to Localize CTX-M-15 Associated Upregulation Element
A. Varman[1] and C. Geyer[2]
[1]*Duchesne Academy, Omaha, NE,* [2]*Creighton University, Omaha, NE*

P-Fri-284
Resveratrol And Its Derivatives' As Potential Inhibitors Of Aβ Peptides Aggregation
Y. Wang[1] and M. Moss[1]
[1]*University of South Carolina, Columbia, SC*

P-Fri-285
Pathophysiological Mechanisms of Autism and Identification of Therapeutic Targets
M. Hwang[1], H. Cho[1], and Y. Lee[1]
[1]*Virginia Tech, Blacksburg, VA*

P-Fri-286
Modeling the Effects of a Microfluidic Environment on GFP Expression in Reporter Bacteria
C. Austin[1], W. Stoy[1], P. Su[2], M. Harber[1], P. Bardill[1], B. Hammer[1], and C. Forest[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*University of California, Berkeley, CA*

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P-Fri-287
An Optogenetic System for Spatiotemporal Regulation of Viral Gene Delivery Vectors
E. Gomez[1], K. Gerhardt[1], J. Judd[1], J. Tabor[1], and J. Suh[1]
[1]*Rice University, Houston, TX*

P-Fri-288
Engineering Diagnostic and Therapeutic Proteins Targeting the MSLN-MUC16 Tumor Biomarker Interface
S. Moore[1], F. Bassir[1], K. George[1], and A. Sirois[1]
[1]*Smith College, Northampton, MA*

P-Fri-289
Knockdown of NHEJ-Related Genes Increases Rate of Homologous Recombination for Genome Editing
C. Krueger[1], T. Cradick[1], and G. Bao[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Fri-290
Engineered Aglycosylated IgG Variants with Enhanced Anti-tumor Activity via Complement Dependent Cytotoxicity (CDC) withoutAntibody Dependent Cell Cytotoxicity (ADCC).
C-H. Lee[1], J. Lee[1], T. Kang[1], and G. Georgiou[1]
[1]*University of Texas at Austin, Austin, TX*

Track: Drug Delivery

Drug Delivery

Chairs: Jianjun Guan, Jennifer Kang-Mieler

P-Fri-441
Developing an Albumin Binding Peptide Derivative of Anticancer Therapeutics
Y-R. Ahn[1]
[1]*Duke University, Durham, NC*

P-Fri-442
Early Black Cranberry Proanthocyanidins Inhibit Melanoma Cell Growth and Proliferation
N. Macedo[1], T. Ferreira[1], C. Neto[1], and S. Bhowmick[1]
[1]*UMass Dartmouth, Dartmouth, MA*

P-Fri-443
Early Development of Gold-Lipidic Nanocomposites for the Detection and Treatment of Prostate Cancer
C. Dobson[1], C. Pickering[1], M. Eggert[1], A. David[1], P. Panizzi[1], and R. Arnold[1]
[1]*Auburn University, Auburn, AL*

P-Fri-444
Development of a Nanoparticle Formulation of Orlistat: Solubility, Stability, and Cytotoxicity
T. Hill[1,2], F. Wheeler[3], S. Kelkar[1,2], S. Kridel[3], and A. Mohs[1,2,3]
[1]*Wake Forest-Virginia Tech School of Biomedical Engineering and Sciences, Winston Salem, NC,* [2]*Wake Forest Institute for Regenerative Medicine, Winston Salem, NC,* [3]*Comprehensive Cancer Center of Wake Forest University, Winston Salem, NC*

P-Fri-445
Reducing Cell Survival in Metastatic Breast Cancer Using Curcumin-Loaded Silk Fibroin Nanoparticles
D. Mishra[1], T. Iyyanki[1], and A. Mathur[1]
[1]*M.D. Anderson Cancer Center, Houston, TX*

P-Fri-446
Temperature- and pH-responsive Photoluminescent Nanoparticles for Lung Cancer Treatment
J. Menon[1,2], D. Nguyen[1,2], M. Wei[1,2], B. Yuan[1,2], J. Yang[3], and K. Nguyen[1,2]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*University of Texas Southwestern Medical Center, Dallas, TX,* [3]*Pennsylvania State University, University Park, PA*

P-Fri-447
Tamoxifen-Coated Selenium Nanoparticles for Breast Cancer Treatment
M. Stolzoff[1], A. D'Antonio[1], and T. Webster[1]
[1]*Northeastern University, Boston, MA*

P-Fri-448
Crosslinking Albumin To Alter Curcumin Release From Spray Dried Particles
I. Jain[1], M. Kelecy[1], M. O'Toole[1], R. Keynton[1], A. Gobin[2], and P. Soucy[1]
[1]*University of Louisville, Louisville, KY,* [2]*Texas Heart Institute, Houston, TX*

P-Fri-449
Synthesis of Dendrimer-Camptothecin Nanoconjugates via Click Chemistry
O. Zolotarskaya[1], H. Yang[1], L. Xu[1], and K. Valerie[1]
[1]*Virginia Commonwealth University, Richmond, VA*

P-Fri-450
A Theoretical Model on the Acoustic Vaporization of Dual Phase Microdroplets
D. Li[1], M. Fabiilli[1], J. Fowlkes[1], P. Carson[1], and J. Bull[1]
[1]*University of Michigan, Ann Arbor, MI*

P-Fri-451
The Combinatorial Effect of Multiple MicroRNA Delivery on Glioblastoma Multiforme
Y. Yin[1], D. Rassias[1], A. Beliveau[1], and A. Jain[1]
[1]*Worcester Polytechnic Institute, Worcester, MA*

P-Fri-452
Multifunctional Polymeric Nanoconstructs for Magnetic Resonance Imaging and Combinatorial Treatment of Brain Tumors
C. Stigliano[1], M. Cho[1], M. Ramirez[1], S. Aryal[1], and P. Decuzzi[1]
[1]*Houston Methodist Research Institute, Houston, TX*

P-Fri-453
Curcumin Loaded Polymeric Nanoparticles For The Prevention Of Metastatic Disease
A. Palange[1,2], D. Di Mascolo [1,2], and P. Decuzzi[1]
[1]*Houston Methodist Research Institute, Houston, TX,* [2]*University of Magna Graecia, Catanzaro, Italy*

P-Fri-454
Development of pH Sensitive Micelles for Drug Delivery to Advanced Prostate Cancer
O. Aydin[1], I. Youssef[1,2], Y. Durmaz[1], G. Tiruchinapally[1], and M. ElSayed[1]
[1]*University of Michigan, Ann Arbor, MI,* [2]*Mansoura University, Mansoura, Egypt*

P-Fri-455
Mild Hypethermia Enhances Transport of Liposomal Gemcitabine and Improves *In vivo* Therapeutic Response Mild Hyperthermia Enhances Transport of Liposomal Gemcitabine and Improves *In Vivo* Therapeutic Response
D. Kirui[1], C. Celia[2], R. Molinaro[1], H. Shen[1], M. Ferrari[1], and D. Kirui[1]
[1]*Houston Methodist Research Institute, Houston, TX,* [2]*University of Chieti, Chieti, Italy*

P-Fri-456
CANCELLED BY AUTHOR

P-Fri-457
Nanoformulations of PARP Inhibitors for the Treatment of Cancer
P. Baldwin[1], S. Tangutoori[1], J. Shelke[1], and S. Sridhar[1]
[1]*Northeastern University, Boston, MA*

P-Fri-458
Localized Tumor Delivery of Radiosensitizers and Chemotherapeutics Using INCeRT Implants
J. Belz[1], R. Kumar[1], S. Markovic[1], Y. Sun[1], M. Niedre[1], M. Makrigiorgos[2], R. Cormack[2], and S. Sridhar[1]
[1]*Northeastern University, Boston, MA,* [2]*Dana Farber Cancer Institute, Brigham and Women's Hospital, Harvard Medical School, Boston, MA*

POSTER SESSION **Fri**

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Fri-459
Injectable Gelatin Derivative Hydrogels with Sustained VEGF Release for Induced Angiogenesis
Z. Li[1], S. Li[2], and X. Liu[1]
[1]Department of Biomedical Sciences, Texas A&M University Baylor College of Dentistry, dallas, TX, [2]Department of Plastic and Aesthetic Surgery, Southwest Hospital, Third Military Medical University, Chongqing, China, People's Republic of

P-Fri-460
Drug-delivery Surgical Suture for Reduction of Scar Formation.
S. Choi[1], B. Kim[2], M. Park[1], C. Park[1], S. Lee[1], C. Heo[3], and Y. Choy[1,2,4]
[1]Interdisiplinary Program in Bioengineering, College of Engineering, Seoul National University, Seoul, Korea, Republic of, [2]Department of Biomedical Engineering, Seoul National University, Seoul, Korea, Republic of, [3]Department of Plastic Surgery and Reconstructive Surgery, Seoul National University College of Medicinety, Seoul, Korea, Republic of, [4]Institute of Medical & Biological Engineering, Medical Research Center, Seoul National University, Seoul, Korea, Republic of

P-Fri-461
Enhancing Macrophage Recruitment by Controlling Scaffold Pore size
Y-H. Kim[1] and Y. Tabata[1]
[1]Institution of Frontier Medical Science, Kyoto University, Kyoto, Japan

P-Fri-462
Multi-layered Polymeric Microparticles For Sustained Drug Delivery
J. Castillo[1], L. Gaviria[1], T. Guda[1], and J. Ong[1]
[1]University of Texas at San Antonio, San Antonio, TX

P-Fri-463
Solvent-free Fabrication of polyHIPE Microspheres for Controlled Release of Growth Factors
M. Whitely[1], R. Moglia[1], M. Brooks[1], J. Robinson[1], M. Pishko[1], and E. Cosgriff-Hernandez[1]
[1]Texas A&M University, College Station, TX

P-Fri-464
Development of Nanodelivery System for Sustained Release of Bioactive Anti-NogoA
I. Yazdi[1], N. Taghipour[1], A. Munoz[1], T. Boone[1], and E. Tasciotti[1]
[1]Houston Methodist Research Institute, Houston, TX

P-Fri-465
Biocompatibility Study of Drug Delivery Sutures in an Ovine Model for Cardiovascular Engineering Applications
D. Lavin[1], L. Zhang[1], R. Quinn[2], S. Hilbert[2], A. Bert[2], C. McFall[2], J. Bustamante[2], K. Merrigan[2], S. Neighbors[2], C. Thanos[1], E. Mathiowitz[1], and R. Hopkins[2]
[1]Brown University, Providence, RI, [2]The Children's Mercy Hospital, Kansas City, MO

P-Fri-466
Combined Magnetic Nanoparticle-Based microRNA and Hyperthermia Therapy to Enhance the Treatment of Cancer
P. Yin[1], B. Shah[1], and K-B. Lee[1]
[1]Rutgers University, Piscataway, NJ

P-Fri-467
Bioresorbable Multi-Drug Delivery Conduit to Promote Peripheral Nerve Regeneration
S. Ho[1], K-M. Lin[1], H. Sant[1], J. Shea[1], J. Agarwal[1], and B. Gale[1]
[1]University of Utah, Salt Lake City, UT

P-Fri-468
Drug Delivery via Magnetic Nanoparticles: Pioneering Treatment of Osteosarcoma
T. Szasz[1], A. Kovach[1], S. Bulla[1], J. Liao[1], L. Williams[1], C. Bulla[1], and R. Prabhu[1]
[1]Mississippi State University, Mississippi State, MS

P-Fri-469
Tunable Molecular Release With Micropatterned Nanoporous Gold Thin Films
O. Kurtulus[1], P. Daggumati[2], and E. Seker[2]
[1]Department of Chemical Engineering and Materials Science, University of California Davis, Davis, CA, [2]Department of Electrical and Computer Engineering, University of California Davis, Davis, CA

P-Fri-470
NanoPorous Polycaprolactone Thin Films for Zero-order Protein Release
E. Schlesinger[1] and T. Desai[2]
[1]UC Berkeley - UCSF, San Francisco, CA, [2]University of California, San Francisco, San Francisco, CA

P-Fri-471
Encapsulation of Halloysite Clay Nanotubes with Drug Impregnated Nanolayers
D. Mills[1] and R. Grimes[1]
[1]Louisiana Tech University, Ruston, LA

P-Fri-472
Light-Mediated Multi-Step Release From Liposomes
J. Park[1], R. Stowers[1], and L. Suggs[1]
[1]University of Texas at Austin, Austin, TX

P-Fri-473
Cross-linked Lipid Particles for Delivery of Antiretroviral Combinations to Inhibit HIV Infection
W. Lykins[1], R. Ramanathan[1], Y. Jiang[1], and K. Woodrow[1]
[1]University of Washington, Seattle, WA

Track: Drug Delivery, Biomaterials

Self Assembly and Nucleic Acid Drug Delivery

Chairs: Rachael Sirianni, Bahareh Behkam

P-Fri-410
Self-Assembling Drug Delivery Vehicles Direct Angiogenesis and Immune Signals
V. Kumar[1], B. Wang[1], I-C. Li[1], A. Jalan[1], S. Shi[1], and J. Hartgerink[1]
[1]Rice University, Houston, TX

P-Fri-411
Layer-by-layer Self Assembly Through α Helical Polypeptides for Responsive Drug Delivery
A. Gormley[1], R. Chandrawati[1], D. Aili[2], and M. Stevens[1]
[1]Imperial College London, London, United Kingdom, [2]Linköping University, Linköping, Sweden

P-Fri-412
Morphologies of DNA Condensed with Functionalized Gold Nanoparticles
E. Salgado[1], G. Yesilbag[2], V. Rotello[2], R. Briber[1], and J. Seog[1]
[1]University of Maryland, College Park, MD, [2]University of Massachusetts, Amherst, MA

P-Fri-413
Nanoengineered Amphiphilic Particles from Poly(glycerol sebacate)-co-Poly(ethylene glycol) for Drug Delivery Applications
P. Desai[1], A. Venkataramanan[1], J. Carrow[1], M. Jaiswal[1], A. Singh[2], and A. Gaharwar[1]
[1]Texas A&M University, College Station, TX, [2]Cornell University, Ithaca, NY

P-Fri-414
Treatment Of Lysosomal Storage Disease With Therapeutic Polymersomes
E. Pearce[1], J. Larsen[1], M. Byrne[1], and D. Martin[1]
[1]Auburn University, Auburn, AL

P-Fri-415
Lipid-polymeric Particles with a Patchy Surface
C. Salvador-Morales[1]
[1]George Mason University, Fairfax, VA

P-Fri-416
Incorporation and Simultaneous, Controlled Release Of Multiple, Diverse Comfort Molecules From A Single Daily Disposable Silicone Hydrogel Contact Lens
C. White[1], C. Bartel[1], and M. Byrne[1]
[1]Auburn University, Auburn, AL

POSTER SESSION **Fri**

See page 141 for Poster floor plan

P-Fri-417
Optimizing Poly(beta-amino ester) Polyplexes for Enhanced Cellular Uptake and Particle Stability
J. Kim[1], P. Mastorakos[2], H. Park[2], J. Suk[2], J. Hanes[2], and J. Green[1]
[1]School of Medicine, Johns Hopkins University, Baltimore, MD, [2]Center for Nanomedicine at the Wilmer Eye Institute, Johns Hopkins University, Baltimore, MD

P-Fri-418
Identifying Factors for Effective Control of DNA Nanoparticle Shape While Retaining *In Vivo* Efficacy
J-M. Williford[1], Y. Ren[1], M. Archang[1], and H-Q. Mao[1]
[1]Johns Hopkins University, Baltimore, MD

P-Fri-419
Continuous-Flow Low-Voltage Microfluidic Electroporation for Gene Delivery
N. Bhattacharjee[1], L. Horowitz[1], and A. Folch[1]
[1]University of Washington, Seattle, WA

P-Fri-420
Enzymatically Degradable Microgels for the Oral Delivery of siRNA
J. Knipe[1], F. Chen[1], and N. Peppas[1]
[1]The University of Texas at Austin, Austin, TX

P-Fri-421
Reactive Oxygen Species-responsive Polyplex Micelles as a PEG-detachable Platform for Plasmid DNAdelivery
M. Gupta[1], S. Lee[1], S. Crowder[1], X. Wang[1], C. Nelson[1], C. Duvall[1], and H-J. Sung[1]
[1]Vanderbilt University, Nashville, TN

P-Fri-422
Synthesis and Characterization of N- (2-hydroxy)-3-Chloride Derivatives of Aminoglycoside Polymer for Potential Application in Gene Delivery
B. Miryala[1], Y. FENG[1], A. Omer[1], and K. Rege[1]
[1]Arizona State University, Tempe, AZ

POSTER SESSION **Fri**

P-Fri-423
Biodegradable DNA Nanoparticles for Efficient *in vivo* Gene Delivery
P. Mastorakos[1], A. da Silva[2], C. Zhang[1], J. Chisholm[1], S. Berry[1], W. Choi[1], H. Park[1], M. Morales[2], J. Hanes[1], and J. Suk[1]
[1]Center for Nanomedicine at the Wilmer Eye Institute, Johns Hopkins University, Baltimore, MD, [2]Carlos Chagas Filho Institute of Biophysics, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil

P-Fri-424
Dendritic Cell Subsets Interact with CpG-carrying Pathogen Mimicking Particles in a Phenotype Specific Manner
J. Leleux[1,2], P. Pradhan[1], and K. Roy[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

P-Fri-425
Polyethyleneimine Coated Gold Nanoparticles For Efficient And Selective Gene Delivery
B. Shrestha[1] and L. Tang[1]
[1]University of Texas at San Antonio, San Antonio, TX

P-Fri-426
Gold Nanoparticle Enhanced DNA and RNA Mediated Therapeutics
S. Huang[1], Y. Zu[1], and S. Wang[1]
[1]Louisiana Tech University, Ruston, LA

P-Fri-427
Targeted Intracellular Delivery of siRNA Via Polybasic Nanogels
J. Pawlish[1], L. Kouecheu[1], M. Tabler[1], J. Golodner[1], B. Gonzales[1], K. Paszek[1], D. Singh[1], C. Marcinkiewicz[1], and O. Fisher[1]
[1]Temple University, Philadelphia, PA

P-Fri-428
Direct Tethering of Small Interfering RNA (siRNA) to Biodegradable Hydrogels for Its Controlled Delivery to Cells
M. Nguyen[1], A. Gilewski[1], M. Levy[2], and E. Alsberg[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Albert Einstein College of Medicine, Bronx, NY

P-Fri-429
Real-time Visualization of PEI Polymer Dynamics During pH Buffering
K. Curtis[1], T. Abdus-Shakur[1], and P. Chandran[1]
[1]Howard University, Washington, DC, DC

P-Fri-430
A Factorial Design For Therapeutic Agent Delivery For Pediatric Tracheomalacia
A. Goodfriend[1], T. Welch[1], K. Nguyen[2], A. Nugent[1], and J. Forbess[1]
[1]University of Texas Southwestern Medical Center at Dallas, Dallas, TX, [2]University of Texas Arlington, Arlington, TX

P-Fri-431
Fabrication of PLGA Microparticles for Improved HPV Vaccine Delivery
E. Cesewski[1], K. Higgins[1], E. McMahon[1], R. Brown[1], J. Fix[1], D. Freudenberger[1], V. Niba[1], H. Park[1], G. Perdomo[1], A. Seo[1], A. Srivastava[1], C. Tsui[1], A. Whiteman[1], and R. Zubajlo[1]
[1]University of Maryland, College Park, MD

P-Fri-432
Modeling of Gel Flow and Drug Transport in the Vaginal Mucosa for Better Microbicide Gel Design
Y. Gao[1], A. Yuan[1], and D. Katz[1,2]
[1]Duke University, Durham, NC, [2]Duke University Medical Center, Durham, NC

P-Fri-433
Development of Surface-Modified pH-Responsive Hydrogels for the Oral Delivery of Growth Hormone
S. Steichen[1], E. Fischer[1], S. Yarborough[1], C. O'Connor[1], and N. Peppas[1,2]
[1]The University of Texas at Austin, Austin, TX, [2]The University of Texas of Austin, Austin, TX

P-Fri-434
Adjuvant Conjugated Nano-particles for Vaccine Delivery: A Robust Method for Immune Response
K. Brink[1]
[1]Texas A&M University, College Station, TX

P-Fri-435
Alginate Based Hydrogels for Controlled-release of Zosteric Acid and Sodium Benzoate
Q. Wang[1] and B-M. Zhang Newby[1]
[1]The University of Akron, Akron, OH

P-Fri-436
Poly(acrylic acid)-Poly(ethylene glycol) Microgels for Protein Delivery
J. Rios[1], G. Lu[1], N. Seo[1], T. Lambert[1], and D. Putnam[1]
[1]Cornell University, Ithaca, NY

P-Fri-437
Cell-Based Microarrays: A Platform to Facilitate Patient-Specific Therapy
M. Carstens[1], A. Acharya[2], J. Lewis[1], E. Huang[3], and B. Keselowsky[1]
[1]University of Florida, Gainesville, FL, [2]University of California, Berkelely, Berkeley, CA, [3]Cleveland Clinic, Cleveland, OH

P-Fri-438
Development of Continuous Flow Microspotter for High-Throughput Drug Screening and Cytotoxicity Evaluation
J. Arellano[1], J. Gammon[1], J. Yang[1], B. Gale[1], and M. Janat-Amsbury[1]
[1]University of Utah, Salt Lake City, UT

P-Fri-439
Microglia Migration and Interactions with Dendrimer in Brain in the Presence of Neuroinflammation
F. Zhang[1,2], E. Nance[1], Y. Alnasser[1], R. Kannan[1], and S. Kannan[1]
[1]Johns Hopkins University School of Medicine, Baltimore, MD, [2]Johns Hopkins University, Baltimore, MD

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Fri-440
MOVED TO P-TH-359

Track: Nano to Micro Technologies, Device Technologies and Biomedical Robotics

Nanotechnology, Microfluidic Platforms, Theranostics

Chairs: Maribel Vazquez, Jeff Zahn

P-Fri-651
Vertically Aligned Carbon Nanofiber Biosensor Platform
K. Mamun[1], F. Tulip[1], N. McFarlane[1], and S. Islam[1]
[1]University of Tennessee, knoxville, TN

P-Fri-652
Spectral Shifting of Bare and PEGylated Plasmonic Nanoparticles in Biological Environments
A. Chen[1], M. Jackson[1], Y. Hu[2], A. Lin[1], J. Young[1], R. Langsner[1], and R. Drezek[1]
[1]Rice University, Houston, TX, [2]Salk Institute for Biological Studies, La Jolla, CA

P-Fri-653
Interaction of Flagellin with Single-walled Carbon Nanotubes
I. Macwan[1], Z. Zhao[1], O. Sobh[2], and P. Patra[1]
[1]University of Bridgeport, Bridgeport, CT, [2]University of Pennsylvania, Philadelphia, PA

P-Fri-654
Nanoparticle Surface Charge Impacts Vesicle Motion in Cortical Neurons
C. Godzich[1], D. Di Carlo[1], and A. Kunze[1]
[1]University of California Los Angeles, Los Angeles, CA

P-Fri-655
Digital Microfluidic Platform for Cell Spheroid-Based Migration/Invasion Assays
B. Bender[1], A. Aijian[1], and R. Garrell[1]
[1]University of California, Los Angeles, Los Angeles, CA

P-Fri-656
Preparation of a Nano-patterned Polymer Replica for Reducing Catheter Associated Inflammation and Infection
L. Liu[1], B. Ercan[1], S. Ni[2], L. Sun[1], and T. Webster[1]
[1]Northeastern University, Boston, MA, [2]Donghua University, Shanghai, China, People's Republic of

P-Fri-657
Macrophage Phenotypic Response to Silica Nanotparticles
H. Herd[1,2], K. Bartlett[1,2], J. Gustafson[1,2], and H. Ghandehari[1,2]
[1]University of Utah, Salt Lake City, UT, [2]Utah Center for Nanomedicine, Salt Lake City, UT

P-Fri-658
Highly Controlled Janus Nanoparticle Synthesis for Cancer Therapy
E. Campbell[1], J. Tang[1], Y. Xia[1], and T. Sulchek[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Fri-659
Controlled Gold Nanorod Assembly with Well-defined Surface Plasmon Pattern on Substrates
Z. Mei[1] and L. Tang[1]
[1]University of Texas at San Antonio, San Antonio, TX

P-Fri-660
Cell-Free Protein Synthesis in Miniaturized Devices and their Effects on the Synthesis Yield
K. Jackson[1] and Z. Fan[1]
[1]University of Florida, Gainesville, FL

P-Fri-661
An Automated, Pump-less Microfluidic Device for Image-Cytometry Measurements of Oral Lesions
T. Abram[1] and J. McDevitt[1]
[1]Rice University, Houston, TX

P-Fri-662
Reusable Polyurethane Negative Mold for Micropost Fabrication
N. Taparia[1], R. Aaron[1], S. Tavakoli[1], A. Karchin[1], and N. Sniadecki[1]
[1]University of Washington, Seattle, WA

P-Fri-663
3D-Printed Microvalves and Micropumps
A. Au[1] and A. Folch[1]
[1]University of Washington, Seattle, WA

P-Fri-664
3D Printed Microfluidic Oxygen Mixer
G. Mauleon[1], L. Villafana[1], and D. Eddington[1]
[1]University of Illinois at Chicago, Chicago, IL

P-Fri-665
3D Printed Microfluidic Devices for Oxygen Control in Cell Culture
M. Brennan[1] and D. Eddington[1]
[1]University of Illinois at Chicago, Chicago, IL

P-Fri-666
Numerical And Experimental Investigation Of Sharp-edge-based Acoustofluidic Mixers
N. Nama[1], P-H. Huang[1], T. Jun Huang[1], and F. Costanzo[1]
[1]The Pennsylvania State University, University Park, State College, PA

P-Fri-667
Fast and Effective Mixing of High Viscosity Liquids via Acoustofluidic Bubble Cavitations
A. Ozcelik[1], Y. Xie[1], A. Nawaz[1], and T. Huang[1]
[1]The Pennsylvania State University, University Park, PA

P-Fri-668
Controllable Generation of Chemical Gradient via Acoustically Oscillated Sharp Edges
P-H. Huang[1], C. Chan[1], N. Nama[1], Y. Chen[1], Y. Xie[1], and T. Huang[1]
[1]The Pennsylvania State University, University Park, PA

P-Fri-669
Droplet Generation and Trapping for High-throughput Bioassays
D. Hu[1], Z. Zhao[1], G. Ghosh[1], and J. Lo[1]
[1]University of Michigan-Dearborn, Dearborn, MI

P-Fri-670
A Programmable Acoustofluidic Pump
P-H. Huang[1], N. Nama[1], Z. Mao[1], Y. Chen[1], Y. Xie[1], and T. Huang[1]
[1]The Pennsylvania State University, University Park, PA

P-Fri-671
Single Cell Capturing and Long-Term Culture Using a Microfluidic Dual-Well Device
C-H. Lin[1,2], Y-H. Hsiao[1,3], H-C. Chang[1,2], C-K. He[1,2], I-M. Chiu[1,2], and C-H. Hsu[1,2,3]
[1]National Health Research Institute, Miaoli County, Taiwan, [2]National Chung Hsing University, Taichung, Taiwan, [3]National Tsing Hua University, Hsinchu, Taiwan

P-Fri-672
Compact, Low-power Micropump via Electrolysis and Catalytic Recombination towards Integrated Microfluidic Systems
A. Michaelian[1], C. Truong[1], and U. Kim[1]
[1]Santa Clara University, Santa Clara, CA

POSTER SESSION **Fri**

See page 141 for Poster floor plan

P-Fri-673
High-throughput Enrichment of Particles from mm/s Fluid Flow Based on AC Electrokinetics
Q. Yuan[1], C. Cheng[1], H. Cui[1], and J. Wu[1]
[1]*The University of Tennessee-Knoxville, Knoxville, TN*

P-Fri-674
Diffusion-based Microfluidic PCR for "One-pot" Analysis of Cells
C. Lu[1], S. Ma[1], D. Loufakis[1], Z. Cao[1], Y. Chang[1], and L. Achenie[1]
[1]*Virginia Tech, Blacksburg, VA*

P-Fri-675
Microfluidic Generation of Cell-Like Liposomes
D. Vallejo[1] and A. Lee[1]
[1]*University of California, Irvine, Irvine, CA*

P-Fri-676
Mathematical Simulations of Heat Transfer and Fluid Dynamics in a Microfluidic Calorimeter with Integrated Thin-film Thermopiles
G. Nestorova[1], N. Crews [1], and E. Guilbeau[1]
[1]*Louisiana Tech University, Ruston, LA*

P-Fri-677
Microfluidic Generation of Stiffness-tunable Polyacryamide Substrate for Studying Mechanical Regulation of Cell Culture Substrate on Cancer Cells
H. Yi-Hsing[1,2], C. Chihchen[2], and H. Chia-Hsien[1,3]
[1]*National Health Research Institutes, Miaoli County, Taiwan,* [2]*National Tsing Hua University, Hsinchu, Taiwan,* [3]*National Tsing Hua University, Hsin chu, Taiwan*

P-Fri-678
Immobilization of Oxalyldihydrazide on Poly(Dimethylsiloxane)
S. Stone[1] and B. Hollins[1]
[1]*Louisiana Tech University, Ruston, LA*

P-Fri-679
A Portable Microfluidic Capillary Electrophoresis Platform for Detecting Organochloride Contaminants in Drinking Water
J. Lee[1], E. Jensen[2], H. Mehrabani[2], H. Jiao[2], and J. Kim[1]
[1]*Texas Tech University, Lubbock, TX,* [2]*HJ Science & Technology, Inc., Berkeley, CA*

P-Fri-680
Integrating 2D and 3D Microelectrodes in Plastic Microfluidic Devices Allowing Spatial and Temporal Control of Electric Fields for Detection or Stimulation.
J. Paredes[1,2], K. Fink[3,4], M. Chooljian[3,4], and D. Liepmann[3,4,5]
[1]*CEIT and Tecnun (University of Navarra), Donostia-San Sebastián, Spain,* [2]*CIC microGUNE, Arrasate-Mondragon, Spain,* [3]*University of California, Berkeley, Berkeley, CA,* [4]*UC Berkeley – UC San Francisco Graduate Program in Bioengineering, Berkeley, CA,* [5]*Berkeley Sensors and Actuators Center, Berkeley, CA*

P-Fri-681
Trapping of Submicron Beads using 3D Embedded-electrode Insulator-based Dielectrophoresis (3D-E^{TT} DEP)
D. Nakidde[1] and M. Agah[1]
[1]*Virginia Tech, Blacksburg, VA*

P-Fri-682
Microfluidic Viscoelastic Hemostatic Assay for Coagulation Diagnostics
R. Judith[1], J. Fisher[2], R. Spero[2], B. Oberhardt[1,3], M. Falvo[1], R. Taylor[1], and R. Superfine[1]
[1]*University of North Carolina at Chapel Hill, Chapel Hill, NC,* [2]*Rheomics Inc., Chapel Hill, NC,* [3]*North Carolina State University, Raleigh, NC*

P-Fri-683
Single Cell Mechanophenotyping and Mechanotransduction using a Microfluidic Micropipette Array
L. Lee[1], V. Murray[1], J. Heureaux[1], and A. Liu[1]
[1]*University of Michigan, Ann Arbor, MI*

P-Fri-684
Fabrication and Investigation of a Miniaturized Nanochannel Drug Delivery System
R. Hood[1], S. Ferrati[1], and A. Grattoni[1]
[1]*The Houston Methodist Research Institute, Houston, TX*

P-Fri-685
A Self-Contained Multi-Step Immunoassay for Point-of-Care Applications
I. Nanayakkara[1], J. Karimi[1], and A. Lee[1]
[1]*University of California, Irvine, Irvine, CA*

P-Fri-686
Multiplexed Electronic Protein Analysis: A Comprehensive Design Space
S. Emaminejad[1], R. Dutton[1], R. Davis[1], and M. Javanmard[1]
[1]*Stanford University, Stanford, CA*

P-Fri-687
Micro and Millifluidic Platforms for Scalable Production of Multifunctional Nanoparticles
S. Kim[1], M. Toth[1], G. Bao[1], D. Giddens[1], and Y. Kim[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

P-Fri-688
Facile Construction of Magnetic Enzyme Nanosystem as a Dual-platform for Fapid Tryptic Digestion
G. Cheng[1] and S-Y. Zheng[1]
[1]*Penn State University, State College, PA*

P-Fri-690
Bioelectrical Impedance Measurements to Detect Changes in Tight Junction Expression at Cell Junctions
R. Kraya[1] and P. Searson[1,2]
[1]*Institute for Nanobiotechnology, Baltimore, MD,* [2]*Johns Hopkins University, Baltimore, MD*

P-Fri-691
Selective Detection and Quantification of Modified DNA With Solid-State Nanopores
O. Zahid[1], A. Carlsen[1], J. Ruzicka[2], E. Taylor[2], and A. Hall[1]
[1]*Wake Forest University School of Medicine, Winston-Salem, NC,* [2]*University of North Carolina Greensboro, Greensboro, NC*

P-Fri-692
Label Free, Multiplexed Plasmonic Gold Nanorod Biochip
Y. wang[1] and L. Tang[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

P-Fri-693
Microfluidic Organ-on-a-Chip: Bi-directional Fluidic Flow Enhances Multi-cell-type, Three-dimensional Human Primary Liver Cell Culture
M. Esch[1], J-M. Prot[1], P. Miller[1], D. Applegate[2], and M. Shuler[1]
[1]*Cornell University, Ithaca, NY,* [2]*RegeneMed, San Diego, CA*

P-Fri-694
Treatment of Vascular Calcification with Elastin-Targeted Theranostic Nanoparticles
K. Bennett[1] and C. Simpson[1]
[1]*Mississippi State University, Mississippi State, MS*

P-Fri-695
Evaluating Antibody Conjugated Magnetic Microspheres for the Depletion of Interleukin-1 Beta for Osteoarthritis Treatment
A. Monsalve[1], B. Kozissnik[1], A. Garraud[1], E. Yarmola[1], K. Allen[1], and J. Dobson[1]
[1]*University of Florida, Gainesville, FL*

P-Fri-696
Molecular Targeting and Imaging Using Virus-Based Nanoparticle-Antibody Conjugates
J. Whitney[1], M. McBurney[1], D. Thompson[2], P. Dawson[2], and N. Steinmetz[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*The Scripps Research Institute, La Jolla, CA*

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Fri-697
Clinically Relevant Carbon Nanotube Dispersions for Microwave Hyperthermia
S. Xie[1], F. Gao[2], S. Patel[1], J. Booske[2], S. Hagness[2], and B. Sitharaman[1]
[1]*Stony Brook University, Stony Brook, NY,* [2]*University of Wisconsin-Madison, Madison, WI*

P-Fri-698
Bioengineering Silicon Quantum dot Theranostics using a Network analysis of Metabolomic and Proteomic Data in Cardiac Ischeamia
F. Erogbogbo[1] and P. Gladding[2]
[1]*San Jose State University (SJSU), San Jose, CA,* [2]*North Shore Hospital, Auckland, New Zealand*

P-Fri-699
Dendritic Wedge-Based Display of Polyarginine Peptides on Semiconductor Quantum Dots Mediates Differential Cellular Binding and Internalization
J. Breger[1,2], K. Susumu[1], M. Muttenhaler[3], J. Delehanty[1], P. Dawson[3], and I. Medintz[1]
[1]*U.S. Naval Research Laboratory, Washington, DC,* [2]*American Society for Engineering Education, Washington, DC,* [3]*The Scripps Research Institute, La Jolla, CA*

P-Fri-700
Pump-Free Membrane-Controlled Perfusion Microfluidic Platform
V. Goral[1], E. Tran[1], and P. Yuen[1]
[1]*Corning Incorporated, Corning, NY*

P-Fri-701
Design of a Custom Multiwell Platform for the Simple and Rapid Preparation of Polyacrylamide Stiffness Assay
N. Ahmed[1], H. Stevenson[1], A. Karadaghy[1], and S. Zustiak[1]
[1]*Saint Louis University, St Louis, MO*

Track: Neural Engineering, Device Technologies and Biomedical Robotics

Neural Engineering II: Glia, PNS Interfaces, and CNS Injury

Chairs: Teresa Murray, Jennifer Kang-Mieler

P-Fri-301
Static Stretch Affects Neural Stem Cell Differentiation Along the Oligodendrocyte Lineage
J. Arulmoli[1], M. Pathak[1], L. McDonnell[1], and L. Flanagan[1]
[1]*University of California, Irvine, Irvine, CA*

P-Fri-302
Application of Optical Clearing Methods to Tissue-Engineered Neural Microtissues
M. Boutin[1] and D. Hoffman-Kim[1]
[1]*Brown University, Providence, RI*

P-Fri-303
Spinal Cord Injury Treatments Tested *In Vivo* Integrating Neural Stem Cell Delivery and Lineage Specification via Immobilized Growth Factors
H. Li[1], T. Ham[1], A. Wilkinson[1], A. Koenig[1], and N. Leipzig[1]
[1]*University of Akron, Akron, OH*

P-Fri-304
Effects of Shear and Electric Stimulation on the Migrating Behavior of Microglia
S. Ahn[1], S. Song[1], E. Park[1], M. Son[1], J-S. Park[1], and J. Shin[1]
[1]*KAIST, Daejeon, Korea, Republic of*

P-Fri-305
Directed Chemotaxis Of Retinal Progenitor Cells In 3D Hydrogels For Rational Cell Delivery Vehicles
A. Koppes[1,2,3], M. Oudin[3], P. Baranov[2], M. Miller[3], F. Gertler[3], M. Young[2], D. Lauffenburger[3], and R. Carrier[1]
[1]*Northeastern University, Boston, MA,* [2]*Schepens Eye Research Institute & Harvard Medical School, Boston, MA,* [3]*Massachusetts Institute of Technology, Cambridge, MA*

P-Fri-306
Enhanced Astrocyte GLT-1 Mediated Glutamate Uptake and Migration Induced by Fibronectin-coated Poly-L-lactic Acid Fibers
J. Zuidema[1], M. Hyzinski-Garcia[2], K. Van Vlasselaer[1], N. Zaccor[1], G. Plopper[1], A. Mongin[2], and R. Gilbert[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*Albany Medical College, Albany, NY*

P-Fri-307
Increased Neurogenesis in Close Proximity to Flow-Stimulated Endothelial Cells
C. Dumont[1], G. Dai[1], and D. Thompson[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

P-Fri-308
Enhanced Myelination by Focal Electrical Stimulation in Microfluidic Platform
H. Lee[1], I. Yang[1,2], and N. Thakor[1,2]
[1]*National University of Singapore, Singapore, Singapore,* [2]*Johns Hopkins University, School of Medicine, Baltimore, MD*

P-Fri-309
3D Printing of Nanostructured Nerve Guidance Scaffolds with Graphene Nanoplatelets
C. O'Brien[1] and L. Zhang[1]
[1]*The George Washington University, Washington, DC*

P-Fri-310
Astrocyte Aligning Using Laminin Micropattern on Cell Adhesive Substrate
S. Joo[1], J. Kim[2], E. Lee[2], N. Hong[1], W. Sun[2], and Y. Nam[1]
[1]*KAIST, Daejeon, Korea, Republic of,* [2]*Brain Korea 21, Korea University College of Medicine, Seoul, Korea, Republic of*

P-Fri-311
Short Term Electrical Stimulation to Promote Nerve Repair and Functional Recovery of Sciatic Nerve Injuries
W. Zhou[1], C. Calvey[2], K. Sloan-Stakleff[2], P. Sendelbach-Sloan[2], W. Lanzinger[2], and R. Willits[1]
[1]*University of Akorn, Akron, OH,* [2]*Akron General Medical Center, Akron, OH*

P-Fri-312
A Multi-Branch Nerve Scaffold With Embedded Microwires In Neural Interfacing Applications
B. Kim[1], E. Ibarra[1], B. Garza[1], R. Luna[1], and Y. Choi[1]
[1]*University of Texas – Pan American, Edinburg, TX*

P-Fri-313
Electrical Stimulation of Single Somatic Nerve Fascicles are Sufficient to Reduce Hypertension
A. Kanneganti[1], S. Fatemi[1], C. Nothnagle [2], M. Wijesundara [2], M. Mizuno[3], S. Smith[3], Y-T. Kim[1], and M. Romero-Ortega[1]
[1]*Univ. Of Texas at Arlington, Arlington, TX,* [2]*Univ. Of Texas at Arlington Research Institute, Fort Worth, TX,* [3]*Univ.of Texas Southwestern Medical Center, Dallas, TX*

P-Fri-314
Neurophysiologic Evaluations of Nano Graphene Multi-Electrode Array for Neural Interfaces
C. Chen[1], W. Yi[1], Z. Feng[1], C. Zhou[1], J. Cavanaugh[1], and M. Cheng[1]
[1]*Wayne State University, Detroit, MI*

P-Fri-315
Thin Film Wireless Electrodes Used To Deliver Therapeutic Stimulation
P. Gamble[1], M. Stephen[1], M. MacEwan[1], and W. Ray[1]
[1]*Washington University in St Louis, St Louis, MO*

See page 141 for Poster floor plan

P-Fri-316
The Role of Oxidative Stress in Axonal Pathology
R. Dastgheyb[1], G. Gallo[2], and K. Barbee[1]
[1]Drexel University, Philadelphia, PA, [2]Temple University, Philadelphia, PA

P-Fri-317
Local Delivery of Paclitaxel from Aligned Electrospun Poly(lactic-acid) Microfibers Promotes Neurite Extension *In Vitro*
J. Roman[1], A. Hurtado[1], and H-Q. Mao[1]
[1]Johns Hopkins University, Baltimore, MD

P-Fri-318
Directing NPC Differentiation with Natural Biomaterials: Implications for Spinal Cord Repair
S. Geissler[1], A. Sabin[2], O. Gooden[2], R. Besser[2], and C. Schmidt[2]
[1]The University of Texas, Gainesville, FL, [2]University of Florida, Gainesville, FL

P-Fri-319
Compromised Axonal Functionality After Neurodegeneration and/or Traumatic Brain Injury.
P. Maia[1] and N. Kutz[1]
[1]University of Washington, Seattle, WA

P-Fri-320
Transcriptomics and Metabolomics of Surgically-induced Cervical Syringomyelia
A. Wilkinson[1], M. Farrag[1], S. Haft[2], P. Joshi[1], H. Huang[1], L. Shriver[1], and N. Leipzig[1]
[1]University of Akron, Akron, OH, [2]Claremont McKenna College, Claremont, CA

P-Fri-321
Delivery of Paramagnetic Nanoparticles after Traumatic Brain Injury in Mice
V. Bharadwaj[1], K. Rumbo[1], V. Kodibagkar[1], and S. Stabenfeldt[1]
[1]Arizona State University, Tempe, AZ

POSTER SESSION **Fri**

P-Fri-322
Semi-Interpenetrating Alginate/Laminin Hydrogels to Study Mechanism for Neural Remodeling Following Traumatic Brain Injury
N. Sturdivant[1], A. Haileyesus[1], J. Carradini[1], and K. Balachandran[1]
[1]University of Arkansas, Fayetteville, AR

P-Fri-323
Pairing Vagus Nerve Stimulation With Rehabilitative Training Enhances Functional Recovery After Traumatic Brain Injury
D. Pruitt[1,2], A. Schmid[1,2], C. Choua[1,2], L. Kim[1,2], C. Abe[1,2], J. Trieu[1,2], M. Kilgard[1,2], and R. Rennaker[1,2]
[1]The University of Texas at Dallas, Richardson, TX, [2]Texas Biomedical Device Center, Richardson, TX

P-Fri-324
Incidence and Risk of Concussive Injury in Vehicle Crashes
H. Gabler[1]
[1]Virginia Tech, Blacksburg, VA

P-Fri-325
Stretch Induced Effects on Callosal Pathway Flavoprotein Autofluoresence
A. Fan[1], K. Stebbings[1], D. Llano[1], and T. Saif[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

P-Fri-326
Traumatic Brain Injury Resulted in Increased Aquaporin-4 Expression - Relevance to Post-Injury Edema?
N. Sturdivant[1], A. Haileyesus[1], J. Carradini[1], and K. Balachandran[1]
[1]University of Arkansas, Fayetteville, AR

P-Fri-327
Wide Field-of-view, Dual-region Multiphoton Imaging Across Extended Cortical Networks
J. Stirman[1,2], I. Smith[1], M. Kudenov[3], and S. Smith[1,2,4]
[1]Neuroscience Center, University of North Carolina, Chapel Hill, NC, [2]Carolina Institute for Developmental Disabilities, Chapel Hill, NC, [3]Department of Electrical and Computer Engineering, North Carolina State University, Raleigh, NC, [4]Department of Cell Biology and Physiology, University of North Carolina, Chapel Hill, NC

P-Fri-328
Carbon Nanotube/Polyethylene Glycol Hydrogel Composite as an *in vitro* Model for Neural Tissue Engineering
K. Shah[1], D. Vasileva[1], and S. Zustiak[1]
[1]Saint Louis University, St Louis, MO

Track: Orthopaedic and Rehabilitation Engineering, Biomechanics

Articular Cartilage and Joints

Chairs: Spencer Lake, Meng Deng

P-Fri-545
In-Vitro Modeling of Osteoarthritis with a Silk Scaffold and Mechanical Compression
S. Berry[1], L. Hayward[1], and D. Kaplan[1]
[1]Tufts University, Medford, MA

P-Fri-546
Testing Efficacy of Pain Management Therapies in a Rodent Model of Post-Traumatic Knee Osteoarthritis
H. Kloefkorn[1], B. Jacobs[1], and K. Allen[1]
[1]University of Florida, Gainesville, FL

P-Fri-547
Enhanced Stem Cell Functions on Cold Atmospheric Plasma Treated Nanocomposite Cartilage Scaffolds
W. Zhu[1], M. Keidar[1], and L. Zhang[1]
[1]The George Washington University, Washington, DC

P-Fri-548
Designing a Probe for the Magnetic Collection of Molecular Biomarkers in Joints for Early Detection of Osteoarthritis
Y. Shah[1], C. Velez Cuervo[1], E. Yarmola[1], D. Arnold[1], J. Dobson[1], and K. Allen[1]
[1]University of Florida, Gainesville, FL

P-Fri-549
Improve the Efficiency of Articular Cartilage Indentation Test by Principal Component Analysis
X. Chen[1], B. Zimmerman[1], and X. Lu[1]
[1]University of Delaware, Newark, DE

P-Fri-550
Low Intensity Vibration Enhances Cartilage Thickness in Young Obese Mice without Compromising Bone.
V. Bhandal[1], T. Pamon[1], M. Chan[1], and C. Rubin[1]
[1]Stony Brook University, Stony Brook, NY

P-Fri-551
Wear in Total Knee Replacements with Oxidized Zirconium Femoral Components Explanted Postmortem
M. Bland[1], K. Austriaco[1], A. Eberhardt[1], and J. Lemons[1]
[1]University of Alabama at Birmingham, Birmingham, AL

P-Fri-552
Degradation-dependent Alterations in Articular Cartilage Lubricating Mechanisms
E. Bonnevie[1], D. Galesso[2], C. Secchieri[2], and L. Bonassar[1]
[1]Cornell University, Ithaca, NY, [2]Fidia Farmaceutici, Padua, Italy

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Fri-553
Calcium Phosphate Clay Nanoparticle Bone Cements with Enhanced Mechanical Properties<u> </u>
U. Jammalamadaka[1], K. Tappa[2], S. Karnik[1], and D. Mills[1]
[1]Louisiana Tech University, Ruston, LA, [2]Louisiana Tech University, Ruston, Afghanistan

P-Fri-554
The Effect of Delayed Mechanical Stimulation in an *in vitro* Microfracture Model
M. Park[1], M. Chatterjee[1], B. Zimmerman[1], L. Snyder-Mackler[1], and X. Lu[1]
[1]University of Delaware, Newark, DE

P-Fri-555
Alterations of Articular Cartilage Surfaces after Mechanical Insult
E. Bonnevie[1], M. Delco[1], P. Alexander[2], R. Tuan[2], L. Fortier[1], and L. Bonassar[1]
[1]Cornell University, Ithaca, NY, [2]University of Pittsburgh, Pittsburgh, PA

P-Fri-556
In Vivo Characterization of Silk Fibroin Microparticles for Intra-Articular Drug Delivery
T. Mwangi[1], R. Bowles[1], D. Tainter[2], R. Bell[2], D. Kaplan[3], and L. Setton[1,2]
[1]Duke University, Durham, NC, [2]Duke University Medical Center, Durham, NC, [3]Tufts University, Medford, MA

Track: Orthopaedic and Rehabilitation Engineering

Bone

Chairs: John Cotton, Joel Bumgardner

P-Fri-533
Experimental Investigation of Bone Drilling Performance
E. MacDonald[1], S. Russel[1], and S. Schmid[1]
[1]University of Notre Dame, Notre Dame, IN

P-Fri-534
Cellulose-based Scaffolds for Enhanced Bone Formation by Human Adipose-derived Stem Cells
H-J. Park[1], K. Yang[1], A-N. Cho[1], S. Yu[2], S. Im[2], and S-W. Cho[1]
[1]Department of Biotechnology, Yonsei University, Seoul, Korea, Republic of, [2]Department of Chemical and Biomolecular Engineering, KAIST, Daejeon, Korea, Republic of

P-Fri-535
Anti-Infective Calcium Phosphate Bone Cement
K. Tappa[1], U. Jammalamadaka[2], S. Karnik[2], and D. Mills[2]
[1]Louisiana Tech University, Ruston, Afghanistan, [2]Louisiana Tech University, Ruston, LA

P-Fri-536
In-Vivo Biocompatibility and Toxicity of Single Walled Carbon Nanotube Composites for Bone Tissue Engineering
A. Gupta[1], T. Liberati[1], S. Verhulst[1], B. Main[1,2], M. Roberts[1], A. Potty[1], and S. El-Amin[1,3]
[1]Southern Illinois University School of Medicine, Springfield, IL, [2]University of Illinois at Springfield, Springfield, IL, [3]Southern Illinois University, School of Medicine, Springfield, IL

P-Fri-537
Biomechanical Investigation of Extracorporeal Irradiation Therapy in Malignant Bone Tumours
S. Chauhan[1], K. Manoj[2], S. Rastogi[2], S. Khan[2], and A. Prasad[1]
[1]Indian Institute of Technology Delhi, New Delhi, India, [2]All India Institute of Medical Sciences, New Delhi, India, New Delhi, India

P-Fri-538
Mitigating Effect Of Dynamic Hydraulic Flow Stimulation On Bone Loss In Functional Disuse Model
T. Chu[1], M. Hu[1], and Y-X. Qin[1]
[1]Stony Brook University, Stony Brook, NY

P-Fri-539
Biasing MSC Differentiation into an Osteoblastogenic Fate Using LIV Leads to Higher Bone Count and Quality
T. Samphel[1], D. Frechette[2], E. Chan[2], and C. Rubin[2]
[1]Stony Brook University, woodside, NY, [2]Stony Brook University, Stony Brook, NY

P-Fri-540
Electrical and Dielectric Properties of Bone and Its Constituents with Frequency
H. Ranu[1] and D. Rai[2]
[1]American Orthopaedic Biomechanics Research Institute, Atlanta, GA, [2]Shobit University, Meerut, India

P-Fri-541
Intracranial Analysis of Non-Sutural Osteoblast Mechanobiology in the Developing Mammal Skull
H. Weiss-Bilka[1], S-Y. Liu[2], and M. Ravosa[1]
[1]University of Notre Dame, Notre Dame, IN, [2]Indiana University School of Dentistry, Indianapolis, IN

P-Fri-542
Morphological Analysis of Changes in the Thoracic Skeleton with Sex and Age
A. Weaver[1], S. Schoell[1], C. Nguyen[2], and J. Stitzel[1]
[1]Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC, [2]Wake Forest University, Winston-Salem, NC

P-Fri-543
A Controlled Delivery Method to Localize Stem Cells
S. Leslie[1], D. Cohen[1], J. Sedlaczek [2], E. Pinsker[3], Z. Schwartz[1], and B. Boyan[1]
[1]Virginia Commonwealth University, Richmond, VA, [2]Otto-von-Guericke University, Magdeburg, Germany, [3]Georgia Institute of Technology, Atlanta, GA

P-Fri-544
Fracture Healing in a Mouse Model of Saether-Chotzen Syndrome
S. Hyzy[1], G. Reddy[1], R. Olivares-Navarrete[1], Z. Schwartz[1,2,3], and B. Boyan[1,2]
[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

Track: Respiratory Bioengineering, Biomechanics

Computational Modeling of the Respiratory System

Chairs: Donald Gaver

P-Fri-522
Computational Modeling of the Alveolar-Scale Deformation during Pulmonary Fibrosis
L. Caggiano[1], M. Schickel[1], and S. Ghadiali[1]
[1]The Ohio State University, Columbus, OH

P-Fri-524
Investigation Into the Enhancement of Surfactant Transport and Sorption in a Model of Airway Reopening
J. Pillert[1], H. Fujioka[1], D. Halpern[2], and D. Gaver[1]
[1]Tulane University, New Orleans, LA, [2]University of Alabama, Tuscaloosa, AL

P-Fri-525
A Computational Model of Epithelial Cell Monolayer Disruption in the Lung
B. Ma[1] and J. Bates[1]
[1]University of Vermont, Burlington, VT

P-Fri-526
Mechanistic Computational Model of Lung Tissue Bioenergetics and the Effect of Acute Lung Injury
X. Zhang[1], R. Dash[2], A. Clough[1], E. Jacobs[3], and S. Audi[1]
[1]Marquette University, Milwaukee, WI, [2]Medical College of Wisconsin, Milwaukee, WI, [3]Zablocki VA Medical Center, Milwaukee, WI

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P-Fri-527
Computational Simulation of Eustachian Tube Sonotubometry Test
J. Torres-Rodriguez[1] and S. Ghadiali[1]
[1]The Ohio State University, Columbus, OH

P-Fri-528
A Scaling Model of the Lung Parenchyma in Aging
B. Suki[1]
[1]Boston University, Boston, MA

P-Fri-529
Agent-Based Models For Studying Stem Cell Dynamics On Decellularized Lung Scaffolds
J. Pothen[1], V. Rajendran[2], D. Wagner[1], D. Weiss[1], and J. Bates[1]
[1]University of Vermont College of Medicine, Burlington, VT, [2]Essex High School, Essex Junction, VT

P-Fri-530
Real-Time Numerical Simulation of Ozone Transport and Uptake in an Anatomically-Accurate Model of the Respiratory Tract
S. Motevalian[1], J. Ultman[1], and A. Borhan[1]
[1]The Pennsylvania State University, University Park, PA

P-Fri-531
Numerical Simulation of Airflow in a CT-based Human Airway Model With Physiologically Appropriate Boundary Conditions
R. Gruetzemacher[1,2], A. Arabshahi[1,2], and K. Sreenivas[1,2]
[1]The University of Tennessee, Chattanooga, Chattanooga, TN, [2]SimCenter: National Center for Computational Engineering, Chattanooga, TN

P-Fri-532
Dynamic Multi-scale Model of the Lung
J. Ryans[1], H. Fujioka[1], D. Halpern[2], and D. Gaver III[1]
[1]Tulane University, New Orleans, LA, [2]University of Alabama, Tuscaloosa, AL

POSTER SESSION **Fri**

Track: Respiratory Bioengineering, Biomechanics

Respiratory Transport and Mechanics I

Chairs: Jason Bates

P-Fri-501
Mechanics of the Pulmonary Airway System in Healthy Subjects and Patients during Forced Expiration Maneuver
A. Pradel[1], K. Blanc[1], P. Gilfriche[2], T. Similowski[1], C. Straus[1], and M. Filoche[3,4]
[1]Université Pierre et Marie Curie, Paris, France, [2]Ecole des Mines-ParisTech, Paris, France, [3]Ecole Polytechnique, Palaiseau, France, [4]INSERM, Créteil, France

P-Fri-502
Adhesive Properties of Ultra-Low Volume Mucus Samples during Otitis Media
N. Higuita-Castro[1], J. Malik[1], J. Swarts[2], and S. Ghadiali[1]
[1]The Ohio State University, Columbus, OH, [2]University of Pittsburgh, Pittsburgh, PA

P-Fri-503
Effect of Long-term Alcohol Exposure on Mucociliary Clearance through 3D High Speed Imagingand Dynamic Modeling
Z. Chen[1,2], Y. Wang[1], X. Jia[1], and M. Zhang[1]
[1]The Ohio State University, Columbus, OH, [2]The University of Tennessee, Knoxville, TN

P-Fri-504
Modeling Lung Morphometry Using a Hybrid Power Law Method
B. Henry[1], Z. Dai[1], and T. Royston[1]
[1]University of Illinois at Chicago, Chicago, IL

P-Fri-505
Intramuscular Sarcomere Length Variability in Ageing Healthy Mouse Diaphragm Muscle
K. Martin[1], C. Henry[1], S. Peirce-Cottler[1], and S. Blemker[1]
[1]University of Virginia, Charlottesville, VA

P-Fri-506
Modeling the Mucociliary Clearance in Bronchial Bifurcations
M. Manolidis[1], B. Louis[2], D. Isabey[2], J. Grotberg[2,3], and M. Filoche[1,2]
[1]Ecole Polytechnique, Palaiseau, France, [2]INSERM, Créteil, France, [3]University of Michigan, Ann Arbor, MI

P-Fri-507
Spatial Organization of Constriction Pattern Contributes to Apparent Airway Hyperresponsiveness And Intersubject Variability in Response to Challenge and Dilation
S. Amin[1] and B. Suki[2]
[1]Boston University, Boston, MA, [2]Boston University, BOSTON, MA

P-Fri-508
Mechanical Properties and Gelation Kinetics of Lung ECM Hydrogels Tailored for Regenerative Medicine
R. Pouliot[1], R. Takahashi[1], M. Malik[1], and R. Heise[1]
[1]Virginia Commonwealth University, Richmond, VA

P-Fri-509
Small Charged Compound Lowers Surface Tension In Alveoli Flooded With Albumin Solution
A. Kharge[1] and C. Perlman[1]
[1]Stevens Institute of Technology, Hoboken, NJ

P-Fri-510
A Composite Cost Function for Quantifying Ventilator-induced Lung Injury
J. Bates[1] and B. Smith[1]
[1]University of Vermont, Burlington, VT

Track: Respiratory Bioengineering, Biomechanics

Respiratory Transport and Mechanics II

Chairs: Bela Suki

P-Fri-511
Effect of Airway Size on Magnitude of Bronchodilatory and Bronchoprotective Responses to Breathing
B. Harvey[1], H. Peterson[1], H. Parameswaran[1], A. Zollinger[1], and K. Lutchen[1]
[1]Boston University, Boston, MA

P-Fri-512
Plasma Proteins Required For Exogenous Surfactant To Lessen Ventilation Injury
Y. Wu[1] and C. Perlman[1]
[1]Stevens Institute of Technology, Hoboken, NJ

P-Fri-513
Visualization of Dynamic Pulmonary Surfactant Transport during Simulated Airway Reopening
E. Yamaguchi[1], M. Dearden[1], L. Nolan[1], and D. Gaver[1]
[1]Tulane University, New Orleans, LA

P-Fri-514
Neulizable Decellularized Lung Matrix Solution for Hyperoxia-induced Acute Lung Injury
J. Wu[1], Q. Ding[1], A. Dutta[1], R. Iyer[2], P. Ravikumar[2], L. Wu[2], C. Hsia[2], and Y. Hong[1]
[1]University of Texas at Arlington, Arlington, TX, [2]University of Texas Southwestern Medical Center, Dallas, TX

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Fri-515
Distribution of Advective Ventilation in a Three-Dimensional Canine Lung Model
J. Herrmann[1], M. Tawhai[2], and D. Kaczka[3]
[1]Boston University, Boston, MA, [2]University of Auckland, Auckland, New Zealand, [3]University of Iowa, Iowa City, IA

P-Fri-516
An Analytical Theory of Oxygen Transport in the Human Placenta
A. Serov[1], C. Salafia[2], D. Grebenkov[1], and M. Filoche[1]
[1]Ecole Polytechnique - CNRS, Palaiseau Cedex, France, [2]Placenta Analytics LLC, Larchmont, NY

P-Fri-517
Estimation of Soft Tissue Elasticity surrounding Upper Airway from MR Imaging and Tube Law Method
D. Subramaniam[1], G. Mylavarapu[1], R. Fleck[2], S. Shott[2], R. Amin[2], and E. Gutmark[1]
[1]University of Cincinnati, Cincinnati, OH, [2]Cincinnati Children's Hospital Medical Center, Cincinnati, OH

P-Fri-518
Aerosolized miR-146a Delivery and Expression in a Mouse Model
C. Bobba[1], K. Nelson[1], B. Whitson[1], X. Zhao[1], and S. Ghadiali[1]
[1]The Ohio State University, Columbus, OH

P-Fri-519
Modulation of Lung Vascular Stiffening by Lipoxin Attenuates LPS-induced Lung Inflammation
A. Meliton[1], M. Allen[1], K. Birukov[1], M. Gardel[1], M. Gardel[1], and A. Birukova[1]
[1]University of Chicago, Chicago, IL

P-Fri-520
Quantifying Effects of Upper Airway Shunt on Peripheral Heterogeneity: A Computational Model Study
S. Bhatawadekar[1], D. Leary [1], and G. Maksym[1]
[1]Dalhousie University, Halifax, NS, Canada

P-Fri-521
Effect of Lung Tissue Density on ^{18}F-FDG Kinetics Parameters
T. Wellman[1] and M. Vidal Melo[2]
[1]Boston University, Boston, MA, [2]Massachusetts General Hospital, Boston, MA

Track: Stem Cell Engineering

Mechanobiology and Stem Cell Translation

Chairs: Thomas Gaborski, Janet Zoldan

P-Fri-231
Distribution of Mitochondria in Human Mesenchymal Stem Cells during Endothelial Differentiation
J. Shin[1], S. Park[1], Y. Kang[1], S. Gu[2], H. Park[2], H. Kim[1], and J-W. Shin[1,2,3]
[1]Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of, [2]Department of Health Science and Technology, Inje University, Gimhae, Korea, Republic of, [3]Cardiovascular and Metabolic Disease Center/ Institute of Aged Life Redesign/UHRC, Inje University, Gimahe, Korea, Republic of

P-Fri-232
Texture Analysis of Nucleus during Differentiation of hMSCs into Osteoblasts in Early Phase
S. Park[1], J. Shin[1], Y. Kang[1], Y. Kim[1], H. Park[2], S. Gu[2], and J-W. Shin[1,2,3]
[1]Department of Biomedical Engineering, Inje University, Gimhae-si, Korea, Republic of, [2]Department of Health Science and Technology, Inje University, Gimhae-si, Korea, Republic of, [3]Cardiovascular and Metabolic Disease Center /Institute of Aged Life Redesign/UHRC, Inje University, Gimhae-si, Korea, Republic of

P-Fri-233
Mesenchymal Stromal Cell Influence on Pulmonary Metastasis After Removal of Primary Osteosarcoma
M. Aanstoos[1], D. Regan[1], R. Rose[1], L. Chubb[1], and N. Ehrhart[1]
[1]Colorado State University, Fort Collins, CO

P-Fri-234
Human Pluripotent Stem Cell Derived Cardiac Tissues for Drug Development and Disease Modeling
A. Carlson[1], I. Shadrin[1], and N. Bursac[1]
[1]Duke University, Durham, NC

P-Fri-235
Mechanosensors of Fluid Shear Induced MSC Migration
B. Riehl[1], J. Lee[1], L. Ha[1], and J. Lim[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

P-Fri-236
Optical Flow Paired With Machine Learning for Increased Detection of Drug-Induced Cardiotoxicity in Human Induced Pluripotent Stem Cell Derived Cardiomycoytes
E. Lee[1], Y. Kurokawa[1], S. George[1], and M. Khine[1]
[1]University of California, Irvine, Irvine, CA

P-Fri-237
Role of the Stretch-activated Ion Channel Piezo1 in Mechanosensitive Lineage Choice
M. Pathak[1], J. Nourse[1], T. Tran[1], J. Arulmoli[1], J. Hwe[1], E. Bernardis[2], L. Flanagan[1], and F. Tombola[1]
[1]UC Irvine, Irvine, CA, [2]Children's Hospital of Philadelphia, Philadelphia, PA

P-Fri-238
Controlling Lineage Specific Differentiation Potential of Pluripotent Stem Cells by Engineering Colony Morphology
M. Maldonado[1], K. Low[1], L. Wong[1], G. Ico[1], T. Fujimoto[1], R. Luu[1], and J. Nam[1]
[1]University of California, Riverside, Riverside, CA

P-Fri-239
Influence of Agitation Rate and Aggregate Size on Human Pluripotent Stem Cells in Dynamic Suspension
D. Nampe[1], R. Joshi[1], C. Beaudette[1], C. Liew[1], and H. Tsutsui[1]
[1]University of California, Riverside, Riverside, CA

P-Fri-240
Characterization of Human Mesenchymal Stem Cell Populations From Old Donors
T. Block[1], M. Marinkovic[1], R. Rakian[1], D. Dean[1], and X-D. Chen[1]
[1]University of Texas Health Science Center at San Antonio, San Antonio, TX

P-Fri-241
Endothelial Differentiation of Adipose-derived Stem Cells in Comparison with Whartons jelly-derived Mesenchymal Stem Cells
M. Gurel[1] and P. McFetrigde[1]
[1]University of Florida, Gainesville, FL

P-Fri-242
HT-MBOSS: A High-Throughput System for Studying Cellular Mechanobiology
J. Lee[1], E. Yoon[1], J. Jansson[1], A. Baker[1], and M. Wong[1]
[1]University of Texas at Austin, Austin, TX

See page 141 for Poster floor plan

Track: Stem Cell Engineering, Biomaterials

Stem Cell Environments and Differentiation

Chairs: Thomas Gaborski, Janet Zoldan

P-Fri-110
Promoting Ligamentogenic Differentiation of Mesenchymal Stem Cells in Controlled Microenvironments
M. Rehmann[1] and A. Kloxin[1]
[1]*University of Delaware, Newark, DE*

P-Fri-111
Determining the Physiochemical Cues Directing Endothelial Specification During Differentiation
Q. Smith[1] and S. Gerecht[1]
[1]*Johns Hopkins University, Baltimore, MD*

P-Fri-112
Arrayed Microenvironments for Probing Liver Progenitor Cell Fate Decisions
K. Kaylan[1], V. Ermilova[1], and G. Underhill[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

P-Fri-113
Engineering the Cellular Lipidome to Direct Mesenchymal Stem Cell Differentiation
K. Levental[1], E. Stockenbojer[2], and I. Levental[1]
[1]*University of Texas Health Science Center at Houston, Houston, TX,* [2]*Rice University, Houston, TX*

P-Fri-114
Expression of Extracellular Matrix and Cell-adhesion Molecules in Chondrogenesis of Human MSCs
A. Nazempour[1], C. R. Quisenberry[1], N. Abu-Lail[1], and B. J Van Wie[1]
[1]*Voiland School of Chemical Engineering and Bioengineering, Washington State University, PULLMAN, WA*

P-Fri-115
Incorporation of Retinoic Acid Releasing Microspheres into Aggregates of Pluripotent Stem Cells for Inducing Neuronal Differentiation
J. Gomez[1], J. Edgar[1], N. Mohtaram[1], A. Montgomery[1], and S. Willerth[1]
[1]*University of Victoria, Victoria, BC, Canada*

P-Fri-116
Deterministic HOX Patterning in Human Pluripotent Stem Cell-derived Posterior Neuroectoderm
E. Lippmann[1], C. Williams[1], M. Estevez-Silva[1], J. Coon[1], and R. Ashton[1]
[1]*University of Wisconsin, Madison, WI*

P-Fri-117
Prediction of Drug-Induced Liver Injury in Engineered Cultures of iPSC-Derived Human Hepatocytes
B. Ware[1], D. Berger[1], and S. Khetani[1]
[1]*Colorado State University, Fort Collins, CO*

P-Fri-118
Microfluidic Co-cultures to Study Stem Cell Fate Selection During Liver Injury
A. Haque[1], P. Gheibi[1], Y. Gao[1], and A. Revzin[1]
[1]*University of California, Davis, Davis, CA*

P-Fri-119
Distinct Regulation Of Arterial Venous Differentiation By Ephrinb2/Ephb4 Hydrogels
T. Dorsey[1] and G. Dai[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

P-Fri-120
CANCELLED BY AUTHOR

P-Fri-121
The Effect of Alginate Capsule Composition on Pancreatic Differentiation of Human Embryonic Stem Cells
T. Richardson[1], J. Candiello[1], P. Kumta[1], and I. Banerjee[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P-Fri-122
Controlled Cell Transdifferentiation by Nanochannel Electroporation
D. Gallego-Perez[1], S. Ghatak[1], J. Ma[1], C. Czeisler[1], P. Gygli[1], T. Sherwood[1], V. Malkoc[1], L. Chang[1], X. Wang[1], C. Askwith[1], S. Khanna[1], C. Rink[1], S. Gnyawali[1], C. Sen[1], J. Otero[1], and L. Lee[1]
[1]*The Ohio State University, Columbus, OH*

P-Fri-123
Optimization of Alternating Electric Current to Achieve Osteodifferentiation of Adult Human Mesenchymal Stem Cells
M. Wechsler[1], B. Hermann[1], and R. Bizios[1]
[1]*The University of Texas at San Antonio, San Antonio, TX*

P-Fri-124
Directed Differentiation of Stem Cells by 3D Extracellular Matrix Composites
J. Jung[1], M. Bache-Wiig[1], and B. Ogle[1]
[1]*University of Minnesota - Twin Cities, Minneapolis, MN*

P-Fri-125
Re-engineering The 3D Pancreatic Niche: Co-culture of Endothelial Cells with Human Embryonic Stem Cells-derived Pancreatic Progenitor Cells in Decellularized Pancreas
S-K. Goh[1], S. Bertera[2], S. Barner[1], and I. Banerjee[1,3]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Children's Hospital of Pittsburgh, Pittsburgh, PA,* [3]*McGowan Institute of Regenerative Medicine, Pittsburgh, PA*

P-Fri-126
Micro-engineered ECM Array as a Platform for Deciphering Cell-ECM Interaction During Stem Cell Differentiation
S-K. Goh[1], S. Bertera[2], W. Halfter[1], and I. Banerjee[1,3]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Children's Hospital of Pittsburgh, Pittsburgh, PA,* [3]*McGowan Institute of Regenerative Medicine, Pittsburgh, PA*

P-Fri-127
In vitro Vascular Arterial Differentiation of Embryonic Stem Cells through Neuropilin-1
D. Kim[1] and G. Dai[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

P-Fri-128
A Kinase Inhibitor Screen Identifies Small-molecule Modulators During Human Pluripotent Stem Cell-derived Cardiac Progenitors into Cardiomyocytes
H. Song[1], M. Radisic[2], and P. Zandstra[2]
[1]*University of Toronto, Toronto, ON, Canada,* [2]*University of Toronto, Toronto, Canada*

P-Fri-129
Cadherin-11 Directs Mesenchymal Stem Cell Differentiation and Regulates Extracellular Matrix Production and Mechanical Properties of Myogenic Tissues *in-vivo* and *in vitro*
S. Row[1], S. Alimperti[1], M. Koobatian[1], Y. Liu[1], T. George[2], S. Agarwal[2], and S. Andreadis[1]
[1]*State University of New york at Buffalo, Amherst, NY,* [2]*Baylor College of Medicine, Houston, TX*

P-Fri-130
Directed Differentiation of Mesenchymal Stem Cells on Cross-linked Gelatin Scaffolds by Mechanical and Architectural Cues
K. McAndrews[1], F. Kim[1], T. Lam[1], D. McGrail[1], and M. Dawson[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

POSTER SESSION **Fri**

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Fri-131
A Multifactorial Approach Focusing On Induced Cardiomyocyte Transdifferentiation
N. Christoforou[1,2], S. Chakraborty[1], A. Adler[1], and K. Leong[1]
[1]Duke University, Durham, NC, [2]Khalifa University of Science Technology and Research, Abu Dhabi, United Arab Emirates

P-Fri-132
Single-Cell Approaches to Assess Hematopoietic Stem Cell Response to Matrix Cues
J. Choi[1], Y. Ilin[1], Y. Zhuo[1], B. Cunningham[1], M. Kraft[1], and B. Harley[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

P-Fri-133
Protein Laden Soft Matrices as High-Throughput Platforms to Engineer Stem Cell Microenvironments
M. Floren[1], S. Bryant[1], and W. Tan[1]
[1]University of Colorado, Boulder, CO

P-Fri-134
Hematopoietic Stem and Progenitor Cells Provide a Local Source of Neutrophils Necessary to Resolve Infected Wounds
P. Falahee[1], D. Dahmubed[1], and S. Simon[1]
[1]University of California at Davis, Davis, CA

P-Fri-135
CANCELLED BY AUTHOR

Track: Tissue Engineering, Stem Cell Engineering

Scaffolds and Surfaces for Tissue Engineering

Chairs: Justin Brown, Lijie Grace Zhang

P-Fri-63
Electrospun Nanostructured Chitosan/PVA Loaded with Growth Factors for Wound Healing
M. Wang[1] and T. Webster[1,2]
[1]The northeastern university, Boston, MA, [2]King Abdulaziz University, Jeddah, Saudi Arabia

P-Fri-64
Optimally Processed Porcine Adipose Tissue as a Soft Tissue Engineering Scaffold
K. Roehm[1] and S. Madihally[1]
[1]Oklahoma State University, Stillwater, OK

P-Fri-65
Antibacterial Properties of Collagen Hydrogels with Tunable Mechanical Properties
R. Egerter[1], C. Angpraseuth[1], M. Jimenez[1], C. Keeler[1], C. Stannard[1], and E. Orwin[1]
[1]Harvey Mudd College, Claremont, CA

P-Fri-66
Poly(ethylene) Glycol Diacrylate Scaffold Mimics Elasticity of Native Bruch's Membrane for Retinal Tissue Engineering
C. White[1] and R. Olabisi[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ

P-Fri-67
The Effects of Hydroxyapatite Size and Hydrostatic Pressure on Osteogeneis of MSCs *in vitro*
S. Gu[1], Y. Kang[2], S. Park[2], J. Shin[2], Y. Wu[2], and J-W. Shin[1,2,3]
[1]Department of Health Science and Technology. Inje University, Gimhae-si, Korea, Republic of, [2]Department of Biomedical Engineering, Inje University, Gimhae-si, Korea, Republic of, [3]Cardiovascular and Metabolic Disease Center/Institute of Aged Life Redesign/UHRC, Gimhae-si, Korea, Republic of

P-Fri-68
Electrospinning of Dendrimers as a New Bio-Engineered Scaffold
D. Aduba, Jr.[1], J. Overlin[1], C. Frierson[1], G. Bowlin[2], and H. Yang[1]
[1]Virginia Commonwealth University, Richmond, VA, [2]University of Memphis, Memphis, TN

P-Fri-69
Incorporation of Intervertebral Disc Cells into Candidate Materials for Nucleus Pulposus Regeneration
E. Growney Kalaf[1], K. Feltz[1], N. Temofeew[1], J. Bledsoe[1], and S. Sell[1]
[1]Saint Louis University, St. Louis, MO

P-Fri-70
Effects of Pore Size on Mechanical Properties and MSC Behavior in Bioglass Composite Scaffolds
C. Vissers[1] and J. Leach[1]
[1]University of California, Davis, Davis, CA

P-Fri-71
Compressed Gelatin-Honey Sponges as Membrane Barriers for Bone Grafting Applications
I. Rodriguez[1], B. Burger[2], and G. Bowlin[1]
[1]The University of Memphis, Memphis, TN, [2]Dulles Institute for Oral/Maxillofacial Surgery, Sterling, VA

P-Fri-72
Fabricating Highly Aligned Collagen Sponges From Self-Assembled, Fibrillar Collagen Gels
C. Lowe[1], I. Reucroft[1], and D. Shreiber[1]
[1]Rutgers University, Piscataway, NJ

P-Fri-73
Synthesis and Evaluation of Barnacles β Strand Peptide Having Cell Attachment Activity
K. Takase[1], Y. Hirano[1], and K. Kamino[2]
[1]Kansai University, Suita, Japan, [2]NITE, Chiba, Japan

P-Fri-74
3D Printed Bone Scaffolds with Microvascular Network and Nano Hydroxyapatite for Improved hMSC Functions
B. Holmes[1] and L. Zhang[1]
[1]The George Washington University, Washington, DC

P-Fri-75
Delivery of Growth Factor via Two Electrospinning Techniques
L. Place[1], M. Seyki[2], J. Taussig[2], and M. Kipper[2]
[1]Colorado State, Fort Collins, CO, [2]Colorado State University, Fort Collins, CO

P-Fri-76
Endothelialization of Novel Magnesium-Rare Earth Alloys with Fluoride and Collagen Coating
N. Zhao[1], B. Workman[1], J. Ma[1], and D. Zhu[1]
[1]North Carolina A&T State University, Greensboro, NC

P-Fri-77
A Pressure-sensitive Adhesive Derived from Sundew Plants for Wound Healing
Y. Huang[1], Y. Wang[1], L. Sun[1], and M. Zhang[1]
[1]The Ohio State University, Columbus, OH

P-Fri-78
Characterization of Native Wharton's Jelly: A Natural Tissue Engineering Construct
S. Sahai[1], M. Wilkerson[1], F. Vitale[2], D. Tsentalovich[2], S. Kiran[1], M. Pasquali[2], C. S. Cox Jr.[1], and F. Triolo[1]
[1]UTHealth – The University of Texas Health Science Center at Houston, Houston, TX, [2]Rice University, Houston, TX

P-Fri-79
PEGylated Fibrin Biomaterials for Cardiomyocyte Cultivation
A. Allen[1], L. Geuss[1], L. Suggs[1], and J. Zoldan[1]
[1]University of Texas at Austin, Austin, TX

POSTER SESSION **Fri**

See page 141 for Poster floor plan

P-Fri-80
Chitosan-Hyaluronic Acid Scaffolds As A Mimic Of Glioblastoma Microenvironment Extracellular Matrix
K. Wang[1], S. Florczyk[1], F. Kievit[1], and M. Zhang[1]
[1]University of Washington, Seattle, WA

P-Fri-81
Hydrogel Polymer Libraries for Developing Induced Pluripotent Stem Cell Derived Cardiac Patches
A. Joaquin[1], N. Peppas[1], and J. Zoldan[1]
[1]University of Texas at Austin, Austin, TX

P-Fri-82
Early *in-vitro* and *in-vivo* Characterization of Small Submucosa and Hyaluronic Acid 3D Scaffolds
D. Tabima[1], V. Talero[1], A. Sabogal[1], J. Navarro[1], D. Narvaez[1], H. Groot[1], and R. Lopez[1]
[1]Universidad de los Andes, Bogota, Colombia

P-Fri-83
A Preliminary Evaluation of Electrospun Polycaprolactone Scaffolds Embedded with Bioglass Beads for Dermal Repair
R. Flores[1], A. Mohammadkhah[2], D. Day[2], and S. Sell[1]
[1]Saint Louis University, St Louis, MO, [2]Missouri Science & Technology, Rolla, MO

P-Fri-84
Bi-Axially Aligned Nanofibers for Soft Tissue Regeneration
B. Banik[1] and J. Brown[1]
[1]The Pennsylvania State University, University Park, PA

P-Fri-85
Fibrous HA Scaffolds With Active NGF Delivery For Directed Neurite Growth
T. Whitehead[1] and H. Sundararaghavan[1]
[1]Wayne State University, Detroit, MI

POSTER SESSION **Fri**

P-Fri-86
A Three-Dimensional Model of Vascularized Human Tumor Colon Spheroids in a Human Colon-Extracted Extracellular Matrix
M. Romero Lopez[1] and C. Hughes[1]
[1]University of California Irvine, Irvine, CA

P-Fri-87
Cell Proliferation and Infiltration in Electrospun non-Synthetic Biopolymer-Based Scaffolds
D. Ardila[1], E. Tamimi[1], A. Acuña[1], T. Doetschman[1], and J. Vande Geest[1]
[1]The University of Arizona, Tucson, AZ

P-Fri-88
Cell-derived Matrices as Biomimetic Substrates for Cardiomyoblast Differentiation
M. Suhaeri[1,2], M. Hwang[1], I. Kim[1], S. Van[1,2], and K. Park[1,2]
[1]Korea Institute of Science and Technology, Seoul, Korea, Republic of, [2]University of Science and Technology, Daejon, Korea, Republic of

Track: Tissue Engineering

Bioreactors for Tissue Engineering

Chairs: Anuradha (Anu) Subramanian, Teja Guda

P-Fri-255
Development Of A Graft For Skeletal Muscle Regeneration Using Bioreactor Technology
B. Pollot[1,2], C. Rathbone[2], and T. Guda[1,2]
[1]University of Texas at San Antonio, San Antonio, TX, [2]U.S. Army Institute of Surgical Research, Ft. Sam Houston, TX

P-Fri-256
Simulated Microgravity Can Alter Cell Viability, Density, and Transport in 3D Microtissues
E. Evans[1], Y-T. Dingle[1], and D. Hoffman-Kim[1]
[1]Brown University, Providence, RI

P-Fri-257
Theoretical Modeling and Experimental Verification of an Ultrasound Assisted Bioreactor
T. Louw[1], H. Viljoen[2], and A. Subramanian[2]
[1]University of Cape Town, Cape Town, South Africa, [2]University of Nebraska, Lincoln, NE

P-Fri-258
Bioreactor Technologies and Testing of Stem Cell-Seeded Scaffolds for Tissue Engineered Heart Valves
L. Sierad[1,2], E. Shaw[1], A. Kennamer[1], R. Odum[1], M. Harpa[2], O. Cotoi[2], T. Preda[2], L. Harceaga[2], R. Deac[2], V. Raicea[2], H. Suciu[2], K. Branzaniuc[2], I. Egyed[2], Z. Pavai[2], A. Szanto[2], A. Simionescu[1,2], and D. Simionescu[1,2]
[1]Clemson University, Clemson, SC, [2]Targu Mures University of Medicine and Pharmacy, Targu Mures, Romania

P-Fri-259
Quantification of Mechanically Induced Orientation of Collagen Fibers in Tissue Engineered Cartilage
E. Kahn[1], R. Stefani[2], M. Kelley[1], A. Mei[1], and B. Bilgen[2,3]
[1]Brown University, Providence, RI, [2]The Warren Alpert Medical School of Brown University and Rhode Island Hospital, Providence, RI, [3]Providence VA Medical Center, Providence, RI

P-Fri-260
Effects of Phonation-Relevant Vibration on Macrophage Phagocytosis
A. Zerdoum[1], B. Bachman[1], and X. Jia[1]
[1]University of Delaware, Newark, DE

P-Fri-261
Identifying the Localized Shear Forces on Cultured Preosteoblasts in 3D Flow Perfusion Cultures and Elucidating Their Metabolic State
V. Sikavitsas[1], C. Williams[1], R. Voronov[2], and D. Papavassiliou[1]
[1]University of Oklahoma, Norman, OK, [2]New Jersey Institute of Technology, Newark, NJ

P-Fri-262
H-Bioreactor Design, Viability Analysis, And Characterization Of Strain On Corneal Keratocytes
T. Beckman[1], R. Roley[1], and E. Orwin[1]
[1]Harvey Mudd College, Claremont, CA

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

Track: Tissue Engineering

Blood Vessel Tissue Engineering

Chairs: Wei Tan, Hsiai Tzung

P-Fri-263
Self-assembly of Endothelial Cells and Smooth Muscle Cells in Bio-printed 3D Fluidic Vascular Tissue
V. Lee[1], P. Vincent[2], S-S. Yoo[3], and G. Dai[1]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Albany Medical College, Albany, NY, [3]Brigham and Women's Hospital, Harvard Medical School, Boston, MA

P-Fri-264
Fabrication of Perfused Culture System for Functional Microvasculature Models
Y. Yukawa[1], B. Kim[1], and Y. Matsunaga[1]
[1]Institute of Industrial Science, The university of Tokyo, Meguro-ku, Tokyo, Japan

P-Fri-265
Large-scale Functional Endothelialized Microvessels in a Gel-free Microfluidic Network
Y. Xiao[1], M. Xu[2], X. Zi[1], X. Li[3], G. Zheng[2], J. Fu[3], S. Halene[1], R. Fan[1], L. Niklason[1], and J. Zhou[1]
[1]Yale University, New Haven, CT, [2]Fudan University, Shanghai, China, People's Republic of, [3]University of Michigan, Ann Arbor, Ann Arbor, MI

P-Fri-266
Reliable Soft Thermo-responsive Substrates for Patterned Cell-Sheet Engineering
S. Shah[1], D. Backman[1], B. LeSavage[1], and J. Wong[1]
[1]Boston University, Boston, MA

P-Fri-267
A Novel Bio-hybrid Functionally Graded Small Diameter Vascular Graft
H. Patel[1], V. Thomas[1], S. Pogwizd[1], R. Singh[2], and Y. Vohra[1]
[1]University of Alabama at Birmingham, Birmingham, AL, [2]Vivo Biosciences, Birmingham, AL

P-Fri-268
Adipose Derived Stem Cells for a Vascular Graft
J. Arrizabalaga[1] and M. Nollert[1]
[1]University of Oklahoma, Norman, OK

P-Fri-269
Development of a Bioengineered Cardiac Assist Device
M. Mohamed[1], M. Hogan[1], N. Patel[1], Z-W. Tao[1], and R. Birla[1]
[1]University of Houston, Houston, TX

P-Fri-270
Development of Collagen Type IV Immobilized Electrospun PLLA Nanofibers Using Gamma-ray Irradiation for Enhanced Endothelialization
H. Yunhoe[1,2], L. Yu Bin[1,2], L. Jang-Soo[1,2], K. Eunmi[1,2], and S. Heungsoo[1,2]
[1]Hanyang University, Seoul, Korea, Republic of, [2]BK[21] Plus Future Biopharmaceutical Human Resources Training and Research Team, Seoul, Korea, Republic of

P-Fri-271
Increased Elastin Matrix Production In PEG-diacrylate Hydrogels For Vascular Tissue Engineering
D. Holman[1], N. Nosoudi[1], H-J. Lee[1], K. Webb[1], and N. Vyavahare[1]
[1]Clemson University, Clemson, SC

Track: Tissue Engineering, Cardiovascular Engineering

Cardiac Muscle and Valve Tissue Engineering

Chairs: Jeffrey Jacot, Dan Simionescu

P-Fri-587
Modeling the Enhancement of Extracellular Matrix Quantity and Quality in Large-Deformation Mechanically-Conditioned Heart Valve Tissue Engineering
J. Soares[1] and M. Sacks[1]
[1]University of Texas at Austin, Austin, TX

P-Fri-588
Porcine Pericardium Fixation Studies For Aortic Heart Valves In Pediatrics
T. Welch[1], J. Wang[1], K. Guleserian[1], V. Sebastian[1], and J. Forbess[1]
[1]UT Southwestern Medical Center of Dallas, Dallas, TX

P-Fri-589
Development of a Tissue Engineered Mitral Valve
C. deBorde[1], J. Liao[2], D. Simionescu[1], and A. Simionescu[1]
[1]Clemson University, Clemson, SC, [2]Mississippi State University, Mississippi State, MS

P-Fri-590
Design of a Hypoxic Incubator for the Study of Calcific Aortic Valve Disease
M. Sapp[1], G. Fatora[1], and K. Grande-Allen[1]
[1]Rice University, Houston, TX

P-Fri-591
Electrical Pacing Of 3D IPSC-Derived Cardiomyocytes In A Microfluidic Device
S. Lam[1], M. Simon[1], D. Tran[1], L. Alonzo[1], N. Flohn[1], A. Lee[1], and S. George[1]
[1]University of California, Irvine, Irvine, CA

P-Fri-592
Engineered Cardiac Tissues Utilizing Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes
J. Wendel[1] and R. Tranquillo[1]
[1]University of Minnesota, Minneapolis, MN

P-Fri-593
Human Pediatric Cardiac Progenitor Cells Formed Structures with High Alignment in 3D Culture
Y. Gao[1] and J. Jacot[1,2]
[1]Rice University, Houston, TX, [2]Texas Children's Hospital, Houston, TX

P-Fri-594
Fabrication and Formation of Multi-Strip, Optogenetic Cardiac Muscles
V. Chan[1], D. Neal[1], and H. Asada[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

P-Fri-595
Human Mesenchymal Stem Cell Seeding of Porcine Small Intestinal Submucosal Extracellular Matrix
J. Chang[1], X. Lin[2], T. Petrie[2], C. Sondergaard[2], and L. Griffiths[1]
[1]University of California-Davis, Davis, CA, [2]University of California-Davis, Sacramento, CA

See page 141 for Poster floor plan

Track: Tissue Engineering, Stem Cell Engineering

Tissue Microfabrication and Stem Cells

Chairs: Min-Ho Kim, Ying Mei

P-Fri-243
Construction of 3D Engineered Tissue by Magnetically-Assisted Cell Assembly
L. Yu Bin[1,2], L. Joong-yup[1,2], T. Ahmad[1,2], B. Seongwoo[1,2], and S. Heungsoo[1,2]
[1]Hanyang University, Seoul, Korea, Republic of, [2]BK21 Plus Future Biopharmaceutical Human Resources Training and Research Team, Seoul, Korea, Republic of

P-Fri-244
A Single Mask, Single Etch Process for Fabricating 3-D Geometries in Collagen I Hydrogel
Y. Hosseini[1], S. Verbridge[1], and M. Agah[1]
[1]Virginia Tech, Blacksburg, VA

P-Fri-245
Projection Micro-Stereolithography Apparatus for High Resolution Patterning of Cells in 3D: Applications in Tissue Engineering of Vasculature
R. Raman[1], B. Bhaduri[1], A. Shkumatov[1], K. Baek[1], M. Mir[2], H. Kong[1], G. Popescu[1], and R. Bashir[1]
[1]University of Illinois at Urbana-Champaign, Champaign, IL, [2]University of California, Berkeley, Berkeley, CA

P-Fri-246
3D Printing of Hydrogel Scaffolds with Tailored Composition and Stiffness
K. Homan[1], A. Jagielska[2], R. Hawthorne[1], T. Busbee[1], K. Van Vliet[2], and J. Lewis[1]
[1]Harvard University, Cambridge, MA, [2]MIT, Cambridge, MA

P-Fri-247
Engineering Alginate Microfibers with Spatially Defined Fibronectin Functional Sites for Skeletal Muscle Tissue Engineering
J. Szymanski[1], P. Patil[1], and A. Feinberg[1]
[1]Carnegie Mellon University, Pittsburgh, PA

P-Fri-248
Investigating Endothelial Remodeling in Tissue-Engineered Microvessels via RNA-seq
J. Zhou[1], M. Xu[1,2], X. Zi[1], Y. Xiao[1], G. Zheng[2], L. Niklason[1], and R. Fan[1,3]
[1]Yale University, New Haven, CT, [2]Fudan University, Shanghai, China, People's Republic of, [3]Yale Comprehensive Cancer Center, New Haven, CT

P-Fri-249
Exploiting Angiogenic Properties of Dedifferentiated Fat Cells
M. Shah[1], M. Chapman[2], R. George[2], V. Narayan[3], and G. Zhang[1]
[1]University of Akron, Akron, OH, [2]Summa Health System, Akron, OH, [3]The Austen BioInnovation Institute in Akron, Akron, OH

P-Fri-250
Enhanced Stem Cell Growth on Smart Polyurethane Scaffolds
N. Castro[1], K. Hearon[2], and L. Zhang[1]
[1]The George Washington University, Washington, DC, [2]Massachusetts Institute of Technology, Cambridge, MA

P-Fri-251
Growth Factor Release from Mesenchymal Stem Cells Encapsulated in PEGDA Microspheres
P. Krzyszczyk[1] and R. Olabisi[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ

P-Fri-252
Effect of MSC and Fibrochondrocyte 3D Co-Culture on Matrix Secretion and Cell Phenotype
M. McCorry[1], J. Puetzer[1], and L. Bonassar[1]
[1]Cornell University, Ithaca, NY

P-Fri- 253
Mechanical Stimulation Of PEGDA Encapsulated Mesenchymal Stem Cells Into Adipocytes
S. Mehta[1] and R. Olabisi[1]
[1]Rutgers University, New Brunswick, NJ

P-Fri-254
Potential Effects of Mechanical Stimulation on The Reprogramming Somatic Cells into iPS Cells
Y. Kim[1], Y. Kang[1], S. Park[1], J. Shin[1], S. Gu[2], H. Park[1], and J-W. Shin[1,2,3]
[1]Department of Biomedical Engineering, Inje University, Gimhae-si, Korea, Republic of, [2]Department of Health Science and Technology, Gimhae-si, Korea, Republic of, [3]Cardiovascular and Metabolic Disease Center /Institute of Aged Life Redesign/UHRC, Gimhae-si, Korea, Republic of

Track: Translational Biomedical Engineering, Device Technologies and Biomedical Robotics

Translational Biomedical Engineering I

Chairs: Mehdi Nikkhah, Mark Van Dyke

P-Fri-211
Amplification-free Multiplexed Detection of miRNA Biomarkers in Single Cancer Cells
N. Wang[1], Y. Wu[1], Y. Lu[1], S. Chapin[2], P. Doyle[2], and R. Fan[1,3]
[1]Yale University, New Haven, CT, [2]MIT, Cambrige, MA, [3]Yale Comprehensive Cancer Center, New Haven, CT

P-Fri-212
Targeted Delivery Of Anti-miR-712 By VCAM1-Binding Au Nanospheres For Atherosclerosis Therapy
R. Simmons[1], T. Sun[1], C. Kim[1], X. Zhao[1], Y. Xia[1], and H. Jo[1]
[1]Georgia Institute of Technology & Emory University, Atlanta, GA

P-Fri-213
Rapid, Single Bacterial Detection From Blood using Microencapsulated Sensors
D-K. Kang[1], M. Ali[1], B. Fan[1], K. Zhang[1], I. Altamore[1], M. Digman[1], E. Gratton[1], E. Peterson[1], and W. Zhao[1]
[1]University of California-Irvine, Irvine, CA

P-Fri-214
In Vivo Validation of Fluorescent Dye to Detect Ano-genital Injury in Women
Y. Cao[1], C. Henry[1], A. Bruce[1], S. Peirce[1], and K. Laughon[1]
[1]Univ. of Virginia, Charlottesville, VA

P-Fri-215
Bioactive Hydrogel Coatings for Improvised Titanium Implants
S. Karnik[1], Y. Luo[1], U. Jammalamadaka[1], K. Tappa[2], and D. Mills[1]
[1]Louisiana Tech University, Ruston, LA, [2]Louisiana Tech University, Ruston, Afghanistan

P-Fri-216
Development of Silk-Elastinlike Protein Polymers as Liquid-To-Solid Embolic Agents
A. Poursaid[1], R. Price[1], A. Tiede[1], E. Olson[1], E. Huo[1], H. Ghandehari[1], and J. Cappello[1]
[1]University of Utah, Salt Lake City, UT

POSTER SESSION **Fri**

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Fri-217
The Effect of Laser Adjuvant on the Efficacy of a Prophylactic Transcutaneous Influenza Vaccine
E. Elenes[1], R. Jadi[1], J. Deventhiran[1], H. Sooryanarain[1], S. Elankumaran[1], and C. Rylander[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

P-Fri-218
Development of a Hepatocyte Bioreactor Utilizing Perfusion through Aligned Nanofiber Networks
A. Gill1, F. Popovic1, C. Brouse1, J. Moore1, T. Raisch1, B. Koons1, and A. Nain1
[1]*Virginia Tech, Blacksburg, VA*

P-Fri-219
Silk Microneedle Delivery and Stabilization of Enteric Disease Vaccines
W. Raja[1], S. Lee[2], H. Kim[2], B. Xu[2], B. Panilaitis[1], S. Tzipori[2], and D. Kaplan[1]
[1]*Tufts University, Medford, MA,* [2]*Tufts University, North Grafton, MA*

P-Fri-220
Microtopographies Inhibit Human Lens Epithelial Cell Migration in Posterior Capsule Opacification Model
C. Kirschner[1], M. Drinker[1], K. Cuevas[2,3], A. Brennan[1,4], and S. Reddy[1]
[1]*Sharklet Technologies, Inc., Aurora, CO,* [2]*Rocky Mountain Ophthamology, Golden, CO,* [3]*Insight Innovations, LLC, Golden, CO,* [4]*University of Florida, Gainesville, FL*

Track: Translational Biomedical Engineering, Device Technologies and Biomedical Robotics

Translational Biomedical Engineering II

Chairs: Manu Platt, Mehdi Nikkhah

P-Fri-221
Soy Scaffolds Improve Healing of Full Thickness Skin Excision Wounds in Rat and Pig Models
Y-E. Har-el[1], J. Gerstenhaber[1], S. Baharlou[1], T. Lo[1], R. Brodsky[1], R. Huneke[2], and P. Lelkes[1]
[1]*Temple University, Philadelphia, PA,* [2]*Drexel University College of Medicine, Philadelphia, PA*

P-Fri-222
The Analysis of Explanted Organ Perfusion to Determine Optimal Perfusion Temperature
T. O'Brien[1], T. Diller[1], and J. Robertson[1]
[1]*Virginia Tech, Blacksburg, VA*

P-Fri-223
Successful Isolation of Human islets using a Collagenase free Osmotic Shock Method
J. McQuilling[1,2], S. Sittadjody[2], J. Steinman[2], G. Orlando[2], A. Farney[2], and E. Opara[1,2]
[1]*Virginia Tech-Wake Forest School of Biomedical Engineering & Sciences (SBES), Winston-Salem, NC,* [2]*Wake Forest School of Medicine, Winston-Salem, NC*

P-Fri-224
Combined MicroRNA/Anti-MicroRNA Therapy and Molecular Beacons Based Prognosis of Mouse Hepatocelluar Carcinoma (HCC) using Target Lipoplex Nanoparticles
X. wang[1], Z. Yang[1], R. Lee[1], S. Jacob[1], K. Ghoshal[1], and J. Lee[1]
[1]*the Ohio State University, columbus, OH*

P-Fri-225
Layer-by-layer Nanoparticles for Co-delivery of Chemodrugs and RNAi for Treating Aggressive Types of Cancers
J. Deng[1], S. Morton[1], E. Dreaden[1], and P. Hammond[1]
[1]*MIT, Cambridge, MA*

P-Fri-226
Multipotent Progenitor and Endothelial Cell Interactions Promote Angiogenesis and Osteogenesis
H. Hofer[1], P. Alexander[1], and R. Tuan[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P-Fri-227
A Novel Cell-Based Assay for MMP Inhibitor Screening
P. Krisanarungson[1], A. Walker[1], and J. Wolchok[1]
[1]*University of Arkansas, Fayetteville, AR*

P-Fri-228
PolyGraphene Muco-adhesive Medi-Patches for Anti-Stem like Cell Therapy via STAT-3 Inhibition
S. Misra[1,2] and D. Pan[1,2]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL,* [2]*Carle Foundation Hospital, Urbana, IL*

P-Fri-229
Pathology Evaluation and Analysis of Cardiac Leads
H. Smith[1], S. Jessen[1], T. Lancon[1], M. O'Brien[1], L. Suarez[1], M. Wilcox[1], M. Miller[2], B. Weeks[1], and F. Clubb, Jr.[1]
[1]*Texas A&M University, College Station, TX,* [2]*Texas A&M Institute for Preclinical Studies, College Station, TX*

P-Fri-230
Minimally Invasive Irreversible Electroporation For Pancreatic Cancer Treatment
L. Reese[1], J. McGuire[1], G. Mishra[2], C. Williams[1], R. Davalos[1], and L. Bickford[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*Wake Forest Medical Center, Winston Salem, NC*

See page 141 for Poster floor plan

TODAY'S HIGHLIGHT

PLATFORM SESSION Sat 1 8:00am - 9:30am
See pages 174-181, HBGCC

EXHIBIT HALL OPEN 9:30am - 1:30p
HBGCC, Exhibit Hall A

POSTER SESSION SAT 9:30pm -1:00pm
See pages 195-210 HBGCC, Exhibit Hall A

Poster Viewing with Authors & Refreshment Break 9:30am - 10:30am

PLENARY SESSION
10:30am - 12:30pm
HBGCC, Lila Cockrell Theatre

Rita Schaffer Memorial Young Invesigator Lecture
NEW PARADIGMS FOR CELL MIGRATION IN CONFINED MICROENVIRONMENTS
Kimberly Stroka, PhD

Diversity Lecture
Naomi Chesler, PhD

PLATFORM SESSION Sat 2 1:30pm - 3:00pm
See pages 182-188, HBGCC

PLATFORM SESSION Sat 3 3:15pm - 4:15pm
See pages 189-193, HBGCC

PLATFORM SESSIONS **Sat-1**

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

SATURDAY, October 25, 2014

8:00 AM - 9:30 AM
PLATFORM SESSIONS – SAT - 1

Track: Tissue Engineering, Cardiovascular Engineering

OP-Sat-1-1 - Room 001A

Cardiac Muscle and Valve Tissue Engineering

Chairs: Nenad Bursac, Song Li

8:00AM
Tubular Heart Valves by Suturing Decellularized Engineered Tissue Tubes
J. Reimer[1], Z. Syedain[1], B. Haynie[1], and R. Tranquillo[1]
[1]University of Minnesota, Minneapolis, MN

8:15AM
Electrically Stimulated Heart Microbundles as a 3D Model of Neonatal to Adult Cardiac Tissue Maturation
C. Jackman[1] and N. Bursac[1]
[1]Duke University, Durham, NC

8:30AM
Fibrous Tissue Scaffolds: Relationships between Geometric Structure and Mechanical Behavior
J. Carleton[1], G. Rodin[1], and M. Sacks[1]
[1]University of Texas at Austin, Austin, TX

8:45AM
Three-Dimensional Artificial Heart Muscle to Supplement the Framework of a Bioartificial Heart
M. Hogan[1], M. Mohamed[1], Z-W. Tao[1], L. Gutierriez[1], and R. Birla[1]
[1]University of Houston, Houston, TX

9:00AM
Tuning Material Properties of Cardiac Extracellular Matrix for Cardiac Tissue Engineering
M. Jeffords[1], J. Wu[2], Q. Ding[2], Y. Hong[2], and G. Zhang[1]
[1]The University of Akron, Akron, OH, [2]University of Texas at Arlington, Arlington, TX

9:15AM
Native Fiber Structure in Decellularized Myocardium Promotes Cardiac Cell Alignment and Maturation
J. Schwan[1], A. Kwaczala[1], T. Ryan[1], A. Lebid[1], and S. Campbell[1]
[1]Yale University, New Haven, CT

Track: Biomaterials, Nano to Micro Technologies

OP-Sat-1-2 - Room 001B

Micro and Nanostructured Materials

Chairs: Scott Verbridge, Tzahi Cohen-Karni

8:00AM
Tunable Microtopography Reduces Myofibroblast Activation and Cutaneous Fibrosis
J. Allen[1], J. Ryu[1], and T. Desai[1]
[1]University of California, San Francisco, San Francisco, CA

8:15AM
Heat-Resistant RNA Biomaterials to Construct Nanoparticles with Controllable Size, Shape, and Stoichiometry for Biomedical Applications
E. Khisamutdinov[1], D. Jasinski[1], and P. Guo[1]
[1]Nanobiotechnology Center, Markey Cancer Center, and Department of Pharmaceutical Sciences, College of Pharmacy, University of Kentucky, Lexington, KY

8:30AM
2D Nanosheets for Osteogenic Differentiation of Human Mesenchymal Stem Cells
J. Xavier[1], P. Desai[1], and A. Gaharwar[1]
[1]Texas A&M University, College Station, TX

8:45AM
Antigen-Independent Targeting of Cancer Cells on Polylysine/Fatty Acid Complexes
C. Castellanos[1], J. Li[1], M. Mitchell[1], and M. King[1]
[1]Cornell, Ithaca, NY

9:00AM
Heparin Hydrogel Microdroplets for Cultivation of Embryonic Stem Cells
C. Siltanen[1], E. Foster[1], J. You[1], A. Haque[1], D-S. Shin[1], and A. Revzin[1]
[1]UC Davis, Davis, CA

9:15AM
Biocompatible Sub-100 nm Patterning TiO2 for the Regulation of Endothelial and Smooth Muscle Cell Functions
M. Rizwan[1], S. Lim[1], S. Goh[1], J. Law[2], M. Saifullah[2], G. Ho[1], and E. Yim[1]
[1]National University of Singapore, Singapore, Singapore, [2]Institute of Materials Research and Engineering, Singapore, Singapore

Track: Cardiovascular Engineering
OP-Sat-1-3 - Room 006A
Microcirculation

Chairs: Taby Ahsan, Steven George

8:00AM
Monocytes are Recruited From Post-Capillary Venules During the Early Phases of Arteriogenesis
A. Bruce[1], M. Kelly-Goss[1], J. Meisner[1], R. Price[1], and S. Peirce[1]
[1]Univ. of Virginia, Charlottesville, VA

8:15AM
The Role Of Cathepsin B In The Control Of Neutrophil Pseudopod Activity Under Flow
M. Akenhead[1] and H. Shin[1]
[1]University of Kentucky, Lexington, KY

8:30AM
Flow Characteristics of Sickle Cell Blood in Hypoxic Conditions
X. Lu[1], C. Jonas[1], J. Higgins[2,3], and D. Wood[1]
[1]University of Minnesota, Minneapolis, MN, [2]Harvard Medical School, Boston, MA, [3]Massachusetts General Hospital, Boston, MA

8:45AM
Vein-On-a-Chip: Functional Assessment and Activation of Intact Mouse Mesenteric Vein
Z. Abdi Dezfooli[1], S-S. Bolz[1], and A. Günther[1]
[1]University of Toronto, Toronto, ON, Canada

9:00AM
Exogenous Nitric Oxide Supplementation To Enhance The Outcome Of Fluid Resuscitation From Hemorrhagic Shock
J. Crump[1], J. Briceno[1], and P. Cabrales[2]
[1]Universidad de Los Andes, Bogota D.C., Colombia, [2]University of California, San Diego, La Jolla, CA

9:15AM
Platelet GpIbα Binding to Von Willebrand Factor (VWF) under Hydrodynamic Shear: Relative Contributions of The D'D3-domain, A1-domain Flanking Peptide and O-linked Glycosylation
C. Zhang[1], A. Kelkar[1], S. Madabhushi[1], K. Dayananda[1], and S. Neelamegham[1]
[1]SUNY at Buffalo, Buffalo, NY

Track: Biomechanics, Cardiovascular Engineering
OP-Sat-1-4 - Room 006B
Cardiovascular Biomechanics I

Chairs: Hanjoong Jo, Danial Shahmirzadi

8:00AM
Biomechanical Characterizations Of Scar ECM During The Acute To Chronic Stages Of Myocardial Infarction
B. Brazile[1], J. Butler[1], S. Patnaik[1], Y. Xu[2], A. Claude[1], R. Prabhu[1], L. Williams[1], G. Zhang[3], J. Guan[2], and J. Liao[1]
[1]Mississippi State University, Mississippi State, MS, [2]Ohio State University, Columbus, OH, [3]University of Akron, Akron, OH

8:15AM
Bending and Twisting the Embryonic Heart Tube: A Noval Computational Model
Y. Shi[1], J. Yao[2], R. Perucchio[3], and L. Taber[1]
[1]Washington University, St. Louis, MO, [2]Dassault Systemes Simulia Corp., Providence, RI, [3]University of Rochester, Rochester, NY

8:30AM
Quantitative Histomorphological Analysis of Right Ventricular Myocardium Under Chronic Pressure Overload
S. M. Siegel[1], U. A. Dar[1], M. Rahman[1], M. R. Hill[1], M. A. Simon[2], and M. S. Sacks[1]
[1]The University of Texas at Austin, Austin, TX, [2]The University of Pittsburgh, Pittsburgh, PA

8:45AM
Exogenous Relaxin Treatment Reverses Left Ventricular Fibrosis and Improves Diastolic Function in a Rate Model
J. Haney[1], D. Schwartzman[1,2], and S. Shroff[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]University of Pittsburgh Medical Center, Pittsburgh, PA

9:00AM
Time-Evolving Growth and Remodeling Response of Right Ventricular Myocardium to Pressure Overload
M. Hill[1], M. Simon[2], and M. Sacks[1]
[1]University of Texas at Austin, Austin, TX, [2]University of Pittsburgh, Pittsburgh, PA

9:15AM
Probing Local Nonlinear Mechanics with Whole-Tissue Experiments
C. Witzenburg[1] and V. Barocas[1]
[1]University of Minnesota, Minneapolis, MN

Track: Cellular and Molecular Bioengineering
OP-Sat-1-5 - Room 006C
Cell and Molecular Immunoengineering

Chairs: Lance Kam, Chris Love

8:00AM
Lipopolysaccharide (LPS) Induces the Interactions of Breast Cancer and Endothelial Cells via Activated Monocytes
C. Chen[1] and D. Khismatullin[1]
[1]Tulane University, New Orleans, LA

8:15AM
T-Pharmacytes for the Targeted Eradication of Latent HIV Reservoirs
B. Jones[1], S. Mueller[1], R. O'Connor[1], V. Vrbanac[1], A. Tager[1], B. Walker[1,2], and D. Irvine[1,2]
[1]Ragon Institute of MGH, MIT, and Harvard, Cambridge, MA, [2]Howard Hughes Medical Institute, Chevy Chase, MD

8:30AM
TLR3 Stimulation Enhances The Immune Stimulatory Properties of Exosome-based Vaccines
M. Damo[1], E. Simeoni[1], D. Wilson[1], and J. Hubbell[1]
[1]Swiss Federal Institute of Technology, Lausanne, Switzerland

8:45AM
Development of a Tissue-Engineered Lymph Node to Study Stromal Immunomodulatory Functions *In Vitro*
C. Buchanan[1] and M. Swartz[1]
[1]Ecole Polytechnique Federal de Lausanne, Lausanne, Switzerland

9:00AM
Molecular-level Deconvolution of the Human Serum Antibody Repertoire Elicited by Vaccination
J. Lavinder[1], G. Ippolito[1], Y. Wine[1], D. Boutz[1], J. Blazeck[1], A. Horton[1], C. Giesecke[2], K. Hoi[1], B. Tan[1], E. Murrin[1], M. Wirth[1], A. Ellington[1], T. Dörner[2], E. Marcotte[1], and G. Georgiou[1]
[1]University of Texas at Austin, Austin, TX, [2]Charite Universitätsmedizin Berlin, Berlin, Germany

9:15AM
Dysregulated Sphingolipid Metabolism In Sickled Erythrocytes & Inflammatory Microparticle Generation
A. Awojoodu[1], P. Keegan[1], A. Lane[1], Y. Zhang[1], M. Platt[1], and E. Botchwey[1]
[1]Georgia Institute of Technology, Atlanta, GA

Track: Cardiovascular Engineering, Tissue Engineering
OP-Sat-1-6 - Room 006D
Cardiac Regeneration

Chairs: Milica Radisic, Lauren Black III

8:00AM
Designing an Elastic Scaffold with Shape-Memory for Functional Tissue Delivery
M. Montgomery[1], B. Zhang[1], L. Reis[1], and M. Radisic[1]
[1]University of Toronto, Toronto, ON, Canada

8:15AM
Generation of Functional Human Myocardium from Native Human Heart Matrix and Human iPS-derived Cardiomyocytes
J. Guyette[1], J. Charest[1], P. Moser[1], and H. Ott[1]
[1]Harvard Medical School, Boston, MA

8:30AM
Engineering Mature Cardiac Tissue *In Vitro*: Biomechanical and Biochemical Stimulation of Physiological Hypertrophy.
C. Rupert[1], M. Regnier[2], C. Murry[2], and K. Coulombe[1]
[1]Brown University, Providence, RI, [2]University of Washington, Seattle, WA

8:45AM
In Vitro Recruitment of Macrophages by Human Embryonic Stem Cell-Derived Cardiomyocytes
I. Pallotta[1], E. Wrona[1], and D. Freytes[1]
[1]The New York Stem Cell Foundation Research Institute, New York, NY

9:00AM
Cardiac Progenitor Cell Exosomes to Treat the Heart
S. Ghosh- Choudhary[1], W. Gray[2], K. Kanter[3], B. Kogon[3], M. Platt[2], and M. Davis[4]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Georgia Insititute of Technology and Emory University, Atlanta, GA, [3]Children's Healthcare of Atlanta, Atlanta, GA, [4]Georgia Insititute of Technology and Emory University and Children's Healthcare of Atlanta, Atlanta, GA

9:15AM
Hepatic Cell-Mediated Delivery of Trefoil Factor 3 to Ischemic Myocardium - A Trans-system Mechanism Against Cardiomyocyte Calcification
S. Liu[1], B. Zhang[1], and Y. Wu[1]
[1]Northwestern University, Evanston, IL

Track: Stem Cell Engineering, Biomechanics
OP-Sat-1-7 - Room 007A
Mechanobiology of Stem Cells

Chairs: Rhima Coleman, Shyni Varghese

8:00AM *Invited*
Nuclear Scaling in Stem Cell Differentiation
D. Discher[1]
[1]Univ Pennsylvani, Philadelphia, PA

8:30AM
ColVI and DCN's Role In Mechanotransduction And Scaffold Material Properties During Chondrogenesis
J. Twomey[1], B. Bulka[1], and A. Hsieh[1,2]
[1]University of Maryland, College Park, College Park, MD, [2]University of Maryland, Baltimore, Baltimore, MA

8:45AM
Differentiation of Human Adipose-Derived Stem Cells in Response to Mechanical Stimulation
K. Megerle[1], W. Cole[2], I. Mahaffey[2], P. Leucht[1], J. Chang[1], and A. Castillo[1,2]
[1]Stanford University School of Medicine, Palo Alto, CA, [2]VAPAHCS, Palo Alto, CA

9:00AM
Hippo-YAP Dependent Mechanosensitive Motor Neuron Differentiation of Human Pluripotent Stem Cells
Y. Sun[1], K. Aw Yong[1], W. Chen[1], R. Philson[1], S. Weng[1], and J. Fu[1]
[1]University of Michigan, Ann Arbor, MI

9:15AM
Parsing Stem Cell Phenotypes Using High Content Imaging of Mechanotransductive Nuclear Reporters
A. Dhaliwal[1], S. Vega[1], V. Arvind[1], M. Brenner[1], Z. Zhang[2], Y. Mao[2], J. Kohn[3], and P. Moghe[1,4]
[1]Biomedical Engineering, Rutgers University, Piscataway, NJ, [2]New Jersey Center for Biomaterials, Rutgers University, Piscataway, NJ, [3]Department of Chemistry & Chemical Biology, Rutgers University, Piscataway, NJ, [4]Department of Chemical & Biochemical Engineering, Rutgers University, Piscataway, NJ

Track: Cardiovascular Engineering
OP-Sat-1-8 - Room 007B
Angiogenesis

Chairs: Bob Tranquillo, Sara Nunes Vasconcelos

8:00AM
Recruitment and Programming of Endogeneous Progenitor Cells *In Situ* for Therapeutic Angiogenesis
L. Deveza[1], J. Choi[1], J. Ashoken[2], and F. Yang[1]
[1]Stanford University, Stanford, CA, [2]San Jose State University, San Jose, CA

8:15AM
Uncoupling Angiogenesis and Inflammation in Peripheral Artery Disease by Therapeutic Peptides with Injectable Microgels
A. Zachman[1], X. Wang[1], J. Tucker-Schwartz[1], S. Lee[1], M. Skala[1], and H-J. Sung[1]
[1]Vanderbilt University, Nashville, TN

PLATFORM SESSIONS Sat-1

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

8:30AM
Syndesomes: A Novel Therapy For Peripheral Ischemia
S. Das[1], A. Monteforte[1], G. Singh[1], M. Martinez[1], A. Dunn[1], and A. Baker[1]
[1]*University of Texas, Austin, Austin, TX*

8:45AM
A Fluid Shear Stress Threshold Regulates Angiogenic Sprouting
P. Galie[1], P. Janmey[1], and C. Chen[2]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*Boston University, Boston, MA*

9:00AM
Evaluation of Endothelial Progenitor Cells for Microvessel Tissue Engineering
E. Brown Peters[1], N. Christoforou[1,2], K. Leong[1], G. Truskey[1], and J. West[1]
[1]*Duke University, Durham, NC,* [2]*Khalifa University, Abu Dhabi, United Arab Emirates*

9:15AM
Physical Signals That Promote Vascularization of Capillary-Scale Channels
N. Boland[1], G. Covarrubias[1], and J. Tien[1]
[1]*Boston University, Boston, MA*

Track: Cellular and Molecular Bioengineering
OP-Sat-1-9 - Room 007C
Young Innovator Session I

Chairs: Cynthia Reinhart-King, Deborah Leckband

8:00AM
Shrink Wrapping Cells in a Defined Extracellular Matrix to Modulate the Chemo-Mechanical Microenvironment
R. Palchesko[1], J. Szymanski[1], A. Sahu[1], and A. Feinberg[1]I
[1]*Carnegie Mellon University, Pittsburgh, PA*

8:15AM
Efficiency of Protease-activatable Virus Nanonodes Tuned Through Incorporation of Wild-type Capsid Subunits
M. Ho[1], J. Judd[1], B. Kuypers[1], M. Yamagami[1], F. Wong[1], and J. Suh[1]
[1]*Rice University, Houston, TX*

8:30AM
Aqueous Two-Phase Printing of Tumor Spheroids For Drug Screening
E. Atefi[1], S. Lemmo[1], D. Fyffe[1], G. Luker[2], and H. Tavana[1]
[1]*University of Akron, Akron, OH,* [2]*University of Michigan, Ann Arbor, MI*

8:45AM
Quantitative Evaluation and Optimization of Co-drugging to Improve Anti-HIV Latency Therapy
V. Wong[1], L. Fong[1], N. Adams[1], Q. Xue[1], S. Dey[2], and K. Miller-Jensen[1]
[1]*Yale University, New Haven, CT,* [2]*Hubrecht Institute, Utrecht, Netherlands*

9:00AM
PAActivation of a Bacterial Mechanosensitive Channel in Mammalian Cells by Cytoskeletal Stress
A. Liu[1], J. Heureaux[1], D. Chen[1], V. Murray[1], and C. Deng[1]
[1]*University of Michigan, Ann Arbor, MI*

9:15AM
Network Modeling Approach to Predict Myofibroblast Differentiation
A. Schroer[1], L. Ryzhova[1], and W. Merryman[1]
[1]*Vanderbilt University, Nashville, TN*

Track: Orthopaedic and Rehabilitation Engineering, Tissue Engineering
OP-Sat-1-10 - Room 007D
Musculoskeletal Tissue Engineering

Chairs: Clark Hung, Warren Grayson

8:00AM
Chondroinductive Biomaterials for Cartilage Tissue Engineering
M. Detamore[1]
[1]*University of Kansas, Lawrence, KS*

8:15AM
Spatial Control of MSC Fate Using 3D Multi-compartment Scaffolds for Engineering Orthopedic Interfaces
W. Grier[1], L. Mozdzen[1], S. Caliari[1], D. Weisgerber[1], M. Boppart[1], and B. Harley[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

8:30AM
Dynamic Hydrostatic Pressure-induced Formation of Micropores in Mature Tissue-engineered Articular Cartilage
T-A. Kelly[1], S. Sirsi[2], A. Nover[1], C. Chen[1], A. Ditzel[1], P. Mountford[2], S. Etezazian[2], G. Ateshian[1], M. Borden[2], and C. Hung[1]
[1]*Columbia University, New York, NY,* [2]*University of Colorado at Boulder, Boulder, CO*

8:45AM
Engineering Craniofacial Bone And Skeletal Muscle From Adipose-Derived Stem Cells
W. Grayson[1]
[1]*Johns Hopkins University, Baltimore, MD*

9:00AM
A Combined Experimental and Theoretical Approach to Designing Enzyme Degradable Hydrogels for Cartilage Tissue Engineering
S. Skaalure[1], S. Chu[1], U. Akalp[1], F. Vernerey[1], A. Doostan[1], and S. Bryant[1]
[1]*University of Colorado, Boulder, CO*

9:15AM
The Use of Laminin-functionalized Hydrogels to Restore Pathological Nucleus Pulposus Cells of the Intervertebral Disc
P. Hwang[1], A. Francisco[1], L. Jing[1], W. Richardson[1], R. Isaacs[1], C. Brown[1], J. Chen[1], and L. Setton[1]
[1]*Duke University, Durham, NC*

Track: Nano to Micro Technologies, Device Technologies and Biomedical Robotics
OP-Sat-1-11 - Room 008A
Cells Tissues and Organs on Chip I

Chairs: Keith Neeves, Maribel Vazquez

8:00AM
Capillary Formation under Interstitial Flow in a Microfluidic Device for Liver Tissue Engineering
R. Sudo[1], Y. Abe[1], S. Menjo[1], and K. Tanishita[2]
[1]*Keio University, Yokohama, Japan,* [2]*Waseda University, Tokyo, Japan*

8:15AM
Simple Microfluidic Device for Automated, High-throughput Morphological Analysis of Stored Red Blood Cells
N. Piety[1], S. Gifford[1], X. Yang[1], and S. Shevkoplyas[1]
[1]*University of Houston, Houston, TX*

8:30AM
Inflammation Mediated Modulation of Blood Brain Barrier *In Vitro*
A. SMITH[1], J. ROSANO[1], C. GARSON[1], K. BHATT[1], B. PRABHAKARPANDIAN[1], M. ASCHNER[2], AND K. PANT[1]
[1]*CFD Research, Huntsville, AL,* [2]*Albert Einstein College of Medicine, Bronx, NY*

8:45AM
A Human Blinking 'Eye-on-a-chip'
J. SEO[1] AND D. HUH[1]
[1]*University of Pennsylvania, Philadelphia, PA*

9:00AM
A Microfabricated Platform for Evaluating Prodrug Metabolism and Toxicity in a Hepatocyte-Cancer Model
S. BALE[1], R. JINDAL[1], G. SRIDHARAN[1], I. GOLBERG[1], W. MCCARTY[1], M. HEGDE[1], A. BHUSHAN[1], L. PRODANOV[1], O. USTA[1], AND M. YARMUSH[1]
[1]*Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School and Shriners Burns Hospital, Boston, MA*

9:15AM
A Microfluidic-Based Array for Large-Scale Ordering And High-Resolution Imaging Of Islets
M. NOURMOHAMMADZADEH[1], J. MENDOZA-ELIAS[1], Y. XING[1], J. OBERHOLZER[1], AND Y. WONG[1]
[1]*University of Illinois at Chicago, Chicago, IL*

Track: Respiratory Bioengineering, Tissue Engineering
OP-Sat-1-12 - Room 008B
Engineering Strategies for Lung Transplant & Regeneration

Chairs: Daniel Weiss, Samir Ghadiali

8:00AM *Invited*
Ex-Vivo Lung Perfusion – A Bench to Bedside Platform for Pulmonary Investigation
[1]B. WHITSON
[1]*The Ohio State University, Columbus, OH*

8:15AM
Design and Validation of a Clinical-Scale Biomimetic Whole-Lung Bioreactor
J. CHAREST[1], T. OKAMOTO[1], A. YASUDA[1], S. GILPIN[1,2], D. MATHISEN[1], AND H. OTT[1,2]
[1]*Massachusetts General Hospital, Boston, MA,* [2]*Harvard Medical School, Boston, MA*

8:30AM
Enhanced Reseeding of Decellularized Rodent Lung Airway and Vasculature
C. STABLER[1], S. LECHT[1], M. BARAKAT[1], L. CAIRES[2], A. RYLANDER[1], R. CHIAVERELLI[1], E. SCHULMAN[3], C. MARCINKIEWICZ[1], AND P. LELKES[1]
[1]*Temple University, Philadelphia, PA,* [2]*Federal University of Juiz de Fora, Juiz de Fora, Brazil,* [3]*Drexel University College of Medicine, Philadelphia, PA*

8:45AM
Mechanical Control of Airway Branching Morphogenesis
V. VARNER[1], J. GLEGHORN[1], AND C. NELSON[1]
[1]*Princeton University, Princeton, NJ*

9:00AM
Engineered Cartilaginous Structures for Tracheal Tissue Replacement
A. DIKINA[1], H. STROBEL[2], B. LAI[1], M. ROLLE[2], AND E. ALSBERG[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Worcester Polytechnic Institute, Worcester, MA*

9:15AM
An Alginate-Based Pulmonary Patch For Repairing Pleural Injuries
S. FENN[1], D. WAGNER[1], P. SAUNDERS[1], P. CHARRON[1], D. WEISS[1], AND R. OLDINSKI[1]
[1]*University of Vermont, Burlington, VT*

Track: Device Technologies and Biomedical Robotics, Translational Biomedical Engineering
OP-Sat-1-13 - Room 201
Biosensors I: Materials and Techniques

Chairs: J-C Chiao, Jeff LaBelle

8:00AM
Advancing Silicon Photonics for Clinical Applications
D. RATNER[1]
[1]*University of Washington, Seattle, WA*

8:30AM
Macromolecularly Imprinted Polymers on the Surface of Nanoparticle Supports for Low-Cost Biosensors
H. CULVER[1], C. FAUVARQUE NUYTTEN[2], AND N. PEPPAS[1]
[1]*University of Texas at Austin, Austin, TX,* [2]*Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland*

8:45AM
A High Density Electrochemical Imaging System for Understanding Cell-to-Cell Communication
W. WILSON[1], K. SCHOELFIELD[1], J. WYDALLIS[1], R. FEENY[1], W. TEJIO[1], T. KERN[1], S. LANTVIT[1], C. HENRY[1], S. TOBET[1], M. REYNOLDS[1], AND T. CHEN[1]
[1]*Colorado State University, Fort Collins, CO*

9:00AM
Protease Detection Assay Based on Aggregation of Stimulus-Responsive Polypeptides
A. GHOORCHIAN[1], A. CHILKOTI[1], AND G. LOPEZ[1]
[1]*Duke University, Durham, NC*

9:15AM
Up-Regulation of Metabolites for Early Detection of Bacterial Pathogens in Human Biofluids
H. SISMAET[1], T. WEBSTER[1], AND E. GOLUCH[1]
[1]*Northeastern University, Boston, MA*

Track: Drug Delivery, Cancer Technologies
OP-Sat-1-14 - Room 103B
Cancer Drug Delivery I

Chairs: Natalie Artzi, Hao Cheng

8:00AM
Role of Endocytosis in Electrotransfection of Tumor Cells
M. WU[1], C-C. CHANG[1], AND F. YUAN[1]
[1]*Duke University, Durham, NC*

8:15AM
Mapping The CXCR4 Receptor On Breast Cancer Cells By AFM: A Tool For Engineering Targeted Drug Delivery Vehicles
B. WANG[1] AND D. AUGUSTE [1]
[1]*The City College of New York, New York, NY*

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

8:30AM
Systemic Delivery of Liposome-Anchored Cytokines Elicits Antitumor Immunity Without Lethal Toxicity
Y. ZHANG[1,2,3] AND D. IRVINE[1,2,3,4,5]
[1]Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, [2]Department of Biological Engineering, Massachusetts Institute of Technology, Cambridge, MA, [3]Koch Institute for Integrative Cancer Research, Massachusetts Institute of Technology, Cambridge, MA, [4]Ragon Institute of Massachusetts General Hospital, Massachusetts Institute of Technology, and Harvard, Cambridge, MA, [5]Howard Hughes Medical Institute, Chevy Chase, MD

8:45AM
Core/Shell Systems for Improved Control of the Externally Triggered Release of Chemotherapeutics
J. PETERS[1], N. LIZANA[1], I. VERMA[1], AND N. PEPPAS[1]
[1]The University of Texas at Austin, Austin, TX

9:00AM
A Long Circulating PVX-Based Nanoparticle for Enhanced Tumor Homing and Therapeutic Payload Delivery
K. LEE[1], S. SHUKLA[1], K. WEBER BONK[1], R. KERI[1], AND N. STEINMETZ[1]
[1]Case Western Reserve University, Cleveland, OH

Track: Neural Engineering, Device Technologies and Biomedical Robotics
OP-Sat-1-15 - Room 202A
Brain-computer Interfaces

Chairs: Chris Passaglia, Erkin Seker

8:00AM
Role of Interleukin 1β Converting Enzyme on Recording Performance and the Reactive Tissue Response Around Chronic Neural Electrode
T. KOZAI[1], X. LI[1], L. BODILY[1], E. CAPAROSA[1], D. CARLISLE[1], R. FRIEDLANDER[1], AND X. CUI[1]
[1]University of Pittsburgh, Pittsburgh, PA

8:15AM
Understanding the Immune Response to Intracortical Microelectrodes
J. HERMANN[1,2], M. RAVIKUMAR, PHD[1,2], J. JIANG[1,3], J. NGUYEN[1,2], S. SUNIL[1], C. WONG[1], A. SOFFER[1], V. SRIVASTAVA[1], D. TAYLOR, PHD[2,3], AND J. CAPADONA, PHD[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Louis Stokes Cleveland VA Medical Center, Cleveland, OH, [3]Cleveland Clinic Lerner Research Institute, Cleveland, OH

8:30AM
The Spatial Distribution of FBR Biomarkers Correlates with Recording Performance in Rats
N. NOLTA[1], M. CHRISTENSEN[1], AND P. TRESCO[1]
[1]University of Utah, Salt Lake City, UT

8:45AM
Modeling Mechanics of Flexible Neural Probes Coated in an Ultra-fast Degrading Polymer for Optimizing Probe Design
S. SINGH[1], M-C. LO[1], V. DAMODARAN[2], H. KAPLAN[2], J. KOHN[2], J. ZAHN[1], AND D. SHREIBER[1]
[1]Rutgers University, Piscataway, NJ, [2]New Jersey Center for Biomaterials, Piscataway, NJ

9:00AM
Flexible Neural Micoprobes Coated with a Fast Degrading Polymer as an Aid to Tissue Insertion
M-C. LO[1], S. SINGH[1], V. B. DAMODARAN[1], S. WANG[1], H. M. KAPLAN[1], K. COFFEY [1], D. BARKER [1], J. D. ZAHN[1], D. I. SHREIBER[1], AND J. KOHN[1]
[1]Rutgers, the State University of New Jersey, Piscataway, NJ

9:15AM
Extracellular Matrix Coatings for CNS Neural Recording Arrays
R. OAKES[1], M. POLEI[1], J. SKOUSEN[1], AND P. TRESCO[1]
[1]University of Utah, Salt Lake City, UT

Track: New Frontiers and Special Topics, Device Technologies and Biomedical Robotics
OP-Sat-1-16 - Room 202B
Global Health I

Chairs: Sergey Shevkoplyas, Leo Wan

8:00AM
A Low-cost, Paper-based Assay for Diagnosis of Sickle Cell Disease in Resource-limited Settings
N. PIETY[1], X. YANG[1], B. DINU[2], A. GEORGE[2], AND S. SHEVKOPLYAS[1]
[1]University of Houston, Houston, TX, [2]Baylor College of Medicine, Houston, TX

8:30AM
GlucoSense: Design of a Low Cost Diabetes Glucometer System
K. GAINEY[1], T. OVINGTON[1], J. DESJARDINS[1], AND D. DEAN[1]
[1]Clemson University, Clemson, SC

8:45AM
Immunomodulatory Nanoparticles Ameliorate Disease in the Leishmania (Viannia) panamensis Mouse Model
A. SIEFERT[1], A. EHRLICH[1], M. CORRAL CARIDAD[2], K. GOLDSMITH-PESTANA[1], D. MCMAHON-PRATT[1], AND T. FAHMY[1]
[1]Yale University, New Haven, CT, [2]Universidad Complutense de Madrid, Madrid, Spain

9:00AM
Towards Development of an Autonomous Network of BacteriaBots: High-Throughput Spatiotemporal Characterization of Bacterial Quorum-Sensing Response
A. SAHARI[1], M. TRAORE[1], A. STEVENS[1], B. SCHARF[1], AND B. BEHKAM[1]
[1]Virginia Tech, Blacksburg, VA

9:15AM
Increasing Access to HIV Medication in Developing Countries: An Operational, Feasibility Study in Zambia
A. DAHINTEN[1], J. EKUTA[1], AND R. MALKIN[1]
[1]Duke University, Durham, NC

Track: Biomedical Imaging and Optics
OP-Sat-1-17 - Room 203A
Ultrasound Imaging

Chairs: Baohong Yuan, Paul Carson

8:00AM
Development and Application of Ultrasound Techniques for Investigating Pathogenesis in Experimental Abdominal Aortic Aneurysms
E. PHILLIPS[1], A. YRINEO[1], H. SCHROEDER[1], F. DAMEN[1], A. BOGUCKI[1], S. JUBAER[1], A. JACKSON[1], R. FOLEY[1], N. BLAIZE[1], J-X. CHENG[1], AND C. GOERGEN[1]
[1]Purdue University, West Lafayette, IN

8:15AM
RSNA QIBA Ultrasound Shear Wave Speed: Sources of Variability in Phantoms, Simulations and Humans
P. CARSON[1], A. MILKOWSKI[2], T. HALL[3], B. GARRA[4], K. NIGHTINGALE[5], M. PALMERI[5], A. SAMIR[6], S. CHEN[7], T. LYNCH[8], N. ROUZE[5], M. DHYANI[6], AND D. SULLIVAN[5]
[1]Univ. of Michigan, Ann Arbor, MI, [2]Siemens Ultrasound, Issaquah, WA, [3]Univ. of Wisconsin, Madison, WI, [4]Veterans Health System, Hyattsville, MD, [5]Duke Univ., Durham, NC, [6]Mass. Gen'l Hospital, Boston, MA, [7]Mayo Clinic, Rochester, MN, [8]CIRS, Inc., Norfolk, VA

8:30AM
Ultrasound and Photoacoustic Imaging of Anatomical and Functional Indicators of Lymph Node Metastasis
G. LUKE[1] AND S. EMELIANOV[1]
[1]The University of Texas at Austin, Austin, TX

8:45AM
Formulation and *In Vitro* Characterization of Targeted Lipid-Pluronic Nanobubbles
P. KOTA[1], C. HERNANDEZ[1], H. WU[1], AND A. EXNER[1]
[1]*Case Western Reserve University, Cleveland, OH*

9:00AM
Skeletal Imaging and Assessment Using Hand-Held Focal Quantitative Ultrasound Technology
J. MUIR[1], L. LIN[1], J. CHENG[1], AND Y-X. QIN[1]
[1]*Stony Brook University, Stony Brook, NY*

9:15AM
Bipolar Nanosecond Electric Pulses Display Reduced Efficacy Due to Acoustic Interference
C. ROTH[1], R. BARNES[2], S. MASWADI[2], B. IBEY[3], H. BEIER[3], AND R. GLICKMAN[1]
[1]*UTHSCSA, San Antonio, TX,* [2]*UTSA, San Antonio, TX,* [3]*Air Force Research Laboratories, San Antonio, TX*

Track: Biomedical Imaging and Optics
OP-Sat-1-18 - Room 203B
Optical Imaging and Microscopy I

Chairs: Bernard Choi, Ken Tichauer

8:00AM
Near Infrared Fluorescent Neural Progenitor Cells to Track Differentiation and Tissue Innervation
A. MOHS[1,2], S. RAGHAVAN[1,2], R. GILMONT[2], S. SOMARA[2], F. MARINI[2], AND K. BITAR[1,2]
[1]*Wake Forest - Virginia Tech School of Biomedical Engineering and Sciences, Winston-Salem, NC,* [2]*Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC*

8:15AM
Imaging Three-Dimensional Nanoscale Morphometry of Type I Collagen Gels Using Focused Ion Beam Scanning Electron Microscopy
S. REESE[1], N. FARHANG[1], AND J. WEISS[1]
[1]*University of Utah, Salt Lake City, UT*

8:30AM
Light-sheet Single-Molecule Super-resolution Imaging of Tissues
Y. HU[1], Z. KATZ[1], B. LILLEMEIER[1], AND H. CANG[1]
[1]*Salk Institute, La Jolla, CA*

8:45AM
Intracellular Three-Dimensional Single-Particle Tracking with Multiplexed Two-Photon Excitation
E. PERILLO[1], Y-L. LIU[1], C. LIU[1], H-C. YEH[1], AND A. DUNN[1]
[1]*The University of Texas Austin, Austin, TX*

9:00AM
Large Scale, High Resolution Imaging with a Simple and Robust Super-resolution Light Sheet Microscopy
P. FEI[1]
[1]*UCLA, Los Angeles, CA*

9:15AM
Ultra-Wide Field-Of-View Gigapixel Fluorescent Imaging System Using A Modified Flatbed Scanner
Z. GÖRÖCS[1], Y. LING[1], M. YU[1], D. KARAHALIOS[1], K. MOGHARABI[1], K. LU[1], Q. WEI[1], AND A. OZCAN[1,2]
[1]*University of California, Los Angeles, Los Angeles, CA,* [2]*California NanoSystems Institute, Los Angeles, CA*

Track: Cancer Technologies, Nano to Micro Technologies
OP-Sat-1-19 - Room 103A
Nanotechnologies for Cancer I

Chairs: Carlos Rinaldi, Craig Duvall

8:00AM
Resources For Preclinical Characterization Of Nanomaterials For Cancer Diagnosis, Imaging & Therapy
N. PANARO[1], S. STERN[1], A. PATRI[1], AND S. MCNEIL[1]
[1]*Leidos Biomedical Research, Frederick, MD*

8:15AM
In Vivo Targeting of Tumor Associated Macrophages Using Mannosylated Endosomal-Escape Nanoparticles
R. ORTEGA[1], W. BARHAM[1], I. MCFADDEN[1], O. TIKHOMIROV[1], K. SHARMAN[1], F. YULL[1], AND T. GIORGIO[1]
[1]*Vanderbilt University, Nashville, TN*

8:30AM
Targeting Nanotechnology to Invasive Brain Tumors
P. PEIRIS[1], A. ABRAMOWSKI[1], L. BAUER[1], R. TOY[1], E. DOOLITTLE[1], S. RAO[1], S. SHAH[1], K. GHAGHADA[2], S. BRADY-KALNAY[1], J. BASILION[1], M. GRISWOLD[1], AND E. KARATHANASIS[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Texas Children's Hospital, Houston, TX*

8:45AM
A Novel Triple Negative Breast Cancer Theranostic Target for Nanomedicine
P. GUO[1] AND D. AUGUSTE[2]
[1]*Boston Children's Hospital, Boston, MA,* [2]*City College of New York, New York, NY*

9:00AM
In Vivo Targeting of Adoptively Transferred T-cells with Nanoparticles for Cancer Immunotherapy
Y. ZHENG[1,2] AND D. IRVINE[1,2,3,4]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Koch Institute for Integrative Cancer Research, MIT, Cambridge, MA,* [3]*Ragon Institute of Massachusetts General Hospital, MIT and Harvard University, Cambridge, MA,* [4]*Howard Hughes Medical Institute, Chevy Chase, MD*

9:15AM
In Vivo Multiplex Photoacoustic Molecular Imaging for Optimization of Nanoparticle Targeting and Kinetics
C. BAYER[1], G. LUKE[1], AND S. EMELIANOV[1]
[1]*The University of Texas at Austin, Austin, TX*

PLATFORM SESSIONS Sat-1

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

Track: Biomedical Engineering Education (BME)
OP-Sat-1-20 - Room 204A

Novel Laboratory Modules

Chairs: Ann Saterbak, Chris Geiger

8:00AM
Teaching Sequential Design of Experiments and Biomedical Process Optimization
J. Audet[1]
[1]*University of Toronto, Toronto, ON, Canada*

8:15AM
"Building Blocks" for Inventing Instruments in the Classroom
D. Hill[1], L. Anderson[1], C. Hill[1], and W. Grover[1]
[1]*University of California, Riverside, Riverside, CA*

8:30AM
Receiving Feedback from Instructor and Peers Increases the Quality of Written Reports in a Biomedical Instrumentation Laboratory Course
R. Ramos[1]
[1]*Rice University, Houston, TX*

8:45AM
Integrating 3D Additive Manufacturing Technologies into a Tissue Engineering Lab Course
A. Feinberg[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

9:00AM
A Two-Dimensional Motion Analysis Laboratory for Introductory Courses in Biomedical Engineering
C. Henak[1] and S. Archer[1]
[1]*Cornell University, Ithaca, NY*

9:15AM
Cloud Experimentation And Biotic Games As Novel Media For Bioengineering Education
I. Riedel-Kruse[1], Z. Hossain[1], A. Chung[1], and N. Cira[1]
[1]*Stanford Bioengineering, Stanford, CA*

SPECIAL SESSION
8:00 AM – 9:30 AM
Ballroom A, Convention Center

Advanced Biomanufacturing: Application Towards the Next Generation Therapies and Diagnostics

Advanced Biomanufacturing is an emerging field in biomedical engineering. Unlike conventional bioprocessing technologies, advanced biomanufacturing builds on the groundbreaking discoveries such as 3D additive manufacturing, genome editing, cell reprogramming and transdifferentiation, systems and synthetic biology, stem cell biology, computational modeling, micro and nanofabrication, material genomes, biomaterials, tissue engineering and regenerative medicine. A group of leading scientists have worked together and recently launched a BMES special interest group (SIG) for advanced biomanufacturing (ABioM-SIG). The objective of the BMES SIG is to bring academic and industrial leaders together to promote the development of advanced biomanufacturing, foster collaborations among investigators in the field, and create a new mode of educating and training the next generation leaders and workforce in advanced biomanufacturing. This inaugural session is the BMES ABioM-SIG's first official session to discuss opportunities and grand challenges in advanced biomanufacturing and to lay out a strategic plan to spur research, education, and industry growth and innovation in advanced biomanufacturing towards significant benefits to the patient population and the society at large.

SPEAKERS:

Microphysiological Tissue Platforms for Drug Testing in Human Health and Disease
GORDANA VUNJAK-NOVAKOVIC, *Professor, Department of Biomedical Engineering and Department of Medical Sciences, Columbia University,*

Advanced Biomanufacturing: A New Wave of Biomedical Engineering
KAIMING YE, *Professor and Department Chair, Department of Bioengneering, State University of New York, Binghamton (SUNY Binghamton)*

On the Threshold – Advanced Biomanufacturing and Clinical Challenges
PETER DILLON, *Professor and Department Chair, Department of Surgery, Penn State Milton S. Hershey Medical Center, Penn State College of Medicine*

Moderator: ATHANASSIOS SAMBANIS
Panelists: CHENG DONG, KAM LEONG, DAVID KAPLAN, GANG BAO, AND GILDA BARABINO

SATURDAY, October 25, 2014

1:30 PM - 3:00 PM

PLATFORM SESSIONS – SAT - 2

Track: Tissue Engineering, Stem Cell Engineering
OP-Sat-2-1 - Room 001A
Adult Stem Cells in Tissue Engineering

Chairs: Liping Tang, Michelle Dawson

1:30PM

TGF-β 1 Pretreatment Improves The Function Of Mesenchymal Stem Cells In The Wound Bed

D. Ghosh[1], D. McGrail[1], and M. Dawson[1]

[1]*Georgia Institute of Technology, Atlanta, GA*

1:45PM

Photocrosslinkable, Biodegradable Hydrogels with Controlled Cell Adhesivity for Tunable siRNA Delivery to Encapsulated hMSCs

M. Nguyen[1], D. Schapira[1], A. McMillan[1], and E. Alsberg[1]

[1]*Case Western Reserve University, Cleveland, OH*

2:00PM

Gelatin-based Injectable Microspheres for Encapsulating Mesenchymal Stem Cells

B. Sung[1], S. Shaffer [1], C. Kim[1], and M-H. Kim[1]

[1]*Kent State University, Kent, OH*

2:15PM

A Novel 'Differentiation Niche' Promoting Stem Cell Differentiation to Smooth Muscle Lineage

L. Velutheril Thomas[1] and J. L.West[1]

[1]*Duke University, Durham, NC*

2:30PM

Hypoxic Modulation of Mesenchymal Stem Cells Affects Macrophage Function for Ischemic Tissue Repair

L. Ricles[1], E. Chung[1], N. Kopcho[1], and L. Suggs[1]

[1]*The University of Texas at Austin, Austin, TX*

2:45PM

Tissue Regeneration Using Scaffold-mediated Autologous Progenitor Cell Responses *In Vivo*

A. Nair [1], J. Shen[1], C. Zhang[2], R. Saxena[2], J. Borrelli[3], R. Tran[4], J. Yang[4], and L. Tang[1]

[1]*University of Texas at Arlington, Arlington, TX,* [2]*University of Texas Southwestern Medical Center at Dallas, Dallas, TX,* [3]*Texas Health Arlington Memorial Hospital, Arlington, TX,* [4]*Pennsylvania State University, University Park, PA*

Track: Biomaterials, Cellular and Molecular Bioengineering
OP-Sat-2-2 - Room 001B
Biomaterials for Immunoengineering I

Chairs: Jeffrey Capadona, Adam Ekenseair

1:30PM

The Aggregate Structure of Self-Assembled Nanocarriers Specifies Their *In Vivo* Uptake By Antigen Presenting Cell Subsets

E. Scott[1], A. de Titta[2], and J. Hubbell[2]

[1]*Northwestern University, Evanston, IL,* [2]*EPFL, Lausanne, Switzerland*

1:45PM

Nanomaterials-based Vaccines for Cocaine Addiction

R. Appavu[1], C. Ding[1], S. Stutz[1], Y. Ding[1], K. Cunningham[1], J. Zhou[1], and J. Rudra[1]

[1]*Department of Pharmacology and Toxicology, Center for Addiction Research, University of Texas Medical Branch, Galveston, TX*

2:00PM

M2e Conjugated Gold Nanoparticles Protect Against H1N1, H3N2 and H5N1 Influenza A Viruses

W. Tao[1], E. Tarbet[2], and H. Gill[1]

[1]*Texas Tech Univeristy, Lubbock, TX,* [2]*Utah State University, Logan, UT*

2:15PM

Immunogenicity and Adjuvanticity of Biologically Derived Nanoparticles

Y. Wang[1], Y. Huang[1], L. Sun[1], and M. Zhang[1]

[1]*Ohio State University, Columbus, OH*

2:30PM

Membrane-interacting, Amphiphilic Gold Nanoparticles: Mechanisms for Bilayer-embedding and Applications in Peptide Vaccine Therapy

P. Atukorale[1], K. Moynihan[1], D. Yun[1], and D. Irvine[1]

[1]*Massachusetts Institute of Technology, Cambridge, MA*

2:45PM

Pre-clinical Development of a Biomaterial-based Microparticle Vaccine for Type 1 Diabetes Attenuation

J. Lewis[1], M. Carstens[1], N. Dolgova[1], C-Q. Xia[1], M. Clare-Salzler[1], and B. Keselowsky[1]

[1]*University of Florida, Gainesville, FL*

Track: Biomaterials
OP-Sat-2-3 - Room 006A
Biomaterials Design I

Chairs: Abigail Koppes, Matt Kipper

1:30PM *Invited*

Biomaterials Design for Enhanced Vascularization and Healing

[1]G. Vunjak-Novakovic

[1]*Columbia University, New York, NY*

2:00PM

Periadventitial Application of Rapamycin-Loaded Nanoparticles Produces Sustained Inhibition of Vascular Restenosis

G. Chen[1], X. Shi[2], L. Guo[2], K. Kent[2], and S. Gong[1,3]

[1]*Materials Science Program and Wisconsin Institute for Discovery, University of Wisconsin–Madison, Madison, WI,* [2]*Department of Surgery, University of Wisconsin Hospital and Clinics, Madison, WI,* [3]*Department of Biomedical Engineering, University of Wisconsin–Madison, Madison, WI*

2:15PM

Polysaccharide Mediated Pore Formation For 3D Myotube Formation

M. Rich[1], M. Lee[1], N. Marshall[2], J. Chen[1], and H. Kong[1]

[1]*University of Illinois, Urbana, IL,* [2]*Drake University, Des Moines, IA*

2:30PM

Polycarbonates Built From the Polyhydroxyl Natural Products Quinic Acid and Glucose: Tuning the Thermal, Mechanical, and Surface Properties for Degradable Medical Plastics Applications

L. Link[1], T. Gustafson[1], A. Lonnecker[1], J. Raymond[1], K. Hearon[1], C. Maher[1], D. Maitland[1], and K. Wooley[1]

[1]*Texas A&M University, College Station, TX*

2:45PM

Rheological and Mechanical Characterization of Biocomposites Based on Chitosan with Potential Use as Bone Adhesives

L. Pinzon[1], F. Cedano[1], F. Salcedo[1], J. Casas[1], C. Moreno[1], J. Briceno[1], and D. Tabima[1]

[1]*Universidad de los Andes, Bogota, Colombia*

PLATFORM SESSIONS Sat-2

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

Track: Biomechanics, Cardiovascular Engineering
OP-Sat-2-4 - Room 006B
Aortic Biomechanics

Chairs: Craig Goergen, Zhijie Wang

1:30PM
Translation of AAA Rupture Risk Assessment: Wall Mechanics and Geometric Quantification
S. Raut[1], J. Shum[2], and E. Finol[3]

[1]University of Texas at Austin, Austin, TX, [2]Carnegie Mellon University, Pittsburgh, PA, [3]University of Texas at San Antonio, San Antonio, TX

1:45PM
Role of Aneurysm on Biomechanics of Radially-Oriented Fibers in Human Ascending Thoracic Aorta
A. Tsamis[1], S. Pal[2], J. Phillippi[2], S. Pasta[3], A. D'Amore[2,3], T. Gleason[2], D. Vorp [2], and S. Maiti[2]

[1]Carnegie Mellon University, Pittsburgh, PA, [2]University of Pittsburgh, Pittsburgh, PA, [3]Fondazione Ri.MED and DICGM University of Palermo, Palermo, Italy

2:00PM
The Role of Heparanase in Aneurysm Development and Cardiac Function
V. Le[1] and A. Baker[1]

[1]University of Texas at Austin, Austin, TX

2:15PM
A Biochemomechanics Model of Stress-Mediated Vascular Adaptation in Normal Physiological Conditions
H. Getachew[1] and S. Baek[1]

[1]Michigan State University, East Lansing, MI

2:30PM
Viscoelastic Characterization of Damage Progress in Porcine Aortic Tissues *In Vitro*
M. Sharma[1], A. Valdevit[1], C. Perlman[1], Y. Wu[1], A. Kharge[1], and D. Shahmirzadi[1]

[1]Stevens Institute of Technology, Hoboken, NJ

2:45PM
An Alternative Method to Measure the Diameter of Abdominal Aortic Aneurysms Using Maximally Inscribed Spheres
H. Gharahi[1], B. Zambrano[1], C. Lim[1], J. Choi[1], W. Lee[2], and S. Baek[1]

[1]Michigan State University, East Lansing, MI, [2]Seoul National University Hospital, Seoul, Korea, Republic of

Track: Biomechanics
OP-Sat-2-5 - Room 006C
Ocular Biomechanics

Chairs: Ross Ethier, Matthew Reilly

1:30PM
Effect Of Cell Stiffness On Transcellular And Paracellular Pore Formation In Schlemm's Canal Cells
M. Johnson[1], S. Braakman[2], R. Pedrigi[2], A. Vahabikashi[1], J. Sherwood[2], R. Vargas-Pinto[1], R. Gupta[2], K. Perkumas[3], W. Stamer[3], C. Ethier[4], and D. Overby[2]

[1]Northwestern University, Evanston, IL, [2]Imperial College London, London, United Kingdom, [3]Duke University, Durham, NC, [4]Georgia Tech, Atlanta, GA

1:45PM
The Role of Ocular Lens-Specific Proteins In Determining Lens Optical and Mechanical Properties
M. Reilly[1], S. Kumar[1], B. Rapp[2], N. Ravi[3,4], P. Hamilton[4], M. Leroux[1], A. Shiels[1], and B. Marchand[1]

[1]University of Texas at San Antonio, San Antonio, TX, [2]Indiana University Health, Indianapolis, IN, [3]Washington University in St. Louis, St. Louis, MO, [4]Department of Veterans Affairs, St. Louis, MO

2:00PM
Effect of Orbital Geometry on Eye Response to Survivable Primary Blast Overpressure
V. Alphonse[1], A. Kemper[1], and S. Duma[1]

[1]Virginia Tech - Wake Forest University Center for Injury Biomechanics, Blacksburg, VA

2:15PM
Matrix Stiffening Contributes to Retinal Endothelial Inflammation Associated with Diabetic Retinopathy
X. Yang[1], H. Scott[1], S. Ardekani[1], and K. Ghosh[1]

[1]University of California, Riverside, Riverside, CA

2:30PM
Ocular Compliance in Mice
S. Schwaner[1], J. Sherwood[2], E. Geisert[3], D. Overby[2], and C. Ethier[1]

[1]Georgia Institute of Technology, Atlanta, GA, [2]Imperial College London, London, United Kingdom, [3]Emory University, Atlanta, GA

2:45PM
Primary Blast Influences Incidence and Severity of Ocular Injury in a Porcine Eye Model
D. Sherwood[1], B. Lund[2], R. Glickman[3], W. Sponsel[1,4], W. Gray[1], R. Watson[1], K. Thoe[4], and M. Reilly[1]

[1]University of Texas San Antonio, San Antonio, TX, [2]U.S. Army Institute of Surgical Research, Ft Sam Houston, TX, [3]University of Texas Health Science Center at San Antonio, San Antonio, TX, [4]WESMDPA, San Antonio, TX

Track: Cancer Technologies, Nano to Micro Technologies
OP-Sat-2-6 - Room 006D
Microtechnologies for Cancer I

Chairs: Rafael Davalos, Samir Iqbal

1:30PM
Dielectrophoretic Isolation and Detection of Cancer Related Circulating Cell Free DNA Biomarkers from Blood and Plasma
M. Heller[1]

[1]University of California San Diego, La Jolla, CA

1:45PM
Circulating Tumor Cell Cluster-Chip
A. Sarioglu[1], N. Aceto[1], N. Kojic[1], M. Donaldson[1], M. Zeinali[1], B. Hamza[1], A. Engstrom[1], H. Zhu[1], T. Sundaresan[1], D. Miyamoto[1], X. Luo[1], A. Bardia[1], B. Wittner[1], S. Ramaswamy[1], T. Shioda[1], D. Ting[1], S. Stott[1], R. Kapur[1], S. Maheswaran[1], D. Haber[1], and M. Toner[1]

[1]Harvard Medical School, Charlestown, MA

2:00PM
Platelet-Targeted Microfluidic Isolation of Circulating Tumor Cells
X. Jiang[1], A. Khankhel[1], E. Reategui[1], M. Zeinali[1], M. Phillips[1], F. Fachin[1], A. Hoang[1], A. Jensen[1], L. Sequist[2], S. Maheswaran[2], D. Haber[2], S. Stott[1], and M. Toner[1]

[1]Massachusetts General Hospital and Harvard Medical School, Boston, MA, [2]Massachusetts General Hospital Cancer Center and Harvard Medical School, Boston, MA

2:15PM
Non-Fixative Preservative Solution for Stabilizing Circulating Tumor Cells in Whole Blood
R. Sandlin[1], K. Wong[1], T. Carey[1], A. Khankhel[1], A. Shank[1], J. Walsh[1], D. Irimia[1], S. Maheswaran[1], D. Haber[1], S. Stott[1], and M. Toner[1]

[1]Massachusetts General Hospital, Harvard Medical School, Charlestown, MA

2:30PM
Shear-responsive Nanocoating for Single Circulating Tumor Cell DNA Analysis
E. Reátegui[1,2], N. Aceto[2,3], J. Sullivan[2,3], A. Jensen[1], E. Lim[4], M. Zeinali[1], J. Martel[1,2], A. Aranyosi[1], W. Li[4], A. Bardia[3], L. Sequist[3], D. Haber[3,5], S. Maheswaran[3], P. Hammond[4], M. Toner[1,2], and S. Stott[1,3]

[1]Center for Engineering in Medicine, Massachusetts General Hospital, Charlestown, MA, [2]Harvard Medical School, Boston, MA, [3]Massachusetts General Hospital Cancer Center, Charlestown, MA, [4]Massachusetts Institute of Technology, Cambridge, MA, [5]Howard Hughes Medical Institute, Chevy Chase, MD

2:45PM
Detecting DNA Damage Electrically With Solid-State Nanopores
M. MARSHALL[1], J. RUZICKA[1], E. TAYLOR[1], AND A. HALL[2]
[1]University of North Carolina Greensboro, Greensboro, NC, [2]Wake Forest University School of Medicine, Winston-Salem, NC

Track: Stem Cell Engineering, Tissue Engineering
OP-Sat-2-7 - Room 007A
Directing Stem Cell Differentiation

Chairs: Steven George, Randolph Ashton

1:30PM *Invited*
Membrane Capacitance Indicates Neural Stem Cell Fate Via Specific Cell Surface Molecules
J. NOURSE[1], S. AHMED[1], J. ARULMOLI[1], B. POVIENG[1], L. MCDONNELL[1], C. SOEMARDY[1], AND L. FLANAGAN[1]
[1]University of California Irvine, Irvine, CA

1:45PM
Nanog Restores the Lost Myogenic Capacity of Senescent Stem Cells
P. MISTRIOTIS[1], M. LIANG[1], L. KARACOSTA[2], AND S. ANDREADIS[1]
[1]University at Buffalo, Amherst, NY, [2]University at Buffalo, Buffalo, NY

2:00PM
Oxygenation Augments Myogenic Differentiation of Mesenchymal Stem Cells under Ischemic Conditions
Y. XU[1], M. FU[1], Z. LI[1], X. LI[1], Z. FAN[1], P. ANDERSON[1], Z. LIU[1], AND J. GUAN[1]
[1]The Ohio State University, Columbus, OH

2:15PM
Direct Conversion of Skin Stem Cells into Functional Neural Crest Fate
V. BAJPAI[1] AND S. ANDREADIS[1]
[1]University at Buffalo, Amherst, NY

2:30PM
Directed *In Vitro* Myogenesis of Human Embryonic Stem Cells and Their *In Vivo* Delivery Using Biomimetic Materials
S. VARGHESE[1], H. KABRA[2], Y. HWANG[2], AND M. KAR[2]
[1]UC San Diego, La Jolla, CA, [2]UCSD, La Jolla, CA

PLATFORM SESSIONS **Sat-2**

Track: Cardiovascular Engineering
OP-Sat-2-8 - Room 007B
Heart Valves and Stents I

Chairs: Michael Sacks, Craig Simmons

1:30PM
Simulation of Heart Valve Biomaterial Fatigue
M. SACKS[1]
[1]University of Texas at Austin, Austin, TX

1:45PM
A Comparative Analysis of Valvular Cell Calcification from Coronary or Non-coronary Aortic Valve Cusps
S. MASJEDI[1], R. ACHARYA[1], AND Z. FERDOUS[1]
[1]University of Tennessee, Knoxville, TN

2:00PM
Pharmacological Targeting of Cadherin-11 Prevents Valvular Calcific Nodule Formation
M. BOWLER[1] AND W. MERRYMAN[1]
[1]Vanderbilt University, Nashville, TN

2:15PM
The Role of Valve Interstitial Cell Structure on Initiation and Progression of Aortic Valve Disease
A. RAZAVI[1], J. CARRADINI[1], AND K. BALACHANDRAN[1]
[1]University of Arkansas, Fayetteville, AR

2:30PM
Novel Mechanism of Directing Osteoblastic-like Differentiation in Valvular Interstitial Cells
E. HEDBERG-DIRK[1] AND M. RUSH[1]
[1]University of New Mexico, Albuquerque, NM

2:45PM
Effect of Boundary Stiffness on Maintenance of Myofibroblast Phenotype
M. KURAL[1] AND K. BILLIAR[1]
[1]Worcester Polytechnic Institute, Worcester, MA

Track: Cellular and Molecular Bioengineering
OP-Sat-2-9 - Room 007C
Young Innovator Session II

Chairs: Cynthia Reinhart-King, Deborah Leckband

1:30PM
The Relative Role of Soluble Guanylyl Cylase Dependent and Independent Pathways in Nitric Oxide Inhibition of Platelet Aggregation Under Flow
J. SYLMAN[1], S. LANTVIT[2], M. REYNOLDS[2], AND K. NEEVES[1]
[1]Colorado School of Mines, Golden, CO, [2]Colorado State University, Ft Collins, CO

1:42PM
Depolarization of Resting Membrane Potential Stimulates Neonatal Cardiomyocyte Proliferation *In Vitro*
J-Y. LAN[1], C. WILLIAMS[1], M. LEVIN[1], AND L. BLACK III[1,2]
[1]Tufts University, Medford, MA, [2]Tufts University School of Medicine, Boston, MA

1:54PM
Membranes Promote Endothelial Differentiation of Adipose-Derived Stem Cells and Perivascular Interactions
A. MAZZOCCHI[1], J-P. DESORMEAUX[2], A. MAN[1], AND T. GABORSKI[1]
[1]Rochester Institute of Technology, Rochester, NY, [2]SiMPore Inc., West Henrietta, NY

2:06PM
Microscale Bio-adhesive Hydrogel Arrays for Cell Engineering Applications
R. PATEL[1], A. PURWADA[1], A. GAHARWAR[2], AND A. SINGH[1]
[1]Cornell University, Ithaca, NY, [2]Texas A&M University, College Station, TX

2:18PM
Nuclear Deformability Constitutes a Rate-limiting Step During Cell Migration in 3-D Environments
P. DAVIDSON[1], C. DENAIS[1], M. BAKSHI[1], AND J. LAMMERDING[1]
[1]Cornell University, Ithaca, NY

2:30PM
Electrospun Polymers for Reprogramming Human Cells
T. CORDIE[1], T. HARKNESS[1], X. JING[1], H-Y. MI[1], L-S. TURNG[1], AND K. SAHA[1]
[1]University of Wisconsin-Madison, Madison, WI

2:42PM
Endometriotic Epithelial Cell Response to Macrophage-Secreted Factors is Dependent on Extracellular Matrix Context
K. POLLOCK[1], T. JARACZEWSKI[1], M. CARROLL[1], D. LEBOVIC[2], AND P. KREEGER[1]
[1]University of Wisconsin-Madison, Madison, WI, [2]University of Wisconsin School of Medicine and Public Health, Madison, WI

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

Track: Drug Delivery
OP-Sat-2-10 - Room 007D
Targeted Drug Delivery I

Chairs: Yun Wu, Michael Davis

1:30PM
A Universal Protein Tag for Delivery of SiRNA - Aptamer Chimeras
H. Liu[1] and X. Gao[2]
[1]Georgia Regents University, Evans, GA, [2]University of Washington, Seattle, WA

1:45PM
Local Inhibition of MMPs in Abdominal Aortic Aneurysm Rat Model Using Anti-elastin Decorated Nanoparticles Loaded with Batimastat
N. Nosoudi[1], A. Sinha[1], P. Nahar[1], and N. Vyavahare[1]
[1]Clemson University, Clemson, SC

2:00PM
Membrane-Embedding Nanoparticles as Cytosolic Drug Delivery Vehicles for Infectious Diseases.
Y-S. Yang[1], A. Bekdemir [2], F. Stellacci[2], and D. Irvine[3]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, [3]Massachusetts Institute of Technology and Howard Hughes Medical Institute, Cambridge, MA

2:15PM
Selective Enhancement of Macropinocytosis For The Delivery Of a Mitochondriotoxic Peptide To Non-Small Cell Lung Cancer (NSCLC)
R. Iglesias[1] and P. Koria[1]
[1]University of South Florida, Tampa, FL

2:30PM
Targeting of Atheroprone Vasculature for Diagnostic Imaging and Prophylactic Drug Delivery
L. Hofmeister[1], S. Lee[1], W. Chen[1], T. Giorgio[1], D. Harrison[1], and H-J. Sung[1]
[1]Vanderbilt University, Nashville, TN

2:45PM
Soluble Epoxide Hydrolase Inhibitor for Nerve Regeneration: Delivery by a Synthetic Nerve Conduit.
C. Terry[1], J. Agarwal[1], Y. He[1], S. Heilshorn[2], C. Morisseau[3], and J. Shea[1]
[1]University of Utah, Salt Lake City, UT, [2]Stanford University, Stanford, CA, [3]UC Davis, Davis, CA

Track: Nano to Micro Technologies, Device Technologies and Biomedical Robotics
OP-Sat-2-11 - Room 008A
Cells Tissues and Organs on Chip II

Chairs: Shannon Weigum, Joseph Kinsella

1:30PM
Inflammatory Cell Trafficking Dynamics Across the Blood-Brain Barrier on a Novel Fluidic Platform
C. Palmiotti[1], R. Beard[2], A. Conway[1], F. Sinatra[1], S. Yuan[2], S. Sundaram[1], and A. Achyuta[3]
[1]Draper Laboratory, Tampa, FL, [2]Dept. of Molecular Pharmacology & Physiology, Morsani College of Medicine, University of South Florida, Tampa, FL, [3]Draper Laboratory, Cambridge, MA

1:45PM
Body-on-a-Chip Simulation with Gastrointestinal Tract and Liver Tissues Suggests that Ingested Nanonanoparticles Have the Potential to Cause Liver Injury
M. Esch[1], G. Mahler[2], T. Stokol[1], and M. Shuler[1]
[1]Cornell University, Ithaca, NY, [2]Binghamton University, Binghamton, NY

2:00PM
A Microfluidic Vascular Injury Model Using Heat-induced Endothelial Cell Activation
J. Sylman[1], S. Retterer[2], K. Rana[1], and K. Neeves[1,3]
[1]Colorado School of Mines, Golden, CO, [2]Oak Ridge National Laboratory, Oak Ridge, TN, [3]University of Colorado Denver, Denver, CO

2:15PM
Digital Microfluidic Immunocytochemistry in Single Cells (DISC) for Analysis of Cell Signaling
A. H. C. Ng[1], M. D. Chamberlain[1], and A. R. Wheeler[1]
[1]University of Toronto, Toronto, ON, Canada

2:30PM
Microfluidic Reconstruction of 3D Osteocyte Network and Mechanotransduction Function
Y. Gu[1], Q. Sun[1], W. Zhang[1], J. Zilberberg[2], A. Valdevit[1], and W. Lee[1]
[1]Stevens Institute of Technology, Hoboken, NJ, [2]Hackensack University Medical Center, Hackensack, NJ

2:45PM
A Microfluidic Platform For Dopaminergic Neuron Growth And In-Line Dopamine Uptake Measurements
Y. Yu[1], M. Shamsi[1], D. Krastev[1], and A. Wheeler[1]
[1]University of Toronto, Toronto, ON, Canada

Track: Respiratory Bioengineering, New Frontiers and Special Topics
OP-Sat-2-12 - Room 008B
Translational Respiratory Engineering

Chairs: Joseph Bull, William Federspiel

1:30PM *Invited*
Respiratory Devices – "Bench to Bedside"
P. DeComo[1]
[1] ALung Technologies, Inc., Pittsburgh, PA

1:45PM
An Acoustic Method for Detecting Air Flow in Artificial Airways
K. Yang[1], A. Muelenaer[2,3], A. Wicks[4], and T. Ruscher[4]
[11] Burton Center for Arts and Technology- Center for Engineering, Salem, VA, [2]Carilion Clinic Children's Hospital, Roanoke, VA, [3]Virginia Tech Carilion School of Medicine, Roanoke, VA, [4]Virginia Tech, Blacksburg, VA

2:00PM
In Vitro Performance Of A Compact Integrated Blood Pump-Oxygenator For Ambulatory Respiratory Assist
S. Madhani[1], B. Frankowski[1], C. Bermudez[1], and W. Federspiel[1]
[1]University of Pittsburgh, Pittsburgh, PA

2:15PM
Microtopographies LIMIT Bacterial Biofilm Accumulation: A Novel Approach to Decreasing Ventilator-Associated Pneumonia CASES
E. Mann[1], R. May[1], R. Mettetal[1], A. Brennan[2], and S. Reddy[1]
[1]Sharklet Technologies, Inc, Aurora, CO, [2]University of Florida, Gainesville, FL

2:30PM
Modeling A Novel Design For A Total Artificial Lung With Enhanced Flow Mixing
P. Fernando[1], H. Cheriyan[1], J. Bull[1], and R. Bartlett[1]
[1]University of Michigan, Ann Arbor, MI

2:45PM
Personalized Predictions of Recruitment, Derecruitment, and Tissue Distention in the Injured Lung
B. Smith[1], L. Lundblad[1], J. Satalin[2], M. Kollisch-Singule[2], B. Emr[2], K. Snyder[2], L. Gatto[3], P. Andrews[4], N. Habashi[4], G. Nieman[2], and J. Bates[1]
[1]University of Vermont, Burlington, VT, [2]SUNY Upstate Medical University, Syracuse, NY, [3]SUNY Cortland, Cortland, NY, [4]University of Maryland, Baltimore, MD

Track: Device Technologies and Biomedical Robotics, Translational Biomedical Engineering
OP-Sat-2-13 - Room 201
Biosensors II: Applications

Chairs: Sihong Wang, Lissett Bickford

1:30PM
Multimarker Diabetes Management Device
J. La Belle[1,2] and C. Cook[2]
[1]Arizona State University, Tempe, AZ, [2]Mayo Clinic College of Medicine, Scottsdale, AZ

1:45PM
Colorimetric Detection of Substrate Binding to Cytochrome P450 with Plasmonic Nano Lycurgus Cup Array
L. Plucinski[1], A. Hsiao[1], M. Gartia[1], W. Arnold[1], A. Ameen[1], A. Das[1], and G. Liu[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

2:00PM
Rapid And No-wash Detection Of Avianin Fluenza A Virus From Clinical Swab Samples
C. Cheng[1], H. Cui[1], Q. Yuan[1], J. Wu[1], and S. Eda[1]
[1]The University of Tennessee, Knoxville, TN

2:15PM
A Focused Surface Acoustic Wave Device for Rapid and Sensitive Detection of Listeria Monocytogenes Based on Recombinase Polymerase Amplification
L. Ren[1], F. Guo[1], Y. Chen[1], P. Li[1], Y. Xie[1], and T. Huang[1]
[1]Penn state university, State College, PA

2:30PM
Multi-Modal System For Monitoring Cellular Behavior
L. Wong[1], C. Manjunath[1], M. Perez[1], C. Horner[1], M. Maldonado[1], and J. Nam[1]
[1]University of California, Riverside, Riverside, CA

2:45PM
Multi-Electrode Sensing for Signal-to-Noise Ratio Enhancement of Impedance Cytometry
S. Emaminejad[1], S. Talebi[1], R. Davis[1], and M. Javanmard[1]
[1]Stanford University, Stanford, CA

PLATFORM SESSIONS **Sat-2**

Track: Drug Delivery, Cancer Technologies
OP-Sat-2-14 - Room 103B
Cancer Drug Delivery II

Chairs: Beata Chertok, Omolola Eniola-Adefeso

1:30PM
Hydrophobically Modified Glycol Chitosan Nanoparticles: Enzymatic Stability, pH Responsiveness, Biocompatibility and Uptake
G. Suarato[1], A. Chin[2], and Y. Meng[1]
[1]Stony Brook University, Stony Brook, NY, [2]Rensselaer Polytechnic Institute, Troy, NY

1:45PM
Unnatural Killer Cells:TRAIL-coated Leukocytes Kill Cancer Cells in a Spontaneous Metastasis Mouse Model of Prostate Cancer
M. Mitchell[1], E. Wayne[1], C. Schaffer[1], and M. King[1]
[1]Cornell University, Ithaca, NY

2:00PM
Nanotechnology Strategies to Improve Therapeutic Relevancy of Cisplatin for Malignant Gliomas
C. Zhang[1], E. Nance[1], P. Mastorakos[1], J. Chisholm[1], S. Berry[1], J. Suk[1], and J. Hanes[1]
[1]Center for Nanomedicine at the Wilmer Eye Institute, Johns Hopkins University School of Medicine, Baltimore, MD

2:15PM
Polyanionic Nanoscale Hydrogels for the Oral Delivery of Chemotherapeutics
A. Puranik[1], D. Spencer[1], V. White[1], L. Pao[1], and N. Peppas[1]
[1]The University of Texas at Austin, Austin, TX

2:30PM
Non-viral DNA Delivery to Human Adipose Mesenchymal Stem Cells for Glioblastoma Treatment
A. Denduluri[1], S. Tzeng[1], K. Kozielski[1], O. Wijesekera[2], A. Mangraviti[2], K. Chaichana[2], H. Guerrero-Cazares [2], J. Green[3], and A. Quinones-Hinojosa[2]
[1]Dept. of Biomedical Engineering, Johns Hopkins University, Baltimore, MD, [2]Dept. of Neurosurgery, Johns Hopkins University, Baltimore, MD, [3]Dept. of Biomedical Engineering & Dept. of Neurosurgery, Johns Hopkins University, Baltimore, MD

2:45PM
Biological Response To Multiple Administrations Of Viral Nanoparticles Carriers: Implication For Long-Term Drug Delivery Applications
S. Shukla[1], D. Dorand[1], J. Myers[1], J. Whitney[1], A. Huang[1], and N. Steinmetz[1]
[1]Case Western Reserve University, Cleveland, OH

Track: Neural Engineering
OP-Sat-2-15 - Room 202A
Glial Cell Engineering / Neural Progenitor Cell and Tissue Engineering

Chairs: Deanna Thompson, Ryan Gilbert

1:30PM
Schwann Cells and Electrical Stimulation: Enhanced Migration and Neurotrophic Factors to Aid PNS Repair
L. Zhang[1], A. Koppes[1], K. Kearns[1], and D. Thompson[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

1:45PM
Piezoelectric Fibrous Scaffolds for Schwann Cell Induced Spinal Cord Repair
Y-S. Lee[1], S. Damarju[2], S. Wu[2], M. Bunge[1], and T. Arinzeh[2]
[1]University of Miami, Miami, FL, [2]New jersey Institute of Technology, Newark, NJ

2:00PM
Aligned, Electrospun Fibers as Artificial Axons to Study Oligodendrocyte Myelination
S. Lee[1], S. Tuck[2], M. Leach[3], S. Chong[1], J. Chan[1], and J. Corey[2,3]
[1]University of California at San Francisco, San Francisco, CA, [2]VA Ann Arbor Healthcare Center, Ann Arbor, MI, [3]The University of Michigan, Ann Arbor, MI

2:15PM
Three-Dimensional Microscaffolds for Enrichment and Transplantation of Human Pluripotent Stem Cell-Derived Neurons
N. Francis[1], N. Bennett[1], A. Carlson[1], A. Halikere[1,2], Z. Pang[2], and P. Moghe[1]
[1]Rutgers University, Piscataway, NJ, [2]Child Health Institute of New Jersey, New Brunswick, NJ

2:30PM
A Novel Injectable Hydrogel-Based Drug Delivery System for Local Delivery of T3 to Promote Myelination after Spinal Cord Injury
R. Shultz [1] and Y. Zhong[1]
[1]Drexel University, Philadelphia, PA

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

2:45PM
Engineering a White Matter Model of Traumatic Brain Injury
B. Pfister[1], A. Adams[1], J. Zalk[1], and H. Kim[2]
[1]New Jersey Institute of Technology, Newark, NJ, [2]Rutgers University, Newark, NJ

Track: New Frontiers and Special Topics, Device Technologies and Biomedical Robotics
OP-Sat-2-16 - Room 202B
Global Health II

Chairs: Elain Fu, Anand Ramasubramanian

1:30PM
Colorimetric Detection of Azidothymidine Using an Alkyne-Modified Dextran Substrate
G. Pratt[1], A. Fan[1], and C. Klapperich[1]
[1]Boston University, Boston, MA

1:45PM
Conversion of a Laboratory-based Colorimetric Assay to a Field-use Paper-based Test for the Detection of Phenylketonuria in Newborns
G. Thiessen[1], K. De Los Reyes[1], R. Monnat[1], and E. Fu[2]
[1]University of Washington, Seattle, WA, [2]Oregon State University, Corvallis, OR

2:00PM
Quantitative Real-Time Recombinase Polymerase Amplification of HIV-1 DNA
B. Rohrman[1], Z. Crannell[1], and R. Richards-Kortum[1]
[1]Rice University, Houston, TX

2:15PM
Real-time Fluorescence Detection of Nucleic Acid Amplification on a Mobile Phone for TB Diagnosis
A. Skandarajah[1], B. Baker[2], M. Kato-Maeda[3], A. Cattamanchi[3], and D. Fletcher[1]
[1]University of California, Berkeley, Berkeley, CA, [2]Lawrence Livermore National Laboratory, Livermore, CA, [3]UCSF Medical School, San Francisco, CA

2:30PM
Fluorescence Detection of DNA Amplification in Porous Media for Point-of-Care Diagnostics
C. Monahan[1], J. Bishop[1], and P. Yager[1]
[1]University of Washington, Seattle, WA

2:45PM
A Fully Integrated Paper-Based Assay for the Extraction, Isothermal Amplification, and Detection of Pandemic (H1N1) Influenza A RNA
N. Rodriguez[1,2], A. Fan[1], J. Linnes[1], C. Chen[1,2], and C. Klapperich[1]
[1]Boston University, Boston, MA, [2]Wyss Institute for Biologically Inspired Engineering, Harvard University, Boston, MA

Track: Biomedical Imaging and Optics
OP-Sat-2-17 - Room 203A
Novel Approaches to Biomedical Imaging

Chairs: B. Hyle Park, Nozomi Nishimura

1:30PM
Multi-parametric Photoacoustic Microscopy of Arterial Ligation
M. Kennedy[1], B. Ning[1], S. Seaman[1], R. Chen[2], Q. Zhou[2], K. Shung[2], S. Peirce[1], and S. Hu[1]
[1]University of Virginia, Department of Biomedical Engineering, Charlottesville, VA, [2]University of Southern California, Resource Center for Medical Ultrasonic Transducer Technology, Los Angeles, CA

1:45PM
Diagnostic Accuracy of Integrated Intravascular Ultrasound and Optical Coherence Tomography for the Detection and Characterization of Human Atherosclerotic Plaque
T. Ma[1], J. Li[2], A. Correa[1], D. Mohar[2], P. Patel[2], K. Shung[1], Z. Chen[2], and Q. Zhou[1]
[1]University of Southern California, Los Angeles, CA, [2]University of California, Irvine, Irvine, CA

2:00PM
Multi-Modal Validation Framework of Mitral Valve Geometry and Biomechanical Models
S. Grbic[1], T. Easley[2], T. Mansi[1], D. Neumann[1], E. Pierce[2], M. Jensen[2], C. Bloodworth[2], A. Siefert[2], J. Krebs[1], D. Yuh[3], A. Yoganathan[2], and D. Comaniciu[1]
[1]Siemens, Princeton, NJ, [2]Georgia Tech, Atlanta, GA, [3]Yale University School of Medicine, New Haven, CO

2:15PM
Rapid Throughput, Seamless Imaging of Human Hip Joint Tissue Across Length Scales to Elucidate Emergent Structure-Function Relationships
D. Zeidler[1], U. Knothe[2], T. Garbowski[1], G. Dellemann[1], and M. Knothe Tate[3]
[1]Carl Zeiss Microscopy, Oberkochen, Germany, [2]Cleveland Clinic, Cleveland, OH, [3]University of New South Wales, UNSW Sydney, Australia

2:30PM
Quantitative Measurement of Cerebrospinal Fluid Flow in Ventricular Shunts by Contrast-enhanced Ultrasound and Cross-correlation Based Microbubble Tracking
R. Hartman[1], S. Aglyamov[1], D. Fox[2], and S. Emelianov[1]
[1]University of Texas at Austin, Austin, TX, [2]St. David's NeuroTexas Institute, Austin, TX

2:45PM
Novel Dental Imaging System
J. Johnson[1], S. Gray[1], L. Leonard[1], and R. Weber[2]
[1]UTSI, Tullahoma, TN, [2]MDI, Arlington Heights, IL

Track: Biomedical Imaging and Optics
OP-Sat-2-18 - Room 203B
Optical Imaging and Microscopy II

Chairs: Javier Jo, Michael Fenn

1:30PM
Bioengineering Autobioluminescence for Biomedical Imaging: From Microbe to Man
S. Ripp[1], T. Xu[2], D. Close[2], and G. Sayler[1]
[1]The University of Tennessee, Knoxville, TN, [2490] BioTech Inc., Knoxville, TN

1:45PM
Live-Cell Analysis of Fibroblast Phenotype on Electrospun Meshes using Surface Enhanced Raman Spectroscopy
E. Kibrom[1], N. Roki[1], C. Bashur[1], and M. Fenn[1]
[1]Florida Institute of Technology, Melbourne, FL

2:00PM
Optimization of Time Gate Selection in Bi-exponential Fluorescence Lifetime Imaging via Sensitivity Analysis
T. Omer[1], N. Sinsuebphon[1], L. Zhao[1], X. Intes[1], and J. Hahn[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

2:15PM
Multiplexing Imaging of Single mRNA Isoforms for Dynamical Quantification in Live Cells
K. Lee[1,2], Y. Cui[2], L. Lee[1], and J. Irudayaraj[2]
[1]University of California Berkeley, Berkeley, CA, [2]Purdue University, West Lafayette, IN

2:30PM
Confocal Fluorescence Nanocytology: Detecting The Molecular Mechanisms Of Carcinogenesis
J. Chandler[1], Y. Stypula-Cyrus[1], L. Almassalha[1], B. Frese[1], H. Subramanian[1], and V. Backman[1]
[1]Nortwestern University, Evanston, IL

2:45PM
Predictive Model Of Probe-Dependent Sampling Depth In Diffuse Reflectance Spectroscopy
W. Goth[1], R. Hennessy[1], M. Sharma[1], and J. Tunnell[1]
[1]The University of Texas at Austin, Austin, TX

Track: Cancer Technologies, Nano to Micro Technologies
OP-Sat-2-19 - Room 103A
Nanotechnologies for Cancer II

Chairs: Kaiming Ye, Debadyuti (Rana) Ghosh

1:30PM
Tumor-penetrating Nanocomplexes for siRNA Delivery to Pancreatic Cancer
J. Lo[1,2], E. Kwon[1], M. Muzumdar[1,3], Y. Ren[1,2], T. Jacks[1], and S. Bhatia[1,4,5]
[1]MIT, Cambridge, MA, [2]Harvard-MIT MD-PhD program, Boston, MA, [3]Dana-Farber Cancer Institute, Boston, MA, [4]Brigham and Women's Hospital, Boston, MA, [5]Broad Institute of Harvard and MIT, Cambridge, MA

1:45PM
Spherical Nucleic Acids as an RNAi-Based Therapy for Glioblastoma
E. Day[1,2], S. Jensen[2], C. Ko[2], L. Hurley[2], A. Stegh[2], and C. Mirkin[2]
[1]University of Delaware, Newark, DE, [2]Northwestern University, Evanston, IL

2:00PM
Magnetic Fluid Hyperthermia Increases Bortezomib Cytotoxicity in Cancer Cells by Proteotoxic Stress
M. Torres-Lugo[1], M. Alvarez[2], A. Castillo[2], O. Soto[2], and C. Rinaldi[3]
[1]University of Puerto Rico, Mayaguez Campus, Mayaguez, Puerto Rico, [2]University of Puerto Rico, Mayaguez Campus, Mayaguez, PR, Puerto Rico, [3]University of Florida, Gainesville, Gainesville, FL

2:15PM
Prussian Blue Nanoparticles For Laser-Induced Photothermal Therapy Of Tumors
H. Hoffman[1], L. Chakrabarti[1], M. Dumont[1], A. Sandler[1,2], and R. Fernandes[1,2]
[1]Children's National Health System, Washington, DC, [2]George Washington University, Washington, DC

2:30PM
Synergistic Antitumor Activity from Two-Stage Delivery of Piperlongumine and TRAIL Nanoparticles
C. Sharkey[1], J. Li[1], and M. King[1]
[1]Cornell University, Ithaca, NY

2:45PM
A Nano-plasmonic Sensor for Label-free Detection and Molecular Profiling of Cancer Exosomes
H. Im[1], H. Shao[1], Y. Park[1], V. Peterson[1], C. Castro[1], R. Weissleder[1,2], and H. Lee[1]
[1]Massachusetts General Hospital, Boston, MA, [2]Harvard Medical School, Boston, MA

Track: Undergraduate
OP-Sat-2-20 - Room 204B
Undergraduate Research I

Chairs: William Guilford, Kristine Ropella

1:30PM
Computational Prediction of G-quadruplex Formation
J. Calvert[1], A. Kreig[1], S. Sinha[1], and S. Myong[1]
[1]University of Illinois at Urbana-Champaign, Champaign, IL

1:40PM
Spatiotemporal-Specific Antibody Signatures Associated with Tenofovir Microbicide Use
L. Dunphy[1], D. Archary[2], K. Arnold[1], K. Seaton[3], J-A. Passmore[2,4,5], L. Werner[2], L. Morris[4], G. Tomaras[3], and D. Lauffenburger[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Centre for the AIDS Programme of Research in South Africa (CAPRISA), Durban, South Africa, [3]Duke Human Vaccine Institute, Duke University Medical Center, Durham, NC, [4]National Health Laboratory Services, Johannesburg, South Africa, [5]Institute of Infectious Diseases and Molecular Medicine, University of Cape Town, South Africa

1:50PM
Bioactive Glass Ceramics: The Ideal Synthetic Bone Substitute
E. Mason[1], M. Fenn[1], and L. Hench[1]
[1]Florida Institute of Technology, Melbourne, FL

2:00PM
Zeolite-loaded Alginate-chitosan Hydrogel Beads As A Topical Hemostat
K. Christodoulides[1], M. Bayomi[1], Y. Choi[1], P. Fathi[1], A. Ghodasara[1], J. Knazik[1], K. Langan[1], B. Miller[1], M. Sikorski[1], H. Thaker[1], J. Titcomb[1], O. Wonodi[1], A. Behrens[1], and P. Kofinas[1]
[1]University of Maryland, College Park, MD

2:10PM
Evaluation of Screw-Tunnel Divergence and Graft Fixation Biomechanics using Flexible and rigid Reamer Systems for Anterior Cruciate Ligament Reconstruction
M. Drazek[1,2], K. Walley[1,3], M. Perez-Viloria[1], S. Okajima[1,3], O. Manoukian[1,4], A. Masoudi[1,5], A. Chiloyan[1,3], R. Nair[1,3], M. Steiner[6], and A. Nazarian[1]
[1]Beth Israel Deaconess Medical Center, Boston, MA, [2]Tufts University School of Medicine, Boston, MA, [3]Boston University, Boston, MA, [4]University of Connecticut, Storrs, CT, [5]Harvard Medical School, Boston, MA, [6]New England Baptist Hospital, Roxbury Crossing, MA

2:20PM
Mechanical Activity of Valve Interstitial Cells in Disease-like Conditions
V. Pramil[1], E. Farrar[1], C. Mosher[2], J. Richards[1], and J. Butcher[1]
[1]Cornell University, Ithaca, NY, [2]Case Western University, Cleveland, OH

2:30PM
Imaging Collagen Architecture With Polarization-Sensitive Optical Coherence Tomography
R. De La Rosa[1], M. Villiger[2,3,4], N. Uribe-Patarroyo[2,3,4], and B. Bouma[2,3,4]
[1]Brown University, Providence, RI, [2]Wellman Center for Photomedicine, Boston, MA, [3]Harvard Medical School, Boston, MA, [4]Massachusetts General Hospital, Boston, MA

2:40PM
Ultrasound Imaging of Forearm Muscles for Decoding Hand Movements in Real Time
M. Lahlou[1], N. Akhlaghi[1], H. Zafar[1], and S. Sikdar[1]
[1]George Mason Univiersity, Fairfax, VA

2:50PM
Using Nonlinear Dynamical Measures to Compare MEG Recordings of Epilepsy Patients with Normal Controls
S. Subramanian[1], S. Robinson[2], S. Inati[2], and R. Coppola[2]
1Johns Hopkins University, Baltimore, MD, 2National Institutes of Health, Bethesda, MD

PLATFORM SESSIONS Sat-2

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

SATURDAY, October 25, 2014

3:15 PM - 4:45 PM

PLATFORM SESSIONS – SAT - 3

Track: Tissue Engineering, Orthopaedic and Rehabilitation Engineering

OP-Sat-3-1 - Room 001A

Muscular, Tendinous, Ligamental Tissue Engineering

Chairs: George Christ, Vassilios Sikavitsas

3:15PM

Highly Functional Engineered Skeletal Muscle Tissues: From Rat to Human

N. Bursac[1]

[1]Duke University, Durham, NC

3:30PM

Mechanical Stimulation of Cellularized Polyurethane-Collagen Composite Meshes for Connective Tissue Applications

P. Thayer[1], E. Tong[1], L. Dahlgren[1], S. Guelcher[2], and A. Goldstein[1]

[1]Virginia Tech, Blacksburg, VA, [2]Vanderbilt University, Nashville, TN

3:45PM

Keratin Hydrogels as a Cell and Growth Factor Delivery Vehicle for Treatment of Volumetric Muscle Loss

H. Baker[1,2], J. Passipieri[1], S. Tomblyn[3], M. Siriwardane[1], C. Okoukoni[1,2], C. Stewart[4], M. Ellenburg[3], L. Burnett[3], and G. Christ[1,2]

[1]Wake Forest Institute for Regenerative Medicine, Winston Salem, NC, [2]VT-WFU School of Biomedical Engineering and Sciences, Winston Salem, NC, [3]KeraNetics, LLC, Winston Salem, NC, [4]University of Virginia, Charlottesville, VA

4:00PM

Tendon Tissue Engineering using a Mechanostimulator and Adult Stem Cell Seeded Decellularized Human Umbilical Vein

V. Sikavitsas[1] and B. Engebretson[1]

[1]University of Oklahoma, Norman, OK

4:15PM

Contractile Composite Scaffolds for Skeletal Muscle Tissue Engineering

D. Browe[1], C. Simmonds[1], K. McKeon-Fischer[1], and J. Freeman[1]

[1]Rutgers University, Piscataway, NJ

4:30PM

Localized BMP-4 Release For Improvement of the Engineered Enthesis

A. Lee[1], C. Lee[1], M. Vidal[1], and K. Baar[1]

[1]University of California, Davis, Davis, CA

Track: Biomaterials, Cellular and Molecular Bioengineering

OP- Sat - 3-2 - Room 001B

Biomaterials for Immunoengineering II

Chairs: Lindsay Fitzpatrick, Anjelica Gonzalez

3:15PM

Immunomodulatory Scaffolds for Enhanced Cell Transplant

R. Gower[1], X. Zhang[1], J. Zhang[1], J. Liu[1], C. Ricci[1], and L. Shea[1]

[1]Northwestern University, Chicago, IL

3:30PM

Biodegradable Nanoellipsoidal Artificial Antigen Presenting Cells for Cancer Immunotherapy

R. Meyer[1], J. Sunshine[1], K. Perica[1], K. Aje[1], J. Schneck[1], and J. Green[1]

[1]School of Medicine, Johns Hopkins University, Baltimore, MD

3:45PM

Incorporation of The Extra Domain A of Fibronectin (EDA) in Fibrin Matrices Mediates Activation of DCs and T-cell-dependent Tumor Regression

Z. Julier[1], M. Martino[1], A. de Titta[1], and J. Hubbell[1]

[1]Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

4:00PM

Effects of Age-Related Changes in Biomechanical and Biochemical Properties Upon Host Response to ECM

S. LoPresti[1,2], L. Zhang[1,2], C. Dearth[1], and B. Brown[1,2]

[1]University of Pittsburgh, Pittsburgh, PA, [2]McGowan Institute for Regenerative Medicine, Pittsburgh, PA

4:15PM

Injectable Thermogelling Block Copolymers as Vaccine Delivery Devices

J. Adams[1] and S. Mallapragada[1]

[1]Iowa State University, Ames, IA

4:30PM

Modulation of Cardiac Macrophages via Hydrogel-mediated IL-4 Delivery as a Strategy for Infarct Healing

I. Somasuntharam[1], S. Carroll[1], M. Brown[2], A. Salimath[1], A. Garcia[1], and M. Davis[1,2]

[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

Track: Biomaterials

OP-Sat-3-3 - Room 006A

Biomaterials Design II

Chairs: Nasim Annabi, Michael Davis

3:15PM

Near-infrared Light Triggerable Polysaccharides Double Network Hydrogel

R. Luo[1], Z. Lim[1], W. Li[2], P. Shi[2], and C-H. Chen[1]

[1]National University of Singapore, Singapore, Singapore, [2]City University of Hong Kong, Hong Kong, Hong Kong

3:30PM

The Design of Hypoxia-Inducible Hydrogels via *In Situ* Oxygen Consuming Reaction

K. Park[1] and S. Gerecht[1]

[1]Johns Hopkins University, Baltimore, MD

3:45PM

Hierarchical Design of Tunable Tissue-Like Collagen Materials

K. Blum[1], T. Novak[1], C. Neu[1], and S. Voytik-Harbin[1]

[1]Purdue University, West Lafayette, IN

4:00PM

Superbiocompatible Hydrogels for Islet Encapsulation Therapy: Tuning the Geometry of Hydrogels Prevents Foreign Body Immune Responses and Fibrosis to Enable Long-Term Blood Glucose Correction in Diabetic Mice

O. Veiseh[1], J. Doloff[1], A. Vegas[1], R. Langer[1], and D. Anderson[1]

[1]Massachusetts Institute of Technology, Cambridge, MA

4:15PM

Directing Cell Functions Using Bioorthogonally Clicked Multiblock Hybrid Copolymers

S. Liu[1], H. Zhang[1], J. Fox[1], and X. Jia[1]

[1]University of Delaware, Newark, DE

Track: Biomechanics
OP-Sat-3-4 - Room 006B
Biomechanics in Degeneration and Regeneration

Chairs: Alesha Castillo, Kyle Allen

3:15PM
A Novel Biomechanical Model to Study Subchondral Microdamage Following Acute Knee Injury
O. Kennedy[1], B. Beutel[1], and M. Lendhey[1]
[1]New York University School of Medicine, NY, NY

3:30PM
Prevention of Cartilage Degeneration by Intraarticular Treatment with Lubricin-Mimetics in the Rat Following Anterior Cruciate Ligament Transection
K. Samaroo[1], M. Tan[1], M. Demange[2], A. Titan[2], C. Carballo[2], M. Sisto[2], S. Rodeo[2], D. Putnam[1], and L. Bonassar[1]
[1]Cornell University, Ithaca, NY, [2]Hospital for Special Surgery, New York, NY

3:45PM
Indentation Method to Map Mechanical Properties of Articular Surface to Identify Degenerated Regions
S. Sim[1,2], A. Chevrier[1], M. Garon[2], E. Quenneville[2], and M. Buschmann[1]
[1]Ecole Polytechnique de Montreal, Montreal, QC, Canada, [2]Biomomentum Inc., Laval, QC, Canada

4:00PM
Mechanobiology Assessment of Temporomandibular Disc Surfaces: A Nanoindentation and TEM Study.
C. Juran[1], A. Matuska[1], and P. McFetridge[1]
[1]University of Florida, Gainesville, FL

4:15PM
Genipin Effect on Soft Palates for the Treatment of Snoring and Obstructive Sleep Apnea
J. Kuo[1], P. Slusarewicz[1], and T. Hedman[1,2]
[1]Orthopeutics LP, Lexington, KY, [2]University of Kentucky, Lexington, KY

4:30PM
The Effect of IGF-I Gene Therapy on the Mechanical Properties of Repaired Equine Cartilage
D. Griffin[1], K. Ortved[1], A. Nixon[1], and L. Bonassar[1]
[1]Cornell University, Ithaca, NY

PLATFORM SESSIONS **Sat-3**

Track: Biomechanics
OP-Sat-3-5 - Room 006C
Multiscale Biomechanics

Chairs: Heather Hayenga, Rouzbeh Amini

3:15PM
A Multiscale Particle Based Model of Platelets in Shear Flows: Correlating Numerical Simulations with *In Vitro* Results
P. Zhang[1], J. Sheriff[1], C. Gao[1], M. Livelli[1], S. Pothapragada[1], N. Zhang[1], L. Zhang[1], M. Slepian[2], Y. Deng[1], and D. Bluestein[1]
[1]Stony Brook University, Stony Brook, NY, [2]University of Arizona, Tucson, AZ

3:30PM
How the Morphology of Osteocytes Contributes to their Mechanotransduction near Microdamage
E. Budyn[1,2], M. Bensidhoum[3], E. Henry[1], J-C. Auregan[3], H. Petite[3], and E. Deprez[1]
[1]Ecole Normale Superieure de Cachan, Cachan, France, [2]University of Illinois at Chicago, Chicago, IL, [3]University Paris Diderot, Paris, France

3:45PM
Finite Element Modeling of Normal and Pathological Chinchilla Ears
X. Wang[1], X. Guan[1], R. Browder[1], D. McCaskill[1], and R. Gan[1]
[1]University of Oklahoma, Norman, OK

4:00PM
Coarse-Grained Molecular Dynamics Modeling of Band-3 Protein Diffusion in the Defective Red Blood Cell Membrane
H. Li[1] and G. Lykotrafitis[1]
[1]University of Connecticut, Storrs, CT

4:15PM
Computational Analysis of Eustachian Tube Opening during Inflammatory Otitis Media in Children with Cleft Palate
J. Malik[1] and S. Ghadiali[1]
[1]The Ohio State University, Columbus, OH

4:30PM
A Computational-Experimental Approach for the In Situ Estimation of Aortic Valve Interstitial Cell Biophysical State
R. Buchanan[1] and M. Sacks[1]
[1]The University of Texas at Austin, Austin, TX

Track: Cancer Technologies, Nano to Micro Technologies
OP-Sat-3-6 - Room 006D
Microtechnologies for Cancer II

Chairs: Sihong Wang, Wei Li

3:15PM
Metastatic Cancer Cells Migration in 3D Collagen Matrix and Microtracks
A. Rahman[1], S. Carey[1], C. Kraning-Rush[1], B. Romero[1], R. Williams[1], and C. Reinhart-King[1]
[1]Cornell University, Ithaca, NY

3:30PM
Decoupling Protrusion from Migration: A New Assay to Study Cancer Cell Protrusion Dynamics in the Absence of Migration
B. Koons[1] and A. Nain[1]
[1]Virginia Tech, Blacksburg, VA

3:45PM
Programmable Bacteria for Cancer Therapy and Diagnostics
T. Danino[1], A. Prindle[2], O. Din[2], G. Kwong[1], S. Bhatia[1], and J. Hasty [2]
[1]MIT, Cambridge, MA, [2]UCSD, La Jolla, CA

4:00PM
Epidermal Growth Factor as a New Migration-Targeted Therapy for Pediatric Brain Tumors
J. Rico[1], T. Singh[1], S. McCutcheon[1], and M. Vazquez[1]
[1]The City College of New York (CUNY), New York, NY

4:15PM
A Kinetic Model for Rapid Molecular Phenotyping of Resected Tissues during Cancer Surgery
L. Sinha[1], Y. Wang[2], C. Yang[1], A. Khan[2], S. Leigh[2], J. Liu[2], and K. Tichauer[1]
[1]Illinois Institute of Technology, Chicago, IL, [2]Stony Brook University (SUNY), Stony Brook, NY

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

4:30PM
A Comparative Study Of Patient-Derived Primary Brain Tumor Cells Using 3D Biomimetic Hydrogels
C. Wang[1], X. Jiang[1], C. Wilson[1], A. Ponnuswami[1], V. Caretti[1], M. Monje[1], G. Grant[1], and F. Yang[1]
[1]*Stanford University, Stanford, CA*

Track: Stem Cell Engineering, Tissue Engineering
OP-Sat-3-7 - Room 007A
Stem Cells in Translational Science

Chairs: Eduardo Silva, Stephanie Willerth

3:15PM *Invited*
Spatiotemporal Mapping of De Novo Tissue Genesis by Stem Cells & Tissue-Implant Interactions
C. Heu[1], S. Moore[2], U. Knothe[3], R. Segal[1], T. Piepergerdes[4], and M. Knothe Tate[1]
[1]*University of New South Wales, UNSW Sydney, Australia,* [2]*Case Western Reserve University, Cleveland, OH,* [3]*Cleveland Clinic, Cleveland, OH,* [4]*Vanderbilt University, Nashville, TN*

3:30PM
Preparation of Native Extracellular Matrix for Stem Cell-based Salivary Gland Regeneration.
A. Malakhov[1], B-X. Zhang[1], H. Wang[1], A. Lin[1], D. Dean[1], S. Weintraub[1], X-D. Chen[1], and C-K. Yeh[2]
[1]*UTHSC, San Antonio, TX,* [2]*STVHCS, San Antonio, TX*

3:45PM
A Human iPS-derived *In Vitro* Model of 3D Vascularized Cardiac Muscle
Y. Kurokawa[1], D. Tran[1], M. Moya[1], A. Sobrino[1], L. Alonzo[1], C. Heylman[1], C. Tu[1], L. Lock[1], C. Hughes[1], B. Conklin[2], and S. George[1]
[1]*University of California, Irvine, Irvine, CA,* [2]*Gladstone Institutes, San Francisco, CA*

4:00PM
Stable Human Induced Pluripotent Stem Cell-derived Cardiomyocyte Syncytium That Supports Paced Electrical Activities and Responds to IKr Blockage
R. Zhu[1], A. Blazeski[1], K. Boheler[1], and L. Tung[1]
[1]*The Johns Hopkins University, Baltimore, MD*

4:15PM
Beat Whole Decellularized Mouse Heart with Human Induced Pluripotent Stem (iPS) Cells
B. Lin[1], T. Lu[1], J. Kim[1], M. Sullivian[1], K. Tobita[1], G. Salama[1], and L. Yang[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

Track: Cardiovascular Engineering
OP-Sat-3-8 - Room 007B
Heart Valves and Stents II

Chairs: Mehdi Nikkah, Gulden Camci-Unal

3:15PM
Physiological Relevant Shear Stress and Flexure in Developing Valvular Tissues
S. Rath[1], A. Villegas[1], M. Salinas[1], and S. Ramaswamy[1]
[1]*Florida International University, Miami, FL*

3:30PM
Design of an *In Vitro* Simulation Pipeline for the Development of Computational Mitral Valve Modeling
C. Bloodworth IV[1], E. Pierce[1], T. Easley[1], M. Toma[1], A. Khalighi[2], C-H. Lee[2], M. Sacks[2], A. Siefert[1], M. Jensen[1], and A. Yoganathan[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*University of Texas at Austin, Austin, TX*

3:45PM
Integrated Experimental-Computational Modeling of Mitral Valve Intestitial Cell Deformation Under In Situ Physiological Loading
C-H. Lee[1], C. Carruthers[2], B. Good[3], S. Ayoub[1], R. Gorman[4], J. Gorman[4], and M. Sacks[1]
[1]*The University of Texas at Austin, Austin, TX,* [2]*Metronic, Minneapolis, MN,* [3]*Pennsylvania State University, State College, PA,* [4]*University of Pennsylvania, Philadelphia, PA*

4:00PM
Impact of Transcatheter Aortic Valve Oversizing on Leaflet Stress and Strain Distribution
M. Abbasi[1] and A. Azadani[1]
[1]*University of Denver, Denver, CO*

4:15PM
Hemodynamic Changes in Coronary Arteries Due to Regional Aortic Root Pathologies
H. Mohammadi[1], R. Cartier[2], and R. Mongrain[1]
[1]*McGill University, Montreal, QC, Canada,* [2]*Montreal Heart Institute, Montreal, QC, Canada*

4:30PM
Stent Strut Geometry Affects Endothelial Cell Migration
J. Jiménez[1], P-J. Wang[1], and P. Davies[1]
[1]*University of Pennsylvania, Philadelphia, PA*

Track: Drug Delivery
OP-Sat-3-9 - Room 007D
Targeted Delivery II

Chairs: Emily Day, Junghae Suh

3:15PM
Targeting Drug Delivery to Motor Neurons in the Spinal Cord
R. Sirianni[1] and A. Prakapenka[1]
[1]*Barrow Neurological Institute, Phoenix, AZ*

3:30PM
Albumin Nanoparticles for Targeted EDTA Delivery to Reverse Elastin Specific Medial Calcification
Y. Lei[1] and N. Vyavahare[1]
[1]*Clemson University, Clemson, SC*

3:45PM
Cystathionine-Gamma-Lyase Enzyme Prodrug Therapy Targeted to Tumor Vasculature in Immune Competent Model
J. Krais[1], C. Kurkjian[2], and R. Harrison[1]
[1]*University of Oklahoma, Norman, OK,* [2]*University of Oklahoma Health Sciences Center, Oklahoma City, OK*

4:00PM
Protease-activatable Virus Based on Adeno-associated Virus for Cardiovascular Disease Therapy
M. Ho[1], M. Lam[1], M. Yamagami[1], C. Guenther[1], and J. Suh[1]
[1]*Rice University, Houston, TX*

4:15PM
Development of Poly-aspartic Acid Peptide Linked PLGA-based Nanoparticles for Bone Targeting
E. Carbone[1], X. Yu[1], T. Jiang[1], C. Nelson[1], H. Kan[1], and W. Lo[1]
[1]*UConn Health Center, Farmington, CT*

4:30PM
Plasma Proteins Alter the Vascular Wall Adhesion of Drug Carriers in a Material & Donor Specific Way
D. Sobcynski[1], P. Charoenphol[1], P. Onyskiw[1], K. Namdee[1], A. Thompson[1], and L. Eniola-Adefeso[1]
[1]*University of Michigan, Ann Arbor, MI*

Track: Respiratory Bioengineering, Biomechanics
OP-Sat-3-10 - Room 008B
Mechanobiology in the Respiratory System

Chairs: Konstantin Birukov, Rebecca Heise

3:15PM
Genetic Variants of Cytoskeletal Elements Linked to Acute Lung Injury Impair Lamellipodia Dynamics and Endothelial Wound Healing
D. Leckband[1], S. Choi[1], and S. Dudek[2]
[1]University of Illinois at Urbana, Urbana, IL, [2]University of Illinois at Chicago, Chicago, IL

3:30PM
The Role of MicroRNAs in Ventilator Induced Lung Injury (VILI) and Inflammation
K. Nelson[1], C. Bobba[1], B. Whitson[1,2], and S. Ghadiali[1,3]
[1]Ohio State University, Columbus, OH, [2]Department of Surgery and Division of Cardiac Surgery, Columbus, OH, [3]Department of Pulmonary, Allergy, Critical Care, and Sleep, Columbus, OH

3:45PM
Paxillin-GEF-H1-MAPK Signalosome and Pathologic Mechanotransduction in Mechanically Ventilated Lung
G. Gawlak[1], X. Tian[1], A. Birukova[1], and K. Birukov[1]
[1]University of Chicago, Chicago, IL

4:00PM
Enhanced Matrix Elastin Production and Organization Using Pentagalloyl Glucose in Pulmonary Fibroblast Cultures
V. Parasaram[1], N. Nosoudi[1], and N. Vyavahare[1]
[1]Clemson University, Clemson, SC

4:15PM
Chronic Tone and Substrate Stiffness Modulation Alters Airway Smooth Muscle Contractile Phenotype
R. Wise[1], N. Zaman[1], A. West[2], P. Gratzer[1], K. Billiar[3], and G. Maksym[1]
[1]Dalhousie University, Halifax, NS, Canada, [2]University of Manitoba, Winnipeg, MB, Canada, [3]Worcester Polytechnic Institute, Worcester, MA

4:30PM
Age Related Changes in Pulmonary Mechanics and Inflammatory Response to Experimental Ventilator Induced Lung Injury
J. Herbert[1], M. Valentine[1], P. Patel[1], A. Reynolds[1], R. Pidaparti[2], and R. Heise[1]
[1]Virginia Commonwealth University, Richmond, VA, [2]University of Georgia, Athens, GA

PLATFORM SESSIONS **Sat-3**

Track: Neural Engineering, Orthopaedic and Rehabilitation Engineering
OP-Sat-3-11 - Room 201
Neuro-rehabilitation Biomechanics

Chairs: Jeffrey Capadona, Ayesgul Gunduz

3:15PM
Predicting Metabolic Costs of Pathologic Gait in Cerebral Palsy
K. Steele[1] and M. Schwartz[2,3]
[1]University of Washington, Seattle, WA, [2]Gillette Children's Specialty Healthcare, St. Paul, MN, [3]University of Minnesota, Minneapolis, MN

3:30PM
Information Theoretic Metrics as Biomarkers of Parkinsonian Symptom Severity
C. Anderson[1] and A. Dorval[1]
[1]University of Utah, Salt Lake City, UT

3:45PM
Increased Shoulder Abduction Loads Decrease Voluntary Finger Flexion in Individuals with Chronic Stroke
Y. Lan[1], J. Yao[1], and J. Dewald[1]
[1]Northwestern University, CHICAGO, IL

4:00PM
Dynamic Simulation and Neuromuscular Control of Balance in Children with Cerebral Palsy: Implications for Rectus Femoris Transfer Surgery
M. Mansouri Boroujeni[1] and J. Reinbolt[1]
[1]University of Tennessee, Knoxville, TN

4:15PM
Optimizing the Spinal Cord: Finding the Best Sensory Input to Improve Walking after Injury
J. White[1,2], L. McCollough[3], K. Tansey[2,4], and S. DeWeerth[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA, [3]Shepherd Center, Atlanta, GA, [4]Atlanta VA Medical Center, Atlanta, GA

4:30PM
An Analytical Solution For Obtaining The Lumbar Spine Segmental Rotations
I. Shojaei[1] and B. Bazrgari[1]
[1]University of Kentucky, Lexington, KY

Track: Drug Delivery, Cancer Technologies
OP-Sat-3-12 - Room 103B
Cancer Drug Delivery III

Chairs: Srivatsan Kidambi, Joseph Kinsella

3:15PM
Targeted Polymeric Nanoparticles for Leukemia Cell-Specific Delivery of Pediatric Chemotherapy
V. Krishnan[1,2], X. Xu[3], R. W. Mason[2], X. Jia[1], and A. K. Rajasekaran[1]
[1]University of Delaware, Newark, DE, [2]Nemours Alfred I DuPont Hospital for Children, Wilmington, DE, [3]Massachusetts Institute of Technology, Cambridge, MA

3:30PM
Functionalization of Gold Nanorods for Cancer Cell Imaging, Drug Delivery and Photothermal Therapy
D. Pacardo[1], B. Neupane[2], M. Rikard[1], Y. Lu[1], R. Mo[1], G. Wang[2], F. Ligler[1], and Z. Gu[1]
[1]North Carolina State University and University of North Carolina, Raleigh, NC, [2]North Carolina State University, Raleigh, NC

3:45PM
Novel Functionalization of Single Walled Carbon Nanohorns for Controlled Chemotherapeutic Delivery
A. Pekkanen[1], M. DeWitt[1], and M. Rylander[1]
[1]Virginia Tech, Blacksburg, VA

4:00PM
A Magnetic Field to Target Paramagnetic Nanoparticles in a Tumor Model of Glioblastoma
M. Navati[1], S. Lopez[1], M. Urban-Maldonado[1], M. Silva[1], J. Segall[1], D. Spray[1], and J. Friedman[1]
[1]Yeshiva University, Bronx, NY

4:15PM
Oxidized Graphene Nanoribbons As A Novel Delivery System For The Anticancer Sphingolipid Ceramide
C. Suhrland[1], B. Sitharaman[1], and J-P. Truman[1]
[1]SUNY Stony Brook, Stony Brook, NY

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

4:30PM
Thermo-responsive, Multimodal Imaging Enabled Nanoparticles Towards Cancer Therapy
N. Pandey[1], A. Wadajkar[1], V. Sundaresan[1,2], E. Hernandez[2], J-T. Hsieh[2], L. Tang[1,2], J. Yang[3], and K. Nguyen[1,2]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*The University of Texas Southwestern Medical Center, Dallas, TX,* [3]*The Pennsylvania State University, University Park, PA*

Track: Neural Engineering, Biomedical Imaging and Optics
OP-Sat-3-13 - Room 202A
Macro/micro Design for Neurotechnologies / Networked Neural Sensors, Actuators, and Instrumentation

Chairs: Pedro Irazoqui, Mehmet Kaya

3:15PM
Implantable Networks of Wireless Nanoelectronic Nodes
P. Irazoqui[1]
[1]*Purdue University, West Lafayette, IN*

3:30PM
System for Integrated Neural Imaging, Recording and Stimulation
Z. Liu[1] and H. Cheng[2]
[1]*Purdue University, West Lafayette, IN,* [2]*Indiana University, Bloomington, IN*

3:45PM
Ultrasound Neuromodulation: Field Overview and Observations in the Vagus Nerve of a Rat
E. Juan[1]
[1]*UPR-Mayagüez, Mayagüez, PR*

4:00PM
Nanowire Electrophysiology for *In Vivo* Measurement of the *C. elegans* Neuromuscular Junction
D. Gonzales[1], B. Avants[1], D. Vercosa[1], and J. Robinson[1,2]
[1]*Rice University, Houston, TX,* [2]*Baylor College of Medicine, Houston, TX*

4:15PM
The Multipatcher: A Robot for High Density Measurement of Intracellular Recordings *In Vivo*
S. Kodandaramaiah[1], F. Flores[1,2], G. Holst[3], I. Wickersham[1], E. Brown[1,2], C. Forest[3], and E. Boyden[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Massachusetts General Hospital, Cambridge, MA,* [3]*Georgia Institute of Technology, Atlanta, GA*

4:30PM
Principles of High Fidelity, High Density 3D Neural Recording
C. Moore-Kochlacs[1,2], J. Scholvin[2], J. Kinney[2], J. Bernstein[2], Y. Yoon[2], S. Arfin[2], N. Kopell[1], and E. Boyden[2]
[1]*Boston University, Boston, MA,* [2]*Massachusetts Institute of Technology, Cambridge, MA*

Track: Undergraduate
OP-Sat-3-14 - Room 204B
Undergraduate Research II

Chairs: William Guilford, Kristine Ropella

3:15PM
AAV9-based Gene Delivery for Cardiac Regeneration via Fibroblast Reprogramming
S. Hansen[1] and B. French[1]
[1]*University of Virginia, Charlottesville, VA*

3:25PM
Promoting Elastin Production in Tissue-Engineered Blood Vessels by Inhibiting microRNA-29 in Human Neonatal Dermal Fibroblasts
S. Perez[1], C. Fernandez[1], W. Reichert[1], and G. Truskey[1]
[1]*Duke University, Durham, NC*

3:35PM
Washing with Human Albumin Improves the Ability of Stored Red Blood Cells to Perfuse an Artificial Microvascular Network
R. Abidi[1], N. Piety[1], and S. Shevkoplyas[1]
[1]*University of Houston, Houston, TX*

3:45PM
The Effect of Lovastatin Treatment on Activated Endothelial Cell Gene Expression and Monocyte Adhesion
K. Henderson[1], C. Fernandez[2], W. Reichert[2], and G. Truskey[2]
[1]*University of Missouri-Columbia, Kansas City, MO,* [2]*Duke University, Durham, NC*

3:55PM
New Chameleon NanoCluster Beacons for Emission-Spectrum-Based SNP Detection
D. Imphean[1], R. Batson[1], J. Obliosca[1], and H-C. Yeh[1]
[1]*University of Texas at Austin, Austin, TX*

4:05PM
Single-cell Transfection Within a 3D Tumor Model Using Optoporation
M. Maurer[1], M. Monaghan[2], Y. Möller[3], M. Olayioye[3], and K. Schenke-Layland[1,2]
[1]*Eberhard-Karls-University Tübingen, Tübingen, Germany,* [2]*Fraunhofer Institute for Interfacial Engineering and Biotechnology (IGB), Stuttgart, Germany,* [3]*University of Stuttgart, Stuttgart, Germany*

4:15PM
Computational Fluid Dynamic Modeling of 3D Scaffolds in Dynamic Culture
H. Ko[1], B. Nguyen[1], and J. Fisher[1]
[1]*University of Maryland, College Park, College Park, MD*

4:25PM
Postural Sway as a Correlate of Psychosis Proneness and Social Behavior
H. Bothwell[1] and D. Evans[2]
[1]*Bucknell University, Lewisburg, PA,* [2]*Geisinger-Bucknell Autism and Developmental Medicine Institute, Lewisburg, PA*

4:35PM
An Enzyme-activatable, Receptor-targeted Filamentous Viral Nanoparticle
P. Chariou[1], K. Lee[1], and N. Steinmetz[1]
[1]*Case Western Reserve University, Cleveland, OH*

SATURDAY


REFRESHMENT BREAKS
REFRESHMENT BREAKS
REFRESHMENT BREAKS
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POSTERS
POSTERS

SATURDAY, October 25, 2014

9:30 AM - 1:00 PM

POSTER SESSIONS

Poster Viewing with Authors – 9:30 AM – 10:30 AM

Bioinformatics, Computational and Systems Biology

P-Sat-1
Computational Modeling of Integrated HDAC5 Response to Electrical and Neurohormonal Stimuli
J. Saucerman[1], M. Rhoads[1], R. North[1], and W. Boyd[1]
[1]University of Virginia, Charlottesville, VA

P-Sat-2
PDGFR α And PDGFR β Cell Surface Levels Are Positively Correlated With Cell Confluency In Vitro
X. Guo[1], O. Imarenezor[1], S. Chen[1], and P. Imoukhuede[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

P-Sat-3
An Agent-Based Model Predicts How Pancreatic Islet Size Affects Revascularization and Engraftment Potential Following Transplantation
M. Lataillade[1] and S. Peirce-Cottler[1]
[1]University of Virginia, Charlottesville, VA

P-Sat-4
Examining The Partitioning Of Angiogenic Receptors *In Vitro*
A. Storm[1], W. Woods[1], and P. Imoukhuede[1]
[1]University of Illinois, Urbana-Champaign, Urbana, IL

P-Sat-5
A Computational Model of Collagen Fibrillogenesis
V. Lanka[1], J. Holmes[2], and W. Richardson[2]
[1]University of Virginia, Ashburn, VA, [2]University of Virginia, Charlottesville, VA

P-Sat-6
Modeling Temporal Dynamics of Infarct Collagen Turnover
W. Pilcher[1], J. Holmes[1], and W. Richardson[1]
[1]University of Virginia, Charlottesville, VA

P-Sat-7
Experimental and Computational Analysis of Cardiomyocyte Generation from iPS Cells via Temporal Modulation of Wnt Signaling
T. Jones[1] and P. Aurora[1]
[1]University of Virginia, Charlottesville, VA

P-Sat-8
Automated Validation and Systematic Revision of a Cardiac Hypertrophy Signaling Model
A. Paap[1], K. Ryall[1], R. North[1], and J. Saucerman[1]
[1]University of Virginia, Charlottesville, VA

P-Sat-9
Integrating the Effects of Exercise to the UVa/Padova Type 1 Diabetes Simulator
N. Frantz[1], K. Turksoy[1], M. Sertbas[1], J. Feng[1], and A. Cinar[1]
[1]Illinois Institute of Technology, Chicago, IL

P-Sat-10
Pan-Cancer Analysis for Identifying Proteins Related to Cancer Stage
S. Mishra[1], C. Kaddi[1], and M. Wang[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Sat-11
Towards Optimizing the Production of Pertussis Vaccine Using Computational Modeling
M. Bloom[1], H. Truong[1], M. Gray[1], E. Hewlett[1], and J. Papin[1]
[1]University of Virginia, Charlottesville, VA

Biomaterials

P-Sat-13
Efficacy And Degradation Analysis of Heat Labile Antibiotic Compounds Subjected To Thermal Conditions Indicative Of PMMA Curing Processes
J. Chang[1,2], T. Hess[1], and M. DeSilva[1]
[1]Naval Medical Research Unit San Antonio, San Antonio, TX, [2]Naval Research Enterprise Internship Program, San Antonio, TX

P-Sat-15
Study of the Second Virial Coefficient of Cowpea Mosaic Virus Under Varying pH and Ionic Strength Using Composition-Gradient Multi-Angle Light Scattering
D. Acosta[1], Y. Ma[1], A. Wen[1], R. Podgornik[2,3,4], V. Parsegian[2], R. French[1], and N. Steinmetz[1]
[1]Case Western Reserve University, Cleveland, OH, [2]University of Massachusetts, Amherst, MA, [3]J. Stefan Institute, Ljubljana, Slovenia, [4]University of Ljubljana, Ljubljana, Slovenia

MOVED TO P-SAT-51

P-Sat-16
Creating Biomimetic Neighbors for *In Vitro* 3D β-Cell Culture systems
S. Ahmadmehrabi[1,2], S. Akbari[2], and P. Hammond[2]
[1]Case Western Reserve University, Cleveland, OH, [2]Massachusetts Institute of Technology, Cambridge, MA

P-Sat-17
Comparison of Mechanical Testing Methods for Biomaterials: Nanoindentation, Pipette Aspiration, and Macroscale Testing
K. Tong[1], R. Blaho[1], C. Buffinton[1], and D. Ebenstein[1]
[1]Bucknell University, Lewisburg, PA

P-Sat-18
Analysis of Cement Particles Present in Human Biopsies Affected by Peri-implantitis
M. Burbano[1], T. Wilson[2], P. Valderrama[2], J. Blansett[3], C. Wadhwani[4], P. Choudhary[1], and D. Rodrigues[1]
[1]University of Texas at Dallas, Richardson, TX, [2]Private Practice of Periodontics, Dallas, TX, [3]Private Practice of Periodontics, Rogers, AR, [4]University of Washington, Seattle, WA

P-Sat-19
Fabrication of a Human Lamina Cribosa Mimic by Co-electrospinning
J. Hochstein[1,2], M. Earley[1,3], A. Rajabi Zamani[1], G. Collins[1], B. Mantilla[1], and M. Jaffe[1]
[1]New Jersey Institute of Technology, Newark, NJ, [2]Johns Hopkins University, Baltimore, MD, [3]Virginia Tech, Blacksburg, VA

P-Sat-20
Tuning an *In Vitro* Hydrogel Microenvironment with Fibroblast Co-Culture for Improved Skeletal Myoblast Delivery
N. Rao[1], G. Agmon[1], M. Tierney[2], A. Sacco[2], and K. Christman[1]
[1]UC San Diego, La Jolla, CA, [2]Sanford-Burnham Medical Research Institute, La Jolla, CA

P-Sat-21
Characterization of Lactose-Containing Two-Solution Bone Cements
E. Bentley[1], L. Rodriguez[1], J. Chari[1], S. Aghyarian[1], and D. Rodrigues[1]
[1]The University of Texas at Dallas, Richardson, TX

P-Sat-22
Determination of Variables Affecting Degradation of Polyethylene Glycol Hydrogels
J. Redington[1], E. Jain[2], S. Sell[2], and S. Zustiak[2]
[1]Shorter University, Suwanee, GA, [2]Saint Louis University, St Louis, MO

P-Sat-23
Comparative Analysis of Chemical and Photochemical Crosslinking of Polyacrylamide Gels
A. Karadaghy[1], H. Stevenson[1], and S. Zustiak[1]
[1]Saint Louis University, St Louis, MO

See page 194 for Poster floor plan

P-Sat-24
Conditioning Cells to Microenvironmental Cues
S. Syed[1] and S. Zustiak[1]
[1]*Saint Louis University, St Louis, MO*

P-Sat-25
Characterization of a Collagen Film at Various pH and Temperatures Using a QCM-D
A. Williams[1], T. Alexander[2], L. Lozeau[2], and T. Camesano[2]
[1]*Vanderbilt University, Nashville, TN,* [2]*Worcester Polytechnic Institute, Worcester, MA*

P-Sat-26
Genetically Engineered Fluorescent Plant Viral Nanoparticles as Versatile Optical Imaging Agents
A. Nagarajan[1], S. Shukla[1], C. Dickmeis[2], R. Fischer[2], U. Commandeur[2], and N. Steinmetz[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*RWTH Aachen, 52074 Aachen, Germany*

P-Sat-27
Investigating the Effect of Conducting Polymer Graphene Oxide Composite Coatings on Magnesium Corrosion
H. Li[1], K. Catt[1], and X. Cui[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P-Sat-28
Analyzing ROS Generation from Magnetic Nanoparticles in an Alternating Magnetic Field and its Role in Iintracellular Hyperthermia
C. Oliver[1], R. Wydra[2], D. Cochran[2], K. Anderson[2], T. Dziubla[2], and J. Hilt[2]
[1]*University of Connecticut, Storrs, CT,* [2]*University of Kentucky, Lexington, KY*

P-Sat-29
Self Assembled Organosilane Coatings For Resorbable Devices
O. Jackson[1], A. Patil[1], and E. Beniash[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P-Sat-30
Syndesomes Enhance Cutaneous Wound Healing in Diabetic Mice
G. Singh[1], S. Das[1], M. Martinez[1], A. Dunn[1], and A. Baker[1]
[1]*University of Texas, Austin, TX*

P-Sat-31
Designing a SiO2-coated Gd-loaded Macromolecular Magnetic Resonance Contrast Agent
L. Randolph[1], M. Bruckman[1], and N. Steinmetz[1,2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Case Western Reserve University School of Medicine, Cleveland, OH*

P-Sat-32
Interface of Physics and Biology: Engineering Virus-Based Nanoparticles for Biophotonics
D. Kernan[1], A. Wen[1], M. Infusino[1,2], A. De Luca[1,3], G. Strangi[1,3], and N. F. Steinmetz[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Universidad San Francisco de Quito, Quito, Ecuador,* [3]*University of Calabria, Rende, Italy*

POSTER SESSION **Sat**

P-Sat-33
Methods for Coating Microspheres with Mesenchymal Stem Cell-Derived Matrix
R. Reese[1], A. Tondon[1], C. Gregory[2], and R. Kaunas[1]
[1]*Texas A&M University, College Station, TX,* [2]*Texas A&M Health Science Center, Temple, TX*

P-Sat-34
Self-Assembly of DNA-Based Responsive Soft Biomaterials: A Computational and Experimental Approach
J. Dominguez[1], Z. Goddard[1], S. Benner[2], C. Hall[2], and T. Betancourt[1]
[1]*Texas State University, San Marcos, TX,* [2]*North Carolina State University, Raleigh, NC*

P-Sat-36
Bio-Corrosion Evaluations Using Dynamic Electrochemical Methods
H. Lundin[1]
[1]*Wichita State University, Park City, KS*

P-Sat-37
Effects Of Dual Frequency Excitation On Cavitation Of Microbubbles
A. Smith[1], L. Phillips[1], S. Guo[2], X. Jiang[2], and P. Dayton[1]
[1]*University of North Carolina, Chapel Hill, NC,* [2]*North Carolina State University, Raleigh, NC*

P-Sat-38
Optimizing Electrospun Fiber Mats For Use As Mock Blood-Brain Barriers
M. Mendive[1], V. Pensabene[2,3], D. Balikov[3], and H-J. Sung[3]
[1]*SyBBURE-Searle Undergraduate Research Experience, Vanderbilt University, Nashville, TN,* [2]*Vanderbilt Institute for Integrative Biosystems Research and Education, Vanderbilt University, Nashville, TN,* [3]*Department of Biomedical Engineering, Vanderbilt University, Nashville, TN*

P-Sat-39
Random Sequential Adsorption of Proteins on Polymer-covered Surfaces: A Simulation-based Approach
A. Gore[1], E. Dumont[2], P. Katira[1], and H. Hess[1]
[1]*Columbia University, New York, NY,* [2]*The Joan and Irwin Jacobs Technion-Cornell Innovation Institute, New York, NY*

P-Sat-40
Study of the Effects of Detoxification Treatments on Titanium used in Osseointegrative Applications
S. Wheelis[1], I. Gindri[1], S. Sridhar[1], P. Valderramma[2], T. Wilson[3], and D. Rodrigues[1]
[1]*University of Texas at Dallas, Richardson, TX,* [2]*Private Practice of Periodontics, Dallas, TX,* [3]*Baylor College of Dentistry, Dallas, TX*

P-Sat-41
Effect of Lateral Retinacular Release after Total Knee Replacement on Patellar Kinematics and Patellofemoral Contact Pressure at Varying Patellar Component Thicknesses
J. Rodriguez[1], X. Xie[1],, R. Rusly[1], A. C. Clark[1], F. Voss[2], J. Desjardins[1], and M. Laberge[1]
[1]*Clemson University, Clemson, SC,* [2]*University of South Carolina, School of Medicine, Clemson,*

SC P-Sat-42
Improved Magnetically Responsive Gels for Controlled Drug Delivery
C. Roco[1,2], S. Kennedy[1,2], C. Cezar[1,2], A. Délèris[1,2], S. Patrizia[1,2], and D. Mooney[1,2]
[1]*Harvard School of Engineering and Applied Science, Cambridge, MA,* [2]*Wyss Institute for Biologically Inspired Engineering, Boston, MA*

P-Sat-43
Biomimetic Nanofiber Microenvironments for Metastatic Tumor Cell Line Development
R. Banoub[1], T. Nelson[1], J. Lang[1], and J. Lannutti[1]
[1]*The Ohio State University, Columbus, OH*

P-Sat-44
Electrospun Nanofibers as a Biomimetic Platform for Melanoma Migration
S. Bushman[1], T. Nelson[1], R. Underiner[1], X. Guan[1], A. Holderbaum[1], J. Lannutti[1], and C. Burd[1]
[1]*Ohio State University, Columbus, OH*

P-Sat-45
Synthesis of Mg-Microbeads using Electrospraying Technique
T. Campbell[1], R. Blount[2], and N. Bhattarai[2]
[1]*University of Rhode Island, Kingston, RI,* [2]*North Carolina A&T State University, Greensboro, NC*

P-Sat-46
Fabrication and Characterization of 3D-Printed Pore Architecture Scaffolds for Mesenchymal Stem Cell Adhesion and Proliferation
M. Prendergast[1], K. Ferlin[1], D. Kaplan[2], and J. Fisher[1]
[1]*University of Maryland - College Park, College Park, MD,* [2]*Food and Drug Administration, Silver Spring, MD*

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Sat-47
Characterizing Gold Nanoparticle Interactions with a Supported Lipid Bilayer in the Presence of Humic Acid
C. Bailey[1], E. Kamaloo[1], K. Waterman[1], K. Wang[1], and T. Camesano[1]
[1]*Worcester Polytechnic Institute, Worcester, MA*

P-Sat-48
Design And Manufacture Of Novel Polymer Neural Electrodes For Blast Testing
G. Terziev[1], G. Wood[1], J. Shridharani[1], A. Alshareef[1], B. Bigler[1], E. Skolnick[1], and C. Bass[1]
[1]*Duke University, Durham, NC*

P-Sat-49
Fabrication of Porous PDMS Thin Films as a Microfluidic Blood Brain Barrier
N. Braman[1,2], L. Hofmeister[1,2], V. Pensabene[2,3], D. Schaffer[3], C. Marasco[1,2,3], and J. Wikswo[2,3]
[1]*Searle SyBBURE Undergraduate Research Program, Nashville, TN,* [2]*Vanderbilt University, Nashville, TN,* [3]*Vanderbilt Institute for Integrative Biosystems Research and Education, Nashville, TN*

P-Sat-50
Osseointegration of Wrapped Dental Implants in Rabbits
A. Whitehead[1], S. Hyzy[1], D. Cohen[1], B. Boyan[1,2], and Z. 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*

P-Sat-51
Characterization of Gold Nanoparticle Interactions with DNA Aptamers Studied through Absorbance and Fluorescent Spectroscopy
J. Yoho[1,2], J. Chavez[2], N. Kelley-Loughnane[2], and J. Hagen[2]
[1]*University of Dayton, Dayton, OH,* [2]*Wright-Patterson Air Force Base, Dayton, OH*

P-Sat-52
Drosophila melanogaster as a Simple Model to Test Dark Toxicity and Tolerance of Potential Photodynamic Therapy Agents
J. Yoho[1], C. Stroh[1], S. Swavey[1], and M. Kango-Singh[1]
[1]*University of Dayton, Dayton, OH*

Biomechanics

P-Sat-61
Analysis of Arterial Mechanics During Head-Down-Tilt Bed Rest
M. Elliott[1,2], D. Martin[3], C. Westby[2], M. Stenger[3], and S. Platts[4]
[1]*Saint Louis University, Chattanooga, TN,* [2]*Universities Space Research Association, Houston, TX,* [3]*Wyle Science, Technology, and Engineering Group, Houston, TX,* [4]*NASA Johnson Space Center Life Sciences, Houston, TX*

P-Sat-62
Investigation of the Tibialis Posterior and Peroneus Longus Muscles on Foot Kinematics While Walking
M. Bucklin [1] and C. Neville [2]
[1]*University of Rochester, Rochester, NY,* [2]*Upstate Medical University, Syracuse, NY*

P-Sat-64
Naive Endoscope Users Have Higher Forces on a Simulated Colon Model Compared to Experienced Endoscopist
M. Farnham[1], K. Bieryla[1], E. Geist[1], and D. Diehl[2]
[1]*Bucknell University, Lewisburg, PA,* [2]*Geisinger Health System, Danville, PA*

P-Sat-65
Single-Level Cervical Fusion Does Not Increase Range of Motion in Adjacent Segments During Head Rotation
T. West[1], W. Anderst[1], W. Donaldson[1], J. Lee[1], and J. Kang[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P-Sat-66
Radiographic Evaluation of the Carpometacarpal Joint in Osteoarthritis Severity and Joint Laxity
S. Guang[1], T. Patel[1], and J. Crisco[1]
[1]*Brown University, Providence, RI*

P-Sat-67
Development of Pipette Aspiration Technique for Measurement of Chick Embryonic Myocardium Mechanical Properties
R. Blaho[1], K. Tong[1], C. Buffinton[1], D. Ebenstein[1], and E. Buffinton[2]
[1]*Bucknell University, Lewisburg, PA,* [2]*Lafayette College, Easton, PA*

P-Sat-68
Structural and Effective Material Properties of the Anterior, Lateral, and Posterior Human Rib Bone
T. Comte[1], A. Lau[1], and M. Kindig[2]
[1]*University of North Carolina, Chapel Hill, NC,* [2]*University of Virginia, Charlottesville, VA*

P-Sat-69
Factors that Contribute to Inter-Subject Variation in Human Liver and Spleen Material Properties
S. Zwolski[1], T. LeRoith[2], and A. Kemper[3]
[1]*University of Rochester, Rochester, NY,* [2]*Virginia-Maryland College of Veterinary Medicine, Blacksburg, VA,* [3]*Virginia Tech - Wake Forest University, Blacksburg, VA*

P-Sat-70
Statistical Shape Analysis of the Human Spleen by Landmark Sliding
K. Yates[1], Y-C. Lu[2], and C. Untaroiu[2]
[1]*Michigan Technological University, Houghton, MI,* [2]*Virginia Polytechnic and State University, Blacksburg, VA*

P-Sat-71
Relationship of Lumbar Angle and Torso Inclination in Adolescent Females
S. Galvis[1], G. Baker[1], S. Wilson[1], and E. Friis[1]
[1]*University of Kansas, Lawrence, KS*

P-Sat-72
Single Cell Directionality on Suspended and Aligned Nanofibers
S. Rao[1,2], J. Wang[2], and A. Nain[2]
[1]*University of Virginia, Charlottesville, VA,* [2]*Virginia Tech, Blacksburg, VA*

P-Sat-73
A More Rigorous Swimming Regimen Does Not Enhance Cardiovascular Changes in Elastin-Deficient Mice
D. Chirumbole[1], K. Stoka[1], and J. Wagenseil[1]
[1]*Washington University in St. Louis, St. Louis, MO*

P-Sat-74
Reduced arterial compliance decreases plaque development in Eln+/-ApoE-/- mice
S. Bhayani[1], J. Maedeker[2], K. Stoka[2], and J. Wagenseil[2]
[1]*Saint Louis University, St. Louis, MO,* [2]*Washington University in St. Louis, St. Louis, MO*

P-Sat-75
Determining the Effect of Vimentin on Cell Traction Force and Stiffness
A. Dagle[1], G. Thomas[2], and Q. Wen[2]
[1]*Clark University, Worcester, MA,* [2]*Worcester Polytechnic Institute, Worcester, MA*

P-Sat-76
In 2D and 3D *In Vitro* Vibrations Modulate Mesenchymal Stem Cell Proliferation and Enhance Gap Junction Intercellular Interaction with Osteoblast Like Bone Cells
R. Patel[1], A. Damato[1,2], S. Pongkitwitoon[1], and S. Judex[1]
[1]*Stony Brook University, Stony Brook, NY,* [2]*Stony Brook University School of Medicine, Stony Brook, NY*

P-Sat-78
Using Virtual Reality To Improve The Compliance Of Children And Adults To Daily Vibration Treatment While Measuring Treatment Efficacy
S. Tikkireddy[1], S. Lee[1], A. Yang[1], G. Pagnotti[1], R. Tong[2], C. Rubin[1], and M. Chan[1]
[1]*Stony Brook University, Stony Brook, NY,* [2]*The Hong Kong Polytechnic University, Hong Kong, China, People's Republic of*

P-Sat-79
Initiation and Propagation of Microdamage in Cancellous Bone
M. Luna[1], A. Torres[2], J. Matheny[2], and C. Hernandez[2]
[1]*University of Arizona, Tucson, AZ,* [2]*Cornell University, Ithaca, NY*

See page 194 for Poster floor plan

P-Sat-80
Measurement of Mechanical Tension Applied to the Nucleus of a Cell
I. Ramachandran[1], P. Arsenovic[1], and D. Conway[1]
[1]Virginia Commonwealth University, Richmond, VA

P-Sat-81
Uphill Walking Enhances The Retention Of A New Stepping Pattern Learned On A Split-Belt Treadmill
J. Calvert[1], C. Sombric[1], and G. Torres-Oviedo[1]
[1]University of Pittsburgh, Pittsburgh, PA

P-Sat-83
High Resolution, Low-Cost Transducer For Cellular Mechanics
E. Richard[1], N. Gambardella[1], K. Kaspar[1], and A. Valdevit [1]
[1]Stevens Institute of Technology, Hoboken, NJ

P-Sat-84
Noninvasive Detection of Pain Associated Spinal Injuries *In Vivo* using microCT Imaging and Acoustic Emissions
A. Knight[1], H. Cutcliffe[1], G. Terziev[1], C. Bass[1], and J. Shridharani[1]
[1]Duke University, Durham, NC

P-Sat-85
Hand Dominance and Physical Activity History Have Little Effect on Distal Radius Microstructure
O. Anjonrin-Ohu[1], T. Butler[2], J. Johnson[2], and K. Troy[2]
[1]University of Tennessee, Kingsport, TN, [2]Worcester Polytechnic Institute, Worcester, MA

P-Sat-86
Microcontact-patterned Proteins on Cyclically Stretched Polyacrylamide Substrates
J. Uribe[1], H. Cirka[2], and K. Billiar[2]
[1]University of Massachusetts Dartmouth, Dartmouth, MA, [2]Worcester Polytechnic Institute, Worcester, MA

P-Sat-87
Characterization Of The Viscoelastic Property Of Mitral Valve Leaflets
P. Parajuli[1], S. Patnaik[1], B. Brazile[1], R. Prabhu[1], H. Rhee[1], L. Williams[1], and J. Liao[1]
[1]Mississippi State University, Mississippi State, MS

P-Sat-88
Sex Differences in Proximal Pulmonary Artery Stiffness as Revealed by Exercise MRI.
J. Warczytowa[1], O. Forouzan[1], C. Francois[1], O. Wieben[1], and N. Chesler[1]
[1]University of Wisconsin-Madison, Madison, WI

P-Sat-89
Correlation Between Acoustic Surface And Whole-Body Attenuations Using Reflection And Transmission QUS for Characteristic Of Bone Quality
K. Agarwal[1], L. Lin[1], J. Muir[1], and Y-X. Qin[1]
[1]Stony Brook University, Stony Brook, NY

P-Sat-90
Mechanical and Cell-Matrix Cues that Induce EMT in a Mouse Lung Adenocarcinoma Model
A. Lee[1], R. Han[2], and J. Grande-Allen[2]
[1]Boston University, Boston, MA, [2]Rice University, Houston, TX

P-Sat-91
Adapting Gait to Multifocal-Lens Glasses Improves Stepping Accuracy in Novice Wearers
E. Weston[1], B. Muncy[2], D. Tomashek[2], K. Keenan[2], R. Smith[2], and K. Beschorner[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]University of Wisconsin-Milwaukee, Milwaukee, WI

P-Sat-92
Measurement of Endoscopist Grip Strength and Manual Dexterity during a Day of Endoscopic Procedures
M. Farnham[1], Y. Melo[1], Z. McCoy[1], E. Geist[1], K. Bieryla[1], and D. Diehl[2]
[1]Bucknell University, Lewisburg, PA, [2]Geisinger Medical Center, Danville, PA

P-Sat-93
Investigation Of Psychophysical Testing Method For Vibrotactile Thresholds
A. Perry [1] and R. Chapla[1]
[1]North Carolina State University, Raleigh, NC

P-Sat-94
Body Segment Parameters in Normal Weight Versus Obese Young Females
M. Knewtson[1], Z. Merrill[1], R. Cham[1], and A. Chambers[1]
[1]University of Pittsburgh, Pittsburgh, PA

P-Sat-95
Quantifying Tibiofemoral Joint Contact Forces in Patients with Knee Osteoarthritis Using OpenSim
P. Kendell[1] and S. Farrokhi[1]
[1]University of Pittsburgh, Pittsburgh, PA

P-Sat-96
Environmental and Storage Effects on Measurements of Porcine Lens Stiffness
B. Marchand[1], S. Kumar[1], and M. Reilly[1]
[1]University of Texas at San Antonio, San Antonio, TX

P-Sat-97
Mechanodifferentiation Of Progenitor Cells Cultured On An Intact ECM Scaffold
C. Rabolli[1], A. LeClair[1], and C. Wagner[1]
[1]The College of New Jersey, Ewing, NJ

P-Sat-98
Methods for Patient-specific Aortic Dissection Modelling
Z. Lucienne[1], V. Flamini[1], P. Ursomanno[2], A. DeAnda[2], and B. Griffith[3]
[1]New York University Polytechnic School of Engineering, Brooklyn, NY, [2]New York University School of Medicine, New York, NY, [3]University of North Carolina at Chapel Hill, Chapel Hill, NC

P-Sat-99
Quantifying Cell-Derived Strain In 3-Dimensional Self-Assembled Dogbone Microtissues
B. Wilks[1], J. Schell[1], and J. Morgan[1]
[1]Brown University, Providence, RI

P-Sat-100
Non-Invasive Characterization of Liver Stiffness Based on Tagged MRI and Inverse Finite Element Analysis
F. Chaves Carvalho[1], V. Flamini[1], L. Axel[2], S. Chung[2], and S. Bhagavatula[2]
[1]New York University Polytechnic School of Engineering, New York, NY, [2]New York University Langone Medical Center, New York, NY

P-Sat-101
High Resolution Particle-Tracking Microrheology In Endothelial Cells And Glycocalyx Layer
P. Yu[1], Y-L. Liu[1], A. Hsu[1], P. Voyvodic[1], A. Baker[1], and H-C. Yeh[1]
[1]University of Texas at Austin, Austin, TX

P-Sat-102
The Collagen Microstructure in the Peripapillary Sclera of the Optic Nerve Head
S. Moed[1], N-J. Jan[1], S. Smelko[1], R. O'Malley[1], A. Dees[1], J. Constantin[1], M. Urich[1], M. Iasella[1], N. Rutowski[1], T. Martin[1], C. Gomez[1], H. Tran[1], J. Grimm[1], K. Lathrop[1], and I. Sigal [1]
[1]University of Pittsburgh, Pittsburgh, PA

P-Sat-103
Lower Extremity Pediatric Orthotic Gait Trainer Lower Extremity Gait Trainer
M. Yin[1], B. McDeed[2], A. Galczynski[2], and T. Le[1]
[1]Mercer University, Macon, GA, [2]Mercer University, MAcon, GA

POSTER SESSION **Sat**

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Sat-103
Development of a Finite Element Model of the Gottingen Minipig Head to Investigate Complex Impact Scenarios
W. Baker[1], E. Fievisohn[1], P. VandeVorde[1], C. Untaroiu[1], and W. Hardy[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

P-Sat-104
Design And Testing Of Composite Materials For Use In The Outer Shell Of Contact Sport Helmets
N. Walters[1], N. Patzin[1], D. Barry[1], G. Batt[1], and J. Desjardins[1]
[1]*Clemson University, Clemson, SC*

Biomedical Imaging and Optics

P-Sat-108
Assessing Edge-Thickness of Soft Contact Lenses Using Gabor-Domain Optical Coherence Microscopy
J. Won[1], P. Tankam[1], I. Cox[1], and J. Rolland[1]
[1]*University of Rochester, Rochester, NY*

P-Sat-109
Evaluation of an Infrared Imager for Breast Cancer Screening
S. Tirumala[1] and M. Loew[1]
[1]*George Washington University, Washington, DC*

P-Sat-110
Color Coding Optically Sectioned Fresh Biopsies for Rapid Pathological Assessment
J. Juan[1], N. Loewke[2], S. Sensarn[2], S. Rogalla[2], D. Rimm[3], and C. Contag[2]
[1]*Brown University, Providence, RI,* [2]*Stanford University, Stanford, CA,* [3]*Yale University, New Haven, CT*

P-Sat-111
Evaluation of the Targeting Ability of Chain-Like Nanoparticles Towards Micrometastasis
G. Doron[1], A. Goldberg[1], P. Peiris[1], E. Doolittle[1], R. Toy[1], and E. Karathanasis[1]
[1]*Case Western Reserve University, Cleveland, OH*

P-Sat-112
Phase Microscopy of Endothelial Cell Interactions in Scattering Media with Oblique Back-Illumination
A. Anderson[1], T. Ford[2], and G. Tearney[2,3]
[1]*University of Rochester, Rochester, NY,* [2]*Massachusetts General Hospital, Boston, MA,* [3]*Harvard Medical School, Boston, MA*

P-Sat-113
Quantifying Cell Surface Receptor Expression In Live Tissue Culture Media Using Dual-Tracer Approach
A. Singh[1], X. Xiaochun Xu[1], L. Sinha[1], C. Yang[1], J. Xiang[1], and K. Tichauer[1]
[1]*Illinois Institute of Technology, Chicago, IL*

P-Sat-114
Computer Simulation of Tooth Mobility Using Varying Material Properties
A. Beckmann[1], S. Raith[2], L. Unterberg[2], and H. Fischer[2]
[1]*Virginia Commonwealth University, Richmond, VA,* [2]*RWTH Aachen University, Aachen, Germany*

P-Sat-115
Non-linear Optical Microscopy of Murine Abdominal Aortic Aneurysm
K. Wilson[1], A. Yrineo[2], A. Adelsperger[2], H. Schroeder[2], D. Zhang[2], J. Zhang[2], C-S. Liao[2], F. Damen[2], E. Phillips[2], J-X. Cheng[2], and C. Goergen[2]
[1]*University of Arkansas, Fayetteville, AR,* [2]*Purdue University, West Lafayette, IN*

P-Sat-116
Design and Optimization of a Hyperspectral Illumination Source for Clinical and Preclinical Imaging
A. Arshad[1], S. Mayes[1], T. Rich[1], and S. Leavesley[1]
[1]*University of South Alabama, Mobile, AL*

P-Sat-117
Detection of Giardia lamblia Cysts and Cryptosporidium parvum Oocysts Using Digital Image Processing
A. Gifford[1], H. Ceylan Kodemir[1], and A. Ozcan[1]
[1]*University of California Los Angeles, Los Angeles, CA*

P-Sat-118
Using Targeted Molecular Imaging For *In Vivo* Evaluation Of Doxorubicin-Based Anti-Cancer Treatment In Combination With The Herbal Medicine Black Cohosh In MCF-7 Xenografts
S. Schuh[1,2], M. Wozniak[1,3], J. Hedhli[1,2], S. Slania[1,2], A. Czerwinski[4], L. Kalinowski[1,3], L. Dobrucki[1,2], and I. Dobrucki[1]
[1]*Beckman Institute for Advanced Science and Technology, Urbana, IL,* [2]*Department of Bioengineering, University of Illinois at Urbana-Champaign, Urbana, IL,* [3]*Department of Medical Laboratory Diagnostics, Medical University of Gdansk, Gdansk, Poland,* [4]*Peptides International Inc., Louisville, KY*

P-Sat-119
Vesicular Localization Induced by Dextran Uptake
T. Netterfield[1], M. Kemp[1], C. Payne[1], and S. Sarkar[2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Northeastern Univeristy, Boston, MA*

P-Sat-120
Single-Nucleotide Polymorphism (SNP) Detection Using a DNA-based Machine
M. Fan[1], K. Yehl[1], and K. Salaita[1]
[1]*Emory University, Atlanta, GA*

P-Sat-121
Diffuse Correlation Spectroscopy to Monitor Longitudinal Vascular Changes in Murine Allografts with Tissue-Engineered Periosteum
E. Mannoh[1], S. Han[2], M. Hoffman[1], M-J. Beltejar[1], D. Benoit[1], and R. Choe[1]
[1]*Department of Biomedical Engineering, University of Rochester, Rochester, NY,* [2]*Institute of Optics, University of Rochester, Rochester, NY*

P-Sat-122
Optimizing Imaging and Computational Analysis for 3D Topographical Visualization of Optically Cleared Whole Normal and Regenerative Tissues
K. Cowdrick[1,2], K. Nelson[1,3], G. Christ[1], and F. Marini[1,4]
[1]*Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC,* [2]*University of Notre Dame, South Bend, IN,* [3]*Wake Forest School of Medicine, Winston-Salem, NC,* [4]*Wake Forest University Baptist Medical Center, Winston-Salem, NC*

P-Sat-123
Quantitative Analysis of Conceptual Pattern Recognition Tasks under Ambiguous Conditions
M. Wenke[1], E. Lin[1], P. Shah[1], J. Ide[1], and L. Mujica-Parodi[1]
[1]*State University of New York at Stony Brook, Stony Brook, NY*

P-Sat-124
Kinetic Modeling of Fluorescent Uptake in the Retina for Blood Flow Mapping
L. Hones[1], M. Guthrie[1], L. Sinha[1], J. Kang-Mieler[1], and K. Tichauer[1]
[1]*Illinois Institute of Technology, Chicago, IL*

P-Sat-125
Axonal Water Fraction is Related to Head Impact Exposure in High School Varsity Football Players
K. Apkarian[1,2], E. Davenport[2], J. Urban[2], M. Espeland[2], C. Whitlow[2], Y. Jung[2], D. Rosenbaum[2], A. Powers[2], J. Stitzel[2], and J. Maldjian[2]
[1]*The Johns Hopkins University, Baltimore, MD,* [2]*Wake Forest School of Medicine, Winston-Salem, NC*

P-Sat-126
PET-CT Imaging of Peripheral Angiogenesis in Type-1 Diabetes Using Novel Dimeric cRGD Peptide
S. Slania[1,2], A. Czerwinski[3], I. Dobrucki[2], and L. Dobrucki[1,2]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL,* [2]*Beckman Institute for Advanced Science and Technology, Urbana, IL,* [3]*Peptides International Inc., Louisville, KY*

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P-Sat-127
Ultrasound Characterization Of The Tibialis Anterior Muscle In Children With Cerebral Palsy And Foot Drop.
A. Aralar[1], D. Turo[1], A. Eranki[1], C. Stanley[2], D. Damiano[2], and S. Sikdar[1]
[1]George Mason University, Fairfax, VA, [2]National Institutes of Health, Bethesda, MD

P-Sat-128
A Novel SNR Measure for Estimation of Shear Stiffness in MR Elastography
K. Huynh[1], R. Eon[2], D. Lake[3], and A. Manduca[3]
[1]The University of Texas at Austin, Austin, TX, [2]Viterbo University, La Crosse, WI, [3]Mayo Clinic, Rochester, MN

P-Sat-129
Highly Sensitive Label-free Biosensors Based On Biconically Tapered Fibers
C. Rowland[1]
[1]California State Polytechnic University, Pomona, Los Angeles, CA

P-Sat-130
Development of a Temperature Sensitive MRI Contrast Agent
K. Hemzacek[1], R. Shankar[1], K. Hussain[1], and V. Kodibagkar[1]
[1]Arizona State University, Tempe, AZ

Cancer Technologies

P-Sat-132
A Caspase-8 Reporter Cell Line from Non-Small Cell Lung Cancer for Anti-Cancer Drug Screening
H. Lee[1], Z. Dereli-Korkut[1], L. Yang[1], and S. Wang[1]
[1]The City College of New York, CUNY, New York, NY

MOVED TO P-SAT-52.

P-Sat-134
Development of a Screening Array for Congenital Melanocytic Nevi
A. Valiga[1], D. Widmer[1], T. Biedermann[2], P. Cheng[1], R. Dummer[1], and M. Levesque[1]
[1]University Hospital Zürich, Zürich, Switzerland, [2]University Children's Hospital Zürich, Zürich, Switzerland

P-Sat-135
Polyvalent Aptamers for the Enhanced Capture of Circulating Tumor Cells in Dynamic Conditions
G. Gydush[1], E. Richards[1], and Y. Wang*[1]
[1]The Pennsylvania State University, State College, PA

P-Sat-136
Integrin-Mediated Metastatic Plasticity in Breast Cancer
S. Nolan[1], L. Barney[1], and S. Peyton[1]
[1]University of Massachusetts Amherst, Amherst, MA

P-Sat-137
Understanding Glioblastoma Migration on Engineered Aligned Nanofibers
S. Arora[1], A. Beliveau[2], and A. Jain[2]
[1]Johns Hopkins University, Baltimore, MD, [2]Worcester Polytechnic Institute, Worcester, MA

P-Sat-138
ECM Stiffening Drives EMT-Like Changes in 3D Epithelial Cell Morphogenesis
K. Martin[1], S. Carey[1], and C. Reinhart-King[1]
[1]Cornell University, Ithaca, NY

P-Sat-139
Varying Concentrations Of Thrombin Affects Tumor Cell Adhesion In Dynamic Conditions
D. Lee[1], G. Gydush[2], E. Richards[2], Y. Wang[2], and C. Dong[2]
[1]The Pennsylvania State University, State College, PA, [2]The Pennsylvania State University, University Park, PA

P-Sat-140
Improving the Response Post-Adoptive Cell Transfer of Dendritic Cells Using Microfluidic Delivery
S. Liu[1,2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]David H. Koch Institute of Integrative Cancer Research, Cambridge, MA

Cardiovascular Engineering

P-Sat-141
Strain Visualization And Quantification For Abdominal Aortic Aneurysm Rupture Risk Prediction
L. Yang[1], N. Couper[1], D. Mix[1], M. Richards[1], and A. Chandra[1]
[1]University of Rochester, Rochester, NY

P-Sat-142
Ex Vivo Assessment Of A Novel Inflow Cannula For Pediatric Continuous-Flow Ventricular Assist Devices
M. Griffin[1,2], M. Grzywinski[1,2], S. Olia[1,2], and M. Kameneva[1,2,3]
[1]Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, [2]McGowan Institute for Regenerative Medicine, Pittsburgh, PA, [3]Department of Surgery, University of Pittsburgh, Pittsburgh, PA

P-Sat-143
3D Reconstruction and Printing of CHD Hearts from Medical CT and Amira Software
M. Lewis[1], C. Buffinton[1], and R. Mangano[2]
[1]Bucknell University, Lewisburg, PA, [2]Geisinger Health System, Danville, PA

P-Sat-144
The Role of Reflex Compensation Following Myocardial Infarction: Supplementing Reported Data Through Model-Based Optimization.
W. Zhang[1] and J. Holmes[1]
[1]University of Virginia, Charlottesville, VA

P-Sat-145
Graphical User Interface To Quantify *In Vitro* Cardiomyocyte Contractility
K. McCarty[1], I. Rivera[2], and C. Simmons[2]
[1]Rice University, Houston, TX, [2]University of Florida, Gainesville, FL

P-Sat-146
Experimental and Computational Models of Microparticle Transport under Dynamic Flow Conditions
C. DeZerga[1], J. Gonzaga[2], and C. Hall[3]
[1]The College of New Jersey, Freehold, NJ, [2]The College of New Jersey, Clifton, NJ, [3]The College of New Jersey, Ewing, NJ

P-Sat-147
Analysis Of A Medical-grade Material Used In A Cardiac Device
K. Brown[1], A. Adkins[2], E. Hord[3], C. Bolch[4], and J. Criscione[3]
[1]Mississippi State University, Mississippi State, MS, [2]St. Mary's University, San Antonio, TX, [3]Texas A&M University, College Station, TX, [4]CorInnova Incorporated, College Station, TX

P-Sat-148
Durability of a Device Designed for Cardiac Assist and Support in a Failing Heart
A. Adkins[1], K. Brown[2], E. Hord[3], C. Bolch[4], and J. Criscione[3,4]
[1]St. Mary's University, San Antonio, TX, [2]Mississippi State University, Mississippi State, MS, [3]Texas A&M University, College Station, TX, [4]CorInnova Inc., College Station, TX

P-Sat-149
Biophysical Mechanisms Underlying Increased Cardiac Contraction by Myofilament Acetylation
Y. Wang[1], S-H. Smith[1], and S-G. Shroff[1]
[1]University of Pittsburgh, Pittsburgh, PA

P-Sat-150
The Role of Heparanase in a Diabetic Mouse Model
S. Mahajan[1], G. Singh[1], E. Nunez[1], S. Das[1], and A. Baker[1]
[1]University of Texas at Austin, Austin, TX

POSTER SESSION **Sat**

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Sat-151
Adeno-associated Virus Mediated Gene Delivery in Rat Cardiomyocytes
G. Sadananda[1], C. Ambrosi[1], and E. Entcheva[1]
[1]*Stony Brook University (SUNY), Stony Brook, NY*

P-Sat-152
Real-Time Visualization of Platelet Deposition Onto Ti6Al4V in Disturbed Flow Geometries
D. Pedersen[1], M. Jamiolkowski[1], M. Kameneva[1], J. Antaki[1,2], and W. Wagner[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Carnegie Mellon University, Pittsburgh, PA*

P-Sat-153
Effect of C-Kit And KDR Stem Cell Markers on PDGFR-a in a Diabetic Mouse Myocardium
S. Ilbeig[1], G. Singh[1], S. Das[1], and A. Baker[1]
[1]*The University of Texas at Austin, Austin, TX*

P-Sat-154
Development of an Automatic System for the Acquisition of ARFI Ultrasound Images during Diastole
K. Kessinger[1], S. Eyerly[1], and P. Wolf[1]
[1]*Duke University, Durham, NC*

P-Sat-155
Regional Strain Quantification of Induced Pluripotent Derived Cardiomyocytes Cultured on a Stiff Substrate
E. Clark[1], R. Orr[2], J. Favreau[2], and G. Gaudette[2]
[1]*Rice University, Houston, TX,* [2]*Worcester Polytechnic Institute, Worcester, MA*

P-Sat-156
Investigating The Effect Of 5-hydroxytryptamine On The Functional Properties Of The Cardiac Valve
R. Reynolds[1], A. Razavi[1], C. Martindale[1], J. Morales[1], and K. Balachandran[1]
[1]*University of Arkansas, Fayetteville, AR*

P-Sat-157
In Vitro Bioactivity Testing of Cardiac Derived Extracellular Matrix Using Stem Cells
T. Grubb[1] and G. Zhang[1]
[1]*The University of Akron, Akron, OH*

P-Sat-158
In Vitro and *Ex Vivo* Substrate Stiffness Effects on Endothelial Permeability in Response to TNF☐
C. Furia[1], R. Lownes Urbano[1], P. Osei-Owusu[1], and A. Morss Clyne[1]
[1]*Drexel University, Philadelphia, PA*

P-Sat-159
Development of a Valve-on-Chip to Study Cardiac Valve Endothelial-Mesenchymal Transformation
J. Carradini[1], N. Sturdivant[1], and K. Balachandran[1]
[1]*University of Arkansas, Fayetteville, AR*

P-Sat-160
Analysis of Structural Changes in Developing Hearts Due to Hyperglycemia
M. Caruso[1], T. Lawson[2], and M. Hinds[2]
[1]*Washington State University, Pullman, WA,* [2]*OHSU, Portland, OR*

P-Sat-161
Influence of Ionic Strength and pH on Neonatal Clot Structure
K. Ahlstedt[1], A. Brown[1], S. Saxena[1], N. Welsch[1], J. Fernandez[2], N. Guzzetta[2,3], and T. Barker[1,4]
[1]*Georgia Tech, Atlanta, GA,* [2]*Childrens Healthcare of Atlanta, Atlanta, GA,* [3]*Emory University, Atlanta, GA,* [4]*Emory University School of Medicine, Atlanta, GA*

P-Sat-162
Parametric Anatomical Models: Rapid Prototyping Methods and Approaches
M. Allain[1], M. Le Saout[2], and C. Taylor[1]
[1]*University of Louisiana at Lafayette, Lafayette, LA,* [2]*University of Poitiers, Poitiers, France*

P-Sat-163
Visualization of Convective Heat Transfer with a Thermal Camera *In Vivo* During Cardiac Radiofrequency Ablation
L. Suchomel[1], S. Eyerly[2], and P. Wolf[1]
[1]*Duke University, Durham, NC,* [2]*Duke University, Durh, NC*

P-Sat-164
Baseline Relation Of Asymmetric Dimethylarginine (ADMA) Levels And Whole Blood Viscosity (WBV) In Patients With End Stage Renal Disease
R. Trigalo[1], R. Madhuraoantula[2], A. Singh[2], M. Hammes[3], and P. Dhar[2]
[1]*University of Illinois at Urbana-Champaign, Champaign, IL,* [2]*Illinois Institute of Technology, Chicago, IL,* [3]*University of Chicago, Chicago, IL*

P-Sat-165
Effect of Exogenous TGF β and its Inhibitors on Hyaluronan Homeostasis in Porcine Aortic Valve Interstitial Cells
A. Stout[1], V. Krishnamurthy[1], and K. Grande-Allen[1]
[1]*Rice University, Houston, TX*

P-Sat-166
Characterizing Mechanical Properties of Cardiac Microtissues
E. Robinson[1], A. Desai[1], J. Rodriguez-Devora[1], and D. Dean[1]
[1]*Clemson University, Clemson, SC*

Biomedical Engineering Education

P-Sat-170
Analyzing the Diffusion of Water in Ion-Exchange Gels Using NMR Methods
J. Feindt[1] and J. Maneval[1]
[1]*Bucknell University, Lewisburg, PA*

Cellular and Molecular Bioengineering

P-Sat-171
Endothelial Surface Glycocalyx Stimulation Induced Nitric Oxide and Calcium Signaling
D. Chester[1], M. Dragovich[1], B. Fu[2], and X. Zhang[1]
[1]*Lehigh University, Bethlehem, PA,* [2]*The City College of The City University of New York, New York City, NY*

P-Sat-172
Endovascular Coil Geometry Determines Blood Clot Permeability
E. Nagel[1], B. Earnest[1], A. Evans[1], and B. Helmke[1]
[1]*University of Virginia, Charlottesville, VA*

P-Sat-173
Effects of an Aquaporin Inhibitor on Cryosurgery of Breast Cancer Cells
H. Reavis[1], D. Dréau[2], and C. Lee[2]
[1]*University of North Carolina at Chapel Hill, Chapel Hill, NC,* [2]*University of North Carolina at Charlotte, Charlotte, NC*

P-Sat-174
Rapid Characterization of G-quadruplexes in Double-Stranded DNA
J. Sanoica[1], J. Calvert[1], A. Kreig[1], R. Tipanna[1], and S. Myong[1]
[1]*University of Illinois at Urbana-Champaign, Champaign, IL*

P-Sat-175
Analysis of Shear-Induced Calcium Oscillations in Vascular Endothelium
J. Julian[1,2], C. Scheitlin[1,2], and B. Alevriadou[1,2]
[1]*The Ohio State University, Columbus, OH,* [2]*Davis Heart & Lung Research Institute, Columbus, OH*

P-Sat-176
Mapping Sensory Diversity Using High-throughput Neural Imaging in C. elegans
T. Gongs[1], R. Lagoy[2], and D. Albrecht[2]
[1]*Louisiana State University, Baton Rouge, LA,* [2]*Worcester Polytechnic Institute, Worcester, MA*

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P-Sat-177
Lysyl Oxidase Inhibitor β aminopropionitrile Reduces Invasiveness of Male Mammary Tumor Cells
K. Young[1], A. Abraham[1], A. Brock[1], and R. Ho[1]
[1]*The University of Texas, Austin, TX*

P-Sat-179
Clinical and Molecular Expression Profiles Revealed Abnormal Plasma mir22 in Patients with Aortic Valve Stenosis
M. Bange[1], S. Samy[2], M. Shuler[1], and M. Ariza-Nieto[1]
[1]*Cornell University, Ithaca, NY,* [2]*Guthrie Clinic, Sayre, PA*

P-Sat-180
Amplifying Signals From Riboswitch Biosensors
A. Bennett[1,2], M. Goodson[2], and N. Kelly-Loughnane[2]
[1]*The University of Dayton, Dayton, OH,* [2711]*th Human Performance Wing, Dayton, OH*

P-Sat-181
In vitro Endothelialized Microfluidic Assay to Study Pulmonary Vaso-occlusion in Sickle Cell Disease
A. Moore[1,2], P. Sundd[1,2,3], E. Gutierrez[4], and A. Groisman[4]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Heart, Lung, Blood and Vascular Medicine Institute, University of Pittsburgh-School of Medicine, Pittsburgh, PA,* [3]*Division of Pulmonary, Allergy and Critical Care Medicine, University of Pittsburgh-School of Medicine, Pittsburgh, PA,* [4]*Department of Physics, University of California-San Diego, La Jolla, CA*

P-Sat-182
Engineering The Extracellular Matrix Of Probiotic Bacteria To Control Localized Adhesion In The Gut
T. Nash[1,2], F. Ward[1,2], P. Praveschotinunt[1,2], A. Duraj-Thatte[1,2], and N. Joshi [1,2]
[1]*Harvard University, Cambridge, MA,* [2]*Wyss Institute for Biologically Inspired Engineering, Boston, MA*

P-Sat-183
Characterizing Thermodynamic Constraints of T4 Lysozyme Secretion via the Type III Secretion System
C. Li[1], A. Azam[1], and D. Tullman-Ercek[2]
[1]*College of Engineering, UC Berkeley, Berkeley, CA,* [2]*College of Chemistry, UC Berkeley, Berkeley, CA*

P-Sat-184
Expression Profiles of Extracellular Vesicle CD14 in Liver Tissue and Plasma in Patients Undergoing Roux-en-Y Gastric Bypass
M. Bange[1], J. Alley[2], M. Shuler[1], and M. Ariza-Nieto[1]
[1]*Cornell University, Ithaca, NY,* [2]*Guthrie Clinic, Sayre, PA*

P-Sat-185
Modeling Tumor-Macrophage Interactions In 3D Micro-Tissues
A. Rodriguez[1], A. Brock[1], and H. Joyce[1]
[1]*The University of Texas at Austin, Austin, TX*

P-Sat-186
Proliferation of Aging Human Cord Blood-Derived Endothelial Cells on Variably Compliant Polyacrylamide Gels
S. Bowman[1,2], T. Cheung[2], J. Fu[2], and G. Truskey[2]
[1]*Vanderbilt University, Nashville, TN,* [2]*Duke University, Durham, NC*

P-Sat-187
The Use Of Ga(III) and Zn(II) Hemecomplexes As A Novel Strategy For Treatment of Staphylococcus aureus Biofilms
A. Albach[1,2]
[1]*US Army Institute of Surgical Research, Ft. Sam Houston, TX,* [2]*St. Mary's Univeristy, San Antonio, TX*

P-Sat-188
Structural Determination of an Avian Astrovirus Capsid Core Structural Determination of an Avian Astrovirus Capsid Core
R. York[1] and R. DuBois[1]
[1]*Univeristy of California Santa Cruz, Santa Cruz, CA*

P-Sat-189
Application of Interfacial Shear Stress to Annulus Fibrosus Cells
A. Uppala[1], S. Han[1], and A. Hsieh[1]
[1]*University of Maryland College Park, College Park, MD*

P-Sat-190
Effect of Chitosan's Biochemical Properties on Antimicrobial Activity
A. Tabassum[1], B. Koppolu[1], and D. Zaharoff[1]
[1]*University of Arkansas, Fayetteville, AR*

Device Technologies and Biomedical Robotics

P-Sat-195
An ECG-Embedded Weight Scale for the Measurement of the QTc Interval in Healthy Adult Individuals
X. Niu[1] and J-P. Couderc[1]
[1]*University of Rochester, Rochester, NY*

P-Sat-197
Neonatal Temperature Sensor for the Developing World
M. Yamagami[1], E. Silva[1], H. Chen[1], E. Alexander[1], K. Maynard[1], P. Keahey[1], Q. Dube[2], and R. Richards-Kortum[1]
[1]*Rice University, Houston, TX,* [2]*Queen Elizabeth Central Hospital, Blantyre, Malawi*

P-Sat-198
Firefighter Health Monitoring Using Wearable EKG Sensors with Bio-identification Capability
J. Farmer[1] and J. Yao[1]
[1]*East Carolina University, Greenville, NC*

P-Sat-199
An Implantable Pneumatic Driver With Non-Invasive Transmural Powering For Cardiac Assist Devices
S. Razvi[1,2], S. Zambrano[1], J. Coello[3], J. Criscione[1], and M. Moreno[1]
[1]*Texas A&M University, College Station, TX,* [2]*The University of Texas at Austin, Austin, TX,* [3]*Instituto Tecnológico de Mérida, Yucatán, Mexico*

P-Sat-200
Debubbling Rotary Planar Peristaltic Micropump
S. Rice[1], R. Reiserer[1], D. Markov[1], S. Sherrod[1], E. Werner[1], K. Seale[1], and C. Marasco [1]
[1]*Vanderbilt University, Nashville, TN*

P-Sat-201
Development of an Analog Front End for the AD5933 Impedance Analyzer to Make Accurate Bio-Impedance Measurements for a Brain on a Chip Device
S. Halim[1], O. Hoilett[1], J. Kribb[1], R. Reiserer[1], and J. Wikswo[1]
[1]*Vanderbilt University, Nashville, TN*

P-Sat-202
Electronic Platform For Automatic Short Performance Physical Battery (SPPB) Test
Y. Bai[1], N. Marco[1], W. Jia[1], H. Zhang[2], Z-H. Mao[1], J. Zgibor[1], L. Burke[1], S. Albert[1], A. Newman[1], and M. Sun[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Beihang University, Beijing, China, People's Republic of*

P-Sat-203
Pressure-sensing Pads for Ultrasound Tissue Mechanics Characterization
C. Corbett[1], K. Showers[1], H. Scruggs[1], E. Kowal[1], C. Kerr[1], H. Cash[1], M. Hanschke[1], D. Dean[1], and D. Kwartowitz[1]
[1]*Clemson University, Clemson, SC*

P-Sat-204
A Method for Determining Skull Coupling of an Instrumented Mouthguard Using Stereo Vision
K. Bui[1] and B. Hammoor[1]
[1]*Stanford University, Stanford, CA*

POSTER SESSION **Sat**

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Sat-205
Optimizing Fat Delivery Methods in Continuous Enteral Feeding of Expressed Breast Milk to Neonates
K. Abdelrahman[1,2], A. Hair[2], K. Hawthorne[2], and S. Abrams[2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Baylor College of Medicine, Houston, TX

P-Sat-206
Upper Extremity Frailty Assessment in Trauma Patients Using Wearable Sensor Technology
M. Heusser[1], N. Toosizadeh[1], B. Zangbar-Sabegh[1], J. Mohler[1], B. Joseph[1], and B. Najafi[1]
[1]University of Arizona Medical Center, Tucson, AZ

P-Sat-207
Finite Element Analysis Comparison of Two Types of Removable Partial Denture Designs
L. Petku[1], E. Meyer[1], and J. Knapp[2]
[1]Lawrence Technological University, Southfield, MI, [2]University of Michigan, Ann Arbor, MI

P-Sat-208
An Automated Fast-ELISA System for the Quantitative Detection of Biomarkers *In Vitro*
D. Maxim[1,2] and I. Georgakoudi[2]
[1]Brigham and Women's Hospital, Harvard Medical School, Boston, MA, [2]Tufts University, Medford, MA

Drug Delivery

P-Sat-211
Cross-linked Lipid Particles for Delivery of Antiretroviral Combinations to Inhibit HIV-1 Infection
W. Lykins[1], R. Ramanathan[1], Y. Jiang[1], and K. Woodrow[1]
[1]University of Washington, Seattle, WA

P-Sat-212
Targeting Human Epidermal Hyperplasia by Suppressing Human HRAS Through Spherical Nucleic Acid (SNA) Nanoconjugates
S. Srinivasan[1], H. Mannam[2], Q. Song[2], C. Mirkin[2], and A. Paller[2]
[1]Case Western Reserve University, Cleveland, OH, [2]Northwestern University, Chicago, IL

P-Sat-213
Dual Drug Release of Doxorubicin and 2-Methoxyestradiol to Inhibit Cancer Cell Invasion and Proliferation
J. Nam[1], E. Rivera[1], and H. von Recum[1]
[1]Case Western Reserve University, Cleveland, OH

P-Sat-214
Transgene Induction from Cyclodextrin Based Polymers
E. Ward[1], E. Rivera-Delgado[1], and H. von Recum[1]
[1]Case Western Reserve University, Cleveland, OH

P-Sat-215
Multivalent Presentation of HER2 Epitopes on Filamentous Plant Virus Platform: A Potential Breast Cancer Vaccine
N. DiFranco[1], S. Shukla[1], U. Commandeur[2], and N. Steinmetz[1]
[1]Case Western Reserve University, Cleveland, OH, [2]RWTH Aachen University, Aachen, Germany

P-Sat-216
TMV Formulation for Imaging and Targeted Treatment of Thrombosis
G. Hsu[1], A. Wen[1], Y. Wang [2], K. Jiang[1], A. Yang[1], H. Gao[2], X. Yu[1], D. Simon[2], and N. Steinmetz [1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Case Cardiovascular Research Institute, Cleveland, OH

P-Sat-217
Estimating the Controlled Release of PRP Components Encapsulated in Biodegradable PEG Hydrogels
S. Sheth[1], E. Jain[1], S. Sell[1], and S. Zustiak[1]
[1]Saint Louis University, St Louis, MO

P-Sat-218
Synthesis and Characterization of Magnetic Nanoparticles for Drug Delivery to Central Nervous System
L. Bruk[1], N. Snyder[1], X. Cui[1], Y. Zhao[1], and T. Ibrahim[1]
[1]University of Pittsburgh, Pittsburgh, PA

P-Sat-219
Engineering of Liposomal Nanoparticles as a Platform for Advanced Drug Delivery Applications
D. Francis[1], P. Kholmatov[1], S. Hayward[1], and S. Kidambi[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

P-Sat-220
Effect of Nanoparticle Morphology and Surface Modification on Tumor Penetration and Distribution
L. Sims[1], H. Frieboes[1], and J. Steinbach[1]
[1]University of Louisville, Louisville, KY

P-Sat-221
A Sweet Nano-affair of Carbon Particles with Deoxyribose Nucleic Acid for Gene Therapy
A. Ohoka[1,2], S. Misra[1,2,3], and D. Pan[1,2,3]
[1]University of Illinois at Urbana-Champaign, Champaign, IL, [2]Biomedical Research Center and Carle Foundation Hospital, Urbana, IL, [3]Beckman Institute, Urbana, IL

P-Sat-222
Effects Of Industrially Processed PLGA Thin Films On Drug Delivery and Material Properties
D. Horne[1], Y. Zhou[2], K. Vedantham[2], and T. Steele[2]
[1]Clemson University, Clemson, SC, [2]Nanyang Technological University, Singapore, Singapore

P-Sat-223
Optimization of Parameters Influencing Polyethylene Glycol Microsphere Fabrication Using Electrospraying
K. Scott[1], E. Jain[1], S. Zustiak[1], and S. Sell[1]
[1]Saint Louis University, St. Louis, MO

P-Sat-224
Novel Chitosan-based Hydrogel for Controlled Release of Anti-tumor Cytokines
E. Lowry[1], C. Wallace[1], B. Koppolu[1], S. Smith[1], and D. Zaharoff[1]
[1]University of Arkansas, Fayetteville, AR

P-Sat-225
A Novel Approach For Root Canal Treatment: Encapsulation of Oral Antibiotics For Drug Delivery Into Dentin Tubules
R. Haseeb[1], M. Lau[1], L. Rodriguez[1], M. Stefan[1], K. Palmer[1], F. Montagner[2], and D. Rodrigues[1]
[1]University of Texas at Dallas, Richardson, TX, [2]Federal University of Rio Grande do Sul, Porto Alegre, Brazil

P-Sat-226
Role of Membrane Rafts in Nanoparticle Uptake by Endothelial Cells
M. Bland[1], S. Son[2], and P. Butler[2]
[1]University of Alabama, Birmingham, AL, [2]Penn State University, University Park, PA

P-Sat-227
The Characterization of PEG-based Hydrogels for Application in Ocular Drug Delivery
E. Canning[1], E. Dosmar[2], and J. Kang-Mieler[2]
[1]Saint Louis University, St. Louis, MO, [2]Illinois Institute of Technology, Chicago, IL

P-Sat-228
Controlled Self-Assembly and Dynamics of Nanoscale Bacteria-Enabled Autonomous Drug Delivery Systems (NanoBEADS)
C. Damico[1], M. Traore[1,2], and B. Behkam[1]
[1]Virginia Polytechnic and State University, Blacksburg, VA, [2]Washington University, St. Louis, MO

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P-Sat-229
Regional Nanoparticle Delivery in the Central Nervous System as a Function of Route of Administration
E. Chung[1,2], A. Prakapenka[1,2], D. DiPerna[1], R. McCall[1], and R. Sirianni[1,2]
[1]Barrow Neurological Institute, Phoenix, AZ, [2]Arizona State University, Tempe, AZ

Nano to Micro Technologies

P-Sat-239
Experimental Optical Properties Of Quadruplex DNA
K. Krawiec[1], K. Lee[1], D. Dryden[1], Y. Ma[1], R. French[1], N. Steinmetz[1], L. Poudel[2], W-Y. Ching[2], R. Podgornik[3], and V. Parsegian[3]
[1]Case Western Reserve University, Cleveland, OH, [2]University of Missouri-Kansas City, Kansas City, MO, [3]University of Massachusetts, Amherst, MA

P-Sat-240
Dual-gel Construct with Dynamic Control of Soluble Chemotactic Cues for the Study of Neural Cells
O. Kuzura[1,2], C. Petersen[1,3], V. Rengarajan[1], and R. Perez-Castillejos[1]
[1]New Jersey Institute of Technology, Newark, NJ, [2]Grinnell College, Grinnell, IA, [3]Case Western University, Cleveland, OH

P-Sat-241
Application of Switchable Silicon Nanomembranes for Controlled Therapeutic Release
S. Wayson[1], G. Madejski[1], K. Smith[1], and J. McGrath[1]
[1]University of Rochester, Rochester, NY

P-Sat-242
High Yielding Conversion of Modified Tobacco Mosaic Virus to Functional Spherical Nanoparticles Using a Mesofluidic Device
A. VanMeter[1], M. Bruckman[1], and N. Steinmetz[1]
[1]Case Western Reserve University, Cleveland, OH

P-Sat-243
Fabrication of a Porous Matrix Integrated into Microfludic Devices for HIV Capture
K. Kundrod[1], K. Surawathanawises[1], and X. Cheng[1]
[1]Lehigh University, Bethlehem, PA

P-Sat-244
The Effect of Chondroitin Sulfate Proteoglycan Surface Gradient Profile on Neurite Growth
A. Geldert[1,2]
[1]National Institutes of Health, Bethesda, MD, [2]University of Virginia, Charlottesville, VA

P-Sat-245
Paper-Based Capture of Neisseria gonorrheae for Point-of-Care Diagnostics
C. Ellenson[1], J. Linnes[1], and C. Klapperich[1]
[1]Boston University, Boston, MA

P-Sat-246
Microfluidic Chromatin Immunoprecipitation in Nanoliter-scale Droplets
A. Oreskovic[1], R. Graybill[1], M. Modak[1], Y. Xu[1], S. Doonan[1], J. Tice[1], T. Ordog[2], and R. Bailey[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Mayo Clinic, Rochester, MN

P-Sat-247
A Chemical Patterned Paper-Based Microfluidic Device For Biochemical Detections
R. Howse[1], M. Musallam[1], B. DeMessie[2] and J. Kim[1]
[1]Texas Tech University, Lubbock, TX, [2]William Mason High School, Mason, OH

P-Sat-248
The Development of an Epidermal Electronic Heating Device for Perioperative Warming
A. Stier[1], K. Diller[1], and N. Lu[1]
[1]The University of Texas at Austin, Austin, TX

P-Sat-249
Cellular Deformation Via Varying Geometric Channels And Dynamic Flow Resistance
J. Vavra[1], J. Zheng[1], and J. Zahn[1]
[1]Rutgers University, Piscataway, NJ

P-Sat-250
Optical Imaging of Biomolecular Tension with Sub-100 nm Resolution
R. Park[1], Y. Liu[2], and K. Salaita[2]
[1]Brown University, Providence, RI, [2]Emory University, Atlanta, GA

P-Sat-251
Testing the Effect of Red Blood Cell Shape on Perfusion of a Microvascular Network
P. Pourreau[1], N. Piety[1], and S. Shevkoplyas[1]
[1]University of Houston, Houston, TX

P-Sat-252
The Effects of Nanoparticle Ingestion on Glucose Transport and Uptake in the Gut Microbiome
G. Shull[1], J. Richter[1], J. Fountain[1], G. Mahler[1], and A. Fiumera[1]
[1]Binghamton University, Binghamton, NY

P-Sat-253
Extending the Spectral Range of Inkjet-Fabricated Paper-Based Plasmonic Enhancing Sensors with Silver Staining
C. Lane[1] and I. White[1]
[1]University of Maryland, College Park, MD

P-Sat-254
Development of a Salivary Cortisol Sensor Using Surface Plasmon Resonance
H. Schmidt[1], T. Long[1], S. Pautler[1], A. Wood[1], S. Grant[1], and S. Gangopadhyay[1]
[1]University of Missouri, Columbia, MO

P-Sat-255
On-chip Oxygen Gradient Stimulation of Pancreatic Beta Cells
F. Chooghari[1] and M. Mahmoud[1]
[1]University of Michigan-Dearborn, Dearborn, MI

P-Sat-256
Detecting Pesticides with Antibody Conjugated CPMV Nanoparticles
J. Kim[1], J. Whitney[1], and N. Steinmetz[2]
[1]Department of Biomedical Engineering, Case Western Reserve University, Cleveland, OH, Cleveland, OH, [2]Department of Biomedical Engineering | Radiology | Materials Science and Engineering | Macromolecular Science and Engineering, Case Western Reserve University, Cleveland, OH, Cleveland, OH

P-Sat-257
Complement-mediated Cell Death of Leukemia and E. coli Cells with Fc Functionalized Beads
M. Devlin[1], B. Gizaw[1], A. Khaja[1], A. Mylarapu[1], C. Patonja[1], P. Pacheco[1], and T. Sulchek[1]
[1]Georgia Institute of Technology, Atlanta, GA

P-Sat-258
Reference Sensors using Poly-acrylonitrile (PAN) Nanobeads for Improved Accuracy in Implantable Optical Sensing Devices
M. Schechinger[1], R. Unruh[1], A. Nagaraja[1], J. Weaver[1], and M. McShane[1]
[1]Texas A&M, College Station, TX

P-Sat-259
In Vitro Turnover of Endothelial Cells
A. Wnorowski[1], J. DeStefano[1], A. Wong[1], and P. Searson[1]
[1]Johns Hopkins University, Baltimore, MD

P-Sat-260
Preasure Measurement In PDMS Microchannels Using The Ideal Gas Law
D. Renner[1] and X. Luo[1]
[1]The Catholic University of America, Washington, DC

POSTER SESSION **Sat**

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

Neural Engineering

P-Sat-261
Two-Dimensional Movement Control using a Non-Invasive, Low-Cost, Brain-Computer Interface
J. DeVince[1] and A. Ritter[1]
[1]Stevens Institute of Technology, Hoboken, NJ

P-Sat-262
The Role of Blood-Derived Macrophages and Resident Microglia in the Neuroinflammatory Response to Implanted Intracortical Microelectrodes
S. Sunil[1,2], M. Ravikumar[1,2], J. Black[1], D. Barkauskas[1], A. Haung[1], R. Miller[1], S. Selkirk[1,2], and J. Capadona[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Louis Stokes Cleveland Veterans Affairs Medical Centre, Cleveland, OH

P-Sat-263
Volumetric Differences of the Amygdala, Hippocampus and Caudate Nucleus in Autism Spectrum Disorder
M. Weitekamp[1], V. DelBene[1], S. Molholm[1], L. Ross[1], and J. Foxe[1]
[1]Albert Einstein College of Medicine, Bronx, NY

P-Sat-265
Transient Spectral Dynamics Correlates with Blood Pressure Excursions During MoyaMoya Neurosurgery
N. Seo[1], S. Ryu[2], R. Murphy[3], J. Leonard[4], and S. Ching[2,3]
[1]University of Rochester, Rochester, NY, [2]Washington University in St. Louis, St. Louis, MO, [3]Washington University School of Medicine in St. Louis, St. Louis, MO, [4]Nationwide Children's Hospital, Columbus, OH

P-Sat-266
The Ladder Rung Walking Task as a Technique to Quantify Traumatic Cerebellar Injury in Rats
J. Binion[1,2], S. Keller[1,3], G. Ordek[1], and M. Sahin[1]
[1]New Jersey Institute of Technology, Newark, NJ, [2]Grove City College, Grove City, PA, [3]Vanderbilt University, Nashville, TN

P-Sat-267
Model of Blast Traumatic Brain Injury with *In Vitro* Dorsal Root Ganglia in Shock Tube
T. Louk[1,2], M. Sisk[1,3], M. Skotak[1], M. Kuriakose[1], A. Adams[1], N. Chandra[1], and B. Pfister[1]
[1]New Jersey Institute of Technology, Newark, NJ, [2]Wartburg College, Waverly, IA, [3]George Mason University, Fairfax, VA

P-Sat-268
Determining the Role of IGF-I in Post-Traumatic Epileptogenesis
L. Boller[1], K. Walters[1], C. Pimentel[1], Y. Song[1], and Y. Berdichevsky[1]
[1]Lehigh University, Bethlehem, PA

P-Sat-269
The Effects of Binaural Stimulation on Brainwave Entrainment
J. Parks[1], M. Harring[1], C. Beauchene[1], and A. Leonessa[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

P-Sat-270
Local Field Potentials Indicate Object Presence During Human Neuroprosthetic Control
D. Crowder[1,2,3], J. Downey[2,4], S. Foldes[2,4], M. Boninger[2,3], and J. Collinger[2,3,5]
[1]The University of Akron, Akron, OH, [2]University of Pittsburgh, Pittsburgh, PA, [3]Human Engineering Research Laboratories, Pittsburgh, PA, [4]Center for the Neural Basis of Cognition, Pittsburgh, PA, [5]Center for Neural Basis of Cognition, Pittsburgh, PA

P-Sat-271
Diffusion Tensor Imaging Segmentation and Tractography of Infantile Nystagmus Syndrome
A. Zampini[1] and N. Kashou[1]
[1]Wright State University, Dayton, OH

P-Sat-272
Dexamethasone Attenuates Immediate Microglial Responses to Brain Microdialysis *In Vivo* as Revealed by Two-Photon Microscopy
G. Brunette[1], T. Kozai[1], A. Jaquins-Gerstl[1], A. Vazquez[1], A. Michael[1], and X. Cui[1]
[1]University of Pittsburgh, Pittsburgh, PA

P-Sat-273
Development of Superoxide Dismutase Mimetic Surfaces to Reduce Accumulation of Reactive Oxygen Species for Neural Interfacing Applications
M. Gitomer[1], K. Potter-Baker[1], J. Nguyen[1], K. Kovach[1], T. Srail[1], W. Stewart[1], J. Skousen[1], and J. Capadona[1]
[1]Case Western Reserve University, Cleveland, OH

P-Sat-274
A Wireless, Real-Time Embedded Hand Gesture Recognition System For Myoelectric Control
J. Sacks[1], X. Liu[2], M. Zhang[2], and J. Van der Spiegel[2]
[1]The University of Texas at Austin, Austin, TX, [2]University of Pennsylvania, Philadelphia, PA

P-Sat-275
Inhibition Of Cluster Of Differentiation 14 (CD14) Attenuates Neuroinflammation Around Intracortical Microelectrode Interface
W. Tomaszewski[1], M. Ravikumar[1], S. Sunil[1], A. Burke[1], D. Hageman[1], and J. Capadona[1]
[1]Case Western Reserve University, Cleveland, OH

P-Sat-276
Diffusion Tractography as a Tool for Subject-Specific Computational Models of DBS in the MLR
K. Brintz[1], L. Zitella[1], J. Xiao[1], Y. Duchin[1], G. Adriany[1], E. Yacoub[1], N. Harel[1], and M. Johnson[1]
[1]University of Minnesota, Minneapolis, MN

P-Sat-278
Novel Fractal Electrode Geometries for Efficient Deep Brain Stimulation of Neural Tissue
N. Iyengar[1], A. DeMaria[1], and X. Wei[1]
[1]The College of New Jersey, Ewing, NJ

P-Sat-279
In Vitro Model For Mimicking Concussion Impacts on Sterile Cell Culture
N. Nibras[1] and S. Madihally[1]
[1]Oklahoma State University, Stillwater, OK

P-Sat-280
Histological and Biodistribution Assessment of Daily Administration of Resveratrol: Application for Intracortical Microelectrodes
W. Stewart[1], K. Potter-Baker[1,2], W. Meador[1], W. Tomaszewski[1], M. Gitomer [1], N. Ziats[1], and J. Capadona[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]L. Stokes Cleveland VA Medical Center, Cleveland, OH

P-Sat-281
Mechanically-compliant Intracortical Implants Reduce the Neuroinflammatory Response
J. Nguyen[1,2], D. Park[1], J. Skousen[2], A. Hess-Dunning[2], D. Tyler[1,2], S. Rowan[1,3], C. Weder[3,4], and J. Capadona[1,2]
[1]Department of Biomedical Engineering, Case Western Reserve University, Cleveland, OH, [2]Advanced Platform Technology Center, Louis Stokes Cleveland Department of Veterans Affairs Medical Center, Cleveland, OH, [3]Department of Macromolecular Science and Engineering, Case Western Reserve University, Cleveland, OH, [4]Adolphe Merkle Institute, University of Fribourg, Marly, Switzerland

P-Sat-282
Complexing Blood Proteins and Resveratrol to Increase Reactive Oxygen Species Scavenging for Intracortical Electrode Use
T. Srail[1], E. Ereifej[1], and K. Potter-Baker[1]
[1]Case Western Reserve University, Cleveland, OH

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New Frontiers and Special Topics

P-Sat-294
Synthesis and Characterization of a Citrate-based Hydrogel for Injection Assisted Endoscopic Mucosal Resection
S. Vilchez Mercedes[1], C. Chu[1], R. Tran[1], and J. Yang[1]
[1]*The Pennsylvania State University, State College, PA*

P-Sat-295
The Interaction Between Cytochrome B5 and Cytochrome B5 Reductase-1 in Electron Transport
E. Kwan[1,2], W. Bauer[2], and M. Malkowski[2]
[1]*University of Rochester, Rochester, NY,* [2]*Hauptman Woodward Medical Research Institute, Buffalo, NY*

P-Sat-296
Detecting Electrophysiologic Abnormalities In Chronic Insomnia Using Detrended Fluctuation Analysis
A. Cugini[1], D. Buysse[2], M. Hall[2], D. Cashmere[2], and F. He[2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Clinical and Translational Science Institute, Pittsburgh, PA*

P-Sat-297
Development Of X-ray Irradiation Port For Biological Material At CUEBIT
W. Heffron[1], R. Wilson[2], D. Medlin[2], A. Gall[2], M. Rusin[2], D. Dean[2], and E. Takacs[2]
[1]*Wofford College, Spartanbug, SC,* [2]*Clemson University, Clemson, SC*

P-Sat-298
Bioproduction Of Ethanol Via Co-culture of Ralstonia eutropha and Saccharomyces cerevisiae
S. Kakarla[1], A. Kehail[1], M. Silby[1], V. Bucci[1], and C. Brigham[1]
[1]*University of Massachusetts Dartmouth, North Dartmouth, MA*

P-Sat-299
Reagent Stability for Ultra-low-cost Sickle Cell Disease Assay
D. Lezzar[1], N. Piety[1], and S. Shevkoplyas[1]
[1]*University of Houston, Houston, TX*

P-Sat-300
Design of an Inexpensive Recording Device To Overcome Obstacles Resulting From Low Literacy Rates In Developing Countries
C. Fayal[1] and S. Graf[2]
[1]*University of Connecticut, Stonington, CT,* [2]*University of Connecticut, Storrs, CT*

Orthopaedic and Rehabilitation Engineering

P-Sat-301
Interaction Between Mirror Visual Feedback and Goal-Directed Task Shows Increased Cortical Excitability in Untrained Hemisphere; Possible Stroke Rehabilitation Applications
N. Mubin[1,2], A. Albanese[1,3], M. Yarossi[1,4], E. Tunik[4], and S. Adamovich[1]
[1]*New Jersey Institute of Technology, Newark, NJ,* [2]*The College of New Jersey, Ewing Township, NJ,* [3]*University of Nevada, Reno, NV,* [4]*Rutgers Biomedical and Health Sciences, Newark, NJ*

P-Sat-302
The Role Of Scleraxis In Bone Remodeling and Callus Formation During Fracture Healing
B. Havelka[1], J. McKenzie[2], E. Buettmann[2], A. Abraham[2], M. Silva[2], M. Gardner[2], and M. Killian[2]
[1]*Saint Louis University, St. Louis, MO,* [2]*Washington University School of Medicine, St. Louis, MO*

P-Sat-303
Biomechanical Analysis of Internal Fixation Methods for Distal Interphalangeal Joint Arthrodesis
S. Rigot[1,2], R. Diaz-Garcia[2], R. Debski[2], and J. Fowler[2]
[1]*University of Rochester, Rochester, NY,* [2]*University of Pittsburgh, Pittsburgh, PA*

P-Sat-304
Modeling Finger Pose and Position in a Cable-Actuated Soft Exomusculate Robotic Glove For Stroke Rehabilitation
M. Huszagh[1], C. Nycz[2], and G. Fischer[2]
[1]*Vanderbilt University, Nashville, TN,* [2]*Worcester Polytechnic Institute, Worcester, MA*

P-Sat-305
Effects of Exercise and Reduced Collagen Crosslinking on Bone Geometry and Microarchitecture in Mice
T. Laine[1], M. Hammond[2], and J. Wallace[1,2]
[1]*Indiana University Purdue University Indianapolis, Indianapolis, IN,* [2]*Purdue University, Indianapolis, IN*

P-Sat-306
Sleeve Gastrectomy on Obese Rats Impairs Trabecular Bone in Quantity and Quality
J. Tan[1], J. Abraham[1], G. Pagnotti[1], V. Patel [1], A. Yang[1], M. Altieri[1], A. Pryor[1], D. Telem[1], C. Rubin[1], and M. Chan[1]
[1]*Stony Brook University, Stony Brook, NY*

P-Sat-307
Utilization Of Peak Extraction Force Of Kirschner (K-) Wire And Reference Probe Indentation Parameters As Predictors Of Bone Mineral Density (BMD)
S. Denning[1], A. Dincer[1], R. Pisano[1], T. Bowen[2], D. Ebenstein[1], and E. Kennedy[1]
[1]*Bucknell University, Lewisburg, PA,* [2]*Geisinger Health System, Danville, PA*

P-Sat-308
A Mechanically Induced Model of Pain and Structural Changes in the Temporomandiular Joint in the Rat
T. Zhou[1], S. Kartha[1], E. Granquist[1], and B. Winkelstein[1]
[1]*University of Pennsylvania, Philadelphia, PA*

P-Sat-309
Development of a Device To Non-Invasively Induce Osteoarthritis Of The Elbow In An Animal Model
L. Kahan[1] and S. Lake[1]
[1]*Washington University in St. Louis, St. Louis, MO*

P-Sat-310
First Steps Towards the Development Of An Artificial Vocal Fold Prosthesis
M. Sandoe[1], G. Burks[1], and A. Leonessa[1]
[1]*Virginia Tech, Blacksburg, VA*

P-Sat-311
Comparing Cyclic Tensile Properties of Porcine Meniscus when Hydrated in PBS versus Synovial Fluid
C. Kline[1], E. Lakes[1], P. McFetridge[1], and K. Allen[1]
[1]*University of Florida, Gainesville, FL*

P-Sat-312
Sleeve Gastrectomy on Obese Rats Reduces the Quantity of Cortical Bone at the Mid Diaphysis
J. Abraham[1], J. Tang[1], G. Pagnotti[1], V. Patel[1], A. Yang[1], M. Altieri[1], A. Pryor[1], D. Telem[1], C. Rubin[1], and E. Chan[1]
[1]*Stony Brook University, Stony Brook, NY*

P-Sat-313
Quantitative Assessment of Gait and Balance for Determining Alignment Parameters for Prosthetic Fitting
J. Loayza[1], A. Arrinda[1], A. Konjengbam[2], A. Alfred[1], A. Thota[1], and R. Jung[1]
[1]*Florida International University, Miami, FL,* [2]*Wakefield Girls High School, Wakefield, United Kingdom*

POSTER SESSION **Sat**

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Sat-314
Older Adults Learn Equally From Large And Small Errors During Split-Belt Locomotor Adaptation
H. Harker[1], C. Sombric[1], P. Sparto[1], and G. Torres-Oviedo[1]
[1]University of Pittsburgh, Pittsburgh, PA

P-Sat-315
Alignment of Hinged Dynamic External Fixators Using the Elbow's Flexion-Extension Axis of Rotation
F. Unukpo[1], R. Baker[1], C. Kopfler[1], C. Lobrano[2], D. O'Neil[1], and A. Hollister[2]
[1]Louisiana Tech University, Ruston, LA, [2]Louisiana State University Health Sciences Center, Shreveport, LA

P-Sat-316
Effect of Ankle Immobilization on Able-Bodied Gait to Model Bilateral Transtibial Amputee Gait
A. Nepomuceno[1], M. Major[1,2], R. Stine[2], and S. Gard[1,2]
[1]Northwestern University Prosthetics-Orthotics Center, Chicago, IL, [2]Jesse Brown VA Medical Center, Chicago, IL

P-Sat-317
Altered Trabecular Bone In An Animal Model Of Post-Traumatic Elbow Stiffness
M. Liu[1], R. Castile[1], L. Galatz[1], and S. Lake[1]
[1]Washington University in St. Louis, St. Louis, MO

P-Sat-318
Use of Natural Crosslinkers to Stabilize Decellularized Cartilage
A. Pinheiro[1,2], A. Gottipati[2], and S. Elder[2]
[1]The University of Akron, Akron, OH, [2]Mississippi State University, Mississippi State, MS

P-Sat-319
Development of Silver Doped Tricalcium Phosphate Thin Films for the Coating of Magnesium Implants
T. Moses[1], G. Harris[2], E. Craven[2], N. Yamoah[2], R. Kotoka[2], S. Ibrahim[2], S. Ajinola[2], and D. Kumar[2]
[1]Clemson University, Clemson, SC, [2]North Carolina Agricultural and Technical State University, Greensboro, NC

Respiratory Bioengineering

P-Sat-322
Darcy Permeability Characterization of PMP Hollow Fiber Membrane Bundles
B. D'Aloiso[1], S. Madhani[1], B. Frankowski[1], and W. Federspiel[1,2]
[1]Medical Devices Lab, McGowan Institute for Regenerative Medicine, University of Pittsburgh, Pittsburgh, PA, [2]University of Pittsburgh, Pittsburgh, PA

P-Sat-323
Design of Collapsible Tubing System for Simulated Airway Reopening
C. Faulman[1], E. Yamaguchi[1], and D. Gaver[1]
[1]Tulane University, New Orleans, LA

P-Sat-324
Computational and Experimental Analysis of Mucus Adhesive Properties during Otitis Media
J. McGuire[1], J. Malik[2], N. Higuita-Castro[2], and S. Ghadiali[2]
[1]Virginia Tech, Blacksburg, VA, [2]The Ohio State University, Columbus, OH

P-Sat-325
The Use Of Exhaled Breath Condensate To Assess Surfactant Dysfunction From Chlorine Exposure
C. Edwards[1], E. Svendsen[1], and D. Gaver[1]
[1]Tulane University, New Orleans, LA

P-Sat-326
A Microfluidic Model of Pulmonary Airway Reopening in Asymmetric Bifurcating Networks
L. Nolan[1], E. Yamaguchi[1], and D. Gaver[1]
[1]Tulane University, New Orleans, LA

P-Sat-327
Mechanical Stretch and Aging of Alveolar Epithelial Cells induces Endoplasmic Reticulum Stress and Pro-inflammatory Gene Expression
J. Nkwocha[1], J. Herbert[1], A. Reynolds[1], and R. Heise[1]
[1]Virginia Commonwealth University, Richmond, VA

P-Sat-328
Assessment of Ventilatory Function and Respiratory Muscle Electromyograms in Rodents for Design of an Adaptive Ventilatory Neuromuscular Pacing Device
B. Davis[1], R. Siu[1], B. Hillen[1], C. Vale[1], and R. Jung[1]
[1]Florida International University, Miami, FL

Track: Undergraduate Research

Stem Cell Engineering

P-Sat-337
Redirecting Intestinal Stem Cell Fate Using Small Molecules
K. Benjamin[1], S. Mohammadi[1], and E. Wiellette[1]
[1]Novartis Institutes for Biomedical Research, Cambridge, MA

P-Sat-338
Combined Role of Basic Fibroblast Growth Factor and pH on Glioblastoma Stem Cell Expansion
E. Haley[1], S. Tilson[1], D. Dozier[1], and Y. Kim[1]
[1]The University of Alabama, Tuscaloosa, AL

P-Sat-339
The Effect of Y-27632 on the Propagation of Glioblastoma Stem Cells
S. Tilson[1], E. Haley[1], D. Dozier[1], G. Yancey Gillespie[2], and Y. Kim[1]
[1]University of Alabama, Tuscaloosa, AL, [2]University of Alabama at Birmingham, Birmingham, AL

P-Sat-340
Improving Transfection Efficiency of Nucleofection Technique by Manipulating Cell Concentration
M. Bloom[1], A. Mellott[1], M. Detamore[1], and H. Shinogle[1]
[1]University of Kansas, Lawrence, KS

P-Sat-341
The Role of Hydrocortisone in the Maturation of Pancreatic Endocrine Beta-like Cells Derived from Murine Embryonic Stem Cells *In Vitro*
J. Choe[1] and H. Ku[2]
[1]University of California, Berkeley, Berkeley, CA, [2]City of Hope, Duarte, CA

P-Sat-342
Adipose-Derived Stem Cells From Diabetic Patients Display A Pro-Thrombogenic Phenotype
D. Pezzone[1,2], J. Krawiec[1,2], J. Weinbaum[1,2], J. Rubin[1,2], and D. Vorp[1,2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]McGowan Institute for Regenerative Medicine, Pittsburgh, PA

P-Sat-343
Investigating the Effects of Stromal Cell - Neuronal Cell Co-culture on Neuronal Maturity and Neuronal Viability Under Oxidative Stress
K. Smith[1], P. Moghe[2], N. Bennett[2], and N. Francis[2]
[1]University of Connecticut, Storrs, CT, [2]Rutgers, The State University of New Jersey, Piscataway, NJ

P-Sat-344
Optimization Of Polyethyleneimine Coated Gold Nanorods For Use In Caspase-3-siRNA Knockdown Of Adipose-Derived Stem Cells
B. Henson[1], D. Santiesteban[1], L. Suggs[1], and S. Emelianov[1]
[1]The University of Texas at Austin, Austin, TX

P-Sat-345
Cytoskeletal Remodeling due to Applied Shear Stress in Differentiating Pluripotent Stem Cells
J. Guidry[1], R. Wolfe[1], and T. Ahsan[1]
[1]Tulane University, New Orleans, LA

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P-Sat-346
Human Mesenchymal Stem Cell Response to a Patterned and Electrostimulated Monolayer of Graphene
B. Fang[1]
[1]*Vanderbilt University, Nashville, TN*

P-Sat-347
Site Directed Differentiation of Using a Fibronectin-VEGF Matrix Blend
N. White[1], J. Zamora[1], R. Burtzlaff[1], D. Glaser[1], and K. McCloskey[1]
[1]*University of California, Merced, Merced, CA*

Tissue Engineering

P-Sat-349
Sustained Protein Release from Tissue Engineering Scaffolds for Bone Regeneration Using Layer-by-Layer Coating
M. Lee[1], M. Keeney[1], X. Jiang[1], and F. Yang[1]
[1]*Stanford University, Stanford, CA*

P-Sat-350
Enhanced Human Bone Marrow Mesenchymal Stem Cell Behavior on Novel 3D Printed Osteochondral Nanocomposite Scaffolds
R. Patel[1], N. Castro[1], and L. Zhang[1]
[1]*The George Washington University, Washington, DC*

P-Sat-351
Enhancing Bone Regeneration by using Osteoinductive Microspheres
C. Dodson[1], C. Haase[1], R. Kaunas[1], and C. Gregory[2]
[1]*Texas A&M University, College Station, TX,* [2]*Texas A&M Health Science Center, Temple, TX*

P-Sat-352
β-Catenin Signaling Leading to Cell Maintenance or Differentiation in Response to Electrospun Fibers
R. Nagurney[1] and J. Brown[1]
[1]*The Pennsylvania State University, State College, PA*

P-Sat-353
Mechanical Characterization Of Extracellular Matrix Hydrogels For Peripheral Nerve Reconstruction
D. Srinivasachar[1], T. Prest[1], and B. Brown[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

P-Sat-354
Adipose Stem Cell Suspension in Keratin Hydrogel for Nervous Tissue Regeneration
L. Marra[1], D. Minteer[1], and K. Marra[1,2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA*

P-Sat-355
Single Walled Carbon Nanohorns Modulate Extracellular Matrix Response in Tendons and Ligaments
J. Jackson[1], E. Ekwueme[2], A. Pekkanen[3], P. Brolinson[4], M. Rylander[3], and J. Freeman[2]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*Rutgers Univeristy, Piscataway, NJ,* [3]*Virginia Tech, Blacksburg, VA,* [4]*Edward Via Virginia College of Osteopathic Medicine, Blacksburg, VA*

P-Sat-356
Design of a Mold System for 3D Self-Assembly of Skeletal Muscle *In Vitro*
M. Mancuso[1], J. Forte[2], and R. Page[2]
[1]*Union College, Schenectady, NY,* [2]*Worcester Polytechnic Institute, Worcester, MA*

P-Sat-357
Development of Carbon Nanotube Hydrogel Composites
D. Vasileva[1], K. Shah[1], and S. Zustiak[1]
[1]*Saint Louis University, St Louis, MO*

P-Sat-358
Quantifying Cell Aggregation in 3D Smooth Muscle Cell Tissue Rings
C. Nunez[1], K. Levi[2], and M. Rolle[2]
[1]*University of Rhode Island, Kingston, RI,* [2]*Worcester Polytechnic Institute, Worcester, MA*

P-Sat-359
Development of a Tendon Graft for Rotator Cuff Repair Using the Human Amniotic Membrane
J. Liu[1], M. Mouchiroud[1], J. Arrizabalaga[1], and M. Nollert[1]
[1]*University of Oklahoma, Norman, OK*

P-Sat-360
Cell Surface Engineering of Embryonic Stem Cells with Modular Biomaterial Chemistries
R. Yada[1], N. Bansal[1], and G. Underhill[1]
[1]*University of Illinois at Urbana-Champaign, Champaign, IL*

P-Sat-361
Development of Nerve Guidance Conduit for Peripheral Nerve Regeneration from Urinary Bladder Matrix
C. Loveland[1,2], B. Young[1], C. Valmikinathan[1], and T. Gilbert[1]
[1]*ACell, Inc., Columbia, MD,* [2]*Johns Hopkins University, Baltimore, MD*

P-Sat-362
Oxygen Sensing Microparticles For Use In Tissue Engineering Scaffolds
N. Vera-Gonzalez[1], N. Virdone[1], B. Nsiah[1], and J. West[1]
[1]*Duke University, Durham, NC*

P-Sat-363
Influence of the Elastic Modulus of Aligned Electrospun Fibers on Mesenchymal Stem Cell Behavior in Collagen Gels
N. Butler-Abisrror[1], P. Thayer[2], and A. Goldstein[2]
[1]*Virginia Polytechnic Institute and State University, Richmond, VA,* [2]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

P-Sat-364
Creation of a Functional Mitral Regurgitation Reversal Model in a Physiological Flow Loop Bioreactor
S. Kim[1], P. Connell[1], M. Jackson[2], S. Little [2], and J. Grande-Allen[1]
[1]*Rice University, Houston, TX,* [2]*The Methodist Hospital, Houston, TX*

P-Sat-365
Transcriptional Activator TAZ Increases Fibroblast ECM Deposition in the Context of Pulmonary Fibrosis
L. Stopfer[1,2], A. Jorgenson[1], D. Sicard[1], and D. Tschumperlin[1]
[1]*Mayo Graduate School, Rochester, MN,* [2]*University of Wisconsin Madison, Madison, WI*

P-Sat-366
Precise Triaxial Deposition of Near Field Electrospun Nanofibers for the Fabrication of Tissue Scaffolds
J. Dover[1] and J. Brown[1]
[1]*The Pennsylvania State University, University Park, PA*

P-Sat-367
Characterization Of Highly Aligned Collagen Sponge-Like Scaffolds For Nerve Tissue Engineering
M. Grota[1], C. Lowe[2], and D. Shreiber[2]
[1]*University of Massachusetts Dartmouth, New Bedford, MA,* [2]*Rutgers The State University of New Jersey, New Brunswick, NJ*

P-Sat-368
Prevascularization of Natural Extracellular Matrix Scaffold
M. Tahtinen[1], L. Zhang[1], and F. Zhao[1]
[1]*Michigan Technological University, Houghton, MI*

P-Sat-369
Bell-shaped Dose Response Of Sodium Pyruvate On Properties Of Tissue Engineered Cartilage
S. Bansal[1], E. Estell[1], G. Ateshian[1], and C. Hung[1]
[1]*Columbia University, New York, NY*

P = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

P-Sat-370
The Effect Of Interleukin β On VLDL Secretion In Steatotic Hepatocytes During Defatting
A. Chen-Liaw[1], G. Yarmush[2], and F. Berthiaume[2]
[1]University of Scranton, Scranton, PA, [2]Rutgers, The State University of New Jersey, Piscataway, NJ

P-Sat-371
Extraction of Platelet-Rich Plasma Derived Lipids from Electrospun Structures for Wound Healing
K. Polito[1] and S. Sell[1]
[1]Saint Louis University, St. Louis, MO

P-Sat-372
Investigating the Response of Fibroblasts to Microgravity: an *In Vitro* Platform to Study Wound Healing
S. Brady[1], L. Stapleton[2], E. Evans[1], and D. Hoffman-Kim[1]
[1]Brown University, Providence, RI, [2]University of New Mexico, Albuquerque, NM

P-Sat-373
Preventing Articular Cartilage Calcification by the Controlled Release of Dorsomorphin
P. Bianconi[1,2], R. Gottardi[1,3,4,5,6], V. Ulici[1,4], S. Little[1,2,7], and R. Tuan[1,3,4]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Department of Bioengineering, Pittsburgh, PA, [3]McGowan Institute for Regenerative Medicine, Pittsburgh, PA, [4]Orthopedic Surgery, Pittsburgh, PA, [5]Ri.Med Foundation, Palermo, Italy, [6]Department of Mechanical Engineering, Pittsburgh, PA, [7]Department of Chemical Engineering, Pittsburgh, PA

P-Sat-374
Peptide linkage of Poly(caprolactone)-Chitosan Blend Scaffolds
M. Sanchez[1], D. Ramos[1,2], C. Laurencin[1,2,3], and S. Kumbar[1,2,3]
[1]University of Connecticut, Storrs, CT, [2]Institute For Regenerative Engineering, Farmington, CT, [3]University of Connecticut Health Center, Farmington, CT

P-Sat-375
Extended Bioreactor Conditioning of MNC Seeded Heart Valves
C. Uryasz[1], M. VeDepo[1], C. McFall[1], K. Neill[1], R. Hopkins[1], and G. Converse[1]
[1]Children's Mercy Hospital, Kansas City, MO

P-Sat-376
UCP-1 Expression in White Adipose Depots in Laminin α4 Knockout Mice
A. Wanagas[1], M. Vaicik[1], M. Morse[2], R. Cohen[2], and E. Brey[1]
[1]Illinois Institute of Technology, Chicago, IL, [2]University of Chicago, Chicago, IL

P-Sat-377
Cellular Response To PPF Reinforced Pericardium Scaffold
V. Niba[1], L. Bracaglia[1], and J. Fisher[1]
[1]University of Maryland, College Park, MD

P-Sat-378
Three-Dimensional Microfluidic Computational Study in Tissue Engineering
J. Stewart[1]
[1]Tarleton State University, Stephenville, TX

P-Sat-379
Cell Culture on Photovoltaic Surfaces: An Alternative to Trypsinization
C. Arthur[1], A. Stastny[1], C. Jones[1], A. Desai[1], D. Dean[1], and J. Rodriguez-Devora[1]
[1]Clemson University, Clemson, SC

P-Sat-380
Developing an *In Vitro* Cardiac Infarct Model With Silk and Cardiac Progenitor Cells
A. Greaney[1]
[1]Tufts University, Medford, MA

P-Sat-381
Mechanical Properties & Degradation of Hydroxyapatite & Tri-Calcium Phosphate Incorporated Hydrogels
D. Kamireddi[1], B. Akar[2], and E. Brey[2]
[1]University of Connecticut, Storrs, CT, [2]Illinois Institute of Technology, Chicago, IL

P-Sat-382
Increasing Engineered Cardiac Muscle Tissue Alignment in 2D
S. Kim[1], I. Batalov[1], and A. Feinberg[1]
[1]Carnegie Mellon University, Pittsburgh, PA

P-Sat-383
Rabbit Corneal Fibroblast Response to Substrate Stiffness
K. Curlin[1] and E. Orwin[1]
[1]Harvey Mudd College, Claremont, CA

P-Sat-384
Biodegradable Polyurethane and Its Application in Tissue Engineering
R. Aekins[1], D. Dorcemus[1], R. Bezwada[2], and S. Nukavrapu[3]
[1]University of Connecticut, Storrs, CT, [2]Bezwada Biomedical LLC, Hillsborough, NJ, [3]University of Connecticut, Farmington, CT

P-Sat-385
Glioma Stem Cells Respond Differentially to Treatment in Tissue Engineered Brain Tumor Microenvironments
A. Berr[1], O. Cossio[1], and J. Munson[1]
[1]University of Virginia, Charlottesville, VA

P-Sat-386
Spatiotemporal Oxygen Monitoring for Three-Dimensional Engineered Tissues
S. Knowlton[1], A. Acun[2], and P. Zorlutuna[2]
[1]University of Connecticut, Storrs Mansfield, CT, [2]University of Notre Dame, Notre Dame, IN

P-Sat-387
Three Dimensional Cell Culture Effects on Chondrogenesis of Kartogenin-treated hMSCs
M. Patil[1], R. Gottardi[1,2,3], V. Ulici[3], S. Little[1], and R. Tuan[3]
[1]Swanson School of Engineering, University of Pittsburgh, Pittsburgh, PA, [2]Ri.MED Foundation, Palermo, Italy, [3]McGowan Institute for Regenerative Medicine, University of Pittsburgh, Pittsburgh, PA

P-Sat-388
A Long Term Imaging Platform for Patterned Substrates
E. Tague[1]
[1]The University of Illiniois Urbana-Champaign, Batavia, IL

P-Sat-389
Alignment-Induced RNA Expression of Endothelial Cells
I. Buczko[1] and K. McCloskey [1]
[1]University of California, Merced, Merced, CA

Track: Undergraduate, Translational Biomedical Engineering

Translational Biomedical Engineering - Undergraduate Research

P-Sat-396
Synth-AID: A Synthetic Skin Delivery System
K. Cyr[1] and C. Marasco[1]
[1]Vanderbilt University, Nashville, TN

P-Sat-397
Optimizing Antibiotic Treatment Strategies Using Small Molecule Inhibitors of DNA Damage Repair
H. Thorp[1,2], J. Yang[1,2], and J. Collins[1,2]
[1]Boston University, Boston, MA, [2]Howard Hughes Medical Institute, Boston, MA

P-Sat-398
Synthesizing PLA-PEG Nanoparticles With A Fluidic Nanoprecipitation System For Industrial Scale Up
N. Schindler[1], M. Lashof-Sullivan[1], R. Groynom[1], and E. Lavik[1]
[1]Case Western Reserve University, Cleveland, OH

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P-Sat-399
Efficient Expression and Purification of Beta Amyloid 42
T. Armand[1], S. Sharma[1], and T. Head-Gordon[1]
[1]University of California, Berkeley, Berkeley, CA

P-Sat-400
Computational Modeling of Pancreatic Duct Strictures as a Predictor for Stent Therapy
C. Moreau[1] and C. Lee[2]
[1]University of Texas Health Science Center at San Antonio, San Antonio, TX, [2]University of Texas at San Antonio, San Antonio, TX

P-Sat-401
The Impact of Mild Cognitive Impairment on Balance and Gait: a Systematic Review
L. Bahureksa[1], M. Schwenk[1], A. Saleh[1], M. Sabbagh[2], D. Coon[3], J. Mohler[1], and B. Najafi[1]
[1]University of Arizona, Tucson, AZ, [2]Banner Sun Health Research Institute, Sun City, AZ, [3]Arizona State University, Phoenix, AZ

P-Sat-402
Structural and Functional Analysis of Neonatal Fibrin Clots
R. Hannan[1], A. Brown[1], J. Fernandez[2], N. Guzzetta[2,3], and T. Barker[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Children's Healthcare of Atlanta, Atlanta, GA, [3]Emory University, Atlanta, GA

P-Sat-403
Patient-Derived Biomaterials for Bone Regeneration
C. Stephens[1], P. Mikael[2], and S. Nukavrapu[2]
[1]Syracuse University, Syracuse, NY, [2]University of Connecticut, Farmington, CT

P = Poster Session
OP = Oral Presentation
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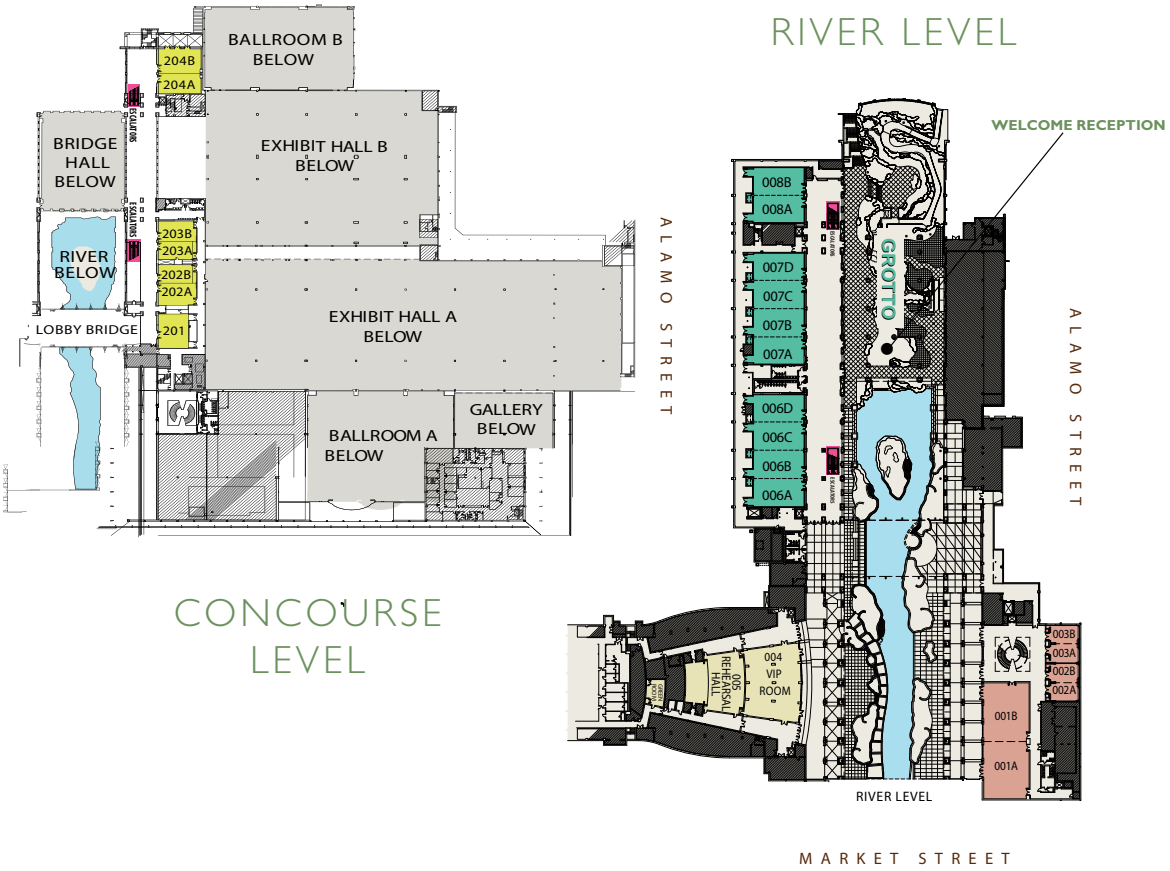


PROGRAM AT-A-GLANCE

TRACK	8:00AM – 9:30AM	2:00PM - 3:30PM	4:30PM - 6:00PM
BIOINFORMATICS, COMPUTATIONAL AND SYSTEMS BIOLOGY	**Single Cell, Heterogeneity, Noise** Room 202A	**Multiscale Modeling** Room 202A	**Cell Regulatory Circuits** Room 202A **Engineering Cells and Pathways via Synthetic and Systems Biology** Room 007D
BIOMATERIALS	**Biomaterial Scaffolds I** Room 006A **Bioinspired and Self Assembling Biomaterials I** Room 006B	**Therapeutic and Theranostic Biomaterials I** Room 006A **Biomaterials for Controlling Cell Environment I** Room 006B	**Therapeutic and Theranostic Biomaterials II** Room 006A **Biomaterials for Controlling Cell Environment II** Room 006B **Hepatic, Pancreatic, Digestive & Renal Tissue Engineering** Room 001A
BIOMECHANICS	**Cell Biomechanics I** Room 006D **Head Injury** Room 103B **Mechanotransduction I** Room 007D **Skeletal Muscle Mechanics** Room 202B	**Cell Biomechanics II** Room 006D **Spine Biomechanics** Room 103B **Mechanotransduction II** Room 007D	**Heart Valve Biomechanics** Room 006D **Methods for Assessing Injury and Injury Risk** Room 103B **Cardiovascular Flow Modeling in Health and Disease** Room 007B **Structure-Function Relationships in Musculoskeletal Tissues** Room 202B
BIOMEDICAL ENGINEERING EDUCATION	**Innovations in BME Education** Room 203B	**Teaching in a Flipped Classroom** Room 203B	**Effective Use of Technology in the BME Classroom** Room 203B
BIOMEDICAL IMAGING & OPTICS	**Applied Biomedical Imaging Techniques** Room 203A	**Molecular Probes I** Room 203A **Musculoskeletal Imaging** Room 202B	**Molecular Probes II** Room 203A
CANCER TECHNOLOGIES	**Cancer Mechanobiology** Room 007A	**Tumor Microenvironment I** Room 007A	**Tumor Microenvironment II** Room 007A
CARDIOVASCULAR ENGINEERING	**Hemodynamics and Vascular Mechanics I** Room 007B **Blood Vessel Tissue Engineering** Room 001A	**Hemodynamics and Vascular Mechanics II** Room 007B **Cardiovascular Devices: Intelligent Design Using Computations and Experiments** Room 201	**Cardiovascular Flow Modeling in Health and Disease** Room 007B **Heart Valve Biomechanics** Room 006D
CELLULAR & MOLECULAR BIOENGINEERING	**Cell Adhesion** Room 007C **Mechanotransduction I** Room 007D **Cell Biomechanics I** Room 006D **Microfluidic Platforms I** Room 008B	**Cell Adhesion and the Extracellular Matrix Interaction** Room 007C **Mechanotransduction II** Room 007D **Biomaterials for Controlling Cell Environment I** Room 006B **Cell Biomechanics II** Room 006D **Microfluidic Platforms II** Room 008B	**Cell Interactions with the Extracellular Matrix** Room 007C **Engineering Cells and Pathways via Synthetic and Systems Biology** Room 007D **Biomaterials for Controlling Cell Environment II** Room 006B
DEVICE TECHNOLOGIES AND BIOMEDICAL ROBOTICS	**Implantable Devices and Implantable Electronics** Room 201 **Biomedical Products and Devices** Ballroom A	**Cardiovascular Devices: Intelligent Design Using Computations and Experiments** Room 201	**Medical Device Technologies** Room 201

Track	8:00am – 9:30am	2:00pm - 3:30pm	4:30pm - 6:00pm
DRUG DELIVERY	**Nano/Micro Drug Delivery** Room 006C	**Drug Delivery in Tissue Engineering I** Room 006C	**Drug Delivery in Tissue Engineering II** Room 006C
NANO AND MICRO TECHNOLOGIES	**BioMEMS I** Room 008A **Microfluidic Platforms I** Room 008B **Nano/Micro Drug Delivery** Room 006C	**BioMEMS II** Room 008A **Microfluidic Platforms II** Room 008B	**Paper Fluidics** Room 008A **Microfluidic Platforms III** Room 008B
NEURAL ENGINEERING	**Head Injury** Room 103B		
NEW FRONTIERS & SPECIAL TOPICS	**Microfluidic Platforms I** Room 008B **Implantable Devices and Implantable Electronics** Room 201 **Microfabrication and 3D Printing for Tissue Engineering** Room 001B **Biomedical Products and Devices** Ballroom A	**Microfluidic Platforms II** Room 008B	**Paper Fluidics** Room 008A **Hepatic, Pancreatic, Digestive & Renal Tissue Engineering** Room 001A
ORTHOPEDIC AND REHABILITATION ENGINEERING	**Skeletal Muscle Mechanics** Room 202B	**Musculoskeletal Imaging** Room 202B **Spine Biomechanics** Room 103B	**Structure-Function Relationships in Musculoskeletal Tissues** Room 202B **Orthopaedic Biomechanics** Room 204A
STEM CELL ENGINEERING	**Microfabrication and 3D Printing for Tissue Engineering** Room 001B		
TISSUE ENGINEERING	**Blood Vessel Tissue Engineering** Room 001A **Microfabrication and 3D Printing for Tissue Engineering** Room 001B **Biomaterial Scaffolds I** Room 006A	**Tissue Engineering of Models for Study of Disease and Drug Discovery** Room 001A **Scaffolds and Surfaces for Tissue Engineering I** Room 001B **Drug Delivery in Tissue Engineering I** Room 006C	**Hepatic, Pancreatic, Digestive & Renal Tissue Engineering** Room 001A **Scaffolds and Surfaces forTissue Engineering II** Room 001B **Drug Delivery in Tissue Engineering II** Room 006C
TRANSLATIONAL BIOMEDICAL ENGINEERING	**Biomedical Products and Devices** Ballroom A **Applied Biomedical Imaging Techniques** Room 203A **Microfluidic Platforms I** Room 008B **Microfabrication and 3D Printing for Tissue Engineering** Room 001B	**Overcoming Challenges and Obstacles for Clinical Translation: From Bench to Bedside** Room 204A **Microfluidic Platforms II** Room 008B	**Paper Fluidics** Room 008A
OTHER	**8:00 – 9:30am** **Professional Integrity Workshop** Room 102AB	**2:00-6:00pm** **BMES-NSF Special Session on Research & Grant Writing** Room 004	**4:00-7:30pm** **Korea-US Joint Workshop in Biomedical Engineering** Ballroom A
STUDENT AND EARLY CAREER	**9:00 – 10:30am** **What Do Biomedical Engineers Actually Do? What Are the Specialization Areas?** Room 103A	**1:30 – 2:45pm** **How to Get Your First Job** Room 103A **2:00-4:00pm** **Resume Review & Critique** Room 102AB	**3:15 – 4:30pm** **Networking for Career Success** Room 103A **5:00 – 6:15pm** **Mock Interview** Room 103A

PROGRAM AT-A-GLANCE

Track	8:00am – 9:30am	1:45pm - 2:45pm	3:00pm – 4:00pm
BIOINFORMATICS, COMPUTATIONAL AND SYSTEMS BIOLOGY	**Signaling Systems Analysis** Room 202A	**System Proteomics: Measurement and Computation** Room 202A	**Prokaryotic Systems Biology** Room 202A
BIOMATERIALS	**Intelligent/Multifunctional Biomaterials** Room 006A **Bone & Cartilage Tissue Engineering I** Room 008B	**Biomaterial Scaffolds II** Room 006A **Bone & Cartilage Tissue Engineering II** Room 008B	**Bioinspired & Self Assembling Biomaterials II** Room 006A **Engineering Stem Cell Environments** Room 001A **Scaffolds and Surfaces for Tissue Engineering III** Room 008B
BIOMECHANICS	**Mechanics of Biomaterials** Room 103B **Cell-Cell Interactions and Intercellular Forces** Room 203B	**Impact and Injury Biomechanics** Room 103B **Computational Modeling of the Respiratory System** Room 203B	**Countermeasures for Bone Loss and Injury** Room 103B **Translational Research Relevant to Common Orthopaedic Injuries** Room 007D
BIOMEDICAL ENGINEERING EDUCATION		**Design in BME Education** Room 006	
BIOMEDICAL IMAGING & OPTICS	**Magnetic Resonance Imaging I** Room 202B **Diagnostic Devices and Biosensors I** Room 203A	**Magnetic Resonance Imaging II** Room 202B **Diagnostic Devices and Biosensors II** Room 203A **Cardiovascular Flow Imaging and Modeling in Health and Disease** Room 007B	**Imaging Strategies in Cancer** Room 007A
CANCER TECHNOLOGIES	**Engineered Models of Cancer I** Room 007A	**Engineered Models of Cancer II** Room 007A	**Imaging Strategies in Cancer** Room 007A
CARDIOVASCULAR ENGINEERING	**Cardiac Electrophysiology and Mechanics** Room 006B **Cardiovascular Assist Devices** Room 007B	**Cardiovascular Flow Imaging and Modeling in Health and Disease** Room 007B	**Structure-Function Relationship in the Cardiovascular System** Room 007B
CELLULAR & MOLECULAR BIOENGINEERING	**Molecular and Cell Engineering I** Room 007C **Cell-Cell Interactions and Intercellular Forces** Room 203B	**Molecular and Cell Engineering II** Room 007C	**Cell Motility** Room 007C **Engineering Stem Cell Environments** Room 001A
DEVICE TECHNOLOGIES AND BIOMEDICAL ROBOTICS	**Wearable Technology** Room 201 **Cardiovascular Assist Devices** Room 007B	**Verification and Validation of Computational Models of Medical Devices** Room 201 **Peripheral Neural Interfaces: Simulation & Recording** Room 001B	**Biomedical Robotics** Room 201
DRUG DELIVERY	**Nucleic Acid Delivery** Room 006C	**Novel Materials and Self Assembly** Room 006C	**Multifunctional Drug Delivery** Room 006C
NANO AND MICRO TECHNOLOGIES	**Nanobiointerfaces** Room 008A **Bio-nanomedicine in Healthcare** Room 006D	**Diagnostics** Room 008A	**Nanoparticles and Theranostics** Room 008A
NEURAL ENGINEERING	**CNS Injury: SCI, TBI and Concussions** Room 001B **Neural Tissue Engineering** Room 001A	**Peripheral Neural Interfaces: Simulation & Recording** Room 001B	**Neural Control and Modeling** Room 001B **Neural Engineering: Controlling Cell Behavior** Room 006B

Track	8:00am – 9:30am	1:45pm - 2:45pm	3:00pm – 4:00pm
NEW FRONTIERS & SPECIAL TOPICS	**Intelligent/Multifunctional Biomaterials** Room 006A **Diagnostic Devices and Biosensors I** Room 203A **Wearable Technology** Room 201	**Bioelectronics** Room 006D **Diagnostic Devices and Biosensors II** Room 203A **Diagnostics** Room 008A	
ORTHOPEDIC AND REHABILITATION ENGINEERING	**Pain** Room 007D **Bone & Cartilage Tissue Engineering I** Room 008B	**Rehabilitation Engineering: Prosthetics and Wearable Devices** Room 007D **Peripheral Neural Interfaces: Simulation & Recording** Room 001B **Bone & Cartilage Tissue Engineering II** Room 008B	**Translational Research Relevant to Common Orthopaedic Injuries** Room 007D
RESPIRATORY BIOENGINEERING		**Computational Modeling of the Respiratory System** Room 203B	
STEM CELL ENGINEERING		**Epithelial and Adipose Tissue Engineering** Room 001A	**Engineering Stem Cell Environments** Room 001A **Translational Therapeutics for Regenerative Medicine** Room 006D
TISSUE ENGINEERING	**Neural Tissue Engineering** Room 001A **Bone & Cartilage Tissue Engineering I** Room 008B	**Epithelial and Adipose Tissue Engineering** Room 001A **Bone & Cartilage Tissue Engineering II** Room 008B **Biomaterial Scaffolds II** Room 006A	**Scaffolds and Surfaces for Tissue Engineering III** Room 008B
TRANSLATIONAL BIOMEDICAL ENGINEERING	**Bio-nanomedicine in Healthcare** Room 006D	**Diagnostics** Room 008A **Bioelectronics** Room 006D	**Translational Therapeutics for Regenerative Medicine** Room 006D
OTHER	**Whitaker International** Room 204A	**2:00-4:00pm** **Diversity, Health Disparities and Affordable Healthcare** Room 004	
STUDENT AND EARLY CAREER	**8:30 – 9:30am** **Student Chapter Outstanding Best Practices** Room 103A **9:30 – 10:30am** **Chapter Outreach & Mentoring Best Practices** Room 103A	**1:30 – 2:30pm** **Owning Your Career & Using Mentors** Room 103A **2:00-4:00pm** **Resume Review & Critique** Room 102AB	

PROGRAM AT-A-GLANCE

Track	8:00am – 9:30am	1:30pm - 3:00pm	3:15pm - 4:45pm
BIOMATERIALS	**Micro and Nanostructured Materials** Room 001B	**Biomaterial for Immunoengineering I** Room 001B **Biomaterials Design I** Room 006A	**Biomaterial for Immunoengineering II** Room 001B **Biomaterials Design II** Room 006A
BIOMECHANICS	**Cardiovascular Biomechanics I** Room 006B	**Aortic Biomechanics** Room 006B **Ocular Biomechanics** Room 006C	**Biomechanics in Degeneration and Regeneration** Room 006B **Multiscale Biomechanics** Room 006C **Mechanobiology in the Respiratory System** Room 008B
BIOMEDICAL ENGINEERING EDUCATION	**Novel Laboratory Modules** Room 204A		
BIOMEDICAL IMAGING & OPTICS	**Ultrasound Imaging** Room 203A **Optical Imaging and Microscopy I** Room 203B	**Novel Approaches to Biomedical Imaging** Room 203A **Optical Imaging and Microscopy II** Room 203B	**Macro/Micro Design for Neurotechnologies: Networked Neural Sensors and Instrumentation** Room 202A
CANCER TECHNOLOGIES	**Nanotechnologies for Cancer I** Room 103A **Cancer Drug Delivery I** Room 103B	**Nanotechnologies for Cancer II** Room 103A **Microtechnologies for Cancer I** Room 006D **Cancer Drug Delivery II** Room 103B	**Microtechnologies for Cancer II** Room 006D **Cancer Drug Delivery III** Room 103B
CARDIOVASCULAR ENGINEERING	**Cardiac Muscle and Valve Tissue Engineering** Room 001A **Microcirculation** Room 006A **Cardiovascular Biomechanics I** Room 006B **Cardiac Regeneration** Room 006D **Angiogenesis** Room 007B	**Heart Valves & Stents I** Room 007B **Aortic Biomechanics** Room 006B	**Heart Valves & Stents II** Room 007B
CELLULAR & MOLECULAR BIOENGINEERING	**Cellular and Molecular Immunoengineering** Room 006C **Young Innovator Session I** Room 007C	**Biomaterial for Immunoengineering I** Room 001B **Young Innovator Session II** Room 007C	**Biomaterial for Immunoengineering II** Room 001B
DEVICE TECHNOLOGIES AND BIOMEDICAL ROBOTICS	**Biosensors I: Materials and Techniques** Room 201 **Cells Tissues and Organs on Chip I** Room 008A **Global Health I** Room 202B **Brain Computer Interfaces** Room 202A	**Biosensors II: Applications** Room 201 **Cells Tissues and Organs on Chip II** Room 008A **Global Health II** Room 202B	
DRUG DELIVERY	**Cancer Drug Delivery I** Room 103B	**Cancer Drug Delivery II** Room 103B **Targeted Drug Delivery I** Room 007D	**Cancer Drug Delivery III** Room 103B **Targeted Drug Delivery II** Room 007D

Track	8:00am – 9:30am	1:30pm - 3:00pm	3:15pm - 4:45pm
NANO AND MICRO TECHNOLOGIES	**Cells Tissues and Organs on Chip I** Room 008A **Micro and Nanostructured Materials** Room 001B **Nanotechnologies for Cancer I** Room 103A	**Cells Tissues and Organs on Chip II** Room 008A **Microtechnologies for Cancer I** Room 006D **Nanotechnologies for Cancer II** Room 103A	**Macro/Micro Design for Neurotechnologies: Networked Neural Sensors and Instrumentation** Room 202A **Microtechnologies for Cancer II** Room 006D
NEURAL ENGINEERING	**Brain Computer Interfaces** Room 202A	**Glial Cell Engineering / Neural Progenitor Cell and Tissue Engineering** Room 202A	**Neuro-rehabilitation Biomechanics** Room 201 **Macro/Micro Design for Neurotechnologies: Networked Neural Sensors and Instrumentation** Room 202A
NEW FRONTIERS & SPECIAL TOPICS	**Global Health I** Room 202B **Biosensors I: Materials and Techniques** Room 201 **Cells Tissues and Organs on Chip I** Room 008A **Nanotechnologies for Cancer I** Room 103A	**Global Health II** Room 202B **Biosensors II: Applications** Room 201 **Cells Tissues and Organs on Chip II** Room 008A	
ORTHOPEDIC AND REHABILITATION ENGINEERING	**Musculoskeletal Tissue Engineering** Room 007D		**Neuro-rehabilitation Biomechanics** Room 201
RESPIRATORY BIOENGINEERING	**Engineering Strategies for Lung Transplant & Regeneration** Room 008B	**Translational Respiratory Engineering** Room 008B	**Mechanobiology in the Respiratory System** Room 008B
STEM CELL ENGINEERING	**Mechanobiology of Stem Cells** Room 007A **Cardiac Regeneration** Room 006D	**Directing Stem Cell Differentiation** Room 007A **Adult Stem Cells in Tissue Engineering** Room 001A	**Stems Cells in Translation Science** Room 007A
TISSUE ENGINEERING	**Cardiac Muscle and Valve Tissue Engineering** Room 001A **Cardiac Regeneration** Room 006D **Cells Tissues and Organs on Chip I** Room 008A **Musculoskeletal Tissue Engineering** Room 007D **Engineering Strategies for Lung Transplant & Regeneration** Room 008B	**Adult Stem Cells in Tissue Engineering** Room 001A **Directing Stem Cell Differentiation** Room 007A **Cells Tissues and Organs on Chip II** Room 008A	**Muscular, Tendinous, Ligamental Tissue Engineering** Room 001A
TRANSLATIONAL BIOMEDICAL ENGINEERING	**Biosensors I: Materials and Techniques** Room 201 **Global Health I** Room 202B **Nanotechnologies for Cancer I** Room 103A	**Biosensors II: Applications** Room 201 **Global Health II** Room 202B **Translational Respiratory Engineering** Room 008B	
OTHER	**ABioM SIG Special Session: Application towards the Next Generation Therapies and Diagnostics** Ballroom A	**Undergraduate Research I** Room 204B	**Undergraduate Research II** Room 204B

SCHEDULE AT-A-GLANCE

WEDNESDAY, October 22, 2014

11:00am – 7:00pm	Registration	HBGCC, Exhibit Hall A
8:30am – 4:30pm	BMES Board of Directors Meeting	HBGCC, Room 102AB
3:30pm – 5:30pm	Meet the Faculty Candidates	HBGCC, West Registration Area
5:30pm – 7:00pm	Welcome Reception	HBGCC, Grotto, River Level

- Plenary Sessions
- Platform Sessions
- Posters
- Workshops
- Student & Early Career
- Exhibits
- Special Events
- General

AFFILIATE EVENTS:

11:00am – 4:00pm
AIMBE Board of Directors Meeting
Henry B. Gonzales Convention Center, Room 003AB

4:00pm - 5:00pm
AIMBE Academic Council Policy Briefing
Henry B. Gonzales Convention Center,Room 003AB

6:15pm – 9:00pm
Council of Chairs Dinner & Meeting
Marriott Rivercenter Salon J

7:00pm – 10:00pm
Annals of Biomedical Engineering Editorial Board Dinner
Marriott Rivercenter, Conference Room 13-14

THURSDAY, October 23, 2014

7:00am – 6:00pm	Registration	HBGCC, Exhibit Hall A
7:00am - 8:00am	Diversity Committee Meeting	HBGCC, Room 003B
7:00am - 8:00am	National Meetings Committee Meeting	HBGCC, Room 003A
8:00am - 9:30am	**Platform Session – Thurs 1**	HBGCC, 19 *concurrent rooms*
8:00am - 9:30am	Professional Integrity Workshop	HBGCC, Room 102AB
9:00am - 10:30am	What Do Biomedical Engineers Actually Do?	HBGCC, Room 103A
9:30am – 5:00pm	Exhibit Hall Open	HBGCC, Exhibit Hall A
9:30am – 5:00pm	**Poster Session – Thurs**	HBGCC, Exhibit Hall A
9:30am – 10:30am	Poster Viewing with Authors & Refreshment Break	HBGCC, Exhibit Hall A
10:30am – 12:15pm	**Plenary Session & State of the Society** Pritzker Distinguished Lecturer	HBGCC, Lila Cockrell Theatre
12:30pm – 1:45pm	Celebration of Minorities in BME Luncheon	HBGCC, Ballroom A
12:15pm – 1:45pm	Lunch on Your Own	
12:45pm – 1:45pm	Medical Devices SIG Business Meeting	HBGCC, Room 003B
1:30pm - 2:30pm	Membership Committee Meeting	HBGCC, Room 003A
1:30pm – 2:45pm	How to Get Your First Job	HBGCC, Room 103A
2:00pm - 3:30pm	Overcoming challenges and obstacles for clinical translation: From bench to bedside	HBGCC, Room 204A
2:00pm - 4:00pm	Resume Review & Critique	HBGCC, Room 012AB
2:00pm - 3:30pm	**Platform Session – Thurs - 2**	HBGCC - 20 *concurrent rooms*
2:00pm -6:00pm	BMES-NSF Special Session	HBGCC, Room 004
3:30pm - 4:30pm	Poster Viewing with Authors & Refreshment Break	HBGCC, Exhibit Hall A
3:15pm – 4:30pm	Networking Effectively– Social Media & Face-to-Face	HBGCC, Room 103A
4:30pm - 6:00pm	**Platform Session – Thurs - 3**	HBGCC - 89 *concurrent rooms*
4:00pm - 7:30pm	Korea-US Joint Workshop in Biomedical Engineering	HBGCC, Ballroom A
5:00pm – 6:15pm	Mock Interview	HBGCC, Room 103A
6:15pm - 7:30pm	**Plenary Session: Computational Modeling and Simulation for Medical Devices**	HBGCC, Lila Cockrell Theatre
8:00pm – 9:30pm	University Receptions	Marriott Rivercenter and Marriott Riverwalk

Plenary Sessions
Platform Sessions
Posters
Workshops
Student & Early Career
Exhibits
Special Events
General

AFFILIATE EVENTS:

12noon – 1:30pm
Cellular and Molecular Bio-engineering - Editorial Board
Marriott Rivercenter , Conference Room 13-14

4:00pm – 5:30pm
AEMB Annual Grand Meeting
Henry B. Gonzales Convention Center, Room 002AB

6:00pm – 8:00pm
AEMB Reception
The Republic of Texas Restaurant

8:00pm – 9:30pm
University Reception
Marriott Rivercenter and Marriott Riverwalk

SCHEDULE AT-A-GLANCE

- Plenary Sessions
- Platform Sessions
- Posters
- Workshops
- Student & Early Career
- Exhibits
- Special Events
- General

FRIDAY, October 24, 2014

7:00am – 6:00pm	Registration	HBGCC, Exhibit Hall A
7:00am - 8:00am	2015 Annual Meeting Planning Committee Meeting	HBGCC, Room 003A
7:00am - 8:00am	ABioM SIG Business Meeting	HBGCC, Room 102AB
7:00am - 8:00am	Education Committee	HBGCC, Room 003B
8:00am – 9:30am	**Platform Sessions - Fri-1-1**	HBGCC - 18 *concurrent rooms*
8:00am - 9:30am	Whitaker International Session	HBGCC, Room 204A
8:30am - 9:30am	BMES Student Chapter—Outstanding Chapter Best Practices	HBGCC, Room 103A
9:30am - 10:30am	BMES Student Chapter Outreach and Mentoring Best Practices	HBGCC, Room 103A
9:30am – 5:00pm	Exhibit Hall Open	HBGCC, Exhibit Hall A
9:30am – 5:00pm	**Poster Session – Fri**	HBGCC, Exhibit Hall A
9:30am – 10:30am	Poster Viewing with Authors & Refreshment Break	HBGCC, Exhibit Hall A
10:30am – 12noon	**Plenary Session** NIBIB Lecture	HBGCC, Lila Cockrell Theatre
12noon – 1:30pm	Lunch on Your Own	
12noon – 1:30pm	CMBE SIG Business Meeting	HBGCC, Room 003B
12:15pm - 1:30pm	Woman in BME Luncheon	HBGCC, Ballroom A
1:30pm – 2:30pm	International Affairs Committee	HBGCC, Room 003A
2:00pm - 4:00pm	Resume Review & Critique, *repeated*	HBGCC, Room 102AB
1:45pm - 2:45pm	**Platform Session – Fri - 2**	HBGCC - 18 *concurrent rooms*
2:00pm - 4:00pm	Diversity, Health Disparities and Affordable Healthcare	HBGCC, Room 204A
3:00pm - 4:00pm	**Platform Session – Fri - 3**	HBGCC - 15 *concurrent rooms*
4:00pm - 5:00pm	Industry Affairs Committee Meeting	HBGCC, Room 003A
4:00pm - 5:00pm	Poster Viewing with Authors & Refreshment Break	HBGCC, Exhibit Hall A
5:15pm - 6:15pm	**Plenary Session**	HBGCC, Lila Cockrell Theatre

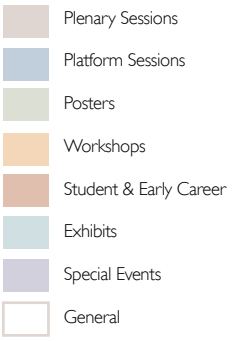
AFFILIATE EVENTS:

9:00am – 10:00am
AEMB Ethics Session
Henry B. Gonzales Convention Center, Room 002AB

1:30pm - 3:00pm
AIMBE-AEMB Student Public Policy Session
Henry B. Gonzales Convention Center, Room 002AB

SATURDAY, OCTOBER 24, 2014

7:00am – 2:00pm	Registration	HBGCC, Exhibit Hall A
8:00am – 9:30am	**Platform Sessions - Sat- 1**	HBGCC - 20 *concurrent rooms*
8:00am - 9:30am	ABioM SIG Special Session	HBGCC, Ballroom A
9:30am – 1:30pm	Exhibit Hall Open	HBGCC, Exhibit Hall A
9:30am – 1:00pm	**Poster Session – Sat**	HBGCC, Exhibit Hall A
9:30am – 10:30am	Poster Viewing with Authors & Refreshment Break	HBGCC, Exhibit Hall A
10:30am – 12:30pm	**Plenary Session** Rita Schaffer Young Investigator Lecture & Diversity Award Winner	HBGCC, Lila Cockrell Theatre
12:30pm - 1:30pm	Student Affairs Committee Meeting	HBGCC, Room 003A
12:30pm – 1:30pm	Lunch on Your Own	
1:00pm – 3:30pm	BMES Board of Directors Meeting	HBGCC, Room 102AB
1:30pm – 3:00pm	**Platform Session – Sat - 2**	HBGCC - 20 *concurrent rooms*
3:15pm – 4:15pm	**Platform Session – Sat - 3**	HBGCC - 14 *concurrent rooms*



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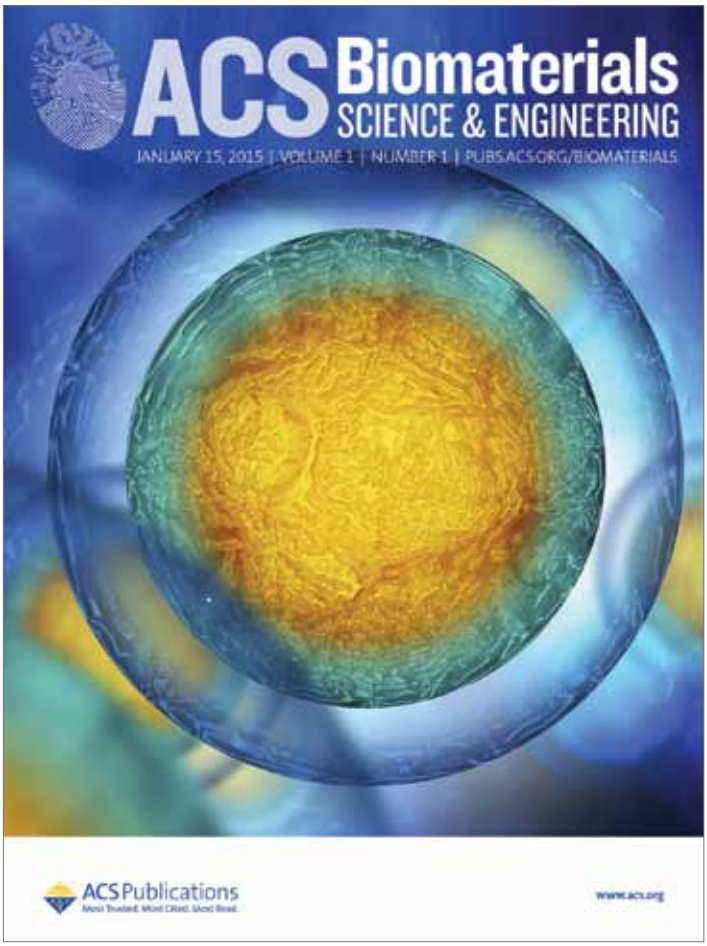

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Keynote Speakers

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Wake Forest University

Ben Fabry
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Don Ingber
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Hotel

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