BMES 2016

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BIOMEDICAL ENGINEERING SOCIETY™
Advancing Human Health and Well Being™

2016 Annual Meeting
October 5–8, 2016

Minneapolis Convention Center
Minneapolis, Minnesota

Song Li
Meeting Chair
University of California Los Angeles

David Odde
Vice Chair
University of Minnesota

Cynthia A. Reinhart-King
Program Chair
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BMES 2017

BIOMEDICAL ENGINEERING SOCIETY™
Advancing Human Health and Well Being™

2017 BMES Annual Meeting
October 11–14, 2017

Phoenix Convention Center
Phoenix, Arizona

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Advancing Human Health and Well-Being

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October 11–14, 2017
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Copies are also available at the Registration Desk.

SCIENTIFIC PROGRAM

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Skyline View from Loring Park | Photo Courtesy of Meet Minneapolis

BMES
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BMES Medical Devices
SPECIAL INTEREST GROUP

2017 BMES/FDA

Frontiers in Medical Devices Conference

Innovations in Modeling and Simulation: Advancing Regulatory Science

May 16–18, 2017, 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.

Meeting Co-chairs

Leonardo Angelone, Ph.D.
Research Scientist, Center for Devices and Radiological Health, US FDA
Leonardo.Angelone@fda.hhs.gov

Anita Bestelmeyer
Director, Corporate Computer-Aided Engineering, BD
anita.bestelmeyer@bd.com

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Senior Principal Engineer, Cardiac Rhythm and Heart Failure, Medtronic
adam.k.himes@medtronic.com

Melissa L. Knothe Tate, Ph.D.
Paul Trainor Chair of Biomedical Engineering
Professor, University of New South Wales Australia
m.knothetate@unsw.edu.au

Early registration opens
February 23, 2017

Early registration deadline
April 11, 2017

For more information visit:
www.bmes.org/meddeviceconference

Richard T. Hart, PhD

BMES President

Edgar C. Hendrickson Professor and Department Chair
BMES Fellow
Department of Biomedical Engineering

The Ohio State University
Columbus, OH

WELCOME TO THE 2016 ANNUAL MEETING of the Biomedical Engineering Society! The Biomedical Engineering Society's Annual Meeting is the premier event for the Society and the field of biomedical engineering. Every fall it is the place to be to share and learn about cutting-edge research in all the disciplines of BME.

This year's theme—"Transforming Discovery into Health Technology"—perfectly describes the work we do every day in our labs. It is a description we are striving to share with the public as the Society heads towards its **50th Anniversary** in 2018. Bringing medicine and engineering together will be central to solving many of the health challenges humankind faces; and as a member of BMES you will play a vital role in that effort.

It is no coincidence that this year's meeting is being held in Minneapolis, a major hub of medical device innovation. BMES seeks to go beyond being the essential annual meeting for academics; we have set our sights on becoming the networking place-to-be for academics and industry in the biomedical engineering field.

One of those local innovators, Medtronic Chairman and CEO Omar Ishrak, will deliver a keynote address Thursday morning. Medtronic is a leading medical technology company, with more than $27 billion in annual revenue, and operations reaching more than 155 countries worldwide. The company offers technologies, solutions and therapies to treat a wide range of medical conditions, including cardiac and vascular diseases, respiratory, neurological and spinal conditions, diabetes, and more. Medtronic's mission to alleviate pain, restore health, and extend life for millions of people around the world is perfectly in line with the goals of BMES.

Medtronic, along with St. Jude Medical, Boston Scientific and Smiths Medical, are holding tours of their facilities during the meeting. The tours are another example of the synergy being built between BMES and industry. Another step towards that goal is the Society's new corporate memberships. The initial corporate members are Boston Scientific, Harris Skeele Corporation, Medtronic, St. Jude Medical and Smiths Medical. Many other organizations are in talks to join the Society as corporate members. This new program will surely make the Society stronger and benefit all its members.

Student and Early Career programming has been expanded for the 2016 meeting. The programming is specifically tailored for those navigating new careers. Topics include: BME Careers in Academia, BME Careers in Industry, BME Government and Alternative Careers, and Rapid Resume Reviews.

This is also the first year BMES will offer the Career Zone, scheduled for Thursday, October 6th and Friday, October 7th in the Exhibit Hall.

This new alternative to the career fair will bring together students, alumni, and employers for networking, recruiting and industry education. Don't miss the panel discussions throughout the day featuring alumni and employers who will share their career paths, advice, and the BME job market.

The terrific slate of keynote addresses starts Thursday morning with Omar Ishrak's talk. Later that day, Nicholas Peppas will deliver the Pritzker Distinguished Lecture and on Saturday Jennifer Munson and Srinivas Sridhar will present the Rita Schaffer Young Investigator and Diversity lecturers, respectively.

Special thanks are due to Conference Chair Song Li, Vice Chair David Odde and Program Chair Cynthia A. Reinhart-King, BMES Staff, NSF, NIH, our sponsors and our meeting attendees. My very best wishes to you for an enjoyable and productive meeting!

Song Li, PhD

Annual Meeting Chair

Chancellor Professor
Chair, Department of Bioengineering
Professor, Department of Medicine

University of California, Los Angeles
Los Angeles, CA

Cynthia Reinhart-King, PhD

Annual Meeting Program Chair

Associate Professor
Biomedical Engineering

Cornell University
Ithaca, NY

David Odde, PhD

Annual Meeting Vice Chair

Professor, Department of
Biomedical Engineering

University of Minnesota
Minneapolis, MN

It is a great pleasure to welcome all of you to the 2016 BMES meeting in Minneapolis, Minnesota. Minneapolis is a hub of the medical device industry and a city full of innovation and inspiration. It is the perfect place to hold this BMES meeting with a theme of "Transforming Discovery into Health Technology".

The four day meeting program will encompass five exciting plenary sessions, 19 scientific tracks and numerous workshops and symposia. The scientific program will highlight the most recent advancements in the broad field of bioengineering and promote creativity and collaboration. This year's expanding industry program reflects the theme of this meeting and the further development of partnership between academia and industry in the BMES community. The meeting will be kicked off by on-site tours at local medical device companies. You will hear from the leaders of Medtronic and The Gates Foundation in plenary sessions. There will be 8 sessions in industry programs that cover a variety of topics including Small Business Innovation Research (SBIR), Technology Transfer (STTR), and Venture Capital Pitches.

There will be 12 special sessions on career development and education. For example, the BMES-NSF Special Session on 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. A session on Educational Approaches to Best Prepare Students for Industry will focus on educational approaches to best prepare biomedical engineer students at both the undergraduate and graduate levels for a professional career in industry.

There will be many sessions that showcase the outreach activities at BMES. The Meet the Expert sessions will feature 5 specialized sessions covering topics that range from tips to applying for funding from program directors, reviewers, and funded investigators to a session featuring journal editors who will discuss how to navigate choosing a journal and judging impact. There are also sessions on the increasingly important topics of data-sharing, building international collaborations and creating connections with industry. Each of the Meet the Experts sessions will be a terrific opportunity to ask questions and network with leaders in the field.

The International Forum on Biomedical Engineering will bring together leaders of biomedical engineering from several countries to share global perspective of this field and forge international collaborations. The joint symposium with American Association of Anatomists will showcase the biological and engineering approaches in technology development and applications with a focus on the rapidly growing role of CRISPR/Cas9 and microRNA technologies in bioengineering.

This year we have record-breaking numbers of abstracts (2,675) and exhibitors (114). Posters and exhibitors will light up the exhibit hall. Discussions at the poster sessions will facilitate the in-depth interactions of the participants, and there will be numerous poster awards to recognize the excellent work by the poster presenters.

We would like to thank all of the track chairs, abstract reviewers and session chairs who have helped organize this meeting and shape the program. We thank all of the participants for attending this meeting and contributing your expertise to the program.

Special thanks to the industry committee, especially Ben Noe and Walt Baxter. We thank the support of BMES leadership and BMES administration, and the hard work by BMES Executive Director Edward Schilling, Meeting Director Debby Tucker, Education Director Michele Ciapa and Communications Director Doug Beizer. We also thank John White and the National Meetings Committee for guidance and support.

We look forward to meeting you at this exciting and inspiring BMES meeting!

Minneapolis Convention Center | Photo Courtesy of the Minneapolis Park and Recreation Board

The Wallace H. Coulter Award for Healthcare Innovation Award Lecture

Omar Ishrak, PhD

Chairman and Chief Executive Officer
Medtronic

Thursday, October 6, 2016

10:15 am–11:30 am

Auditorium/Minneapolis Convention Center

The Wallace H. Coulter Award for Healthcare Innovation Award Lecture

Omar Ishrak has served as Chairman and Chief Executive Officer of Medtronic since June 2011. Medtronic is the world's leading medical technology company, with more than $27 billion in annual revenue, and operations reaching more than 160 countries worldwide. Medtronic offers technologies, solutions and therapies to treat a wide range of medical conditions, including cardiac and vascular diseases, respiratory, neurological and spinal conditions, diabetes, and more. The Medtronic Mission is to alleviate pain, restore health, and extend life for millions of people around the world.

Since joining Medtronic, Omar has focused the company on three core strategies of Therapy Innovation, Economic Value and Globalization. These three strategies form the basis for Medtronic's efforts to partner with its customers to drive high quality patient out-comes, expand patient access to healthcare, and lower costs in health care systems around the world. In 2014, Omar engineered the acquisition of Covidien, a $10 billion global manufacturer of surgical products and supplies. The acquisition of Covidien was the largest medical technology acquisition in the history of the industry.

Omar joined Medtronic from General Electric Company, where he spent 16 years, most recently as President and CEO of GE Healthcare Systems, a $12 billion division of GE Healthcare, with a broad portfolio of diagnostic, imaging, patient monitoring and life support systems. Omar also served as an Officer and a Senior Vice President of GE.

Earlier in his career, Omar amassed 13 years of technology development and business management experience, holding leadership positions at Diasonics/Vingmed, and various product development and engineering positions at Philips Ultrasound.

He grew up in Bangladesh, earned a Bachelor of Science Degree and Ph.D. in Electrical Engineering from the University of London, King's College.

Omar currently serves as co-chair of the World Economic Forum's Health and Healthcare Community, which includes global leaders focused on shaping the future of health and healthcare. Key areas of focus for this community include promoting healthy behaviors, better management of future pandemics/epidemics, increasing global access to care, and increasing value in healthcare systems to advance healthcare delivery and improve patient outcomes.

Omar is a member of the Board of Trustees of the Asia Society, the leading educational organization dedicated to promoting mutual understanding and strengthening partnerships among peoples, leaders and institutions of Asia and the United States in a global context. He is also a member of the Minnesota Public Radio Board of Trustees.

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

Robert A. Pritzker Distinguished Lecture

Nicholas Peppas, ScD

Cockrell Family Regents Chair in Engineering
Professor, Department of Biomedical Engineering,
McKetta Department of Chemical Engineering,
Department of Surgery and Perioperative Care,
Dell Medical School, and Division of Pharmaceutics,
College of Pharmacy
Director, Institute for Biomaterials,
Drug Delivery and Regenerative Medicine

The University of Texas at Austin

Thursday, October 6, 2016
5:00 pm–6:00 pm
Auditorium/Minneapolis Convention Center

Designing the Next Generation of Intelligent Biomaterials and Hydrogels: Molecular Recognition and Advanced Protein and Cell Delivery

The field of biomaterials has become an integral part of biomedical engineering as it provides the foundations for the investigation and development of novel nano-and microstructures for organ replacement, carriers, targeting agents, biodegradable scaffolds, recognitive and physiologically-responsive systems, diagnostic devices, biosensors and combination products. Examining the great medical successes of the last 25 years we conclude that the existence of advanced biomaterials has allowed us to treat patients, improve their quality of life and develop new medical systems and devices that we could have not imagined 50 years ago. New design methods for intelligent biomaterials have allowed a wide range of biomedical applications. Indeed, engineering the molecular design of intelligent hydrogels by controlling recognition and specificity is the first step in coordinating and duplicating complex biological and physiological processes. We address design and synthesis characteristics of novel crosslinked networks capable of desirable biomaterial/protein interaction and protein release. We also discuss the dynamic behavior of artificial molecular structures capable of specific molecular recognition of biological molecules. We will also discuss recent studies on intelligent polymer carriers for protein delivery to specific sites, using responsive polymers to achieve pH- or temperature-triggered delivery, usually in modulated mode, and improvement of the behavior of their glyco- and cyto-adhesive behavior and cell recognition. Finally, intelligent cationic polymers have been investigated as biomaterials for drug delivery of nucleic acids because they can form polyelectrolyte complexes with negatively charged (anionic) nucleic acids, protecting the nucleic acid from degradation and enhancing cellular uptake and endosomal escape.

Nicholas A. Peppas is the Cockrell Family Regents Chaired Professor in the Departments of Biomedical and Chemical Engineering of the Cockrell School of Engineering, the Department of Surgery and Perioperative Care of the Dell Medical School, and the Division of Pharmaceutics of the College of Pharmacy. He is also the Director of the Institute of Biomaterials, Drug Delivery and Regenerative Medicine of the University of Texas at Austin. His work in biomaterials, biopolymer physics, protein and therapeutic agent delivery and bionanotechnology has made seminal contributions to the dynamic behavior of biomacro–molecules in complex biological environments with emphasis on solute (drug/protein) transport through three-dimensional macromolecular networks. A leading authority in biomaterials and drug delivery principles, his research blends modern molecular and cellular biology with engineering to analyze complex biological structures and to generate next-generation systems with enhanced applicability, reliability, and functionality and to design the next-generation of medical systems and devices for patient treatment.

NIH NIBIB Lecture

Mark A. Griswold, PhD

Professor of Radiology, Biomedical Engineering (BME), Electrical Engineering and Computer Science (EECS), and Physics
Director of MRI Research

Case Western Reserve University
Cleveland, Ohio

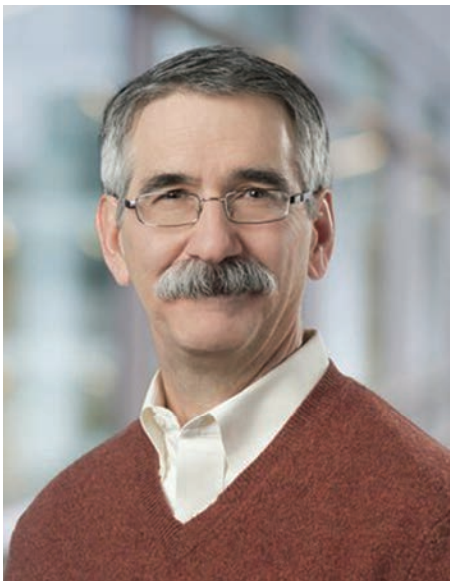
Friday, October 7, 2016
10:15 am–11:45 am
Auditorium/ Minneapolis Convention Center

Rethinking the Way We Do MRI: Magnetic Resonance Fingerprinting

The conventional MRI/NMR acquisition framework has worked so well that it has remained nearly constant for almost 50 years. In this talk we will discuss a new framework, Magnetic Resonance Fingerprinting (MRF), that we believe has the potential to overcome previous limitations and open up numerous new possibilities for MR. Instead of using a single "purified" pulse sequence, MRF uses a pseudorandomized pulse sequence which is simultaneously sensitive to multiple tissue properties. This rich signal no longer fits into the standard MR processing framework. Because of this, MRF uses pattern recognition to decode the acquired data. Besides providing high quality quantitative results for multiple MR parameters simultaneously from a single acquisition, MRF also provides a high level of suppression of measurement errors and in certain cases may provide higher sensitivity than traditional MR methods. MRF is also able to directly generate maps specific to individual tissue types, which should allow for earlier disease detection. Finally, MRF should practically simplify the clinical MR workflow, with the potential that the end user could just be presented with a single "scan" button.

Mark Griswold, PhD, is a professor in the Department of Radiology at Case Western Reserve University and University Hospitals in Cleveland, Ohio, with secondary appointments in Biomedical Engineering, Physics, Electrical Engineering and Computer Science.
Dr. Griswold received his BS in Electrical Engineering from the University of Illinois and his PhD in Physics from the University of Würzburg, Germany. Prior to joining Case Western Reserve, Dr. Griswold was director of the RF Coil Development Laboratory at Beth Israel Deaconess Medical Center/Harvard Medical School. He is a fellow of the American Institute of Medical and Biological Engineering (2012) and the International Society of Magnetic Resonance in Medicine (2009) and serves on the Board of Trustees of the International Society of Magnetic Resonance in Medicine (ISMRM).

Special Plenary Session



Jim Gallarda

Senior Program Officer
Bill & Melinda Gates Foundation

Friday, October 7, 2016
5:45 pm–6:30 pm
Auditorium/ Minneapolis Convention Center

Extraordinary Challenges and the Need for Extraordinary Competencies – The Role of the Biomedical Engineer

Here are some sobering statistics (cited from http://scienceforsociety.com/)

- Over 1 billion of the world's population do not have access to electricity. Less than 10% of people have access to electricity in some countries
- 660 million lack access to safe water. The water crisis is considered by many experts as the #1 global risk for impact on society
- Almost a third of humanity (over 2 billion) lack access to adequate sanitation
- Life expectancy globally varies from above 80 (in advanced nations) to below 50 (in some developing nations), due to inadequate access to health care
- 16,000 children under the age of 5 die each day from preventable causes. 25% or more of children in 17 countries have never been to a primary school

None of these have easy answers. Throughout the world, extraordinary challenges require extraordinary competencies. In this talk, I will describe what the Bill & Melinda Gates Foundation is doing in the area of global health, with a focus in my area of expertise – diagnostics. I'll discuss some of the lessons we are learning, and how it affects our work with our partners, whom we entrust to find real-world solutions to complex systemic problems in global health. I'll discuss the need for innovative engineers, with a special emphasis for pragmatic, interdisciplinary systems thinking. I'll wrap up with: 1) the single greatest deterrent to addressing these challenges, and 2) some advice for future generations of biomedical engineers – those of you who might find yourselves one day called by these extraordinary challenges.

Jim Gallarda is currently a Senior Program Officer with the Bill & Melinda Gates Foundation in Seattle, WA. He has over 25 years of industry experience in commercial infectious disease assay development and has overseen multiple teams developing immunodiagnostic & PCR systems for HIV-1, HIV-2, HCV, HBV and WNV. He now serves as a diagnostic lead for the Foundation's efforts in tuberculosis & most recently, the Ebola crisis.

Rita Schaffer Young Investigator Lecture

Jennifer Munson, PhD

Assistant Professor, University of Virginia
Department of Biomedical Engineering

Charlottesville, Virginia

Saturday, October 8, 2016
10:30 am
Auditorium/Minneapolis Convention Center

Interstitial Fluid Flow in the Brain Tumor Microenvironment

Glioblastoma is the deadliest form of brain cancer and is defined by the invasive nature of its cells. Invasion in the brain follows distinctive routes that correlate with interstitial and bulk flow pathways. In brain cancer, increased interstitial fluid flow develops due to heightened interstitial pressure in the tumor bulk interfacing with the relatively normal pressure of the surrounding brain tissue. This differential leads to fluid transport specifically through the invasive tissue edge of the tumor where cells are prone to both interact with the surrounding brain microenvironment and to evade localized, transport-limited therapies. To examine how interstitial fluid flow alters the invasion of brain cancer cells, we have developed a number of in vitro and in vivo methods to examine fluid flow and its effects on cellular responses. In vitro, we have found that interstitial flow can enhance invasion of brain cancer cells using cell lines and patient-derived glioma stem cells in tissue-engineered models of the brain-tumor interface. These effects are mediated simultaneously by both chemotactic and mechanotransduction mechanisms. In vivo, we have seen interstitial flow both correlate with and increase invasion of implanted cancer cells through the brain. By conducting in vivo measurements of interstitial flow using MRI techniques, we can correlate interstitial fluid flow to patterns of glial cell response, extracellular matrix deposition, and receptor activation in tumor-associated brain along these invasive pathways. These findings further implicate interstitial fluid flow as a driver of tissue morphology and indicate multiple mechanisms through which fluid flow can mediate cellular invasion in the brain.

Jennifer Munson, Ph.D. is an Assistant Professor of Biomedical Engineering at the University of Virginia. Dr. Munson received her Bachelor of Science in Chemical Engineering and Neuroscience from Tulane University in 2006. She worked at Genentech in Process Engineering before pursuing graduate study at Georgia Tech with Ravi Bellamkonda, Ph.D. Supported by a National Science Foundation Graduate Research Award, she developed liposomal nanocarriers to deliver a novel anti-invasive therapeutic to glioblastoma. During her Ph.D. she was awarded a Fulbright Fellowship to Switzerland to pursue independent study on the glioma microenvironment at L'École Polytechnique Fédérale de Lausanne with Melody Swartz, Ph.D. After completing her Ph.D. in 2011, she returned to Switzerland as a Whitaker Scholar for post-doctoral training on the breast cancer microenvironment, focusing on changes that alter interstitial transport. She joined the University of Virginia in 2014, pursuing research interests related to the cancer microenvironment, drug delivery, and transport in brain and breast cancers. Her work includes the development of tissue engineered systems for the study of interstitial flow and tissue transport as well as translation of these systems for patient-specific drug screening. Her work has been published in journals such as Science Translational Medicine and Cancer Research. Her group at UVA is funded by the American Cancer Society, the Coulter Foundation for Translational Research, and the Kincaid Foundation.

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.

BMES Diversity Award Lecture

Srinivas Sridhar, PhD

University Distinguished Professor of Physics,
Biomedical Engineering
and Chemical Engineering
Northeastern University

Boston, Massachusetts

Saturday, October 8, 2016

10:30 AM

Auditorium/Minneapolis Convention Center

Global Nanomedicine Academy: Broadening Participation and Diversity through Collaborative Education

The vision of the Nanomedicine Academy is to ensure access to specialized knowledge unconstrained by geography or economic status, provide access to training in knowledge and techniques in nanomedicine, and establish opportunities for collaboration across institutions in education and research, in order to train the future leaders in the emerging field of nanomedicine. Over the last several years the Nanomedicine Academy has established a new model of higher education that involves partnership and knowledge sharing between nodes of expertise in nanomedicine and Minority Serving Institutions (MSI). The Academy has created a scalable, interactive, reciprocal relationship among a large pool of minority students, and with leading experts in the field, established an evidence-based education program to attract and retain students from underrepresented minority populations. The initial partnering institutions are Northeastern University, University of Puerto Rico Mayaguez, Tuskegee University, Morgan State University, and Florida International University, as well as institutions in other countries. These unique programs have trained hundreds of graduate and undergraduate students in MSI, and led to institutional change in the form of new programs in nanomedicine.

Srinivas Sridhar, Ph.D. is University Distinguished Professor of Physics, Biomedical Engineering and Chemical Engineering at Northeastern University, and Lecturer on Radiation Oncology, Harvard Medical School.

An elected Fellow of the American Physical Society, Sridhar's current areas of research are nanomedicine, neurotechnology and MRI imaging. His paper in Nature in 2003 was listed among Breakthroughs of 2003 by the journal *Science*.

As Founding Director of the Electronic Materials Research Institute at Northeastern University, Sridhar established a Nanomedicine Center for synthesis and characterization of nanoparticle formulations. Sridhar is passionately committed to training future scientists and engineers and providing access to knowledge to all particularly to those from under-represented minority communities. He has trained more than 120 faculty, postdoctoral fellows, scientists, and graduate and undergraduate students. He is Director of the Nanomedicine Academy funded by grants for NSF and NIH, whose vision is to providing training in nanomedicine nationally and globally. He is Director of CaNCURE: Cancer Nanomedicine Coops for Undergraduate Research, an NIH R25 program to provide research training in cancer nanomedicine. He is Director and PI of the NSF IGERT Nanomedicine Science and Technology Center. He developed several first-of-their kind courses in Nanomedicine. These unique programs have taught hundreds of graduate and undergraduate students in several minority serving institutions, and led to institutional change in the form of new programs in nanomedicine.

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- Immunoengineering and Mechanical Microenvironment in Cancer Therapy
- Stem Cell Engineering and Mechanical Microenvironment in Regenerative Medicine

CONFERENCE HIGHLIGHTS:

- Short Talks from Student/Fellow Abstracts
- Rising Star Podium Sessions from Junior Principal Investigators
- Poster Presentations from International and Domestic Research

FEATURED SPEAKERS:

ABSTRACTS

Abstract Submission Schedule

Open: 5/17/16
Close: 8/17/16

For more submission information, visit **www.BMES.org/CMBEConf17Abstracts**.

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62-100 Kauna'oa Drive
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Hotel Reservation Dates

Open: 8/14/16
Cut-off: 12/16/16

Conference Rate: $205

Call (800) 882-6060 for reservations. Reference "CMBE 2017" to receive the discounted group rate.

For more information, visit **www.BMES.org/CMBEConf17Hotel**

REGISTRATION

Registration Schedule

Early:
9/13/16 – 11/21/16

Advance:
11/22/16 – 12/12/16

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To learn more, please visit **www.BMES.org/CMBEConf17Sponsorships** or contact Michael King at +001 (607) 255-9803, **Mike.King@Cornell.edu** or Peter Yingxiao Wang at +001 (858) 822-45020, **Yiw015@eng.UCSD.edu**

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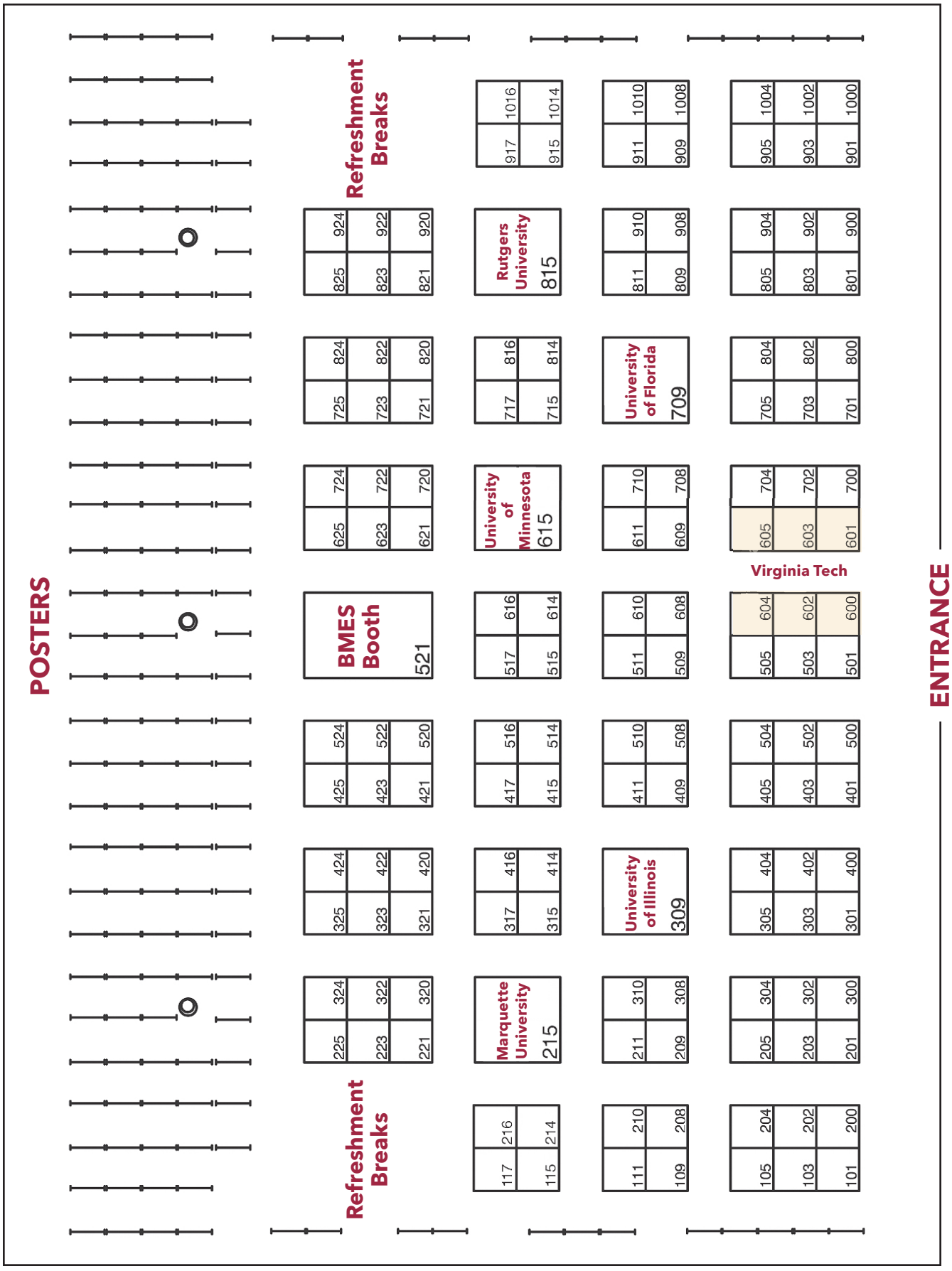
2016 EXHIBITORS

Exhibit Hall Floorplan



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Arizona State University

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Email: sbhse@asu.edu
Web: sbhse.engineering.asu.ed

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

Booth # 420

Binghamton University Department of Biomedical Engineering

P.O. Box 6000
Binghamton, NY 13902
Phone: 607-777-5774
Email: tglezen@binghamton.edu
Web: www.binghamton.edu/biomedical-engineering

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

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BIOPAC Systems, Inc. Department of Biomedical Engineering

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Boston University Biomedical Engineering

44 Cummington Mall, Room 220
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Web: www.bu.edu/bme

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 biome-chanics, 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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Carnegie Mellon University

5000 Forbes Avenue
Doherty Hall 2100
Pittsburgh, PA 15213
Phone: 412-268-6222
Email: yuliwang@andrew.cmu.edu
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The Department of Biomedical Engineering at Carnegie Mellon is built upon a long tradition of interdisciplinary research across departmental borders. Its decades-old research program emphasizes a collaborative network that balances four synergistic areas: basic engineering principles of living cells and tissues, engineering tools for biomedical research, interface between living and artificial materials, and clinical applications of biomedical engineering. Training programs encourage students to expand their vision and prepare them for a wide range of careers from academic research in basic sciences, to engineering entrepreneurship, to medical care.

Booth # 401

Case Western Reserve University

10900 Euclid Avenue
Wickenden 310
Cleveland, OH 44106
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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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Booth # 225

The City College of New York Biomedical Engineering

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

Booth # 708

Clemson University Department of Bioengineering

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Booth # 721

Colorado School of Mines

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Golden, CO 80401
Phone: 303-273-3720
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The Chemical & Biological Engineering Department at Colorado School of Mines is a dynamic, exciting environment for research and higher education. Research areas include renewable energy, soft materials, biomedical devices, and thin-film materials. Golden, Colorado is a gorgeous place to work and play with 300 days of sunshine a year.

Booths # 809 / 811

Columbia University Department of Biomedical Engineering

351 Engineering Terrace
500 West 120th Street
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Phone: 212-854-4460
Email: bme@columbia.edu
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The Department of Biomedical Engineering at Columbia University offers biomedical engineering education and research through B.S., M.S., Ph.D., and M.D./Ph.D. degree programs.ááOur department provides a surprising mix of the intellectual atmosphere of an Ivy League institution and the sense of community of a small college enriched by the diversity of New York City.

Booths # 500/502

Cornell University

101 Weill Hall
Ithaca, NY 14853
Phone: 607-255-2573
Email: bh42@cornell.edu
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The Meinig School of Biomedical Engineering at Cornell University focuses on interdisciplinary research to achieve a quantitative understanding of human biology at all spatial and temporal scales with the goal of improving human health. The school has a close relationship with Weill Cornell Medical Colleg 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. The Meinig School has close collaborations with other departments on campus.

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

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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 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.

Booth # 825

George Mason University Department of Bioengineering

4400 University Drive, MS 165
Fairfax, VA 22030
Phone: 703-993-4190
Email: tmcgowa2@gmu.edu
Web: www.bioengineering.gmu.edu

Located in the Washington DC metropolitan area, George Mason University's Department of Bioengineering offers unique research and educational experience with collaborative opportunities with nearby national laboratories, institutes, and clinical facilities. The BS program earned accreditation from ABET in 2012 and offers three concentrations: Biomedical Signals & Systems, Bioengineering Healthcare Informatics, and Bioengineering Pre-health. The Bioengineering PhD program is currently accepting applications from outstanding prospective students with full tuition and stipend support. The department has 11 primary faculty members with approximately $6M of active research in areas ranging from biomedical imaging, nanotechnology, neural engineering, and date-driven biomechanics.

Booth # 203

The George Washington University

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

Booth # 614

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

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Booth # 909

Imperial College London Department of Bioengineering

Royal School of Mines
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Email: bioengineering@imperial.ac.uk
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Imperial College London is consistently rated in the top 10 universities worldwide. The Department of Bioengineering at Imperial is the leading Department in the UK. Our research spans the breadth of bioengineering. We offer a range of academic and research opportunities for undergraduate (MEng) and postgraduate (MSc, MRes and PhD).

Booths # 501 / 503 / 505

Johns Hopkins University Department of Biomedical Engineering

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

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

Booths # 220 / 222

Korea Institute of Science and Technology (KIST)

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Lawrence Technological University

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Lehigh University Bioengineering

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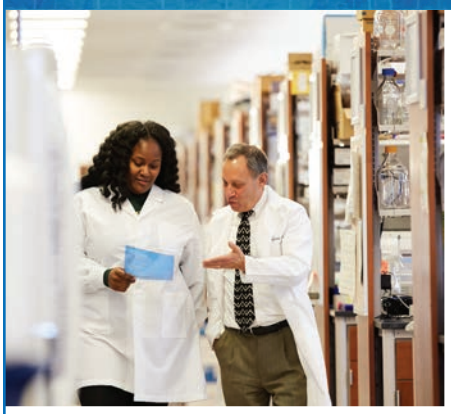

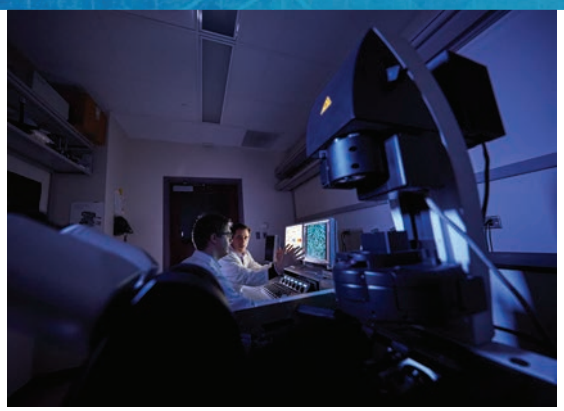

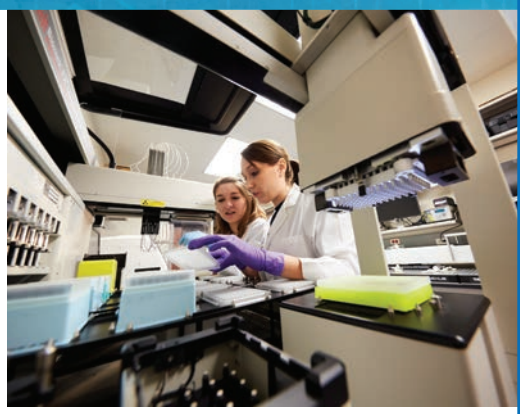

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Booth # 215

Marquette University Medical College of Wisconsin

P.O. Box 1881
Milwaukee, WI 53201
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The Marquette University and Medical College of Wisconsin Department of Biomedical Engineering features innovative programs in the following research areas: cardiovascular and pulmonary; imaging; medical device innovation; analytics, informatics and software engineering; computational biology and systems biology; molecular systems and modeling; orthopaedics and orthopaedic rehabilitation; neurosystems and neurorehabilitation.

Booths # 514 / 516

Mayo Graduate School Biomedical Engineering & Physiology Program

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

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

Booth # 424

McGill University

810 Sherbrooke Street West
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Booth # 202

Medtronic

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Booth # 323

Michigan State University Department of Biomedical Engineering

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East Lansing, MI 48824
Phone: 517-884-7931
Email: minottni@egr.msu.edu
Web: www.egr.msu.edu/home

The new Department of Biomedical Engineering at Michigan State University explores the intersection of medicine, human biology, engineering research, as well as design and practice. Biomedical Engineers serve society by developing new methods to understand, diagnose and treat illness and injury in the classroom, in the laboratory, and in the clinic.

Booth # 820

Michigan Technological University Department of Biomedical Engineering

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Email: slsedar@mtu.edu
Web: www.mtu.edu/biomedical

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

Booth # 1016

Minnesota High Tech Association

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Booth # 717

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

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

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Booth # 1014

National Science Foundation

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Booth # 904

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

323 Dr. Martin Luther King Jr. Boulevard
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Web: http://biomedical.njit.edu

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.

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Booth # 704

Northwestern University Biomedical Engineering Department

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Booths # 922 / 924

The Ohio State University Department of Biomedical Engineering

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Booth # 520

The Pennsylvania State University

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

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

Booth # 201

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3221 Rippey Road
Loomis, CA 95650
Phone: 916-993-3799
Email: info@placerinspection.com
Web: www.placerinspection.com

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Booths # 509/511

Purdue University Weldon School of Biomedical Engineering

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

The Weldon School of Biomedical Engineering at Purdue recruits exceptional MS and PhD students for nationally–funded graduate programs in four signature areas of expertise: imaging, instrumentation, engineering biomaterials and biomechanics, and quantitative cellular and systems engineering. We are distinguished by our entrepreneurial partnerships, specialty programs in regulatory affairs and biomedical entrepreneurship, and strong parntership with the Indiana University School of Medicine in Indianapolis.

Booth # 920

Quantified Logic LLC

909 W. Grove Parkway
Tempe, AZ 85283
Phone: 602-920-9699
Email: zach.houser@quantifiedlogic.com
Web: www.quantifiedlogic.com

Quantified Logic is focused on building cost effective learning solutions for biomedical engineering. We offer customized hardware, software, and courseware to meet your needs. Our unique pricing structure is great for online, onsite, or at home learning.

Booth # 715

Rensselaer Polytechnic Institute

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

Rensselaer Polytechnic Institute is the nation's oldest technological research university 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 # 300 / 302

Rice University Bioengineering

MS-142, P.O. Box 1892
Houston, TX 77251-1892
Phone: 713-348-5869
Email: bioeng@rice.edu
Web: www.bioe.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 # 815

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 # 117

Smiths Medical

6000 Nathan Lane N
Plymouth, MN 555442
Phone: 763-383-3000
Email: info.asd@smiths-medical.com
Web: www.smith-medical.com

Booth # 204

Springer

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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 # 115

Stevens Institute of Technology

1 Castle Point on Hudson
Hoboken, NJ 07030
Phone: 914-393-7229
Email: avaldevi@stevens.edu
Web: www.stevens.edu

Booth # 822

Stony Brook University Bioengineering Department

5281 SUNY
Stony Brook, NY 11794
Phone: 631-632-2302
Email: jessica.kuhn@stonybrook.edu
Web: www.bme.sunysb.edu

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

Booth # 901

Syracuse University Department of Biomedical and Chemical Engineering

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

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

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Booth # 725

Temple University College of Engineering, Department of Bioengineering

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

Booths # 701/ 703

Texas A & M University Department of Biomedical Engineering

3120 TAMU
College Station, TX 77843
Phone: 979-845-5532
Email: bmen@tamu.edu
Web: http://engineering.tamu.edu/biomedical

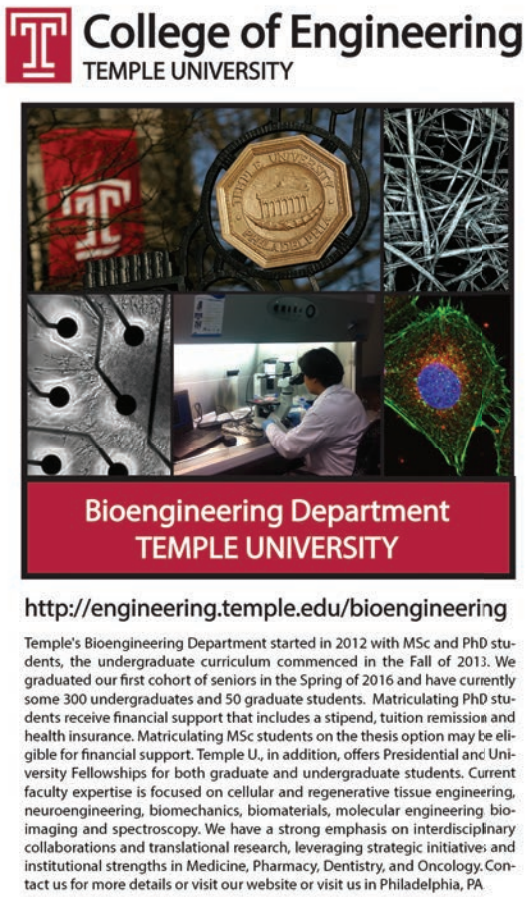
The Department of Biomedical Engineering at Texas A&M University offers allows students to impact health outcomes in the areas of sensing and imaging, optics, orthopedic biomechanics, biomaterials, tissue engineering, biomolecular and cellular engineering, and more. The department's award-winning faculty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

Booths # 722 / 724

Tufts University Biomedical Engineering

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

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



Booth # 205

Tulane University Department of Biomedical Engineering

500 Lindy Boggs Bldg.
New Orleans, LA 70118
Phone: 504-865-5897
Email: cstewar3@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 # 921

The University of Akron Department of Biomedical Engineering

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

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

Booths # 415 / 417

The University of Alabama at Birmingham Department of Biomedical Engineering

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

The BME department at The University of Alabama–Birmingham offers Master, PhD, and M.S.B.M.E. with Certificate in Life Sciences Entrepreneurship. The BME interdisciplinary programs including the areas of tissue engineering, biomechanics, cardiac electrophysiology, etc. The program include 20 primary and 46 secondary faculty members. BME graduates find employment in universities, industries, and regulatory agencies. In 2015, it became a joint department in School of Medicine and School of Engineering with the hiring of a new Chairman, Dr. Jianyi Jayö Zhang, MD, PhD, and successful addition of 6 new faculty. The new BME department is in the top 20 joint BME departments in US on NIH funding.

Booth # 421

The University of Arizona Biomedical Engineering

P.O. Box 210240
Tucson, AZ 85721
Phone: 520-626-9134
Email: bmegidp@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 # 121

University of Arkansas Biomedical Engineering

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

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

Booth # 422

University of Calgary

2500 University Drive NW
Calgary, Alberta T2N 1N4 Canada
Phone: 403-210-9733
Email: kdrinker@ucalgary.ca
Web: www.ucalgary.ca/bme/graduate

Booth # 610

University of California, Berkeley Bioengineering

306 Stanley Hall, MC1762
Berkeley, CA 94720-1762
Phone: 510-642-5833
Email: bioeng@berkeley.edu
Web: http://bioeng.berkeley.edu/

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

Booth # 923

The University of California, Davis Department of Biomedical Engineering

451 E. Health Sciences Drive, GBSF 2303
Davis, CA 95616
Phone: 530-752-1033
Email: bme@ucdavis.edu
Web: www.bme.ucdavis.edu

With 35 primary faculty and a graduate group of 75 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.

Booths # 414 / 416

University of California, Irvine

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

Booth # 109

UC San Diego

9500 Gilman Drive MC0412
San Diego, CA 92093
Phone: 858-822-3441
Email: gmoreira@ucsd.edu
Web: http://be.ucsd.edu/

Booth # 211

University of Chicago Institute for Molecular Engineering

5640 South Ellis Avenue, ERC 299
Chicago, IL 60637
Phone: 773-834-1437
Email: ime@uchicago.edu
Web: http://ime.uchicago.edu

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

Booth # 325

University of Colorado Denver/ Anschutz Medical Campus Department of Bioengineering

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

Booth # 720

University of Delaware

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

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

Booth # 709

University of Florida 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

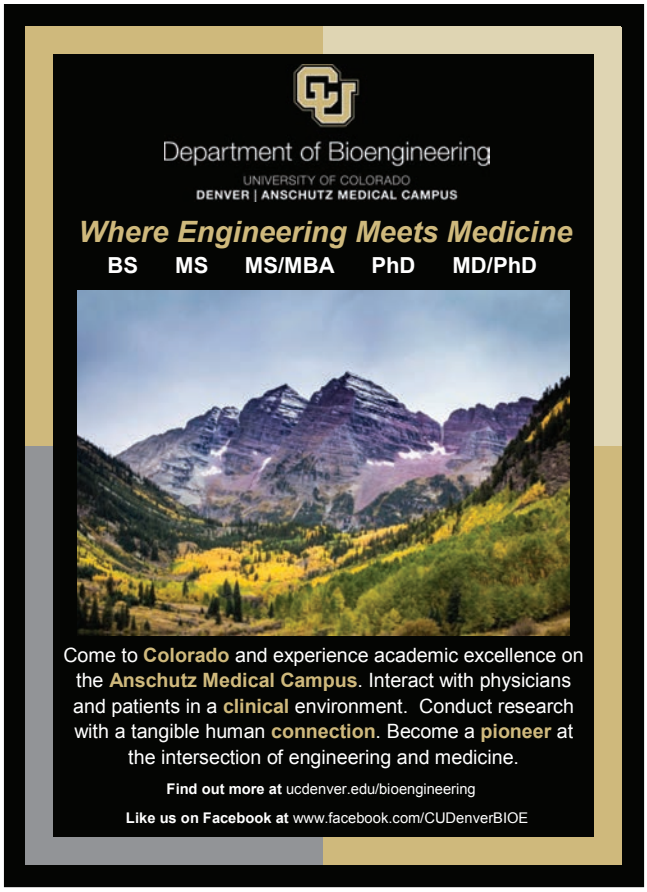
UF BME is made possible by the vision and generosity of Dr. J. Crayton Pruitt and his family. Since its inception in 2002, the department continues to excel in interdisciplinary research that merges engineering with biology and medicine. The department offers both a graduate program and an undergraduate program (2012 inaugural class), with particular strengths in Neural Engineering, Imaging and Medical Physics, Biomaterials and Regenerative Medicine, and Biomedical Informatics and Modeling. In the past year, the department has grown to 22 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 # 915

University of Illinois at Chicago

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

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



Booth # 309

University of Illinois @ Urbana-Champaign

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

With strengths in biomolecular imaging, bio-nanotechnology, computational bioengineering, cellular and tissue engineering, synthetic bioengineering, and health care systems engineering, the Department of Bioengineering at Illinois is addressing grand challenges in human health and sustainability. Come join a top-ranked engineering school and one of the fastest-growing, innovative bioengineering departments. We are committed to providing the best experience for our students and training future bioengineering leaders by incorporating diverse topics of science, engineering, technology and medicine into our teaching. We offer BS, MS, MEng, and PhD degrees and are driving the development of the new Carle Illinois College of Medicine, one of the nationÆs first engineering-based medical schools.

Booth # 409

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

1304 W. Springfield Avenue
1270 Digital Computer Lab, MD-278
Urbana, IL 61801
Phone: 217-333-1867
Email: bioemeng@illinois.edu
Web: bioemeng.illinois.edu

Illinois' Master of Engineering in Bioinstrumentation, with special focus on medical imaging, is an intensive professional degree program that is available on-campus as well as online. The program trains engineers to be industry leaders by combining rigorous graduate-level engineering coursework with fundamental business training on issues that confront professionals who develop products for biomedical imaging, medical diagnostics, genomics, and tools used in life science research. The program is designed as a unique discovery experience, offering greater technical depth than is possible in an undergraduate program. At Illinois, you'll delve into the fine points of biometric sensors, imaging technology, and life-changing clinical devices. You'll also gain the hands-on experience, leadership ability, and unparalleled skills needed to be successful in your chosen career.

Booth # 625

University of Iowa Department of Biomedical Engineering

103 S. Capitol Street
Iowa City, IA 52242
Phone: 319-335-5632
Email: courtney-bork@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 the Colleges of Dentistry, Medicine, Nursing, and Public Health. IowaCity 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

New College.
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Bioengineering at the University of Illinois at Urbana-Champaign is the driving force in the creation of the nation's first engineering-based **College of Medicine**.

And an exciting part of the new college is the new **Jump Simulation Center**, offering hands-on medical education and research, with students and faculty in engineering and medicine working side by side. The center is being constructed in Everitt Laboratory, a campus landmark that is undergoing a $55+ million renovation and soon will be the new home of the **Department of Bioengineering**.

FOR MORE INFORMATION

EMAIL: bioengineering@illinois.edu

WEB: medicine.illinois.edu

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Booth # 814

The University of Kansas

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

KU Bioengineering is an exciting and dynamic place. Our curriculum is broad and flexible, embracing the interdisciplinary nature of the field.á 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 # 320

University of Kentucky Department of Biomedical Engineering

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

The University of Kentucky offers B.S., M.S., and Ph.D. degrees in BME.Graduate level research are organized as interdisciplinary through the Institute of Biomedical Engineering.Faculty from the College of Engineering, Graduate School of Medicine, College of Veterinary Medicine, and College of Education, Health, and Human Sciences work collaboratively to teach courses and perform research.

Booth # 911

Fischell Department of Bioengineering University of Maryland

College Park MD 20742
Phone: 301-405-8268
Email: bioe-grad@umd.edu
Web: bioe.umd.edu

The Fischell Department of Bioengineering at the University of Maryland is the home of an emerging academic discipline, challenging degree programs, and faculty and students who want to make a difference in human health care through education, research, and invention. We will open our new state-of-the-art facility, Clark Hall, in 2017.

Booth # 917

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.

Booths # 821 / 823

University of Miami Department of Biomedical Engineering

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

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

Booth # 400

University of Michigan Department of Biomedical Engineering

1125 Carl A. Gerstacker Building
2200 Bonisteel Blvd.
Ann Arbor, MI 48109-2099
Phone: 734-615-9412
E-mail: sldougl@umich.edu
Web: www.bme.umich.edu

The mission of the University of Michigan Department of Biomedical Engineering is to provide leadership in education, training and cutting-edge research by translating science and engineering to solve important challenges in medicine and life sciences to the benefit of humanity. 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 academia, law, medicine, and business.

Booth # 615

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, plus 500 other FDA-registered medtech companies). Research conducted by the faculty spans the full spectrum, with particular depth in cardiovascular engineering, neural engineering, cell/tissue engineering, cancer bioengineering, and biomedical imaging/optics.

Booths # 403 / 405

University of North Carolina at Chapel Hill NC State University

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

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

Booth # 903

University of Oklahoma Stephenson School of Biomedical Engineering

202 W Boyd Street, CEC 107
Norman, OK 73019
Phone: 405-325-5453
Email: bme@ou.edu
Web: www.ou.edu/coe/sbme

OU is home to the newest BME department in the nation, with established M.S. and Ph.D. programs. Located in a vibrant research and startup community with the nearby Oklahoma Health Sciences Center (OUHSC), the Oklahoma Medical Research Foundation, and various entrepreneurial entities, BME students and faculty work in a translational environment with physicians and companies. Faculty candidates are invited to visit us and inquire about Endowed Professorships, and students are encouraged to ask about Stephenson Graduate Fellowships and translational research partnerships with the OUHSC.

Booths # 900 / 902

University of Pittsburgh Department of Bioengineering

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

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

Booth # 608

University of Rochester

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

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

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For questions, contact PJ Meek at pjmeek@ou.edu or (405) 325-5453.

To learn about the multiple Stephenson Endowed Professorships and Stephenson Graduate Fellowships, contact Michael Detamore, director of the Stephenson School of Biomedical Engineering at detamore@ou.edu.

Booth # 705

University of Southern California Viterbi School of Engineering

3650 McClintock Ave, OHE 106
Los Angeles, CA 90089
Phone: 213-740-4488
Email: viterbi.gradprogram@usc.edu
Web: http://viterbi.usc.edu/gapp

Booth # 908

University of South Dakota Biomedical Engineering

4800 North Career Avenue, Suite 221
Sioux Falls, SD 57107
Phone: 605-367-7763
Email: bme@usd.edu
Web: www.usd.edu/bme

The Biomedical Engineering Graduate Program at the University of South Dakota works at the interface of engineering and medicine. Research training emphasizes engineering biomaterials that can repair or replace damaged tissues and treat critical diseases. Course curriculum reflects the interdisciplinary nature of biomedical engineering and includes coursework in biomaterials, biomechanics, and bioinformatics. Faculty candidates and students are encouraged to visit our booth for more information.

Booths # 308 / 310

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 University of Tennessee offers B.S., M.S., and Ph.D. degrees in BME. Graduate level research are organized as interdisciplinary through the Institute of Biomedical Engineering. Faculty from the College of Engineering, Graduate School of Medicine, College of Veterinary Medicine, and College of Education, Health, and Human Sciences work collaboratively to teach courses and perform research.

Booth # 411

The University of Texas Arlington Bioengineering Department

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

The Bioengineering Department at The University of Texas Arlington offers several research and scholarship opportunities for students interested in Biomaterials & Regenerative Tissue Engineering, Bioinstrumentation, Biomechanics, and Biomedical Imaging. Graduate students also have the option of earning a joint graduate degree with The University of Texas Southwestern Medical Center at Dallas. Those interested in our programs are strongly encouraged to visit Booth 411 at the exhibit to learn more!

Booths # 621 / 623

The University of Texas at Austin Department of Biomedical Engineering

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

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

Booth # 223

University of Texas at Dallas

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

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

Booth # 1000

University of Texas at San Antonio

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

Booth # 425

University of Toronto Institute of Biomaterials & Biomedical Engineering

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

The U of T Institute of Biomaterials & Biomedical Engineering (IBBME) is a multidisciplinary research unit where investigators and students from engineering, medicine and dentistry collaborate with 10 major hospitals to develop solutions for our most pressing healthcare challenges. Our programs in biomedical and clinical engineering offer a world-class education at Canada's #1 ranked university.

Booth #209

University of Utah

36 S. Wasatch Drive, SMBB 3100
Salt Lake City, UT 84112
Phone: 801-581-8528
Email: erin.pugh@utah.edu
Web: www.bioen.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 # 504

University of Virginia

P.O. Box 800762
Charlottesville, VA 22908
Phone: 434-924-5101
Email: ran2x@virginia.edu
Web: http://bme.virginia.edu

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

Booth # 801

University of Washington Department of Bioengineering

3720 15th Avenue NE
Box 355061
Seattle, WA 98195
Phone: 206-616-3371
Email: bluek2@uw.edu
Web: http://depts.washington.edu/bioe/index.html

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

A Closely Knit Community

Nestled into Utah's Wasatch Mountain range, the Department of Bioengineering's 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 unsurpassed natural beauty. Learn more about us at: *bioen.utah.edu*

Department of BIOENGINEERING
UNIVERSITY OF UTAH

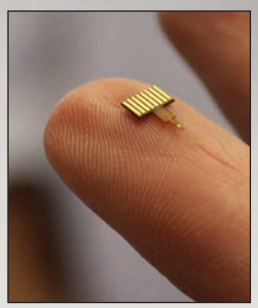
PhD in Biomedical Engineering

Offered by the **Department of Bioengineering** at The University of Texas at Dallas, the Biomedical Engineering PhD program has over 20 research faculty with more than $20M in active funding from the NIH, NSF, DARPA and industry partners.

PhD applicants are eligible to be selected for a Eugene McDermott Graduate Fellowship, which includes a generous stipend, tuition, and a $10,000 annual discretionary budget.

Application Deadline:
December 15, 2016

For More Information:
972.883.5155
bmenadvising@utdallas.edu
be.utdallas.edu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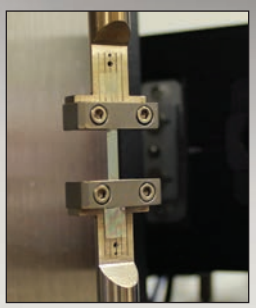
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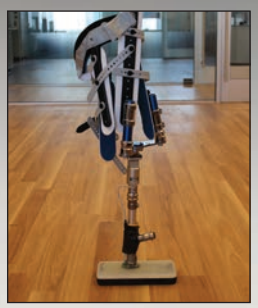
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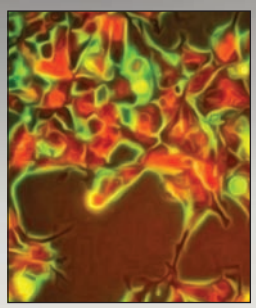
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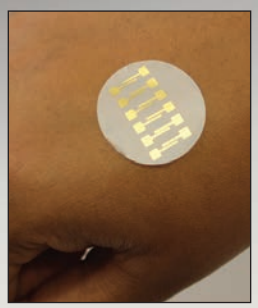
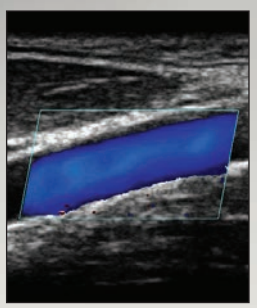

BIOSENSORS


BIOMEDICAL IMAGING

ERIK JONSSON SCHOOL
OF ENGINEERING AND COMPUTER SCIENCE
THE UNIVERSITY OF TEXAS AT DALLAS

UT DALLAS

Booth # 504

University of Virginia

P.O. Box 800762
Charlottesville, VA 22908
Phone: 434-924-5101
Email: ran2x@virginia.edu
Web: http://bme.virginia.edu

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

Booth # 801

University of Washington Department of Bioengineering

3720 15th Avenue NE
Box 355061
Seattle, WA 98195
Phone: 206-616-3371
Email: bluek2@uw.edu
Web: http://depts.washington.edu/bioe/index.html

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

Booth # 616

University of Wisconsin - Madison Biomedical Engineering Department

1550 Engineering Drive
Madison, WI 53706
Phone: 608-890-3573
Email: biomed@engr.wisc.edu
Web: www.engr.wisc.edu/bme/bme.html

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

Booths # 609 / 611

Vanderbilt University

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

VU BME bridges Vanderbilt's engineering, basic science departments, and 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.

Booths # 315 / 317

Virginia Commonwealth University

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

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. The department is actively recruiting faculty.

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

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

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

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

Booths # 508 / 510

Washington University in St. Louis

One Brookings Drive, Box 1097
St. Louis, MO 63120
Phone: 314-935-6164
Email: teasdalek@wustl.edu
Web: http://bme.wustl.edu/

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

Booth # 522

Wayne State University

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

The Biomedical Engineering Department at Wayne State University offers BS, MS, PhD and MD/PhD degrees. Ground breaking research in 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, Wayne State will play a major role in the development of new standards to better the quality of human life.

Booth # 816

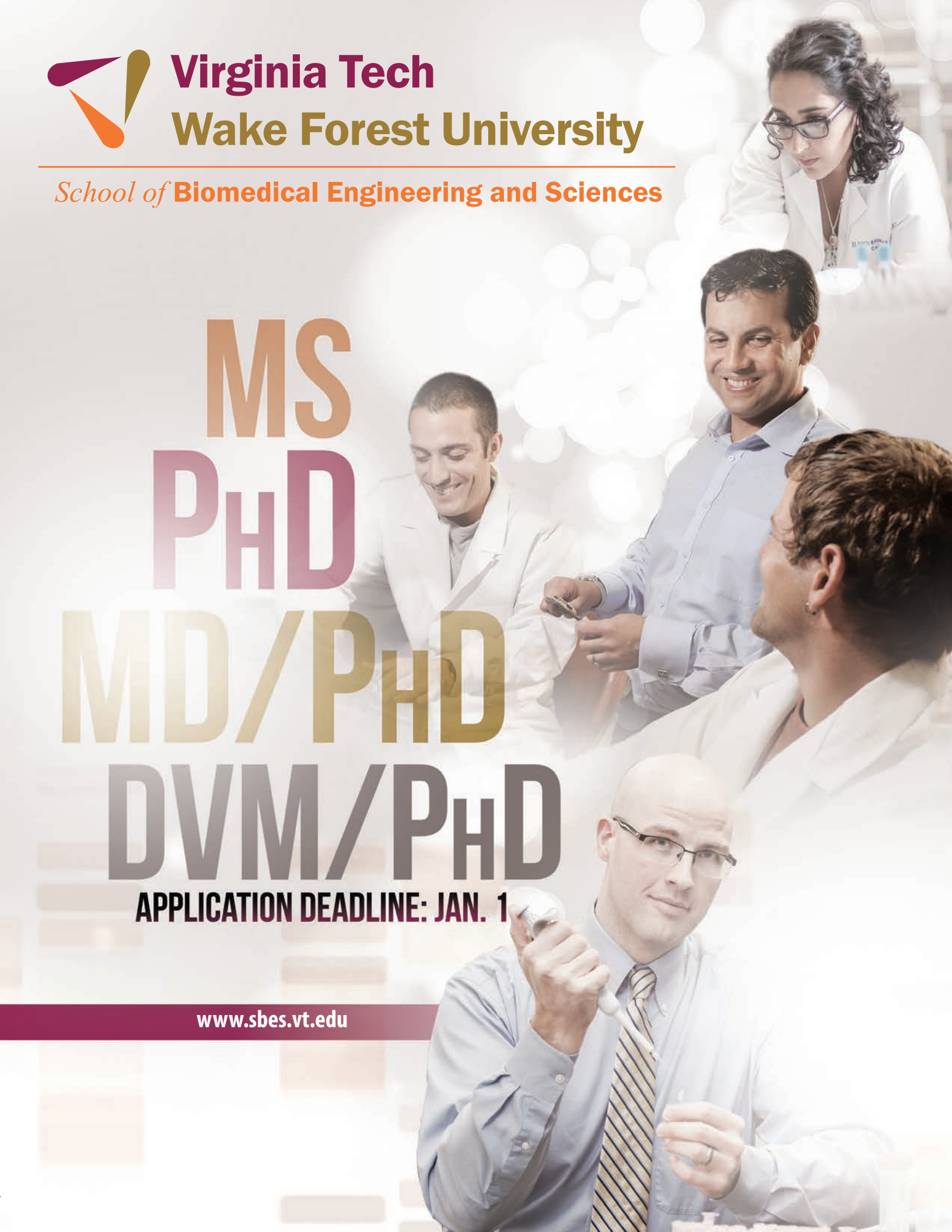
Whitaker International Program Institute of International Education

809 United Nations Plaza
New York, NY 10017
Phone: 646-308-8850
Email: Aschaefer@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.

Virginia Tech
Wake Forest University

School of **Biomedical Engineering and Sciences**



MS
PhD
MD/PhD
DVM/PhD

APPLICATION DEADLINE: JAN. 1

www.sbes.vt.edu

Booths # 322 / 324

Worcester Polytechnic Institute (WPI)

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.

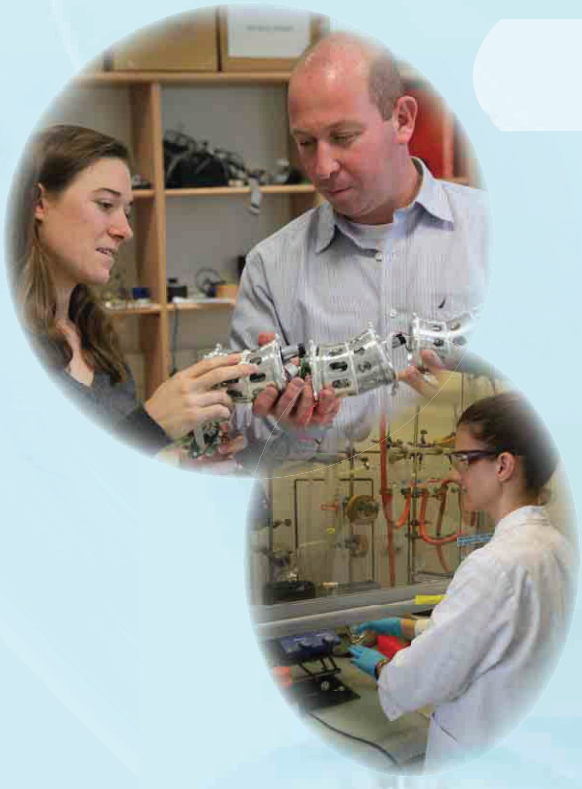
Booth # 321

Yale University

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

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

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
www.whitaker.org

Meeting Location | Registration | Exhibits | Poster Presentations

Meeting Location

Minneapolis Convention Center

1301 Second Ave South
Minneapolis, Minnesota 55403
612.335.6000

Hilton Minneapolis

1001 Marquette Avenue South
Minneapolis, Minnesota, 55403-2440
612.376.1000

Registration

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

On-Site Registration Hours

Wednesday, October 5	12:00 pm – 7:00 pm
Thursday, October 6	7:00 am – 6:00 pm
Friday, October 7	7:00 am – 6:00 pm
Saturday, October 8	7:00 am – 2:00 pm

Exhibits

Exhibit Halls B-C, Minneapolis Convention Center
Exhibits will be open:

Thursday, October 6	9:30 am – 5:00 pm
Friday, October 7	9:30 am – 5:00 pm
Saturday, October 8	9:30 am – 1:30 pm

Biotechnology Company Tours

Wednesday, October 5

2:30 pm–5:30 pm

Advance registration required

Buses will depart from the convention center entrance.

BMES Presenter Information

Platform Presentations

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

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

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

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

Poster Presentations

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

Thursday	9:30 am–10:15 am and 2:30 pm–3:15 pm
Friday	9:30 am–10:15 am and 3:15 pm–4:00 pm
Saturday	9:30 am – 10:15 am

All posters will be in the Exhibit Hall B-C in the Minneapolis Convention Center. Posters are numbered with a card corresponding to the numbers assigned in the program.

Speaker Ready Room

Registration Area, Exhibit Hall of the Minneapolis 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 5	1:00 pm – 5:00 pm
Thursday, October 6	7:00 am – 5:00 pm
Friday, October 7	7:00 am – 5:00 pm
Saturday, October 8	7:00 am – 2:30 pm

Program Highlights—Don't Miss These Events!

Wednesday, October 5

Meet the Faculty Candidate Forum

3:30 pm–5:30 pm **Exhibit Hall B | CC**

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

The BMES 2016 Annual Meeting ***Meet The Faculty Candidate Forum*** was only open to those who are actively on the market for the 2016–2017 recruiting cycle. Candidates submitted for consideration in August. The accepted candidates' CVs can be viewed at www.bmes.org.

Wednesday, October 5

Welcome Reception

5:30 pm–7:00 pm **Hall B-C Foyer | CC**

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

Wednesday, October 5

LGBT Dessert Social

8:00 pm–9:00 pm **Symphony III, Minneapolis Hilton**

**additional registration and $10 ticket required.*

Manu Platt, PhD, Associate Professor of Biomedical Engineering at the Georgia Institute of Technology and Emory University, is the speaker for the BMES LGBT dessert social hour. He will speak about navigating a career and life while feeling like an outsider, which has motivated him to create open and inclusive safe spaces for communities of outsiders. He will discuss intersectionality and the complexities of fusing orientation, ethnicity, gender, religion, education, family values and more that define each person's unique approaches to solving problems as humans and as biomedical engineers. Introductory remarks will be made by Shelly Peyton, Assistant Professor of Chemical Engineering at the University of Massachusetts, Amherst. Prof. Platt's talk will be followed by dessert and a cash bar.

LGBT Social Sponsored by:

DEPARTMENT OF BIOENGINEERING
UNIVERSITY of WASHINGTON

Thursday, October 6

BMES State of the Society Address & Wallace H. Coulter Award for Healthcare Innovation Lecture

10:15 am **Auditorium | CC**

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

Friday, October 7

BMES Bash at the Minneapolis Convention Center

8:30 pm–11:00 pm

Join us for a Dessert Party this year to celebrate the 2016 BMES Annual Meeting. We listened to our attendees and members, that they would like to enjoy dinner at the myriad of restaurants in downtown Minneapolis (more than 30 within walking distance of the convention center) and then cap the evening off with some dessert and networking.

Refreshment Breaks

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

Refreshment breaks are sponsored by:

MAYO GRADUATE SCHOOL
MAYO CLINIC
Biomedical Engineering and Physiology

NJIT New Jersey Institute of Technology
Department of Biomedical Engineering

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

Celebration of Minorities in BME Luncheon

Thursday, October 6

Celebration of Minorities in BME Luncheon*

11:45 am–12:45 pm **Ballroom A | CC**

**additional registration and $25 ticket required.*

This is the seventh 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.

Karl W. Reid, Ed.D.,
Executive Director of the National Society of Black Engineers (NSBE)

In this presentation, Dr. Reid will share his experience and perspective on barriers to an engineering education and profession, and highlight the NSBE vision to dramatically change the face of engineering by 2025.

Karl W. Reid, Ed.D. was named executive director of the National Society of Black Engineers (NSBE) on June 2, 2014, marking his return to the organization that gave him his first major leadership experience, 31 years earlier. For the past 17 years, he has been a leading advocate for increasing college access and opportunity for low-income and minority youth. Prior to NSBE Dr. Reid was the senior vice president for research, innovation and member college engagement for the United Negro College Fund (UNCF), where he oversaw new program development, research and capacity building for UNCF's 37 historically black colleges and universities. Before his service at UNCF, he worked in positions of increasing responsibility to increase diversity at his alma mater, the Massachusetts Institute of Technology (MIT), which he left as associate dean of undergraduate education and director of the Office of Minority Education. While working at MIT, Dr. Reid earned his Doctor of Education degree at Harvard University. His thesis explored the interrelationship of race, identity and academic achievement.

Dr. Reid graduated from MIT, where he did his undergraduate and master's work in materials science and engineering and was a Tau Beta Pi Scholar. He credits his membership in the NSBE chapter at MIT with giving a vital boost to his self-confidence and leadership skills. He joined the Society during his freshman year, was elected chapter vice president during his junior year and served as NSBE national chair for 1984–85. After graduating from MIT, Dr. Reid worked in the computer industry for 12 years. In 1991, five years into a successful career in sales and marketing with IBM Corporation, Dr. Reid read Jonathan Kozol's "Savage Inequalities," a seminal book about educational disparities in the U.S., which sparked his passion for bringing about positive change through education of African Americans.

Dr. Reid is now supporting NSBE's National Executive Board and the Society's 31,000 members in reaching the main goal of NSBE's 10-year Strategic Plan: to move black students and professionals from underrepresentation to overrepresentation in engineering in the U.S., by producing 10,000 Black Engineers annually in the country, by 2025. Dr. Reid is a member of the DC STEM Network Advisory Council and the American Society of Civil Engineers' "Dream Big" IMAX Movie Technical Advisory Council, and was recently named one of the "Top 100 Executives in America" by Uptown Professional magazine.

Diversity Luncheon is Sponsored by:

PURDUE ENGINEERING

WELDON SCHOOL OF BIOMEDICAL ENGINEERING

Friday, October 7

Women in BME Luncheon*

12:00 noon–1:30 pm **Ballroom A | CC**

**additional registration and $25 ticket required.*

An Unorthodox Career Path: From Practicing Physician to Playing One on TV

Our career trajectories are shaped by a series of opportunities and our courage to grow and change. All too often, however, the decisions we make are constrained by the conventional boundaries of the professional designations behind our name. Dr. Archelle Georgiou started her professional life as a practicing physician but over the following 25 years, she made 7 major shifts that took her career from medicine to managed care to the media. The key to navigating this unorthodox path has been self-awareness of her innate talents. Dr. Georgiou will use examples from her personal experiences to describe why and how we should commit to our calling versus a traditional career storyline.

Archelle Georgiou, MD,
Founder of Georgiou Consulting

Dr. Archelle Georgiou started her professional life as a practicing physician but over the following 25 years, she made 7 major shifts that took her career from medicine to managed care to the media. The key to navigating this unorthodox path has been self-awareness of her innate talents. Dr. Georgiou will use examples from her personal experiences to describe why and how we should commit to our calling versus a traditional career storyline.

Dr. Archelle Georgiou is a physician, a "recovering" healthcare industry executive, data lover, and health reporter. Her broad base of career experiences naturally let her look at health through the eyes of doctors, patients, insurance companies, policy makers, and the media. She founded Georgiou Consulting in 2008 and uses this balanced perspective to help companies with innovative, effective healthcare solutions ignite the change they need for meaningful adoption and improved business results. Most of her clients are outside the traditional healthcare system.

Dr. Georgiou believes that the media has an important role to play in influencing consumers to take responsibility for their health. Since 2007, Dr. Georgiou has been an on-camera medical expert in Minneapolis-St. Paul, initially with Fox9News and currently with KSTP, the ABC affiliate. In her weekly segments and monthly half-hour specials, she's covered more than 800 compelling health related topics, from the newest medical technology to patient advocacy to health insurance and the latest health care policy change. Archelle is recognized as a speaker with data-driven ideas that challenge the status quo and spark conversations about true health reform. She's been invited to speak at forums including Tedx, Gallup, Mayo Clinic Transform, Wireless Health Sciences Alliance Summit, Wharton School of Business and Colgate University. She has appeared on Katie's Take with Katie Couric, Fox Business News and Mehmet Oz & Friends. Her insights regarding change and leadership have been featured in several books including, *Motivate Like A CEO* and *The Millionaire Mystique*. In 2014, Dr. Georgiou received Minnesota Magazine's Champion award for "an individual who has focused their efforts to elevate the profile/status of the state's health care industry."

Women in BME Luncheon is Sponsored by:

Bioengineering
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
Engineering For Life

Additional Meetings

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

Wednesday, October 5

BMES Board of Directors Meeting
8:30 am–4:30 pm — **Room 101HI | CC**
Organizer: **Richard Hart**

AIMBE Board of Directors Meeting
Affiliate Event
1:00 pm–4:00 pm — **Room 101F | CC**
Organizer: **Milan Yager**

AIMBE Academic Council
Affiliate Event
4:00 pm–5:00 pm — **Room 101F | CC**
Organizer: **Milan Yager**

CMBE SIG Business Meeting
5:00 pm–7:00 pm — **Room 101G | CC**
Organizer: **Elizabeth Loboa**

Council of Chairs Dinner & Meeting
Invitation Only
6:30 pm–9:00 pm — **Salon E Minneapolis Hilton**
Organizer: **Don Gaver**

Industry Committee Planning Meeting
Invitation Only
7:30 pm–8:30 pm — **Boardroom 3 Minneapolis Hilton**
Organizer: **Ben Noe**

Thursday, October 6

Diversity Committee Meeting
7:00 am–8:00 am — **Room 101G | CC**
Organizer: **Debra Auguste and Guillermo Ameer**

ABioM SIG Business Meeting
9:00 am–11:00 am — **Room 101HI | CC**
Organizer: **Kaiming Ye**

Ethics Subcommittee Meeting
9:30 am–10:30 am — **Room 101G | CC**
Organizer: **Subrata Saha**

50th Anniversary Committee Meeting
1:00 pm–3:00 pm — **Room 101G | CCI**
Organizer: **Martine LaBerge**

Friday, October 7

Education Committee Meeting
7:00 am–8:00 am — **Room 101G | CC**
Organizer: **Donald Gaver**

National Meetings Committee / 2017 Annual Meeting Planning Committee Meeting
8:00 am–10:00 am — **Room 101HI | CC**
Organizer: **John White and Shelly Sakiyama-Elbert**

International Affairs Subcommittee
8:00 am–9:00 am — **Room 203A | CC**
Organizer: **Damir Khismatullin**

Medical Devices SIG Business Meeting
2:00 pm–3:00 pm — **Room 101HI | CC**
Organizer: **Devashish Shrivastava**

Membership Committee Meeting
3:30 pm–4:30 pm — **Room 101G | CC**
Organizer: **Kristen Billiar**

Design Competition Judges Meeting
3:30 pm–4:30 pm — **Room 203A | CC**
Organizer: **Liz DaSilva**

Saturday, October 7

Council of Industry Chapter Presidents–
Invitation Only
8:00 am–9:00 am — **Room 101F | CC**
Organizer: **Ben Noe**

Industry Advisory Board
Invitation Only
9:30 am–10:30 am — **Room 101F | CC**
Organizer: **Ben Noe**

Student Affairs Subcommittee
9:30 am–10:30 am — **Room 203A | CC**
Organizer: **Art Ritter**

BMES Board of Directors Meeting
1:00 pm–3:30 pm — **Room 101HI | CC**
Organizer: **Lori Setton**

Receptions located at the Minneapolis Hilton from 8:00 pm–10:00 pm

Thursday, October 6

Boston University
Marquette IX

Clemson Bioengineering
Marquette IV

Cornell University
Marquette III

Duke University
Rochester Room

The George Washington University
Grand Ballroom A

Wallace H. Coulter Department at Georgia Tech & Emory
Symphony I

Johns Hopkins University Biomedical Engineering Department
Marquette I

Marquette University/ Medical College of Wisconsin
Conrad C

Northeastern University Department of Chemical Engineering
Grand Ballroom G

The Ohio State University
Symphony III

Purdue University, Weldon School of Biomedical Engineering
Conrad D

Rennselaer Polytechnic Institute
Boardroom 3

Rice University Bioengineering
Marquette VII

UCLA Bioengineering Department
Symphony IV

The University of Alabama at Birmingham
Grand Ballroom F

University of California Irvine
Conrad A

University of California San Diego
Grand Ballroom B

University of Florida
Conrad B

University of Illinois at Urbana-Champaign
Grand Ballroom C

University of Michigan, Department of BiomedE
Directors Row 4

University of Pennsylvania Department of Bioengineering
Marquette V

University of Pittsburgh Department of Bioengineering
Directors Row 2

University of Rochester
Grand Ballroom D

University of Southern California–Viterbi School of Engineering
Marquette II

University of Texas at Austin
Grand Ballroom E

University of Utah, Department of Bioengineering
Symphony II

University of Virginia
Red Wing

University of Washington Bioengineering
Duluth Room

University of Wisconsin-Madison Biomedical Engineering Department
Directors Row 3

Vanderbilt University, Department of Biomedical Engineering
Marquette V

Washington University in St. Louis
Marquette VIII

Whitaker International Program
Directors Row 1

Student and Early Career Programs

Programs take place in the Convention Center, unless otherwise noted

Thursday, October 6

8:00 am–9:00 am **Room 205**

Becoming a Biomedical Engineer… What you need to know and where do you fit in

Learn about the key areas of BME, what BME's do and how they differ from other engineers. Explore the wide range of career options in industry, academia, clinical, government, research facilities and entrepreneurial. Hear about the BME work environment, and the job outlook to help you decide where you fit in.

9:15 am–10:15 am **Room 205**

BME Careers in Academia

Hear about the various career paths and opportunities in academia. Faculty will share their insights and experiences to help you prepare for a career in academia or decide if academia is right for you.

1:30 pm–2:45 pm **Room 205**

BME Careers in Industry

Explore the various industry options for BME professionals. Representatives from industry will share their career paths, educational training, insight into the hiring market, and suggestions for students and recent graduates who wish to pursue the same career.

2:45 pm–4:15 pm **Room 208AB**

Rapid Resume Review

Members Only

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

3:00 pm–5:00 pm **Room 102D**

Coop/Intern and Industrial Relations Workshop

Invitation Only

3:15 pm–4:30 pm **Room 205**

BME Government and Alternative Careers

Hear about the career paths and educational training as BME alumni share their experience and insight into working in the government, law, regulatory and consulting. Students and recent graduates will take away suggestions for how to pursue these careers.

9:00 am–5:30 pm **Exhibit Hall**

Career Zone

Join us for our new alternative career fair! The Career Zone is an area bringing together students, alumni, and employers for networking, recruiting and industry education. Don't miss the panel discussions throughout the day featuring alumni and employers who will share their career paths, advice, and the BME job market.

Panel sessions begin at 8:00am and last for 60 or 90 minutes. Panel speakers will continue the discussion, take more questions, network and/or recruit in the Career Zone after their scheduled session.

Student Chapter Tables

Alpha Eta Mu Beta, The National Biomedical Engineering Honor Society

Clemson University

Rice University

San José State University

Stevens Institute of Technology

University of Illinois, Urbana-Champaign

University of Minnesota

University of Oklahoma

University of South Carolina

University of Southern California

University of Texas at San Antonio

One-on-one career coaching will take place in the BMES booth for members only.

Student and Early Career Programs

Programs take place in the Convention Center, unless otherwise noted

Friday, October 7

8:30 am–9:30 am **Room 208CD**

BMES Student Chapter– Outstanding Chapter Best Practices

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

9:00 am–10:30 am **Room 205**

Career Options for BME PhDs

This session is designed specifically for BME PhD students and postdoctoral fellows. It brings together a panel of professionals with PhD degrees in BME or related disciplines employed in industry and academia. Each speaker will share their experiences and useful tips on what BME PhD students and postdocs need to do to land a job in industry or academia.

9:30 am–10:30 am **Room 208CD**

BMES Student Chapter–Mentoring and Chapter-Industry Best Practices

Outstanding Mentoring awardee University of Illinois, Urbana-Champaign will provide their chapter best-practices along with, the Chapter-Industry awardee The Ohio State University. University of Illinois, Urbana-Champaign will discuss their goals and the success of their mentoring program and The Ohio State University will present their Chapter-Industry best practices. During this workshop, students will have the opportunity to ask questions, exchange ideas and implement new goals for their upcoming year.

1:45 pm–3:15 pm **Auditorium**

BMES Undergraduate Student Design Competition

During this session we will bring together the top 6 winning design teams that were selected out of 22 applicants. The top 6 include Columbia University, Clemson University, Purdue University, Virginia Commonwealth University, University of Rochester and Rice University. This competition allows each design team to orally present their projects and students to ask questions after each presentation. Upon completion of all presentations, the judges will select and announce the top 3 winners.

2:30 pm–3:45 pm **Room 205**

BME Careers in Industry

Explore the various industry options for BME professionals. Representatives from industry will share their career paths, educational training, insight into the hiring market, and suggestions for students and recent graduates who wish to pursue the same career.

4:15pm–5:30pm **Room 205**

BME Entrepreneurs

Entrepreneurs discuss the translational path; how to take an idea from concept to commercial product. Hear about resources available to students interested in translating their technologies both within and outside the university, and licensing and start-up options. Panelists will also discuss the skills needed to work in a start-up.

9:00 am–5:30 pm **Exhibit Hall**

Career Zone

Join us for our new alternative career fair! The Career Zone is an area bringing together students, alumni, and employers for networking, recruiting and industry education. Don't miss the panel discussions throughout the day featuring alumni and employers who will share their career paths, advice, and the BME job market.

Panel sessions begin at 9:00am and last for 60 or 90 minutes, ending at 5:30pm. Panel speakers will continue the discussion, take more questions, network and/or recruit in the Career Zone after their scheduled session.

CAREER | CONNECTIONS

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HOSTED BY

Bioengineering

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

The I Hotel and Conference Center • Champaign, Illinois • November 4, 2016

- Learn about BME career opportunities in industry, academia and clinical
- Present your research work at the poster session
- Network with your peers and leaders in the field
- Hear about entrepreneurship and alternative careers
- Learn how to market yourself

www.BMES.org/MWConf16

Abstract Submissions — www.BMES.org/MWConf16Abstracts

Registration — www.BMES.org/MWConf16Reg

Sponsorship and Exhibit Opportunities — www.BMES.org/MWConf16SponExh

Hotel and Travel — www.BMES.org/MWConf16HotelTravel

Alpha Eta Mu Beta (AEMB) Programs

Thursday, October 6

4:30 pm–5:15 pm **Room 200A/CC**

Alpha Eta Mu Beta Annual Grand Meeting

Session Co-chairs: Dominic E. Nathan PhD, Bhavit Vora, MS, Justin Huckaby, BS, Morgan Elliott, BS, David Wolfson, BS, Marcia A. Pool, PhD, Alicia Fernandez-Fernandez, PhD, DPT, Kerri A. Green, MS and Teresa A Murray PhD.

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

Thursday, October 6

6:30 pm–8:00 pm **Lounge A, Level 2/CC**

Alpha Eta Mu Beta Reception

Session Co-chairs: Dominic E. Nathan PhD, Bhavit Vora, MS, Justin Huckaby, BS, Morgan Elliott, BS, David Wolfson, BS, Marcia A. Pool, PhD, Alicia Fernandez-Fernandez, PhD, DPT, Kerri A. Green, MS and Teresa A Murray PhD.

The Annual AEMB reception will be held at Lounge A, Lelvel 2. New charters and national awards will be presented at this session. Furthermore, this session will serve as 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. For tickets, please contact aemb@alphaetamubeta.org

Alpha Eta Mu Beta–Annual Ethics Session

Friday, October 7

10:00 am **Room 200A/CC**

Ethical Issues in Developing Tuberculosis Vaccines and Drugs

Session Co-chairs: Susan L. Craddock, PhD and Bhavit Vora, MS

Tuberculosis as of last year surpassed AIDS as the leading cause of infectious disease deaths in the world, yet there have been no new drugs or more effective vaccines developed in more than four decades. This is potentially changing with collaborative partnerships involving non-profits, university scientists, government and philanthropic financing, and pharmaceutical companies. Yet the attempts to develop new therapies for tuberculosis are not without critiques including whether money is better spent on single diseases rather than broader public health initiatives, whether enough is known about the tuberculosis bacterium to go ahead with clinical trials of new drug and vaccine candidates, and whether low-income countries affected by the disease should be leading these collaborations. These debates will be discussed in this talk, with the aim not to answer any of them definitively, but to elucidate what might be at stake in these collaborations and in the longstanding efforts to mitigate tuberculosis globally.

Alpha Eta Mu Beta (AEMB), the National Biomedical Engineering Honor Society, is committed to promoting ethics in the field of biomedical engineering. This year, AEMB is honored to host Dr. Susan Craddock from the University of Minnesota. Dr. Craddock's research focuses on social and political factors shaping the experience and patterns of, as well as responses to, infectious diseases. She has published on access to AIDS drugs, noncommercial clinical trials, and the roles of poverty, gender, and race on public health responses to tuberculosis. Her forthcoming book, *Compound Solutions: Pharmaceutical Alternatives for Global Health,* is on collaborative efforts to produce new tuberculosis vaccines and drugs for the first time in decades.

Student and Early Career Programs

Alpha Eta Mu Beta

Saturday, October 8

9:00 am–10:00 am **Room 200A/CC**

Mentoring for INnovative Design Solutions (MINDS) Workshop

Session Co-chairs: Teresa A. Murray, PhD, Alicia Fernandez-Fernandez, PhD, DPT, Bhavit Vora, MS, Justin Huckaby, BS, Morgan Elliott, BS, David Wolfson, BS, Marcia A. Pool, PhD, Kerri A. Green, MS and Dominic E. Nathan PhD.

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

Friday, October 7

8:00 am–9:30 am **Room 200J/CC**

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 two sub-programs: Fellows and Scholars Program, and the Summer Program. For more information, including program details, the online applica-tion and deadlines, visit: http://www.whitaker.org.

Chair: Amie Schaefer
Program Officer, Whitaker International Program
Institute of International Education

Joseph Yu
Whitaker International Fellow, 2013
Host Institution: Imperial College London, UK
Topic: Comprehensive Training in Cardiovascular Research and Biomedical Engineering Entrepreneurship

Brandan Walters
Whitaker International Fellow, 2014
Host Institution: Eberhard Karls University of Tubingen, Germany
Topic: Quantifiably Controlling Mesenchymal Stem Cell Morphology by Application of Tuned Cyclic Strain and the Effects of These Changes on Smooth Muscle Cell Differentiation

Erin Coonahan
Whitaker International Fellow, 2013
Host Institution: Engineering World Health, Honduras
Topic: Technician Training Programs to Improve Access to Healthcare in Honduras

Colin Hisey
Whitaker International Fellow, 2015
Host Institution: University of Navarra, Spain
Topic: A Microfluidic Device for Controlled Cell Placement and 1D Migration on Biomimetic Structures

Alisha Geldert
Whitaker International Fellow, 2015
Host Institution: National University of Singapore
Topic: Investigation of Aptamer-based Sensing for Malaria Detection

Cellular and Molecular Bioengineering

Congratulates the 2016 CMBE Young Innovators!

September 2016 issue, edited by Tejal Desai and Michael King

Craig Duvall
Vanderbilt Univ.
Stacey Finley
Univ. Southern California
Gregory Hudalla
Univ. Florida
Steven Jay
Univ. Maryland
Christopher Jewell
Univ. Maryland
Xiaojun Lance Lian
Penn State Univ.

Ting Lu
Univ. Illinois Urbana-Champaign
Minglin Ma
Cornell Univ.
Erkin Seker
Univ. California Davis
Kandice Tanner
National Cancer Institute
Kathryn Whitehead
Carnegie Mellon Univ.

See the Young Innovators present their work on Friday, October 7, 2016 at 1:45 and 4:00pm!

- **Become a 2017 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 2017 BMES Annual Meeting.**
- **To be eligible, candidates must hold a position at the Assistant Professor level or equivalent. BMES non-members are eligible and welcome.**
- **Self nominations should include manuscript title with 200-word abstract, and a 2-page NIH-style biosketch, emailed to mike.king@cornell.edu.**

BMES
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Advancing Human Health and Well-Being™

Key Dates for 2017 Young Innovators issue:
Nomination Deadline: November 4, 2016
Abstract Acceptance: December 9, 2016
Manuscript Submission: February 10, 2017
Print Publication: September 2017

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

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

Congratulations to the following Award Winners:

The Wallace H. Coulter Award for Healthcare Innovation

Presented at Thursday morning plenary session at 10:15 am

Omar Ishrak, PhD
Medtronic

Robert A. Pritzker Distinguished Lecture Award

Presented at Thursday evening plenary session at 5:00 pm

Nicholas A. Peppas, ScD
University of Texas at Austin

Rita Schaffer Young Investigator Award

Presented at Saturday morning plenary session at 10:30 am

Jennifer Munson, PhD
University of Virginia

Diversity Lecture Award

Presented at Saturday morning plenary session at 10:30 am

Srinivas Sridhar, PhD
Northeastern University

Innovation and Career Development Awards

Presented Thursday at Engineering Low-Cost Solutions to Address Health Care Disparities session at 3:15 pm

Angela Alexander-Bryant, PhD
Clemson University

Salma Ayoub
University of Texas at Austin

Lisa Cervia
Duke University

Paulette Foster
North Carolina A & T State University

Ruby Huynh
Catholic University of America

Juan Jimenez, PhD
University of Massachusetts

Maritza Jimenez
University of Pittsburgh

Meryem Pehlivaner
Northeastern University

Faisal Reza, PhD
Yale University

Evan Scott, PhD
Northwestern University

Woon-Hong Yeo, PhD
Virginia Commonwealth University

BMES Extended Abstracts: Design and Research Awards

Presented at Friday morning plenary session at 10:15 am

Graduate Students

Ali Bakhshinejad
University of Wisconsin- Milwaukee

Fidel Hernandez
Stanford University

Randall Meyer
Johns Hopkins University

Lei Wang
Colorado State University

Yang Zhu
McGowan Institute for Regenerative Medicine

Undergraduate Students

April Joy Aralar
George Mason University

Adam Berger
University of Maryland

Kevin Cyr
Vanderbilt University

Jack Dischler
Wayne State University

Nikan Namiri
University of California, Los Angeles

Erica Schwarz
Johns Hopkins University

Shania Shaji
Widener University

BMES Student Chapter Awards

Presented at Saturday morning plenary session at 10:30 am

2016 Outstanding Achievement Award

BMES Student Chapter at Virginia Tech/ Wake Forest University

2016 Commendable Achievement Award

BMES Student Chapter at Clemson University

2016 Outstanding Mentoring Program Award

BMES Student Chapter at University of Illinois, Urbana-Champaign

2016 Outstanding Chapter-Industry Achievement Award

BMES Student Chapter at The Ohio State University

2015 Fleetest Feet Award

BMES Student Chapter Virginia Tech/Wake Forest–46,680 miles

Honorable Mentions

BMES Student Chapter at Johns Hopkins University

BMES Student Chapter at San Jose State University

BMES Student Chapter at University of Southern California

BMES Journal Paper Awards

Presented at Friday morning plenary session at 10:15am/ Main Auditorium, Level I

Annals of Biomedical Engineering (ABME)

Most Downloaded

Hockey STAR: A Methodology for Assessing the Biomechanical Performance of Hockey Helmets.

Bethany Rowson, Steven Rowson, Stefan M. Duma *Annals of Biomedical Engineering* October 2015, Volume 43, Issue 10, pp 2429–2443.

Most Cited

Biologic Scaffolds for Regenerative Medicine: Mechanisms of In vivo Remodeling.

Ricardo Londono, Stephen F. Badylak *Annals of Biomedical Engineering* March 2015, Volume 43, Issue 3, pp 577–592.

Vascularization in Bone Tissue Engineering Constructs.

Ángel E. Mercado-Pagán, Alexander M. Stahl, Yaser Shanjani, Yunzhi Yang *Annals of Biomedical Engineering* March 2015, Volume 43, Issue 3, pp 718–729.

Cardiovascular Engineering and Technology

Most Downloaded

The 'Sphere': A Dedicated Bifurcation Aneurysm Flow-Diverter Device.

Thomas Peach, J. Frederick Cornhill, Anh Nguyen, Howard Riina, and Yiannis Ventikos *Cardiovascular Engineering and Technology 2014;* 5(4): 334–347.

Most Cited

Biodegradable Stents: Biomechanics Modeling Challenges and Opportunities.

James E. MooreJr., Joao S. Soares, Kumbakonam R. Rajagopal *Cardiovascular Engineering and Technology 2010;* 1(1): 52–65.

Cellular and Molecular Bioengineering

Most Downloaded

How to Measure Molecular Forces in Cells: A Guide to Evaluating Genetically-Encoded FRETBased Tension Sensors.

Anna-Lena Cost, Pia Ringer, Anna Chrostek-Grashoff, and Carsten Grashoff *Cellular and Molecular Bioengineering 2015*; 8(1): 96–105.

Editor's Choice Award

Probing the Biophysical Properties of Primary Breast Tumor-Derived Fibroblasts.

Turi A. Alcocer, Francois Bordeleau, Shawn P. Carey, Marsha C. Lampi, Daniel R. Kowal, Sahana Somasegar, Sonal Varma, Sandra J. Shin, Cynthia A. Reinhart-King *Cellular and Molecular Bioengineering 2015*; 8(1): 76-85.

Note: the Editor-in-Chief Michael King recused himself from this year's Editor's Choice selection process.

CONGRATULATIONS!
BMES 2016 CLASS OF FELLOWS

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

FELLOW RECIPIENTS

Stelios Andreadis, PhD
Bahman Anvar, PhD
Jason H. T. Bates, PhD, DSc
John P. Fisher, PhD
Ali Khademhosseini, PhD
Sanjay Kumar, MD, PhD
Elizabeth G. Loboa, PhD
Angelique Louie, PhD
Béla Suki, PhD

Fellows will receive Awards at the Pritzker Lecture on Thursday, October 8, 2016 at 5:00pm.

Bioinformatics and Systems Biology

Amina Qutub
Rice University

Casim Sarkar
University of Minnesota

Biomaterials

Shelly Peyton
University Massachusetts Amherst

Brendan Harley
University of Illinois UC

Biomechanics

Lance Davidson
University of Pittsburgh

Tanmay Lele
University of Florida

Biomedical Engineering Education

Monty Reichert
Duke University

Amy Lerner
University of Rochester

Biomedical Imaging and Optics

Richard Price
University of Virginia

Paolo Decuzzi
Instituto Italiano di Tecnologia

Cancer Technologies

Taher Saif
University of Illinois Urbana-Champaign

Nastaran Kuhn
National Cancer Institute, NIH

Cardiovascular Engineering

Kristyn Masters
University of Wisconsin

Anjelica Gonzalez
Yale University

Cellular and Molecular Bioengineering

Susan Thomas
Georgia Tech

Alisa Morss Clyne
Drexel University

Device Technologies and Biomedical Robotics

Dan Ratner
University of Washington

Walt Baxter
Medtronic

Drug Delivery

Michael King
Cornell University

Dan Zarraga
Genentech

Nano and Micro Technologies

Yaakov Nahmias
Hebrew University

Daniel Irimia
Harvard University

Neural Engineering

Michelle LaPlaca
Georgia Tech

Deanna Thompson
Rensselaer Polytechnic Institute

Orthopedic and Rehabilitation Engineering

Nadeen Chahine
Feinstein Institute

Luis Cardoso
The City College of New York

Respiratory Bioengineering

Susan Margulies
University of Pennsylvania

Stem Cell Engineering

Taby Ahsan
Tulane University

Eben Alsberg
Case Western Reserve

Tissue Engineering

Adam W. Feinberg
Carnegie Mellon University

Howard Matthew
Wayne State University

Translational Biomedical Engineering

Roger Kamm
Massachusetts Institute of Technology

Rashid Bashir
University of Illinois Urbana-Champaign

Undergraduate Research, Design & Leadership

Delphine Dean
Clemson University

Sherry Harbin
Purdue University

Thank you to our Reviewers for their Time and Effort

Bioinformatics, Computational and Systems Biology

Benjamin Cosgrove
Ranjan Dash
Colin Drummond
Taeyoon Kim
Pamela Kreeger
Stacey Finley
Ashlee Ford Versypt
Jeff Holmes
Mahendra Kavdia
Matthew Lazzara
Rob MacLeod
Megan McClean
Kathryn Miller-Jensen
David Noren
David Odde
Jason Papin
Shayn Peirce
Amina Qutub
Amanda Randles
Casim Sarkar
Cheemeng Tan
Lufang Zhou

Biomaterials

Vinay Abhyankar
Josephine Allen
Deirdre Anderson
Joel Bumgardner
Gulden Camci-Unal
Hao Cheng
Lesley Chow
Jeannine Coburn
Mark Cronin-Golomb
Roche de Guzman
Tara Deans
Craig Duvall
John Fisher
Gargi Ghosh
Daniel Alge
Jordan Green
Teja Guda
Jiang He
Rebecca Heise
Ngan Huang
Jeffrey Jacot
Kyung Jae Jeong
Ho-Wook Jun
Salman Khetani
Joseph Kinsella
Vipuil Kishore
Kyle Lampe
Jungwoo Lee
Jennifer Leight
Yan Li
Xiaohua Liu
Maureen Lynch
Mary Beth Monroe
Monica Moya
Rene Olivares-Navarrete
Jennifer Patterson
George Pins
Jerald Redmond
David Rubenstein
Treena Arinzeh
Jai Rudra
Alisha Sarang-Sieminski
Stephanie Seidlits
Blanka Sharma
Eduardo Silva
Aleksander Skardal
Cherie Stabler
Jan Stegemann
Joe Tien
Alice Tomei
Scott Verbridge
William D Wagner
Qun Wang
Hui Wei
Jeff Wolchok
Young-sup Yoon
David Zaharoff
Ge Zhang
Feng Zhao
Donghui Zhu
Janet Zoldan
Silviya Zustiak

Biomechanics

Mohammad Abedinnasab
Kyle Allen
Kartik Balachandran
Janet Barzilla
Kristen Billiar
Dwight Bronson
Ashley Brown
Stuart Campbell
Rhima Coleman
Kareen Coulombe
Jennifer Currey
Guohao Dai
Jaydip Desai
Eno Ebong
Steve Fening
Matthew Fisher
Bingmei Fu
F. Scott Gayzik
Keith Gooch
Umut Gurkan
Jeff Holmes
Yujian Huang
Jessica Isaacs
Lance Kam
Roland Kaunas
Andrew Kemper
Taeyoon Kim
Ryan Koppes
Murali Krishnamurthy
Lik Chuan Lee
Christopher Lemmon
Susan Lessner
Jun Liao
Robert Allen
Margaret Lowder
Walter Murfee
Ruth Ochia
Muralidhar Padala
Amit Pathak
Robert Peattie
Ferris Pfeiffer
Christopher Price
Ellie Rahbar
Sharan Ramaswamy
Christopher Raub
Noah Rosenblatt
Jonathan Rylander
Ali Sadegh
Saravan Kumar
Shanmugavelayudam
Yan-Ting Shiu
Joao Soares
Kimberly Stroka
Paul Sundaram
Costin Untaroiu
Antonio Valdevit
Siqi Wang
Vincent Wang
Yong Yang

Biomedical Engineering Education

Jeremy Ackerman
Nastaran Alinezhadbalalami
Robert Allen
Casey Ankeny
Janet Barzilla
Kristen Billiar
Gary Brooking
Lola Brown
Joel Bumgardner
Daniel Cavanagh
Ting Chen
Olivia Coiado
Jennifer Currey
Thomas Everett
Paul Fagette
John Fisher
Richard Goldberg
Connie Hall
Yujian Huang
Jessica Isaacs
Jennifer Kang-Mieler
Murali Krishnamurthy
Jacqueline Linnes
Margaret Lowder
Jean-Michel Maarek
Rob MacLeod
Ashwin Nair
Ruth Ochia
Raquel Perez-Castillejos
Ferris Pfeiffer
Brian Plouffe
Marcia Pool
Harcharan Ranu
Jerald Redmond
Katherine Reuther
Mark Ruegsegger
Alisha Sarang-Sieminski
Steven Schreiner
Erkin Seker
Scott Sell
Jesse Shearin
Allison Sieving
C. LaShan Simpson
Anita Singh
Deborah Wells
Jenny Amos
Conrad Zapanta
Jason Zara

Thank you to our Reviewers for their Time and Effort

Biomedical Imaging & Optics

Milad Akhlaghi Bouzan
Santosh Aryal
Carolyn Bayer
Kim Butts Pauly
Charles Caskey
Mark Cronin-Golomb
Wawrzyniec Dobrucki
Amber Doiron
Daniel Elson
Thomas Everett
Samuel Grant
Joan Greve
Teja Guda
Aysegul Gunduz
Jiang He
John Hossack
Song Hu
Schön Ingmar
Javier Jo
Kim Kelly
Jaehong Key
Alexander Klibanov
Abigail Koppes
Ana Martins
Luca Menichetti
Craig Meyer
Wilson Miller
Walter O'Dell
Rui Pereira
Adrian Podoleneau
Steven Poelzing
Christopher Price
Yi Wang
Baohong Yuan
Lufang Zhou

Cancer Technologies

Nastaran Alinezhadbalalami
Brian Booth
Katie Bratlie
Kris Dahl
Anthony Dickherber
Stacey Finley
Daniel Gallego-Perez
Gargi Ghosh
Cheryl Gomillion
Adam Hall
Xiaoming He He
Kazunori Hoshino
Anjana Jain
Mathumai Kanapathipillai
Yonghyun Kim
Joseph Kinsella
Pamela Kreeger
Nastaran Kuhn
Matthew Lazzara
Jungwoo Lee
Jennifer Leight
Chien-Chi Lin
Wenge Liu
Song Lou
Susan McCarthy
Carolina Salvador Morales
Ashwin Nair
David Odde
Walter O'Dell
Amit Pathak
Harcharan Ranu
Taher Saif
Jesse Shearin
Kimberly Stroka
Ming Su
Scott Verbridge
Shunqiang Wang
Shannon Weigum
Ian Wong
Lori Young
David Zaharoff

Cardiovascular Engineering

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Robert Akins
B. Rita Alevriadou
Josephine Allen
Deirdre Anderson
Kartik Balachandran
Kristen Billiar
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Lola Brown
Stuart Campbell
Naomi Chesler
Olivia Coiado
Daniel Conway
Kareen Coulombe
Ranjan Dash
Wawrzyniec Dobrucki
Eno Ebong
Thomas Everett
Bingmei Fu
F. Scott Gayzik
Anjelica Gonzalez
Keith Gooch
Joan Greve
Jeff Holmes
Ngan Huang
Thomas Hund
Jeffrey Jacot
Juan Jimenez
Lik Chuan Lee
Jun Liao
Margaret Lowder
Rob MacLeod
Rolle Marsha
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Karen May-Newman
Megan McCain
Walter Murfee
Muralidhar Padala
Robert Peattie
Shayn Peirce
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Ramesh Raghupathy
Sharan Ramaswamy
Arthur Ritter
David Rubenstein
Sudeep Sastry
Yan-Ting Shiu
Eduardo Silva
Joao Soares
Kevin Soucy
Sara Vasconcrelos
Horst von Recum
Siqi Wang
Saami Yazdani
Ying Zheng

Cellular and Molecular Engineering

Vinay Abhyankar
B. Rita Alevriadou
Kristen Billiar
Brian Booth
Ashley Brown
Stuart Campbell
Nilay Chakraborty
Hao Cheng
Kris Dahl
Guohao Dai
Ranjan Dash
Dennis Discher
Henry Donahue
Eno Ebong
Amir Farnoud
Stacey Finley
Bingmei Fu
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Umut Gurkan
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Chandra Kothapalli
Pamela Kreeger
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Megan McClean
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Kristen Mills
Melissa Moss
Walter Murfee
Keith Neeves
David Odde
Anthony Passerini
Amit Pathak
Robert Peattie
Ellie Rahbar
Alisha Sarang-Sieminski
Casim Sarkar
Karl Schilke
Daniel Schmidt
Evan Scott
Stephanie Seidlits
Joao Soares
Sarah Stabenfeldt
Kimberly Stroka
Ming Su
Paul Sundaram
Cheemeng Tan
Alice Tomei
Maribel Vazquez
William D Wagner
Yong Yang

Thank you to our Reviewers for their Time and Effort

Device Technologies and Biomedical Robotics

Mohammad Abedinnasab
Chad Abunassar
Robert Allen
Walt Baxter
Gary Brooking
Jaydip Desai
Daniel Elson
F. Scott Gayzik
Richard Goldberg
Seunghyun Kim
Ryan Koppes
Jacqueline Linnes
Muralidhar Padala
Ferris Pfeiffer
Harcharan Ranu
Daniel Ratner
Arthur Ritter
Steven Schreiner
Kevin Soucy
Ming Su
Alexandrina Untaroiu
Shunqiang Wang
Jia Yao
Xiaopeng Zhao

Drug Delivery

Daniel Alge
Nastaran Alinezhadbalalami
Katie Bratlie
Lola Brown
Hao Cheng
Jeannine Coburn
Kris Dahl
Roche de Guzman
Dennis Discher
Amber Doiron
Craig Duvall
Amir Farnoud
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Eduardo Silva
Cherie Stabler
Alice Tomei
Andrew Tsourkas
Ashlee Ford Versypt
Horst von Recum
Shunqiang Wang

Nano and Micro Technologies

Vinay Abhyankar
Chad Abunassar
Alptekin Aksan
Shyam Aravamudhan
Vince Beachley
Francois Berthiaume
Xuanhong Ceng
Nilay Chakraborty
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Horst von Recum
Qun Wang
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Hui Wei
Shannon Weigum
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Elena Yarmola
Jeffrey Zahn

Neural Engineering

Shyam Aravamudhan
Treena Arinzeh
Tim Bruns
Ting Chen
Jaydip Desai
Daniel Gallego-Perez
Aysegul Gunduz
Yujian Huang
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Javier Jo
Andrew Kemper
Lucas Lu
Ruth Ochia
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Noah Rosenblatt
Jonathan Rylander
Anita Singh
Jan Stegemann
Antonio Valdevit
Siqi Wang
Vincent Wang

Thank you to our Reviewers for their Time and Effort

Respiratory Bioengineering

Said Audi
Jason Bates
Ranjan Dash
Marcel Filoche
Samir Ghadiali
Rebecca Heise
David Kaczka
Arthur Ritter
Bela Suki
Daniel Tschumperlin
Siqi Wang
Tilo Winkler

Stem Cell Engineering

Treena Arinzeh
Gulden Camci-Unal
Rhima Coleman
Kris Dahl
Guohao Dai
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Eduardo Silva
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Emmanuel (Manolis) Tzanakakis
Horst von Recum
Kaiming Ye

Tissue Engineering

Ashutosh Agarwal
Robert Akins
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Sarah Stabenfeldt
Kelly Stevens
Paul Sundaram
Harini Sundararaghavan
Joe Tien
William D Wagner
Qun Wang
Yong Yang
Kaiming Ye

Translational Biomedical Engineering

A. George Akingba
Deirdre Anderson
Rashid Bashir
Gary Bowlin
Gary Brooking
Wawrzyniec Dobrucki
Thomas Everett
Amir Farnoud
Samuel Grant
Aysegul Gunduz
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Salman Khetani
Jamal Lewis
Carolina Salvador Morales
Muralidhar Padala
Kidong Park
George Pins
Jai Rudra
Hui Wei
David Zaharoff
Pinar Zorlutuna

Undergraduate Research, Design & Leadership

Mohammad Abedinnasab
Chad Abunassar
Milad Akhlaghi Bouzan
B. Rita Alevriadou
Nastaran Alinezhadbalalami
Janet Barzilla
Jason Bates
Dwight Bronson
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Ashwin Nair
Drishya Nair
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Vipul Raikar
Harcharan Ranu
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Karl Schilke
Steven Schreiner
Aleksander Skardal
Paul Sundaram
Aby Thyparambil
William D Wagner
Siqi Wang
Xuefeng Wei
Jeffrey Willey
Tong Ye
Lufang Zhou

2016 PROGRAM

THURSDAY'S HIGHLIGHTS

Platform Sessions-Thurs-1
8:00 am–9:30 am — **Convention Center**
See pages 73-81

Industry Session: Intellctual Property: Patent Process
9:00 am–10:00 am — **Room 201**
See page 81

Exhibit Hall Open
9:30 am–5:00 pm — **Exhibit Hall**

Poster Session
9:30 am–5:00 pm — **Exhibit Hall**

Poster Viewing with Authors & Refreshment Break
9:30 am–10:15 am — **Exhibit Hall**

Plenary Session
10:15 am–11:30 am — **Auditorium**

State of the Society
Rich Hart, PhD

The Wallace H. Coulter Award for Healthcare Innovation Award Lecture
Omar Ishrak

Celebration of Minorities in BME Luncheon
11:45 am–12:45 pm — **Ballroom A**
Additional Ticket Purchase Required

Industry Session: Technology Transfer Pitches and Networking
12:00 noon–2:00 pm — **Room 201**
See page 81

Platform Sessions-Thurs-2
1:00 pm–2:30 pm — **Convention Center**
See pages 82-91

Meet the Expert: NIH Funding: Meet Program Directors, Reviewers, and Awardees
1:00 pm–2:30 pm — **Room 204**
See page 90

Special Session: International Symposium on Biomedical Engineering
1:00 pm–2:30 pm — **Room 208CD**
See page 91

Special Session: Developing Best Practices for Graduate Training in Biomedical Innovation
1:00 pm–4:00 pm — **Room 102E**
See page 91

Industry Session: Special Industry Topics
2:15 pm–5:00 pm — **Room 201**
See page 91

Poster Viewing with Authors & Refreshment Break
2:30 pm–3:15 pm — **Exhibit Hall**

Platform Sessions-Thurs-3
3:14 pm–4:45 pm — **Convention Center**
See pages 92-100

Special Session: Engineering Low-Cost Solutions to Address Health Care Disparities
3:15 pm–4:45 pm — **Room 208CD**
See page 100

Plenary Session: Robert A. Pritzker Distinguished Lecture
5:00 pm–6:00 pm — **Ballroom BC**

Designing the Next Generation of Intelligent Biomaterials and Hydrogels: Molecular Recognition and Advanced Protein and Cell Delivery
Nicholas Peppas, ScD

Hosted Receptions–Minneapolis Hilton
See pages 57 for list

Thursday, October 6 | 8:00 am–9:30 am | Platform Session 1

OP-Thurs-1-1 Auditorium 1

Tracks: Biomechanics, Cellular and Molecular Bioengineering

The Nucleus and Cytoskeleton in Mechanobiology

Chairs: Jan Lammerding, Venkat Maruthamuthu

8:00 am

Activating the Nuclear Piston Mechanism to Generate Intracellular Pressure During 3D Tumor Cell Migration–INVITED

Ryan Petrie[1]
[1]Drexel University, Philadelphia, PA

8:15 am

LINC Complex Disruption Enhances Nuclear Deformability and Cell Transit Through Narrow Constrictions

Gregory Fedorchak[1], Jineet Patel[1], Patricia Davidson[2], and Jan Lammerding[1]
[1]Cornell University, Ithaca, NY, [2]Institut Curie, Paris, France

8:30 am

As the Beating Heart Stiffens in Development, So Does the Nuclear Lamina

Sangkyun Cho[1], Stephanie Majkut[1], Kenneth Vogel[1], Amal Abbas[1], Manorama Tewari[1], Jerome Irianto[1], Andrea Liu[1], Sam Safran[2], and Dennis Discher[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Weizmann Institute, Rehovot, Israel

8:45 am

Regulation of Single Stress Fiber Mechanics by Cell Geometry and Actin Network Architecture

Elena Kassianidou[1], Christoph Brand[2], Ulrich Schwarz[2], and Sanjay Kumar[1]
[1]UC Berkeley, Berkeley, CA, [2]Institute for Theoretical Physics and BioQuant, Heidelberg University, Heidelberg, Germany

9:00 am

Force-history Dependence and Reinforcement of Actin Filaments at the Single Molecular Level

Hyunjung Lee[1], Shoichiro Ono[2], Suzanne Eskin[1], Cheng Zhu[1], and Larry McIntire[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

9:15 am

The Role of Cytoskeleton and Ion Channels In Cell Decision-Making Under Confinement

Alexandros Afthinos[1], Runchen Zhao[1], and Konstantinos Konstantopoulos[1]
[1]The Johns Hopkins University, Baltimore, MD

OP-Thurs-1-2 Auditorium 2

Track: Cancer Technologies

Emerging Technologies for Cancer Treatment

Chairs: Tony Dickherber, Keyue Shen

8:00 am

Toward Targeting the Physical Hallmarks of Tumors with Pulsed Electric Field Ablation Therapy–INVITED

Scott Verbridge[1], Jill Ivey[1], Eduardo Latouche[1], Akanksha Kanitkar[1], Mike Sano[2], Zhi Sheng[3], John Rosmeisl[1], and Rafael Davalos[1]
[1]Virginia Tech, Blacksburg, VA, [2]Stanford University, Stanford, CA, [3]Virginia Tech Carilion Research Institute, Roanoke, VA

8:15 am

Prussian Blue Nanoparticle-based Photothermal Therapy Combined with Checkpoint Inhibition for Photothermal Immunotherapy of Neuroblastoma

Juliana Cano-Mejia[1], Elizabeth Sweeney[1], Rachel Burga[1], Catherine Bollard[1], Anthony Sandler[1], John Fisher[2], C. Russell Y. Cruz[1], and Rohan Fernandes[3]
[1]Children's National Health System, Washington, DC, [2]University of Maryland, College Park, MD, [3]Children's National Health System, Washington, DC

8:30 am

Microporous Scaffolds For Early Detection of Circulating Pancreatic Cancer Cells

Grace Bushnell[1], Lidong Wang[1], Shreyas Rao[2], Rachel Dudek[1], Yining Zhang[1], Robert Oakes[1], Jacqueline Jeruss[1], Diane Simeone[1], and Lonnie Shea[1]
[1]University of Michigan, Ann Arbor, MI, [2]University of Alabama, Tuscaloosa, AL

8:45 am

Mapping Tumor Cell Drug Response as a Function of Matrix Context Using Combinatorial Cell Microarrays

Kerim Kaylan[1], Stefan Gentile[1], Lauren Milling[1], Kaustubh Bhinge[2], Farhad Kosari[2], and Gregory Underhill[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Mayo Clinic, Rochester, MN

9:00 am

3D *In Vitro* Platform to Isolate Dormancy-Capable Cancer Cells

Julian Preciado[1], Eduardo Reategui[1], Emil Lou[1], Samira Azarin[1], and Alptekin Aksan[1]
[1]University of Minnesota, Minneapolis, MN

9:15 am

A Mathematical Framework for Ultra-sensitive Detection of Cancer Using Activity-Based Biomarkers

Gabe Kwong[1]
[1]Georgia Tech & Emory, Atlanta, GA

Thursday, October 6 | 8:00 am–9:30 am | Platform Session 1

OP-Thurs-1-3 — Auditorium 3

Tracks: Biomechanics, Cardiovascular Engineering

Cardiovascular Biomechanics I

Chairs: Ellie Rahbar, Saravan Kumar Shanmugavelayudam

8:00 am
Hemodynamic Reflex Compensation in Acute Infarction: Implications for Ventricular Remodeling
Colleen M. Witzenburg[1], Wade Zhang[1], Brooke T. Sutherland[1], and Jeffrey W. Holmes[1]
[1]University of Virginia, Charlottesville, VA

8:15 am
Pulmonary Artery Stiffening is Evident by Changes in Nonlinear Mechanical Properties in Canine PAH
Mark Golob[1], Gregory Wolf[1], Omid Forouzan[1], Ashley Mulchrone[1], Heidi Kellihan[1], Melissa Bates[2], and Naomi Chesler[1]
[1]University of Wisconsin-Madison, Madison, WI, [2]University of Iowa, Iowa City, IA

8:30 am
Hydrostatic Stress Regulates Tissue Compaction, Polarity, and Matrix Stiffness in the Developing Atrioventricular Valve
David Bassen[1], Rishabh Singh[1], Russell Gould[1], Philip Buskohl[1], and Jonathan Butcher[1]
[1]Cornell University, Ithaca, NY

8:45 am
Tsai-Hill Maximum-Work Theory: An Anisotropic Failure Criterion For Fibrous Biological Tissues
Christopher Korenczuk[1], Lauren Votava[1], Rohit Dhume[1], and Victor Barocas[1]
[1]University of Minnesota, Minneapolis, MN

9:00 am
Adaptive Remodeling of the Right Ventricle Myocardium in Response to Pulmonary Hypertension: Towards Physical Understanding and Prediction
Reza Avazmohammadi[1] and Michael Sacks[1]
[1]University of Texas at Austin, Austin, TX

9:15 am
Do Pressure-Volume Loops Accurately Measure Heart Tissue Stiffness? A Comparison with Biaxial Tensile Testing
Rachel Childers[12], Aaron J. Trask[12], Jun Liu[1], Pamela A. Lucchesi[3], and Keith J. Gooch[1]
[1]The Ohio State University, Columbus, OH, [2]Nationwide Children's Hospital Research Institute, Columbus, OH, [3]The Commonwealth Medical College, Scranton, PA

OP-Thurs-1-4 — Room 102AB

Track: Tissue Engineering

Bioreactor Systems for Tissue Engineering

Chairs: Roche deGuzman, Harini Sundararaghavan

8:00 am
Tissue Engineering Bioreactors for Regenerative Medicine and Study of Disease–INVITED
Gordana Vunjak-Novakovic[1], Kacey Ronaldson[1], Sarindr Bhumiratana[2], and Keith Yeager[1]
[1]Columbia University, New York, NY, [2]epiBone, New York, NY

8:30 am
***Ex Vivo* Arterial Culture for Assessment of Compliance-Induced Intimal Hyperplasia**
Diaz-Rodriguez[1], Jonathan Kulwatno[1], Juan Felipe Diaz Quiroz[1], Alysha Kishan[2], Allison Post[2], Elizabeth Cosgriff-Hernandez[2], andMariah Hahn[1]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Texas A&M University, College Station, TX

8:45 am
A Study of Matrix Remodeling in Aortic Heart Valve Cusps in Response to Tunable Biaxial Cyclic Stretch
Ying Lei[1], Shirin Masjedi[1], and Zannatul Ferdous[1]
[1]The University of Tennessee, Knoxville, Knoxville, TN

9:00 am
Cardiac Valve Bioreactor Capable of Physiological Conditioning
Brandon Tefft[1], Daniel Spoon[1], Ryan Hennessy[1], Nicholas Stoyles[1], Melissa Young[1], Soumen Jana[1], Dan Dragomir-Daescu[1], Robert Simari[2], and Amir Lerman[1]
[1]Mayo Clinic, Rochester, MN, [2]University of Kansas Medical Center, Kansas City, KS

9:15 am
Tissue Engineered Tendon Grafts using Oscillatory Mechanostimulation
Zachary Mussett[1], Mary E. Hoover[1], and Vassilios Sikavitsas[1]
[1]University of Oklahoma, Norman, OK

OP-Thurs-1-5 — Room 102C

Tracks: Tissue Engineering, Orthopaedic and Rehabilitation Engineering

Musculoskeletal Tissue Engineering

Chairs: Elizabeth Loboa, Henry Donahue

8:00 am
Strategies for Functional Tissue Engineering of Articular Cartilage–INVITED
Clark Hung[1], Andrea Tan[1], Brendan Roach[1], Adam Nover[1], Alex Cigan[1], Robert Nims[1], Kacey Marra[2], and James Cook[3]
[1]Columbia University, New York, NY, [2]University of Pittsburgh, Pittsburgh, PA, [3]University of Missouri, Columbia, MO

8:30 am
A Continuous Pore Size Gradient PLLA Scaffold for Osteochondral Regeneration
Riccardo Gottardi[1], Gioacchino Conoscenti[2], Peter Alexander[1], Paul Manner[3], Vincenzo La Carrubba[2], Valerio Brucato[2], and Rocky Tuan[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Università degli Studi di Palermo, Palermo, Italy,[3]University of Washington, Seattle, WA

8:45 am
***In Situ* Tissue Regeneration Via Robust, Bioadhesive, and Cell-Infiltrating Supramolecular Gelatin Hydrogels**
Liming Bian[1], Qian Feng[1], and Kongchang Wei[1]
[1]Chinese University of Hong Kong, Shatin, Hong Kong

9:00 am
Microfluidic Flow Cell Array Printing for Engineered IVD and Musculo-skeletal Tissues
David Ede[1]
[1]University of Utah, Salt Lake City, UT

9:15 am
Magnetic Sorting Offers Rapid, High-Throughput Isolation of ALPL+ Cells from Lipoaspirate
Bryan Sutermaster[1] and Eric Darling[1]
[1]Brown University, Providence, RI

OP-Thurs-1-6 Room 101A

Track: Cellular and Molecular Bioengineering

Molecular and Cellular ImmunoEngineering

Chairs: Jai Rudra, Kyung-Ho Roh

8:00 am
Biomaterials-Based Immune Therapies for Treating Inflammation–INVITED
Carolina Mora Solano[1], Yi Wen[2], and Joel Collier[2]
[1]University of Chicago, Chicago, IL, [2]Duke University, Durham, NC

8:15 am
Innate Immune Strategies for Combating Antibiotic Resistant S. aureus Infection–INVITED
Scott Simon[1]
[1]UC Davis, Davis, CA

8:30 am
Two-stage Lymph Node Drug Delivery System Based on Differential Rates of Oxanorbornadiene-mediated Drug Tethering and Release from Thiolated Nanoparticles–INVITED
Alex Schudel[1], Cody Higginson[1], M.G. Finn[1], and Susan Thomas[1]
[1]Georgia Institute of Technology, Atlanta, GA

8:45 am
Biomaterials-based *Ex Vivo* Engineered Immune Organoids for Controlled Differentiation of B Cells
Alberto Purwada[1] and Ankur Singh[1]
[1]Cornell University, Ithaca, NY

9:00 am
Probing the Roles of Neutrophil Extracellular Trap Components with Synthetic DNA-Histone Structures
Cameron Louttit[1], Priyan Weerappuli[1,2], Taisuke Kojima[1], Midori Maeda[1], Cameron Yamanishi[1], Shuichi Takayama[1], and James Moon[1]
[1]University of Michigan, Ann Arbor, MI, [2]Wayne State University, Detroit, MI

9:15 am
Engineered T Regulatory Cells (Tregs) as a Multiple Sclerosis Therapeutic
Elissa Leonard[1] and Jennifer Maynard[1]
[1]University of Texas at Austin, Austin, TX

OP-Thurs-1-7 Room 101B

Tracks: Cellular and Molecular Bioengineering, Nano and Micro Technologies

Micro/Nano Tools in Molecular Biology (Genomics, Proteomics)

Chairs: Caroline Jones, Noel Dahl

8:00 am
Ultrasensitive Detection of Secreted Proteins from Single Cells Using Chemically-Amplified Quantum Dots
Vanessa Herrera[1], Thuy Luu[1], Robert Gutierrez[1], Maha Rahim[1], Frances McWhorter[1], Wendy Liu[1], and Jered Haun[1]
[1]University of California, Irvine, Irvine, CA

8:15 am
µFLISA: A New Experimental and Computational Platform for Analysis of Dynamic Secretomes to Identify Precise Secretory Signatures of Stem Cell Mediated Cardioprotection
Kshitiz Kz[1], David Ellison[2], Yasir Suhail[2], Junaid Afzal[2], Laura Woo[2], and Andre Levchenko[1]
[1]Yale University, West Haven, CT, [2]Johns Hopkins University, Baltimore, MD

8:30 am
A Multiplexed Digital Microfluidic Dispenser for Quantitative Nanoliter Droplet Analysis
Jinzhen Fan[1], Baoqing Li[1,2], Fernando Villarreal[1], Brent Weyers[1], Cheemeng Tan[1], and Tingrui Pan[1]
[1]University of California, Davis, Davis, CA, [2]University of Science and Technology of China, Hefei, China, People's Republic of

8:45 am
Capillary Electrophoresis Coupled with Micro Free Flow Electrophoresis for High Speed Comprehensive Two-Dimensional Analysis of Peptides
Alexander Johnson[1] and Michael Bowser[1]
[1]University of Minnesota, Minneapolis, MN

9:00 am
Enabling Multiplexed Single-cell Measurement of Angiogenic Receptors via Quantum dot (QD) Nanosensors: A High-throughput Quantification Approach
Si Chen[1] and P Imoukhuede[1]
[1]University of Illinois at Urbana-Champaign, Champaign, IL,

Thursday, October 6 | 8:00 am–9:30 am | Platform Session 1

9:15 am
Click Chemistry-Based DNA Labeling of Cells for Barcoding Applications
Stefan Gentile[1] and Gregory Underhill[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

OP-Thurs-1-8 — Room 101C

Tracks: Biomechanics, Orthopaedic and Rehabilitation Engineering

Orthopedic Mechanobiology and Mechanotransduction

Chairs: Roland Kaunus, Kyle Allen

8:00 am
Tendon Injuries: Degeneration and Impaired Healing–INVITED
Nelly Andarawis-Puri[1]
[1]Cornell University, Ithaca, NY

8:30 am
A Nociceptive Role for Integrin Signaling from Mechanical Injury of Ligaments
Sijia Zhang[1], Jasmine Lee[1], and Beth Winkelstein[1]
[1]University of Pennsylvania, Philadelphia, PA

8:45 am
Characterization of Rodent Gait in Two Models of Osteoarthritic Pain
Brittany Jacobs[1], Katherine Dunnigan[1], Margaret Pires-Fernandes[1], and Kyle Allen[1]
[1]University of Florida, Gainesville, FL

9:00 am
Visualization of Cell Lineage and Proliferation on the Mineralizing Surface of Mechanically Loaded Tibias
Heather Zannit[1] and Matthew Silva[1]
[1]Washington University in St. Louis, Saint Louis, MO

9:15 am
Simulated Microgravity Plus Immobilization Exacerbates Sarcopenia but not Osteopenia
Toni Speacht[1], Andrew Krause[1], Jennifer Steiner[1], Charles Lang[1], and Henry Donahue[2]
[1]Penn State, Hershey, PA, [2]Virginia Commonwealth University, Richmond, VA

OP-Thurs-1-9 — Room 101D

Track: Cardiovascular Engineering

Hemodynamics

Chairs: Juan Jimenez, Keith Gooch

8:00 am
Hemodynamic and Morphological Characteristics of Mirror and Ipsilateral Cerebral Aneurysms
Ravi Doddasomayajula[1] and Juan Cebral[1]
[1]George Mason University, Fairfax, VA

8:15 am
Nitrite Regulates Mitochondrial Dynamics to Inhibit Vascular Smooth Muscle Cell Proliferation
Christopher Reyes[1,2], Sruti Shiva[1,2,3], Danielle Guimaraes[2], and Yinna Wang[2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Pittsburgh Heart, Lung and Blood Vascular Medicine Institute, Pittsburgh, PA, [3]Center for Metabolism & Mitochondrial Medicine, Pittsburgh, PA

8:30 am
Hemodynamic Alterations Translate Into Distinct Cardiac Malformation Phenotypes
Madeline Midgett[1] and Sandra Rugonyi[1]
[1]Oregon Health & Science University, Portland, OR

8:45 am
An In Silico Study of Hemodynamics in a Virtually Treated Growing Cerebral Aneurysm Model
Chad Hyslop[1], Priya Nair[1], Matthew Mortensen[1,2], Jonathan Plasencia[1], Justin Ryan[3], Brian Chong[1,4], and David Frakes[1,2,5]
[1]SBHSE, Arizona State University, Tempe, AZ, [2]EndoVantage, LLC, Scottsdale, AZ, [3]Phoenix Children's Hospital, Phoenix, AZ, [4]Mayo Clinic Hospital, Phoenix, AZ, [5]ECEE, Arizona State University, Tempe, AZ

9:00 am
Minimum Wound Size for Clotting: Flowing Blood Coagulates on a Single Collagen Fiber Presenting Tissue Factor and von Willebrand Factor
Shu Zhu[1], Maurizio Tomaiuolo[1], and Scott Diamond[1]
[1]University of Pennsylvania, Philadelphia, PA

OP-Thurs-1-10 — Room 101E

Track: Biomaterials*

Mechanics of Biomaterials

Chairs: Alice Tomei, Kaiming Ye

8:00 am
Mechanics Of Brain Tissue Measured By Cavitation Rheology
Sualyneth Galarza[1], Aleksandar Mijailovic[2], Nathan Birch[1], Jessica Schiffman[1], Alfred Crosby[1], Shelly Peyton[1], and Krystyn Van Vliet[2]
[1]University of Massachusetts Amherst, Amherst, MA, [2]Massachusetts Institute of Technology, Cambridge, MA

8:15 am
Thiol-epoxy/maleimide Ternary Networks as Softening Substrates for Bioelectronic Medicines
Radu Reit[1], Haley Abitz[1], Neel Reddy[1], Shelbi Parker[1], Andrew Wei[1], Nicole Aragon[1], Milan Ho[1], Aaron Weittenhiller[1], Tong Kang[1], and Walter Voit[1]
[1]The University of Texas at Dallas, Richardson, TX

8:30 am
Dynamic Modulation of Mechanically Tunable 3D ECM-Mimic for the Study of Dynamic Cell Response to Scaffold Mechanics
Adam Munoz[1], Joseph Miller[1], Atrouli Chatterjee[1], and Cynthia Reinhart-King[1]
[1]Cornell University, Ithaca, NY

8:45 am
Hyaluronic Acid-Based Hydrogels with Simultaneously Tunable Mechanical & Bioactive Properties
Madison Godesky[1] and David Shreiber[2]
[1]Rutgers, The State University of New Jersey, New York, NY, [2]Rutgers, The State University of New Jersey, Piscataway, NJ

9:00 am
Bio-Orthogonally Crosslinked, Engineered Protein Hydrogels with Tunable Mechanics and Biochemistry
Christopher Madl[1], Lily Katz[1], and Sarah Heilshorn[1]
[1]Stanford University, Stanford, CA

9:15 am
Viscoelastic Effect of Hydrogel Regulates Epithelial Morphogenesis
Yuan Yuan[1], Kalyanaraman Vaidyanathan[1], and Debanjan Sarkar[1]
[1]University at Buffalo, Buffalo, NY

*** Biomaterials Track sponsored by**

ACS Biomaterials SCIENCE & ENGINEERING

OP-Thurs-1-11 Room 200E

Tracks: Cardiovascular Engineering, Device Technologies and Biomedical Robotics

Cardiovascular Devices I

Chairs: Olivia Coiado, Lola Brown

8:00 am
Using Vagus Nerve Stimulation To Treat Hypertension And Hypertension-Induced Heart Disease
Elizabeth Annoni[1], Xueyi Xie[1], Steven Lee[1], Kanchan Kulkarni[1], Imad Libbus[2], Bruce KenKnight[2], John Osborn[1], and Elena Tolkacheva[1]
[1]University of Minnesota, Minneapolis, MN, [2]Cyberonics Inc., Houston, TX

8:15 am
Improving Cardiac Transplantation Using an *Ex Vivo* Perfusion Model and Pharmacological Posttreatment
Maria Seewald[1], Erik Gaasedelen[1], Tinen Iles[1], Lars Mattison[1], Alexander Mattson[1], Megan Schmidt[1], and Paul Iaizzo[1]
[1]University of Minnesota, Minneapolis, MN

8:30 am
A Microwave-assisted Wireless Passive Stimulator of Cardiac Cells
Shiyi Liu[1], Ali Navaei[1], Mehdi Nikkhah[1], and Junseok Chae[1]
[1]Arizona State University, Tempe, AZ

8:45 am
Myocardial Perfusion During Left Ventricular Assist Device Support in Normal & Heart Failure Calves
Kevin Soucy[1], Dustin Phillips[1], Guruprasad Giridharan[1], Michael Sobieski[1], Sumanth Prabhu[2], Mark Slaughter[1], and Steven Koenig[1]
[1]University of Louisville, Louisville, KY, [2]University of Alabama at Birmingham, Birmingham,AL

9:00 am
Novel Nanomatrix Reduces Inflammation in Dynamic Conditions *In Vitro* and Dilates Arteries *Ex Vivo*
Grant Alexander[1], Jeremy Vines[1], Patrick Hwang[1], Teayoun Kim[1], Jeong-a Kim[1], Brigitta Brott[1], Young-Sup Yoon[2], and Ho-Wook Jun[1]
[1]University of Alabama at Birmingham, Birmingham, AL, [2]Emory University, Atlanta, GA

9:15 am
Detachable Small-scale Glass Microelectrode to Measure Transmembrane Potential in Contracting Hearts
Angel Moreno[1], Mladen Barbic[2], and Matthew Kay[1]
[1]The George Washington University, Washington, DC, [2]The Howard Hughes Medical Institute, Janelia Research Campus, Ashburn, VA

OP-Thurs-1-12 Room 200F

Track: Device Technologies and Biomedical Robotics

Biosensors

Chairs: Daniel Ratner, Jeffrey LaBelle

8:00 am
Biosensor Array for Highly Sensitive and Rapid Detection of Wound Bacteria
Roya Sheybani[1] and Anita Shukla[1]
[1]Brown University, Providence, RI

8:15 am
Capillary-Driven Fluidic Networks for Blood Typing via Silicon Photonic Biosensors
Shon Schmidt[1], Alexander Wende[1], Jonas Flueckiger[2], Lukas Chrostowski[2], and Daniel Ratner[1]
[1]University of Washington, Seattle, WA, [2]University of British Columbia, Vancouver, BC, Canada

8:30 am
Development of an Iris Image Based Noninvasive Physiological Glucose Sensor: A Preliminary Clinical Trial
Niraj K. Gupta[1] and Brent D. Cameron[1]
[1]University of Toledo, Toledo, OH

8:45 am
Real-Time Detection of Insulin Surrogate Markers within Physiomimetic Islet Microsystems
Giovanni Lenguito[1], Jonathan Witz[1], Alejandro Caicedo[1], and Ashutosh Agarwal[1]
[1]University of Miami, Miami, FL

9:00 am
Novel Algorithm For Multi-marker Detection In Electrochemical Impedance Spectroscopy
Chi Lin[1], David Probst[1], Lindsey Rider[1], and Jeffrey LaBelle[1]
[1]Arizona State University, Tempe, AZ

Thursday, October 6 | 8:00 am–9:30 am | Platform Session 1

9:15 am
Ultrasonic Transducer-Guided Electro-chemical Impedance Spectroscopy to Assess Lipid-Laden Plaques
Jianguo Ma[1], Yuan Luo[2], Rene Packard[1], Teng Ma[3], Yichen Ding[1], Parinaz Abiri[1], Yu-Chong Tai[2], Qifa Zhou[3], Kirk Shung[3], Rongsong Li[1], and Tzung Hsiai[1]
[1]University of California, Los Angeles, Los Angeles, CA, [2]California Institute of Technology, Pasadena, CA, [3]University of Southern California, Los Angeles, CA

OP-Thurs-1-13 Room 200D

Track: Biomaterials*

3D Printing and Advanced Biomaterial Manufacturing

Chairs: Kyung Jae Jeong, Teja Guda

8:00 am
Design and Characterization of Functional Microscale Bicuspid Valves Fabricated in Biocompatible Hydrogels
Samantha Paulsen[1], Bagrat Grigoryan[1], and Jordan Miller[1]
[1]Rice University, Houston, TX

8:15 am
Dual Crosslinking System for Stabilizing Filament-based 3D Printing of Hydrogel Structures
Christopher Highley[1], Liliang Ouyang[1,2], Christopher Rodell[1], and Jason Burdick[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Tsinghua University, Beijing, China, People's Republic of

8:30 am
Development of a Photoresponsive Scaffold for the Induced Release of Self-Assembled Nanostructures
Nicholas Karabin[1] and Evan Scott[1]
[1]Northwestern University, Evanston, IL

8:45 am
Silk Hydrogel-Based Bio-Functionalized Microfluidics
Siwei Zhao[1], Ying Chen[1], Benjamin Partlow[1], Anne Golding[1], Peter Tseng[1], Jeannine Coburn[1], Matthew Applegate[1], Jodie Moreau[1], Fiorenzo Omenetto[1], and David Kaplan[1]
[1]Tufts University, Medford, MA

9:00 am
3D Printing of a Cellularized Composite for Bone Repair
Caroline Murphy[1], Krishna Kolan[1], Ming Leu[1], and Julie Semon[1]
[1]Missouri S&T, Rolla, MO

9:15 am
3D Printing System to Fabricate Therapeutically Loaded Biopolymer Microthreads for Applications in Tissue Engineering
Meagan Carnes[1], Christopher Nycz[1], Jeremy Shui[1], Jacquelyn Claveau[1], Alex Markoski[1], Richard Eberheim[1], Gregory Fischer[1], and George Pins[1]
[1]Worcester Polytechnic Institute, Worcester, MA

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ACS Biomaterials SCIENCE & ENGINEERING

OP-Thurs-1-14 Room 200G

Track: Biomedical Engineering Education (BME)

Global Health Engineering 2.0: Building Educational Capacity in Africa

Chairs: William Reichert, Russell Jamison

8:00 am
The Rice University-University of Malawi Partnership: A Biomedical Engineering Capacity Building Initiative to Improve Health Care through Invention–INVITED
Maria Oden[1], Veronica Leautaud[1], Gregory Gamula[2], Theresa Mkandawire[2], and Rebecca Richards-Kortum[1]
[1]Rice University, Houston, TX, [2]University of Malawi-The Polytechnic, Blantyre, Malawi

8:15 am
Interdisciplinary Solutions to Global Health Problems: A Collaboration Across Disciplines and Institutions–INVITED
Andrew Rollins[1], Henry Kiwumulo[2], David Mafigiri[1,2], Janet McGrath[1], and Robert Ssekitoleko[2]
[1]Case Western Reserve University, Cleveland, OH, [2]Makerere University, Kampala, Uganda

8:30 am
Sustainable Biomedical Equipment Training: An Evidence-Based Model–INVITED
Brittany Zick[1], Dane Emmerling[1], Paige Sholar[1], and Robert Malkin[1]
[1]Duke University, Durham, NC

8:45 am
Collaborations to Support Innovation in Biomedical Engineering in Africa–INVITED
Akinniyi Osuntoki[1], Akinwale Coker[2], Tania Douglas[3], David Gatchell[4], Robert Murphy[5], and Matthew Glucksberg[4]
[1]University of Lagos, Lagos, Nigeria, [2]University of Ibadan, Ibadan, Nigeria, [3]University of Cape Town, Cape Town, South Africa, [4]Northwestern University, Evanston, IL, [5]Northwestern University, Chicago, IL

9:00 am
Multinational Student Design Teams: Co-Identifying and Co-Defining Global Health Needs–INVITED
Kathleen Sienko[1], Elsie Effah Kaufmann[2], Samuel Obed[3], Timothy Johnson[1], and Maria Young[1]
[1]University of Michigan, Ann Arbor, MI, [2]University of Ghana -Legon, Accra, Ghana, [3]Korle Bu Teaching Hospital, Accra, Ghana

9:15 am
Innovation & Design for Global Health In A Graduate BME Module: Engaging with Health Workers
Tinashe Mutsvangwa[1], Nailah Conrad[1], Oluwatoyin Lawal[2], Folake Akintayo[2], Muhammed Habeebu[3], Sunday Adetona[3], and Tania Douglas[1]
[1]University of Cape Town, Cape Town, South Africa, [2]University of Ibadan, Ibadan, Nigeria, [3]University of Lagos, Lagos, Nigeria

OP-Thurs-1-15 Room 200C

Tracks: Biomedical Imaging and Optics, Tissue Engineering

Imaging Techniques in Tissue Engineering

Chairs: Paolo Decuzzi, Adam Feinberg

8:00 am
***In Vitro* MRI and *In Vivo* MRE of Mesenchymally Derived TE Constructs–INVITED**
Shadi Othman[1]
[1]University of the Pacific, Stockton, CA

8:30 am
Optical Clearing Affords Whole Organ Imaging and Morphometric Analysis of Cellular and Extracellular Matrix Remodeling Using a Murine Regenerating Bladder Model
Frank Marini[1], Kyle Cowdrick[1], Mona Zarifpour[1], Christopher Booth[2], Harsh Patolia[1], Karl-Erik Andresson[1], and George Christ[3]
[1]Wake Forest Institute of Regenerative Medicine, Winston-Salem, NC, NC, [2]John Hopkins School of Medicine, Baltimore, MD, [3]University of Virginia, Charlottesville, Charlottesville, VA

8:45 am
Diffuse Correlation Tomography to Accelerate Tissue-Engineering Approach for Improving Allografts
Songfeng Han[1], Joseph B Vella[2], Ashley R Proctor[1], Danielle S W Benoit[1], and Regine Choe[1]
[1]University of Rochester, Rochester, NY, [2]University of Rochester Medical Center, Rochester, NY

9:00 am
Single-photon Emission Computed Tomography (SPECT) Assessment of an Engineered Endothelium on ePTFE Vascular Grafts
Yidi Wu[1], Bin Jiang[1], Chad Haney[1], and Guillermo Ameer[1]
[1]Northwestern University, Evanston, IL

9:15 am
Tracking Ocular Stem Cell Delivery and Tissue Regeneration with Ultra-sound and Photoacoustic Imaging
Kelsey Kubelick[1], Eric Snider[1], Heechul Yoon[1], C. Ross Ethier[1], and Stanislav Emelianov[1]
[1]Georgia Institute of Technology and Emory University, Atlanta, GA

OP-Thurs-1-16 Room 200H

Track: Drug Delivery

Nucleic Acid Delivery

Chairs: Craig Duvall, Kris Dahl

8:00 am
Targeted Nanoparticles for Delivery Of siRNA To Sites Of Early Onset Post-Traumatic Osteoarthritis-
Sean Bedingfield[1], Taylor Kavanaugh[1], Caeley Gullett[1], Thomas Werfel[1], Hongsik Cho[2], Karen Hasty[2], and Craig Duvall[1]
[1]Vanderbilt University, Nashville, TN, [2]University of Tennessee, Memphis, TN

8:15 am
Reversal of Liver Fibrosis using L-tyrosine Polyurethane Nanoparticles Encapsulated with microRNA
Jeongenu Hyun[1], Sihyung Wang[1], Jieun Kim[1], K. Madhusudana Rao[1], Soo Yong Park[1], Ildoo Chung[1], Chang-Sik Ha[1], Sang-Woo Kim[1], Youngmi Jung[1], and Yang H. Yun[2]
[1]Pusan National University, Busan, Korea, Republic of, [2]University of Akron, Akron, OH

8:30 am
High Content Analysis Platform for Optimization of CRISPR-Cas9 Delivery Strategies in Human Cells
Jared Carlson-Stevermer[1], Benjamin Steyer[1], Madelyn Goedland[1], Meng Lou[1], Lucille Kohlenberg[1], Ryan Prestil[1], and Krishanu Saha[1]
[1]University of Wisconsin-Madison, Madison, WI

8:45 am
Targeted Delivery of Brain-Penetrating Non-Viral GDNF Gene Vectors to the Striatum with MRI-guided Focused Ultrasound Reverses Neurodegeneration in a Parkinson's Disease Model
Brian Mead[1], Namho Kim[2], Panagiotis Mastorakos[1], Wilson Miller[1], Jung Soo Suk[2], Alexander Klibanov[1], Justin Hanes[2], and Richard Price[1]
[1]University of Virginia, Charlottesville, VA, [2]Johns Hopkins University School of Medicine, Baltimore, MD

9:00 am
Essential Role of Endocytic Vesicles and Trafficking in Gene Delivery Via Electrotransfection
Lisa Cervia[1] and Fan Yuan[1]
[1]Duke University, Durham, NC

9:15 am
Nanotherapeutics for Combination Drug and Gene Therapy in Treating Glioblastoma Multiforme
Angela Alexander-Bryant[1], Michael Lynn[2], and Jeoung Soo Lee[1]
[1]Clemson University, Clemson, SC, [2]Greenville Hospital System, Greenville, SC

OP-Thurs-1-17 Room 200B

Track: Translational Biomedical Engineering

Translation of Biomedical Products

Chairs: Roger Kamm, Andrew Smith

8:00 am
Move Over, Mice: How Integration of Systems Biology with Organs-on-Chips May Humanize Therapeutic Development–INVITED
Linda Griffith[1]
[1]MIT, Cambridge, MA

8:30 am
Point-of-Care Biochip to Quantify CD64 Expression for Sepsis Diagnosis
Umer Hassan[1], Bobby Reddy [1], Tor Jensen[1,2], Manish Patel[1], Emilee Flaugher[1], Michael Rappleye[1], Gillian Smith[1], Zachary Price[1], Paula Guevara[1], Hiba Shahid[1], Astha Tanna[1], Tanmay Ghonge[1], and Rashid Bashir[1]
[1]University of Illinois at Urbana Champaign, Urbana, IL, [2]Carle Foundation Hospital, Urbana, IL

Thursday, October 6 | 8:00 am–9:30 am | Platform Session 1

8:45 am
A Stem Cell-Seeded Porous Hydrogel Patch for Treatment of Alveolar Air Leaks
Brandon Guenthart[1], Jinho Kim[1], John O'Neill[1], N. Valerio Dorrello[1], Matthew Bacchetta[1], and Gordana Vunjak-Novakovic[1]
[1]Columbia University, New York, NY

9:00 am
Accelerating The Formation of Micro-vasculature-on-a-chip with Senescent Stromal Cells
Yang Xiao[1], Chang Liu[1], Jonathan Chen[1], Jing Zhou[1], Zhuo Chen[1], Vittorio Orlandi[1], Laura Niklason[1], and Rong Fan[1]
[1]Yale University, New Haven, CT

9:15 am
The Development of a Thin-Filmed, Non-Invasive Tissue Perfusion Sensor To Quantify Capillary Pressure Occlusion Of Explanted Organs
Timothy O'Brien[1], Ali Roghanizad[1], Philip Jones[1], Charles Aardema[1], John Robertson[1], and Thomas Diller[1]
[1]Virginia Tech, Blacksburg, VA

OP-Thurs-1-18 — Room 200I

Track: Respiratory Bioengineering

Computational Modeling of the Respiratory System in Health and Disease

Chairs: Tilo Winkler, David Kacska

8:00 am
A Statistical and Biophysical Model of the Young-to-Old Adult Human Lung For Predicting Function From Structure–INVITED
Merryn Tawhai[1], Mahyar Osanlouy[1], Yuwen Zhang[1], Clair King[2], Margaret Wilsher[2], David Milne[2], Ching-Long Lin[3], Eric Hoffman[3], and Alys Clark[1]
[1]University of Auckland, Auckland, New Zealand, [2]Auckland District Health Board, Auckland, New Zealand, [3]University of Iowa, Iowa City, IA

8:15 am
A Viscoelastic Model of Alveolar and Alveolar Duct Dynamics in Bleomycin-induced Lung Injury
Bradford Smith[1], Lars Knudsen[2], Elena Lopez-Rodriguez[2], Lennart Berndt[2], Caroline Boden[2], Clemens Ruppert[3], Matthias Ochs[2], and Jason Bates[1]
[1]University of Vermont, Burlington, VT, [2]Hannover Medical School, Hannover, Germany, [3]Justus-Liebig-University, Giessen, Germany

8:30 am
Regional Increase in Airway Wall Thickness Could Affect Overall Bronchoconstriction and Result in Airway Hyperresponsiveness in Asthma
Tilo Winkler[1]
[1]Massacusetts General Hospital and Harvard Medical School, Boston, MA

8:45 am
Mucociliary Clearance in Bronchial Bifurcations
Marcel Filoche[1,2,3,4], Michail Manolidis[1], Bruno Louis[2,3,4], Daniel Isabey[2,3,4], and James Grotberg[5]
[1]Ecole Polytechnique, Palaiseau, France, [2]Institut Mondor de Recherche Biomédicale, Créteil, France, [3]Université Paris-Est, Créteil, France, [4]ERL CNRS 7240, Créteil, France, [5]University of Michigan, Ann Arbor, MI

9:00 am
A Novel Structural Predictor of Emphysema Progression Using a Network Model of Lung Tissue Deterioration
Jarred Mondoñedo[1,2] and Béla Suki[1]
[1]Boston University, Boston, MA, [2]Boston University School of Medicine, Boston, MA

9:15 am
Optimization of Spectral Content in Oscillatory Ventilator Waveforms
Jacob Herrmann[1] and David Kaczka[1]
[1]University of Iowa, Iowa City, IA

OP-Thurs-1-19 — Room 200J

Tracks: Neural Engineering, Nano and Micro Technologies

Micro/Nano Tools in Neurosciences

Chairs: Cho Hansang, Abigail Koppes

8:00 am
Multifunctional Nanoporous Gold Coatings for Neuroengineering Applications–INVITED
Erkin Seker[1]
[1]University of California, Davis, Davis, CA

8:15 am
***In Vivo* Recording from Mouse Retinal Ganglion Cells Using Syringe-Injectable Electronics**
Guosong Hong[1], Tian-Ming Fu[1], Mu Qiao[1], Joshua Sanes[1], and Charles Lieber[1]
[1]Harvard University, Cambridge, MA

8:30 am
A Wireless Fully-Passive Neural Recorder Using RF Backscattering Effect
Shiyi Liu[1], Cedric Lee[2], Asimina Kiourti[2], John Volakis[2], and Junseok Chae[1]
[1]Arizona State University, Tempe, AZ, [2]The Ohio State University, Columbus, OH

8:45 am
Targeting Motoneurons Using Cholera Toxin-B Coated Protocells
Maria Gonzalez Porras[1], Paul Durfee[2], C. Jeffrey Brinker[2], Gary Sieck[1], and Carlos Mantilla[1]
[1]Mayo Clinic, Rochester, MN, [2]University of New Mexico, Albuquerque, NM

9:00 am
Focused Ultrasound Mediated Drug Delivery from Polymeric Perfluorocarbon Nanoemulsions for Noninvasive Neuromodulation
Randall Meyer[1], Raag Airan[1], Nicholas Ellens[1], Qiuyin Ren[1], Callie Deng[1], Keyvan Farahani[2], Martin Pomper[1], Shilpa Kadam[1], and Jordan Green[1]
[1]Johns Hopkins University, Baltimore, MD, [2]National Cancer Institute/National Institutes of Health, Bethesda, MD

9:15 am
Fluorescent Cyclic Peptide Nanoparticles to Detect Amyloid-beta Aggregates in Alzheimer's Disease
Leming Sun[1], Zhen Fan[1], Tao Yue[1], Yujian Huang[1], Jeff Kuret[2], Douglas Scharre[3], and Mingjun Zhang[1]
[1]Department of Biomedical Engineering, College of Engineering, The Ohio State University, Columbus, OH, [2]Department of Molecular and Cellular Biochemistry, The Ohio State University College of Medicine, Columbus, OH, [3]Department of Neurology, Division of Cognitive Neurology, The Ohio State University Wexner Medical Center, Columbus, OH

INDUSTRY SESSION

9:00 am–10:00 am **Room 201**

Intellectual Property: Patent Process

Chair: Ben Noe

The IP: Patent Process panel will give audience members an overview of what a patent is, types of patents, why to apply, the process and timing to apply for a patent, and a brief overview of infringement issues. Panelists will give audience members best practices and tips to consider when applying for a patent.

INDUSTRY SESSION

12:00 noon–2:00 pm **Room 201**

Technology Transfer Pitches and Networking

Chair: Ben Noe

This session will be a forum for select researchers and academics to pitch to companies interested in sponsoring research or licensing a technology. The technology topics will align with the commercial interests of the participating companies. All meeting attendees are welcome to sit in the audience to watch the pitches. Company representatives will be available after the pitches for questions and networking.

OP-Thurs-1-20 **Room 200A**

Track: Bioinformatics, Computational and Systems Biology

Analysis of Cell Signaling I

Chairs: Matthew Lazzara, Pamela Kreeger

8:00 am
Chromatin Modifies Decoding of NF-kB Signaling to Regulate Gene Expression–INVITED
Victor Wong[1], Arvind Chavali[1], Suzanne Gaudet[2], and Kathryn Miller-Jensen[1]
[1]Yale University, New Haven, CT, [2]Dana Farber Cancer Institute, Boston, MA

8:30 am
A Combination of Stochastic and Deterterministic Ca2+ Signal Decoding Guides VEGF-Driven Phenotype Selection
David Noren[1], Amina Qutub[1], Aryeh Warmflash[1], Daniel Wagner[1], Aleksander Popel[2], and Andre Levchenko[3]
[1]Rice University, Houston, TX, [2]Johns Hopkins University, Baltimore, MD, [3]Yale University, New Haven, CT

8:45 am
Dynamic Transcription Factor Activity in Olaparib Resistant Cancer Cells
Joseph Decker[1], Eric Hobson[1], Kelly Arnold[1], and Lonnie Shea[1]
[1]University of Michigan, Ann Arbor, MI

9:00 am
Proteins Find Their Niche: Competitive Binding Tunes Activation Profiles
Matthew Pharris[1], Daniel Romano[1], Neal Patel[1], and Tamara Kinzer-Ursem[1]
[1]Purdue University, West Lafayette, IN

9:15 am
Differential Regulation of Hypertrophy and Apoptosis by Beta Adrenergic Signaling in Cardiomyocytes
Bryan Chun[1] and Jeff Saucerman[1]
[1]University of Virginia, Charlottesville, VA

Thursday, October 6 | 1:00 pm–2:30 pm | Platform Session 2

OP-Thurs-2-1 — Auditorium 1

Tracks: Biomechanics, Cellular and Molecular Bioengineering

Mechanobiology of Cardiac and Smooth Muscle

Chairs: Kimberly Stroka, Stuart Campbell

1:00 pm
Insights from Microtissue Models of Cardiomyopathy–INVITED
Travis Hinson[1]
[1]University of Connecticut Health Center, Farmington, CT

1:15 pm
Measuring Acto-myosin Mediated Mechanical Anisotropy of Vascular Smooth Muscle Cells
Zaw Win[1], Justin Buksa[1], and Patrick Alford[1]
[1]University of Minnesota, Minneapolis, MN

1:30 pm
Effects of Physiologic Stretch Pattern on the Endoplasmic Reticulum in Vascular Smooth Muscle Cells
Elizabeth Bartolak-Suki[1] and Bela Suki[1]
[1]Boston University, Boston, MA

1:45 pm
Subcellular Cytoskeleton Architecture Regulates Mechanohomeostasis of Vascular Smooth Muscle Cells
Qianbin Wang[1], Xiaoyu Xu[1], Caroline Kopfler[1], and Weiqiang Chen[1]
[1]New York University, Brooklyn, NY

2:00 pm
Elucidating Vascular Smooth Muscle Cell Mechano-Adaptation Laws
Kerianne Steucke[1], Zaw Win[1], Taylor Stemler[1], Emily Walsh[1], and Patrick Alford[1]
[1]University of Minnesota, Minneapolis, MN

2:15 pm
The Influence of Troponin C Isoforms on the Degree of Stretch Activation in *Drosophila* Jump Muscle
Amy Loya[1], Devan Puhl[1], and Douglas Swank[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

OP-Thurs-2-2 — Auditorium 2

Track: Cancer Technologies

Imaging Strategies and Molecular Profiling in Cancer

Chairs: Kandice Tanner, Kaushal Rege

1:00 pm
Insights into Hallmarks of Early Carcinogenesis Using Nanoscale-Sensing Optical Microscopy–INVITED
Vadim Backman[1]
[1]Northwestern University, Evanston, IL

1:15 pm
Quantitative Mapping of Epidermal Growth Factor Receptor Endocytosis in Single Cancer Cells
Phuong Le[1], Kristopher Kilian[1], and Andrew Smith[1]
[1]University of Illinois at Urbana Champaign, Urbana, IL

1:30 pm
Mitochondrial Morphology as a Biomarker of Cancer Phenotype and Drug Response
Randy Giedt[1] and Ralph Weissleder[1]
[1]Massachusetts General Hospital/Harvard Medical School, Boston, MA

1:45 pm
Spatially Resolved Chemistry Related to Tumor Progression Using Imaging ToF-SIMS
Blake Bluestein[1], Fionnuala Morrish[2], David Hockenberry[2], and Lara Gamble[1]
[1]University of Washington, Seattle, WA, [2]Fred Hutchinson Cancer Research Center, Seattle, WA

2:00 pm
***In Vivo* Quantification of Cancer Cell-Surface Receptors Under Saturation Conditions by Generalized Paired-Agent Kinetic Model**
Negar Sadeghipour[1], Scott Davis[2], and Kenneth Tichauer[1]
[1]Illinois Institute of Technology, Chicago, IL, [2]Dartmouth, Hanover, NH

2:15 pm
Exploring Acoustic Angiography as an Early Radiation Therapy Response Evaluation Technique in Tumors
Sunny Kasoji[1], Judith Rivera[1], Ryan Gessner[2], Sha Chang[3], and Paul Dayton[1]
[1]University of North Carolina- Chapel Hill/ North Carolina State University, Chapel Hill, NC,[2]Sonovol, Chapel Hill, NC, [3]UNC Chapel Hill School of Medicine, Chapel Hill, NC

OP-Thurs-2-3 — Auditorium 3

Tracks: Biomechanics, Cardiovascular Engineering

Cardiovascular Biomechanics II

Chairs: Kareen Coulombe, Joao Soares

1:00 pm
Pulmonary Arterial Biomechanics: Measurement, Modeling and Impact–INVITED
Naomi Chesler[1]
[1]University of Wisconsin, Madison, WI

1:30 pm
Interrelationships between *In Vivo* Tissue Stress and Interstitial Cell Deformations in the Mitral Valve Anterior Leaflet in Normal and Surgically Modified States
Chung-Hao Lee[1], Kristen Feaver[1], Will Zhang[1], Robert Gorman[2], Joseph Gorman[2], and Michael Sacks[1]
[1]The University of Texas at Austin, Austin, TX, [2]University of Pennsylvania, Philadelphia, PA

Thursday, October 6 | 1:00 pm–2:30 pm | Platform Session 2

1:45 pm
A Structural Model for the Lamellar Unit of Aortic Media Shows a Difference in the Local Stress-State for BAV and TAV Aneurysmal Tissue
James Thunes[1], Julie Phillippi[1], Thomas Gleason[1], David Vorp[1], and Spandan Maiti[1]
[1]University of Pittsburgh, Pittsburgh, PA

2:00 pm
Biomimetic Models to Study Cell Mechanobiology at the Blood-Brain Barrier
Kelsey Gray[1], Marina Shumakovich[1], Dakota Katz[1], and Kimberly Stroka[1]
[1]University of Maryland, College Park, College Park, MD

2:15 pm
Three-Dimensional Mechanical Behavior of the Ovine Carotid Artery Bifurcation—Insights from Geometry and Microstructure
Ryan Mahutga[1], John Carruth[1], Christopher Korenczuk[1], and Victor Barocas[1]
[1]University of Minnesota, Minneapolis, MN

OP-Thurs-2-4 Room 102AB

Tracks: Tissue Engineering, Orthopaedic and Rehabilitation Engineering

Naturally-Derived and Extracellular Matrix Biomaterials in Tissue Engineering

Chairs: Bryan Brown, Jordan Miller

1:00 pm
Developmental ECM for Cardiac Regeneration and Repair—INVITED
Kyle Edmunds[1], Corin Williams[1], Whitney Stoppel[1], Breanna Duffy[1], Jacques Guyette[2], Harald Ott[2], Justin Weinbaum[3], and Lauren Black[1,4]
[1]Tufts University, Medford, MA, [2]Mass General Hospital, Boston, MA, [3]University of Pittsburgh, Pittsburgh, PA, [4]Tufts University School of Medicine, Boston, MA

1:30 pm
Properties of Remodeled ECM Scaffolds in the Temporomandibular Joint
Jesse Lowe[1], William Chung[1,2], Bryan Brown[1,2], Scott Johnson[1,2], Stephen Badylak[1,2], and Alejandro Almarza[1,2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]McGowan Institute of Regenerative Medicine, Pittsburgh, PA

1:45 pm
Injectable Gel Scaffold Composed of Homogenized Acelluar Tissue Conjugated with Gold Nanoparticles and Curcumin
Colten Snider[1], David Grant[1], Seth Sherman[1], and Sheila Grant[1]
[1]University of Missouri, Columbia, MO

2:00 pm
Hybrid Scaffold of Aligned Electrospun Fiber and Fibroblast-derived Matrix for Cardiac Tissue Engineering
Muhammad Suhaeri[1,2], Ramesh Subbiah[1,2], Su-Hyun Kim[1], Chong-Hyun Kim[1], and Kwideok Park[1,2]
[1]Korea Institute of Science and Technology, Seoul, Korea, Republic of, [2]Korea University of Science and Technology, Daejon, Korea, Republic of

2:15 pm
Engineering a Pancreatic Islet Bioinstructive Microenvironment: A Comparative Study of Mouse and Human Islets
Clarissa Hernandez[1], Kara Benninger[2], Raghu Mirmira[2], Robert Considine[2], and Sherry Voytik-Harbin[1]
[1]Purdue University, West Lafayette, IN, [2]Indiana University School of Medicine, Indianapolis, IN

OP-Thurs-2-5 Room 102C

Tracks: Tissue Engineering, Orthopaedic and Rehabilitation Engineering

Musculoskeletal Tissue Engineering II

Chairs: Jan Stegemann, Megan McCain

1:00 pm
Development of 2D and 3D Engineered Muscle Tissue Constructs—INVITED
Rebecca Duffy[1] and Adam Feinberg[1]
[1]Carnegie Mellon University, Pittsburgh, PA

1:15 pm
Forward Engineering the Functionality of 3D Printed Skeletal Muscle-Powered Biological Machines
Caroline Cvetkovic[1], Meghan Ferrall-Fairbanks[2], Ritu Raman[1], Manu Platt[2], and Rashid Bashir[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Georgia Institute of Technology, Atlanta, GA

1:30 pm
Engineered Human Skeletal Muscle Tissues with Maintained Satellite Cell Pool
Jason Wang[1], Mark Juhas[1], Alastair Khodabukus[1], and Nenad Bursac[1]
[1]Duke University, Durham, NC

1:45 pm
CRISPR Epigenome Editing to Promote Osteogenic Differentiation in Adipose-Derived Mesenchymal Stem Cells
Hunter Levis[1], Niloofar Farhang[1], Xue Yin[1], Joshua Stover[1], Brandon Lawrence[1], and Robert Bowles[1]
[1]University of Utah, Salt Lake City, UT

2:00 pm
Injectable, Cell-Seeded, Modular Microtissues for Bone Regeneration in Critical Size Defects
Ramkumar Tiruvannamalai Annamalai[1], Shailesh Agarwal[1], Benjamin Levi[1], and Jan Stegemann[1]
[1]University of Michigan, Ann Arbor, MI

2:15 pm
Validation of An Osteochondral Bioreactor Applied To Study The Protective Role Of Sex Hormones
Riccardo Gottardi[1,2], Hang Lin[1], Laura Iannetti[3], Giovanna D'Urso[3], Paolo Zunino[3], Thomas Lozito[1], Peter Alexander[1], Paul Manner[4], Elizabeth Sefton[5], Teresa Woodruff[5], and Rocky Tuan[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Fondazione Ri.MED, Palermo, Italy, [3]Politecnico di Milano, Milano, Italy, [4]University of Washington, Seattle, WA, [5]Department of Obstetrics and Gynecology, Chicago, IL

Thursday, October 6 | 1:00 pm–2:30 pm | Platform Session 2

OP-Thurs-2-6 — Room 101A

Track: Cellular and Molecular Bioengineering

Molecular and Cellular Engineering Functional Materials and Sensors

Chairs: Gregory Hudalla, Gabe Kwong

1:00 pm
Solving Drug Delivery Problems by Genetically Engineered Nanoparticles–INVITED
Ashutosh Chilkoti[1]
[1]Duke University, Durham, NC

1:15 pm
Design and Assembly of Nanostructured Polyvalent Biomaterials–INVITED
Ravi Kane[1], Chad Varner[1], Tania Rosen[1], and Ammar Arsiwala[1]
[1]Georgia Tech, Atlanta, GA

1:30 pm
Design, Construction and Application of an Ezrin Tension Sensor
Matthew Berginski1, Andrew LaCroix[1], and Brenton Hoffman[1]
[1]Duke University, Durham, NC

1:45 pm
Engineering Synthetic Toehold Switch for Visualization of Single Cell microRNA Activity
Shue Wang[1], Nicholas Emery[1], and Allen Liu[1]
[1]University of Michigan, Ann Arbor, MI

2:00 pm
Highly Multiplexed Analysis of Cancer-specific T cells using DNA-barcoded peptide-MHC Tetramers
Shreyas Dahotre[1,2] and Gabriel Kwong[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

2:15 pm
Tunable Thermal Bioswitches for *In Vivo* Control of Microbial Therapeutics
Mohamad Abedi[1], Dan Piraner[1], Brittany Moser[1], Audrey Lee-Gosselin[1], and Mikhail Shapiro[1]
[1]California Institute of Technology, Pasadena, CA

OP-Thurs-2-7 — Room 101B

Track: Cancer Technologies

Engineered Models of Breast Cancer Metastasis and the Tumor Microenvironment

Chairs: Farhan Chowdhury, Srivatsan Kidambi

1:00 pm
The Perivascular Niche Protects Disseminated Tumor Cells from Chemotherapy–INVITED
Patrick Carlson1, Alexander Barrett[2], Kirk Hansen[2], and Cyrus Ghajar[1]
[1]Fred Hutchinson Cancer Research Center, Seattle, WA, [2]University of Colorado, Denver, Denver, CO

1:15 pm
Cell-secreted Fibronectin Supports Metastatic Latency in the Bone Marrow Matrix
Lauren Barney[1], Christopher Hall[1], Alyssa Schwartz[1], and Shelly Peyton[1]
[1]University of Massachusetts, Amherst, Amherst, MA

1:30 pm
The Energy Costs Associated with Cell Migration Through Collagen Gels
Marianne Lintz[1], Joseph Miller[1], Zachary Goldblatt[1], Aniqua Rahman[1], and Cynthia Reinhart-King[1]
1Cornell University, Ithaca, NY

1:45 pm
Aligned Collagen Micro-tissues to Study Invasion of Cancer Cells on 3D Fiber Tracks
Arja Ray[1], Zachary Slama[1], Samantha Madden[1], and Paolo Provenzano[1]
[1]University of Minnesota, Twin Cities, Minneapolis, MN

2:00 pm
Evaluating Microenvironmental Changes Following Normal Tissue Irradiation: The Role of CD8+ T Cells in Breast Tumor Cell Migration *In Vivo*
Marjan Rafat[1], Marta Vilalta[1], Todd Aguilera[1], Amato Giaccia[1], and Edward Graves[1]
[1]Stanford University, Stanford, CA

2:15 pm
***In Vitro* Breast Tumor Model to Investigate the Role of Tumor Microenvironment in Disease Progression**
Srivatsan Kidambi[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

OP-Thurs-2-8 — Room 101C

Tracks: Biomechanics, Orthopaedic and Rehabilitation Engineering

Implant and Prosthetic Biomechanics

Chairs: Anita Singh, Antonio Valdevit

1:00 pm
Glenoid Baseplate Micromotion In Reverse Total Shoulder Arthroplasty
Jennifer Anderson[1], John Tokish[2], Stefan Tolan[2], Richard Hawkins[2], Alan Marionneaux[1], and John DesJardins[1]
[1]Clemson University, Clemson, SC, [2]Steadman Hawkins Clinic of the Carolinas, Greenville, SC

1:15 pm
Impact of Tibiotalar Alignment on COP Trajectory in Patients with Severe Ankle Arthritis
Evan McConnell[1], Robin Queen[1], and Daniel Schmitt[2]
[1]Virginia Tech University, Blacksburg, VA, [2]Duke University, Durham, NC

Thursday, October 6 | 1:00 pm–2:30 pm | Platform Session 2

1:30 pm
Constraint Testing of Flat, Semi-Constrained, and Mobile Bearing Total Knee Replacements
Lucy Young[1], Kyle Snethen[1], Patrick Brandt[1], Madeline Bebler[1], Haley Leslie[1], and Melinda Harman[1]
[1]Clemson University, Clemson, SC

1:45 pm
The Role of Task Expertise in Startle Evoked Movements
Maria Jose Quezada[1] and Claire Honeycutt[1]
[1]Arizona State University, Tempe, AZ

2:00 pm
Modification of a Magnesium Based Metal for Internal Fixation Applications
Michael Sealy[1], Dale Feldman[2], Yeubin Guo[3], and Jonah Sharkins[2]
[1]University of Nebraska, Lincoln, NE, [2]UAB, Birmingham, AL, [3]University of Alabama, Tuscaloosa, AL

2:15 pm
A Novel Distractive and Mobility-Enabling Lumbar Spinal Orthosis
Denis DiAngelo[1] and Daniel Hillyard[1]
[1]University of Tennessee Health Science Center, Memphis, TN

OP-Thurs-2-9 — Room 101D

Track: Stem Cell Engineering

Directing Stem Cell Differentiation I

Chairs: Yuguo Lei, Gulden Camci-Unal

1:00 pm
The Role of Adipose-Derived Stem Cells in Skeletal Muscle Repair–INVITED
Viktoriya Rybalko[1], Pei-Ling Hsieh[1], Roger Farrar[1], and Laura Suggs[1]
[1]University of Texas at Austin, Austin, TX

1:30 pm
Characterization of Smooth Muscle Cells and Urothelial Cells Differentiated from Adipose Derived Stem Cells for Bladder Tissue Engineering Applications
Caitlyn Ambrose[1] and Jiro Nagatomi[1]
[1]Clemson University, Clemson, SC

1:45 pm
Keratin Hydrogels Promote Smooth Muscle Differentiation from c-kit+ Human Cardiac Stem Cells
Benjamin Ledford[1], Jamelle Simmons[1], Miao Chen[1], Lijuan Kan[1], Mark Van Dyke[1], and Jia-Qiang He[1]
[1]Virginia Tech, Blacksburg, VA

2:00pm
Regulating Arterial Venous Differentiation of Pluripotent Stem Cells through Immobilized and Soluble Signals
Taylor Dorsey[1], Diana Kim[1], and Guohao Dai[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

2:15 pm
Murine Cardiomyocyte Differentiation via Nutrient Deprivation-Mediated Activation of -catenin
Jangwook Jung[1], Pablo Hofbauer[1], Tanner McArdle[1], and Brenda Ogle[1]
[1]University of Minnesota-Twin Cities, Minneapolis, MN

OP-Thurs-2-10 — Room 101E

Track: Biomaterials*

Biomaterial Scaffolds I

Chairs: Katelyn Swindle-Reilly, Jeff Wolchok

1:00 pm
Multivariate Scaffold Designs that Mimic the Complexity of Tissue Interfaces–INVITED
Elizabeth Cosgriff-Hernandez[1], Alysha Kishan[1], Andrew Robbins[1], Mingliang Jiang[1], Veysel Erel[1], and Michael Moreno[1]
[1]Texas A&M University, College Station, TX

1:30 pm
Fabrication of Biphasic Scaffold for Treatment of Chronic Wound Healing
Allison Goins[1,2], Vidhya Ramaswamy[1], and Josepine Allen[1,2]
[1]Univeristy of Florida, Gainesville, FL, [2]Institute for Cell and Tissue Science and Engineering, Gainesville, FL

1:45 pm
Engineering Synthetic Matrices to Guide Intestinal Organoid Morphogenesis
Victor Hernandez-Gordillo[1], GiHun Choi[1], Rebecca Carrier[2], and Linda Griffith[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Northeastern University, Boston, MA

2:00 pm
Tunable, "Self-fitting" Shape Memory Polymer (SMP) Scaffolds for Cranial Bone Defect Repair
Lindsay Woodard[1], Vanessa Page[1], Kevin Kmetz[1], and Melissa Grunlan[1]
[1]Texas A&M University, College Station, TX

2:15 pm
Development of a Biodegradable Polymer-Metal Composite as a Novel Biomaterial
Tyler Stahl[1], Thomas Xu[2], and Syam Nukavrapu[1,2]
[1]University of Connecticut, Storrs, CT, [2]University of Connecticut Health Center, Farmington, CT

*** Biomaterials Track sponsored by**

ACS Biomaterials SCIENCE & ENGINEERING

Thursday, October 6 | 1:00 pm–2:30 pm | Platform Session 2

OP-Thurs-2-11 — Room 200E

Tracks: Cardiovascular Engineering, Device Technologies and Biomedical Robotics

Cardiovascular Devices II

Chairs: Alexandrina Untaroiu, Varun Bhatia

1:00 pm
Chronic Cyclic Vagus Nerve Stimulation has Beneficial Electrophysiological Effects on Healthy Hearts in the Absence of Autonomic Imbalance
Steven Lee[1], Qinglu Li[1], Imad Libbus[2], Bruce H. KenKnight[2], Mary Garry[1], and Elena Tolkacheva[1]
[1]University of Minnesota, Minneapolis, MN, [2]Cyberonics Inc, Houston, TX

1:15 pm
Quantitative Analyses of the Relative Distributions of Epicardial Adipose on Human Hearts
Alexander Mattson[1], Teri Whitman[2], Michael Eggen[2], and Paul Iaizzo[1]
[1]University of Minnesota, Minneapolis, MN, [2]Medtronic PLC, Mounds View, MN

1:30 Pm
Development and Feasibility Testing of a Novel Left Ventricular Assist Device (LVAD) Outflow Graft Anastsomosis Device (GrAD)
Young Choi[1], Michael Sobieski[1], Guruprasad Giridharan[1], Michele Gallo[1,2], Mark Slaughter[1], Zhongjun Wu[1], and Steven Koenig[1]
[1]University of Louisville, Louisville, KY, [2]University of Padua, Padua, Italy

1:45 pm
A High-Throughput Microfluidic Device for the Selective Removal of Activated Granulocytes from Recirculating Whole Blood during Cardiopulmonary Bypass
Briony Strachan[1], Hui Xia[1], Sean Gifford[2], and Sergey Shevkoplyas[1]
[1]University of Houston, Houston, TX, [2]Halcyon Biomedical Incorporated, Friendswood, TX

2:00 pm
A Novel Design for a Decellularized Tissue Engineered Transcatheter Aortic Valve
Melissa Young[1], Nicholas Styoles[1], Ryan Hennessy[1], Brandon Tefft[1], Soumen Jana[2], Rebecca Hennessy[1], and Amir Lerman[1]
[1]Mayo Clinic, Rochester, MN, [2]Mayo Clinic, Rochester, Afghanistan

2:15 pm
Polyethylene Oxide Coated Controlled Drug-Eluting Balloons: *In Vivo* Evaluation in a Rabbit Model
Jordan Anderson[1], Sujan Lamichhane[1], Daniel Engebretson[1], Gopinath Mani[1], Tyler Remund[2], Katie Pohlson[2], Amber Wolf[2], and Patrick Kelly[3]
[1]University of South Dakota, Sioux Falls, SD, [2]Sanford Research, Sioux Falls, SD, [3]Sanford Health, Sioux Falls, SD

OP-Thurs-2-12 — Room 200F

Track: Device Technologies and Biomedical Robotics

Affordable Health Devices and Frugal Innovation

Chairs: Daniel Ratner, Jacqueline Linnes

1:00 pm
A Distributable Paper-based Diagnostic Kit for Point-of-Care Screening for Sickle Cell Disease
Kian Torabian[1], Dalia Lezzar[1], Nathaniel Piety[1], Alex George[2], and Sergey Shevkoplyas[1]
[1]University of Houston, Houston, TX, [2]Baylor College of Medicine, Houston, TX

1:30 pm
Rapid Paperfluidic Molecular Diagnostic for Field Detection of Cholera in Drinking Water in Haiti
Taylor Moehling[1], Sonia Bhatt[1], Jacqueline Linnes[1], and Jacqueline Linnes[1]
[1]Purdue University, West Lafayette, IN

1:45 pm
Quantification of C-Reactive Protein using a Lateral Flow Immunoassay and a Smartphone-enabled Device
Elizabeth Rey[1], Dakota O'Dell[1], Seoho Lee[1], and David Erickson[1]
[1]Cornell University, Ithaca, NY

2:00 pm
Improving Paper-based Protein Detection with Dehydrated Two-Phase Micellar Components
David Pereira[1], Samantha Zhang[1], Benjamin Wu[1], and Daniel Kamei[1]
[1]UCLA, Los Angeles, CA

2:15 pm
A Simple Device for Bedside Washing of Stored Red Blood Cells
Eszter Voros[1], Nathaniel Piety[1], and Sergey Shevkoplyas[1]
[1]University of Houston, Houston, TX

OP-Thurs-2-13 — Room 200D

Track: Bioinformatics, Computational and Systems Biology

Systems Approaches to Therapy, Therapeutics, and Precision Medicine

Chairs: Ashlee Ford Versypt, David Noren

1:00 pm
Overcoming Adaptive Resistance and Fractional Response of Cancer Cells to Targeted Therapy
Mohammad Fallahi-Sichani[1], Verena Becker[1], Gregory Baker[1], Sarah Boswell[1], Robert Everley[1], Jia-Ren Lin[1], and Peter Sorger[1]
[1]Harvard Medical School, Boston, MA

1:15 pm
Optimization of Acute Myeloid Leukemia Predictions with a Five-Fold Cross-Validated Genetic Algorithm
Carlos Bueno[1], Luiza Ferreira[1], John Gawedzinski[1], Sangheon Han[1], Sohyun Park[1], Trenton Piepergerdes[1], and Amina Qutub[1]
[1]Rice University, Houston, TX

1:30 pm
Hidden Networks in Antibiotic Target Discovery
Paul Jensen[1,2], Zeyu Zhu[2], and Tim van Opijnen[2]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Boston College, Chestnut Hill, MA

1:45 pm
OntoBIDS: An Ontology Driven BioImage Dataset Discovery System.
Menno VanDiermen[1], Etienne Gnimpieba[2], and Carol Lushbough[1]
[1]University of South Dakota, Vermillion, SD, [2]University of South Dakota, Sioux Falls, SD

2:00 pm
Systems Pharmacology Predicts Antibiotic Spatial Distribution and Efficacy In TB Granulomas
Elsje Pienaar[1], Jansy Sarathy[2], Brendan Prideaux[2], Veronique Dartois[2], Denise Kirschner[1], and Jennifer Linderman[1]
[1]University of Michigan, Ann Arbor, MI, [2]Public Health Research Institute and New Jersey Medical School, Newark, NJ

2:15 pm
Cytoprofiling and Microscale Cis-co-culture for Predicting Therapy Resistance in Multiple Myeloma
Jay Warrick[1], Loren Stallcop[1], Yasmin Alvarez-Garcia[1], Dominique Lisiero[1], Kenneth Chng[1], Mailee Huynh[1], Natalie Callander[1], Shigeki Miyamoto[1], and David Beebe[1]
[1]University of Wisconsin Madison, Madison, WI

OP-Thurs-2-14 Room 200G

Track: Nano and Micro Technologies

Micro and Nanoscale Tools for Monitoring Inflammation

Chairs: Daniel Irimia, Amir Farnoud

1:00 pm
Biomimetic Delivery Platforms to Target Inflammation–INVITED
Ennio Tasciotti[1]
[1]Houston Methodist Research Institute, Houston, United States Minor Outlying Islands

1:15 pm
Neutrophil Swarming-on-a-chip for the Study of Collective Cell Migration
Eduardo Reategui[1], Hunter Elliott[2], Jesmond Dalli[3], Fatemeh Jalali[1], Aimal Khankhel[1], Elisabeth Wong[1], Hansang Cho[1], Charles N. Serhan[3], and Daniel Irimia[1]
[1]Harvard Medical School / Massachusetts General Hospital, Charlestown, MA, [2]Harvard Medical School, Boston, MA, [3]Harvard Medical School / Center for Experimental Therapeutics and Reperfusion Injury, Brigham and Women's Hospital, Boston, MA

1:30 pm
Activity-based Nanoparticles for Noninvasive Monitoring Of Organ Transplant Rejection
Quoc Mac[1], Dave Mathews[2], Andrew Adams[2], and Gabe Kwong[1]
[1]Georgia Tech & Emory, Atlanta, GA, [2]Emory School of Medicine, Atlanta, GA

1:45 pm
A Biomimetic Microfluidic Particle Tracker for Enumeration of White Blood Cells Subtypes and Quantification of Antigen Surface Expression Level
Tanmay Ghonge[1], Bobby Reddy[1], Anurup Ganguli[1], Greg Damhorst[1], Umer Hassan[1], and Rashid Bashir[1]
[1]University of Illinois at Urbana Champaign, Urbana, IL

2:00 pm
The Importance of Nanoparticle Size and Ligand Density in Cell Modulation
John Hickey[1,2], Fernando Vicente-Zegarra[1], and Jonathan Schneck[2]
[1]Johns Hopkins University, Baltimore, MD, [2]Johns Hopkins School of Medicine, Baltimore, MD

2:15 pm
Micro-Physiological Systems to Study Endothelial Barrier Functions In Sepsis
Tejas Khire[1], Richard Waugh[1], and James McGrath[1]
[1]University of Rochetser, Rochester, NY

OP-Thurs-2-15 Room 200C

Tracks: Biomedical Imaging and Optics, Translational Biomedical Engineering

Imaging Techniques in Clinical Translation

Chairs: Wawrzyniec Dobrucki, Emily Day

1:00 pm
Quantitative Analysis of Tympanic Membrane Mobility using Pneumatic Low Coherence Interferometry
Jungeun Won[1], Guillermo L. Monroy[1], Paritosh Pande[1], Pin-Chieh Huang[1], Ryan L. Shelton[1], and Stephen A. Boppart[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

1:15 pm
Development of Imaging Probe For Osteoarthritis Diagnosis
Jun Zhou[1], Shuxin Li[1], Yihui Huang[1], Jinglei Wu[1], Yi Hong[1], Joseph Borrelli[2], and Liping Tang[1]
[1]University of Texas at Arlington, Arlington, TX, [2]Texas Health Arlington Memorial Hospital, Arlington, TX

1:30 pm
Multi-Modal and Multiscale Measurement of Breast Cancer Metabolism *In Vitro* and *In Vivo*
Benjamin Cox[1,2,3], Joseph Szulczewski[1,3], Kai Ludwig[1], Erin Adamson[1], David Inman[1], Stephen Graves[1], Justin Jeffery[4], Jason McNulty[1], Patricia Keely[1,4], Kevin Eliceiri[1,3,4], and Sean Fain[1,4]
[1]University of Wisconsin at Madison, Madison, WI, [2]Morgridge Institute for Research, Madison, WI, [3]Laboratory for Optical and Computational Instrumentation, Madison, WI, [4]UW Carbone Cancer Center, Madison, WI

Thursday, October 6 | 1:00 pm–2:30 pm | Platform Session 2

1:45 pm
Evaluation of Computational Endomicroscopy Architectures for *In Vivo* Optical Biopsy
John Paul Dumas[1], Muhammad Lodhi[1], Waheed Bajwa[1], and Mark Pierce[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ

2:00 pm
High-resolution *In Vivo* Imaging of a Centimeter-large Mouse Tumor using Ultrasound-switchable Fluorescence
Bingbing Cheng[1] and Baohong Yuan[1]
[1]University of Texas at Arlington, Arlington, TX

2:15 pm
Developing Monitors of Cerebral Hemodynamics for Extracorporeal Membrane Oxygenation Therapy
David Busch[1,2], Constantine Mavroudis[3], Genevieve Dupont-Thibodeau[1], Ann McCarthy[1], Tiffany Ko[2], Madeline Winters[1], John Newland[1], Kobina Mensah-Brown[1], Kaitlin Griffith[4], Jennifer Lynch[5], Peter Schwab[2], Erin Buckley[6], Arjun Yodh[2], and Daniel Licht[1]
[1]Children's Hospital of Philadelphia, Philadelphia, PA, [2]University of Pennsylvania, Philadelphia, PA, [3]Hospital of the University of Pennsylvania, Philadelphia, PA, [4]Temple University, Philadelphia, PA, [5]New York University, New York, NY, [6]Georgia Tech, Atlanta, GA

OP-Thurs-2-16 — Room 200H

Track: Drug Delivery

Drug Delivery in Tissue Engineering and Medicine

Chairs: Steven Jay, Katie Bratlie.

1:00 pm
Gradient Release of Cardiac Morphogen by Photo-responsive Polymer Micelles for Spatiotemporal Control of Embryonic Stem Cell Differentiation
Mukesh Gupta[1], Daniel Balikov[1], Young Chun[1], Douglas Sawyer[2], and Hak-Joon Sung[1]
[1]Vanderbilt University, Nashville, TN, [2]Maine Medical Institute, Scarborough, ME

1:15 pm
Localized and Sustained Delivery of siRNA from Hydrogels to Enhance Fracture Healing
Yuchen Wang[1] and Danielle Benoit[1]
[1]University of Rochester, Rochester, NY

1:30 pm
Macrophage-mediated Degradation of Gelatin Microspheres for Release of Bone Morphogenetic Protein
Ramkumar Tiruvannamalai Annamalai[1], Paul Turner[1], William Carson[1], and Jan Stegemann[1]
[1]University of Michigan, Ann Arbor, MI

1:45 pm
Recombinant Elastin Based Nanoparticles for Targeted Gene Therapy
Dagmara Monfort[1] and Piyush Koria[1]
[1]University of South Florida, Tampa, FL

2:00 pm
Stable Nanodroplets for Controlled Drug Release and Monitoring Using Ultrasound
Yoonjee Park[1], Madison Taylor[1], Zhe Zhang[1], Courtney Collins[1], Hsuan-Yeh Pan[1], Eric Mahoney[1], Karla Mercado[1], Kevin Haworth[1], and Chia-Ying Lin[1]
[1]University of Cincinnati, Cincinnati, OH

2:15 pm
Oral Vaccine Delivery using Ragweed Pollen Grains
Md Jasim Uddin[1] and Harvinder Gill[1]
[1]Texas Tech University, Lubbock, TX

OP-Thurs-2-17 — Room 200B

Track: Orthopaedic and Rehabilitation Engineering

Articular Cartilage and Joints

Chairs: Clark Hung, Rhima Coleman

1:00 pm
Bisphosphonate Rescues Articular Cartilage from Trauma Damage—INVITED
Yilu Zhou[1], Mengxi Lv[1], Shongshan Fan[1], Liyun Wang[1], and X. Lucas Lu[1]
[1]University of Delaware, Newark, DE

1:15 pm
Effect of Focal Chondral Defects on the Biphasic Mechanics of Cartilage in the Hip
Jocelyn Todd[1], Benjamin Ellis[1], Travis Maak[1], and Jeff Weiss[1]
[1]University of Utah, Salt Lake City, UT

1:30 pm
Direct Evidence for Tribological Rehydration Of Cartilage Via *In Situ* Quantification Of Solute Transport
Brian Graham[1], Axel Moore[1], David Burris[1], and Christopher Price[1]
[1]University of Delaware, Newark, DE

1:45 pm
A Novel Method for Early Diagnosis of Osteoarthritis
Mustafa Unal[1] and Ozan Akkus[1]
[1]Case Western Reserve University, Cleveland, OH

2:00 pm
Magnitude-Dependent and Inversely-related Osteogenic/Chondrogenic Differentiation of Human Mesenchymal Stem Cells Under Dynamic Compressive Strain
Christopher Horner[1], Koji Hirota[1], Junze Liu[1], Hyle Park[1], and Jin Nam[1]
[1]University of California, Riverside, CA

2:15 pm
Microscale Mechanics of The Interface Of Native And Repaired Articular Cartilage
Rebecca Irwin[1], Darvin Griffin[1], Amanda Meppelink[2], Itai Cohen[1], Mark Randolph[2], and Lawrence Bonassar[1]
[1]Cornell University, Ithaca, NY, [2]Massachusetts General Hospital, Boston, MA

Thursday, October 6 | 1:00 pm–2:30 pm | Platform Session 2

OP-Thurs-2-18 — Room 200I

Track: Respiratory Bioengineering

Computational Mechanics of the Respiratory System

Chairs: Jason Bates, Bela Suki

1:00 pm
Cost Functions to Predict Ventilator-Induced Lung Injury and Personalize Mechanical Ventilation
Katharine Hamlington[1], Bradford Smith[1], Gilman Allen[1], and Jason Bates[1]
[1]University of Vermont College of Medicine, Burlington, VT

1:15 pm
Statistics of Liquid Plug Rupture Events in the Lung
Marcel Filoche[1,2,3,4] and James Grotberg[5]
[1]Ecole Polytechnique, Palaiseau, France, [2]Institut Mondor de Recherche Biomédicale, Créteil, France, [3]Université Paris-Est, Créteil, France, [4]ERL CNRS 7240, Créteil, France, [5]University of Michigan, Ann Arbor, MI

1:30 pm
Modeling Lung Mucous Flows with Particle Method
Hideki Fujioka[1] and Donald Gaver III[1]
[1]Tulane University, New Orleans, LA

1:45 pm
The Audible Human Project: Study of Acoustic Transmission with a Fractal Based Model of the Human Airways
Brian Henry[1] and Thomas Royston[1]
[1]University of Illinois at Chicago, Chicago, IL

2:00 pm
Chronic Assessment of Respiratory Muscle Function after Unilateral Phrenic Nerve Denervation
Obaid Khurram[1], Gary Sieck[1], and Carlos Mantilla[1]
[1]Mayo Clinic College of Medicine, Rochester, MN

2:15 pm
A Global Index for Characterizing Ciliary Beating Efficiency in Pulmonary Airways
Mathieu Bottier[1,2,3], Marta Pena-Fernandez[1,2,3], Gabriel Pelle[1,2,3], Emilie Bequignon[1,2,3], Daniel Isabey[1,2,3], André Coste[1,2,3], Estelle Escudier[1,2,3], James Grotberg[4], Jean-François Papon[1,2,3], Bruno Louis[1,2,3], and Marcel Filoche[1,2,3,5]
[1]Institut Mondor de Recherche Biomédicale, Créteil, France, [2]Université Paris-Est, Créteil, France, [3]ERL CNRS 7240, Créteil, France, [4]University of Michigan, Ann Arbor, MI, [5]Ecole Polytechnique, Palaiseau, France

OP-Thurs-2-19 — Room 200J

Tracks: Neural Engineering, Tissue Engineering

Spinal Cord Tissue Engineering & Repair

Chairs: Harini Sundararaghavan, Stephanie Seidlits

1:00 pm
Genome Engineering to Understand the Role of Interneurons in Recovery After Spinal Cord Injury–INVITED
Shelly Sakiyama-Elbert[1] and Hao Xu[1]
[1]Washington University, St. Louis, MO

1:15 pm
Biomaterial-Mediated Gene Delivery Targeting Reduced Inflammation after Spinal Cord Injury–INVITED
Stephanie Seidlits[1,2], Daniel Margul[2,3], Ryan Boehler[2], Dominique Smith[2,3], Jonghyuk Park[3], Aishani Ataliwala[1], Todor Kukushliev[2], Mitchell Johnson[3], and Lonnie Shea[2,3]
[1]UCLA, Los Angeles, CA, [2]Northwestern University, Evanston, IL, [3]University of Michigan, Ann Arbor, MI

1:30 pm
Local Delivery of Minocycline from Metal Ion-Assisted Self-Assembled Complexes Promotes Neuroprotection and Functional Recovery after Spinal Cord Injury
Zhicheng Wang[1], Jia Nong[1], and Yinghui Zhong[1]
[1]Drexel University, Philadelphia, PA

1:45 pm
Optimizing Vagus Nerve Stimulation Paired with Rehabilitation to Enhance Recovery after Spinal Cord Injury
Michael Darrow[1], Andrea Ruiz[1], Patrick Ganzer[1], Abby Berry[1], Elaine Lai[1], Luz Barron Horta[1], Alexa Gilfoyle[1], Lea Simone[1], and Seth Hays[1]
[1]University of Texas at Dallas, Richardson, TX

2:00 pm
Improvement of Schwann Cell Transplantation using Injectable Hydrogels after Spinal Cord Injury
Laura Marquardt[1], Karen Dubbin[1], Vanessa Doulames[2], Giles Plant[2], and Sarah Heilshorn[1]
[1]Stanford University, Stanford, CA, [2]Stanford University School of Medicine, Stanford, CA

2:15 pm
Schwann Cell loaded PVDF-TrFE Scaffolds Promote Axon Regeneration after Spinal Cord Injury
Yee-Shuan Lee[1], Siliang Wu[2], Treena Arinzeh[2], and Mary Bunge[1]
[1]University of Miami, Miami, FL, [2]New Jersey Institute of Technology, Newark, NJ

Thursday, October 6 | 1:00 pm–2:30 pm | Platform Session 2

OP-Thurs-2-20 **Room 200A**

Track: Bioinformatics, Computational and Systems Biology

Analysis of Cell Signaling II

Chairs: Kathryn Miller-Jensen, Mahendra Kavdia

1:00 pm
Multivariate Cell Signaling Control of Epithelial-Mesenchymal Transition–INVITED
Matthew Lazzara[1]
[1]*University of Virginia, Charlottesville, VA*

1:30 pm
Morphogens Regulate Spatiotemporal Patterning of Calcium Signaling in a Developing Epithelium
Jeremiah Zartman[1], Qinfeng Wu[1], Pavel Brodskiy[1], and Cody Narciso[1]
[1]*University of Notre Dame, Notre Dame, IN*

1:45 pm
A Computational and Experimental Analysis of the Role of Macrophages in Ovarian Cancer Metastasis
Molly Carroll[1], Harin Patel[1], and Pamela Kreeger[1]
[1]*University of Wisconsin, Madison, WI*

2:00 pm
JNK Pathway Activation Modulates Bypass Resistance to EGFR/HER2 Targeted Therapies
Aaron Meyer[1], Simin Manole[1], and Edward Richards[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

2:15 pm
Modeling of Axon Membrane Skeleton Correlated with Sodium Propagation
Yihao Zhang[1], Vi Ha[1], and George Lykotrafitis[1]
[1]*University of Connecticut, Storrs, CT*

MEET THE EXPERT

1:00 pm–2:30 pm **Room 204**

NIH Funding: Meet Program Directors, Reviewers, and Awardees

Organized by Tony Dickherber, PhD, Program Director, Innovative Molecular Analysis Technologies (IMAT) Program, Center for Strategic Scientific Initiatives, National Cancer Institute

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

Panel Members:

- Michelle A. Berny-Lang, PhD, Program Director, Office of the Director, Center for Strategic Scientific Initiatives,National Cancer Institute (NCI)
- Tony Dickherber, PhD, Program Director, Innovative Molecular Analysis Technologies (IMAT) Program, Center for Strategic Scientific Initiatives, National Cancer Institute (NCI)
- Prof. Dawn Elliott, PhD, Director of Biomedical Engineering, University of Delaware
- Prof. Adam Engler, Dept. of Bioengineering, Sanford Consortium for Regenerative Medicine, University of California, San Diego
- Zeynip Erim, PhD, Program Director, Division of Interdisciplinary Training (DIDT), National Institute of Biomedical Imaging and Bioengineering (NIBIB)
- Prof. Linda Griffith, School of Engineering Professor of Teaching Innovation, Biological Engineering, and Mechanical Engineering, Massachusetts Institute ofTechnology
- Prof. Roger Kamm, Cecil and Ida Green Distinguished Professor of Biological and Mechanical Engineering, Massachusetts Institute of Technology
- Christine Kelley, PhD, Director, DDST, Division of Discovery Science & Technology (DDST), National Institute of Biomedical Imaging and Bioengineering (NIBIB)
- Nastaran Zahir Kuhn, PhD, Associate Director, Division of Cancer Biology, Program Director, Physical Sciences-Oncology, National Cancer Institute (NCI)
- Prof. Todd Sulchek, PhD, Associate Professor, Bioengineering, Georgia Institute of Technology
- Prof. Rong Fan, PhD, Associate Professor, Department of Biomedical Engineering, Yale University

Thursday, October 6 | 1:00 pm–2:30 pm | Platform Session 2

SPECIAL SESSION

1:00 pm–2:30 pm **Room 208CD**

International Symposium on Biomedical Engineering

Chairs: Song Li, Damir Khismatullin

Biomedical engineering is a fast growing field. The purpose of this symposium is to provide an overview of biomedical engineering research and education around the world, and facilitate the collaboration.

Panel Members:

- Richard Hart, Ph.D., President, Biomedical Engineering Society, USA,
- Yubo Fan, Ph.D., President, Chinese Society of Biomedical Engineering.
- Anthony Weiss, Ph.D., President of Australia and New Zealand MBS
- Hanjoong Jo, Ph.D., Hanjoong Jo, President of the Korean American BME Society
- Michael Capuano, Vice-President of the Canadian Medical and Biological Engineering Society

SPECIAL SESSION

1:00 pm–4:00 pm **Room 102E**

Developing Best Practices for Graduate Training in Biomedical Innovation

Chairs: Gilda Barabino, Jeffrey Garanich

Many universities have begun offering specialized graduate training in the process of translating academic research into medical innovations that have real impacts on patient care. With this growth of the field, now is an opportune time to hold a collaborative conversation on shared themes, challenges such programs face, and new directions for enhanced impact.

INDUSTRY SESSION

2:15 pm–5:00 pm **Room 201**

Special Industry Topics

Chairs: Christopher Basciano

This session will include technical platform talks from industry professionals on a research or product. In addition, the BMES Cellular and Molecular Bioengineering SIG with hold a panel on Commercialization of Bone Regeneration products, and the BMES Medical Devices SIG will hold a session on V&V in medical devices.

2:15 pm

Quantitative Electroencephalography Dynamics in Prediction of Drowsy Driving on Simulator

Chaoyang Chen[1], Chaofei Zhang[2], Bo Cheng[2], Wenjun Wang[2], Chao Zeng[3], Yang Zhou[1], and John Cavanaugh[1]
[1]Wayne State University, Detroit, MI, [2]Tsinghua University, Beijing, China, People's Republic of, [3]Shihezi University, Shihezi, China, People's Republic of

2:30 pm

Intraoperative Surgical Monitor for Detection of Trauma during Cochlear Implantation

Christopher Giardina[1], Tatyana Fontenot[1], Andrew Pappa[1], William Scott[1], Kevin Brown[1], and Harold Pillsbury[1]
[1]UNC School of Medicine, Chapel Hill, NC

Thursday, October 6 | 3:15 pm–4:45 pm | Platform Session 3

OP-Thurs-3-1 Auditorium 1

Tracks: Biomechanics, Cellular and Molecular Bioengineering

Substrate Effects in Mechanobiology

Chairs: Brenda Ogle, Lance Kam

3:15 pm
Topographic Confinement of Epithelial Clusters Combines with Matrix Stiffness to Induce Mesenchymal Transition
Samila Nasrollahi[1] and Amit Pathak[1]
[1]Washington University in Saint Louis, Saint Louis, MO

3:30 pm
Dendritic Cells Sense and Respond to Substrate Geometry
Amy Bendell[1], Janis Burkhardt[1,2], and Daniel Hammer[1]
[1]University of Pennsylvania, Philadelphia, PA,
[2]Children's Hospital of Philadelphia, Philadelphia, PA

3:45 pm
Cell-Induced Alignment of Fibrous Extracellular Matrix in 3D Microfabricated Tissues
Bryan Nerger[1], Alexandra Piotrowski-Daspit[1], and Celeste Nelson[1]
[1]Princeton University, Princeton, NJ

4:00 pm
Regulation of Mitochondrial Function by Matrix Elasticity in Engineered Cardiac Tissues
Davi M. Lyra-Leite[1], Nathan Cho[1], Nethika R. Ariyasinghe[1], Andrew P. Petersen[1], and Megan L. McCain[1,2]
[1]Laboratory for Living Systems Engineering, University of Southern California, Los Angeles, CA,
[2]Keck School of Medicine of USC, Los Angeles, CA

4:15 pm
Substrate Stiffness Modulates Rho/ROCK Expression in Human Keratinocytes
Hoda Zarkoob[1], Sathivel Chinnathambi[1], Spencer Van Dorn[1], Jon Reed[2], John Selby[1], and Edward Sander[1]
[1]The University of Iowa, Iowa City, IA,
[2]SRQ Bio, Inc., Sarasota, FL

4:30 pm
Microtubule-Targeting Agents Alter Glioma Cell Stiffness-Sensing Behaviors
Louis Prahl[1], Patrick Bangasser[1], Mahya Hemmat[1], Steven Rosenfeld[2], and David Odde[1]
[1]University of Minnesota, Minneapolis, MN,
[2]Cleveland Clinic, Cleveland, OH

OP-Thurs-3-2 Auditorium 2

Track: Cancer Technologies

Cancer Immunoengineering

Chairs: Ankur Singh, Mathumai Kanapathipillai

3:15 pm
Microenvironment Induced Impairments of T-cell Mechanosensing of Melanoma Antigens
Cheng Zhu[1], Zhou Yuan[1], Nathan Rohner[1], Prithiviraj Jothikumar[1], and Susan N. Thomas[1]
[1]Georgia Institute of Technology, Atlanta, GA

3:30 pm
Precision Glycocalyx Editing as a Strategy for Cancer Immunotherapy
Elliot Woods[1]
[1]UC Berkeley, Burlingame, CA

3:45 pm
Engineering Artificial Lymph Nodes
John Hickey[1], Hai-Quan Mao[1], and Jonathan Schneck[1]
[1]Johns Hopkins University, Baltimore, MD

4:00 pm
Cell Membrane-Inserting Amphiphilic Bioconjugates for Enhancing Immunotherapies in Cancer
Michael Zhang1, Kelly Moynihan[2], Llian Mabardi[2], Debra Van Egeren[2], Darrell Irvine[2], and Gregory Szeto[1,3]
[1]University of Maryland Baltimore County, Baltimore, MD,
[2]Koch Institute for Integrative Cancer Research, MIT, Cambridge, MA, [3]Marlene and Stewart Greenebaum Cancer Center, University of Maryland, Baltimore, Baltimore, MD

4:15 pm
Single-step Nanoparticle Antigen Presentation System for Tumor Immunotherapy
Fredrick Kohlhapp[1], Brent Chesson[2], Erica Huelsman[3], Arman Nabatiyan[3], Jai Rudra[4], and Andrew Zloza[1]
[1]Rutgers Cancer Institute of New Jersey, New Brunswick, NJ,
[2]Rutgers Cancer Institute of New Jersey, Galveston, TX,
[3]Rush Medical University, Chicago, IL,
[4]University of Texas Medical Branch, Galveston, TX

4:30 pm
Engineering Therapeutic T Cells that Activate by Photothermal Triggers
Ian Miller[1,2], Joe Maenza[1], Jason Weis[1], and Gabriel Kwong[1,2]
[1]Georgia Institute of Technology, Atlanta, GA,
[2]Emory University, Atlanta, GA

Thursday, October 6 | 3:15 pm–4:45 pm | Platform Session 3

OP-Thurs-3-3 — Auditorium 3

Tracks: Biomechanics, Cardiovascular Engineering

Cardiovascular Biomechanics III

Chairs: Lik Chuan Lee, Naomi Chesler

3:15 pm
Hemodynamics Regulates Endothelial Glycocalyx Correlating to Modulation of Key Endothelial Functions–INVITED
Ming Cheng[1], Solomon Mensah[1], Ian Harding[1], and Eno Ebong[1]
[1]Northeastern University, Boston, MA

3:45 pm
A Novel Single-Beat Approach to Assess Right Ventricular Systolic Function in Pulmonary Hypertension
Alessandro Bellofiore[1], Eric Dinges[2], Rebecca Vanderpool[3], Melanie Brewis[4], Andrew Peacock[4], Sanjiv Shah[5], and Naomi Chesler[2]
[1]San Jose State University, San Jose, CA, [2]University of Wisconsin-Madison, Madison, WI,[3]University of Pittsburgh, Pittsburgh, PA, [4]Pulmonary Vascular Unit, Glasgow, United Kingdom,[5]Northwestern University, Chicago, IL

4:00 pm
Exercise Decreases Arterial Stiffness and Mediates Effects of A High-Fat, High-Sugar Diet
Julie Kohn[1], Jenny Ma[1], Shweta Modi[1], Julian Azar[1], Adeline Chen[1], Stephanie Cheng[1], and Cynthia Reinhart-King[1]
[1]Cornell University, Ithaca, NY

4:15 pm
Role of Dobutamine in Coronary Blood Flow-Myocardial Volume Relationships: *In Vivo* Assessment with Sonomicrometry
John Stendahl[1], Nabil Boutagy[1], Nripesh Parajuli[2], Allen Lu[2], Imran Alkhalil[1], Melissa Eberle[1], Ben Lin[1], Lawrence Staib[2], James Duncan[2], and Albert Sinusas[1]
[1]Yale School of Medicine, New Haven, CT, [2]Yale School of Engineering and Applied Science, New Haven, CT

4:30 pm
Average Aneurysm Wall Stress and Displacement in the Common Carotid Artery Increase with an Increase in Aneurysm Size: Initial Results using Fluid-Structure Interaction Simulations
Simon Kudernatsch[1,2], Sampat Nidadavolu[3], and Donald R. Peterson[1,2]
[1]Texas A&M University, College Station, TX, [2]Texas A&M University–Texarkana, Texarkana, TX, [3]CD-Adapco, Melville, NY

OP-Thurs-3-4 — Room 102AB

Track: Tissue Engineering

Engineering Tissue Interfaces

Chairs: Howard Matthew, Anita Singh

3:15 pm
Gradient Biomaterials in Osteochondral and Trachea Defect Repair–INVITED
Michael Detamore1
[1]University of Kansas, Lawrence, KS

3:45 pm
Establishing Mechanically Active Synthetic Mucosal Interface in A Multi-Well Plat
Abhinav Sharma[1], Neil Forbes[1,2,3], and Jungwoo Lee[1,2,3]
[1]University of Massachusetts Amherst, Amherst, MA, [2]Institute for Applied Life Sciences, Amherst, MA, [3]Molecular and Cellular Biology Graduate Program, Amherst, MA

4:00 pm
Osteotendinous Differentiation and Interfacial Toughening of A Multi-Compartment Collagen Scaffold
Wlliam Grier[1], Laura Mozdzen[1], and Brendan Harley[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

4:15 pm
Hydrogel Platform for Modeling the Dermoepidermal Junction *In Vitro*
Jangwook Jung[1], Wei-Han Lin[1], Jakub Tolar[1], and Brenda Ogle[1]
[1]University of Minnesota-Twin Cities, Minneapolis, MN

4:30 pm
Localization and Quantification of Mineral Deposition at the Engineered Osteochondral Interface Following Three and Seven Days of Double Diffusion
Andreea Teodora Dinescu[1], Amy Chung[1], Esther Cory[1], and Robert Sah[1]
[1]University of California-San Diego, La Jolla, CA

OP-Thur-3-5 — Room 102C

Track: Tissue Engineering

Engineering Replacement Tissues

Chairs: Mai Lam, Harini Sundararaghavan

3:15 pm
Translation of Conformal Islet Encapsulation and Implementation of Nanocarriers-Based Refinements
Vita Manzoli[1,2], Diana Velluto[1], Maria M. Abreu[1], Freddy Gonzalez Badillo[1,3], and Alice A. Tomei[1,3]
[1]Diabetes Research Institute–University of Miami–Miller School of Medicine, Miami, FL, [2]Department of Electronics, Information and Bioengineering–Politecnico di Milano, Milano, Italy, [3]Department of Biomedical Engineering–University of Miami, Coral Gables, FL

Thursday, October 6 | 3:15 pm–4:45 pm | Platform Session 3

3:30 pm
Optogenetic Regulation of Insulin Secretion in Pancreatic Cells
Fan Zhang[1] and Emmanuel Tzanakakis[1,2]
[1]Tufts University, Medford, MA, [2]Tufts Medical Center, Boston, MA

3:45 pm
Engineering a Long-term and Highly Functional 3D Human Liver Model Using Silk Scaffolds
David Kukla[1], Salman Khetani[1], Whitney Stoppel[2], and David Kaplan[2]
[1]University of Illinois at Chicago, Chicago, IL, [2]Tufts University, Medford, MA

4:00 pm
Achieving Native Cartilage Compressive Properties in Engineered Neocartilage
Wendy Brown[1], Grayson DuRaine[2], Heenam Kwon[1], Jerry Hu[1], and Kyriacos Athanasiou[1]
[1]University of California Davis, Davis, CA, [2]Oregon Health & Science University, Portland, OR

4:15 pm
Smart Self-Modulatory Release System Based on Bioactive Coating Modified 3D Printed Perfused Scaffold for Vascularized Bone Regeneration
Haitao Cui[1], Wei Zhu[1], Benjamin Holmes[1], Michael Plesniak[1], and Lijie Grace Zhang[1]
[1]The George Washington University, Washington, DC

4:30 pm
Spatially Organized Microtissue Assemblies for Salivary Gland Tissue Engineering.
Tugba Ozdemir[1], Dakota Kelly[1], Eric Fowler[1], Daniel Zakheim[1], Daniel A. Harrington[2], Robert L. Witt[1,3,4], Mary C. Farach-Carson[1,2], Swati Pradhan-Bhatt[1,4], and Xinqiao Jia[1]
[1]University of Delaware, Newark, DE, [2]Rice University, Houston, TX, [3]Thomas Jefferson University, Philadelphia, PA, [4]Helen F. Graham Cancer Center & Research Institute, Christiana Care, Newark, DE

OP-Thurs-3-6 — Room 101A

Track: Cellular and Molecular Bioengineering

Single Cell and Collective Migration

Chairs: Dennis Discher, David Odde

3:15 pm
Collective Migration and Self-Organization in Epithelial-Mesenchymal Co-Cultures
Marielena Gamboa Castro[1], Susan Leggett[1], and Ian Wong[1]
[1]Brown University, Providence, RI

3:30 pm
Loss of Giant Obscurins Enhances Migration And Cell Dynamics In Pancreatic Ductal Epithelial Cells
Daniel Shea[1], Konstantinos Konstantopoulos[1], and Aikaterini Kontrogianni-Konstantopoulos[2]
[1]Johns Hopkins University, Baltimore, MD, [2]University of Maryland School of Medicine, Baltimore, MD

3:45 pm
Role of Microtubules in Centrosome Positioning During 1D Migration
Katrina Adlerz[1] and Helim Aranda-Espinoza[1]
[1]University of Maryland, College Park, MD

4:00 pm
Mapping 3D Neutrophil Tractions on Micropatterned Stripes
Lauren Hazlett[1], Jonathan Estrada[1], Xian O'Brien[1], Jonathan Reichner[1], and Christian Franck[1]
[1]Brown University, Providence, RI

4:15 pm
A Novel Bioinspired Microfluidic Assay for Investigation of the Role of Protein Kinase C-delta (PKC) in Human Neutrophil-Endothelium Interaction During Acute Inflammation
Fariborz Soroush[1], Yuan Tang[1], Ting Zhang[1], Devon King[1], Sudhir Deosarkar[1], Balabhaskar Prabhakarpandian[2], Laurie Kilpatrick[1], and Mohammad Kiani[1]
[1]Temple University, Philadelphia, PA, [2]CFD Research Corporation, Huntsville, AL

4:30 pm
Unjamming and Spreading of a Cellular Aggregate as a Model of Breast Cancer Migration
Karin Wang[1] and Jeffrey Fredberg[1]
[1]Harvard University, Boston, MA

OP-Thurs-3-7 — Room 101B

Track: Cancer Technologies

Precision Medicine and Biomarkers

Chairs: Farhan Chowdhury, Michael King

3:15 pm
Every Cancer Patient Deserves an Equation: Predicting Survival from Patient-Specific Models –INVITED
Kristin Swanson[1], Corbin Rayfield[2], Fillan Grady[3], Andrea Hawkins-Daarud[3], Pamela Jackson[3], Eduardo Carrasco[3], and Bernard Bendok[3]
[1]Mayo Clinic Arizona, Phoenix, AZ, [2]Mayo Clinic, Scottsdale, AZ, [3]Mayo Clinic, Phoenix, AZ

3:30 pm
Key Gene Mutations for Increasing Migration of Brain Cancer Cells via Confinement
Loan Bui[1], Alissa Hendrick[1], Tamara Hill[1], Richard Leviner[1], and Young-Tae Kim[1]
[1]University of Texas at Arlington, Arlington, TX

3:45 pm
Development of Assays for Detecting Methylation in Cell-Free DNA at Single Copy Sensitivity and Single CpG-Site Resolution
Pornpat Athamanolap[1], Thomas II Pisanic[1], and Tza-Huei Wang[1]
[1]Johns Hopkins University, Baltimore, MD

4:00 pm
Focused Ultrasound Reprograms Ethanol-Treated Prostate Cancer Cells Back to Normal
Heng Yu[1], Hakm Murad[1], Daishen Luo[1], and Damir Khismatullin[1]
[1]Tulane University, New Orleans, LA

4:15 pm
Targeted Nanosystems as Precision Tools for Cancer Diagnosis and Therapy
Ester Kwon[1], Jaideep Dudani[1], Candice Gurbatri[1], and Sangeeta Bhatia[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

4:30 pm
Next-generation Sequencing Reveals Distinct Genetic Features of Mechanically Isolated Tumorigenic Cells
Farhan Chowdhury[1], Michael Saul[2], and Taekjip Ha[3]
[1]Southern Illinois University Carbondale, Carbondale, IL, [2]University of Illinois at Urbana-Champaign, Urbana, IL, [3]Johns Hopkins University, Baltimore, MD

OP-Thurs-3-8 Room 101C

Tracks: Biomechanics, Tissue Engineering

Human Performance/Sports Biomechanics

Chairs: Costin Untaroiu, Jonathan Rylander

3:15 pm
Voluntary Head Movements Exceed Football Impact Rotational Velocities Without Neurological Deficit
Fidel Hernandez[1], Jared Ostdiek[1], Alec McGlaughlin[1], Matt Garelli1, and David Camarillo[1]
[1]Stanford University, Stanford, CA

3:3 pm
Comparison of Pitching and Long-Toss Kinetics in Professional Baseball Players
Janelle Cross[1], Roger Caplinger[2], and William Raasch[1,2]
[1]Medical College of Wisconsin, Milwaukee, WI
[2]Milwaukee Brewers Baseball Club, Milwaukee, WI

3:45 pm
Evaluation of Head Impact Exposure in Youth Football Practice Drills
Mireille Kelley[1], Joeline Kane[2], Mark Espeland[2], Logan Miller[1], Joel Stitzel[1], and Jillian Urban[1]
[1]Virginia Tech-Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC, [2]Wake Forest University, Winston-Salem, NC

4:00 pm
Comparison of Objective Rating Techniques vs. Expert Opinion In The Validation Of Computational Human Body Models
Matthew Davis[1], Bharath Koya[1], Jeremy Schap[1], and F. Scott Gayzik[1]
[1]Wake Forest School of Medicine, Winston-Salem, NC

4:15 pm
Quantitative Assessment of Falls for Humans in a Safety Harness
Gordon Cooke[1,2] and Arthur Ritter[2]
[1]US Army Armament Research, Development and Engineering Center, Picatinny Arsenal, NJ,[2]Stevens Institute of Technology, Hoboken, NJ

4:30 pm
Can Muscle Volume Be a Predictor of Motor Performance?
Thanh Tran[1], Katherine Knaus[1], Peter Frank[1], Geoffrey Handsfield[1], Joseph Hart[1], and Silvia Blemker[1]
[1]University of Virginia, Charlottesville, VA

OP-Thurs-3-9 Room 101D

Track: Stem Cell Engineering

Directing Stem Cell Differentiation II

Chairs: Melissa Krebs, Yuguo Lei

3:15 pm
Cell-free Synthetic Vascular Grafts: A Blank Slate to Study Host Cell Infiltration and Transformation–INVITED
Yadong Wang[1], Kee-Won Lee[1], Liwei Dong[1], Chelsea Stowell[1], Mario Solari[1], and Vijay Gorantla[1]
[1]University of Pittsburgh, Pittsburgh, PA

3:45 pm
Differentiation of V2a Interneurons From Human Pluripotent Stem Cells
Jessica Butts[1,2], Dylan McCreedy[1], Federico Mendoza-Camacho[1], Tracy Hookway[1], Praveen Taneja[1], Linda Noble-Haeusslein[3], and Todd McDevitt[1,3]
[1]Gladstone Institutes, San Francisco, CA, [2]Graduate Program in BioEngineering University of California San Francisco and Berkeley, San Francisco, CA, [3]University of California–San Francisco, San Francisco, CA

4:00 pm
Nanotopography Promoted Neuronal Differentiation of Human Induced Pluripotent Stem Cells
Kai Wang[1], Liqing Song[2], Yan Li[2], and Yong Yang[1]
[1]West Virginia University, Morgantown, WV, [2]Florida State University, Tallahassee, FL

4:15 pm
Maintenance of Neural Progenitor Cell Stemness in 3D Hydrogels Requires Matrix Remodeling
Christopher Madl[1], Ruby Dewi[1], Cong Dinh[1], Kyle Lampe[1,2], Duong Nguyen[3], Annika Enejder[3], and Sarah Heilshorn[1]
[1]Stanford University, Stanford, CA, [2]University of Virginia, Charlottesville, VA, [3]Chalmers University of Technology, Gothenburg, Sweden

4:30 pm
Derivation of Cortical Spheroids from Human Induced Pluripotent Stem Cells in a Suspension Bioreactor
Yuanwei Yan[1], Liqing Song[1], and Yan Li[1]
[1]Florida State University, Tallahassee, FL

Thursday, October 6 | 3:15 pm–4:45 pm | Platform Session 3

OP-Thurs-3-10 — Room 101E

Track: Biomaterials*

Biomaterial Scaffolds II

Chairs: Jeffrey Jacot, Guohao Dai

3:15 pm
A Tissue-specific Matrix-incorporated Electrospun Scaffold for Meniscus Tissue Engineering
Jinglei Wu[1], Cancan Xu[1], Xingjian Gu[1], and Yi Hong[1]
[1]University of Texas at Arlington, Arlington, TX

3:30 pm
Cardiac and Musculoskeletal Tissue Engineering using Cell- Laden Conductive Fibers
Afsoon Fallahi[1], Iman Yazdi[1], Ali Tamayol[1], and Ali Khademhosseini[1]
[1]Harvard Medical School, Cambridge, MA

3:45 pm
***In Vivo* Study of Gold Nanoparticle-Collagen Gel For Soft Tissue Augmentation**
Sheila Grant[1], Jiaxun Zhu[2], Robert Brooks[2], Dale DeVore[2], and David Grant[1]
[1]University of Missouri, Columbia, MO, [2]Eternogen, LLC, Columbia, MO

4:00 pm
Development of an Electrospun Scaffold with Tailorable Void Space for Dermal Wound Regeneration
Ryan Clohessy[1], Karolina Stumbraite[1], Barbara Boyan[1,2], and Zvi Schwartz[1,3]
[1]Virginia Commonwealth University, Richmond, VA
[2]Georgia Institute of Technology, Atlanta, GA
[3]University of Texas Health Science Center at San Antonio, San Antonio, TX

4:15 pm
Hand-spun Micro/nanofibers for Cartilage Regeneration
Mingkun Wang[1], Chunxiao Cui[1], Mazen Ibrahim[2], John Lawrence[2], Maurizio Pacifici[2], and Li-Hsin Han[1]
[1]Drexel University, Philadelphia, PA, [2]Children's Hospital of Philadelphia, Philadelphia, PA

4:30 pm
Three-Dimensionally Templated Hydrogels for Peripheral Nerve Injury Repair
Christopher Lacko[1], Stacy Porvasnik[1], Monica Wall[1], Andrew Garcia[1], Carlos Rinaldi[1], and Christine Schmidt[1]
[1]University of Florida, Gainesville, FL

*** Biomaterials Track sponsored by**

ACS Biomaterials SCIENCE & ENGINEERING

OP-Thurs-3-11 — Room 200E

Tracks: Cardiovascular Engineering, Tissue Engineering

Cardiovascular Tissue Engineering I

Chairs: Jordan Miller, Josephine Allen

3:15 pm
Fundamental Questions about Lymphatic Biology and Implications for Tissue Engineering–INVITED
Walter Murfee[1]
[1]Tulane University, New Orleans, LA

3:45 pm
Heterogeneities in Vascular Stiffness Impact Endothelial Monolayer Integrity
Jacob VanderBurgh[1], Julie Kohn[1], and Cynthia Reinhart-King[1]
[1]Cornell University, Ithaca, NY

4:00 pm
Tissue Engineering Arterioles: The Role of Intraluminal Fluid-Derived Forces
Mahama Traore[1], Richard Hongyi Li[1], and Steven George[1]
[1]Washington University in Saint Louis, Saint Louis, MO

4:15 pm
Preventing Progression to Heart Failure: Anisotropic, Acellular, Silk-ECM Patches for Treatment of Myocardial Infarction
Whitney Stoppel[1], Kelly Sullivan[1], Jonathan Grasman[1], Monique Foster[1], David Kaplan[1], and Lauren Black[1]
[1]Tufts University, Medford, MA

4:30 pm
Directing Vascular Regeneration *In-Situ*
Randall Smith Jr.[1], Daniel Swartz[2], and Stelios Andreadis[3,4]
[1]SUNY at Buffalo, Buffalo, NY, [2]Angiograft, LLC, Buffalo, NY, [3]University at Buffalo, SUNY, Buffalo, NY, [4]Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY

OP-Thurs-3-12 — Room 200F

Track: Nano and Micro Technologies

Microscale Diagnostic Technologies

Chairs: Brian Plouffe, Nilay Chakraborty

3:15 pm
Innovative Healthcare is in the Palm of Your Hand–INVITED
Luke Lee[1]
[1]California Institute of Quantitative Biosciences UC Berkeley, Berkeley, CA

3:45 pm
Smartphone-based Optofluidic Exosome Diagnostic for Concussion Recovery
Jina Ko[1], Matthew Hemphill[1], David Gabrieli[1], Leon Wu[1], Ravi Yelleswarapu[1], Gladys Lawrence[1], Wesley Pennycooke[1], Anup Singh[1], Dave Meaney[1], and Dave Issadore[1]
[1]University of Pennsylvania, Philadelphia, PA

4:00 pm
Developing an *In Vitro* Platform to Study the Dormant Liver Stages of Plasmodium Vivax Malaria
Nil Gural[1], Breanna Stillo[1], Ani Galstian[2], Alex Miller[2], Rapatbhorn Patrapuvich[3], Jetsumon Sattabongkot[3], Sandra March[1], and Sangeeta N. Bhatia[1,2,4]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Broad Institute, Cambridge, MA,[3]Mahidol University, Bangkok, Thailand, [4]Howard Hughes Medical Institute, Cambridge, MA

4:15 pm
Spatially Mapped Gene Expression Analysis from Tissue
Anurup Ganguli[1], Gregory Damhorst[1], Carlos Duarte[1], Tanmay Ghonge[1], Farhad Kosari[2], Christian Konopka[1], Wawrzyniec Dobrucki[1], and Rashid Bashir[1]
[1]University of Illinois at Urbana Champaign, Urbana, IL, [2]Mayo clinic cancer center-research, Rochester, MN

4:30 pm
MAPS- Magnetically Actuated Protease Sensors For *In Vivo* Tumor Profiling
Simone Schurle[1], Jaideep S. Dudani[1], Michael G. Christiansen[1], Polina Anikeeva[1], and Sangeeta Bhatia[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

OP–Thurs–3–13 — Room 200D

Track: Bioinformatics, Computational and Systems Biology

Metabolic Models

Chairs: Ranjan Dash, Stacey Finley

3:15 pm
Engineering Mammalian Cells Using Systems Biology Models to Enhance Biopharmaceutical Development–INVITED
Nathan Lewis[1]
[1]University of California, San Diego, La Jolla, CA

3:45 pm
Cost Based Methods for the Analysis of Genome-wide Human Metabolic Reconstructions
Andre Schultz[1] and Amina Qutub[1]
[1]Rice University, Houston, TX

4:00 pm
Integration of Comparative Toxicogenomics Data to Generate Biomarker Predictions with Rat and Human Metabolic Networks
Kristopher Rawls[1], Edik Blais[1], Glynis Kolling[1], and Jason Papin[1]
[1]University of Virginia, Charlottesville, VA

4:15 pm
Modeling the Detailed Kinetics and Nitric Oxide Inhibition of Mitochondrial Cytochrome c Oxidase
Venkat Pannala[1], Amadou Camara[1], Said Audi[2], and Ranjan Dash[1]
[1]Medical College of Wisconsin, Milwaukee, WI, [2]Marquette University, Milwaukee, WI

4:30 pm
Systems Analysis Identifies Metabolic Components to Antibiotic Susceptibility and Tolerance
Jason Yang[1,2], Sarah Wright[1,2], and James Collins[1,2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Broad Institute of MIT and Harvard, Cambridge, MA

OP–Thurs–3–14 — Room 200G

Track: Nano and Micro Technologies

Microfluidics for the Diagnostic and Monitoring of Viral Infections

Chairs: Evan Scott, Kim SeungHyun

3:15 pm
A Field-Portable Inertio-Magnetic Microfluidic Cell Sorter for Rapid Discovery of Zika-Specific Antibodies
Aniruddh Sarkar[1,2], Giuseppe Lofano[1], Sophie Blackburn[2], Jongyoon Han[2], and Galit Alter[1]
[1]Harvard Medical School, Cambridge, MA, [2]Massachusetts Institute of Technology, Cambridge, MA

3:30 pm
Detection of Intact Influenza Virus from Clinical Samples Using Computationally Designed Affinity Proteins
Caitlin Anderson[1], Eva-Maria Strauch[1], Rosemichelle Marzan[1], David Baker[1], and Paul Yager[1]
[1]University of Washington, Seattle, WA

3:45 pm
Leveraging Implantable Nanofluidic Technology for Longterm HIV Prophylaxis
Robert Hood[1], Priya Jain[2], and Alessandro Grattoni[2]
[1]University of Texas at San Antonio, San Antonio, TX, [2]Houston Methodist Research Institute, Houston, TX

4:00 pm
Field-Portable Holographic Microscope for Label-free Detection of Herpes Simplex Virus
Aniruddha Ray[1], Ha Ho[1], Mustafa Daloglu[1], Euan Mcleod[2], and Aydogan Ozcan1
[1]University of California, Los Angeles, CA, [2]University of Arizona, Tucson, AZ

4:15 pm
Magnetic Nanopore-based Sorting for Ultra-sensitive HIV Viral Load Detection
Nishal Shah[1]
[1]University of Pennsylvania, Philadelphia, PA

4:30 pm
Paper-based Device for Gastroenteritis Detection Integrated With Sample Preparation Cartridge
Zhenyuan Lu[1,2], Kshitij Ranjan[1], Jacob Carrano[2], Roland Schneider[2], John Carrano[2], and Shannon Weigum[1]
[1]Texas State University, San Marcos, TX, [2]Paratus Diagnostics, LLC, Austin, TX

Thursday, October 6 | 3:15 pm–4:45 pm | Platform Session 3

OP-Thurs-3-15 — Room 200C

Track: Biomedical Imaging and Optics, Biomechanics

Imaging Techniques in Biomechanics

Chairs: F. Scott Gayzik, Mohammad H. Abedinnasab

3:15 pm
***In Vivo* Characterization of the Human Skull-Brain Interface using Magnetic Resonance Elastography**
Andrew Badachhape[1], Ramona Durham[1], Brent Efron[1], Ruth Okamoto[1], Curtis Johnson[2], and Philip Bayly[1]
[1]Washington University in St. Louis, St. Louis, MO, [2]University of Delaware, Newark, DE

3:30 pm
Quantitative Assessment of Cell Contractility Using Polarized Light Microscopy
Francois Bordeleau[1], Joseph Miller[1], Wenjun Wang[1], and Cynthia Reinhart-King[1]
[1]Cornell University, Ithaca, NY

3:45 pm
Implementation of a 3D-2D Imaging-Based Approach for Accurate Quantification of Shoulder Motion Using a Clinically-Available Biplane Fluoroscope
Joseph Mozingo[1], Mohsen Akbari-Shandiz[1], Dixon Magnuson[1], Cynthia McCollough[1], and Kristin Zhao[1]
[1]Mayo Clinic, Rochester, MN

4:00 pm
Investigation of *In Vivo* Human Brain Motion Under Head Accelerations
Kaveh Laksari[1], Bradley Hammoor[1], Leland Pung[2], Kerstin Mueller[1], Huy Do[1], and David Camarillo[1]
[1]Stanford University, Stanford, CA, [2]Siemens Medical Solutions Inc., Malvern, PA

4:15 pm
Forces Across Cell-Cell Junctions Contribute to Lumen Formation and Homeostasis in Epithelial Acini–INVITED
Daniel Conway[1] and Vani Narayanan[1]
[1]Virginia Commonwealth University, Richmond, VA

4:30 pm
***In Vivo* Multi-Frequency Magnetic Resonance Elastography Of The Human Brain: Which Frequencies Matter?**
Mehmet Kurt[1], Han Lv[1,2], Kaveh Laksari[1], Lyndia Wu[1], Karla Epperson[1], Kevin Epperson[1], Anne Sawyer[1], David Camarillo[1], Kim Butts Pauly[1], and Max Wintermark[1]
[1]Stanford University, Stanford, CA, [2]Beijing Friendship Hospital, Beijing, China, People's Republic of

OP-Thurs-3-16 — Room 200H

Track: Drug Delivery

Novel Materials and Self Assembly for Drug Delivery

Chairs: Kyung Jae Jeong, Roche de Guzman

3:15 pm
Engineering Protease-Responsive Microspheres from Self-Assembled Disordered Proteins
Benjamin Schuster[1], Ranganath Parthasarathy[1], and Daniel Hammer[1]
[1]University of Pennsylvania, Philadelphia, PA

3:30 pm
Halide-Gated Molecular Release from Nanoporous Gold Thin Films
Ozge Polat[1] and Erkin Seker[1]
[1]University of California, Davis, Davis, CA

3:45 pm
Design of Self-Assembled Multilayers for Immune Modulation
Boyan Xia[1], Lisa Tostanoski[1], and Christopher Jewell[1,2,3]
[1]University of Maryland-College Park, College Park, MD, [2]University of Maryland Medical School, Baltimore, MD, [3]Marlene and Stewart Greenebaum Cancer Center, Baltimore, MD

4:00 pm
Supramolecular Protein PEGylation
Matthew Webber[1]
[1]University of Notre Dame, Notre Dame, IN

4:15 pm
Self-Assembly of ssDNA-Amphiphiles into DNA Nanotubes with Controlled Diameters and Lengths
Huihui Kuang[1] and Efrosini Kokkoli[1]
[1]University of Minnesota, Minneapolis, MN

4:30 pm
Polymer Thin Film Device for Immuno-protective Encapsulation of Human Stem Cell Derived Insulin Producing Cells for the Treatment of Type 1 Diabetes
Ryan Chang[1], Gaetano Faleo[1], Holger Russ[1], Matthias Hebrok[1], Qizhi Tang[1], and Tejal Desai[1]
[1]University of California, San Francisco, San Francisco, CA

Thursday, October 6 | 3:15 pm–4:45 pm | Platform Session 3

OP-Thurs-3-17 — Room 200B

Track: Orthopaedic and Rehabilitation Engineering

Intervertebral Disc and Spine

Chairs: Robert Bowles, Beth Winkelstein

3:15 pm
Imaged Based Modeling to Investigate Pathomechanics of Disc Degeneration–INVITED
Dawn Elliott[1], Amy Claeson[1], Brent Showalter[1], Edward Vresilovic[2], John Peloquin[3], John DeLucca[1], Alexander Wright[3], James Gee[3], and Neil Malhotra[3]
[1]University of Delaware, Newark, DE, [2]Pennsylvania State University, Hershey, PA, [3]University of Pennsylvania, Philadelphia, PA

3:45 pm
Biomechanical Effect of Ischiofemoral Impingement and Femoral Version on Lumbar Facet Joint Loading
Anthony Khoury[1,2], Juan Gomez-Hoyos[2], Ricardo Schroder[2], Eric Johnson[2], Ian Palmer[2], and Hal Martin[2]
[1]University of Texas Arlington, Dallas, TX, [2]Baylor Research Institute, Dallas, TX

4:00 pm
Analysis of Individual and Combined Annulus Fibrosus and Nucleus Pulposus Repair *In Vitro*
Stephen Sloan, Jr.[1], Devis Galesso[2], Cynthia Secchieri[2], and Lawrence Bonassar[1]
[1]Cornell University, Ithaca, NY, [2]Fidia Farmaceutici S.p.A., Padua, Italy

4:15 pm
Evidence of Serum Response Factor Signaling In Nucleus Pulposus Cells of The Intervertebral Disc
Bailey Fearing[1], Priscilla Hwang[1], Ruhang Tang[2], Devin Bridgen[3], Liufang Jing[1], Michael Kelly[2], Munish Gupta[2], and Lori Setton[1]
[1]Washington University in St. Louis, St Louis, MO, [2]Washington University School of Medicine, St Louis, MO, [3]Duke University, Durham, NC

4:30 pm
Epigenome Editing of Nociceptive Neurons Abolishes Degenerative IVD Induced Sensitization
Joshua Stover[1], Niloofar Farhang[1], Brandon Lawrence[1], and Robby Bowles[1]
[1]University of Utah, Salt Lake City, UT

OP-Thurs-3-18 — Room 200I

Track: Biomedical Engineering Education (BME)

Entrepreneurship and Innovation in Biomedical Engineering

Chairs: Kunal Mitra, Subrata Saha

3:15 pm
Educating Entrepreneurially Minded Biomedical Engineers–INVITED
Douglas Melton[1]
[1]The Kern Family Foundation, Waukesha, WI

3:45 pm
Helping Students Develop Strategies for Dealing with Unethical Behavior in the Workplace
Jay Goldberg[1] and Kristina Ropella[1]
[1]Marquette University, Milwaukee, WI

4:00 pm
MedTech Innovation Course: Improvement and Versatility of the Model
Jawad Ali[1], Heather Haeberle[2], Sarah Mayes[3], and Margo Cousins[2]
[1]University of Texas at Austin, Dell Medical School, Austin, TX, [2]University of Texas at Austin, Austin, TX, [3]Alafair Biosciences, Austin, TX

4:15 pm
Fostering Entrepreneurial Mindset in Biomedical Engineering Programs
Mansoor Nasir[1] and Eric Meyer[1]
[1]Lawrence Technological University, Southfield, MI

4:30 pm
Encouraging Curiosity, Connections and the Creation of Value in a Materials/Biomaterials Sequence: Part 1: Materials Science
Gary Bledsoe[1] and Silviya Zustiak[1]
[1]Saint Louis University, St Louis, MO

Thurs-3-19 — Room 200J

Track: Neural Engineering

Peripheral Nerve Stimulation and Repair

Chairs: Treena Arinzeh, Erin Purcell

3:15 pm
Human Endothelial Cells Secrete Neurotropic Factors to Direct Axonal Growth
Jonathan Grasman[1] and David Kaplan[1]
[1]Tufts University, Medford, MA

3:30 pm
Physical Therapy Combined with a PCL/HA Nanofiber Conduit for Enhanced Peripheral Nerve Repair
Tonya Whitehead[1], Jean Peduzzi[2], Assadollah Mazhari[2], Chaoyang Chen[1], John M. Cavanaugh[1], and Harini G. Sundararaghavan[1]
[1]Wayne State University, Detroit, MI
[2]Wayne State University School of Medicine, Detroit, MI

Thursday, October 6 | 3:15 pm–4:45 pm | Platform Session 3

3:45 pm
Neuronal and Glial Optogenetic Stimulation for Accelerating Nerve Growth
Seongjun Park[1], Ritchie Chen[1], Alex Senko[1], Jueun Lee[1], Jung Yun Yoon[1], and Polina Anikeeva[1]
[1]Massachusetts Institute of Technology (MIT), Cambridge,MA

4:00 pm
Ultrasound Stimulation for Peripheral Nerve Repair
Emily Ashbolt[1], Marissa Puzan[1], Daniel Ventre1, and Abigail Koppes[1]
[1]Northeastern University, Boston, MA

4:15 pm
Osseointegrated Neural Interface (ONI): A Novel Approach to Peripheral Nerve Interfaces.
Aaron Dingle[1], Joesph Novello[1], Jared Ness[1], Dan Hellenbrand[1], Lisa Krugner-Higby[1], Brett Nemke[1], Yan Lu[1], Sarah Brodnick[1], Mark Markel[1], David Goodspeed[1], Justin Williams[1], and Samuel Poore[1]
[1]University of Wisconsin, Madison, WI

4:30 pm
An Electro-Stimulation Integrated Device for Pain Management of Peripheral Neuropathy
John MacDonald[1], Rashad Armbrister[1], and Udayan Das[1]
[1]DeVry University, Chicago, IL

SPECIAL SESSION

3:15 pm–4:45 pm **Room 208CD**

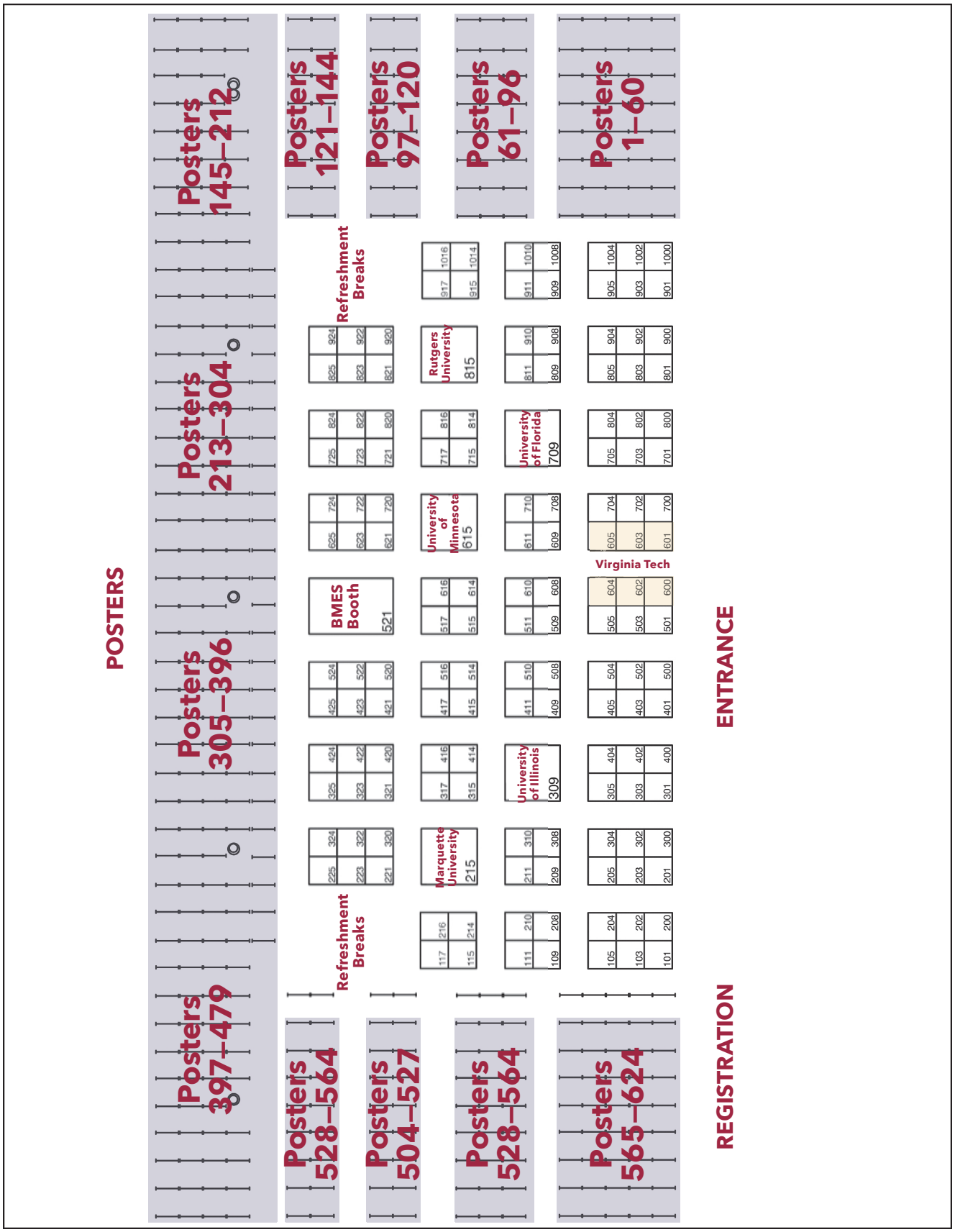
Engineering Low-Cost Solutions to Address Health Care Disparities

Chairs: Gilda Barabino, Cato Laurencin

This session will explore the role of biomedical engineering in addressing health disparities and more specifically the application of biomedical technologies in developing countries, with an eye toward their adaptation to address issues here in the U.S.
Dr. Rebecca Richards-Kortum will open the session and be followed by a panel discussion of the wide range of opportunities for engineers interested in solving health disparities through novel low-cost engineering designs. Winners of the 2016 BME Innovation and Career Development Travel Award will be announced at the session.

Thursday, October 6 | 9:30 am–5:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:30 pm–3:15 pm



Thursday, October 6 | 9:30 am–5:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:30 pm–3:15 pm

Track: Biomaterials
Hydrogel Biomaterials

Th-1
Temperature and pH Dependent Degradation of AH6 3:1 and AH6 5:1 Poly(beta-amino ester) Polymers
Alexander Chen[1] and David Puleo[1]
[1]University of Kentucky, Lexington, KY

Th-2
Polypyrrole Poly-HEMA Based Hydrogels and Custom Culture Plate Design For Stem Cells Differentiation Induction Through Electric Field Application
Vincent Duriavic[12], Christian Kotanen[1], and Anthony Guiseppi-Elie[1]
[1]Texas A&M, College Station, TX, [2]University of Montpellier, Montpellier, France

Th-3
Nitric Oxide Releasing Fibrin Cleavage Products for Incorporation into Injectable PEG Hydrogels
Breeanne Spalding[1], Connor McCarthy[1], Bruce Lee[1], and Rupak Rajachar[1]
[1]Michigan Technological University, Houghton, MI

Th-4
Development of a Novel Nitric Oxide Releasing Fibrin Microgel Composite Hydrogel for Tendon Repair
Carly Joseph[1], Connor McCarthy[1], Hannah Fisher[1], Jacob Altscheffel[1], Adam Francis[1], Breeanne Spalding[1], Bruce Lee[1], and Rupak Rajachar[1]
[1]Michigan Technological University, Houghton, MI

Th-5
Optimization and Characterization of Actuating PEG/Acrylic Acid Hydrogels As Artificial Muscles
Daniel Browe[1], Matthew Sze[1], and Joseph Freeman[1]
[1]Rutgers University, Piscataway, NJ

Th-6
Novel Cellular Adhesion Properties on Poly(ethylene gylcol) Dimethacrylate Hydrogels
Elizabeth Hernandez[1], Ann Babcock[2], Christina Lochner[3], and Derek Doroski[3]
[1]Franciscan University of Steubenville, Hannover, PA, [2]Franciscan University of Steubenville, Elk Ridge, MD, [3]Franciscan University of Steubenville, Steubenville, OH

Th-7
Hydrogen Peroxide Generation and Biocompatibility of Mussel Adhesive Moiety Modified Injectable Hydrogel
Hao Meng[1], Yuan Liu[1], and Bruce Lee[1]
[1]Michigan Technological University, Houghton, MI

Th-8
Fabrication of Injectable Macroporous Alginate Microbeads for Magnetically Actuated Drug Delivery
Jaeyun Kim[1] and Bom Yi Shin[1]
[1]Sungkyunkwan University, Suwon, Korea, Republic of

Th-9
Self-Assembly of Heterochiral Peptides with Varied Sequence Patterns
Alexey Koyfman[1], Charles Peak[2], Rajagopal Appavu[1], Akhilesh Gaharwar[2], and Jai Rudra[1]
[1]University of Texas Medical Branch, Galveston, TX, [2]Texas A&M University, College Station, TX

Th-10
New Matrix End-Tethering Strategy Supports both Mechano-sensing and Tissue-Mimetic Fiber Remodeling
Jessica Lee[1], Elena Kassianidou[1], James MacDonald[1], Matthew Francis[12], and Sanjay Kumar[1]
[1]University of California, Berkeley, Berkeley, CA, [2]Lawrence Berkeley National Laboratory, Berkeley, CA

Th-11
Impedance Characterization of Polyaniline Nanofibers Chitosan Composites Using Modified Thin Film Electrodes
John Aggas[1] and Anothony Guiseppi-Elie[1]
[1]Texas A&M, College Station, TX

Th-12
Self-healing of Thermal-induced Protein Hydrogel
Jun Chen[1], Xiaoyu Ma[1], and Yu Lei[1]
[1]University of Connecticut, Storrs, CT

Th-13
Fabrication of Multi-Compartmental Hydrogel Microparticles by Sequential Electrospinning Combined with Photopatterning Process
Kanghee Cho[1], Sung Ho Cha[1], Byung Ju Yun[1], Byoungyong Yoo[1], and Won-Gun Koh[1]
[1]Yonsei University, Seoul, Korea, Republic of

Th-14
Development of Hydrogel Therapeutic Delivery System for Traumatic Optic Neuropathy
Katelyn Swindle-Reilly[1], Nguyen Tram[1], Matthew Reilly[1], Kirstin Jones[2], and Randolph Glickman[2]
[1]The Ohio State University, Columbus, OH, [2]University of Texas Health Science Center at San Antonio, San Antonio, TX

Th-15
Circular Dichroism Spectroscopy: A New Approach To Monitor Collagen Fibrillogenesis
Kathryn Drzewiecki[1], Daniel Grisham[1], Vikas Nanda[1], and David Shreiber[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ

Th-16
Fibroblast to Myofibroblast Transitions In Hydrogels of Varying Stiffness
Anuraag Boddupalli[1] and Katie Bratlie[1]
[1]Iowa State University, Ames, IA

Th-17
Tissue Derived ECM Hydrogels: Using Matrix Solubilization to Control Material Properties
Robert Pouliot[1], Patrick Link[1], Nabil Mikhaiel[1], and Rebecca Heise[1]
[1]Virginia Commonwealth University, Richmond, VA

Th-18
Influence of Storage Conditions On The Physical Properties And Protein Release Of Polyethylene Glycol Hydrogel Microspheres
Saahil Sheth[1], Era Jain[1], Kristen Polito[1], Scott Sell[1], and Silviya Zustiak[1]
[1]Saint Louis University, St Louis, MO

Th-19
Collagen:Fibrin Hydrogels As Myogenic Grafts: Effects Of Blends And Mechanical Conditioning
Sarah Stagg[1,2], Joo Ong[1,2], Christopher Rathbone[1], and Teja Guda[1,2]
[1]University of Texas at San Antonio, San Antonio, TX, [2]University of Texas Health Science Center, San Antonio, TX

Th-20
Mechanical Property of Surface Crosslinked Super Absorbent Polymer
Sooho Chang[1], Minsu Kim[1], Donyoung Kang[1], Seunghee Oh[1], Won-Gun Koh[1], and Hyungsuk Lee[1]
[1]Yonsei University, Seoul, Korea, Republic of

Th-21
Soft, Highly Compressive, and Conductive Cryogels for Use as Neuroprosthetic Electrodes
Rosa Ghatee[1], Anita Tolouei[1], Walter Besio[1], and Stephen Kennedy[1]
[1]University of Rhode Island, Kingston, RI

Thursday, October 6 | 9:30 am–5:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:30 pm–3:15 pm

Th-22
Comparative Study of Ultrasound Induced and Naturally Self-assembled Silk Fibroin-Wool Keratin Hydrogel Biomaterials
Phuong-Trang Vu[1], Ye Xue[1], and Xiao Hu[1]
[1]Rowan University, Glassboro, NJ

Th-23
Construction of Tissue Adhesive Based on Polymer-Inorganic Nanoparticle Interactions Promoting Cellular Infiltration
Yuan Liu[1], Hao Meng[1], and Bruce Lee[1]
[1]Michigan Technological University, Houghton, MI

Th-24
A Heterogeneous Fibrosis Model for Cancer Mechanobiology
Dave Dingal[1], Yuntao Xia[2], and Dennis Discher[2]
[1]Stanford University, Stanford, CA, [2]University of Pennsylvania, Philadelphia, PA

Track: Biomechanics
Computational and Multiscale Modeling in Biomechanics

Th-25
Hemodynamic Changes during Growth and Rupture of a Middle Cerebral Artery Aneurysm
Alena Sejkorova[1,2], Kendall Dennis[2], Susheil Uthamaraj[2], Emily Nordahl[2], David Kallmes[2], Giuseppe Lanzino[2], Ales Hejcl[1], and Dan Dragomir Daescu[2]
[1]Masaryk Hospital, Ústí nad Labem, Czech Republic, [2]Mayo Clinic, Rochester, MN

Th-26
Virtual Surgery Study of Changes in Nasal Aerodynamics After Inferior Turbinate Reduction in Patients with Nasal Obstruction
Azadeh A.T. Borojeni[1], Dennis O. Frank-Ito [2], Julia S. Kimbell[3], John S. Rhee[1], and Guilherme J. M. Garcia[1]
[1]Medical College of Wisconsin, Milwaukee, WI, [2]Duke University, Durham, NC, [3]University of North Carolina, Chapel Hill, NC

Th-27
Optimized Simulation of Annulus Fibrosis Layers for Finite Element Model of Lumbar Spine: A Parametric and Sensitivity Study
Chaudhry Hassan[1], Yue-Li Sun[1], Elissa Scannapieco[1], Gita Vikram[1], and Yi-Xian Qin[1]
[1]Stony Brook University, Stony Brook, NY

Th-28
A Finite Element Homogenization Technique for Anisotropic Analysis of Ordered Axons
Daniel Sullivan[1], John Georgiadis[2], and Assimina Pelegri[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ, [2]Illinois Institute of Technology, Chicago, IL

Th-29
Regional Residual Stress Analysis of Human Lens Capsule as a Function Of Age
David Zhang[1] and Matthew Reilly[2]
[1]University of Texas at San Antonio, San Antonio, TX, [2]The Ohio State University, Columbus, OH

Th-30
Role of The Facet Capsular Ligament in Guiding Lumbar Spinal Motion
Emily Bermel[1], Victor Barocas[1], and Arin Ellingson[1]
[1]University of Minnesota-Twin Cities, Minneapolis, MN

Th-31
Nonlinear Bending Dynamics of a Semiflexible Filament in 3D Brownian Fluctuation
Jyothirmai Simhadri[1] and Preethi Chandran[1]
[1]Howard University, Washington, DC

Th-32
The Role of Annular Tissues and Intraocular Pressure in Ocular Morphogenesis
Nguyen Tram[1], Katelyn Swindle-Reilly[1], and Matthew Reilly[1]
[1]The Ohio State University, Columbus, OH

Th-33
Tullio Phenomenon: Pathological Sound-Induced Vertigo
Marta Iversen[1], John Carey[2], Charles Della Santina[2], Wu Zhou[3], Hong Zhu[3], and Richard Rabbitt[1]
[1]University of Utah, Salt Lake City, UT, [2]Johns Hopkins University, Baltimore, MD, [3]University of Mississippi Medical Center, Jackson, MS

Th-34
Modified Corpectomy Model for Growing-Rods: Validation of Finite Element Analysis
Mary Foltz[1,2], Victor Barocas[1], Andrew Freeman[1,3], Joan Bechtold[1], and David Polly[1]
[1]University of Minnesota, Minneapolis, MN, [2]Excelen Center for Bone & Joint Research and Education, Minneapolis, MN, [3]Fortus Medical, Minneapolis, MN

Th-35
Probabilistic Distributions of Trabecular Bone Architecture May Reveal Nature's Design Principles
Matthew Kirby[1], Feng Zhao[1,2], and Xiaodu Wang[1]
[1]University of Texas at San Antonio, San Antonio, TX
[2]Beihang University, Beijing, China, People's Republic of

Th-36
An *In-Situ* Approach to Estimate the Layer-Specific Biophysical State of Aortic Valve Interstitial Cells
Rachel Buchanan[1] and Michael Sacks[1]
[1]The University of Texas at Austin, Austin, TX

Th-37
Using Logarithmic Spirals to Quantify Human Rib Geometry
Sven Holcombe[1], Stewart Wang[1], and James Grotberg[1]
[1]University of Michigan, Ann Arbor, MI

Track: Bioinformatics, Computational and Systems Biology
Algorithms for Computational/Systems Biology

Th-38
Identifying PET Biomarkers to Predict Conversion Of Mild Cognitive Impairment To Alzheimer's Disease
Alexandra Berges[1]
[1]Johns Hopkins University, Baltimore, MD

Th-39
Application of Curve Fitting to Determine Rates of Inhibition of Elastase by Alpha-1 Antitrypsin
Bryan Materi[1], Michael Adenson[1], and Robby Sanders[1]
[1]Tennessee Technological University, Cookeville, TN

Th-40
Optimizing Tuberculosis Antibiotic Regimens Using a Computational Model of Granuloma Formation
Joseph Cicchese[1], Elsje Pienaar[1], Jennifer Linderman[1], and Denise Kirschner[2]
[1]University of Michigan, Ann Arbor, MI, [2]University of Michigan Medical School, Ann Arbor, MI

Th-41
Statistically Robust Detection of Group-Specific Signal from Specificity Determining Positions in Protein Families
Roman Sloutsky[1] and Kristen Naegle[1]
[1]Washington University in St Louis, St Louis, MO

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Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:30 pm–3:15 pm

Th-42
Quantitative Characterization of Human Cognitive State Using Physiological Parameters
Dong Wang[1], Xinghua Jia[1], Caroline Lieser[1], Matthew Middendorf[2], Scott Galster[2], and Mingjun Zhang[1]
[1]Department of Biomedical Engineering, College of Engineering, The Ohio State University, Columbus, OH, [2]711th Human Performance Wing, Air Force Research Laboratory, WPAFB, OH

Track: Bioinformatics, Computational and Systems Biology
Dynamics of Biological Systems

Th-44
Allostatic Breakdown of Multiple Homeostat Systems: A Computational Approach
Alison Acevedo[1] and Ioannis Androulakis[12]
[1]Rutgers University, Piscataway, NJ, [2]Rutgers-Robert Wood Johnson Medical School, New Brunswick, NJ

Th-45
How Failure Propagates in Aging Ttissues: Accelerated Implosion Hypothesis
Daniel Suma[1], Pinar Zorlutuna[1], and Dervis Vural[1]
[1]University of Notre Dame, Notre Dame, IN

Th-46
Modeling Mouse Soleus Muscle Contraction
Joseph Palladino[1]
[1]Trinity College, Hartford, CT

Th-47
The Role of the Hypothalamic-Pituitary-Adrenal (HPA) Axis In Modulating Seasonal changes In Immunity
Kamau Pierre[1], Naomi Schlesinger[2], and Ioannis Androulakis[1,2]
[1]Rutgers University, Piscataway, NJ, [2]Rutgers-Robert Wood Johnson Medical School, New Brunswick, NJ

Th-48
Hyperglycemia-induced Multi-layered Genomic Regulation Analysis
Hemang Patel[1] and Mahendra Kavdia[2]
[1]Wayne State University, Detroit, MI, [2]Wayne State Univeristy, Detroit, MI

Th-49
Computer-driven Design and Experimental Testing of a Synthetic Microbial Community
Meghan Thommes[1] and Daniel Segre[1]
[1]Boston University, Boston, MA

Th-50
Defining Phenotypic Landscapes for Progenitor Cells
Zi Ye[1], Najaf Shah[2], and Casim Sarkar[1]
[1]University of Minnesota, Minneapolis, MN, [2]University of Pennsylvania, Philadelphia, PA

Track: Bioinformatics, Computational and Systems Biology
Genomics, Transcriptomics, and Regulatory RNA Networks

Th-51
Development of a High-Throughput Screen for Early-Life Predictors of Lifespan in *C. elegans*
Holly Kinser[1] and Zachary Pincus[1]
[1]Washington University in St. Louis, St. Louis, MO

Th-52
Heterogenic MiRNA Regulation in Hyperglycemia-induced Endothelial Dysfunction
Hemang Patel[1] and Mahendra Kavdia[2]
[1]Wayne State University, Detroit, MI, [2]Wayne State Univeristy, Detroit, MI

Th-53
Bioinformatic Insights into Toll-like Receptors in Macrophages
Shakti Gupta[1], Sindhu Raghunandan[1], Andrew Caldwell[1], Merril Gersten[1], Srinivasan Ramachandran[1], and Shankar Subramaniam[1]
[1]University of California, San Diego, La Jolla, CA

Track: Bioinformatics, Computational and Systems Biology
Integration of Biophysics and Bioinformatics/Data-Driven Models

Th-54
Detecting Epileptic Seizures with EEG Siginals & Machine Learning Over Wearable Devices
Abdunnaser Younes[1] and Abdelniser Mooman[2]
[1]University of Waterloo, Waterloo, ON, Canada, [2]Rochester Institute of Technology, Rochester, NY

Th-55
Pathophysiology Informatics: Integrating Multi-scalar Experimental Data to Predict Pathology
Cassie Mitchell[1] and Grant Coan[1]
[1]Georgia Institute of Technology, Atlanta, GA

Th-56
Immersive Visualization for Comparative Viewing of CFD Results with Associated Multiscale Data
John Venn[1], Christopher Larkee[2], and John LaDisa[1,3]
[1]Marquette University, Milwaukee, WI, [2]Marquette Univeristy, Milwaukee, WI, [3]Medical College of Wisconsin, Milwaukee, WI

Th-57
Computational Investigation of Bidirectional Cargo Transport in Neurons
Kazuka Ohashi[1], John Fricks[1], and William Hancock[1]
[1]The Pennsylvania State University, State College, PA

Th-58
Characterization of Optimal Strategy for Glenn Anastomosis using Statistical Shape Models
Prahlad Menon[1], Craig Benzinger[1], and Haifa Hong[2]
[1]Duquesne University, Pittsburgh, PA, [2]Shanghai Jiaotong University School of Medicine, Shanghai, China, People's Republic of

Track: Bioinformatics, Computational and Systems Biology
Bioinformatics, Computational and Systems Biology–Other/Non-Specified

Th-59
Diffusion Model Across a Blood-Brain Barrier Mimic for The Treatment Of Autism Spectrum Disorder
Jamelle Simmons[1], Luke Achenie[1], and Yong Woo Lee[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

Th-60
Computational Model-Driven Design of a Pharmacological Intervention During Muscle Regeneration
Kyle Martin[1], Chris Kegelman[1], Kelley Virgilio[1], Juliana Passipieri[1], George Christ[1], Shayn Peirce[1], and Silvia Blemker[1]
[1]University of Virginia, Charlottesville, VA

Thursday, October 6 | 9:30 am–5:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:30 pm–3:15 pm

Track: Biomaterials
Interpenetrating and Multi-Functional Biomaterials

Th-61
Regenerative Orthopedic Device Materials: Making Nano-composites via Solid State Shear Pulverization
Sean Devlin[1], Nathan Spangenberg[1], Rohit Batish[1], Daniel Hagaman[2], Frank Ji[2], and Peter Lelkes[1]
[1]Temple University, Philadelphia, PA, [2]Drexel University, Philadelphia, PA

Th-62
Study of Titanium-Zirconium Nanotubes on Commercially Available Roxolid Implants
Sai Bhosle[1], Sweetu Patel[2], Tolou Shokuhfar[1], and Cortino Sukotjo[1]
[1]University of Illinois at Chicago, Chicago, IL, [2]Michigan Technological University, Chicago, IL

Track: Biomaterials
Biomaterials on a Chip

Th-63
The Effects of Polymerization Conditions on Biofabricated Chitosan Microbeams in Microfluidics
Santiago Correa[1], Phu Pham[1], Xiaolong Luo[1], and Christopher Raub[1]
[1]The Catholic University of America, Washington, DC

Th-64
The Effects of Multiple Spatial Inhomogeneities of ECM on Directed Cell Migration
Minji Whang[1] and Jungwook Kim[1]
[1]Sogang University, Seoul, Korea, Republic of

Th-65
Understanding Pathogen Microbial Physiology using a Biomimetic Biofilm
Sung-Ho Paek[1], Keith C. Heyde[1], and Warren C. Ruder[1]
[1]Virginia Tech, Blacksburg, VA

Track: Biomaterials
Advanced Characterization and Imaging of Biomaterial Environments

Th-66
Assessment of Mechanically Assisted Electrochemical Degradation of Alumina-TiC Composite in An Aqueous Environment
Hetal Maharaja[1]
[1]Clemson University, Clemson, SC

Th-67
Rapid High Resolution Multi-Parameter Characterization of Liposome-Protein Complexes by Nanoparticle Tracking Analysis
Ragy Ragheb[1], Edward Esposito[1], and Duncan Griffiths[1]
[1]Malvern Instruments, Westborough, MA

Th-68
Intercalator-induced Oscillatory Vibration of DNA Modified Micro-cantilever
Shandong Xu[1], Liyuan Ma[1], Shanshan Yuan[1], and Ming Su[1]
[1]Northeastern University, Boston, MA

Th-69
Impact of Lactoferrin and Lysozyme on Microbe Transport in Mucus
Taylor Carlson[1], Jaclyn Lock[1], and Rebecca Carrier[1]
[1]Northeastern University, Boston, MA

Th-70
Dual-Imaging Enabled Platform Biodegradable Scaffolds for Non-Invasive Imaging in Tissue Engineering
Dingying Shan[1], Zhifeng Liang[1], Yuncong Ma[1], Nanyin Zhang[1], and Jian Yang[1]
[1]The Pennsylvania State University, University Park, PA

Track: Biomaterials
Natural and Bioinspired Biomaterials

Th-71
Probing Biomolecular Interactions of High-density Lipoprotein Mimetic Nanomaterials with Amyloid-beta Peptide for the Treatment of Alzheimer's DIsease
Angel Santiago-Lopez[1], Yoshitaka Sei[1], and Yongtae Kim[1]
[1]Georgia Institute of Technology, Atlanta, GA

Th-72
A Mechanically Tunable Interpenetrating Network of Gelatin-Methacrylate and Fibrous Collagen
Anthony Berger[1], Pamela Kreeger[1], and Kristyn Masters[1]
[1]University of Wisconsin-Madison, Madison, WI

Th-73
Prototyping Chip Style Microfluidic Devices for High Performance Fiber Production
Catherine Gruat-Henry[1] and Bradley Hoffmann[1]
[1]North Dakota State University, Fargo, ND

Th-74
Biomimetic Biodegradable Photoluminescent Polymers for Bone Tissue Engineering
Chuying Ma[1] and Jian Yang[1]
[1]Pennsylvania state university, state college, PA

Th-75
Silk-Zein Protein Composite Materials
Dave Jao[1], Ye Xue[1], Joseph Forys[1], Justin Buchicchio[1], and Xiao Hu [1]
[1]Rowan University, Glassboro, NJ

Th-76
Adhesion and Alignment of Stem Cells on a Spider Silk Scaffolds after UV Sterilization
Katherine Hafner[1], Olivia Ross[1], Hannah Maeser[1], John Catoe[1], Marian Kennedy[1], and Delphine Dean[1]
[1]Clemson University, Clemson, SC

Th-77
Functionalization of Electrospun 3D Nanofibrous Polycaprolactone Scaffolds via Polydopamine Coating
Jacob Miszuk[1], Tao Xu[2], Yong Zhao[2], Hongli Sun[1], and Hao Fong[2]
[1]University of South Dakota, Sioux Falls, SD, [2]South Dakota School of Mines and Technology, Rapid City, SD

Th-78
Mechanical Response of the Tracheal System to Hemolymph Pressure in the Beetle Zophobas morio
Khaled Adjerid[1], Hodjat Pendar[1], and Jake Socha[1]
[1]Virginia Tech, Blacksburg, VA

Th-79
Development of Hyaluronan-Based Microrods for the Attenuation of Chronic Cardiac Fibrosis
Long Le[1], Michael Mkrtschjan[2], Brenda Russell[2], and Tejal Desai[1]
[1]University of California, San Francisco, San Francisco, CA, [2]University of Illinois at Chicago, Chicago, IL

Th-80
A Mechanistic Evaluation of Intrinsic Crosslinking Properties and Synthesis Procedures for Keratin-based Microparticles
Marc Thompson[1] and Mark Van Dyke[1]
[1]Virginia Tech, Blacksburg, VA

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Th-81
Sterilization, Storage Stability, Physical and Biological Properties of an S-nitroso-N-acetylpenicillamine-Based Nitric Oxide Releasing Polymer
Marcus Goudie[1], Elizabeth Brisbois[2], Jitendra Pant[1], Alex Thompson[3], Joseph Potkay[3], and Hitesh Handa[1]
[1]University of Georgia, Athens, GA, [2]University of Michigan, Ann Arbor, MI, [3]VA Ann Arbor Healthcare Systems, Ann Arbor, MI

Th-82
Engineering a Bioinspired Bone Marrow Environment for Enhanced Stem Cell Differentiation
Rebecca Goldstein[1], Vladimir Hlady[1], and Tara Deans[1]
[1]University of Utah, Salt Lake City, UT

Th-83
Promotion of Cell Migration within Wound Environments through Platelet-like-particle Mediated Matrix Deformation
Seema Nandi[1] and Ashley Brown[1]
[1]North Carolina State University and University of North Carolina at Chapel-Hill, Raleigh, NC

Th-84
Characteristics of Trehalose-Based Deep Eutectic Solvents: Implications for BioFormulation
Shangping Wang[1] and Gloria D. Elliott[1]
[1]University of North Carolina at Charlotte, Charlotte, NC

Th-85
Development of Synthetic Thrombus for Use in Neurovascular Modeling
Sharna Beahm[1], William Merritt[1], Timothy Becker[1], Connor Gonzalez[1], and Kayla Goodrich[1]
[1]Northern Arizona University, Flagstaff, AZ

Th-86
Comparative Study of Formic Acid Based Silk Materials
Ye Xue[1], Fang Wang[1], Maria Torculas[1], Jethro Medina[1], and Xiao Hu[1]
[1]Rowan University, Glassboro, NJ

Th-87
Biomimetic Hydrogels for Loading Growth Factors and Cells using Aptamers and Gelatin
Yong Wang[1], Xiaolong Zhang[1], and Nan Zhao[1]
[1]The Pennsylvania State University, State College, PA

Th-88
Design of Self-assembling 2, 5-Diketopiperazine Nanostructures for Antibacterial Surfaces
Yoshiaki Hirano[1], Eri Nakatsuka[1], and Sachiro Kakinoki[1]
[1]Kansai University, Osaka, Japan

Track: Biomechanics
Human Performance/Sports Biomechanics

Th-89
Kinematic Patterns of Lumbar Spine and Hips Coordination of Pro–and Amateur-Golfers
Ahnryul Choi[1] and Frederick Mun[2]
[1]Sungkyunkwan University, Suwon, Korea, Republic of, [2]Carnegie Mellon University, Pittsburgh, PA

Th-90
An Evaluation of Protective Faceguard Effects on the Impact Performance of Football Helmets
Alexander Bina[1], John DesJardins[1], Greg Batt[1], and Steve Siclari[1]
[1]Clemson University, Clemson, SC

Th-91
The Pressure Pointe: Assessing Forces on Dancers' Feet during Ballet
Haley Leslie[1], Sean Flannery[1], Melissa Copeland[1], Shruti Kaul[1], Lucas Schmidt[1], Melissa McCullough[1], and Delphine Dean[1]
[1]Clemson University, Clemson, SC

Th-92
Impact Exposure through Video Assessment of American Football
Jesus Loza[1], Lyndia Wu[1], Calvin Kuo[1], Daniel Senif[1], Scott Anderson[1], and David Camarillo[1]
[1]Stanford University, Stanford, CA

Th-93
A Kinematic Approach to Understanding Gender Differences in Upper Extremity Function During a Man-Machine Interface Task in a Submariner Environment
Tanimu Deleon-Nwaha[1] and Donald R. Peterson[2]
[1]University of Connecticut, Storrs, CT, [2]Texas A&M-Texarkana, Texarkana, TX

Track: Biomechanics
Biomechanics

Th-94
Biomechanical Properties of the Porcine Optic Nerve
Sarah Fitzgerald[1], Sammira Rais-Rohani[1], Bryn Brazile[1], Heath Baskin[1], Richard Summers[2], Robert Hester[2], and Jun Liao[1]
[1]Mississippi State University, Mississippi State, MS, [2]University of Mississippi Medical Center, Jackson, MS

Th-95
Passive and Active Characteristics of the Smooth Muscle of the Small intestine and its Numerical Simulation
In Seok Han[1], Junghwa Hong[1], and Young Eun Kim[2]
[1]Korea University, Sejong, Korea, Republic of, [2]Dankook University, Yongin-si, Gyeonggi-do, Korea, Republic of

Th-96
The Recovery Effect of Muscle Fatigue and HRR According to Sling Therapy with Whole Body Vibration
Ju Hwan Oh[1], Seung-Rok Kang[1], Sun-Hye Sin[1], Jin Young Min[2], and Tae Kyu Kwon[1]
[1]Chonbuk National University, Jeonju, Korea, Republic of, [2]Corporation of Sonicworld, Jeonju, Korea, Republic of

Tracks: Biomechanics, Orthopaedic and Rehabilitation Engineering
Implant and Prosthetic Biomechanics

Th-97
Biomechanical Investigation of Pull-out Force of Transverse versus Oblique Screws in Proximal and Distal Humerus: A Synthetic Bone Model Study.
Bich Nguyen[1], Trung Le[1], and Ha Vo[1]
[1]Mercer University, Macon, GA

Th-98
***In Vivo* Stiffness of Carbon Fiber and Fiberglass Dynamic Elastic Response Prosthetic Feet**
Christina Webber[1] and Kenton Kaufman[1]
[1]Mayo Clinic, Rochester, MN

Th-99
Design of a Wearable Low-Power Ultrasound System for Prosthetic Control using Time Delay Spectrometry
Katrina Colucci-Chang[1], Caitlin Johnson[1], Zaineb Nawaz[1], Elizabeth Tarbox[1], Parag V. Chitnis[1], and Siddhartha Sikdar[1]
[1]George Mason University, Fairfax, VA

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Th-100
Mechanical Testing of A Burlap-Epoxy Composite For Use In Prosthetics
Mary Arico[1] and Suhash Ghosh[1]
[1]University of Hartford, West Hartford, CT

Th-101
A Novel Total Knee Replacement That Incorporates Synthetic Ligaments to Influence Knee Stability
Michael Stokes[1], Luke Pietrykowski[1], Taylor Gambon[1], Brendan Greene[1], Caroline Bales[1], and John DesJardins[1]
[1]Clemson University, Clemson, SC

Th-102
Strains and Stresses in Trans-Femoral Prosthetic Socket
Sara Naftali[1], Dennis Dashevsky[1], and Anat Ratnovsky[1]
[1]Afeka–Tel Aviv Academic College of Engineering, Tel Aviv, Israel

Th-103
Strains and Stresses in Trans-Tibial Prosthetic Socket
Sara Naftali[1], Guy Ateret[1], and Anat Ratnovsky[1]
[1]Afeka–Tel Aviv Academic College of Engineering, Tel Aviv, Israel

Th-104
Experimental Thermal Analysis of a Novel Prosthetic Socket along with Silicon and PCM Liners
Sayed Cyrus Rezvanifar[1], Stephen Conklin[1], and Brian L. Davis[1]
[1]The University of Akron, Akron, OH

Track: Biomechanics
Injury Biomechanics

Th-105
Effect of Restraint Conditions and ATD Type on Thoracic and Femoral Responses in Frontal Sled Tests
Devon Albert[1], Stephanie Beeman[1], Craig McNally[1], and Andrew Kemper[1]
[1]Virginia Tech, Blacksburg, VA

Th-106
Using Numerical Simulation of Automotive Crashes to Predict Vertebral Loads And Influence Of Vehicle Parameters
Jeffrey Suhey[1], Derek Jones[1], James Gaewsky[1], Ashley Weaver[1], and Joel Stitzel[1]
[1]Virginia Tech-Wake Forest University, Winston-Salem, NC

Th-107
Development of Elderly Female Rib Finite Element Model
Keegan Yates[1] and Costin Untaroiu[1]
[1]Virginia Tech, Blacksburg, VA

Th-108
Blast Mitigation Performance of Floor Mat Material and Lower Limb Fracture Risk by a High Rate Impact Rig Simulating Anti-Vehicle Land Mine
Liying Zhang[1] and Paul Begeman[1]
[1]Wayne State Univesity, Detroit, MI

Th-109
Upper and Lower Extremity Injuries in Low Speed Vehicle Collisions
Omid Komari[1], William Bliss[1], Nicholas Toosi[1], and Kevin Toosi[1]
[1]Pittsburgh Biomechanics, Pittsburgh, PA

Th-110
Mechanistic Differentiation Between Blunt Impact and Primary Blast in Causing Ocular Injury
Richard Watson[1] and Matthew Reilly[2]
[1]University of Texas San Antonio, Helotes, TX, [2]The Ohio State University, Columbus, OH

Th-111
Biomechanical Properties of Neonatal Brachial Plexus
Shania Shaji[1], Anita Singh[1], Holly Sinnott[1], Gabrielle Gehron[1], Shadi Malaeb[2], and Maria Delivoria-Papadopoulos[2]
[1]Widener University, Chester, PA, [2]Drexel University College of Medicine, Philadelphia, PA

Th-112
Semi-Automated Analysis of Driver Response in a Finite Element Crash Test Reconstruction
Xin Ye[1 2], James Gaewsky[1 2], Derek Jones[1 2], Bharath Koya[1 2], Ryan Barnard[1], Ashley Weaver[1 2], and Joel Stitzel[1 2]
[1]Wake Forest University School of Medicine, Winston-Salem, NC, [2]Virginia Tech-Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC

Th-113
Impact of High Intensity Noise Exposure on Stapedius Muscle Function in Chinchillas
Zachary Yokell[1], Don Nakmali[1], and Rong Gan[1]
[1]University of Oklahoma, Norman, OK

Th-114
Finite Element Human Body Models for Industrial Applications
Zahra Asgharpour[1]
[1]Materialise N.V., Leuven, Belgium

Track: Neural Engineering
Brain and Spinal Cord Injury

Th-115
n-3 Long-Chain Polyunsaturated Fatty Acids Decrease in Pediatric Traumatic Brain Injury
Charlotte Mae Waits[1], Steven Kosmach[2], Susan Sergeant[1], Floyd H. Chilton[1], Charles S. Cox[2 3], and Elaheh Rahbar[1]
[1]Wake Forest School of Medicine, Winston-Salem, NC, [2]University of Texas Health Science Center at Houston, Houston, TX, [3]Texas A&M University, College Station, TX

Th-116
Neuroprotection via Immobilized BDNF Fragment Peptides for Sustained Presentation Following TBI
Christopher Lowe[1] and David Shreiber[1]
[1]Rutgers University, Piscataway, NJ

Th-117
Interfacing a Central Pattern Generator Model with a Musculoskeletal Model
Lin Tong[1], Ismael Perez[1], Patrick Arguello[1], and Deborah Won[1]
[1]California State University, Los Angeles, Los Angeles, CA

Track: Neural Engineering
Glial Cell Engineering: Promoting Regeneration and Addressing Degeneration

Th-118
Rapid Screening of 3D Composite Biomaterials for Optimization of Glial and Neuronal Behavior
Christopher Bertucci[1], Isabella Kronau[2], Sriram Ramamoorthy[1], Pankaj Karande[1], and Deanna Thompson[1]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Academy of the Holy Names Upper School, Troy, NY

Th-119
Electrical and Chemical Stimulation of Neural Cells for Retinal Integration
Shawn Mishra[1], Stephen Redenti[2], and Maribel Vazquez[1]
[1]City College of New York, New York, NY, [2]Lehman College, Bronx, NY

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Th-120
Astrocyte Response to Viscoelastic Mechanical Properties in Three-dimensional Scaffolds
Amber Busher[1], Zachary DiMattia[1], Matthew Fiori[1], Jonathon Zachok[1], and Peter Galie[1]
[1]Rowan University, Glassboro, NJ

Track: Neural Engineering
Axonal Growth and Guidance

Th-124
Ultrasound-Enhanced Molecular Therapy for Axon Neurogenesis
Asis Lopez[1], Ashwin Sivakumar[1], Adrian Jones[1], Bridget K Daugherty[1], Michael Moore[1], Damir B. Khismatullin[1], and Asis Lopez[1]
[1]Tulane University, New Orleans, LA

Th-125
Topographical Cues for Human Embryonic Stem Cell-Derived Retinal Ganglion Cells Axonal Extension and Organization
Calvin Chang[1], Hai-Quan Mao[1], and Donald Zack[1]
[1]Johns Hopkins University School of Medicine, Baltimore, MD

Th-126
Vagus Nerve Stimulation Paired with Rehabilitation Improves Functional Recovery Following Peripheral Nerve Injury
Eric Meyers[1], Rafael Granja[1], Ruby Solorzano[1], Patrick Ganzer[1], Nicole Robertson[1], Katherine Adcock[1], Mario Romero-Ortega[1], Michael Kilgard[1], Robert Rennaker[1], and Seth Hays[1]
[1]University of Texas at Dallas, Richardson, TX

Th-127
An Injectable, Anisotropic Hydrogel for Directed Cell and Nerve Growth
Jonas Rose[1], María Cámara-Torres[1], Jens Koehler[1], Khosrow Rahimi[1], and Laura De Laporte[1]
[1]DWI-Leibniz-Institute for Interactive Materials, Aachen, Germany

Track: Neural Engineering
Neural Coding and Modeling

Th-128
Evolution of Brain Network Dynamics in Neurodevelopment
Lucy R. Chai[1], Ankit N. Khambhati[1], Ruben C. Gur[1], Raquel E. Gur[1], Theodore D. Satterthwaite[1], and Danielle S. Bassett[1]
[1]University of Pennsylvania, Philadelphia, PA

Th-129
Artifact Removal Using Advanced Moving Average Filter for Accurate Detection of Short-Latency Spikes
Sungjin Oh[1], Sungmin Han[1,2], Dong Hwee Kim[1,2], Heesu Park[1,3], and Inchan Youn[1,3]
[1]Korea Institute of Science and Technology, Seoul, Korea, Republic of, [2]Korea University College of Medicine, Seoul, Korea, Republic of, [3]Korea University of Science and Technology, Daejeon, Korea, Republic of

Th-130
Electrophysiologic Features of Recovery in Deep Brain Stimulation for Depression
Vineet Tiruvadi[1,2], Ashan Veerakumar[2], Andrea Crowell[2], Allison Waters[2], Robert Butera[1], Patricio Riva-Posse[2], and Helen Mayberg[2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory School of Medicine, Atlanta, GA

Track: Neural Engineering
Neural Interfaces: Closed-Loop Control

Th-131
Automated Localization Using Novel Feature Extraction and Clustering In Focal Epilepsy
Brent Berry[1]
[1]Mayo Clinic, Rochester, MN

Th-132
Towards a Closed-loop Deep Brain Stimulator for the Improved Treatment of Essential Tremor
Enrico Opri[1], Jonathan Shute[1], Rene Molina[1], Michael S. Okun[1], Kelly D. Foote[1], and Aysegul Gunduz[1]
[1]University of Florida, Gainesville, FL

Th-133
Closed-Loop Deep Brain Stimulation Using Wearable Sensors for the Improved Treatment of Essential Tremor
Jackson Cagle[1], Kenan Tufekci[1], Francy Perez[1], Neel Patel[1], Dylan Zuniga[1], Giang Nguyen[1], Enrico Opri[1], and Aysegul Gunduz[1]
[1]University of Florida, Gainesville, FL

Th-134
Creating a Localized and Dynamic Facial Somatotopic Map of Area 3b Using Cutaneous Vibratory Stimulation
Justin Tanner[1], Taylor Hearn[1], and Stephen Helms Tillery[1]
[1]Arizona State University, Tempe, AZ

Th-135
Towards Responsive Deep Brain Stimulation For Medically Refractory Freezing Of Gait In Parkinson's Disease
Rene Molina[1], Jonathan Shute[1], Enrico Opri[1], Peter Rossi[1], Kelly Foote[1], Michael Okun[1], and Aysegul Gunduz[1]
[1]University of Florida, Gainesville, FL

Th-136
Planar Control of a Quadcopter Using a Zero-Training Brain Machine Interface Platform
Reza Abiri[1], Justin Kilmarx[1], Mohammad Raj[1], and Xiaopeng Zhao[1]
[1]University of Tennessee, Knoxville, TN

Track: Neural Engineering
Neural Progenitor and Neural Stem Cell Engineering

Th-137
Boosting Effect of EGF on Development of Neural Network Activity
Daejeong Kim[1], Jeewoong Lee[1], and Yoonkey Nam[1]
[1]KAIST, Daejeon, Korea, Republic of

Th-138
In vitro Approaches for Directing the Differentiation of Adult Neural Stem Cells into Neurons
Lindsey Crawford[1] and Shelly Sakiyama-Elbert[1]
[1]Washington University in St. Louis, St. Louis, MO

Th-139
3D Printing Scaffold Containing Aligned Channels for Inducing Mesenchyamal Stem Cell Neuronal Differentiation
Wei Zhu[1], Fahed Masood[2], and Lijie Grace Zhang[1]
[1]The George Washington University, Washington, DC, [2]University of Maryland, College Park, MD

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Track: Neural Engineering
Neurodegenerative Disease

Th-140
Neuronal Protection against Oxidative Insult by Polyanhydride Nanoparticle-based Antioxidant Therapy

Timothy Brenza[1], Shivani Ghaisas[1], Dilshan Harischandra[1], Julia Vela-Ramirez[1], Benjamin Schlichtmann[1], Gary Zenitsky[1], Balaraman Kalyanaraman[2], Vellareddy Anantharam[1], Anumantha Kanthasamy[1], and Balaji Narasimhan[1]
[1]Iowa State University, Ames, IA, [2]Medical College of Wisconsin, Milwaukee, WI

Th-141
Optimally Selected Features Detect and Predict Freezing of Gait in Parkinson's Disease

Sadra Hemmati[1] and Eric Wade[1]
[1]University of Tennessee, Knoxville, TN

Th-142
Biomaterials for Human Pluripotent Stem Cell Derived Mid-brain Dopaminergic Neuron Generation and Transplantation to Treat Parkinson's Disease

Maroof Adil[1] and David Schaffer[1]
[1]University of California Berkeley, Berkeley, CA

Th-143
Olive Oil Antioxidants Modulate Amyloid- OligomerToxicity Associated with Alzheimer's Disease

S. Zeb Vance[1], Colman Moore[1], and Melissa Moss[1]
[1]University of South Carolina, Columbia, SC

Th-144
Effect of Tremor on Reaching Task Performance in Patients with Parkinson's Disease

Zixiang Hu[1], Manzhao Hao[1], Shaoqing Xu[2], Fuliang Xu[1], Qin Xiao[2], and Ning Lan[1],[3],4
[1]Med-X Research Institute, Shanghai, China, People's Republic of, [2]Department of Neurology and Institute of Neurology, Ruijin Hospital affiliated to Shanghai Jiao Tong University School of Medicine, Shanghai, China, People's Republic of, [3]Division of Biokinesiology and Physical Therapy, University of Southern California, Los Angeles, CA, 4University of Southern California, Los Angeles, CA

Tracks: Biomechanics, Neural Engineering
TBI and Concussion Biomechanics

Th-145
An "Intelligent Mouthguard" Meets the NFL Level I Head Impact Dosimeter Validity Specification

Adam Bartsch[1] and Sergey Samorezov[1]
[1]Cleveland Clinic, Cleveland, OH

Th-146
Biomechanical Performance of Hockey Helmets

Bethany Rowson[1], Abigail Tyson[1], Bryan Cobb[1], Steven Rowson[1], and Stefan Duma[1]
[1]Virginia Tech, Blacksburg, VA

Th-147
Strain-based Validation of an Instrumented Mouthguard

Calvin Kuo[1], Michael Fanton[1], Lyndia Wu[1], Jason Luck[2], Hattie Cutcliffe[2], Robert Lynall[3], Kody Campbell[3], Jason Mihalik[3], Cameron Bass[2], and David Camarillo[1]
[1]Stanford University, Stanford, CA, [2]Duke University, Durham, NC, [3]University of North Carolina, Chapel Hill, Chapel Hill, NC

Th-148
Relating On-Field Head Impacts to Standards Testing: Comparison of Youth and Adult Football Helmets

David Sproule[1], Eamon Campolattano[1], and Steven Rowson[1]
[1]Virginia Tech, Blacksburg, VA

Th-149
Drill-Specific Head Impact Exposure in Youth Football Practice

Eamon Campolettano[1], Steven Rowson[1], and Stefan Duma[1]
[1]Virginia Tech, Blacksburg, VA

Th-150
Multi-objective Design Optimization of a Football Helmet Facemask

Kyle Johnson[1 2], Souma Chowdhury[3], William Lawrimore[4], Yuxiong Mao5, Ali Mehmani[6], Alston Rush[1 2], and Mark Horstemeyer[1 2]
[1]Mississippi State University, Starkville, MS, [2]Center for Advanced Vehicular Systems, Starkville, MS, [3]University of Buffalo, Buffalo, NY, [4]U.S. Army Engineer Research and Development Center, Vicksburg, MS, [5]Predictive Design Technologies, Starkville, MS,[6]Columbia University, New York, NY

Th-151
Differences in The Ability of Bicycle Helmets to Reduce Risk Of Head Injury

Megan Bland[1] and Steven Rowson[1]
[1]Virginia Tech, Blacksburg, VA

Th-152
Performance Evaluation of Injury Predictors and Identification of Most Vulnerable Deep White Matter Regions

Wei Zhao[1], Zhigang Li[1], and Songbai Ji[1]
[1]Dartmouth College, Hanover, NH

Th-153
Kinematic Sensitivities On Brain Strain Via a Pre-computed Atlas

Wei Zhao[1] and Songbai Ji[1]
[1]Dartmouth College, Hanover, NH

Th-154
Significance of Rotational Velocity Impulse Shape On Brain Strains

Wei Zhao[1] and Songbai Ji[1]
[1]Dartmouth College, Hanover, NH

Th-155
Characterization of Cumulative Subconcussive Exposures of Blunt and Blast Injury

Mathew Long[1 2], Aswati Aravind[1 2], Namas Chandra[1], Viji Santhakumar[2], Kevin Pang[2], and Bryan Pfister[1]
[1]New Jersey Institute of Technology, Newark, NJ
[2]New Jersey Medical School, Newark, NJ

Th-156
Hyperconnectivity of Event-Related Potential Networks Enhanced By Mild Brain Injury & Anesthesia

Lorre Atlan[1] and Susan Margulies[1]
[1]University of Pennsylvania, Philadelphia, PA

Th-157
Modulation of Calcium Dynamics in Astrocytes in Spatially Confined Microcavitation Zone

Bo Chen[1], Johnwesly Kanagaraj[2], and Michael Cho[1]
[1]University of Texas at Arlington, Arlington, TX,
[2]University of Illinois at Chicago, Chicago, IL

Th-158
Development of Micropatterned Cell Culture Models to Elucidate the Effect of Collapsing Microcavitation

Jessica Tjahja[1], Sameep Malla[1], Christopher Elias[1], Bo Chen[1], and Michael Cho[1]
[1]University of Texas at Arlington, Arlington, TX

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

Musculoskeletal Robotics and Biomechatronics in Rehabilitation

Th-159
Adjusting Powered-Knee Prosthesis Impedance Parameters Improves Gait Symmetry During Load Carriage
Andrea Brandt[1], Ming Liu[1], and He (Helen) Huang[1]
[1]NC State University/UNC Chapel Hill, Raleigh, NC

Th-160
Step Length and Width Changes during Pseudorandom Perturbations during Walking in Young Adults
Jacob Van Dehy[1], Tanya Onushko[1], Timothy Boerger[1], and Brian Schmit[1]
[1]Marquette University, Milwaukee, WI

Th-161
A Wrist and Hand Exoskeleton Orthosis Controlled by EMG Sensors
Edward F. Austin[1], Pedro J. Chacon[1], Young-Ho Shin[1], Mitchell A. St. Pierre[1], and Jin-Woo Choi[1]
[1]Louisiana State University, Baton Rouge, LA

Th-162
Computer-Controlled Lower Limb Exoskeleton Ambulation System for Paraplegia
Yang Zhou[1], Chaoyan Chen[1], Yousef Alshahrani[1], Pan Tian[2], Jie Hu[2], Mark Ming-Cheng Cheng[1], and John Cavanaugh[1]
[1]Wayne State University, Detroit, MI, [2]Shanghai Jiao Tong University, Shanghai, China, People's Republic of

Tracks: Orthopaedic and Rehabilitation Engineering, Neural Engineering

Rehabilitation Engineering: Implantable Devices

Th-163
Development of Step Counting Algorithm from the Ambulatory Tibial Load Analysis System
Arad Lajevardi-Khosh[1], Ben Tresco[1], Ami Stuart[1], Tomasz Petelenz[1], and Robert Hitchcock[1]
[1]University of Utah, Salt Lake City, UT

Th-164
Wireless, Passive Magnetoelastic Sensor for Monitoring Stress At Orthopedic Implants
Govindan Suresh[1], Keat Ong[1], and Andrew Derouin[1]
[1]Michigan Technological University, Houghton, MI

Th-165
NPWT Effects Wound Healing Cues in Tissues Surrounding Percutaneous Devices
Saranne Mitchell[1], Sujee Jeyapalina[1,2], Robert Bowles[1], and Kent Bachus[1,2]
[1]University of Utah, Salt Lake City, UT, [2]Department of Veterans Affairs, Salt Lake City, UT

Track: Orthopaedic and Rehabilitation Engineering

Skeletal Muscle, Ligaments, Tendons, and Interfaces

Th-166
Effect of Collegiate Swim Training on Rotator Cuff Properties, Shoulder Strength, and Subjective Outcomes
Jack Dischler[1], Timothy Baumer[1], and Michael Bey[1]
[1]Henry Ford Hospital, Detroit, MI

Th-167
Creep Loading of Tendons Causes Extensive and Severe Fibril and Molecular-Level Damage
Khaled Hijazi[1], Kathy Singfield[1], and Samuel Veres[1,2]
[1]Saint Mary's University, Halifax, NS, Canada, [2]Dalhousie University, Halifax, Canada

Th-168
Rotator Cuff Grafts using Decellularized Porcine MSC Seeded Tendons Cultured in a Mechanical Stimulator
Chelsea E. Coffey[1], Younji Sohn[1], and Vassilios Sikavitsas[1]
[1]University of Oklahoma, Norman, OK

Track: Orthopaedic and Rehabilitation Engineering

Spine and Intervertebral Disc

Th-169
Thoracic Volume 3D Computational Modeling of Virtual Scheuermann's Kyphosis with Wedging Fractures
Po-Chih Lee[1], Arthur Erdman[1], Charles Ledonio[1], and David Polly[1]
[1]University of Minnesota, Minneapolis, MN

Th-170
Augmentation of Energy Production of the Intervertebral Disc with Polyurethane Mass Transfer Device
Yu-Fu Wang[1] and Chun-Yuh Charles Huang[1]
[1]Department of Biomedical Engineering, University of Miami, Coral Gables, FL

Track: Orthopaedic and Rehabilitation Engineering

Orthopaedic and Rehabilitation Engineering

Th-171
Engineering an Inclusive and Conducive Learning Environment for Mobility-Challenged Students: A Case Study Evaluation of a Nigerian University
Abel Olorunnisola[1]
[1]University of Ibadan, Ibadan, Nigeria

Th-172
A Smart-Walker System for Fall Prevention and Rehabilitation
Bradley Willenberg[1], Sudeshna Pal[2], Lina Khan[2], Christopher Cepeda[2], Ross Pearlman[2], Wilson Perez[2], T'Jean Tomlinson[2], Mario Pita[1,2], Patrick Pabian[2], Adam Golden[1,3], and Edward Ross[1]
[1]University of Central Florida College of Medicine, Orlando, FL, [2]University of Central Florida, Orlando, FL. [3]Orlando VA Medical Center, Orlando, FL

Th-173
The Cell Response of 7F2 Osteoblasts to Low-Dose Radiation
Katelyn Truong[1], Suzanne Bradley[1], Matthew Rusin[1], Endre Takacs[1], and Delphine Dean[1]
[1]Clemson University, Clemson, SC

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Th-174
Evaluation of Equestrian Helmet Energy Attenuation Performance
Anne Hoch[1], Linda McGrady[1,2], Amy Ford[1], and Mei Wang[1,2]
[1]Medical College of Wisconsin, Milwaukee, WI, [2]Marquette University, Milwaukee, WI

Th-175
Self Contained Bioreactor for Bone Regeneration
Pratima Labroo[1], Ching-wen Li[2], Himanshu Sant[1], Bruce Gale[1], Jill Shea[1], and Jay Agarwal[1]
[1]University of Utah, Salt Lake city, UT, [2]National Ching Hsing University, Taipei, Taiwan

Th-176
GaitAssist: A Novel Technology to Mitigate Scissoring Gait in Patients with CP
Yu Xu[1], Jacob Schick[1], Kaiyuan Wang[1], Kevin Xin[1], Andie Seabrooke[1], Michael Ruiz[1], Michael Ruiz[1], Ana Ainechi[1], Alexander de la Vega[1], Alexander Hoon[2], Brittany DeCroes[2], Tara Johnson[2], and Robert Allen[1]
[1]Johns Hopkins University, Baltimore, MD, [2]Kennedy Krieger Institute, Baltimore, MD

Track: Biomedical Engineering Education (BME)
Ethics

Th-177
Ethical Challenges in Biomedical Engineering Education And Research
Subrata Saha[1] and Pamela Saha[1]
[1]SUNY Downstate Medical Center, Brooklyn, NY

Track: Biomedical Engineering Education (BME)
Curriculum Content

Th-178
A Course in "Maker Activities" for a Master of Engineering Design and Commercialization
Brandon Kirkland[1], Ophelia Johnson[1], and Alan Eberhardt[1]
[1]University of Alabama at Birmingham, Birmingham, AL

Th-179
An Innovative and Collaborative Method for Introducing Industry Standards into Biomedical Engineering Curriculum at the University of Toronto
Andrey Shukalyuk[1] and Dawn Kilkenny[1]
[1]University of Toronto, Toronto, ON, Canada

Th-180
Performance of Students on Scholarships in the Biomedical Engineering Program at Universidad de los Andes
Diana Gaitan[1] and Juan Carlos Briceno[1]
[1]U de los Andes, Bogota, Colombia

Th-181
Molecules and Cells: Using Multiple Teaching Methods Promotes Long Term Retention
Eileen Haase[1] and Harry Goldberg[1]
[1]Johns Hopkins University, Baltimore, MD

Th-182
Developing Communication Skills in Biomedical Engineering Undergraduate Students through a Cross-Disciplinary Service Project
Jennifer Keshwani[1] and Krista Adams[1]
[1]University of Nebraska Lincoln, Lincoln, NE

Th-183
Moving from a Scientific Undergraduate Thesis Project to a Capstone Design Project: Challenges and Possibilities
Maria Fernanda Olarte-Sierra[1] and Juan Briceño[1]
[1]Universidad de los Andes, Bogota, Colombia

Track: Biomedical Engineering Education (BME)
Design

Th-184
Designing Hands On Bioengineering Graduate Curriculum for Diverse Audiences
Adele Doyle[1]
[1]University of California Santa Barbara, Santa Barbara, CA

Th-185
The Teaching Dead: Season III-2 Years Post Infection
Jeffrey La Belle[1], Stephanie Maxwell[1], Aldin Malkoc [1], Joseph Heath[1], and Kara Karaniuk [1]
[1]Arizona State University, Tempe, AZ

Th-186
The History of The BME-IDEA Meeting and Report-out for 2016
Joe Tranquillo[1] and Youseph Yazdi[2]
[1]Bucknell University, Lewisburg, PA, [2]Johns Hopkins University, Baltimore, MD

Th-187
Design of a Laminar Flow Hood for a Pediatric Hospital in Vietnam
Miiri Kotche[1], Barak Stoltz[1], Tejas Madhavan[1], Josh Shubert[1], Beny Romo[1], and Fatima Rizvi[1]
[1]University of Illinois at Chicago, Chicago, IL

Track: Biomedical Engineering Education (BME)
Entrepreneurship and Innovation

Th-188
A Master of Engineering in Design and Commercialization
Alan Eberhardt[1] and Lee Moradi[1]
[1]University of Alabama at Birmingham, Birmingham, AL

Th-189
Using STEM to STEAM Initiatives to Create Multi-disciplinary Engineering Teams
Lola Brown[1] and Gilda Barabino[1]
[1]City College of New York, New York, NY

Th-190
Use of Needs Assessment to Improve "Empathize" Step In Design Thinking for Freshmen Bioengineers
Ruth Ochia[1]
[1]Temple University, Philadelphia, PA

Th-191
Executing a Business Start-Up Model to Refine Biomedical Engineering Training Tools
Sarah Rowlinson[1], Timothy Burg[2], and Karen Burg[1,2]
[1]Clemson University, Clemson, SC, [2]University of Georgia, Athens, GA

Th-192
Encouraging Curiosity, Connections, and the Creation of Value in a Materials/Biomaterials Sequence: Part II Biomaterials
Silviya Zustiak[1] and Gary Bledsoe[1]
[1]Saint Louis University, St Louis, MO

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Track: Biomedical Engineering Education (BME)
Flipped Classrooms

Th-193
Student-Graded Homework Using Compare/Contrast and Self-Explanation Exercises
Michael Caplan[1] and Nathan Kirkpatrick[1]
[1]Arizona State University, Tempe, AZ

Track: Biomedical Engineering Education (BME)
Freshman-Level Engineering Discovery Classes

Th-194
Osteocytes Density Reduction in Cortical Bone by Estrogen Deficiency and Functional Disuse and Countermeasure
Dongye Zhang [1], Nancy Rojas[2], Yi-Xian Qin[1], and Minyi Hu[1]
[1]Stony Brook University, Stony Brook, NY, [2]Stony Brook University, Brooklyn, NY

Track: Biomedical Engineering Education (BME)
Global Health

Th-195
The Development of a Student-led Co-curriculum in Global Health Design: M-HEAL
Kevin Jiang[1], Jennifer Lee[1], and Mary Munsell[1]
[1]University of Michigan, Ann Arbor, MI

Track: Biomedical Engineering Education (BME)
In Silico Demonstration

Th-196
Chemical and Biomedical Engineering Educational MATLAB App for PK/PD Modeling of ACE-Inhibition
Grace Harrell[1], Alexandra McPeak[1], and Ashlee Ford Versypt[1]
[1]Oklahoma State University, Stillwater, OK

Track: Biomedical Engineering Education (BME)
Laboratory-Based Teaching

Th-197
A K-12 Engineering Education Module: Hands-On Approach to Helmet Design
Abigail Tyson[1], Bethany Rowson[1], and Steven Rowson[1]
[1]Virginia Tech, Blacksburg, VA

Th-198
Inquiry-Based Laboratories for Medical Electronics Course
Jean-Michel Maarek[1]
[1]University of Southern California, Los Angeles, CA

Th-199
Updating Biomechanics Materials Laboratory Class: Innovations in Student Reports
Michael Nowak[1]
[1]University of Hartford, West Hartford, CT

Th-200
Tissue Engineering Scaffold Design for Sophomore Biomedical Engineering Students
Nicolas Mann[1], Daniel Infusino[2], Matthew Goldner[2], and Vince Beachley[2]
[1]Rowan University, Glassbo, NJ, [2]Rowan University, Glassboro, NJ

Th-201
Integrating Biological Design-Thinking and The Scientific Method into Undergraduate Biomedical Engineering Curriculum
Ritu Raman[1], Marlon Mitchell[1], Pablo Perez-Pinera[1], Rashid Bashir[1], and Lizanne DeStefano[2]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Georgia Institute of Technology, Atlanta, GA

Th-202
Functional Electrical Stimulation Laboratory for Introductory Courses in Biomedical Engineering
Seung-Jae Kim[1]
[1]California Baptist University, Riverside, CA

Track: Biomedical Engineering Education (BME)
On-Line Education

Th-203
Development of an Online Multistep Engineering Problem Solving Course Using LabVIEW
Samual Lines[1], Mehdi Shokoueinejad[1], and Amit Nimunkar[1]
[1]University of Wisconsin-Madsion, Madison, WI

Track: Biomedical Engineering Education (BME)
Biomedical Engineering Education (BME)

Th-204
Development of a Patient-Focused Biomedical Engineering Program within a Small Liberal Arts University
Brian Plouffe[1]
[1]Regis College, Weston, MA

Th-205
A "Boot Camp" As In-laboratory Introduction to Research Methods for a Research Experiences for Undergraduates Program
Margo Cousins[1], Stephanie Young[1], Erin Dolan[1], Lynda Gonzales[1], Brandi DeMont[1], Mia Markey[1], and Laura Suggs[1]
[1]University of Texas at Austin, Austin, TX

Th-206
VHA/NCI Big Data Scientist Training Enhancement Program: New Opportunities & Outcomes
Connie Lee[1], Sean Hanlon[2], and Michelle Berny-Lang[2]
[1]Employee Education System, Veterans Health Administration, U.S. Department of Veterans Affairs, Washington, DC, [2]Center for Strategic Scientific Initiatives, Office of the Director, National Cancer Institute, National Institutes of Health, Bethesda, MD

Th-207
Image Processing Tools for Contact Angle Assessment to Evaluate Wetting of Dental Materials
Rana Abdelsalam[1], Teresa Ryan[1], and Waldmer De Rijk[1]
[1]East Carolina University, Greenville, NC

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Track: Biomedical Imaging and Optics
Image Assisted Biological Modeling

Th-208
An Automated Real-time Approach for Quantifying Phagocytosis and Reactive Oxygen Species Levels
Andre Paredes[1] and Jun Cheng[1]
[1]University of Illinois at Chicago, Chicago, IL

Th-209
Utilizing Noninvasive Imaging Techniques to Classify Radiation Response in a Pediatric Brain Tumor Model
Tien Tang[1], Janice Zawaski[2], Kathleen Francis [1], Amina Qutub[1], and M. Waleed Gaber[1,2]
[1]Rice University, Houston, TX, [2]Baylor College of Medicine, Houston, TX

Th-210
Comparative Study of In Vivo Degradation Tracking and Modeling using Autofluorescent Protein Microspheres and Nanoparticles Suspension
Xiaoyu Ma[1], Jun Chen[1], Tai-Hsi Fan[1], and Yu Lei[1]
[1]University of Connecticut, Storrs, CT

Track: Biomedical Imaging and Optics
Image Guided Therapy and Surgery

Th-211
Laser Interstitial Thermal Therapy for Minimally Invasive Ablation of Small Renal Tumors
Luis Fontaneda[1], Nelson Salas[1], and Karli Pease[1]
[1]University of Miami, Coral Gables, FL

Th-212
Paired-agent Fluorescence Imaging Improves Contrast of Cranial Nerves
Veronica Torres[1], Joshua Wewel[2], Richard Byrne[2], and Kenneth Tichauer[1]
[1]Illinois Institute of Technology, Chicago, IL,
[2]Rush University Medical Center, Chicago, IL

Th-213
Dual-modality Smartphone Fiber-optic Endoscope for Early Detection of Cervical Cancer in Low-Resource Settings
Xiangqian Hong[1] and Bing Yu[1]
[1]The University of Akron, Akron, OH

Track: Biomedical Imaging and Optics
Imaging Informatics

Th-214
Automated Segmentation of Prostate Tissue for Partial Wave Spectroscopy (PWS) Analysis using Non-rigid Registation and k-means Clustering Method
Qin Miao[1], Saurabh Bagalkar[2], Justin Derbas[2], Hariharan Subramanian[1,2], and Vadim Backman[1]
[1]Northwestern University, Evanston, IL, [2]Nanocytomics LLC, Evanston, IL

Th-215
Characterization of Pulmonary Fibrosis on HRCT Images Using Deep Learning
Xavier Gonzalez[1,2], Diego Llarrull[1], Mirabela Rusu[3], and Ansaf Salleb-Aouissi[1]
[1]Columbia University, New York City, NY, [2]University of Buenos Aires. School of Engineering, Ciudad de Buenos Aires, Argentina,
[3]General Electric, Niskayuna, NY

Th-216
An Automated Method for Low Resolution Optical Character Recognition on Pulse Volume Recording Image
Zhexuan Zhang[1], Uygar Teomete[1], and Weizhao Zhao[1]
[1]University of Miami, Coral Gables, FL

Track: Biomedical Imaging and Optics
Imaging Techniques in Neuroscience

Th-217
Cerebral Blood Flow is Linked to EEG Bursting after Cardiac Arrest and Resuscitation
Christian Crouzet[1], Robert H. Wilson[1], Maryam H. Farahabadi[1], Afsheen Bazrafkan[1], Donald Lee[1], Juan Alcocer[1], Bruce J. Tromberg[1], Yama Akbari[1], and Bernard Choi[1]
[1]UC Irvine, Irvine, CA

Th-218
Multicolor Scanning Plane Illumination Microscope for Imaging Embryonic Brain Development in Zebrafish
Nathan Hart[1], Holly Gibbs[1], Arne Lekven[1], and Alvin Yeh[1]
[1]Texas A&M University, College Station, TX

Th-219
Coupled Multivariate Empirical Mode Decomposition (MEMD) and Inverse Solution Method for Epilepsy Localization
Pegah Khosropanah[1], Abd Rahman Ramli[1], and Mohammad Hamiruce Marhaban[1]
[1]University Putra Malaysia, Serdang, Malaysia

Th-220
Modular Augmented Microscopy with Spatial Light Modulation
Summer Garland[1], Jeffrey Watson[1], Nikolay Martirosyan[2], Michael Lemole[2], and Marek Romanowski[1]
[1]University of Arizona, Tucson, AZ,
[2]Banner University Medical Center, Tucson, AZ

Th-221
Gradient Index Lens Implant Has Minimal Tissue Reaction & Does Not Affect Behavioral Tests
Seon A Lee[1], Kevin Holly[1], Vladislav Voziyanov[1], Stephanie Villalba[2], Rudi Tong[3], Holly Grigsby[1], Edward Glasscock[2], Ioannis Vlachos[1], Francis Szele[3], and Teresa Murray[1]
[1]Louisiana Tech University, Ruston, LA,
[2]LSU Health Sciences Center-Shreveport, Shreveport, LA,
[3]University of Oxford, Oxford, United Kingdom

Th-222
Investigating Neural Responses in Brain by Optic Fiber Detection
Wen-Ju Pan[1], Jacob Billings[1], Maysam Nezafati[1], Waqas Majeed[1], and Shella Keilholz[1]
[1]Emory University/Georgia Institute of Technology, Atlanta, GA

Th-223
Acoustoelectric Imaging of the EEG in a Human Head Phantom
Yexian Qin[1], Pier Ingram[1], and Russell Witte[1]
[1]University of Arizona, Tucson, AZ

Th-224
Sparsity and Smoothness Enhanced EEG Brain Imaging
Ying Li[1], Jing Qin[1], Yue-Loong Hsin[2], Stanley Osher[1], and Wentai Liu[1]
[1]University of California Los Angeles, Los Angeles, CA, [2]Chung Shan Medical University, Taichung, Taiwan

Track: Biomedical Imaging and Optics
Molecular Imaging

Th-225
Multimodal Photoacoustic Lifetime and Ultrasound Imaging System
Ekaterina Ippolito[1] and Shai Ashkenazi[1]
[1]University of Minnesota, Minneapolis, MN

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Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:30 pm–3:15 pm

Th-226
Ultra-Sensitive Detection of Circulating microRNA with Quantum Dots
Lucas Smith[1], Yang Liu[1], and Andrew Smith[1]
[1]University of Illinois, Urbana, IL

Th-227
Enhancing Reactivity of Antibody-Conjugated trans Cyclooctenes for Bioorthogonal Pretargeting
Maha Rahim[1], Rajesh Kota[1], Ting-yi Chu[1], and Jered Haun[1]
[1]University of California Irvine, Irvine, CA

Th-228
Devising Novel Eu(III)-based pH-responsive Bio-probes for Selective Lysosome Imaging
Sergey Shuvaev[1], Robert Pal[1], Mark Fox[1], and David Parker[1]
[1]Durham University, Durham, United Kingdom

Th-229
Staining Paired-Agent Model (SPAM) For Cell Surface Receptor Concentration Estimation in Thick Tissue Imaging
Xiaochun Xu[1], Yu Wang[2], Jonathan T.C. Liu[2], Jialing Xiang[1], and Kenneth M. Tichauer[1]
[1]Illinois Institute of Technology, Chicago, IL, [2]University of Washington, Seattle, WA

Th-230
Experimental Investigation of the Impact of Excitation Beam on Chemical Concentration Sensitivity for X-ray Fluorescence Computed Tomography (XFCT)
Xu Dong[1] and Guohua Cao[1]
[1]Virginia Tech, Blacksburg, VA

Th-231
Peptide Beacons for Protein Imaging in Live Cells
Zhenjiang Zhang[1], Ciaran Lee[1], Anirban Ray[1], Sheng Tong[1], and Gang Bao[1]
[1]Rice University, Houston, TX

Track: Biomedical Imaging and Optics Molecular Probes

Th-232
PEI-Coated Rare Earth Doped Nanoparticles as Dual-Modality Contrast Agent for Shortwave Infrared And Photoacoustic Imaging
Mei Chee Tan[1], Shuqing He[1], Nitish Thakor[2], and Lun-De Liao[2]
[1]Singapore University of Technology and Design, Singapore, Singapore, [2]National University of Singapore, Singapore, Singapore

Th-233
Reporter+Probe Biosensors: Toehold-Mediated Strand Displacement for Detection of MiR-29b-1-5p
Nicholas E. Larkey[1], Corinne N. Brucks[1], Natasha M. Smith[1], and Sean M. Burrows[1]
[1]Oregon State University, Corvallis, OR

Th-234
Carbon Nanodot as Biocompatible Probe for in Vivo Imaging
Pantrika Krisanarungson Krisanarungson[1], Gregory Lecroy[1], Fan Yang[1], Yaping Sun[1], and Bruce Gao[1]
[1]Clemson University, Clemson, SC

Track: Biomedical Imaging and Optics MRI

Th-235
Center Frequency Determination using Off-resonance Saturation in MRI
Eamon Doyle[1,2], Jonathan Chia[3], and John Wood[1,2]
[1]University of Southern California, Los Angeles, CA, [2]Children's Hospital of Los Angeles, Los Angeles, CA, [3]Philips Healthcare, Cleveland, OH

Th-236
Development of a Custom 1H/31P Spectroscopy Coil for Canine Models of Muscular Dystrophy
Jeremy Sia[1], Kurt Parizek[1], Matthew Wilcox[1], and Mary McDougall[1]
[1]Texas A&M University, College Station, TX

Th-237
Semi-automatic Image Processing of Craniospinal Morphometrics for Chiari Malformation
Maggie Eppelheimer[1], Aintzane Urbizu[1,2], James Houston[1], Soroush Heidari Pahlavian[1], Audrey Braun[1], Dipankar Biswas[1], Philip Allen[1], Rick Labuda [3], and Francis Loth[1]
[1]University of Akron, Akron, OH, [2]Duke University, Durham, NC, [3]Conquer Chiari, Wexford, PA

Th-238
Brain White Matter Orientation Dispersion Changes Associated with Subconcussive Head Impact Exposure After A Single Season Of Youth Football
Naeim Bahrami[1], Elizabeth Davenport[2], Jillian Urban[1], Youngkyoo Jung[1], Joel Stitzel[1], Joseph Maldjian[2], and Christopher Whitlow[1]
[1]Wake Forest University, Winston Salem, NC, [2]University of Texas South Western, Dallas, TX

Th-239
Characterization of Structural Connectivity in Neural Ganglia: AGraph Theory Approach
Abdol Aziz Ould Ismail[1 2], Ghoncheh Amouzandeh[1 2], and Samuel Grant[1 2]
[1]Florida State University, Tallahassee, FL, [2]National High Magnetic Field Laboratory, Tallahassee, FL

Th-240
Electrical Conductivity Mapping at 21.1 T
Ghoncheh Amouzandeh[1 2] and Samuel Grant[1 2]
[1]Florida State University, Tallahassee, FL, [2]National High Magnetic Field Laboratory, Tallahassee, FL

Track: Biomedical Imaging and Optics Ultrasound Imaging

Th-241
Circle of Willis Model for Transcranial Doppler Ultrasound Training
Conner Beyersdorf[1], Benjamin Hage[1], Edward Truemper[1,2], and Greg Bashford[1,2]
[1]University of Nebraska, Lincoln, NE, [2]Children's Hospital & Medical Center, Omaha, NE

Th-242
Novel Transcranial Doppler Headband for Simultaneous Measurement of Middle Cerebral and Basilar Artery Hemodynamics
Marissa Nitz[1], Mohammed Alwatban[1], Benjamin Hage[1], Max Twedt[1], Jessie Patterson[1], Julie Honaker[1], Edward Truemper[1,2], and Greg Bashford[1,2]
[1]University of Nebraska, Lincoln, NE, [2]Children's Hospital & Medical Center, Omaha, NE

Th-243
Use of Shear Wave Ultrasound Vibrometry for Detection of Simulated Esophageal Malignancy in ex vivo Porcine Esophagi
Johnathon Aho[1], Ivan Nenadic[1], Sara Aristizabal Taborda[1], Dennis Wigle[1], Daniel Tschumperlin[1], and Matthew Urban[1]
[1]Mayo Clinic, Rochester, MN

Th-244
Classification of Breast Tumor Using Texture Analysis
Viksit Kumar[1], Max Menis[1], Adriana Gregory[1], Zeynettin Akkus[1], Mahdi Bayat[1], Mostafa Fatemi[1], and Azra Alizad[1]
[1]Mayo College of Medicine, Rochester, MN

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Th-245
Improved Contrast for High Frame Rate Imaging using Coherent Compounding Combined with Spatial Matched Filtering
Yang Lou[1] and Jesse Tong-Pin Yen[1]
[1]University of Southern California, Los Angeles, CA

Track: Cancer Technologies
Computational Modeling of Cancer Growth and Treatment

Th-246
Optimizing Tumor Contrast During Surgery: Ideal Imaging Agent Parameters for Paired-agent Methods.
Aakanksha Rangnekar[1], Kimberley Samkoe[2], and Kenneth Tichauer[1]
[1]Illinois Institute of Technology, Chicago, IL, [2]Dartmouth College, Hanover, NH

Th-247
A Stochastic Model for Predicting Path Persistence of Cell Migration in a 3D Polymer Matrix
Benjamin Yeoman[1] and Parag Katira[1]
[1]San Diego State University, San Diego, CA

Th-248
Characterization of the Electrical Properties of Surgically Resected Human Healthy and Malignant Pancreatic Tissue in Response to Irreversible Electroporation for Treatment of Pancreatic Cancer
Suyashree Bhonsle[1], Andrea Rolong[1], Ahmad Safaai-Jazi[1], Clancy Clark[2], and Rafael Davalos[1]
[1]Virginia Tech, Blacksburg, VA, [2]Wake Forest Baptist Baptist Medical Center, Blacksburg, VA

Tracks: Biomechanics, Cancer Technologies
Cancer Mechanobiology

Th-249
Inhibition of Endothelial Nitric Oxide Synthase Decreases Breast Cancer Cell MDA-MB-231 Adhesion to Intact Microvessels Under Physiological Flows
Lin Zhang[1], Min Zeng[1], and Bingmei Fu[1]
[1]The City College of the City University of New York, New York, NY

Th-250
Forces Generated by Single Cells During Three-Dimensional Growth
Jianyong Huang[1], Liangli Wang[1], and Fan Yuan[1]
[1]Duke University, Durham, NC

Th-251
The Effect of Cancer Cell Secreted Factors on Local and Global ECM Remodeling by Fibroblasts and Force-mediated YAP Nuclear Localization
Kyung Hwa Choi[1] and Taher Saif [1]
[1]University of Illinois at Urbana Champaign, Urbana, IL

Th-252
Loading-Induced Interstitital Fluid Flow Was More Heterogeneous Than Matrix Strains in a 3D Bone Metastasis Model
Boyuan Liu[1], Gary Chang[1], Gabriel Kornilowicz[1], Suyue Han[1], Yahya Modarres-Sadeghi[1], and Maureen Lynch[1]
[1]UMass-Amherst, Amherst, MA

Th-253
Viscoelastic Correction of Stiffness-Dependent Growth Rates of Cancerous Human Breast Cells
Olaoluwa Adeniba[1], Elise Corbin[1,2], and Rashid Bashir[1]
[1]University of Illinois, Urbana Champaign, Urbana, IL, [2]University of Pennsylvania, Philadelphia, PA

Th-254
Fluid Shear Stress Activates Epithelial-To-Mesenchymal Transition Genes in Luminal Breast Cancer Subtype
Ursula Triantafillu[1], Nikki Klaassen[2], Andrew Raddatz[1], and Yonghyun Kim[1]
[1]University of Alabama, Tuscaloosa, AL, [2]Kansas State University, Manhattan, KS

Th-255
Influence of Myoferlin on Cell Motility and Epithelial to Mesenchymal Transition in Eroltinib Resistant Lung Cancer Cells
YouJin Cho[1], Vasudha Shukla[2], Douglas Kniss[1,2], and Samir Ghadiali[1,2]
[1]The Ohio State University, Columbus, OH, [2]The Wexner Medical Center at The Ohio State University, Columbus, OH

Track: Cancer Technologies
Engineered Models of Cancer and the Tumor Microenvironment

Th-256
Substratum Stiffness Regulates Drug-induced Cancer Cell Dormancy
Alisya Anlas[1] and Celeste Nelson[1]
[1]Princeton University, Princeton, NJ

Th-257
Development of Lymph Node Construct for Investigating Prostate Cancer Metastasis
Amirhossein Hakamivala[1], Carlos Chicas[1], Jose Castro[1], Charls Wallace[1], Ashwin Nair[1], and Liping Tang[1]
[1]University of Texas at Arlington, Arlington, TX

Th-258
Microfluidic Device for Modeling the Invasive Tumor Microenvironment in Colon Carcinoma Three Dimensional Tumor Models
Eric Weaver[1 2], Amanda Hummon[1], and Pinar Zorlutuna[1]
[1]University of Notre Dame, Notre Dame, IN, [2]Harper Cancer Research Institute, Notre Dame, IN

Th-259
Rotational Collagen Alignment Using Acupuncture Needles Reveals Diversity in Contact Guidance
Jacob Nuhn[1], Juan Wang[1], and Ian Schneider[1]
[1]Iowa Sate University, Ames, IA

Th-260
3D Hydrogel-Based Microwell Arrays as a Tumor Microenvironment Model to Study Breast Cancer Growth
John Casey[1], Xiaoshan Yue[1], Trung Dung Nguyen[1], Victoria Zellmer[1], Siyuan Zhang[1], and Pinar Zorlutuna[1]
[1]University of Notre Dame, Notre Dame, IN

Th-261
A Novel Vascularized Three-Dimensional Tissue-Engineered Model for Breast Cancer Metastasis
Julia Jin[1], Rachel Akintayo[1], Ross Weinreb[1], Kerry Morrison[1], Xue Dong[1], Omer Kaymakcalan[1], Andrew Abadeer[1], Sarah Karinja[1], and Jason Spector[1]
[1]Weill Cornell Medical College, New York, NY

Th-262
Multiple Organ-on-a-Chip Platform for Metastasis Dynamic Studies
Julio Aleman[1 2] and Aleksander Skardal[1 3 4]
[1]Wake Forest Institute for Regenerative Medicine, Winston Salem, NC, [2]Wake Forest School of Medicine, Winston Salem, NC, [3]Virginia Tech-Wake Forest University School of Biomedical Engineering and Sciences, Winston Salem, NC, [4]Comprehensive Cancer Center of Wake Forest University School of Medicine, Winston Salem, NC

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Th-263
Implantable Bioengineered Microenvironments to Study Human Tumor-Immune Interaction
Ryan Carpenter[1] and Jungwoo Lee[1,2,3]
[1]University of Massachusetts Amherst, Amherst, MA, [2]Institute for Applied Life Sciences, Amherst, MA, [3]Molecular and Cellular Biology Graduate Program, Amherst, MA

Th-264
High-throughput Biomimetic 3D Models of Cancer Dormancy and Reactivation
Taraka Sai Pavan Grandhi[1], Thrimoorthy Potta[1], Indrani Deshpande[1], and Kaushal Rege[1]
[1]Arizona State University, Tempe, AZ

Th-265
Hydrogel-based *In Vitro* Glioblastoma Spheroid Models
Lindsay Hill[1], Anisa Ashraf[1], and Silviya Zustiak[1]
[1]Saint Louis University, St. Louis, MO

Th-266
A 3D Submucosal Microenvironment for Investigation of Fiber Alignment Induced Epithelial-to-Mesenchymal Transition in Colorectal Cancer Cells
Mahesh Devarasetty[1,2], Aleksander Skardal[1,2], and Shay Soker[1,2]
[1]Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC, [2]Virginia Tech-Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC

Th-267
Flow Response of Myeloid Derived Suppressor Cells in the Breast Tumor Microenvironment
Matthew Perez[1], Janet Cross[1], and Jennifer Munson[1]
[1]University of Virginia, Charlottesville, VA

Th-268
Three Dimensional (3D) High Density Tumor Microarray to Study the Influence of Stromal Cells on Cancer Invasion
Harpinder Saini[1], Karime Jocelyn Rosas Gomaz[2], Kiarash Rahmani[2], Robet Ros[2], and Mehdi Nikkhah[2]
[1]Arizona State University, tempe, AZ, [2]Arizona State University, Tempe, AZ

Th-269
High Throughput Oncology Drug Screening and Molecular Analysis Using Microprinted Tumor Spheroids
Pradip Shahi Thakuri[1], Stephanie Ham[1], Gary Luker[2], and Hossein Tavana[1]
[1]The University of Akron, Akron, OH, [2]University of Michigan, Ann Arbor, MI

Th-270
Bioinspired DNA-Histone Complex to Study Metastasis-Promoting Activity of Neutrophil Extracellular Traps
Priyan Weerappuli[1,2], Cameron Louttit[1], Taisuke Kojima[1], Midori Maeda[1], Cameron Yamanishi[1], Christopher Oliver[1], James Moon[1], and Shuichi Takayama[1]
[1]University of Michigan, Ann Arbor, MI, [2]Wayne State University, Detroit, MI

Th-271
Dissecting the Role of Bone Marrow-Derived Progenitor Cells in Pancreas Cancer
Rachel Edwards[1], Mackenzie Callaway[1], Taylor Heim[1], Mitchell Erickson[1], Marjorie Carlson[1], and Paolo Provenzano[1]
[1]University of Minnesota, Minneapolis, MN

Th-272
Comparative Analysis of Tumor Spheroid Generation Techniques for Differential In Vitro Drug Toxicity
Shreya Raghavan[1], Pooja Mehta[1], Eric Horst[1], Maria Ward[1], Katelyn Rowley[1], and Geeta Mehta[1]
[1]University of Michigan, Ann Arbor, MI

Th-273
Title: Characterization of Growth Factor Stimulated MDA-MB-231 Breast Cancer Cell Migration
Tanzila Islam[1]
[1]Washington State University, Pullman, WA

Th-274
Self-assembly of Tumor Spheroids in a Bioprinted Heterogeneous 3D Tumor Stroma Model
Tao Jiang[1], Jose Gil Munguia-Lopez[2], Joel Grant[1], Sanahan Vijayakumar[1], and Joseph Kinsella[1]
[1]McGill University, Montreal, QC, Canada, [2]Instituto Potosino de Investigación Científica y Tecnológica, A.C. (IPICyT), San Luis Potosi, Mexico

Th-275
Melanoma-Induced Endothelial Barrier Disruption via VE-cadherin Disassembly and Cell Contractility
Virginia Aragon-Sanabria[1], Esther Gomez[1], and Cheng Dong[1]
[1]The Pennsylvania State University, University Park, PA

Th-276
A Tumor-on-a-Chip Platform Recapitulating Hypoxic Microenvironments
Yuta Ando[1], Daniel Yen[1], Gabriel Rocha[1], and Keyue Shen[1]
[1]University of Southern California, Los Angeles, CA

Tracks: Cancer Technologies, Nano and Micro Technologies

Micro/Nano Tools in Cancer (Diagnostics, Treatment)

Th-277
A tumor-on-a-chip Platform for Screening Precision Medicine-driven Therapies
Steven Forsythe[1], Naren Mehta[1], Angela Alistar[2], Adam Hall[1], and Aleksander Skardal[1]
[1]Wake Forest School of Medicine, Winston-Salem, NC, [2]Wake Forest Baptist Medical Center, Winston-Salem, NC

Th-278
Multivalent Capture of Tumor Cells Using Microfluidic Devices
Anna Gams[1], Jinling Zhang[1], Weian Sheng[1], and Z. Hugh Fan[1]
[1]University of Florida, Gainesville, FL

Th-279
Smartphone-Compatible Magnetic Focusing for Detection of Circulating Tumor Cells
Ashwini Joshi[1], Reza Amin[1], Stephanie Knowlton[1], Alexander Hart[1], Bekir Yenilmez[1], Chung Yang[1], and Savas Tasoglu[1]
[1]University of Connecticut, Storrs, CT

Th-280
Photothermal Therapy Improves the Efficacy of a MEK Inhibitor in the Treatment of Malignant Peripheral Nerve Sheath Tumors
Elizabeth Sweeney[1], Rachel Burga[1], Chaoyang Li[1], Yuan Zhu[1], and Rohan Fernandes[1]
[1]Children's National Medical Center, Washington, DC

Th-281
Optical Surveillance of Multi-Organ Metastatic Lesions using Rare Earth Albumin Nanoprobes
Harini Kantamneni[1], Margot Zevon[1], Laura Higgins[1], Derek Adler[1], Sheng Yang[2], Xinyu Zhao[2], Mei chee Tan[2], Mark Pierce[1], Richard Riman[1], Vidya Ganapathy[1], Charles Roth[1], and Prabhas Moghe[1]
[1]Rutgers University, New Brunswick, NJ, [2]Singapore University of Technology and Design, Singapore, Singapore

Th-282
Rapid, Surface-marker Specific Isolation of Exosomes for the Diagnosis of Cancer, Using Parallelized, Magnetic nanopores
Jina Ko[1], Neha Bhagwat[1], Stephanie Yee[1], Erica Carpenter[1], Ben Stanger[1], and Dave Issadore[1]
[1]University of Pennsylvania, Philadelphia, PA

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Th-283
A Magnetic Micropore Chip for Rapid (< 1 hour) Unbiased Circulating Tumor Cell Isolation and In-situ RNA Analysis
Jina Ko[1], Neha Bhagwat[1], Stephanie Yee[1], Colleen Redlinger[1], Janae Romeo[1], Mark O'Hara[1], Arjun Raj[1], Erica Carpenter[1], Ben Stanger[1], and Dave Issadore[1]
[1]University of Pennsylvania, Philadelphia, PA

Th-284
Image-guided Radiosensitizing Polymersome Nanoparticles to Track and Treat Superficial Tumors
Murali Ramamoorthi[1], Sanaz Ebrahimi Samani[1], Simon Tran[1], and Joseph Kinsella[1]
[1]McGill University, Montreal, QC, Canada

Th-285
Detection of miRNA 21 and 141 in Prostate Cancer Blood Specimen using Nucleic Acid Sequence Based Amplification Lateral Flow Device
Babatunde James[1], Akinniyi Osuntoki[1], A.A. Oshodi[1], and O.A. Magbagbeola[1]
[1]University of Lagos, Lagos, Nigeria

Th-286
Population-based Detection of Cell Penetrating Peptide Uptake in a Microfluidic Droplet Trapping Array
Nora Safabakhsh[1], Seleipiri Charles[1], Manibarathi vaithiyanathan[1], Riad Elkhanoufi[1], and Adam Melvin[1]
[1]Louisiana State University, Baton Rouge, LA

Th-287
Quantification of Mammalian 5-Hydroxymethylcytosine Content by a Novel Solid-State Nanopore Assay
Osama Zahid[1] and Adam Hall[2]
[1]Wake Forest University School of Medicine, Winston-Salem, United States Minor Outlying Islands, [2]Wake Forest University School of Medicine, Winston-Salem, NC, United States Minor Outlying Islands

Th-288
Nanotextured Functionalized Substrates for Enhanced Identification of Metastatic Breast Cancer Cells
Nuzhat Mansur[1], Francisco J. Villarreal[1], Mohammad Raziul Hasan[1], Young-Tae Kim[1], and Samir M. Iqbal[1]
[1]University of Texas at Arlington, Arlington, TX

Th-289
Microfluidic Device for Motility and Biochemical Assessment in Parallel Drug Testing
Shiny Amala Priya Rajan[1], Parker Hambright[2], Aleksander Skardal[1 3 4], and Adam Hall[1 2 3 4]
[1]Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC, [2]Wake Forest University, Winston-Salem, NC, [3]Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC, [4]Comprehensive Cancer Center of Wake, Winston-Salem, NC

Th-290
Quantification of Cancer Cell Response to Therapy with Quantitative Phase Microscopy
Dian Huang[1], Diane N.H. Kim[1], Michael Teitell[1], and Thomas Zangle[1]
[1]University of California, Los Angeles, Los Angeles, CA

Th-291
Preparation of Size-Controlled 3D Glioma Spheroid Models
You Jung Kang[1], Do Young Kim[1], and Sheereen Majd[2]
[1]Pennsylvania State University, University Park, PA, [2]University of Houston, Houston, TX

Th-292
Portable and Cost-effective Surface Plasmon Resonance Biosensor for Lung Cancer Early Detection
Chang Liu[1], Zijian An[1], Maxwell Eisenbaum[1], Nan Zhang[1], Qiaoqiang Gan[1], and Yun Wu[1]
[1]State University of New York at Buffalo, Buffalo, NY

Th-293
A Microfluidic Device for Controlled Cell Placement and 1D Migration on Biomimetic Structures
Colin Hisey[1], Miguel Martínez-Calderón[2], Oihane Mitxelena-Iribarren[2], S.M. Olaizola[2], Maite Mujika[2], Sergio Arana[2], and Derek Hansford[1]
[1]The Ohio State University, Columbus, OH, [2]CEIT-IK4 & Tecnun, Donostia-San Sebastián, Spain

Th-294
Multifunctional Block Copolymer Nanoparticles for Diagnostics of Folate Receptor-Positive Tumors
Jiahui Zhang[1], Yiming Huang[2], and Eilaf Egap[1]
[1]Georgia Institute of Technology & Emory University, Atlanta, GA, [2]Emory University, Atlanta, GA

Th-295
Erythrocyte Membrane coated Bismuth Nanoparticles for Enhanced X-ray Radiation Therapy
Junjie Deng[1], Seng-Kah Ng[1], and Ming Su[1]
[1]Northeastern University, Boston, MA

Th-296
Cellular Uptake and Cytotoxicity Effects of SERS Tags for Use in Cancer Imaging
Manjari Bhamidipati[1] and Laura Fabris[1]
[1]Rutgers University, Piscataway, NJ

Th-297
Targeted Nanoparticle/Cancer Binding Mediated by Tumor Cell Over-eExpression of Sialic Acid Analogs.
Qiuyin Ren[1], Mohit Mathew[1], Randall Meyer[1], Kevin Yarema[1], and Jordan Green[1]
[1]Johns Hopkins University, Baltimore, MD

Th-298
Carboplatin-Complexed and cRGD-Conjugated Unimolecular Nanoparticles for Targeted Ovarian Cancer Therapy
Yuyuan Wang[1], Liwei Wang[1], Guojun Chen[1], and Sarah Gong[1]
[1]Univeristy of Wisconsin-Madison, Madison, WI

Th-299
Nano Size Effects for Magnetic Fluid Heating and Magnetic Resonance Imaging
Sheng Tong[1], Chris Quinto[2], and Gang Bao[1]
[1]Rice University, Houston, TX, [2]Georgia Institute of Technology, Atlanta, GA

Th-300
Microfluidic Devices for Mechanical Dissociation and Filtration of Tumor Tissues into Single Cells
Xiaolong Qiu[1], Trisha Westerhof[1], Marissa Pennell[1], Katrina Henrikson[1], Edward Nelson[1], and Jered Haun[1]
[1]University of California, Irvine, Irvine, CA

Th-301
Radiation Enhanced Anti-metastatic Treatment Of Cancer With Radiation
Yuting Qiu[1], Seng Kah Ng[1], and Ming Su[1]
[1]Northeastern University, Boston, MA

Track: Cardiovascular Engineering
Angiogenesis

Th-302
Quantitative Analysis of HUVEC Tube Formation in Culture Under An Oxygen Gradient
Brice Boudehent[1], Kosuke Tsukada[1], and Kanae Kadokura[1]
[1]Keio University, Yokohama, Japan

Th-303
Inhibition of Mechanosensitive microRNA-199a Therapeutically Enhances Perfusion Recovery and Collateral Arteriogenesis
Joshua Heuslein[1] and Richard Price[1]
[1]University of Virginia, Charlottesville, VA

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Th-304
Shear Stress Modulates Notch Signaling Mediated Vascular Repair
Kyung In Baek[1]
[1]University of California Los Angeles, Los Angeles, CA

Th-305
Nanoparticles for Protein Delivery And Gene Therapy: An Alternative Treatment For Hindlimb Ischemia
Linda Noukeu[1,2], Subhash Banerjee[2,3], Liping Tang[1,2], and Kytai Nguyen[1,2]
[1]The University of Texas at Arlington, Arlington, TX, [2]The University of Texas Southwestern Medical Center, Dallas, TX, Dallas, TX, [3]VA North Texas Health Care System at Dallas, Dallas, TX

Th-306
Three-Dimensional Microfluidic Platform to Study the Role of Stromal Cells in Tumor Angiogenesis
Supriya Nagaraju[1], Danh Truong [2], and Mehdi Nikkhah[1]
[1]Arizona State University, Tempe, AZ, [2]Arizona State University, tempe, AZ

Th-307
Alginate Hydrogels for Controlled Release of PRP
Negar Faramarzi[1], Iman Yazdi[2], Ali Tamayol[2], Leon Ptaszek[1], Afsoon Fallahi[2], Jeremy N Ruskin[3], and Ali Khademhosseini[2]
[1]Massachusetts General Hospital, Boston, MA, [2]Brigham and Women's Hospital, Cambridge, MA, [3]Massachusetts General Hospital, Cambridge, MA

Th-308
The Effect of Media Type On Nerve Presence In Cultured Microvascular Networks With Blood Vessels And Lymphatics
Nicholas Hodges[1], Ryan Barr[1], James Lane[1], and Walter Murfee[1]
[1]Tulane University, New Orleans, LA

Th-309
Alginate-Chitosan Hydrogels Provide a Sustained Gradient of S1P for Therapeutic Angiogenesis.
Priscilla Williams[1] and Eduardo Silva[1]
[1]University of California, Davis, Davis, CA

Th-310
Pro- and Anti-angiogenic VEGF-A Splice Variants Bind VEGFRs with Differential Affinities
Spencer Mamer[1], Ashley Wittenkeller[1], and P. I. Imoukhuede[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

Th-311
Engineering Oriented Microvessels on Aligned Extracellular Matrix Scaffold
Zichen Qian[1], Lijun Zhang[1], Mitch Tahtinen[1], Avik Ghosh[1], Qi Xing[1], and Feng Zhao[1]
[1]Michigan Technological University, Houghton, MI

Track: Cardiovascular Engineering
Blood and Bleeding Disorders

Th-312
Precise Gene Engineering and Drives for Hemoglobinopathies in Disparate, Minority Populations
Faisal Reza[1] and Peter M. Glazer[1]
[1]Yale University, New Haven, CT

Th-313
Effects of Shear on P-selectin Deposition in Microfluidic Channels
Nesreen Alsmadi[1,2], Eddie Shimp[3], Christopher Lewis[3], Kevin Lam[4 5], and David Schmidtke[1 2]
[1]University of Texas at Dallas, Richardson, TX, [2]University of Texas Southwestern, Dallas, TX,[3]University of Oklahoma, Norman, OK, [4]University of Texas at Dallas, Richardson, TX,[5]University of Texas Southwestern, Dallas, TX

Th-314
Role of Calcium During the Intra- and Extra- Cellular Cleavage of Von Willebrand Factor by ADAMTS13
Sriram Neelamegham[1], Shobhit Gogia[1], and Anju Kelkar[1]
[1]SUNY at Buffalo/ University at Buffalo, Buffalo, NY

Tracks: Cardiovascular Engineering, Biomechanics
Cardiovascular Biomechanics

Th-315
Patient-Specific Computational Modeling of the Left Atrium and Left Atrial Appendage: Application to Left Atrial Appendage Closure Devices
Shahnaz Javani[1], Peyman Azadani[2], and Ali Azadani[1]
[1]University of Denver, Denver, CO, [2]University of Utah School of Medicine, Salt Lake City, UT

Th-316
The Effect of Limb Flexion on Torsional Deformations and Stresses in the Human Femoropopliteal Artery
Anastasia Desyatova[1], William Poulson[1], Paul Deegan[1], Carol Lomneth[1], Jason MacTaggart[1], and Alexey Kamenskiy[1]
[1]University of Nebraska Medical Center, Omaha, NE

Th-317
Patient-Specific Computational Modeling of Hemodynamics in Pulmonary Arterial Hypertension
Byron A Zambrano[1], Nathan Mclean[1], Liang Zhong[2], Ju Le Tan[3], Alberto Figueroa[4], Lik Chuan Lee[1], and Seungik Baek [1]
[1]Michigan State University, East lansing, MI, [2]National Heart Centre Singapore, [3]Duke- NUS Medical School, Singapore, Singapore, [3]National Heart Centre Singapore, Singapore, Singapore, [4]University of Michigan, Ann Arbor, MI

Th-318
Atomic Force Microscopy and Carbon Fibre: A Novel Technique to Assess Multidimensional Mechanics of Single Isolated Cardiomyocytes
Aesha Desai[1], Remi Peyronnet[2,3], Peter Kohl[2,3], and Delphine Dean[1]
[1]Clemson University, Clemson, SC, [2]University Heart Centre Freiburg, Freiburg, Germany,[3]University of Freiburg, Freiburg, Germany

Th-319
Pre- and Post-Infarct Left Ventricular Myocardium: It's Compressible.
Eder Medina[1], Devesh Sahu[1], Joseph H. Gorman III[2], Robert C. Gorman[2], and Michael Sacks[1]
[1]University of Texas-Austin, Austin, TX, [2]University of Pennsylvania, Philadelphia, PA

Th-320
An In Vitro Assessment of Cardiac-Emboli Dynamics On Cerebral Perfusion for the Investigation of Vascular Occlusion In Acute Ischemic Stroke
Fiona Malone[1], Patrick Delassus[1], Eugene McCarthy[1], Paul Fahy[1], and Liam Morris[1]
[1]Galway Mayo Institute of Technology, Galway, Ireland

Th-321
Exercise Decreases Arterial Stiffness and Mediates Effects of A High-Fat, High-Sugar Diet
Julie Kohn[1], Jenny Ma[1], Shweta Modi[1], Julian Azar[1], Adeline Chen[1], Stephanie Cheng[1], and Cynthia Reinhart-King[1]
[1]Cornell University, Ithaca, NY

Th-322
Regulation of Human Cardiac Fibroblast Phenotype by Extracellular Matrix Elasticity
Nathan Cho[1], Shadi Razipour[1], and Megan McCain[1]
[1]University of Southern California, Los Angeles, CA

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Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:30 pm–3:15 pm

Th-323
Hemodynamics of Porcine Left Ventricles before and after Myocardial Infarction
Vivek Vasudevan[1], Low Jia Jun Adriel[1], Sarayu Parimal[2], Smita Sampath[2], Chih-Liang Chin[2], and Choon-Hwai Yap[1]
[1]National University of Singapore, Singapore, Singapore, [2]Merck Sharp & Dohme, Singapore, Singapore

Track: Cardiovascular Engineering
Computational Modeling in Cardiovascular Systems

Th-324
Modeling Blood Flow Characteristics in Axial Propeller-Pumps Used as Left Ventricular Assist Devices
Alexandrina Untaroiu[1], Mihai Bleiziffer[2], and Antonio Delgado[2]
[1]Virginia Tech, Blacksburg, VA, [2]Friedrich-Alexander University of Erlangen-Nuremberg, Erlangen, Germany

Th-325
Prolonged Blood Residence Time on Transcatheter Aortic Valve Leaflets as a Permissive Factor in Valve Thrombosis
Koohyar Vahidkhah[1], Mohammad Barakat[1], Mostafa Abbasi[1], Shahnaz Javani[1], Peyman Azadani[2], Anwar Tandar[2], Danny Dvir[3], and Ali Azadani[1]
[1]University of Denver, Denver, CO, [2]University of Utah School of Medicine, Salt Lake City, UT,[3]St Paul's Hospital, Vancouver, BC, Canada

Th-326
GPU-Accelerated Hemodynamics Simulations in Vessels with Deformable Walls
Mike Zhu[1], John Gounley[1], and Amanda Randles[1]
[1]Duke University, Durham, NC

Th-327
Laboratory Development of a Self-Powered FONTAN for Treatment of Congenital Heart Disease
Arka Das[1], Kristin Sverrisdottir[1], Janina Helwig[1], Gabriela Espinoza[1], Shanice Jones[1], Josean Ruiz[1], Eduardo Divo[1], Alan Kassab[2], and William Decampli[2]
[1]Embry Riddle Aeronautical University, Daytona Beach, FL, [2]University of Central Florida, Central Florida, FL

Th-328
3D Simulation of Aortic Valve Hemodynamics Using Coupled CFD and FEM Approaches via ANSYS
Armin Amindari[1], Kadir Kirkkopru[1], Magdi Yacoub[2], and Huseyin Cagatay Yalcin[3]
[1]Istanbul Technical University, istanbul, Turkey, [2]Imperial College, London, United Kingdom,[3]Qatar University, Doha, Qatar

Th-329
An Experimentally Validated Fluid-Structure Interaction Model of Left Ventricular Filling
Jae Ho Lee[1], Amneet Bhalla[1], Boyce Griffith[1], Milad Samaee[2], and Arvind Santhanakrishnan[2]
[1]University of North Carolina at Chapel Hill, Chapel Hill, NC, [2]Oklahoma State University, Stillwater, OK

Th-330
Longitudinal CFD Infers Mechanisms of Thrombus Formation and Abdominal Aortic Aneurysm Expansion
Byron Zambrano[1], Farhad Jaberi[1], and Seungik Baek [1]
[1]Michigan State University, East lansing, MI

Th-331
Reduced-Order Simulation of Electric Propagation in Realistic Cardiac Tissue Models
Duong Vu[1] and Kwong Ng[1]
[1]New Mexico State University, Las Cruces, NM

Th-332
Fluid Mechanics of the Human Fetal Right Ventricle at 20 Weeks Gestation
Hadi Wiputra[1], Chang Quan Lai[1], Guat Ling Lim[2], Joel Jia Wei Heng[1], Guo Lan[1], Sanah Merchant Soomar[2], Arijit Biswas[2], Citra Nurfarah Zaini Mattar[2], Hwa Liang Leo[1], and Choon Hwai Yap[1]
[1]National University of Singapore, Singapore, Singapore, [2]National University Health Systems, Singapore, Singapore

Th-333
Ebers, DaVinci and Euler: Can We Calculate the Pulse? Assumptions, Challenges and Opportunities in Modeling of Aortic Flow.
Hisham Sherif[1,2]
[1]Christiana Hospital, Newark, DE, [2]University of Delaware, Newark, DE

Th-334
Effects of Weight Function on Element Free Galerkin Simulation of Cardiac Propagation
Ian Sturdevant[1] and Kwong Ng[1]
[1]New Mexico State University, Las Cruces, NM

Th-335
Shear Stress Induced NO Production Model: Effect of Spatial Heterogeneity in enos and CCE Channels.
Jaimit Parikh[1], Kenneth Barbee[1], Donald Buerk[1], and Dov Jaron[1]
[1]Drexel University, Philadelphia, PA

Th-336
Vortex Analysis of Intra-Aneurismal Hemodynamics in Cerebral Aneurysms
Kevin Sunderland[1] and Jingfeng Jiang[1]
[1]Michigan Technological University, Houghton, MI

Th-337
A Computational Study of Role of Ascorbate in Improving Endothelial Dysfunction
Sheetal Joshi[1] and Mahendra Kavdia[1]
[1]Wayne State Univeristy, Detroit, MI

Th-338
Effects of Cardiac and Respiration Movements on Relative Phrenic Nerve Displacements
Maria Burbano[1], Lars Mattison[1], and Paul Iaizzo[1]
[1]University of Minnesota, Minneapolis, MN

Th-339
Effects of Turbulent Eddies on Hemolysis in a Centrifugal Blood Pump
Mesude Ozturk[1], Edgar O'Rear[1], Margaret Heck[1], Madison James[1], and Dimitrios Papavassiliou[1]
[1]University of Oklahoma, Norman, OK

Th-340
Modeling the Effects of Volatile Anesthetics on L-type Ca2+ Channels and Ca2+ Induced Ca2+ Release in Cardiac Myocytes
Neeraj Manhas[1], Guilherme Garcia[1], Venkat Pannala[1], Wai Meng Kwok[1], Amadou K.S Camara[1], and Ranjan K Dash [1]
[1]MCW, Milwaukee, WI

Th-341
Red Blood Cells Oxygen Transport in the Veto-placental Vasculature System of the Placenta
Zhenxing Wu[1] and Parisa Mirbod[1]
[1]Clarkson University, Potsdam, NY

Th-342
A Novel Computational Model of the Carotid Artery to Determine Fluid Dynamic Effects on Plaque Instability
Scott Hymel[1], Kristy Cosgroove[2], T. Cooper Woods[3], Hernan Bazan[2], and Damir Khismatullin[1]
[1]Tulane University, New Orleans, LA, [2]Ochsner Medical Center, New Orleans, LA, [3]Tulane Medical School, New Orleans, LA

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Th-343
Computational Analysis of Functional Mitral Regurgitation Repair Using Annuloplasty and Papillary Muscle Reposition
Thuy Pham[1], Fanwei Kong [1], Charles Primiano[2], John Elefteriades[3], and Wei Sun[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Hartford Hospital, Hartford, CT, [3]Yale Hospital, New Haven, CT

Th-344
A Mathematical Model for the Role of N2O3 in Enhancing Nitric Oxide Following Nitrite Infusion
Yien Liu[1], Donald Buerk[1], Kenneth Barbee[1], and Dov Jaron[1]
[1]Drexel University, Philadelphia, PA

Tracks: Cardiovascular Engineering, Biomechanics
Cardiovascular Biomechanics

Th-345
Attribute-rich Models of the Mitral Valve Leaflets for Patient-specific Simulations
Amir Khalighi[1], Andrew Drach[1], Robert C. Gorman[2], Joseph H. Gorman[2], and Michael S. Sacks[1]
[1]The University of Texas as Austin, Austin, TX, [2]University of Pennsylvania, Philadelphia, PA

Th-346
Stochastic Models of the Mitral Valve Chordae Tendineae for High-fidelity Simulations
Amir Khalighi[1], Andrew Drach[1], Robert C. Gorman[2], Joseph H. Gorman[2], and Michael S. Sacks[1]
[1]The University of Texas as Austin, Austin, TX, [2]University of Pennsylvania, Philadelphia, PA

Th-347
Impact of Chronic Pulmonary Embolization on Arterial Stiffening
Ashley Mulchrone[1], Omid Forouzan[1], Timothy Hacker[1], Dan Consigny[1], Melissa Bates[2], Heidi Kellihan[1], and Naomi Chesler[1]
[1]University of Wisconsin-Madison, Madison, WI, [2]University of Iowa, Iowa City, IA

Th-348
Head Torsion is Necessary for Cardiac S-looping
Ashok Ramasubramanian[1]
[1]Union College, Schenectady, NY

Th-349
Basement Membrane Remodeling Affects Contractile Mechanics to Increase Cardiac Function with Age
Ayla Sessions[1], Gaurav Kaushik[1], Sarah Parker[2], Koen Raedschelders[2], Rolf Bodmer[3], Jennifer E. Van Eyk[2], and Adam Engler[1]
[1]University of California, San Diego, La Jolla, CA, [2]Cedars-Sinai Heart Institute, Los Angeles, CA, [3]Sanford Burnham Prebys Medical Discovery Institute, La Jolla, CA

Th-350
Investigating The Viscoelastic Properties of Tricuspid Valve Leaflets and Chordae Tendineae
Sallie Lin[1], Katherine Copeland[1], Bryn Brazile[1], Heath Baskin[1], Raj Prabhu[1], Lakiesha Williams[1], Ge Zhang[2], and Jun Liao[1]
[1]Mississippi State University, Mississippi State, MS, [2]University of Akron, Akron, OH

Th-351
Modeling the Circumferential Changes of the Pulmonary Arteries in a PAH-Animal Model within the QLV Framework
Daniela Velez-Rendon[1], Erica Pursell[1], and Daniela Valdez-Jasso[1]
[1]University of Illinois at Chicago, Chicago, IL

Th-352
Right Ventricular Pressure-Volume Loop Analysis During Exercise in a Patient with PAH
Eric Dinges[1], Heather Shumaker[1], Alessandro Bellofiore[2], Jeanette Cheng[3], Sanjiv Shah[3], and Naomi Chesler[1]
[1]University of Wisconsin-Madison, Madison, WI, [2]San Jose State University, San Jose, CA,[3]Northwestern University, Chicago, IL

Th-353
Axial Contributions of the Left and Right Pulmonary Arteries in Pulmonary Arterial Hypertension
Erica Pursell[1], Daniela Velez-Rendon[1], and Daniela Valdez-Jasso[1]
[1]University of Illinois at Chicago, Chicago, IL

Th-354
Mechanical Analysis of Venous Valves for Pediatric Heart Valve Replacement
Erin Roberts[1 2], Peter Hammer[2], Breanna Piekarski[2], Joyce Wong[1], and Sitaram Emani[2]
[1]Boston University, Boston, MA, [2]Boston Children's Hospital, Boston, MA

Th-355
Numerical Simulation of Pulmonary Autograft Remodeling after Ross Procedure
Yue Xuan[1], Andrew Wisneski[1], Hesam Moghaddam[1], Elaine Tseng[1], and Liang Ge[1]
[1]University of California San Francisco, San Francisco, CA

Th-356
Topological and Geometrical Analyses of 3D Epicardial Elastin Fiber Network
Xiaodan Shi[1], Song Zhang[1], Katherine Copeland[1], Yue Liu[2], Huajian Gao[2], and Jun Liao[1]
[1]Mississippi State University, Mississippi State, MS, [2]Brown University, Providence, RI

Track: Cardiovascular Engineering
Heart Valve Structure, Function, and Disease

Th-357
Characterization of Three-dimensional Anisotropic Heart Valve Tissue Mechanical Properties at Various Rates of Deformation
Mostafa Abbasi[1], Mohammad Barakat[1], Koohyar Vahidkhah[1], and Ali Azadani[1]
[1]University of Denver, Denver, CO

Th-358
Overexpression of Catalase Impairs Aortic Valve Function and Accelerates Valvular Calcification in Mice
Caitlin Fermoyle[1], Carolyn Roos[1], Grace Casaclang-Verzosa[1], Bin Zhang[1], and Jordan Miller[1]
[1]Mayo Clinic, Rochester, MN

Th-359
Flow Field in Critical Aortic Valve Stenosis in Infants
Elnaz Pour Issa[1], Alexander T. Williams[1], Sana Nasim[1], Arash Moshkforoush[1], Denise Medina[1], Lilliam Valdes-Cruz[2], Steven Bibevski[2], Frank Scholl[2], Nikolaos Tsoukias[1], and Sharan Ramaswamy[1]
[1]Florida International University, Miami, FL, [2]Joe DiMaggio Children's Hospital, Hollywood, FL

Th-360
Time Profile Analysis of Conventional Plain Geometric Orifice Area and Edged Geometric Orifice Area for Artificial Heart Valves
Kwonsoo Chun[1], Samir Saidi[2], Daniel Harrington[2], and Henri Justino[3]
[1]Baylor College of Medicine, Houston, TX, [2]Rice University, Houston, TX, [3]Baylor College of Medicine, Houston, TX

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Th-361
A Comparative Study Between Transcatheter Aortic Valves and Surgical Bioprosthesis: Implications On Hemodynamics and Durability
Atieh Yousefi[1], Pablo Maureira[2], and Lakshmi Prasad Dasi[1]
[1]The Ohio State University, Columbus, OH, [2]CHU Nancy, Nancy, France

Th-362
Fluid Dynamics of Patient-Specific Stenotic Aortic Heart Valves
Ryan Oba[1], Amirsepehr Azimian[1], Atieh Yousefi Koupaei[1], Hoda Hatoum[1], Jennifer Dollery[1], Juan Crestanello[1], and Lakshmi Prasad Dasi[1]
[1]The Ohio State University, Columbus, OH

Th-363
Predictive Model to Assess Coronary Obstruction During TAVI Implantation
Amirsepehr Azimian[1], Jennifer Dollery[1], Juan Crestanello[1], and Lakshmi Prasad Dasi[1]
[1]The Ohio State University, Columbus, OH

Th-364
Static and Dynamic Culture Bioreactors for the Study of Hypoxia in Valve Disease
Matthew Sapp[1], Dragoslava Vekilov[1], Varun Krishnamurthy[1], Madeline Monroe[1], Saheba Bhatnagar[1], Christine Diaz[1], Rebecca Nikonowicz[1], and K. Jane Grande-Allen[1]
[1]Rice University, Houston, TX

Th-365
Biocompatibility Tests of a Carbothane Scaffold in Hybrid Tissue Engineered Heart Valves
Samuel Zuke[1], Hamed Alavi[1], and Arash Kheradvar[1]
[1]University of California, Irvine, Irvine, CA

Th-366
Histological Signatures of Splitting in Maternal Mitral Valve Chordae Tendineae
Brandon Scott[1] and Sarah Wells[2]
[1]Dalhousie University, Halifax, Canada, [2]Dalhousie University, Halifax, NS, Canada

Th-367
Causes for Myofibroblast Phenotype of Cells in Ventricularis Layer of a Porcine Aortic Valve Leaflet
Soumen Jana[1], Melissa Young[1], and Amir Lerman[1]
[1]Mayo Clinic, Rochester, MN

Track: Cellular and Molecular Bioengineering
Biomanufacturing

Th-368
Bio-manufacturing: Novel Platform for 3D Culture Models in Therapeutic Applications
John Bocinsky[1]
[1]Florida Institute of Technology, Melbourne, FL

Th-369
3D Laser Printing of Soybean Oil Epoxidized Acrylate for Highly Aligning Human Bone Marrow Mesenchymal Stem Cells
Shida Miao[1], Nthan, J Castro[1], Margaret Nowicki[1], Wei Zhu[1], José Almeida[1], Haitao Cui[1], Xuan Zhou[1], and Lijie Zhang[1]
[1]The George Washington University, Washington, DC

Th-370
Formulation of Biologics for Long Term Storage: Glass Transition Temperature and Formulation Stability of Trehalose-Phosphate Salt Blends in Humid Environments
Shima Ziaei[1], Babak Bagheri[1], and Gloria Elliott[1]
[1]University of North Carolina at Charlotte, Charlotte, NC

Track: Cellular and Molecular Bioengineering
Cell Adhesion and Interactions with the Extracellular Matrix

Th-371
***In Vitro* Validation of a Computational Model of Fibronectin Assembly**
Devin Mair[1], Thomas Petet[1], Lewis Scott[1], Seth Weinberg[1], and Christopher Lemmon[1]
[1]Virginia Commonwealth University, Richmond, VA

Th-372
Myofibroblast Differentiation in Response to Conformational Changes in Fibronectin's Integrin Binding Domain
Haylee Bachman[1], Gulcin Arslan[2], and Thomas Barker[3]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Ege University, Izmir, Turkey, [3]University of Virginia, Charlottesville, VA

Th-373
Non-Enzymatic Selective Osmotic Shock for The Isolation Of Human Islets
Kevin Enck[1,2], John McQuilling[1,2], Sittadjody Sivanandane[2], and Emmanuel Opara[1,2]
[1]Wake Forest University, Winston-Salem, NC, [2]WFIRM, Winston-Salem, NC

Th-374
Thiol-ene Hydrogels as a Tool for Studying Macrophage Phagocytic Activity and Infection
Kirsten Brink[1], Adam Navara[1], Paul de Figueiredo[1], and Daniel Alge[1]
[1]Texas A&M University, College Station, TX

Th-375
Mechanophenotype Influences Cellular Organization and Morphology
Manisha Kanthilal[1] and Eric Darling[1]
[1]Brown University, Providence, RI

Th-376
A Novel Approach of Simulating Directed Cell Migration towards the Stiffest ECM
Min-Cheol Kim[1], Rohan Abeyaratne[1], Roger D. Kamm[1], and H. Harry Asada[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

Th-377
Engineered Intestinal Microenvironments as Preclinical Drug Screening Platforms
Ruby Dewi[1], Rebecca DiMarco[1], and Sarah Heilshorn[1]
[1]Stanford University, Stanford, CA

Th-378
Band 3 Inhibitor as a Mediator of Erythrocyte Aggregation during the Onset of Thermal Burn Injury
Samantha WeberFishkin[1], Harrison Seidner[1], Geoffry Gunter[2], Semih Kuric[1], and Mary Frame[1]
[1]Stony Brook University, Stony Brook, NY, [2]Arete Associates, Los Angeles, CA

Th-379
Role of E-Cadherin Adhesion In The Assembly Of Nascent Desmosomes
Omer Shafraz [1], Sara Stahley [2], Andrew Kowalczyk[2], and Sanjeevi Sivasankar[1]
[1]Iowa State University, Ames, IA, [2]Emory University School of Medicine, Atlanta, GA

Th-380
Effects of G to A Mutagenesis on Murine Leukemia Virus Gag Oligomerization
Vikram Puram[1], Megan Roth[1], Jessica Martin[1], and Louis Mansky[1]
[1]Univeristy of Minnesota-Twin Cities, Minneapolis, MN

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Track: Cellular and Molecular Bioengineering
Cell Motility and Migration

Th-381
Automated Tracking of Wound Healing in Endothelial Cells Cultured on Different Substrates
Olga Chashchina[1], Valentin Laplaud[1], Elizabeth Antoine[1], and Abdul Barakat[1]
[1]Ecole Polytechnique, Palaiseau, France

Th-382
Altering Cell Behavior and Morphology With Highly Ordered Nanostructured Surfaces
Amy Mantz[1,2], Charles Rice[1,2], Derek Sekora[1,2], Eva Franke-Schubert[1,2], Mathias Schubert[1,2], and Angela Pannier[1,2]
[1]University of Nebraska-Lincoln, Lincoln, NE, [2]Center for Nanohybrid Functional Materials, Lincoln, NE

Th-383
Investigating Macrophage Plasticity and Migration in a 3D Wound Healing Model
Andrew Ford[1] and Padma Rajagopalan[1]
[1]Virginia Tech, Blacksburg, IA

Th-384
Characterization of Rho GDP- dissociation Inhibitor (RhoGDI) Function in Platelets
Anh Ngo[1], Owen McCarty[1], and Joseph Aslan[1]
[1]Oregon Health and Science University, Portland, OR

Th-385
Segregation of Mobile Nuclear Proteins Away from Chromatin When The Nucleus Is Constricted
Charlotte Pfeifer[1], Jerome Irianto[1], and Dennis Discher[1]
[1]University of Pennsylvania, Philadelphia, PA

Th-386
Cell Spreading Dynamics on Colloidal Thin Films
Daniel Chester[1] and Ashley Brown[1]
[1]North Carolina State University and the University of North Carolina at Chapel-Hill, Raleigh, NC

Th-387
Implications of Vascular Remodeling Effects on the Quantity and Quality of Monocyte Adhesion in Flow
Erin Edwards[1,2] and Susan Thomas[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Georgia Institute of Technology & Emory University, Atlanta, GA

Th-388
Genomic Variation in an Osteosarcoma Cell Line Caused by Pore Migration
Jerome Irianto[1], Charlotte R. Pfeifer[1], Yuntao Xia[1], Avathamsa Athirasala[1], Manu Tewari[1], Roger E. Greenberg[1], and Dennis E. Discher[1]
[1]University of Pennsylvania, Philadelphia, PA

Th-389
Insight in Constricted Cell Migration: Tension on the DNA and Inhibition of Nuclear Processes
Jerome Irianto[1], Charlotte R. Pfeifer[1], Yuntao Xia[1], Roger E. Greenberg[1], and Dennis E. Discher[1]
[1]University of Pennsylvania, Philadelphia, PA

Th-390
Expression of Mechanosensitive Channel of Large Conductance (MscL) in Mammalian Metastatic Cancer Cells for Study and Disruption of migration in narrow 3D confinements
Johanna Heureaux[1]
[1]University of Michigan Ann Arbor, Ann Arbor, MI

Th-391
Collagen Fibrils Attached to Flexible Substrates Reveal the Role of Mechanics on Contact Guidance
Juan Wang[1], Jacob Nuhn[1], Anuraag Boddupalli[1], Katie Bratlie [1], and Ian Schneider[1]
[1]Iowa State University, Ames, IA

Th-392
Osteoblast vs. MSC Migration under Fluid Shear
Brandon Riehl[1], Jeong Soon Lee[1], Ligyeom Ha[1], and Jung Yul Lim[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

Th-393
Regulation of Chlamydomonas Flagella and Ependymal Cell Motile Cilia by Ceramide-Mediated Translocation of GSK3
Kara Hardin[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Medical College of Georgia, Augusta, GA

Th-394
Cell Division Dictates Patterns of Emergent Collective Angular Motion in Multicellular Tissues
Michael Siedlik[1], Sriram Manivannan[1], Ioannis Kevrekidis[1], and Celeste Nelson[1]
[1]Princeton University, Princeton, NJ

Th-395
A Computational Model to Predict How Chemokine Binding to Extracellular Matrix and Cell Arrangements Influence 3D Gradients and Cancer Cell Migration
Phillip Spinosa[1], Kathy Luker[1], Gary Luker[1], and Jennifer Linderman[1]
[1]University of Michigan, Ann Arbor, MI

Th-396
A 3D Multiplex Platform for Single Cell Chemotaxis
Steven Roberts[1] and Nitin Agrawal[1]
[1]George Mason University, Fairfax, VA

Th-397
Mechanical Interactions between Cells and Substrate Regulate Collective Migration
Abdel-Rahman Hassan[1], Thomas Biel[1], and Taeyoon Kim[1]
[1]Purdue University, West Lafayette, IN

Th-398
Inhibition of a DNA Repair Kinase ATM Leads to Cell Death in 3D Migration Independent of DNA Damage
Jerome Irianto[1], Yuntao Xia[1], Charlotte Pfeifer[1], Jiazheng Ji[1], Roger A. Greenberg[1], and Dennis Discher[1]
[1]University of Pennsylvania, Philadelphia, PA

Track: Cellular and Molecular Bioengineering
Cellular and Molecular Immunoengineering

Th-399
Paired Heavy and Light Chain Antibody Repertoire Analysis to Inform Rational Vaccine Design
Brandon Dekosky[1]
[1]NIAID, Bethesda, MD

Th-400
Engorgement Leads to Qccumulation of Engineered Marrow Macrophages in a Rapid and Selective Clearance of Tumor Cells
Cory Alvey[1], Kyle Spinler[2], Jerome Irianto[1], Charlotte Pfeifer[1], Yuntao Xia[1], Sankyun cho[1], Dave Dingal[1], Jake Hsu[1], Manu Tewari[1], and Dennis Discher[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]University of California San Diego, La Jolla, CA

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Th-401
Microenvironemnt Stiffness as A Control Mechanism of Phagocytosis By Tumor-Associated Macrophages
Jake Hsu[1], Cory Alvey[1], Yuntao Xia[1], Jerome Irianto[1], and Dennis Discher[1]
[1]University of Pennsylvania, Philadelphia, PA

Th-402
Characterization of Human Stem Cell Derived Neutrophils
Laurel Hind[1], David Bennin[1], and Anna Huttenlocher[1]
[1]University of Wisconsin-Madison, Madison, WI

Th-403
A Microscale Testbed to Assay And Manufacture CAR T-Cell Immunotherapies
Nicole Piscopo[1], Kirsti Walker[1], Yasmin Alvarez-Garcia[1], Loren Stallcop[1], David Beebe[1], Christian Capitini[1], and Krishanu Saha[1]
[1]University of Wisconsin- Madison, Madison, WI

Th-404
Cellular Backpacking as a Novel Tool for Nanoimmunotherapy
Rachel Burga[1 2], Catherine Bollard[1 2], C. Russell Cruz[1 2], and Rohan Fernandes[1 2]
[1]Children's National Health System, Washington, DC, [2]George Washington University, Washington, DC

Th-405
Immunogenomic Engineering of a Plug-and-(dis)play Hybridoma Platform
Sai Reddy[1]
[1]ETH Zurich, Basel, Switzerland

Th-406
Investigating the Role of the Extracellular Matrix on Macrophage Phenotype Polarization
Thuy Luu[1] and Wendy Liu[1]
[1]University of California, Irvine, Irvine, CA

Track: Cellular and Molecular Bioengineering
Subcellular Biophysics

Th-407
Cell-Based FRET Biosensor For High-Throughput Screening Of Small Molecule Inhibitors Of Tumor Necrosis Factor Receptor 1 (TNFR1)
Chih Hung Lo[1], Andrew Lewis[1], Tory Schaaf[2], Benjamin Grant[3], Nagamani Vunnam[1], Prachi Bawaskar[2], David Thomas[2],4, and Jonathan Sachs[1]
[1]Department of Biomedical Engineering, University of Minnesota, Minneapolis, MN,[2]Department of Biochemistry, Molecular Biology and Biophysics, University of Minnesota, Minneapolis, MN, [3]Fluorescence Innovations Inc., Minneapolis, MN, 4Photonic Pharma LLC, Minneapolis, MN

Th-408
Unifying Cellular Bioelectromagnetic Phenomena: Dielectrophoresis and Electroporation
Daniel Sweeney[1], Temple Douglas[2], and Rafael Davalos[2]
[1]Virginia Tech, Blacksburg, VA, [2]Virginia Polytechnic Institute and State University, Blacksburg, VA

Th-409
Cytoskeleton Mediated Alterations in Nuclear Morphology And Dimension
Dong-Hwee Kim[1,2], Bo Li[2,3], Jung-Won Park[1], Denis Wirtz[2], and Sean X. Sun[2]
[1]Korea University, Seoul, Korea, Republic of, [2]Johns Hopkins University, Baltimore, MD,[3]Tsinghua University, Beijing, China, People's Republic of

Th-410
Stratum Corneum Lipid Composition Alters the Heterogeneous Growth of *Staphylococcus Aureus*
Joseph Cleary[1], Minyoung Kim[1], Claudia Marques[1], and Guy German[1]
[1]Binghamton University, Binghamton, NY

Th-411
Muc1-induced Microvesicle Shedding in Breast Cancer: A Biophysical Phenomenon
LaDeidra Monet Roberts[1], Carolyn Shurer[1], Michael Hollander[1], and Matthew Paszek[1]
[1]Cornell University, Ithaca, NY

Th-412
Single-Molecule Imaging of Cytoplasmic Targets in Living Cells with Quantum Dots
Mohammad Zahid[1], Liang Ma[1], Sung Jun Lim[1], and Andrew Smith[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

Th-413
Spatial Characterization of Moisture Content in Desiccated Samples using Raman Microspectroscopy
Quinn Osgood[1], Jason Solocinski[1], Mian Wang[1], and Nilay Chakraborty[1]
[1]University of Michigan Dearborn, Dearborn, MI

Th-414
Scaffold Protein IQGAP1 Orchestrates Protein Trafficking and Membrane Processing in Epithelial Cells
Volker Schweikhard[1], Edward Samson[1], Jan Zimak[1], Tyler McLaughlin[1], David Tsao[1], and Michael Diehl[1]
[1]Rice University, Houston, TX

Th-415
Modeling Nanoscale Dynamics of Molecular Motors
Janak Jethva[1], Keith Mickolajczyk[1], John Fricks[1], and William Hancock[2]
[1]Pennsylvania State University, University Park, PA, [2]Penn State University, University Park, PA

Track: Cellular and Molecular Bioengineering
Cellular and Molecular Bioengineering

Th-416
Changes in Triglyceride-Rich Lipoprotein Composition in Response to a High-Fat Meal Promote Endothelial Inflammation in Hypertriglyceridemic Subjects
Anita Rajamani[1], Andrea Fernandez[1], Ying Wang [1], Chongxiu Sun[1], Scott Simon[1], and Anthony Passerini[1]
[1]University of California, Davis, Davis, CA

Th-417
A Novel Pulsing Protocol Based on Cancellation of Cancellation Effect
Enbo Yang[1], Chunrong Zhou[1], Andrei Pakhomov[1], and Shu Xiao[1]
[1]Old Dominion University, Norfolk, VA

Th-418
Protein Characterization of Formalin-Fixed, Fluorescence-Activated Sorted Cell Subpopulations
Jessica Sadick[1], Molly Boutin[1], Diane Hoffman-Kim[1], and Eric Darling[1]
[1]Brown University, Providence, RI

Th-419
Ice Formation Characterstics during Cryopreservation with Trehalose as an Addative
Jason Solocinski[1], Quinn Osgood[1], Mian Wang[1], and Nilay Chakraborty[1]
[1]University of Michigan Dearborn, Dearborn, MI

Thursday, October 6 | 9:30 am–5:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:30 pm–3:15 pm

Th-420
Estimation of Intracellular pH at Low Temperatures: Implications in Cryobiology
Eric Rosiek[1], Manal Makki[1], Quinn Osgood[1], Ben Li[1], and Nilay Chakraborty[1]
[1]University of Michigan Dearborn, Dearborn, MI

Th-421
Combinatorial Antimicrobial Efficacy of Non-thermal Jet Plasma and Chlorhexidine (CHX) Digluconate on Pseudomonas Aeruginosa Biofilm
Tripti Thapa[1] and Halim Ayan[1]
[1]University of Toledo, Toledo, OH

Th-422
Simulation on Calcium Inflow via Pathways of Cell Membrane in Response to 600ns Electrical Pulse
Wenfei Bo[1], Hairong Yin[1], Jingchao Tang[1], and Yubin Gong[1]
[1]University of Electronic Science and Technology of China, Chengdu, China, People's Republic of

Th-423
Quantifying Macrophage Protease Secretion Reveals Variability in Rates, Production, and Stability
Ken Brandon[1,2], W. Andrew Shockey[3], and Manu O. Platt[3]
[1]Oakwood University, Huntsville, AL, [2]University of Alabama-Huntsville, Huntsville, AL,[3]Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech and Emory University, Atlanta, GA

Track: Device Technologies and Biomedical Robotics
Affordable Health Devices and Frugal Innovation

Th-424
Phone's Application as Seizures Alarm for Epilepsy Patients
Daniel Jimenez-Mendoza[1], Jose de Jesus Bernal-Alvarado[1], Ma. Isabel Delgadillo-Holtfort[1], and Jose Marco Balleza Ordaz[1]
[1]Universidad de Guanajuato Campus Leon, Leon, Guanajuato, Mexico

Th-425
Development of Low-cost Impediometric Biosensors for Clinical Diagnostics and Water Testing
Jacquiline Rohde[1], Andrew Cobb[1], Ryan Gilbert[1], Zachary Hawks[1], John DesJardins[1], and Delphine Dean[1]
[1]Clemson University, Clemson, SC

Th-426
An Automated Selective Condenser for Collection of Glucose in Exhaled Breath
Divya Tankasala[1], Laura Jamicich[1], Shubhankar Takle[1], Ann Rundell[1], and Jacqueline Linnes[1]
[1]Purdue University, West Lafayette, IN

Th-427
A Smartphone Device and App for Self-Monitoring Blood Alcohol Content (BAC)
Alex Hille[1], Vivian Ramirez[1], John Gendi[1], Marvin Packer[2], and Herbert Voigt[1]
[1]Boston University, Boston, MA, [2]Harvard Vanguard Medical Associates Atrius, Boston, MA

Th-428
Design and Testing of a Novel Anesthetic Gas Analyzer for use in Low-Resource Areas
Patrick Kolbay[1], Joseph Orr[1], and Kai Kück[1]
[1]University of Utah, Salt Lake City, UT

Th-429
Behavioral Analysis Automation for Music and Emotion-based Robotic Therapy for Children with ASD
Rachael Bevill[1], Srineil Nizambad[1], Chung Hyuk Park[1], Myounghoon Jeon[2], and Ayanna Howard[3]
[1]The George Washington University, Washington, DC, [2]Michigan Technological University, Houghton, MI, [3]Georgia Institute of Technology, Atlanta, GA

Track: Device Technologies and Biomedical Robotics
Biosensors

Th-430
Establishing The Basis for Quantitative Spark-Induced Breakdown Spectroscopy (SIBS) Toxin Detection Technology
Carmen Gondhaleakar[1], Eva Biela[1], Bartek Rajwa[1], Euiwon Bae[1], Valery Patsekin[1], Jennifer Sturgis[1], Huisung Kim[1], Iyll-Joon Doh[1], Larry Stanker[2], and Paul Robinson[1]
[1]Purdue University, West Lafayette, IN, [2]USDA, ARS, Albany, CA

Th-431
Electrochemical Detection of *Pseudomonas aeruginosa* in Polymicrobial Environments
Clara Romero Santiveri[1], Hunter Sismaet[1], and Edgar Goluch[1]
[1]Northeastern University, Boston, MA

Th-432
Point of Care Multimarker Sensor for Trauma
David Probst[1] and Carissa Henricksen[2]
[1]Arizona State University, Chandler, AZ, [2]Arizona State University, Tempe, AZ

Th-433
Design of a Micro-interdigitated Electrode Array for High-throughput Biomarker Quantification
Vidura Jayasooriya[1] and Dharmakeerthi Nawarathna[1]
[1]North Dakota State University, Fargo, ND

Th-434
Progress Toward an Optical Cavity Based Sensor with a Chained Differential Detection through Refractive Index Measurements
Seunghyun Kim[1], Donggee Rho[1], and Jess Lichtenberg[1]
[1]LeTourneau University, Longview, TX

Th-435
A Miniaturized LTCC-based pH Sensing System
Houssem Eddine Amor[1,2], Paul Marsh[1], Achraf Ben Amar[2], Ammar Kouki[2], and HUNG CAO[1]
[1]University of Washington Bothell, Seattle, WA, [2]École de technologie supérieure, Montreal, QC, Canada

Th-436
Rapid Antimicrobial Susceptibility Testing at the Single Cell Level
Hui Li[1], Yi Lu[1], and Pak Wong[1]
[1]The Pennsylvania State University, University Park, PA

Th-437
Electrochemical Detection of Clinical *Pseudomonas aeruginosa* Isolates using AC Voltammetry
Hunter Sismaet[1], Elizabeth Hirsch[1], and Edgar Goluch[1]
[1]Northeastern University, Boston, MA

Th-438
Novel Measurement of Intra-Abdominal Pressure in Women during Daily Activities and Exercise
Johanna de Gennaro[1], Stefan Niederauer[1], Tanner Coleman[1], Tomasz Petelenz[1], and Robert Hitchcock[1]
[1]University of Utah, Salt Lake City, UT

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Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:30 pm–3:15 pm

Th-439
An Ultrasensitive Biosensor for Rapid Viral Pathogen Detection
Lei Wang[1], Milena Veselinovic[1], Lang Yang[1], Brian Geiss[1], Tom Chen[1], and David Dandy[1]
[1]Colorado State University, Fort Collins, CO

Th-440
DNA Detection Based on Nanoplasmon-Enhanced Molecular Beacons
Akash Kannegulla[1], Ye Liu[1], and Li-Jing Cheng[1]
[1]Oregon State University, Corvallis, OR

Th-441
Highly Sensitive Nucleic Acid Detection Using Quantum Dot-Fullerene Based Molecular Beacons
Ye Liu[1], Akash Kannegulla[1], and Li-Jing Cheng[1]
[1]Oregon State University, Corvallis, OR

Th-442
Salmonella Detection Using Magnetic Sensors: High Sensitivity and High Throughput
Maria Torija[1], Kevin Dorfman[2], Lorena Maldonado-Camargo[3], Carlos Rinaldi[3], Julian Sheats[2], Srinand Sreevatsan4, Mark Tondra5, and Peter Mueller[1]
[1]NVE Corporation, Eden Prairie, MN, [2]University of Minnesota, Minneapolis, MN, [3]University of Florida, Gainsville, FL, 4University of Minnesota, St. Paul, MN, 5Diagnostic Biosensors, St. Paul, MN

Th-443
Directed Irradiation Synthesis On Surface Topography and Biosensing Properties Of TiO2-coated Photonic Crystal (PC) Fluorescence Biosensors
Ming Kit Cheng[1], Akshath Shetty[1], and Jean Allain[1]
[1]University of Illinois Urbana Champaign, Urbana, IL

Th-444
Acquisition of Inter-Abdominal Pressure as a Predictor of Pelvic Floor Disorder in Post-Partum Women
Stefan Niederauer[1], Johanna de Gennaro[1], Robert Hitchcock[1], and Tomasz Petelenz[1]
[1]University of Utah, Salt Lake City, UT

Track: Device Technologies and Biomedical Robotics
Medical Device Development and Computational Models

Th-445
The Effect of Distribution of Facial Surface Points on Target Registration Error in Contour-based Registration for Neuronavigation
Hyun-Joon Park[1], Teayong Sim[1], Hakje Yoo[1], Ahnryul Choi[1], Ki-Young Shin[2], and Joung Hwan Mun[1]
[1]Sungkyunkwan University, Suwon, Korea, Republic of, [2]Korea Electro-technology Research Institute, Ansan, Korea, Republic of

Th-446
Hand-Held Device for the Location of Sentinel Node Biopsy Markers in Breast Cancer Surgery
Cody Jordan[1], Joseph Wilson[1], Scott Slaney[1], Lucas Schmidt[1], Vipul Raikar[1], Melissa McCullough[1], Nancy Demore[2], and Delphine Dean[1]
[1]Clemson University, Clemson, SC
[2]Medical University of South Carolina, Charleston, SC

Th-447
Fingerprinting Technology Measuring Stimulated Sweat Secretion Rate to Diagnose Cystic Fibrosis
Yu-Hao Peng[1], Danieli B Salinas[2], and Jean-Michel Maarek[1]
[1]University of Southern California, Los Angeles, CA, [2]Children Hospital Los Angeles, Los Angeles, CA

Th-448
Improving Poly(p-dioxanone) Strength Retention in a Novel Implantable Wound Closure Device
Jesse Butch[1], Daniel Mazzucco[1], and Julian Trowbridge[1]
[1]ZSX Medical, Philadelphia, PA

Th-449
Lab-on-a-chip Self-assembly of Fluorescent Peptide-based Nanoparticles for Blood-based Diagnosis of Alzheimer's Disease
Leming Sun[1], Zhen Fan[1], Tao Yue[1], Jesse Fine[1], Eun-Mee Lee[1], Rebecca Davis[2], Jeff Kuret[3], Douglas Scharre[2], and Mingjun Zhang[1]
[1]Department of Biomedical Engineering, College of Engineering, The Ohio State University, Columbus, OH, [2]Department of Neurology, Division of Cognitive Neurology, The Ohio State University Wexner Medical Center, Columbus, OH, [3]Department of Molecular and Cellular Biochemistry, The Ohio State University College of Medicine, Columbus, OH

Th-450
First Pass Metabolism of Acetaminophen on a Modular, Low Cost, Two Tissue Body-on-a-chip Platform
Yang Yang[1] and Mandy Esch[1]
[1]Syracuse University, Syracuse, NY

Tracks: Device Technologies and Biomedical Robotics, Orthopaedic and Rehabilitation Engineering
Musculoskeletal Robotics and Biomechatronics in Rehabilitation

Th-451
Designing A Rapidly Responding Actuation for Medical Robotic Exoskeleton Joints.
Yousef Alshahrani[1], Chaoyan Chen[1], Yang Zhou[1], Pan Tian[2], Jie Hu[2], Jin Qi[2], John Cavanaugh[1], and Mark Ming-Cheng Cheng[1]
[1]Wayne State University, Detroit, MI, [2]Shanghai Jiao Tong University, Shanghai, China, People's Republic of

Track: Device Technologies and Biomedical Robotics
Prosthetics and Physical-Assist Devices

Th-452
The Development of a Tongue-Controlled Access Device for Power Mobility
Michelle Kern[1], James Sharp[1], Alissa Smith[1], Lisa Kenyon[1], and John Farris[1]
[1]Grand Valley State University, Grand Rapids, MI

Th-453
Development Of A Novel 3D Printed, Low Cost Bionic Hand
Jonah Robison[1], Andrew Sedler[1], Chris Hicks[1], Megan Sech[1], Ben Bryla[1], and Melissa McCullough[1]
[1]Clemson University, Clemson, SC

Th-454
Evaluating Exoskeleton Assistance using Instantaneous Metabolic Cost Measures
Richard Nuckols[1], Tracy Giest[1], and Gregory Sawicki[1]
[1]UNC Chapel Hill and NC State University, Raleigh, NC

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Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:30 pm–3:15 pm

Track: Translational Biomedical Engineering
Models, Phantoms and Surrogates for Device Validation

Th-455
Computational and Experimental Models of Prosthetic Heart Valve Dynamics
Boyce Griffith[1], Ebrahim Kolahdouz[1], Amneet Bhalla[1], Thomas Caranasos[2], and Lawrence Scotten[3]
[1]University of North Carolina at Chapel Hill, Chapel Hill, NC, [2]University of North Carolina at Chapel Hill School of Medicine, Chapel Hill, NC, [3]VSI, Victoria, BC, Canada

Th-456
In Vitro System for Testing Optical Heart Rate Monitors
Kevin Bellows[1,2], Cody Lewis[2], Richard Horner[2], Lee Hudson[2], John Hanks[1,2], and Gerard Coté[1,2]
[1]Texas A&M University, College Station, TX, [2]Texas A&M Engineering Experiment Station, College Station, TX

Th-457
Creating a Validation Dataset for Intracranial Pressure Monitoring Metrics using Gaussian Fitting
Maria Qadri[1], Shabbar Danish[2], and William Craelius[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ, [2]Rutgers-Robert Wood Johnson Medical School, New Brunswick, NJ

Th-458
Dynamic Myocardial Phantom for the Calibration of Multimodal Imaging Protocols and Modeling Methods
Hiba Shahid[1], Joshua Au[1], Nathan Cornwell[1], Viraat Goel[1], Pierce Hadley[1], Alexander Hasnain[1], Jacob Haynie[1], Boeun Hwang[1], Joshua Lew[1], Bara Saadah[1], Teresa Yang[1], Hugh Yeh[1], Brad Sutton[1,2], and Lawrence W. Dobrucki[1,2]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Beckman Institute of Advanced Science and Technology, Urbana, IL

Th-459
In Vitro Neurovascular Model Development for Accurate Biomaterials Testing and Characterization
Anne Marie Holter[1], Timothy Becker[1], Kayla Goodrich[1], and Connor Gonzalez[1]
[1]Northern Arizona University, Flagstaff, AZ

Track: Translational Biomedical Engineering
Translational Biomedical Engineering

Th-460
Upregulation of IRF5 In Inflammatory Monocytes Promotes Phenotype Switching During Recruitment On Aortic Endothelium.
Alfredo Hernandez[1]
[1]UC Davis, Davis, CA

Th-461
Synergistic Ablation of Tumors *In Vivo* by High-Intensity Focused Ultrasound and Ethanol
Hakm Murad[1], Gray Halliburton[1], Daishen Luo[1], and Damir Khismatullin[1]
[1]Tulane University, New Orleans, LA

Track: Biomaterials
Integration of Biomaterials and Devices

Th-462
Biocompatibility and Adhesion Testing of Hydroxyapatite Coatings Deposited By Sol-gel Dip Coating
Alexander DeHaan[1], Maritza Fuerte[1], and Guna Selvaduray[1]
[1]San Jose State University, San Jose, CA

Th-463
Thermo-Mechanical Properties and Actuation Profiles of Shape Memory Polyurethane-urea Foams
Alexandra Easley[1], Duncan Maitland[1], and Sayyeda M. Hasan[1]
[1]Texas A&M University, College Station, TX

Th-464
Towards Fast & Gentle Cell Isolation: Integrating Microfluidics & Secondary Anchor Targeted Cell Release
Ali Ansari[1] and P. Imoukhuede[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

Th-465
Laser Irradiation of Mg Alloys: Reduced Kinetics and Enhanced Biocompatibility
David Florian[1], Michael Melia[1], Fritz Steuer[1], John Scully[1], and James Fitz-Gerald[1]
[1]University of Virginia, Charlottesville, VA

Th-466
Anti-inflammatory Coatings of Hernia Repair Meshes
Dmitry Gil[1], James Rex[1], William Cobb[2], and Alexey Vertegel[1]
[1]Clemson University, Clemson, SC, [2]Greenville Health System, Greenville, SC

Th-467
Microstructured Titanium Surfaces Mediate Markers of Bone Modelling
Ethan M. Lotz[1], Michael B. Berger[1], Zvi Schwartz[1], and Barbara D. Boyan[1]
[1]Virginia Commonwealth University, Richmond, VA

Th-468
Synthesis and Characterization of Biostable Shape Memory Polymer Foam Scaffolds
Grace Fletcher[1], Sayyeda Hasan[1], Andrew Weems[1], Mary Beth Browning Monroe[1], Alexandra Easley[1], and Duncan Maitland[1]
[1]Texas A&M University, College Station, TX

Th-469
Importance of Macrophage Activation in Inflammation and Stem Cell Recruitment Following Biomaterial Implantation
Kelly Hotchkiss[1], Sarah Tracy[1], and Rene Olivares-Navarrete[1]
[1]Virginia Commonwealth University, Richmond, VA

Th-470
A Gelatin-Based Adhesive Combined with Polydopamine Coating to Enhance Tissue Integration of Medical Implant
Thanh Dinh[1] and Kyung Jae Jeong[1]
[1]University of New Hampshire, Durham, NH

Th-471
Surface Patterning of an Alkylsilane Coated Layer to Control Corrosion Rate of Magnesium Devices
Laura Fulton[1], Avinash Patil[1], and Elia Beniash[1,2,3]
[1]University of Pittsburgh, Pittsburgh, PA, [2]University of Pittsburgh Department of Oral Biology, Pittsburgh, PA, [3]McGowan Institute for Regenerative Medicine, Pittsburgh, PA

Th-472
(Moved to Oral Saturday 3-3)

Thursday, October 6 | 9:30 am–5:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:30 pm–3:15 pm

Th-473
Osteoclast Mediated Bone Resorption is Attenuated by Modified Titanium Surfaces
Michael Berger[1], Ethan Lotz[1], Sharon Hyzy[1], Barbara Boyan[1 2], and Zvi Schwartz[1 3]
[1]Virginia Commonwealth University, Richmond, VA, [2]Georgia Institute of Technology, Atlanta, GA, [3]University of Texas Health Science Center at San Antonio, San Antonio, TX

Th-474
Novel Hydroxyapatite Coatings Reduced Degradation of Magnesium Implants and Promoted Bone Marrow Mesenchymal Stem Cell Adhesion.
Qiaomu Tian[1], Laura Rivera-Castaneda[1], Arash Aslani[2], and Huinan Liu[1 3]
[1]University of California Riverside, Riverside, CA, [2]N[2] Biomedical LLC, Bedford, MA,[3]University of California Riverside, Rivside, CA

Th-475
Effects of Sterilization on Shape Memory Polyurethane Embolic Foam Devices
Rachael Muschalek[1], Landon Nash[1], Ryan Jones[1], and Duncan Maitland[1]
[1]Texas A&M University, College Station, TX

Th-476
Towards a Bioselective Surface for Treatment of Sepsis in a Hemoperfusion Blood Cleansing Device
Ramya Raman[1], John Lahman[1], Bonan Yu[1], Adam Higgins[1], and Karl Schilke[1]
[1]Oregon State University, Corvallis, OR

Th-477
Preliminary SEM and EDS Analysis of Novel Surface Modification After 1000 Cycles of Wear Testing
Sarah Helms[1], Golnaz Najaf Tomaraei[1], Marian Kennedy[1], and John DesJardins[1]
[1]Clemson University, Clemson, SC

Th-478
Comparison of Large-pore And Small-pore Polypropylene Surgical Mesh: Structural, Mechanical and Histological Analysis
Xinyue Lu[1], Brittney Cotton[1], Megan Hanschke[1], Todd Heniford[2], and Melinda Harman[1]
[1]Clemson University, Clemson, SC, [2]Carolinas HealthCare System, Charlotte, NC

Track: Drug Delivery
Targeted or Responsive Delivery Systems

Th-482
A Novel Platform to Study Particle Deposition in the Lung
Adam Sonnenberg[1], Elizabeth Bartolák-Suki[1], and Béla Suki[1]
[1]Boston University, Boston, MA

Th-484
Study of SN-38 Distribution from Injectable Polymeric Depots in Tumor-Bearing Mice
Chawan Manaspon[1] and Norased Nasongkla[1]
[1]Mahidol University, Nakorn Pathom, Thailand

Th-485
Multifunctional Nanoparticles for Specific Neuroblastoma Targeting
Daniel Quevedo[1 2], Sahar Rahmani[1 2], Artak Shahnas[2], Asish Misra[1], Domenic Kratzer[2], Melissa Cadena[1], Hakan Durmaz[3], and Joerg Lahann[1 2]
[1]University of Michigan, Ann Arbor, MI, [2]Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany, [3]Istanbul Technical University, Istanbul, Turkey

Th-486
Nanoparticle Targeting During *Ex Vivo* Perfusion of Human Kidney
Gregory Tietjen[1], Sarah Hosgood[2], Nancy Kirkiles-Smith[1], Jiajia Cui[1], Eleanor Bolton[2], John Bradley[2], Kourosh Saeb-Parsy[2], J. A. Bradley[2], M. L. Nicholson[2], Jordan Pober[1], and W. Mark Saltzman[1]
[1]Yale University, New Haven, CT, [2]University of Cambridge, Cambridge, United Kingdom

Th-487
Tumor-Targeting Upconversion-Nanoparticle-Based Unimolecular Micelles for Simultaneous Chemotherapy, Photodynamic Therapy, and Fluorescence Imaging for Neuroendocrine Cancer Therapy
Guojun Chen[1], Renata Jaskula-Sztul[2], April Harrison[3], Corinne Vokoun[1], Liwei Wang[3], Kevin Eliceiri[3], Herbert Chen[2], and Shaoqin Gong[3]
[1]UW-Madison, Madison, WI, [2]University of Alabama at Birmingham, Birmingham, AL,[3]University of Wisconsin-Madison, Madison, WI

Th-488
Chemotherapy of Metastatic Breast Cancer Cells during the Blood-circulating Process by CEACAM6-targeting Albumin Nanoparticles
Hohyeon Lee[1], Hyounkoo Han[1], Minji Lee[1], and Hyuncheol Kim[1,2]
[1]Department of Chemical and Biomolecular Engineering, Sogang University, [3 5] Baekbeom-ro, Mapo-gu, Seoul, Korea, Republic of, [2]Interdisciplinary program of Integrated Biotechnology, Sogang University, [3 5] Baekbeom-ro, Mapo-gu, Seoul, Korea, Republic of

Th-489
Fluid Dynamic Modeling of Intranasal Drug Delivery to the Nasopharyngeal Orifice of the Eustachian Tube
Jennifer Malik[1] and Samir Ghadiali[1]
[1]The Ohio State University, Columbus, OH

Th-490
Adaptable Griffiths in Delivery from Polymer Blend Electrospun Fibers
Jinghua Duan[1] and Jill Steinbach-Rankins[1]
[1]University of Louisville, Louisville, KY

Th-491
One-step Versus Two-step Conjugation of Lysine-based ADCs: Comparison Of Payload Loading, Distribution, And Overall ADC Stability
Keith Arlotta[1]
[1]University of Utah, Salt Lake City, UT

Th-492
A11 Minibody-Conjugated, Polypeptide-Based Gold Nanoshells for Targeted Photothermal Therapy
Kevin Chen[1], Kristine Mayle[1], Kathryn Dern[1], Vincent Wong[1], Shijun Sung[1], Ke Ding[1], April Rodriguez[1], Scott Knowles[1], Zachary Taylor[1], Hong Zhou[1], Warren Grundfest[1], Anna Wu[1], Timothy Deming[1], and Daniel Kamei[1]
[1]University of California at Los Angeles, Los Angeles, CA

Th-493
Electrospun Polymeric Fibers for Long-Term Protection against HIV and HSV-2
Kevin Tyo[1] and Jill Steinbach-Rankins[1]
[1]University of Louisville, Louisville, KY

Th-494
Functionalization of Endothelial Cells for Magnetically Targeted Delivery to Stented Blood Vessels
Mark Battig[1], Ilia Fishbein[1], Ivan Alferiev[1], Robert Levy[1], and Michael Chorny[1]
[1]The Children's Hospital of Philadelphia, Philadelphia, PA

Th-495
Aptamer-Amphiphile Micelles Targeting a Novel Chemokine For Cancer Therapeutics
Michael Harris[1], Timothy Pearce[1], Thomas Pengo[1], and Efrosini Kokkoli[1]
[1]University of Minnesota-Twin Cities, Minneapolis, MN

Thursday, October 6 | 9:30 am–5:00 pm | Poster Session | Exhibit Hall BC

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Th-496
Platelet Microparticle-inspired Nanomedicine (PMIN) for Targeted Thrombolysis
Michael Sun[1], Wei Li[2], Christa Palowski[1], Clarissa Kos[1], Kavya Ravichandran[3], Gurbani Kaur[3], and Anirban Sen Gupta[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Cleveland Clinic, Cleveland, OH,[3]Hathaway Brown High School, Shaker Heights, OH

Th-497
Reversal of Elastin Calcification and Aneurysm in a Rat Model using Dual Targeted Therapy with EDTA- and PGG-loaded Nanoparticles
Nasim Nosoudi[1], Aniqa Chowdhury[1], Steven Siclari[1], Saketh Karamched[1], Vaideesh Parasaram[1], Joe Parrish[1], and Narendra Vyavahare[1]
[1]Clemson University, Clemson, SC

Th-498
Optimal Nanoparticle Uptake by Cells is Dictated by Morphology
Pouria Fattahi[1], Yin-Ting Yeh[1], Siyang Zheng[1], Sulin Zhang[1], Justin L. Brown[1], and Peter J. Butler[1]
[1]Pennsylvania State University, University Park, PA

Th-499
Magnetically Activated Hydrogels for the Delivery of Optimized Chemotherapeutic Temporal Profiles
Tania Emi[1], Tanner Barnes[1], Anita Tolouei[1], and Stephen Kennedy[1]
[1]University of Rhode Island, Kingston, RI

Th-500
Magnetically Responsive Hydrogels for Directing the Sprouting and Maturation of Vasculature
Tania Emi[1] and Stephen Kennedy[1]
[1]University of Rhode Island, Kingston, RI

Th-501
Enhanced Cancer Immunotherapy by Microneedle Patch-Assisted Delivery of Anti-PD1 Antibody
Yanqi Ye[1,2], Chao Wang[1,2], Gabrielle Hochu [1], Hasan Sadeghifar [3], and Zhen Gu[1,2]
[1]University of North Carolina at Chapel Hill and North Carolina State University, Raleigh, NC,[2]University of North Carolina at Chapel Hill, Chapel Hill, NC, [3]North Carolina State University, Raleigh, NC

Track: Drug Delivery
Cellular Based Delivery Methods

Th-502
Co-encapsulation of Insulin-Secreting Cells and Mesenchymal Stem Cells for Chronic Wound Closure
Ayesha Aijaz[1], Matthew Teryek[1], and Ronke Olabisi[1]
[1]Rutgers University, Piscataway, NJ

Th-503
Red Blood Cell-Mediated Delivery of Lysozyme Dextran Nanogels to Pulmonary Vasculature
Daniel Pan[1], Jacob Brenner[1], Jacob Myerson[1], and Vladimir Muzykantov[1]
[1]University of Pennsylvania, Philadelphia, PA

Track: Drug Delivery
Delivery Systems for Proteins and Vaccines

Th-504
A Targeted Drug Delivery System for Selective Deliver of Insulin-like Growth Factor-1 to Infarcted Myocardium to Improve Stem Cell Survival
Ji Zhou[1], Michaela Rizzo[1], Yuan Tang[2], Andrew Issekutz[3], Mohammad Kiani[2], and Bin Wang[1]
[1]Widener University, CHESTER, PA, [2]Temple University, Philadelphia, PA, [3]Dalhousie University, Halifax, NS, Canada

Th-505
Enhancing CD1-restricted T Cell Vaccination with Multi-adjuvant-loaded Nanomaterials
Dina Kats[1], Shaobin Shang[2], Chyung-Ru Wang [2], and Evan Scott[1]
[1]Northwestern University, Evanston, IL, [2]Northwestern University, Chicago, IL

Th-506
Nano-polymersomes Facilitate Enzyme Replacement Therapy Efficacy to the Brain
Jessica Kelly[1,2,3], Douglas Martin[2,3,4], and Mark Byrne[1,3,5]
[1]Biomimetic & Biohybrid Materials, Biomedical Devices, and Drug Delivery Laboratories, Department of Chemical Engineering, Auburn University, Auburn, AL, [2]Scott-Ritchey Research Center, College of Veterinary Medicine, Auburn University, Auburn, AL, [3]US Dept of Education GAANN Graduate Fellowship Program in Biological & Pharmaceutical Engineering, Auburn University, Auburn, AL, [4]Department of Anatomy, Physiology, and Pharmacology, College of Veterinary Medicine, Auburn University, Auburn, AL, [5]Biomimetic & Biohybrid Materials, Biomedical Devices, and Drug Delivery Laboratories, Department of Biomedical Engineering, Rowan University, Glassboro, NJ

Th-507
Dual Loading of Hydrophilic and Hydrophobic Molecules into Polymersomes via Flash Nanoprecipitation
Sean Allen[1], Omar Osorio[1], and Evan Scott[1]
[1]Northwestern University, Evanston, IL

Track: Nano and Micro Technologies
Bioinspired Micro/Nano Devices

Th-508
Mechanical Stimulation and Stiffness Characterization Device for Electrospun Cell Culture Scaffolds
Soliman Alhudaithy[1], Devina Jaiswal[1], Namdev Shelke[2], Sangamesh G. Kumbar[2], and Kazunori Hoshino[1]
[1]University of Connecticut, Storrs, CT, [2]University of Connecticut Health Center, Farmington, CT

Th-509
Microfluidic Transcellular Monitoring of Cell-Nanomaterial Interaction For Translational Nanomedicine
Yoshitaka Sei[1], Erisa Sula[1], and YongTae Kim[1]
[1]Georgia Institute of Technology, Atlanta, GA

Tracks: Nano and Micro Technologies, Translational Biomedical Engineering
Micro/Nano Tools in Global Health

Th-510
Investigation into Nonspecific Fluorescence Recovery in a FRET-Based Aptasensor
Alisha Geldert[1], Kenry[1], and Chwee Teck Lim[1]
[1]National University of Singapore, Singapore, Singapore

Th-511
Inducing Tissue Plasticity and Repair via Nanochannel-mediated Gene Delivery
Daniel Gallego-Perez[1], Durba Pal[1], Subhadip Ghatak[1], Natalia Higuita Castro[1], Shomita Mathew[1], Surya Gnyawali[1], Lingqian Chang[1], Wu Lu[1], Jose Otero[1], L. James Lee[1], and Chandan Sen[1]
[1]The Ohio State University, Columbus, OH

Th-512
Magnetic Removal of Free Hemoglobin: A Method to Reduce Hemolysis-Induced Platelet Activation
Kelli Simms[1], Nadeem Wajih [2], Daniel Kim-Shapiro[2], and Elaheh Rahbar[1]
[1]Wake Forest School of Medicine, Winston Salem, NC, [2]Wake Forest University, Winston Salem, NC

Thursday, October 6 | 9:30 am–5:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:30 pm–3:15 pm

Th-513
Computational Integration of Nano-scale Physical Biomarkers and Cognitive Assessments for Diagnosis and Prediction of Alzheimer's Disease
Tao Yue[1], Xinghua Jia[1], Jennifer Petrosino[2], Dong Wang[1], Zhen Fan[1,3], Leming Sun[1,3], Jesse Fine[1], Rebecca Davis[4], Scott Galster[5], Jeff Kuret[6], Douglas Scharre[4], and Mingjun Zhang[1]
[1]Department of Biomedical Engineering, College of Engineering, The Ohio State University, Columbus, OH, [2]Department of Biomedical Sciences, The Ohio State University, Columbus, OH, [3]Dorothy M. Davis Heart & Lung Research Institute, The Ohio State University, Columbus, OH, [4]Department of Neurology, Division of Cognitive Neurology, The Ohio State University Wexner Medical Center, Columbus, OH, [5]711th Human Performance Wing, Air Force Research Laboratory, WPAFB, OH, [6]Department of Molecular and Cellular Biochemistry, The Ohio State University College of Medicine, Columbus, OH

Th-514
Nanoparticle Assay for Detection of a Preeclampsia Biomarker using Surface Enhanced Raman Spectroscopy
Monika Schechinger[1], Haley Marks [1], Mahua Choudhury[1], and Gerard Cote'[1,2]
[1]Texas A&M, College Station, TX,
[2]Texas A&M Engineering Experiment Station, College Station, TX

Th-515
Simulation of Magnetic Particle Capture for Extracorporeal Magnetic Separation of Inflammatory Cytokines for Cardiopulmonary Bypass (CPB) procedures
Olivia Lanier[1], Camilo Velez[1], and Jon Dobson[1]
[1]University of Florida, Gainesville, FL

Th-516
Time-Domain Encoded Optofluidics for Multiplexed, Lock-in Detection of Fluorescent Signals
Venkata Yelleswarapu[1] and David Issadore[1]
[1]University of Pennsylvania, Philadelphia, PA

Th-517
Magnetic Particle Capture as a Surrogate Measure for Synovial Fluid Viscosity
Yash Shah[1], Lorena Maldonado-Camargo[1], Neal Patel[1], Elena Yarmola[1], Carlos Rinaldi[1], Jon Dobson[1], and Kyle Allen[1]
[1]University of Florida, Gainesville, FL

Th-518
Instrument-free Assay for Monitoring Bladder Cancer with High Specificity and Sensitivity in Resource Poor Settings
Abhinav Acharya[1], Andres Correa[1], Tatum Tarin[1], and Steven Little[1]
[1]University of Pittsburgh, Pittsburgh, PA

Th-519
A Smartphone-Enabled Portable Diagnostics for Iron Deficiency in Resource-Limited Settings
Balaji Srinivasan[1], Seoho Lee[1], Dakota O'Dell [1], David Erickson[1], and Saurabh Mehta[1]
[1]Cornell University, Ithaca, NY

Th-520
Biomimetic Nanotopography to Control Cell Adhesion on an Artificial Cornea
Elena Liang[1], Mary Nora Dickson[1], Cristina Kenney[1], Marjan Farid[1], Roger Steinert[1], and Albert Yee[1]
[1]University of California, Irvine, Irvine, CA

Th-521
Tunable Wax-ink Valves for Multistep Paper-fluidic Diagnostics
Elizabeth Phillips[1], Tori Clift[1], and Jacqueline Linnes[1]
[1]Purdue University, West Lafayette, IN

Th-522
Breaking the Diagnostic Barrier: Paper-Based Assay for Simplified Sickle Cell Diagnosis
Kevin Cyr[1], Christina Marasco[1], and Jennifer Colby[2]
[1]Vanderbilt Institute for Integrative Biosystems Research and Education, Nashville, TN,[2]Vanderbilt University Medical Center, Nashville, TN

Th-523
Modeling the Early Stages of Fatty Liver Disease and Fibrosis in Microengineered Human Liver Cultures
Matthew Davidson[1] and Salman Khetani[1,2]
[1]Colorado State University, Fort Collins, CO,
[2]University of Illinois at Chicago, Chicago, IL

Th-524
Detection Signal Amplification based on Cyclic Catch-and-Release
Michael Jacobs[1] and Frederick Haselton[1]
[1]Vanderbilt University, Nashville, TN

Th-525
Paper-Based Test for Indirect Screening of Newborns for Sickle Cell Disease
Nathaniel Piety[1], Alex George[2], Sonia Serrano[3], Maria Lanzi[3], Palka Patel[2], Maria Noli[2], Silvina Kahan[2], Damian Nirenberg[2], João Camanda[2], Gladstone Airewele[2], and Sergey Shevkoplyas[1]
[1]University of Houston, Houston, TX, [2]Baylor College of Medicine, Houston, TX, [3]Angola Sickle Cell Initiative, Cabinda City, Angola

Track: Nano and Micro Technologies Advances in Micro/Nano Manufacturing

Th-526
Elongation Processing to Enhance Macromolecular Orientation and Strength of Electrospun Nanofibers
David Brennan[1], Dave Jao[1], Xiao Hu[1], and Vince Beachley[1]
[1]Rowan University, Glassboro, NJ

Th-527
Effects of Solvent and Process Parameters on the Structures and Functions of Micellular Nanocrystals
Gang Ruan[1], Yuxiang Sun[1], Xinyi Ding[1], Ning Han[1], Jun Wang[1], and Xiaoya Yu[1]
[1]Nanjing University, China, Nanjing City, China, People's Republic of

Th-528
Control of Shape and Optical Property of Anisotropic Gold Nanomaterials by the Reduction of Silver Ion
Hyon Bin Na[1], Bong-Geun Kim[1], Jong-Won Lee[1], and Dujin Kim[1]
[1]Myongji University, Yongin, Korea, Republic of

Th-529
Graphene Quantum Dots: An Alternative Filler to Nanocomposite And Their Biomedical Applications.
Navathej Gobi[1], Darshan Vijayakumar[1], Chaitra Ramesh[1], Shambhavi Kashyap[1], and Folarin Erogbogbo[1]
[1]San Jose State University, San Jose, CA

Th-530
Dependence of Nanotextured Titanium Orthopedic Surfaces on Electrolyte Fluoride Concentration
Radheshyam Tewari[1], Sachin Bhosle[1,2], and Craig Friedrich[1]
[1]Michigan Technological University, Houghton, MI,
[2]Michigan technological University, Houghton, MI

Th-531
Three-Dimensional Microfabrication of Biodegradable Polymers for Biomedical Applications
Thanh Nguyen[1]
[1]University of Connecticut, Storrs, CT

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Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:30 pm–3:15 pm

Track: Nano and Micro Technologies
Micro/Nano Tools in Infectious Diseases

Th-532
Mycobacterium smegmatis Biofilm Response to Time-Varying and Nanoparticle Encapsulated Antibiotic Concentrations in a Microfluidic Device
Loc Truong[1], Norman Bae[1], Allen Wang[1], and Benjamin Hawkins[1]
[1]San Jose State University, San Jose, CA

Th-533
Measurement of C-Reactive Protein Using CdSe/ZnS Quantumdots Through its Spectral Intensity Values
Kalpana Ramakrishnan[1] and Shahnila Raza[1]
[1]Rajalakshmi Engineering College, Chennai, India

Th-534
Hollow Silica Microspheres for Buoyancy-assisted Bioseparation
Lichen Xiang[1], Erica Osta[1], Linying Li[2], Gabriel López[2,3], and Shannon Weigum[1]
[1]Texas State University, San Marcos, TX, [2]Duke University, Durham, NC, [3]University of New Mexico, Albuquerque, NM

Th-535
Structural Antibacterial Properties of Carbon-Infiltrated Carbon Nanotube Coatings
Stephanie Morco[1], Anton Bowden[1], Brian Jensen[1], and Dustin Williams[2]
[1]Brigham Young University, Provo, UT, [2]University of Utah, Salt Lake City, UT

Tracks: Nano and Micro Technologies, Cellular and Molecular Bioengineering
Micro/Nano Tools in Molecular Biology (Genomics, Proteomics)

Th-536
Rare Biomarker Quantification Through Integrated Dielectrophoretic and Plasmonic Based Fluorescence Enhancement
Logeeshan Velmanikam[1], Michael Fondakowski[1], Ivan Lima[1], and Dharmakeerthi Nawarathna[1]
[1]North Dakota State University, Fargo, ND

Th-537
Determining the Size of Biomolecule-Tagged Nanoparticles by Brownian Motion Quantification
Katherine Clayton[1], Janelle Salameh[1], Julia Fraseur[1], Nelda Vazquez-Portalatin[1], Alyssa Panitch[1], Steven Wereley[1], and Tamara Kinzer-Ursem[1]
[1]Purdue University, West Lafayette, IN

Th-538
Femtoliter Droplet Confinement of Pneumococcus Pairs for Single Event Transformation Assay
Martin Brennan[1], Donald Morrison[1], and David Eddington[1]
[1]University of Illinois at Chicago, Chicago, IL

Th-539
Ultrasensitive Microfluidic Assay for Genome-wide DNA methylation Analysis and Precision Medicine
Sai Ma[1], Zhixiong Sun[1], Hehuang Xie[1], Chen Sun[1], Travis Murphy[1], and Chang Lu[1]
[1]Virginia Tech, Blacksbug, VA

Th-540
Development of a Microfluidic Device for Trapping, Transforming, and Monitoring Gene Expression of Individual Tobacco Protoplasts
Tayler Schimel[1], Mary-Anne Nguyen[1], Stephen Sarles[1], and Scott Lenaghan[1]
[1]University of Tennessee, Knoxville, TN

Th-541
Quantitative Yeast Cell Dynamics in Static Chemical Gradients
Thanh Vo[1], Phu Pham[1], John S. Choy[1], and Xiaolong Luo[1]
[1]Catholic University of America, Washington, DC

Th-542
Ingested Nanoparticles Alter Gastrointestinal Tract Enzyme Function and Mineral Absorption
Zhongyuan Guo[1], Nicole Martucci[1], Gabriella Shull [1], Elad Tako[2], and Gretchen Mahler[1]
[1]Binghamton University, Binghamton, NY, [2]U.S. Department of Agriculture, Ithaca, NY

Track: Respiratory Bioengineering
Computational Modeling of the Respiratory System in Health and Disease

Th-543
Multi-scale Modeling Of Parenchymal/Airway Interactions
Jason Ryans[1], Hideki Fujioka[1], David Halpern[2], and Donald Gaver[1]
[1]Tulane University, New Orleans, LA, [2]University of Alabama, Tuscaloosa, AL

Th-544
Integrating Videoendoscopic Observations into Computational Models of Eustachian Tube Function
Justo Torres-Rodriguez[1] and Samir Ghadiali[1]
[1]The Ohio State University, Columbus, OH

Th-545
Relationship Between CT-based Lung Mechanics and BODE index in COPD
Sandeep Bodduluri[1], Surya Bhatt[2], Sarah Gerard[1], John Newell Jr.[1], Mark Dransfield[2], Eric Hoffman[1], and Joseph Reinhardt[1]
[1]The University of Iowa, Iowa City, IA, [2]The University of Alabama, Birmingham, AL

Th-546
Integrated Model of Lung Mitochondrial Tricarboxylic Acid Cycle and Electron Transport System
Xiao Zhang[1], Ranjan Dash[2], Venkat Pannala[2], Anne Clough[1], Amadou Camara[2], Elizabeth Jacobs[3], and Said Audi[1]
[1]Marquette University, Milwaukee, WI, [2]Medical College of Wisconsin, Milwaukee, WI,[3]Zablocki VA Medical Center, Milwaukee, WI

Track: Respiratory Bioengineering
Mechanics and Mechanobiology of the Lung and Airways

Th-547
Incorporating Macrophages into an In-vitro Model of Mechanically-Induced Lung Inflammation
Christopher Bobba[1] and Samir Ghadiali[1]
[1]The Ohio State University, Columbus, OH

Th-548
Influence of Substrate Stiffness on Fibrogenic Response of Fibroblasts to Carbon nanotubes
Kai Wang[1], Lin Shi[1], and Yong Yang[1]
[1]West Virginia University, Morgantown, WV

Th-549
Modulating Mechano-Transduction and Middle Ear Inflammation using miR-146a
Natalia Higuita-Castro[1], Vasudha Shukla[1], J. Douglas Swarts [2], and Samir N. Ghadiali[1]
[1]The Ohio State University, Columbus, OH, [2]University of Pittsburgh, Pittsburgh, PA

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Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:30 pm–3:15 pm

Track: Respiratory Bioengineering
Pulmonary Cell and Matrix Biology

Th-550
Differentiation of Lung Fibroblasts to Airway Smooth Muscle (ASM): Towards a Tractable In Vitro Model
Joshua Morgan[1], Peter Sariano[1], and Jason Gleghorn[1]
[1]University of Delaware, Newark, DE

Track: Respiratory Bioengineering
Respiratory Bioengineering

Th-551
Identification of Ventilation Type During Anesthesia Period in Operating Rooms
Ali Jalali[1], Luis Ahumada[1], Jorge Galvez[1], and Mohamed Rehman[1]
[1]Children's Hospital of Philadelphia, Philadelphia, PA

Th-552
Non-Invasive, Real time, Affordable Monitoring of Hemoglobin and Vital parameters for ICU patients
Harsh Modi[1], David Weldon[1], and Mehmet Kaya[1]
[1]Florida Institute of Technology, Melbourne, FL

Th-553
Study on CO2 Rebreathing Device for Sleep Apnea Treatment by Means of CFD Analysis and Experiment
Mehdi Shokoueinejad[1], Arman Pazouki[2], Jake Levin[1], Fa Wang[1], Chris R. Fernandez[3], Samuel J. Rusk[3], and John G. Webster4
[1]University of Wisconsin-Madison, Madison, WI, [2]California State University, Los Angeles, CA, [3]EnsoData, Inc., Madison, WI, [4]UW-Madison, Madison, WI

Th-554
Design and Implementation of a Sensitive Sensor for the Measurement of Flow in Mice
Samer Bou Jawde[1], Bradford Smith[2], Jason Bates[2], and Bela Suki[1]
[1]Boston University, Boston, MA, [2]University of Vermont, Burlington, VT

Track: Drug Delivery
Drug Delivery in Tissue Engineering

Th-555
Controlled Release of Bone Morphogenetic Protein-2 from Thiol-Ene Click Hydrogels
Faraz Jivan[1], Ken Muneoka[1], and Daniel Alge[1]
[1]Texas A&M University, College Station, TX

Th-556
Control Release Anesthetics to Enable An Integrated Anesthetic-MSC Therapeutic
Timothy Maguire[1,2], Mollie Davis[2], Ileana Marrero-Berríos[2], Charles Zhu[2], Chris Gaughan[1], Jonathan Weinberg[3], Devasena Manchikalapati[3], Joseph SchianodiCola[3], Martin Yarmush[2], Rene Schloss[2], and Joel Yarmush[3]
[1]Beau Ridge Pharmaceuticals, New York, NY, [2]Rutgers University, Piscataway, NJ, [3]New York Methodist Hospital, Brooklyn, NY

Th-557
Highly Efficient Encapsulation of Small-molecule N-acetylcysteine Within PLGA Nanoparticles
Nicholas Murphy[1] and Kyle Lampe[1]
[1]University of Virginia, Charlottesville, VA

Th-558
An Intestinal Trojan Horse as Regenerative Therapy for Inflammatory Bowel Disease
Zahra Davoudi[1] and Qun Wang[1]
[1]Iowa State University, Ames, IA

Th-559
Lung Surfactant Coatings Improve Nanoparticle Uptake and Retention in Lung Epithelial Cells
Roshni Iyer[1], Cancan Xu[1], Yi Hong[1,2], Connie Hsia[2,3], and Kytai Nguyen[1,2]
[1]The University of Texas at Arlington, Arlington, TX, [2]Joint Graduate Program in Biomedical Engineering–University of Texas at Arlington and University of Texas Southwestern Medical Center, Arlington, TX, [3]University of Texas Southwestern Medical Center, Dallas, TX

Th-560
Modeling Transdermal Drug Delivery Via Diffusion Through a Porous, Thin-Walled Suture
Stephanie Jorgensen[1], Pedro Arce[1], and Jonathan Sanders[1]
[1]Tennessee Technological University, Cookeville, TN

Th-561
Micro-CT Based Imaging of Metallic Nanoparticles for Tracking Microspheres following Intra-articular Drug Delivery
Taylor Comte[1], Daniel Leib[1], Nathan Reed[1], Elizabeth Leimer[1,2,3], Matthew Silva[1], and Lori Setton[1]
[1]Washington University in St. Louis, St. Louis, MO, [2]Duke University, Durham, NC, [3]Albany Medical College, Albany, NY

Th-562
Control-released Basic Fibroblast Growth Factor in Photocrosslinkable Scaffold Promotes Vascularized Skin Tissue Regeneration Using Human Umbilical Cord-derived Mesenchymal Stem Cells
Xiao-Fei Zhang[1] and Xiaofeng Cui[1,2,3,4]
[1]Wuhan University of Technology, Wuhan, China, People's Republic of, [2]Stemorgan Therapeutics, Albany, NY, [3]Rensselaer Polytechnic Institute, Troy, NY, 4Technical University Munich, Munich, Germany

Th-563
VEGF-PLGA Nanoparticles Promote Vascularization *In Vitro* and *In Vivo*
Yasin Oduk[1], Ramaswamy Kannappan[1], Wuqiang Zhu[1], and Jianyi Zhang[1]
[1]University of Alabama at Birmingham, Birmingham, AL

Th-564
Dual Delivery of TGF Receptor II Binding Peptide and Oxygen to Control Cardiac Fibrosis
Zhaobo Fan[1], Minghuan Fu[1], and Jianjun Guan[1]
[1]Ohio State University, Columbus, OH

Track: Tissue Engineering
Bioreactor Systems for Tissue Engineering

Th-565
Generation of Dissolved Oxygen Concentration Gradient Inside of Microfluidic Chip without Additional Gas Supplies or Chemicals
Heeyeong Jang[1] and Sang-Hoon Lee[2]
[1]Korea University, Seoul, Korea, Republic of, [2]Korea University, KU-KIST graduate school, Seoul, Korea, Republic of

Th-566
Experimental and Computational Models of Mass Transport Within 3D Collagen-Matrigel Hydrogels
Lauren Marshall[1], Roy Koomullil[1], Andra Frost[1], and Joel Berry[1]
[1]University of Alabama at Birmingham, Birmingham, AL

Th-567
Bioreactor Design for Tissue Engineered Cornea
Patrick Scalise[1], Chris Kotcherha[1], and Elizabeth Orwin[1]
[1]Harvey Mudd College, Claremont, CA

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Th-568
Evaluation of Pulsed Electromagnetic Field Exposure System for Chondrocyte Proliferation
Song-I Chun[1], Tae hyung Kim[1], and Chi-woong Mun[1]
[1]Inje University, Gimhae, Korea, Republic of

Track: Tissue Engineering
Clinical Translation of Engineered Tissues

Th-569
Non-invasive Assessments to Track Human White Adipose Tissue Engineered Models *In Vitro*
Rosalyn Abbott[1], Carlo Alonzo[1], Francis Borowsky[1], Irene Georgakoudi[1], and David Kaplan[1]
[1]Tufts University, Medford, MA

Track: Tissue Engineering
Engineering Replacement Tissues

Th-570
Negative Pressure Enhances Cellular Infiltration into Electrospun Fibrous Scaffolds
Azadeh Timnak[1,2], Jonathan A. Gerstenhaber[1,2], Yah-el Har-el[1,2], and Peter I. Lelkes[1,2]
[1]Department of Bioengineering, College of Engineering, Temple University, Philadelphia, PA, [2]Temple Institute for Regenerative Medicine and Engineering (TIME), Temple University, Philadelphia, PA

Th-571
The Effects of Hypoxic Cell Expansion and Tissue Culture on Auricular Cartilage Engineering
Benjamin Cohen[1] and Lawrence Bonassar[1]
[1]Cornell University, Ithaca, NY

Th-572
Blow-spun Chitosan/PEG/PLGA Nanofibers as a Novel Tissue Engineering Scaffold
Diane Bienek[1] and Wojtek Tutak[1]
[1]ADA Foundation, Gaithersburg, MD

Th-573
Contributions of BMP Proteins in Cardiac Repair Cell functionality and Angiogenesis in a 3D in vitro Model
Isabella Pallotta[1], Bruce Sun[1], Gregory Lallos[1], Cecile Terrenoire[1], and Donald Freytes[1,2,3]
[1]The New York Stem Cell Foundation Research Institute, New York, NY, [2]North Carolina State University, Raleigh, NC, [3]University of North Carolina-Chapel Hill, Chapel Hill, NC

Th-574
Development of a Bio-inspired Hybrid Nanosack for Islet Transplantation in the Omentum
Patrick Hwang[1], Dong-Jin Lim[1], Grant Alexander[1], Anath Shalev[1], Wanxing Cui[2], Shawn Gilbert[1], and Ho-Wook Jun[1]
[1]University of Alabama at Birmingham, Birmingham, AL, [2]Medstar Georgetown Hospital, Washington, DC

Th-575
Tissue Engineered Cartilaginous Trachea Using Chondrocyte-Seeded Polymer Scaffolds
Timothy Holzberg[1], Ting Guo[1], Joshua Bedwell[2], Diego Preciado[2], George Zalzal[2], and John Fisher[1]
[1]University of Maryland, College Park, MD, [2]Children's National Medical Center, Washington, DC

Tracks: Nano and Micro Technologies, Tissue Engineering
Human and Organ on a Chip

Th-576
A Soft Microfluidic Device as an In Vitro Model for Studying Mechanobiology of Tubular Organs
Hyeonji Yu[1], Dongwon Kang[1], Kwangin Shin[1], Minji Whang[1], and Jungwook Kim[1]
[1]Sogang University, Seoul, Korea, Republic of

Th-577
Cell-Matrix and Cell-Cell Interactions in Endothelial Barrier Models on Porous Glass Membranes
Stephanie Casillo[1], Ana Peredo[1], Andrea Mazzocchi[1], and Thomas Gaborski[1]
[1]Rochester Institute of Technology, Rochester, NY

Th-578
Novel Mechanisms of Non-Coding Genomic Regulation Identified in Cardiac Disease-in-a-dish Models
Aditya Kumar[1], Stephanie Thomas[1], Kirsten Wong[1], Kevin Tenerelli[1], Valentina Lo Sardo[2], William Ferguson[2], Eric Topol[2,3], Kristin Baldwin[2], and Adam Engler[1,4]
[1]University of California, San Diego, La Jolla, CA, [2]The Scripps Research Institute, San Diego, CA, [3]Scripps Translational Science Institute, La Jolla, CA, 4Sanford Consortium for Regenerative Medicine, San Diego, CA

Th-579
Co-patterning of Living Tissues In 3D-Printed Microfluidic Chips
Christiane Nguyen[1], Stephanie Knowlton[2], Chu Hsiang Yu[2], and Savas Tasoglu[2]
[1]University of Connecticut, Danbury, CT, [2]University of Connecticut, Storrs, CT

Th-580
Human Colon Biopsy Slices Ex Vivo: Impacts of Oxygen and Bacteria
Luke Schwerdtfeger[1], Erica Borresen[1], Elizabeth Ryan[1], and Stuart Tobet[1]
[1]Colorado State University, Fort Collins, CO

Th-581
Effect of Gelatin Patterning and Stiffness on the Culture of Podocytes for Glomerulus-on-a-chip
Ellery Jones[1], Matthew Ishahak[1], Alla Mitrofanova[2], Alessia Fornoni[2], and Ashutosh Agarwal[1]
[1]University of Miami, Coral Gables, FL, [2]University of Miami, Miami, FL

Th-582
Endogenous Signals Shape Phenotype of Primary Hepatocytes Cultured in Microchambers
Pantea Gheibi[1], Amranul Haque[1], Yandong Gao[1], Elena Foster[1], Kyung Jin Son[1], Jungmok You[1], Gulnaz Stybayeva[1], Dipali Patel[1], and Alexander Revzin[1]
[1]University of California, Davis, Davis, CA

Th-583
A Tissue Engineered Model of Aging
Aylin Acun[1], Dervis Vural[1], and Pinar Zorlutuna[1]
[1]University of Notre Dame, Notre Dame, IN

Th-584
Design and Development Of An In Vitro Vascular Model Using 3D Printing-enabled Hydrogel Casting Technique
Pranav Soman[1], Liang Yang[1], Shivkumar Shridhar[1], and Melissa Gerwitz[1]
[1]Syracuse University, Syracuse, NY

Th-585
Vessel Growth Response to Controlled Oxygen Gradients in a Microfluidic Platform
Sandra Lam[1], Yunli Chu[1], Alan Soetikno[1], and Steven George[1]
[1]Washington University in St. Louis, St. Louis, MO

Thursday, October 6 | 9:30 am–5:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:30 pm–3:15 pm

Track: Tissue Engineering
Engineering Tissue Interfaces

Th-586
Nanostructuring to Improve Osseointegration of Titanium Implants in Spinal Reconstruction
Alethia Barnwell[1], Sandra Arias[1], Akshath Shetty[1], and Jean Paul Allain[1]
[1]University of Illinois Urbana-Champaign, Urbana, IL

Th-587
Fabrication and Characterization of Poly(-amino ester) Hydrogel Microspheres with Tailorable Size and Properties
Amir Najarzadeh[1,2] and David Puleo[2]
[1]University of Kentucky, lexington, KY, [2]University of Kentucky, Lexington, KY

Th-588
Exploring Synergy Between Mechanical and Bioinstructive Cues for the Tendon:Bone Interface
Brittany Banik[1] and Justin Brown[1]
[1]The Pennsylvania State University, University Park, PA

Th-589
Nanotopography-Induced Neuromuscular Junction Assembly
Eunkyung Ko[1], Seung-Jung YU[2], Jooyeon Park[1], Sung Gap Im[2], Marni Boppart[1], Rashid Bashir[1], and Hyunjoon Kong[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of

Th-590
Optimizing The Growth and Characterization of Retinal Pigment Epithelial Cells
Ian Wadsworth[1], Harshit Singh[1], Lori Caldwell[1], Zach Jensen[1], Bret Hansen[1], Randy Lewis[1], and Elizabeth Vargis[1]
[1]Utah State University, Logan, UT

Th-591
Biomimetic Surface Modification of PLLA Scaffolds for Bone Tissue Engineering
Cortes Williams[1], Nathan R. Richbourg[1], Ariel Chloe Cross[1], and Vassilios Sikavitsas[1]
[1]University of Oklahoma, Norman, OK

Th-592
Biocompatibility of Plasma Immersion Ion Implantation Surface Treated Shape Memory Polymer
Xinying Cheng[1], Alexey Kondyurin[2], Marcela M.M. Bilek[2], Shisan Bao[3,4,5], and Lin Ye[1]
[1]Centre for Advanced Materials Technology, School of Aerospace, Mechanical and Mechatronic Engineering, The University of Sydney, NSW2006, Australia, [2]Applied and Plasma Physics, School of Physics, the University of Sydney, NSW2006, Australia, [3]Discipline of Pathology and School of Medical Science, University of Sydney, NSW2006, Australia, 4Bosch Institute, the University of Sydney, NSW2006, Australia, 5Charles Perkins Centre, the University of Sydney, NSW2006, Australia

Track: Tissue Engineering
Naturally-Derived and Extracellular Matrix Biomaterials in Tissue Engineering

Th-593
Increasing Modulus of Perfusion-Decellularized Kidney Organ Scaffolds to Enhance Recellularization
Alexey Goloubev[1], Andres Rubiano[2], Alicia Brown[1], Edward Ross[1], Chelsey Simmons[2], and Bradley Willenberg[1]
[1]University of Central Florida College of Medicine, Orlando, FL, [2]University of Florida, Gainesville, FL

Th-594
Fiber-Embedded Scaffolds for Tricuspid Heart Valve Tissue Engineering
Alison Jacob[1], Ayesha Khanam[2], and Howard Matthew[1]
[1]Wayne State University, Detroit, MI, [2]University of Michigan, Ann Arbor, MI

Th-595
Mechanical Bioeffects Contribute to Ultrasound-Induced Pro-Migratory Collagen Activity
Emma Grygotis[1], Diane Dalecki[1], and Denise Hocking[1]
[1]University of Rochester, Rochester, NY

Th-596
Considerations for Using The Resazurin Reduction Assay For Temporal Quantification of Cell Number In Tissue Engineering and Three-Dimensional Perfusion Culture Applications
Joseph Uzarski[1], Michael DiVito[1], William Miller[2], and Jason Wertheim[1,2,3,4]
[1]Northwestern University Feinberg School of Medicine, Chicago, IL, [2]Northwestern University, Evanston, IL, [3]Jesse Brown VA Medical Center, Chicago, IL, [4]Northwestern University, Chicago, IL

Th-597
Crosslinking of the Human Amniotic Membrane using Riboflavin and UVA
Julien Arrizabalaga[1] and Matthias Nollert[1]
[1]University of Oklahoma, Norman, OK

Th-598
Perlecan Domain I Gradients Establish Growth Factor Gradients in Hydrogels for Salivary Engineering
Kelsea M. Hubka[1], Brian J. Grindel[1], Swati Pradhan-Bhatt[2,3], Robert L. Witt[2,3,4], Daniel D. Carson[1], Daniel A. Harrington[1], and Mary C. Farach-Carson[1]
[1]Rice University, Houston, TX, [2]Helen F. Graham Cancer Center & Research Institute, Christiana Care, Newark, DE, [3]University of Delaware, Newark, DE, 4Thomas Jefferson University, Philadelphia, PA

Th-599
Chemical and Topographical Cues for Modulating Macrophage Activation States
Melissa Wrobel[1] and Harini Sundararaghavan[1]
[1]Wayne State University, Detroit, MI

Track: Tissue Engineering
Stem Cells in Tissue Engineering

Th-600
Assessment of Thrombogenicity of Human Adipose-derived Stem Cells
Anh La[1] and Robert Tranquillo[1]
[1]University of Minnesota, Minneapolis, MN

Th-601
Mechanical Stimulation Increases RNA-level Expression of Knee Meniscus Genes in Adipose-derived Stromal Cells
Elizabeth Meier[1], Bin Wu[1], Aamir Siddiqui[2], Donna Tepper[2], Michael Longaker[3], and Mai Lam[1,3]
[1]Wayne State University, Detroit, MI, [2]Henry Ford Health System, Detroit, MI, [3]Stanford University, Stanford, CA

Th-602
Biodegradable Porous Microspheres as a Stem Cell Vehicle and Controlled Drug Delivery Platform
Eric Sandhurst[1] and Hongli Sun[1]
[1]University of South Dakota, Sioux Falls, SD

Th-603
The Effect of Electro-active PEGDA Hydrogels on Mesenchymal Stem Cells
Kriti Gupta[1]
[1]Rutgers University, Kendall Park, NJ

Thursday, October 6 | 9:30 am–5:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 2:30 pm–3:15 pm

Th-604
Utah-Mesenchymal Stem Cell Sheet Technology for the Advancement of Stem Cell Transplantation Therapy
Sophia Bou-Ghannam[1]
[1]University of Utah, Salt Lake City, UT

Th-605
NR2F2 Regulates Chondrogenesis of Human Mesenchymal Stem Cells in Bioprinted Cartilage
Guifang Gao[1], Xiao-Fei Zhang[1], Karen Hubbell[2], Guohao Dai[3], Arndt Schilling4, Tomo Yonezawa[5], and Xiaofeng Cui[1,2,3,4]
[1]Wuhan University of Technology, Wuhan, China, People's Republic of, [2]Stemorgan Therapeutics, Albany, NY, [3]Rensselaer Polytechnic Institute, Troy, NY, [4]Technical University Munich, Munich, Germany, [5]Nagasaki University, Nagasaki, Japan

Th-606
Wnt-YAP Interactions during Neural Tissue Patterning of Human Induced Pluripotent Stem Cells
Julie Bejoy[1], Liqing Song[1], and Yan Li[1]
[1]Florida State University, Tallahassee, FL

Track: Tissue Engineering
Tissue Engineering

Th-607
Developing Primers for Multiplexed PCR of Human Neural Progenitor Cells
Alena Casella[1] and Rebecca Kuntz Willits[1]
[1]The University of Akron, Akron, OH

Th-608
Fabrication of Electrospun Branched-Clusters as Fundamental Building Units for Tissue Engineering
Ben Minden-Birkenmaier[1], Gretchen Selders[1], and Gary Bowlin[1]
[1]University of Memphis, Memphis, TN

Th-609
The Effects and Mechanisms of Electromagnetic Stimuli on Cultured Rabbit Corneal Fibroblasts
Deval Gupta[1] and Nathan Miller[1]
[1]Harvey Mudd College, Claremont, CA

Th-610
Reproducible Construction of Honeycomb Concave Microwell Arrays for 3D Microtissues Engineering
Geonhui Lee[1], JaeSeo Lee[2], and SangHoon Lee[2]
[1]Korea University, Seoul, Korea, Republic of, [2]Korea University, Seoul, Korea, Republic of

Th-611
Electrospinning Collagen and Gelatin Fibers To Model The Extracellular Matrix Of The Corneal Stroma
Cesar Orellana[1] and Kelly McConnell[1]
[1]Harvey Mudd College, Claremont, CA

Th-612
A Bioinspired Culture Medium Prolongs the Functional Lifetime of Human Liver Cells in Culture
Matthew Davidson[1] and Salman Khetani[1,2]
[1]Colorado State University, Fort Collins, CO, [2]University of Illinois at Chicago, Chicago, IL

Th-613
Resveratrol Releasing Scaffolds to Promote Lipid Metabolism in Adipose Tissue
Michael Hendley[1] and Michael Gower[1]
[1]University of South Carolina, Columbia, SC

Th-614
Mimicking the Bone Microenvironment to Study Cellular Activity on a Calcium Phosphate Scaffold
Karen Burg[1,2] and Olsen Horton[2]
[1]University of Georgia, Athens, GA, [2]Clemson University, Clemson, SC

Th-615
Role of Extracellular Matrix and Electrospun Polymer Fiber Diameter on Mammalian Cell Guidance
Priyanka Ruparelia[1], Ramakrishna Sharma[2], Lifeng Zhang[2], Shyam Aravamudhan[2], and Dennis LaJeunesse[1]
[1]University of North Carolina at Greensboro, Greensboro, NC, [2]North Carolina A&T State University, Greensboro, NC


Loring Park with downtown Minneapolis skyline
Courtesy of the Minneapolis Park and Recreation Board

FRIDAY'S HIGHLIGHTS

Platform Sessions-Fri-1
8:00 am–9:30 am — **Convention Center**
See pages 136-142

Meet the Expert: Collaborations for International Research
8:00 am–9:30 am — **Room 204**
See page 143

Special Session: AAA-BMES Symposium: Genome Editing Strategies in Bioengineering
8:00 am–9:30 am — **Room 208AB**
See page 143

Industry Session: SBIR/STTR
8:00 am–9:00 am — **Room 201**
See page 144

Industry Session: Reimbursement
9:15 am–10:15 am — **Room 201**
See page 144

Exhibit Hall Open
9:30 am–5:00 pm — **Exhibit Hall**

Poster Session
9:30 am–5:00 pm — **Exhibit Hall**

Poster Viewing with Authors & Refreshment Break
9:30 am–10:15 am — **Exhibit Hall**

Plenary Session
10:15 am–11:45 am — **Auditorium**

NIBIB Lecture
Rethinking the Way We Do MRI: Magnetic Resonance Fingerprinting
Mark A. Griswold, PhD

Industry Session: Healthcare Innovation with Physicians
12 noon–1:30 pm — **Room 201**
See page 144

Platform Sessions-Fri-2
1:45 pm–3:15 pm — **Convention Center**
See pages 145-153

Meet the Expert: Meet the Journal Editors
1:45 pm–3:15 pm — **Room 204**
See page 153

Industry Session: Mobile/Digital Health
2:00 pm–3:00 pm — **Room 201**
See page 153

Poster Viewing with Authors & Refreshment Break
3:15 pm–4:00 pm — **Exhibit Hall**

Industry Session: Investment Pitches and Partnering
3:15 pm–5:15 pm — **Room 201**
See page 153

Special Session: KOSOMBE-US-KOREA Joint Workshop on BME
3:15 pm–6:15 pm — **Room 208AB**
See page 153

Platform Sessions-Fri-3
4:00 pm–5:30 pm — **Convention Center**
See pages 154-162

Meet the Expert: Collaborations with Industry
4:00 pm–5:30 pm — **Room 204**
See page 162

Special Session: Educational Approaches to Best Prepare Students for Industry
4:00 pm–5:30 pm — **Room 208CD**
See page 162

Special Plenary Session
5:45 pm–6:30 pm — **Auditorium**

Extraordinary Challenges and the Need for Extraordinary Competencies–The Role of the Biomedical Engineer
Jim Gallarda

BMES Dessert Bash
8:30 pm–11:00 pm — **Ballroom AB/CC**

Friday, October 7 | 8:00 am–9:30 am | Platform Session 1

OP-Fri-1-1 Auditorium 1

Tracks: Cellular and Molecular Bioengineering, Biomechanics

Testing, Modeling, and Exploiting Mechanobiology

Chairs: Christopher Lemmon, Guohao Dai

8:00 am
Mechanical Amplification of Tumor Death Using Polymeric Nanoparticles
Michael Mitchell[1] and Robert Langer[1]
[1]MIT, Cambridge, MA

8:15 am
High Throughput Label-Free Cell Viability Assay Using Deformability Cytometry
Mahdokht Masaeli[1], Dewal Gupta[2], and Dino Di Carlo[2]
[1]Stanford University, Stanford, CA, [2]UCLA, Los Angeles, CA

8:30 am
Combinatorial ECM Arrays Reveal the Effects of Biomechanics In Liver Progenitor Differentiation
Andreas Kourouklis[1], Kerim Kaylan[2], and Gregory Underhill[2]
[1]University of Illinois Urbana-Champaign, Urbana, IL, [2]University of Illinois Urbana Champaign, Urbana, IL

8:45 am
To Be, or Not to Be: Cellular Homeostasis to Mechanical Perturbations
Shinuo Weng[1], Yue Shao[1], Weiqiang Chen[1,2], and Jianping Fu[1]
[1]University of Michigan-Ann Arbor, Ann Arbor, MI, [2]New York University, New York, NY

9:00 am
Effects of Compaction and Stretch on Cell Alignment in 3D Constructs: Testing a Proposed Model
Kellen Chen[1] and Jeffrey W. Holmes[1]
[1]University of Virginia, Charlottesville, VA

9:15 am
Modeling the Influence of Substrate Young's Modulus, Adhesion Size, and Cell Geometry on Cell Traction
Ghaidan Shamsan[1] and David Odde[1]
[1]University of Minnesota Twin Cities, Minneapolis, MN

OP-Fri-1-2 Auditorium 2

Tracks: Cancer Technologies, Nano and Micro Technologies

3D Microfluidic Cancer Models

Chairs: Ian Wong, Matt Kinsella

8:00 am
3D Printed Biomimetic Nanocomposite Matrix for the Study of Breast Cancer Bone Metastasis
Wei Zhu[1], Robert Glazer[2], and Lijie Grace Zhang[1]
[1]The George Washington University, Washington, DC, [2]Georgetown University Medical Center, Washington, DC

8:15 am
Micropalpation: Analysis of Cancer Spheroid Stiffness Using Microtweezers
Devina Jaiswal[1], Zichao Bian[1], Alexander Almeida[1], Guoan Zheng[1], Kevin Claffey[2], and Kazunori Hoshino[1]
[1]University of Connecticut, Storrs, CT, [2]University of Connecticut Health Center, Farmington, CT

8:30 am
Miniaturized High-Content Imaging Assays on 3D Cultured Cell Microarrays for Mechanistic Toxicity
Pranav Joshi[1], Akshata Datar[1], Alexander Roth[1], Kyeong Nam Yu[1], and Moo-Yeal Lee[1]
[1]Cleveland State University, Cleveland, OH

8:45 am
Recreating 3D Tumor Microenvironment on a Chip for Screening Drug Delivery Systems
Yuan Tang[1], Fariborz Soroush[1], Bin Wang[1,2], Balabhaskar Prabhakarpandian[3], and Mohammad Kiani[1]
[1]Temple University, Philadelphia, PA, [2]Widener University, Chester, PA, [3]CFD Research Corporation, Huntsville, AL

9:00 am
Roles of Interstitial Flows in Breast Cancer Cell Invasion Using a 3D Microfluidic Model
Yu Ling Huang[1], Chih-kuan Tung[2], Anqi Zheng[3], Beum Jun Kim[1], and Mingming Wu[1]
[1]Cornell University, Ithaca, NY, [2]North Carolina A&T State University, Greensboro, NC, [3]Icahn School of Medicine at Mount Sinai, New York, NY

9:15 am
Role of Lymphatic-Mimicking Small-Scale Fluid Shear Stress on Survival, Integrin Signaling, and Drug Response in Aggressive Human Lymphoid Tumors
FNU Apoorva[1], Ye Tian[1], and Ankur Singh[1]
[1]Cornell University, Ithaca, NY

OP-Fri-1-3 Auditorium 3

Tracks: Biomechanics, Neural Engineering

Concussion Biomechanics

Chairs: Jason Luck, Yujian Huang

8:00 am
Helmet Add-Ons Contribute to a Reduction in the Magnitude of Head Impacts Among Football Athletes
Kristopher Hendershot[1], Kelsey Evans[1], Lindsay Lee[1], Sanam Patel[1], Christopher Rothfusz[1], Brian Liu[2], Nicole Kosoris[2], Shean Phelps[2], Russell Gore[3], David Wright[1], Tamara Espinoza[1], and Michelle LaPlaca[4]
[1]Emory University, Atlanta, GA, [2]Georgia Tech Research Institute, Atlanta, GA, [3]Shepherd Center, Atlanta, GA, [4]Georgia Tech / Emory University, Atlanta, GA

8:15 am
***In Vivo* Strains Vary by Brain Tissue Type and Cortical Region with Mild Angular Head Acceleration**
Deva Chan[1], Andrew Knutsen[2], Yuan-Chiao Lu[3], Sarah Yang[1], Philip Bayly[4], John Butman[5], and Dzung Pham[1]
[1]Henry M Jackson Foundation, Bethesda, MD, [2]Institute for Defense Analyses, Alexandria, VA,[3]Uniformed Services University of the Health Sciences, Bethesda, MD, [4]Washington University in St. Louis, St. Louis, MO, [5]Radiology and Imaging Sciences, Bethesda, MD

8:30 am
Investigation of Football Head Impacts Through Development of a Dynamic Model
Michael Fanton[1], Fidel Hernandez[1], and David Camarillo[1]
[1]Stanford University, Stanford, CA

8:45 am
Investigation of Intraparenchymal Head Injury Mechanisms through Multivariate FE Simulation
Derek Jones[1], Jillian Urban[1], Ashley Weaver[1], and Joel Stitzel[1]
[1]Wake Forest University, Winston-Salem, NC

9:00 am
Assessment of Single Season Accumulation of Head Impact Exposure in Youth Athletes
Jillian Urban[1 2], Mireille Kelley[1 2], Logan Miller[1 2], Derek Jones[1 2], and Joel Stitzel[1 2]
[1]Wake Forest School of Medicine, Winston Salem, NC, [2]Virginia Tech-Wake Forest University Center for Injury Biomechanics, Winston Salem, NC

9:15 am
Astrocyte Reactivity Following Blast Exposure Involves Aberrant Histone Acetylation
Zachary Bailey[1], Michael Grinter[1], and Pamela VandeVord[1 2]
[1]Virginia Tech, Blacksburg, VA, [2]Salem Veterans Affairs Medical Center, Salem, VA

OP-Fri-1-4 — Room 102AB

Tracks: Cardiovascular Engineering, Tissue Engineering

Cardiovascular Tissue Engineering II

Chairs: Kareen Coulombe, Kartik Balachandran

8:00 am
Engineered *In Vitro* Disease Models for the Development and Validation of New Cardiac Therapies–INVITED
Kelly Sullivan[1], Whitney Stoppel[1], Breanna Duffy[1], David Kaplan[1], and Lauren Black[1,2]
[1]Tufts University, Medford, MA, [2]Tufts University School of Medicine, Boston, MA

8:30 am
***In Vivo* Anastomosis and Perfusion of a 3D Printed PEG Hydrogel Containing Microvascular Networks**
Samantha Paulsen[1], Carol Chen[2], Bagrat Grigoryan[1], Nicholas Calafat[1], Pavan Atluri[2], and Jordan Miller[1]
[1]Rice University, Houston, TX, [2]University of Pennsylvania, Philadelphia, PA

8:45 am
Temporal Control of ECM Composition in *Ex Vivo* Heart Valve Organ Cultures
Ana Porras[1], Hongyu Rao[1], Curtis Brandt[1], and Kristyn Masters[1]
[1]University of Wisconsin-Madison, Madison, WI

9:00 am
Fabrication of Human Cardiac Tissue Using 3D Printing of High Resolution, ECM-Inspired Scaffolds
Molly Kupfer[1], Ling Gao[2], Jangwook Jung[1], Patrick Zhang[2], Libang Yang[2], Quyen Tran[3], Visar Ajeti[3], Brian Freeman[1], Paul Campagnola[3], Jianyi Zhang[1,2], and Brenda Ogle[2 3]
[1]University of Minnesota-Twin Cities, Minneapolos, MN, [2]University of Minnesota-Twin Cities, Minneapolis, MN, [3]University of Wisconsin-Madison, Madison, WI

9:15 am
Engineered hiPSC-Cardiac Tissue Propagates Electrical Impulses to Host in Infarcted Rat Hearts
Kareen Coulombe[1], Fabiola Munarin[1], Tae Yun Kim[1 2], Ulrike Mende[1 2], and Bum-Rak Choi[1 2]
[1]Brown University, Providence, RI, [2]Rhode Island Hospital, Providence, RI

OP-Fri-1-5 — Room 102C

Track: Biomaterials*

Biomaterials for Immunoengineering I

Chairs: Silviya Zustiak, Qun Wang

8:00 am
Combinatorial Delivery of Multiple TLR Agonists Via Polymeric Pathogen Like Particles Synergistically Enhances Innate And Adaptive Immune Responses
Ranjna Madan-Lala[1], Pallab Pradhan[1], and Krishnendu Roy[1]
[1]Georgia Institute of Technology, Atlanta, GA

8:15 am
Expansion of Exhausted T Cells via Electrospun Poly(Dimethyl Siloxane)-based Fibrous Meshes
Alex Dang[1], Danielle Bogdanowicz[1], Helen Lu[1], Lance Kam[1], Jennifer Brown[2], and Stacey Fernandes2
[1]Columbia University, New York, NY, [2]Harvard Medical School, Boston, MA

8:30 am
Antibody-Modified-Conduit Blood Filtration: an Extra-corporeal Immune-Modulating Therapy for Sepsis
Andre Shomorony[1,2,3], Brian McAlvin[2], and Daniel Kohane[2]
[1]Harvard Medical School, Boston, MA, [2]Boston Children's Hospital, Boston, MA, [3]Massachusetts Institute of Technology, Cambridge, MA

8:45 Aam
Revisiting the Immunogenicity (or Tolerogenicity) of Poly (lactic-co-glycolic acid)
Riley Allen[1], Jeff Ma[1], and Jamal Lewis[1]
[1]University of California, Davis, Davis, CA

9:00 am
pH-Dependent Vomocytosis of PLGA Microparticles from Dendritic Cells
Amir Bolandparvaz[1], Jeffry Ma[1], and Jamal Lewis[1]
[1]University of California, Davis, Davis, CA

Friday, October 7 | 8:00 am–9:30 am | Platform Session 1

9:15 am
Modification of PLGA Microparticles with the Immunomodulatory Protein CD200 Promotes Phagocytosis and Anti-inflammatory Cytokine Secretion by Macrophages
Esther Chen[1], Shu-Hui Chu[1], Andrea Tenner[1], and Wendy Liu[1]
[1]University of California, Irvine, Irvine, CA

*** Biomaterials Track sponsored by**

ACS Biomaterials SCIENCE & ENGINEERING

OP-Fri-1-6 Room 101A

Tracks: Bioinformatics, Computational and Systems Biology, Cellular and Molecular Bioengineering

Theory and Practice of Synthetic Biology

Chairs: Casim Sarkar, Megan McClean

8:00 am
Spatial Segregation of Synthetic Circuit Output Using the Cell Surface
Felicia Scott[1], Keith Heyde[2], and Warren Ruder[1]
[1]Virginia Tech, Blacksburg, VA, [2]Virginia Polytechnic Institute and State University, Blacksburg, VA

8:15 am
A Toolkit for Optogenetic Control of Gene Expression in *Saccharomyces Cerevisiae*
Cameron Stewart[1] and Megan McClean[1]
[1]UW-Madison, Madison, WI

8:30 am
Elucidating Response Dynamics of Multivalent Signal Transduction Hubs
Wesley Errington[1], Patrick Holec[1], and Casim Sarkar[1]
[1]University of Minnesota, Minneapolis, MN

8:45 am
Cell Lineage Tracing Using Nuclease Barcoding
Stephanie Tzouanas Schmidt[1], Stephanie Zimmerman[2], Jianbin Wang[3], Stuart Kim[1], and Stephen R. Quake[1]
[1]Stanford University, Stanford, CA, [2]Univ. of Washington, Seattle, WA, [3]Tsinghua University, Beijing, China, People's Republic of

9:00 am
Bow-tie Signaling Topology Vulnerable to Age-Associated Decline
Matthew Crane[1], Kenneth Chen[1], Peter Swain[2], and Matthew Kaeberlein[1]
[1]University of Washington, Seattle, WA, [2]University of Edinburgh, Edinburgh, United Kingdom

9:15 am
Employing Biomimetic Systems for Understanding the Affects of the Human Microbiome
Keith Heyde[1] and Warren Ruder[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

OP-Fri-1-7 Room 101B

Track: Cancer Technologies

Engineered Models of Glioma and the Tumor Microenvironment

Chairs: Aleksander Skardal, Cyrus Ghajar

8:00 am
Development and Characterization of Spontaneous Glioblastoma Mouse Models
Chao Liu[1], Rebecca Klank[1], Ghaidan Shamsan[1], S. Joseph McFarren[1], Brooke Braman[1], Taner Akkin[1], David Largaespada[1], and David Odde[1]
[1]University of Minnesota, Minneapolis, MN

8:15 am
Glioma Cell Invasion is Significantly Enhanced in Composite Hydrogel Matrices Composed of Chondroitin 4- and 4,6-Sulfated Glycosaminoglycans
Meghan Logun[1], Nicole Bisel[1], Emily Tanasse[2], Wujun Zhao[1], Bhagya Gunasekera[1], Leidong Mao[1], and Lohitash Karumbaiah[1]
[1]University of Georgia, Athens, GA, [2]Boise State University, Boise, ID

8:30 am
Analyzing Hypoxia Induced Epigenetic Variations in Cell Subpopulations in the Tumor Microenvironment
Megan Cox[1], Yan Zhu[1], Yuan-Pang Hsieh[1], Chang Lu[1], and Scott Verbridge[1]
[1]Virginia Tech, Blacksburg, VA

8:45 am
Brain-mimetic Hydrogels to Study Development of Glioblastoma Resistance to EGFR Inhibition
Weikun Xiao[1], Rongyu Zhang[1], Songping Sun[1], Arshia Ehsanipour[1], Christopher Walthers[1], Jesse Liang[1], Lisa Ta[1], David Nathanson[1], and Stephanie Seidlits[1]
[1]University of California, Los Angeles, CA

9:00 Aam
Tumor-On-A-Chip: Addressing Transport Mechanics and Cytotoxicity of Nanomedicines On 3D Tumor Spheroids
Rui Pereira[1], Chiara Manneschi[1], Marco Francardi[1], Anna Lisa Palange[1], Aeju Lee[1], and Paolo Decuzzi[1]
[1]IIT-Italian Institute of Technology, Genova, Italy

9:15 am
An *In Vitro* Model of Glioblastoma Multiforme
Hemamylammal Sivakumar[1], Mahesh Devarasetty[1], and Aleksander Skardal[1]
[1]Wake Forest School of Medicine, Winston-Salem, NC

OP-Fri-1-8 — Room 101C

Track: Biomechanics

Injury Biomechanics I

Chairs: Jaydip Desai, Matthew Fisher

8:00 am
Adult Human Finite Element Models for Simulating Pedestrian Accidents
Costin Untaroiu[1], Wansoo Pak[1], Yunzhu Meng[1], and Scott Gayzik[2]
[1]Virginia Tech, Blacksburg, VA, [2]Wake Forest University, Winston-Salem, NC

8:15 am
Evaluation of Hearing Protection Devices to Blast Exposure Using Human Temporal Bone and 3D Ear Model
Rong Gan[1], Don Nakmali[1], and Kegan Leckness[1]
[1]University of Oklahoma, Norman, OK

8:30 am
Foot Flight after a Simulated Misstep Predicts Ladder Fall Severity
Erika Pliner[1] and Kurt Beschorner[1]
[1]University of Pittsburgh, Pittsburgh, PA

8:45 am
Changes In Bone Mass After Body Weight Supported Treadmill Training In Spinal Cord Injury Rats
Gabrielle Gehron[1], Brittany King[2], Jaclyn Witko[2], Jennifer Kadlowec[2], and Anita Singh[1]
[1]Widener University, Chester, PA, [2]Rowan University, Glassboro, NJ

9:00 am
Accurate Detection of On-Field Football Head Impacts Using an Instrumented Mouthguard
Lyndia Wu[1], Calvin Kuo[1], Jesus Loza[1], Mehmet Kurt[1], Kaveh Laksari[1], Daniel Senif[1], Scott Anderson[1], Logan Miller[2], Jillian Urban[2], Joel Stitzel[2], and David Camarillo[1]
[1]Stanford University, Stanford, CA, [2]Wake Forest University, Winston-Salem, NC

9:15 am
Potential Injury Prevention Benefits of an Intersection Driver Assistance System
John Scanlon[1] and Hampton Gabler[1]
[1]Virginia Tech, Blacksburg, VA

OP-Fri-1-9 — Room 101D

Track: Tissue Engineering

Printing and Patterning in Tissue Engineering

Chairs: Monica Moya, Ashutosh Agarwal

8:00 am
Stereolithography of Engineered Tissues Containing Interpenetrating Vascular Networks–INVITED
Jordan Miller[1]
[1]Rice University, Houston, TX

8:30 am
3D Near-Field Electrospinning: A New Approach for 3D Fiber: Cell-loaded Gel Composites
Pouria Fattahi[1], Jordan T. Dover[1], and Justin L. Brown[1]
[1]Pennsylvania State University, University Park, PA

8:45 am
Generation of Glioblastoma-Vascular Niche using 3D Bioprinting
Vivian Lee1, Seung-Schik Yoo[2], Hongyan Zou[3], Roland Friedel[3], and Guohao Dai[1]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Brigham and Women's Hospital, Harvard Medical School, Boston, MA, [3]Icahn School of Medicine at Mount Sinai, New York, NY

9:00 am
Engineering Pre-Vascularized Skeletal Muscle with Physiologically-Relevant Cellular Organization for Treatment of Volumetric Muscle Loss
Karina Nakayama[1], Marco Quarta[2], Victor Garcia[2], Zachary Strassberg[2], Oscar Abilez[3], Thomas Rando[2], and Ngan Huang[1]
[1]Stanford University, Palo Alto, CA, [2]Veterans Affairs Palo Alto Health Care System, Palo Alto, CA, [3]Stanford University, Stanford, CA

9:15 am
2D Self-foldable Micro-patterns for Forming 3D Cell Niches with Tunable Micro-topography
Chunxiao Cui[1], Mingkun Wang[1], and Li-Hsin Han[1]
[1]Drexel University, Philadelphia, PA

OP-Fri-1-10 — Room 101E

Track: Biomaterials*

Advanced Characterization and Imaging of Biomaterial Environments

Chairs: Jai Rudra, Christopher Jewell

8:00 am
Optical Anisotropy Contrast Microscopy: Imaging Ellipsometry of Cells Cultured On Birefringent Nanostructures Enables Live-Cell Label-Free Observation of Cell Features And Cell-Substrate Interactions.
Albert Nguyen[1], Tadas Kasputis[2], Darin Peev[1], Eva Franke-Schubert[1], Angela Pannier[1], and Mathias Schubert[1]
[1]University of Nebraska-Lincoln, Lincoln, NE, [2]University of Michigan, Ann Arbor, MI

8:15 am
Systems Analysis Yields Essential Immune Cell and Cytokine Targets In The Foreign Body Response To Implanted Biomaterials
Joshua Doloff[1,2], Robert Langer[1,2,3], and Daniel Anderson[1,2,3]
[1]David H. Koch Institute for Integrative Cancer Research, Massachusetts Institute of Technology, Cambridge, MA, [2]Department of Anesthesiology, Boston Children's Hospital, Boston, MA, [3]Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, MA

Friday, October 7 | 8:00 am–9:30 am | Platform Session 1

8:30 am
Do Ingested Emulsifiers Disrupt the Intestinal Mucus Barrier?
Jaclyn Lock[1], Taylor Carlson[1], Charles Evans[1], and Rebecca Carrier[1]
[1]Northeastern University, Boston, MA

8:45 am
Evaluating a Biodegradable Piezoelectric Composite Scaffold for Cartilage Tissue Engineering
Ateka Khader[1] and Treena Arinzeh[1]
[1]New Jersey Institute of Technology, Newark, NJ

9:00 am
Imaging Pulmonary Distribution and Residence Time of Nano-in-Micro Particles
Joscelyn Mejias[1,2] and Krishnendu Roy[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

9:15am
Computational Analysis of Biomaterial-Based VEGF Delivery for Regenerative Medicine
Lindsay Clegg[1] and Feilim Mac Gabhann[1]
[1]Johns Hopkins University, Baltimore, MD

*** Biomaterials Track sponsored by**

ACS Biomaterials SCIENCE & ENGINEERING

OP-Fri-1-11 — Room 200E

Track: Respiratory Bioengineering

Experimental Respiratory Mechanobiology

Chairs: Rebecca Heise, Said Audi

8:00 am
Dynamic Imaging During Cyclic Stretch Reveals Pulmonary Endothelial Response to Thrombin Challenge
Arkaprava Dan[1], Ryan Huang[1], and Deborah Leckband[1]
[1]University of Illinois, Urbana-Champaign, Urbana, IL

8:15 am
Cell-extracellular Matrix Interactions Play a Critical Role in the Origin of Hyperreactivity of Airway Smooth Muscle Cells in Asthma
Harikrishnan Parameswaran[1], Ramaswamy Krishnan[2], Michael Smith[1], and Kenneth Lutchen[1]
[1]Boston University, Boston, MA, [2]Beth Israel Deaconess Medical Center, Boston, MA

8:30 am
Controlled Delivery of Therapeutic Cells and Microparticles into Target Lung Airways
Jinho Kim[1], John O'Neill[1], Brandon Guenthart[1], N. Valerio Dorrello[1], Matthew Bacchetta[1], and Gordana Vunjak-Novakovic[1]
[1]Columbia University, New York, NY

8:45 am
Stiffness of Human Lung Tissue: An AFM Study on Aging and Tissue Thickness Effects
Delphine Sicard[1], Laura Fredenburgh[2], and Daniel Tschumperlin[1]
[1]Mayo Clinic, Rochester, MN, [2]Brigham and Women's Hospital, Boston, MA

9:00 am
Alveolar Type II Epithelial Cells Exhibit Age-dependent Differential Response to Mechanical Stretch and Monocyte Recruitment
Michael Valentine[1], Joseph Herbert[1], Franck Kamga Gninzeko[1], Matthew Schneck[1], Angela Reynolds[1], and Rebecca Heise[1]
[1]Virginia Commonwealth University, Richmond, VA

9:15 am
VE-cadherin Signals and Substrate Stiffness Regulate Force Transduction Through Endothelial Monolayers
Roberto Andresen Eguiluz[1], Mohammed Munim[1], and Deborah Leckband[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

OP-Fri-1-12 — Room 200F

Track: Nano and Micro Technologies

Drug Screening Technologies

Chairs: Nilay Chakraborty, Jacqueline Linnes

8:00 am
Therapeutic Drug Monitoring of Antibiotics and Antifungals from Serum Using SERS
Adam Berger[1] and Ian White[1]
[1]University of Maryland, College Park, College Park, MD

8:15 am
Droplet-on-demand Platform for Combinatorial Screening of Drugs in C. elegans
Guillaume Aubry[1] and Hang Lu[1]
[1]Georgia Institute of Technology, Atlanta, GA

8:30 am
A Bioengineered Multi-organoid Body-on-a-Chip Platform for Advanced Drug Screening
Mahesh Devarasetty[1], Steven Forsythe[1], Sean Murphy[1], Thomas Shupe[1], Sang-Jin Lee[1], John Jackson[1], James Yoo[1], Shay Soker[1], Colin Bishop[1], Anthony Atala[1], and Aleksander Skardal[1]
[1]Wake Forest School of Medicine, Winston-Salem, NC

8:45 am
Collagen Microtissues Facilitate Large-scale Studies of Cell-matrix Interactions
Alexandra Crampton[1], Marie-Elena Brett[1], and David Wood[1]
[1]University of Minnesota, Minneapolis, MN

9:00 am
Point-of-Detection Single-Cell Microchip for High-Throughput, Multiplexed Analysis of Cancer Cells
Jun Wang[1]
[1]SUNY Albany, Albany, NY

9:15 am
Anaerobic Conditions Reduce Damage to Red Blood Cells during Hypothermic Storage
Nathaniel Piety[1], Julianne Stutz[1], Nida Yilmaz[1], Hui Xia[1], Tatsuro Yoshida[2], and Sergey Shevkoplyas[1]
[1]University of Houston, Houston, TX, [2]New Health Sciences Inc., Bethesda, MD

OP-Fri-1-13 Room 200D

Track: Biomedical Imaging and Optics

Molecular Imaging

Chairs: Santosh Aryal, Rui Pereira

8:00 am
Development of a Protease-Activatable Nanoprobe for Molecular Imaging with Dual Energy CT
Jeffrey Ashton[1], Cristian Badea[2], and Jennifer West[1]
[1]Duke University, Durham, NC, [2]Duke University Medical Center, Durham, NC

8:15 am
Using Indocyanine Green as a Control Agent in Paired-agent Fluorescence Imaging for Sentinel Lymph Node Metastases Detection
Chengyue Li[1], Xiaochun Xu[1], and Kenneth M. Tichauer[1]
[1]Illinois Institute of Technology, Chicago, IL

8:30 am
High-Definition Infrared Spectroscopic Imaging: Towards Automated Cancer Histopathology
Shachi Mittal[1], Tomasz Wrobel[2], L. Suzanne Leslie[2], Andre Kadjacsy Balla[3], and Rohit Bhargava[1]
[1]University of Illinois at Urbana Champaign, Urbana, IL, [2]Beckman Institute for Advanced Science and Technology, Urbana, IL, [3]University of Illinois at Chicago, Chicago, IL

8:45 am
Exploratory Spectral Analysis for Comparison of High-Definition Infrared Imaging of Colon Samples with Standard-Definition Fourier Transform Infrared Imaging
Suamya Tiwari[1], Shachi Mittal[1], Tomasz Wrobel[2], and Rohit Bhargava[1]
[1]University of Illinois at Urbana Champaign, Urbana, IL, [2]Beckman Institute for Advanced Science and Technology, Urbana, IL

9:00 am
High Speed and High Definition Characterization of Prostate Cancer By Infrared Spectroscopic Imaging
Tomasz Wrobel[1], Andre Kadjacsy-Balla[2], and Rohit Bhargava[1]
[1]University of Illinois, Urbana, IL, [2]University of Chicago, Chicago, IL

9:15 am
Chemical Imaging of the Tumor Microenvironment with ToF-SIMS
Lara Gamble[1], Blake Bluestein[1], Daniel Graham[1], Fionnuala Morrish[2], David Hockenbery[2], and Peggy Porter[2]
[1]University of Washington, Seattle, WA, [2]Fred Hutchinson Cancer Research Center, Seattle, WA

OP-Fri-1-14 Room 200G

Track: Translational Biomedical Engineering

Micro/Nano Tools in Medicine

Chairs: Xuanhong Cheng, Shannon Weigum

8:00 am
Translating and Commercializing Biophotonics Imaging Technologies for Point-of-Care Devices–INVITED
Stephen Boppart[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

8:30 am
Point-of-Care Compatible Sustained-Release Synthetic Biomarkers to Monitor Imminent Onset of Disease
Jaideep Dudani[1], Colin Buss[1], Reid Akana[1], Gabriel Kwong[2], and Sangeeta Bhatia[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Georgia Institute of Technology, Atlanta, GA

8:45 am
Point-of-care Diagnosis of M. Tuberculosis using Combined Immunomagnetic Enrichment and Acid-fast Staining
Nishal Shah[1]
[1]University of Pennsylvania, Philadelphia, PA

9:00 am
Rapid Screening/Diagnosis of Tuberculosis from Breath Using Functionalized TiO2 Nanotube Array Sensing Platform
Dhiman Bhattacharyya[1], Mano Misra[1], and Swomitra Mohanty[2]
[1]University of Utah, Salt Lake City, UT

9:15 am
Label-free Field Screening of Schistosoma haematobium Eggs in Urine Samples Using a Cost-effective Smartphone Based Microscope
Hatice Ceylan Koydemir[1], Isaac I. Bogoch[2], Derek Tseng[1], Richard K.D. Ephraim[3], Evans Duah[3], Joseph Tee[4], Jason R. Andrews[5], and Aydogan Ozcan[1]
[1]University of California Los Angeles, Los Angeles, CA, [2]University of Toronto, Toronto, Canada, [3]University of Cape Coast, Ghana, Ghana, [4]Volta River Authority, Ghana, Ghana,[5]Stanford University, Stanford, CA

OP-Fri-1-15 Room 200C

Tracks: Biomechanics, Bioinformatics, Computational and Systems Biology

Computational and Multiscale Modeling in Biomechanics I

Chairs: Taeyoon Kim, Siqi Wang

8:00 am
Subject-Specific Models to Predict Ankle Kinematics with Dual-Fluoroscopy as a Reference Standard
Jennifer Nichols[1], Koren Roach[1], Niccolo Fiorentino[1], and Andrew Anderson[1]
[1]University of Utah, Salt Lake City, UT

Friday, October 7 | 8:00 am–9:30 am | Platform Session 1

8:15 am
Frequency-Dependent Penetration o Vibrotactile Stimulus In The Pacinian Corpuscle
Julia Quindlen[1], Burak Guclu[2], Eric Schepis[3], and Victor Barocas[1]
[1]University of Minnesota, Minneapolis, MN, [2]Bogaziçi University, Istanbul, Turkey, [3]Syracuse University, Syracuse, NY

8:30 am
A Chemo-Mechanical Computational Model for Cancer Cell Invasion in Stroma
Hossein Ahmadzadeh[1], Marie Webster[1], Ashani Weeraratna[1], and Vivek Shenoy[1]
[1]University of Pennsylvania, Philadelphia, PA

8:45 am
A Predictive Multiscale Model of Simulating Shear-Induced Platelet Activation
Peng Zhang[1], Chao Gao[1], Jawaad Sheriff[1], Marvin Slepian[2], Yuefan Deng[1], and Danny Bluestein1
[1]Stony Brook University, Stony Brook, NY, [2]University of Arizona, Tucson, AZ

9:00 am
Tuning the Force Sensitivity of a Force Transducer at Intercellular Cadherin Adhesions
Deborah Leckband[1], Samantha Barrick[1], Jing Li[1], Alokananda Ray[1], and Emad Tajkhorshid[1]
[1]University of Illinois, Urbana, IL

9:15 am
A Bio-chemo-mechanical Model for Nuclear Mechanics During Cell Transmigration
Xuan Cao[1], Emad Moeendarbary[2], Philipp Isermann[3], Patricia Davidson[3], Anya Burkart[2], Jan Lammerding[3], Roger Kamm[2], and Vivek Shenoy[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Massachusetts Institute of Technology, Cambridge, MA, [3]Cornell University, Ithaca, NY

OP-Fri-1-16 — Room 200H

Track: Drug Delivery

Topics in Drug Delivery I

Chairs: Michael King, Isidro Zarraga

8:00 am
Immunomodulatory Effects of Nanoparticles in a Mouse Model of Skin Allergy–INVITED
Samreen Jatana[1], Brian Palmer[1], Sarah Phelan[1], and Lisa DeLouise[1]
[1]University of Rochester, Rochester, NY

8:30 am
Dual Carfilzomib and Doxorubicin Loaded Liposomal Nanoparticles for Synergistic Efficacy in Multiple Myeloma Mouse Mode–INVITED
Basar Bilgicer[1]
[1]Notre Dame, South Bend, IN

8:45 am
Physicochemical and Biological Factors in Drug Eluting Stent Design–INVITED
Yen-Lane Chen[1]
[1]Boston Scientific, New Brighton, MN

9:00 am
Engineering Antibody Fabs for Long Acting Delivery to the Eye–INVITED
Devin Tesar[1]
[1]Genentech, South San Francisco, CA

OP-Fri-1-17 — Room 200B

Track: Device Technologies and Biomedical Robotics

Wearable Sensors and Devices

Chairs: Walt Baxter, Gary Brooking

8:00 am
Flexible Electronics and Data Interpretation Methods for Physiologic Monitoring–INVITED
Todd Coleman[1]
[1]University of California, San Diego, La Jolla, CA

8:30 am
MouthLab Tricorder Is Optimized for Rapid Medical Assessment
Jianzhou Xu[1], Yuankui Zhu[1], Hai Tang[1], Yang Hong[1], David Feller-Kopman[1], and Gene Fridman[1]
[1]Johns Hopkins University, Baltimore, MD

8:45 am
Development of a Reverse Iontophoresis Based Noninvasive Real Time Transdermal Biomarker Sensing Platform
Niraj K. Gupta[1], Yongsoon Hwang[1], and Brent D. Cameron[1]
[1]University of Toledo, Toledo, OH

9:00 am
A Wearable Wireless Multiple-Lead ECG Sensor Embedded in a Flexible Finger Ring
Quan Dong[1], Mona Zaghloul[1], and Zhenyu Li[1]
[1]George Washington University, Washington, DC

9:15 am
Clinical Validation of a New Consumer Sleep Monitoring Device
Erik Zavrel[1]
[1]Cornell University, New York, NY

MEET THE EXPERT

8:00 am–9:30 am **Room 204**

Collaborations for International Research

Organized by Dr. Jerry S.H. Lee, *Deputy Director for Cancer Research and Technology, White House Cancer Moonshot Task Force*

With advanced technologies shrinking the hurdles associated with conducting research in a global community, the need to develop and sustain international collaborations is critical for 21st century science. Panelists will share experiences developing, sustaining, and supporting international collaborations.

Panel Members:

- Owen McCarty, PhD FAHA, Professor & Interim Chair of Biomedical Engineering, Oregon Health & Science University
- Paul Pearlman, Science Policy Advisor, National Institutes of Health, National Cancer Institute, Center for Global Health
- Ryan Pawell, Founder and CEO of Indee
- Syril D. Pettit, Executive Director, Health and Environmental Sciences Institute (HESI)

SPECIAL SESSION

8:00 am–9:30 am **Room 208AB**

JOINT AAA-BMES SYMPOSIUM: Genome Editing Strategies in Bioengineering

Chairs: Lynne Opperman, Geert Schmid-Schonbein

8:00 am

Precision Genome Editing for Treating Single-gene Disorders

Ciaran Lee[1] and Gang Bao[1]
[1]Rice University, Houston, TX

8:20 am

New MicroRNA Biotechnology to Inhibit Inflammation and Regenerate Bone

Brad Amendt[1]
[1]Craniofacial Anomalies Research Center, University of Iowa Carver College of Medicine

8:40 am

Using CRISPR-Cas9 to Unravel the Role of Glycans during Human Leukocyte-Endothelial Cell Adhesion

Sriram Neelamegham[1]
[1]State University of New York, Buffalo, NY

9:00 am

Mouse Models of Human Genetic Diseases Created by CRISPR/Cas9-mediated Genomic Engineering

Yongbo Lu[1]
[1]Department of Biomedical Sciences, Texas A&M University College of Dentistry, Dallas TX

Friday, October 7 | 8:00 am–9:30 am | Platform Session 1

SPECIAL SESSION

8:00 am–9:30 am **Room 200J**

Whitaker Session

Chair: Amie Schaefer
Program Officer, Whitaker International Program Institute of International Education

Joseph Yu
Whitaker International Fellow, 2013
Host Institution: Imperial College London, UK
Topic: Comprehensive Training in Cardiovascular Research and Biomedical Engineering Entrepreneurship

Brandan Walters
Whitaker International Fellow, 2014
Host Institution: Eberhard Karls University of Tubingen, Germany
Topic: Quantifiably Controlling Mesenchymal Stem Cell Morphology by Application of Tuned Cyclic Strain and the Effects of These Changes on Smooth Muscle Cell Differentiation

Erin Coonahan
Whitaker International Fellow, 2013
Host Institution: Engineering World Health, Honduras
Topic: Technician Training Programs to Improve Access to Healthcare in Honduras

Colin Hisey
Whitaker International Fellow, 2015
Host Institution: University of Navarra, Spain
Topic: A Microfluidic Device for Controlled Cell Placement and 1D Migration on Biomimetic Structures

Alisha Geldert
Whitaker International Fellow, 2015
Host Institution: National University of Singapore
Topic: Investigation of Aptamer-based Sensing for Malaria Detection

INDUSTRY SESSION-SBIR/STTR

8:00 am–9:00 am **Room 201**

Chairs: Ben Noe

This panel will give an overview of SBIR and STTR grants, including requirements, how to apply, best practices to consider, and watch outs to avoid.

INDUSTRY SESSION–Reimbursement

9:15 am–10:15 am **Room 201**

Chairs: Ben Noe

This panel will discuss the current landscape and policies surrounding reimbursement for drugs, devices, procedures, and therapies and its impact on manufacturers.

INDUSTRY SESSION

12:00 noon–1:30 pm **Room 201**

Healthcare Innovations with Physicians

Chair: Ben Noe

One of the challenges in biomedical engineering careers is developing an understanding of current and anticipated unmet clinical needs, and how to address those needs with existing and new technologies. The audience will be treated to a detailed view, from clinicians, on how real-world problems in orthopedics, neurology, and transplantation can be addressed with biomedical engineering solutions.

Friday, October 7 | 1:45 pm–3:15 pm | Platform Session 2

OP-Fri-2-1 Auditorium 1

Tracks: Cellular and Molecular Bioengineering, Biomechanics

Mechanotransduction

Chairs: Paul Sundaram, Anthony Passerini

1:45 pm
Exercise Increases the Population of Myofibroblasts and Enhances the Pericellular Matrix in Fatigue Damaged Tendons
Rebecca Bell1, N. Remi Gendron[2], Matthew Anderson[2], Evan L. Flatow[2], and Nelly Andarawis-Puri[1]
[1]Cornell University, Ithaca, NY, [2]Icahn School of Medicine at Mount Sinai, New York, NY

2:00 pm
Effects of Mechanical Stimulation on Collagen Synthesis in Aged Human Dermal Fibroblasts
Aribet De Jesus[1], Sathivel Chinnathambi[1], Mariam El-Hattab[1], Douglas Henstrom[1], and Edward Sander[1]
[1]University of Iowa, Iowa City, IA

2:15 pm
Piezo1 Regulates Mechanotransductive Release of ATP from Human RBCs
Jiandi Wan[1], Eyup Cinar[1], Sitong Zhou[1], James DeCourcey[1], Yixuan Wang[2], and Richard Waugh[3]
[1]Rochester Institute of Technology, Rochester, NY, [2]University of Science and Technology, Beijing, China, People's Republic of, [3]University of Rochester, Rochester, NY

2:30 pm
Improving the Contractile Properties of Mesenchymal Stem Cells by Expressing NANOG
Aref Shahini[1], Panagiotis Mistriotis[1], Mohammadnabi Asmani[1], Ruogang Zhao[1], and Stelios Andreadis[1]
[1]University at Buffalo, The State University of New York, Buffalo, NY

2:45 pm
Keratin 8/18 Regulation of Collective Epithelial Cell Contractility
Francois Bordeleau[1], Charles-Antoine Lamontagne[2], Cynthia Reinhart-King[1], Yves De Koninck[2], and Normand Marceau[2]
[1]Cornell University, Ithaca, NY, [2]Université Laval, Quebec, QC, Canada

3:00 pm
Epidermal Growth Factor Receptor Mediates E-cadherin Force Transduction in Epithelia
Deborah Leckband[1], Ismaeel Muhamed[1], Jun Wu[1], Poonam Sehgal[1], and Xinyu Kong[1]
[1]University of Illinois, Urbana, IL

OP-Fri-2-2 Auditorium 2

Tracks: Cancer Technologies, Nano and Micro Technologies

Microscale Cancer Cell Analysis

Chairs: Alptekin Aksan, Ming Su

1:45 pm
Single Cell Cytokine Analysis of Circulating Hematopoietic Cells in Myeloproliferative Diseases
Rong Fan[1]
[1]Yale University, New Haven, CT

2:00 pm
Detection of an Ovarian Cancer Biomarker Via an Implantable Single-Walled Carbon Nanotube Biosensor
Ryan Williams[1], Christopher Lee[1], Thomas Galassi[2], Maria Sirenko[1], Janki Shah[1], Jackson Harvey[2], Douglas Levine[1], and Daniel Heller[1]
[1]Memorial Sloan Kettering Cancer Center, New York, NY, [2]Weill Cornell Medicine, New York, NY

2:15 pm
Isolation and Molecular Profiling of Tumor-specific Extracellular Vesicles Using Microfluidic Technologies
Eduardo Reategui[1,2], Kristan van der Vos[3], Charles P. Lai[3], Mahnaz Zeinali[1,2], Leonora Balaj[3], David T. Ting[2,4], Brian V. Nahed[5], Xandra O. Breakefield[3], and Shannon L. Stott[1,2,4]
[1]Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, [2]Massachusetts General Hospital Cancer Center, Harvard Medical School, Charlestown, MA, [3]Department of Neurology, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, [4]Department of Medicine, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, [5]Massachusetts General Hospital Brain Tumor Center/Pappas Center for Neurooncology, Boston, MA

2:30 pm
Microfluidic Digital Melt Array for Accessing Rare Methylation Biomarkers in Cancer
Christine O'Keefe[1], Thomas Pisanic[1], Pornpat Athamanolop[1], Helena Zec[1], and Tza-Huei Wang[1]
[1]Johns Hopkins University, Baltimore, MD

2:45 pm
Rapid Microfluidic Analysis Of Primary Tumor Cell Viscoelasticity
Lionel Guillou[1], Joanna Dahl[2], Jung Ming Lin[2], Abdul Barakat[1], Julien Husson[1], Susan Muller[2], and Sanjay Kumar[2]
[1]Ecole Polytechnique, Palaiseau, France, [2]UC-Berkeley, Berkeley, CA

3:00 pm
Adhesion-based Tumor Cells Capture Using Nanotopography
Lin Shi[1], Kai Wang[1], and Yong Yang[1]
[1]West Virginia University, Morgantown, WV

Friday, October 7 | 1:45 pm–3:15 pm | Platform Session 2

OP-Fri-2-3 — Auditorium 3

Tracks: Biomechanics, Neural Engineering

Traumatic Brain Injury Biomechanics & Repair

Chairs: Liying Zhang, Deva Chan

1:45 pm
Biomechanical Response, Neuropathology and Biomarker Expression in an Experimental Model of Traumatic Brain Injury–INVITED
Liying Zhang[1], John Cavanaugh[1], Yan Li[1], and Srinivas Kallakuri[1]
[1]Wayne State University, Detroit, MI

2:00 pm
The Spatial and Temporal Deformation Pattern of the Brain from Blunt Trauma
Brian Swenson[1], Chen Miao[1], Namas Chandra[1], and Bryan Pfister[1]
[1]New Jersey Institute of Technology, Newark, NJ

2:15 pm
Quantifying Hypothermia Treatment Efficacy on 3D Neuronal Cultures Following Traumatic Brain Injury
Mark Scimone[1,2], Alana Levine[1], Jonathan Estrada[2], Harry Cramer[1,2], Paul Hopkins[1,2], and Christian Franck[1,2]
[1]Center for Biomedical Engineering, Brown University, Providence, RI, [2]School of Engineering, Brown University, Providence, RI

2:30 pm
***In Situ* Estimation of Strain Thresholds for Axon Failure as a Function of Macroscopic Stretch**
Sagar Singh[1], Assimina Pelegri[1], and David Shreiber[1]
[1]Rutgers University, Piscataway, NJ

2:45 pm
Comparative Modeling of Blast- and Impact-Induced Traumatic Brain Injury
Andrew Fisher[1], Olga Minaeva[1], Chad Tagge[1], Mark Wojnarowicz[2], Amanda Gaudreau Balderrama[1], Juliet Moncaster[2], Noel Casey[2], Robin Cleveland[3], Andrew Anderson[4], William Moss[4], Ann McKee[2,5], and Lee Goldstein[1,2]
[1]Boston University, Boston, MA, [2]Boston University School of Medicine, Boston, MA,[3]University of Oxford, Oxford, United Kingdom, [4]Lawrence Livermore National Laboratory, Livermore, CA, [5]Boston VA Healthcare System, Jamaica Plain, MA

3:00 pm
A Smart Helmet Based On Wearable MEMS Sensors and A Soft Airbag To Prevent Head Trauma
Mehmet Kurt[1], Neil Hildick Smith[1], Michael Fanton[1], and David Camarillo[1]
[1]Stanford University, Stanford, CA

OP-Fri-2-4 — Room 102AB

Tracks: Cardiovascular Engineering, Tissue Engineering

Cardiovascular Tissue Engineering III

Chairs: Brenda Ogle, Pinar Zorlutuna

1:45 pm
Tissue Engineered Models for Characterizing Vascular Mechano-Adaptation–INVITED
Patrick Alford[1], Zaw Win[1], Kerianne Steucke[1], and Eric Hald[1]
[1]University of Minnesota, Minneapolis, MN

2:15 pm
Development of Novel Antioxidant-Nitric Oxide Donor Hybrid Compound and Its Carrier for PAD Treatment
Duong Le[1], Aneetta Kuriakose[1], Suchismita Acharya[1], and Kytai Nguyen[1]
[1]University of Texas at Arlington, Arlington, TX

2:30 pm
Mechanocompatible Polymer-Extracellular Matrix Composites for Vascular Tissue Engineering
Bin Jiang[1], Rachel Suen[1], Jiao-Jing Wang[2], Zheng Zhang[2], Jason Wertheim[2], and Guillermo Ameer[1]
[1]Northwestern University, Evanston, IL, [2]Northwestern University, Chicago, IL

2:45 pm
Injectable Hydrogels as a Regenerative Medicine Therapy for Peripheral Arterial Disease
Abbygail Foster[1], Lei Cai[1], Ruby Dewi[1], Zachary Strassberg[1], Ngan Huang[1], and Sarah Heilshorn[1]
[1]Stanford University, Stanford, CA

3:00 pm
Exercise-Induced iPS-based Disease Modeling of Human Hypertrophic Cardiomyopathies
Zhen Ma[1], Sangmo Koo[1], Mohammad Mandegar[2], Nathaniel Huebsch[2], Brian Siemons[1], Costas Grigoropoulos[1], Bruce Conklin[2], and Kevin Healy[1]
[1]University of California, Berkeley, Berkeley, CA, [2]Gladstone Institute, San Francisco, CA

OP-Fri-2-5 — Room 102C

Track: Biomaterials*

Biomaterials for Immunoengineering II

Chairs: Ioannis Zervantonakis, Jungwoo Lee

1:45 pm
Improved Deliveries of Anti-Cancer Immunogenic Factors Using Magnetically Responsive Biomaterials
Anita Tolouei[1] and Stephen Kennedy[1]
[1]University of Rhode Island, Kingston, RI

2:00 pm
Dendritic Cells Treated with Extracellular Indoleamine 2,3 Dioxygenase Maintain an Immature Phenotype and Suppress Antigen-specific T cell Proliferation
Evelyn Bracho-Sanchez[1], Azadeh Hassanzadeh[1], Mark Wallet[1], and Benjamin Keselowsky[1]
[1]University of Florida, Gainesville, FL

2:15 pm
Combination Nanovaccine Induces Rapid Protective Immunity against Yersinia pestis
Sean Kelly[1], Danielle Wagner-Muniz[1], Thomas Dubensky[2], Bryan Bellaire[1], Michael Wannemuehler[1], and Balaji Narasimhan[1]
[1]Iowa State University, Ames, IA, [2]Aduro Biotech, Berkeley, CA

2:30 pm
Keratin Biomaterials Augment Anti-Inflammatory Macrophage Phenotype *In-Vitro*
Michele Waters[1], Pamela VandeVord[1], and Mark Van Dyke[1]
[1]Virginia Tech, Blacksburg, VA

2:45 pm
The Effect of Substrate Rigidity on Induction of Regulatory T cells from Conventional T cells
Neha Nataraj[1], Joung-Hyun Lee[1], Alex Dang[1], and Lance Kam[1]
[1]Columbia University, New York, NY

3:00 pm
Serum Albumin Controls Charge-Mediated Adhesion and Isolation of Cancer Cells and Leukocytes Under Flow
Michael Mitchell[1], Carlos Castellanos[2], and Michael King[2]
[1]MIT, Cambridge, MA, [2]Cornell University, Ithaca, NY

*** Biomaterials Track sponsored by**

ACS Biomaterials SCIENCE & ENGINEERING

OP-Fri-2-6 — Room 101A

Track: Cellular and Molecular Bioengineering

Gene Delivery and Genome Bioengineering

Chairs: Angela Pannier, Pablo Perez-Pinera

1:45 pm
Biologics Delivery to the Central Nervous System: Tools for *In Vivo* Cell Engineering–INVITED
Suzie Pun[1], Drew Sellers[1], Yilong Cheng[1], Kevin Tan[1], David Peeler[1], and Philip Horner[2]
[1]University of Washington, Seattle, WA, [2]Houston Methodist, Houston, TX

2:00 pm
Optimization of RNAi Nanomedicines for Breast Tumor Therapy–INVITED
Craig Duvall[1], Samantha Sarett[1], Thomas Werfel[1], Meredith Jackson[1], Taylor Kavanaugh[1], Todd Giorgio[1], Dana Brantley-Sieders[1], and Rebecca Cook[1]
[1]Vanderbilt University, Nashville, TN

2:15 pm
Genome Editing to Correct Duchenne Muscular Dystrophy–INVITED
Charles Gersbach[1], Christopher Nelson[1], and Jacqueline Robinson-Hamm[1]
[1]Duke University, Durham, NC

2:30 pm
Exploring The Effect of Chromatin State On CRISPR/Cas9 Activity
Ciaran M Lee[1], Timothy H Davis[1], Yidan Pan[1], Harshavardhan Deshmukh[1], and Gang Bao[1]
[1]Rice University, Houston, TX

2:45 pm
Development of Photoactivatable CRISPR-plus Technology
Piyush K. Jain[1], Vyas Ramanan[1], Arnout G. Schepers[1], Nisha S. Dalvie[1], Apekshya Panda[1], Heather E. Fleming[1], and Sangeeta N. Bhatia[1,2,3,4]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Department of Medicine, Brigham and Women's Hospital, Boston, MA, [3]Broad Institute, Cambridge, MA, [4]Howard Hughes Medical Institute, Cambridge, MA

3:00 pm
Point-of-Care Mutation Detection in Rare Genetic Disorders
Michael Caplan[1], David Carpentieri[2], Mitchell Shub[2], Emily Thompson[1], Logan Taysom[1], Scott Johnson[1], Ryan Bath[1], Ryan Fisher[1], Alexander Carpentieri[1], and Theodore Hall[1]
[1]Arizona State University, Tempe, AZ
[2]Phoenix Children's Hospital, Phoenix, AZ

OP-Fri-2-7 — Room 101B

Tracks: Cancer Technologies, Biomechanics

Cancer Mechanobiology I

Chairs: Gabe Kwong, Scott Verbridge

1:45 pm
Nuclear Rupture and Mechanics during Cancer Cell Migration in Confined Environments–INVITED
Jan Lammerding[1]
[1]Cornell University, Ithaca, NY

2:00 pm
Extracellular Matrix Stiffness Regulates Tumor Vasculature Phenotype
Francois Bordeleau[1], Brooke Mason[1], Emmanuel Lollis[1], Michael Mazzola[1], Sahana Somasegar[1], Joseph Califano[1], Christine Montague[1], Danielle LaValley[1], John Huynh[1], Yashira Negron Abril[1], Robert Weiss[1], Lawrence Bonassar[1], Jonathan Butcher[1], and Cynthia Reinhart-King[1]
[1]Cornell University, Ithaca, NY

2:15 pm
A Bulky Glycocalyx Drives Proliferation in the Metastatic Niche
Elliot Woods[1]
[1]UC Berkeley, Burlingame, CA

2:30 pm
Cancer-Associated Fibroblasts Exhibit Stiffness Dependent Matrix Deformations and Vascularization Potential
Mary Kathryn Sewell-Loftin[1], Taylor Hughes[1], Elizabeth Crist[1], Samantha van Hove[1], Gregory Longmore[1], and Steven George[1]
[1]Washington University in St. Louis, St. Louis, MO

Friday, October 7 | 1:45 pm–3:15 pm | Platform Session 2

2:45 pm
HEMICA-Hydrogel Encapsulated Micro-channel Array In Cancer Metastasis
Alexandros Afthinos[1], Runchen Zhao[1], Adam Suppes[1], and Konstantinos Konstantopoulos[1]
[1]The Johns Hopkins University, Baltimore, MD

3:00 pm
Stiffness-Induced Evolution of EGF and Integrin Signaling Alters Cancer Cell Motility via Calpain 2
Alyssa Schwartz[1], Christopher Hall[1], and Shelly Peyton[1]
[1]University of Massachusetts Amherst, Amherst, MA

OP-Fri-2-8 Room 101C

Track: Biomechanics

Injury Biomechanics II

Chairs: Jaydip Desai, Matthew Fisher

1:45 pm
Changing Fibrous Architecture of The Periodontal Ligament Due to Periodontitis Modeled With A Transverse Isotropic Hyperelastic Model
David Nedrelow[1] and Victor Barocas[1]
[1]University of Minnesota, Minneapolis, MN

2:00 pm
Evaluation of Brain Response Following Head Impact in Youth Athletes Using an Anatomically Accurate Finite Element Model
Logan Miller[1,2], Mireille Kelley[1,3], Derek Jones[1,3], Jillian Urban[1,3], Steven Rowson[1,4], and Joel Stitzel[1,3]
[1]Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC, [2]Wake Forest University School of Medicine, Winston Salem, NC, [3]Wake Forest University School of Medicine, Winston-Salem, NC, [4]Virginia Tech, Blacksburg, VA

2:15 pm
Characterization of Thoracic Loading as a Result of Same Level Forward Falls
Stephanie Beeman[1] and Andrew Kemper[1]
[1]Virginia Tech, Blacksburg, VA

2:30 pm
Thoracoabdominal Injury Risk in a Human Model as Result of Pre-Crash Braking
Berkan Guleyupoglu[1], Jeremy Schap[1], Matthew Davis[1], and Scott Gayzik[1]
[1]Wake Forest University School of Medicine, Winston Salem, NC

2:45 pm
Investigation of CSF Cavitation As An Injury Mechanism Of Traumatic Brain Injury
Allen Yu[1], Barclay Morrison III[2], David Meaney[3], and Cameron Bass[1]
[1]Duke University, Durham, NC, [2]Columbia University, New York, NY, [3]University of Pennsylvania, Philadelphia, PA

3:00 pm
Development and Validation of Infant Skull Fracture Predictors for Low-Height Falls
Marzieh Memar[1], Brittany Coats[2], Ingrid Lan[1], Sarah Sullivan[1], and Susan Margulies[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]University of Utah, Salt Lake City, UT

OP-Fri-2-9 Room 101D

Tracks: Tissue Engineering, Nano and Micro Technologies

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

Chairs: Yaakov Nahmias, Salman Khetani

1:45 pm
Microengineered Physiological Biomimicry: Human Organs-on-Chips–INVITED
Dan Dongeun Huh[1]
[1]University of Pennsylvania, Philadelphia, PA

2:15 pm
Real-Time Monitoring of Metabolic Function In Liver-On-Chip Microdevices Tracks The Dynamics Of Mitochondrial Dysfunction
Danny Bavli[1], Sabina Tsytkin-Kirschenzweig[1], Sebastian Prill[2], Elishai Ezra[1], Magnus Jaeger[2,3], and Yaakov Nahmias[1]
[1]The Hebrew University of Jerusalem, Jerusalem, Israel, [2]Fraunhofer Institute for Cell Therapy and Immunology, Potsdam, Germany, [3]Federal Institute for Risk Assessment, Berlin, Germany

2:30 pm
Lego-inspired Organ-on-a-Chip Gelatin Methacryloyl Microfluidic System
Julio Aleman[1,2,3], Yu Shrike Zhang[3,4,5], Aleksander Skardal[1,6,7], and Ali Khademhosseini[3,4,5]
[1]Wake Forest Institute for Regenerative Medicine, Winston Salem, NC, [2]Wake Forest School of Medicine, Winston Salem, NC, [3]Biomaterials Innovation Research Center, Cambridge, MA,[4]Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA, [5]Wyss Institute for Biologically Inspired Engineering, Boston, MA, [6]Virginia Tech-Wake Forest University School of Biomedical Engineering and Sciences, Winston Salem, NC, [7]Comprehensive Cancer Center of Wake Forest University School of Medicine, Winston Salem, NC

2:45 pm
Human Pulmonary Thrombosis-on-a-Chip
Abhishek Jain[1,2,3], Riccardo Barrile[1,4], Andries van der Meer[1], Akiko Mammoto[3], Karen De Ceunynck[2], Omozuanvbo Aisiku[2], Monicah Otieno[5], Calvert Louden[5], Geraldine Hamilton[6], Robert Flaumenhaft[2], and Donald Ingber[1,3,7]
[1]Wyss Institute for Biologically Inspired Engineering at Harvard University, Boston, MA, [2]Beth Israel and Deaconess Medical Center, Harvard Medical School, Boston, MA, [3]Boston Children's Hospital, Harvard Medical School, Boston, MA, [4]Cedar Sinai Medical Center, Los Angeles, CA,[5]Janssen Pharmaceutical Research and Development, Spring House, PA, [6]Emulate Inc., Boston, MA, [7]Harvard Paul A. Johnson School of Engineering, Cambridge, MA

3:00 pm
Miniaturized iPS-Cell Derived Micro-Heart Muscles for Physiologically Relevant Drug Response Analyses
Nathaniel Huebch[1,2], Nikhil Deveshwar[3], Peter Loskill[3], Zhen Ma[3], Luke Judge[1,2], Mohammed Mandegar[1], Casey Gifford[1], Tamer Mohammed[1], Anurag Mathur[3], Annie Truong[1], Cade Fox[2], Po-Lin So[1], Kathryn Ivey[1], Tejal Desai[2], Kevin Healy[3], and Bruce Conklin[1,2]
[1]Gladstone Institute of Cardiovascular Disease, San Francisco, CA, [2]University of California, San Francisco, San Francisco, CA, [3]University of California, Berkeley, Berkeley, CA

OP-Fri-2-10 Room 101E

Track: Biomaterials*

Natural and Bioinspired Materials I

Chairs: Rebecca Willits, Evan Scott

1:45 pm
Biomaterials for Probing the Biological Functions of the Glycocalyx–INVITED
Kamil Godula[1]
[1]University of California, San Diego, La Jolla, CA

2:15 pm
A Simple and Scalable Method To Retrieve Natural Mucin For Functional Reconstitution Of Mucosal Barrier
Abhinav Sharma[1], Neil Forbes[1,2,3], and Jungwoo Lee[1,2,3]
[1]University of Massachusetts Amherst, Amherst, MA, [2]Institute for Applied Life Sciences, Amherst, MA, [3]Molecular and Cellular Biology Graduate Program, Amherst, MA

2:30 pm
Design and Synthesis of Di-Block Copolymer for Boundary Lubrication of Articular Cartilage
Zhexun Sun[1], Elizabeth Feeney[1], Sierra Cook[1], Can Zhou[1], Ya Guan[1], Delphine Gourdon[1], Lawrence Bonassar[1], and David Putnam[1]
[1]Cornell University, Ithaca, NY

2:45 pm
Synthetic Communication Between Artificial and Natural Cells
Yunfeng Ding[1], Eliza Morris[1], and Cheemeng Tan[1]
[1]University of California Davis, Davis, CA

3:00 pm
Fibrin and Fibrinogen Differentially Regulate Macrophage Inflammatory Activation
Jessica Hsieh[1,2], Thi Tran[1,2], Elliot Botvinick[1,2], and Wendy Liu[1,2]
[1]University of California, Irvine, Irvine, CA, [2]Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA

*** Biomaterials Track sponsored by**

OP-Fri-2-11 Room 200E

Track: Neural Engineering

Neural Disease

Chairs: Xiaopeng Zhao, Levi Wood

1:45 pm
Biological Ice-Nine: Resolving The Structural Conversion, Aggregation and Neurotoxicity Of Prion Proteins at the Single Molecule Level
Chi-Fu Yen[1], Dilshan Harischandra[1], Anumantha Kanthasamy[1], and Sanjeevi Sivasankar[1]
[1]Iowa State University, Ames, IA

2:00 pm
Deep Brain Stimulation Recorrelates Cortical Beta Power with Gait Speed in a Parkinsonian Rat Model
Christian Polar[1], Alan Dorval[1], and Mark Lehmkuhle[1]
[1]University of Utah, Salt Lake City, UT

2:15 pm
Gender Differences Identify Inflammatory Cytokines Correlated with Alzheimer's Disease Severity
Levi Wood[1], Johnathan Long[1], and Michael Griffin[1]
[1]Georgia Institute of Technology, Atlanta, GA

2:30 pm
Modeling Neuropsychiatric Disorder Circuitry with Induced Neurons
Joseph Fantuzzo[1,2], Lidia De Filippis[2], Ronald Hart[1], Zhiping Pang[2], and Jeffrey Zahn*1*
[1]Rutgers University, Piscataway, NJ, [2]Robert Wood Johnson Medical School, New Brunswick, NJ

2:45 pm
Reinforcement Learning for Phasic Disruption of Pathological Oscillations in a Model of Parkinson's Disease
Logan Grado[1], Matt Johnson1, and Tay Netoff[1]
[1]University of Minnesota, Minneapolis, MN

3:00 pm
Pericyte Viability and Inflammatory Response in Alzheimer's and Diabetic Microenvironments
Laura Weinstock[1], John Long[1], and Levi Wood[1]
[1]Georgia Institute of Technology, Atlanta, GA

OP-Fri-2-12 Room 200F

Track: Cellular and Molecular Bioengineering

CMBE Young Innovators I

Chairs: Tejal Desai, Daniel Hammer, Michael King

1:45 pm
Drug-Eluting Conformal Coatings on Individual Cells–INVITED
Minglin Ma[1]
[1]Cornell University, Ithaca, NY

Friday, October 7 | 1:45 pm–3:15 pm | Platform Session 2

2:00 pm
An Ecological Understanding of Quorum Sensing-Based Bacteriocin Synthesis–INVITED
Ting Lu[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

2:15 pm
Lipidoid Tail Structure Strongly Influences siRNA Delivery Activity–INVITED
Christopher Knapp[1] and Kathryn Whitehead[1]
[1]Carnegie Mellon University, Pittsburgh, PA

2:30 pm
Interrogating Canonical Wnt Signaling Pathway in Human Pluripotent Stem Cell Fate Decisions using CRISPR-Cas9–INVITED
Xiaojun Lian[1]
[1]Penn State University, University Park, PA

2:45 pm
Mechanisms of Reduced Astrocyte Surface Coverage in Cortical Cells on Nanoporous Gold Films–INVITED
Christopher Chapman[1], Hao Chen[1], Marianna Stamou[1], Pamela Lein[1], and Erkin Seker[1]
[1]University of California, Davis, Davis, CA

3:00 pm
Elucidation of the Delivery Mechanism of MK2 Inhibitory Peptide Nano-polyplexes for Improving Long-term Vascular Graft Patency–INVITED
Craig Duvall[1], Kameron Kilchrist[1], Brian Evans[1], and Colleen Brophy[1]
[1]Vanderbilt University, Nashville, TN

OP-Fri-2-13 — Room 200D

Track: Bioinformatics, Computational and Systems Biology

Single-Cell Measurements and Models

Chairs: Benjamin Cosgrove, Amanda Randles

1:45 pm
Loss of GDF11 Tumor Suppression by Intracellular Retention in Single Triple-negative Breast Cancer Cells–INVITED
Sameer Bajikar[1], Chun-Chao Wang[2], Michael Borten[1], Kristen Atkins[1], and Kevin Janes[1]
[1]University of Virginia, Charlottesville, VA, [2]National Tsing Hua University, Hsinchu, Taiwan

2:15 pm
Illumination of Muscle Stem Cell Functional Diversity from Hierarchically-Organized Single-Cell RNA-Sequencing
Sharon Soueid-Baumgarten[1], Francis Chen[1], Brenton Munson[1], and Benjamin Cosgrove[1]
[1]Cornell University, Ithaca, NY

2:30 pm
Profiling Dense RNA Molecules in Single Cells by Correlation FISH
Ahmet Coskun[1] and Long Cai[1]
[1]California Institute of Technology, Pasadena, CA

2:45 pm
Single-Cell Analyses Reveal Phenotypic and Functional Heterogeneity of Circulating Tfh cells in Human Systemic Lupus Erythematosus
Rong Fan[1] and Jonathan Chen[1]
[1]Yale University, New Haven, CT

3:00 pm
Determining the Role of Fractional Occupancy in Single Cell Drug Response
Matt Dubach[1], Katherine Yang[1], and Ralph Weissleder[1]
[1]Harvard Medical School, Boston, MA

OP-Fri-2-14 — Room 200G

Track: Biomedical Engineering Education (BME)

Biomedical Design

Chairs: Matthew Glucksberg, Kathleen Sienko

1:45 pm
Risk-free Student Self-Assessment of Design Projects
Michael Caplan[1]
[1]Arizona State University, Tempe, AZ

2:00 pm
Incorporation of Needs Finding Improves Student Understanding in a Bioengineering Design Course
Bilal Ghosn[1]
[1]Rice University, Houston, TX

2:15 pm
A Device to Simultaneously and Accurately Measure Heart Rate and Acceleration
Rachel Yung[1], Michael Mudgett[1], and Eileen Haase[1]
[1]Johns Hopkins University, Baltimore, MD

2:30 pm
User-Centered Design in a Biomedical Engineering Module: Addressing Hearing Loss in the Elderly
Nailah Conrad[1], Tinashe Mutsvangwa[1], Anastasia Doyle[1], and Tania Douglas[1]
[1]University of Cape Town, Cape Town, South Africa

2:45 pm
Teaching Engineering Design for Global Engagement: Understanding Constraint
Russell Jamison[1]
[1]Virginia Commonwealth University, Richmond, VA

3:00 pm
Cross-Disciplinary Design Teams for Biomedical Engineering Design
Conrad Zapanta[1], Wayne Chung[1], and Corrine Bacigal[1]
[1]Carnegie Mellon University, Pittsburgh, PA

OP-Fri-2-15 Room 200C

Tracks: Biomechanics, Bioinformatics, Computational and Systems Biology

Computational and Multiscale Modeling in Biomechanics II

Chairs: Siqi Wang, Taeyoon Kim

1:45 pm
A Chemo-mechanical Model for Cell-mediated Fiber Recruitment, Focal Adhesion Growth and Extracellular Matrix Mechanosensing in Fibrillar Microenvironments
Xuan Cao[1], Ehsan Ban[1], Brendon Baker[2], Jason Burdick[1], Christopher Chen[2], and Vivek Shenoy[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Boston University, Boston, MA

2:00 pm
Role of Plantar Fascia and Heel Pad in Simulating Axial Impact to the Lower Leg
Carolyn Hampton[1] and Michael Kleinberger[1]
[1]ARL, Aberdeen Proving Grounds, MD

2:15 pm
Prestrain, Deformation, and Growth in a Porcine Model of Skin Expansion
Adrian Buganza Tepole[1], Michael Gart[2], Chad Purnell[2], Arun Gosain[2], and Ellen Kuhl[3]
[1]Purdue University, West Lafayette, IN, [2]Lurie Children's Hospital, Northwestern University, Chicago, IL, [3]Stanford University, Stanford, CA

2:30 pm
Pulmonary Contusion Modeling in Reconstructions of Frontal Motor Vehicle Collisions
James Gaewsky[1], Derek Jones[1], Ashley Weaver[1], and Joel Stitzel[1]
[1]Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC

2:45 pm
Stress Concentrations Around Vasculature–The Mechanics of Chronic Traumatic Encephalopathy?
Ahmed Alshareef[1] and Matthew B. Panzer[1]
[1]University of Virginia, Charlottesville, VA

3:00 pm
A Lumped Parameter Model of Fiber Recruitment in the Extracellular Matrix during Biaxial Stretch
Samer Bou Jawde[1], Jason Bates[2], and Bela Suki[1]
[1]Boston University, Boston, MA, [2]University of Vermont, Butlington, VT

OP-Fri-2-16 Room 200H

Track: Drug Delivery

Topics in Drug Delivery II

Chairs: Horst von Recum, Carolina Salvador Morales

1:45 pm
Formulating Subcutaneous Entecavir Implants for Chronic Hepatitis B Treatment
Steven Henry[1], Stephanie Barrett[1], Seth Forster[1], Ryan Teller[1], Zhen Yang[1], Gregory Doto[1], Michael Ruth[1], Takayuki Tsuchiya[1], Lee Klein[1], and Marian Gindy[1]
[1]Merck & Co., West Point, PA

2:00 pm
Effect of NGF Delivering Conduit On Peripheral Nerve Regeneration
Pratima Labroo[1], Isak Goodwin[1], Brett Davis[1], Kyle Edwards[1], Scott Ho[1], Himanshu Sant[1], Bruce Gale[1], Jill Shea[1], and Jay Agarwal[1]
[1]University of Utah, Salt Lake City, UT

2:15 pm
Implantable Devices for Drug Delivery: How Electric Fields Across Nanochannels Can Be Leveraged For Next Gen Personalized Medicine.
Giacomo Bruno[1,2], Thomas Geninatti[1,3], Giulia Rizzo[2], Danilo Demarchi[2], and Alessandro Grattoni[1]
[1]Houston Methodist Research Institute, Houston, TX, [2]Politecnico di Torino, Turin, Italy,[3]University of Chinese Academy of Sciences, Beijing, China, People's Republic of

2:30 pm
Off-Target Effects of Nanoparticle (NP)-Mediated siRNA Delivery to Mesenchymal Stem Cells (MSCs)
Dominic Malcolm[1,2], Janet Sorrells[1], and Danielle Benoit[1,2]
[1]University of Rochester, Rochester, NY, [2]University of Rochester Medical Center, Rochester, NY

2:45 pm
A Magnetic Switch for Controlling Viral Gene Delivery *In Vivo*
Sheng Tong[1], Haibao Zhu[1], and Gang Bao[1]
[1]Rice University, Houston, TX

3:00 pm
Targeting Host Alveolar Macrophages via Mannosylated Antibiotic Prodrug Polymers
Jasmin Chen[1] and Daniel Ratner[1]
[1]University of Washington, Seattle, WA

OP-Fri-2-17 Room 200B

Track: Orthopaedic and Rehabilitation Engineering

Bone

Chairs: Jonathan Rylander, Jennifer Currey

1:45 pm
Osteocytes: The Managers of Bone Adaption–INVITED
Mitchell Schaffler[1]
[1]The City College of New York, New York, NY

2:15 pm
A Nano-microfluidic Device for the Study of Osteocyte Apoptotic Signaling
Sean McCutcheon[1], Mitchell Schaffler[1], and Maribel Vazquez[1]
[1]City College of New York, New York, NY

2:30 pm
Bone Blood Perfusion Increases with Diet-Induced Obesity, Associated with Trabecular Deterioration in Mice
Nicholas Hanne[1,2], Andrew Steward[1,2], Elizabeth Easter[1], and Jacque Cole[1,2]
[1]North Carolina State University, Raleigh, NC, [2]University of North Carolina, Chapel Hill, NC

Friday, October 7 | 1:45 pm–3:15 pm | Platform Session 2

2:45 pm
Reduced Bacterial Growth on Titanium Screws with Nanophase TiO2 Surface Treatment
Garima Bhardwaj[1] and Thomas Webster[1]
[1]Northeastern University, Boston, MA

3:00 pm
Ultrastructural Changes in Osteogenesis Imperfecta Bone: Synchrotron Study of a Murine Model
Jitin Samuel[1], Abusaleh Ahsan[1], and Xiaodu Wang[1]
[1]University of Texas at San Antonio, San Antonio, TX

OP-Fri-2-18 Room 200I

Track: Biomaterials*

Drug Delivering Biomaterials I

Chairs: Jerald Redmond, Kimberly Stroka

1:45 pm
Quinacrine Mediated Sensitization of Glioblastoma (GBM) Cells to TRAIL through MMP-sensitive PEG Hydrogel Nanocarriers
Pelin Erkoc[1], Ahmet Cingoz[1], Tugba Bagci-Onder[1], and Seda Kizilel[1]
[1]Koc University, Istanbul, Turkey

2:00 pm
Discrete Polymeric Nanowires as a Platform for Immunomodulation and Tissue Engineering
Colin Zamecnik[1], Margaret Lowe[2], David Patterson[2], Michael Rosenblum[2], and Tejal Desai[2]
[1]UCB-UCSF Joint Graduate Program in Bioengineering, San Francisco, CA, [2]University of California, San Francisco, San Francisco, CA

2:15 pm
Shear-Reversible Nonaqueous Nanocomposites for Local Delivery of Combination Drugs
Anthony Tabet[1], Vinh Tran[1], Macallum Brabender[1], and Chun Wang[1]
[1]University of Minnesota, Minneapolis, MN

2:30 pm
Post-Implantation Drug Reloading of Devices Is Not Affected By Bacterial Biofilm
Erika Cyphert[1], Sean Zuckerman[1], and Horst von Recum[1]
[1]Case Western Reserve University, Cleveland, OH

2:45 pm
Bioglass and Growth Factor Substrate Additives for Mesenchymal Stem Cell Induction
Roche de Guzman[1], Daniel Foyt[1], Vasilios Lianos[1], Emily Diaz[1], Miguel Hutchinson[1], Bethany Dill[1], and Grzegorz Polak[1]
[1]Hofstra University, Hempstead, NY

3:00 pm
Sustained Release of siRNA via Tethering to Hydrogels
Nicholas Kwon[1], Minh Khanh Nguyen[1], Alex Gilewski[1], Samantha Wilner[2], Keith Maier[2], Matthew Levy[2], and Eben Alsberg[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Albert Einstein College of Medicine, Bronx, NY

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ACS Biomaterials SCIENCE & ENGINEERING

OP-Fri-2-19 Room 200J

Track: Cardiovascular Engineering

Heart Valve Structure, Function and Disease I

Chairs: Gretchen Mahler, Arash Keradvar

1:45 pm
Role of Proinflammatory NFkB Signaling in Regulating Aortic Valve Calcific Potential
Terence Gee[1], Emily Farrar[1], Kevin Hsu[1], Bin Zhou[2], and Jonathan Butcher[1]
[1]Cornell University, Ithaca, NY, [2]Albert Einstein College of Medicine, Bronx, NY

2:00 pm
Decreased Cell Adhesion Strength Promotes Endothelial to Mesenchymal Transformation
Jonathan Bramsen[1], Sudip Dahal[1], Sara Mina[1], Chris Maiorana[1], Guy German[1], Bruce Murray[2], Peter Huang[2], and Gretchen Mahler[1]
[1]Binghamton University, Department of Biomedical Engineering, Binghamton, NY, [2]Binghamton University, Department of Mechanical Engineering, Binghamton, NY

2:15 pm
CD44 Signaling Promotes Mineralization in an *In Vitro* Model of CAVD
Lauren Baugh[1] and Lauren Black[1]
[1]Tufts University, Medford, MA

2:30 pm
The Distribution of Cell Spread Area and Stress Fiber Alignment in Aggregates Indicates a Role for Cell Tension in Calcific Aortic Valve Disease
Heather Cirka[1], Vivian Liang[1], and Kristen Billiar[1]
[1]Worcester Polytechnic Institute, Worcester, MA

2:45 pm
Patient-Specific Modeling of Transcatheter Aortic Valve Implantation: An In-Vitro Study
Hoda Hatoum[1], Atieh Yousefi[1], Pablo Maureira[2], Jennifer Dollery[3], Juan A. Crestanello[3], and Lakshmi Prasad Dasi[1]
[1]The Ohio State University, Columbus, OH, [2]CHU de Nancy, Nancy, France, [3]Division of Cardiothoracic Surgery, Wexner Medical Center, The Ohio State University, Columbus, OH

3:00 pm
Effect of Positioning and Heart Beating on Transcatheter Aortic Valve Performance
Matteo Bianchi[1], Ram Ghosh[1], Gil Marom[1], Oren Rotman[1], Marvin Slepian[1], and Danny Bluestein[1]
[1]Stony Brook University, Stony Brook, NY

Friday, October 7 | 1:45 pm–3:15 pm | Platform Session 2

MEET THE EXPERT

1:45 pm–3:15 pm **Room 204**

Meet the Journal Editors

Organized by Dr Pep Pàmies, *Chief Editor, Nature Biomedical Engineering*

The ever growing amounts of increasingly accessible scientific results as well as growing competition for funding have increased the demands for researchers to show the quality, impact and reach of their scientific publications. Yet there is ample disagreement on how to measure impact and reach. A panel of editors will discuss strategies for researchers in biomedical engineering to improve the dissemination of their results. The session will feature 5-min presentations from each of the panel members and a round-table discussion.

Panel members:

- **Prof Kam Leong**
  Department of Biomedical Engineering, Columbia University, and Editor-in-Chief of Biomaterials
- **Prof Michael King**
  Department of Biomedical Engineering, Cornell University, and Editor-in-Chief of Cellular and Molecular Bioengineering
- **Prof David Odde**
  Department of Biomedical Engineering, University of Minnesota, and Editorial Board Member,
- **Biophysical Journal**
- **Dr Pep Pàmies**
  Chief Editor, Nature Biomed*ical Engineering*

SPECIAL SESSION

2:00 pm–5:00 pm **Room 102DEF**

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 focused on innovative research in biomedical engineering and grant writing. The session will bring together NSF Bioengineering and Engineering Healthcare grantees, young investigators, junior and senior faculty, and post-doctoral fellows 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, EAGER and unsolicited grant applications. The research areas where the NSF Biomedical Engineering Program supports fundamental and trans-formative research will also be discussed. Participants will gain an increased awareness of NSF funded research, a better understanding of NSF funding opportunities and how to prepare successful grant applications, and a chance to establish new relationships leading to future collaborations. This material is based upon work supported by the National Science Foundation under Grant No. CBET–1628295. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

INDUSTRY SESSION– Mobile/Digital Health

2:00 pm–3:00 pm **Room 201**

Chairs: Ben Noe

The Mobile/Digital Health panel will discuss latest news and trends including, but not limited to, the following topics: personalized medicine, big data, health and fitness apps, and integration of devices and high tech.

INDUSTRY SESSION– Investment Pitches and Partnering

3:15 pm–5:15 pm **Room 201**

Chairs: Ben Noe

This session will feature four venture capitalists who will be hearing pitches from start-up companies for funding opportunities. All meeting attendees are welcome to sit in the audience to watch the pitches.

SPECIAL SESSION

3:15 pm–6:15 pm **Room 208AB**

The 4th US-Korea Joint Workshop on Biomedical Engineering

Chair: Hanjoong Jo, Ho-Wook Jun

Korean American Biomedical Engineering Society (KBMES) would like to invite you to the Fourth Korea-US Joint Biomedical Engineering Workshop. The objective of the Joint Workshop is to promote cooperation, collaboration and networking between the two societies and their members of the Korea Society of Medical and Biological Engineering (KOSOMBE) and Biomedical Engineering Society (BMES).

This Joint Workshop is planned for two sessions. We will have a total of 9 plenary/invited speakers (including Prof. Roger Kamm in MIT and Prof. Lonnie Shea in Univ. of Michigan) from the U.S. and Korea spanning the two sessions, followed by a dinner reception ("Korean Night") for all participants.

Friday, October 7 | 4:00 pm–5:30 pm | Platform Session 3

OP-Fri-3-1 Auditorium 1

Tracks: Cellular and Molecular Bioengineering, Biomechanics

Mechanobiology of the Vascular and Nervous Systems

Chairs: Patrick Alford, Rhima Coleman

4:00 pm
Antagonism of the Serotonin 2B receptor Prevents Pathologic Biomechanical Remodeling in a Mouse Model of Familial Pulmonary Arterial Hypertension
Nathaniel Bloodworth[1], Erica Carrier[1], James West[1], Alison Schroer[1], Santhi Gladson[1], Sheila Shay[1], Joshua Hutcheson[2], and David Merryman[1]
[1]Vanderbilt University, Nashville, TN, [2]Florida International University, Miami, FL

4:15 pm
A Biomimetic Platform Reveals Novel Mechanisms for Regulation of Microvascular Function via Hemodynamic Shear Stress
William Polacheck[1,2], Matthew Kutys[1], and Christopher Chen[1,2]
[1]Boston University, Boston, MA, [2]Harvard University, Boston, MA

4:30 pm
Shear Stress Modulates Endothelial VCAm-1 Expression via Endoplasmic Reticulum Stress Response Pathways
Keith Bailey[1], Scott I Simon[1], and Anthony Passerini[1]
[1]UC Davis, Davis, CA

4:45 pm
Shear Stress Modulates Endothelial Cell Glucose Uptake and Endothelial Nitric Oxide Synthase OGlcNAcylation
Alisa Clyne[1] and Sarah Basehore[1]
[1]Drexel University, Philadelphia, PA

5:00 pm
Short-Duration Overpressure Induces Acute Structural Reactivity in Glia
Nora Hlavac[1] and Pamela VandeVord[1,2]
[1]Virginia Tech, Blacksburg, VA, [2]Salem Veterans Affairs Medical Center, Salem, VA

5:15 pm
In Vivo* Diametric Regulation of Single Axons in *Drosophila
Anthony Fan[1], Alireza Tofangchi[1], Mikhail Kandel[1], Gabriel Popescu[1], and Taher Saif[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

OP-Fri-3-2 Auditorium 2

Tracks: Cancer Technologies, Nano and Micro Technologies

Heterogenous Cell-Cell Interactions in Cancer

Chairs: Mathumai Kanapathipillai, Daniel Gallego-Perez

4:00 pm
Effect of Resident Macrophages on Extravasation of Breast Cancer Epithelial Cells
Marie-Elena Brett[1], Geneva Doak[1], and David Wood[1]
[1]University of Minnesota, Minneapolis, MN

4:15 pm
Microengineered Tumor-Stroma Platform Investigating the Biochemical Influence of Stromal Fibroblasts on Breast Cancer Invasion
Danh Truong[1], Eric Barrientos[2], Julieann Puleo[3], Ghassam Mouneimne[4], and Mehdi Nikkhah[2]
[1]Arizona State University, Tempe, AZ, [2]Arizona State University, Tempe, AZ, [3]University of Arizona, Tucson, AZ, [4]University of Arizona, Tucson, AZ

4:30 pm
Single-Cell Functional Analysis of Immune Cell-Mediated Cytotoxicity Against Myeloma in Microfluidic Droplets
Saheli Sarkar[1], Pooja Sabhachandani[1], and Tania Konry[1]
[1]Northeastern University, Boston, MA

4:45 pm
Single Cell Analysis of Contact Inhibition in Micro-Patterned Culture
Khadija Zaidi[1] and Nitin Agrawal[1]
[1]George Mason University, Fairfax, VA

5:00 pm
3D Tumor Model to Investigate Natural Killer Cell-Cancer Cell Interactions
Isaac Adjei[1], Glendon Plumton[1], Julie Djeu[2], and Blanka Sharma[1]
[1]University of Florida, Gainesville, FL, [2]Moffitt Cancer Center, Tampa, FL

5:15 pm
Pediatric Glioblastoma Cells Modulate Human Neural Progenitor Cell Phenotype and Migration within Cocultures
Kurt Farrell[1], Moo-Yeal Lee[1], and Chandra Kothapalli[1]
[1]Cleveland State University, Cleveland, OH

OP-Fri-3-3 — Auditorium 3

Track: Biomechanics

Biomechanics of Biomaterials

Chairs: Muralidhar Padala, Jessica Isaacs

4:00 pm
Zonal Articular Cartilage Exhibits Poroelastic Behavior
Joseph Wahlquist[1], Aaron Aziz[1], Mark Randolph[2], Stephanie Bryant[1], Corey Neu[1], and Virginia Ferguson[1]
[1]University of Colorado, Boulder, Boulder, CO, [2]Harvard Medical School, Boston, MA

4:15 pm
Measurement of Displacement Fields of Native Extracellular Matrix Fibrils Loaded *In Situ*
Andrea Acuna[1], Michael Drakopoulos[1], Benjamin Sather[1], Craig Goergen[1], and Sarah Calve[1]
[1]Purdue University, West Lafayette, IN

4:30 pm
Detection of Mechanical Damage at the Molecular Level Using Collagen Hybridizing Peptides
Jared Zitnay[1], Yang Li[1], Zhao Qin[2], Markus Buehler[2], S. Michael Yu[1], and Jeffrey Weiss[1]
[1]University of Utah, Salt Lake City, UT, [2]Massachusetts Institute of Technology, Cambridge, MA

4:45 pm
Mechanical Properties of Baboon Tympanic Membrane Measured with DMA System
Warren Engles[1], Rong Gan[1], Don Nakmali[1], and Kyle Smith[1]
[1]The University of Oklahoma, Norman, OK

5:00 pm
Creep Properties of Pelvic Floor Supportive Ligaments
Adwoa Baah-Dwomoh[1], Ting Tan[1], and Raffaella De Vita[1]
[1]Virginia Tech, Blacksburg, VA

5:15 pm
Sensitivity to Axial Rotation and Region-of-Interest Selection in Bone Mineral Density at the Lateral Distal Femur
Jodie Gomez[1], Rachel Tufaro[1], Ashkan Pourkand[2], David Grow[2], and Christina Salas[1]
[1]University of New Mexico, Albuquerque, NM, [2]New Mexico Institute of Mining and Technology, Socorro, NM

OP-Fri-3-4 — Room 102AB

Tracks: Cardiovascular Engineering, Tissue Engineering

Cardiovascular Tissue Engineering IV

Chairs: Lauren Black III, Megan McCain

4:00 pm
Heart-on-a-Plate for Drug Discovery and Disease Modeling–INVITED
Milica Radisic[1]
[1]University of Toronto, Toronto, ON, Canada

4:30 pm
Dissecting The Mechanisms Of Genetic Cardiomyopathy Using *In Vitro* Engineered Disease Models
Anant Chopra[1], Mathew Kutys[1], Kehan Zhang[1], William Polacheck[1], J. G. Seidman[2], Christine Seidman[2], John Hinson[3], and Christopher S.Chen[1,4]
[1]Boston University, Boston, MA, [2]Harvard Medical School, Boston, MA, [3]University of Connecticut Health Center & The Jackson Laboratory for Genomic Medicine, Farmington, CT, [4]Harvard University, Boston, MA

4:45 pm
Construction of Engineered Myocardium by the Cultivation of Induced Pluripotent Stem Cells within Bio-inspired Hydrogel Consisting of Self-assembled Peptides
Yujian Huang[1], Lei Wang[2], Tao Yue[1], Leming Sun[1], Hua Zhu[3], Yigang Wang[2], Peter Mohler[3], and Mingjun Zhang[1]
[1]The Ohio State University, Columbus, OH, [2]University of Cincinnati, Cincinnati, OH, [3]The Ohio State University Wexner Medical Center, Columbus, OH

5:00 pm
Maturation of Human Pluripotent Stem Cell-Derived Cardiomyocytes by Engineering 3D Cardiac Tissues
Tracy Hookway[1], Nik Mendoza-Camacho[1], and Todd McDevitt[1,2]
[1]Gladstone Institutes, San Francisco, CA, [2]University of California San Francisco, San Francisco, CA

5:15 pm
Acute and Chronic Stimulation of 1-Adrenergic Receptor have Opposite Effect on Electrical Activity in Human Ventricular Slices
Chaoyi Kang[1,2], Yun Qiao[1,2], Gang Li[2], Stacey Rentschler[2], and Igor Efimov[1]
[1]The George Washington University, Washington, DC, [2]Washington University in St. Louis, St. Louis, MO

Friday, October 7 | 4:00 pm–5:30 pm | Platform Session 3

OP-Fri-3-5 — Room 102C

Track: Biomaterials*

Biomaterials for Immunoengineering III

Chairs: Katie Bratlie, Salman Khetani

4:00 pm
Allergen-coated Microneedles as a Novel Approach for Preventive Allergy Immuntherapy
Akhilesh Kumar Shakya[1], Chang Huan Lee[1], and Harvinder S Gill[1]
[1]Texas Tech University, Lubbock, TX

4:15 pm
A Dual-Microparticle System to Modulate Autoimmunity in an Antigen-Specific Context
Joshua Stewart[1], Jamal Lewis[2], and Benjamin Keselowsky[1]
[1]University of Florida, Gainesville, FL, [2]University of California, Davis, Davis, CA

4:30 pm
Elucidating the Immunological Mechanism of Non-inflammatory Peptide Nanofiber Vaccines
Yi Wen[1], Youhui Si[2], Jianjun Chen[2], Rebecca Pompano[2], Anita Chong[2], and Joel Collier[1]
[1]Duke University, Durham, NC, [2]University of Chicago, Chicago, IL

4:45 pm
Macrophage Responses to Textured Stainless Steel and Cobalt-Chromium Alloy Surfaces
Jordan Anderson[1], Sujan Lamichhane[1], and Gopinath Mani[1]
[1]University of South Dakota, Sioux Falls, SD

5:00 pm
Engineering Nanomaterial Morphology for Targeting Immune Cells in Naive and Atherosclerotic Mice
Sijia Yi[1], Yugang Liu[1], Sean Allen[1], Fanfan Du[1], Xiaomo Li[1], Brian Ouyang[1], and Evan Scott[1]
[1]Northwestern University, Evanston, IL

5:15 pm
Fc-functionalized Microparticles to Modulate the Physical Extent of Complement Activity
Todd Sulchek[1] and Brandon Holt[1]
[1]Georgia Tech, Atlanta, GA

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OP-Fri-3-6 — Room 101A

Track: Cellular and Molecular Bioengineering

Adhesion to the Vascular Endothelium

Chairs: Monica Burdick, Eno Ebong

4:00 pm
Stabilization of the Hinge Region in Human E-selectin Enhances Binding Affinity to Ligands Under Force–INVITED
Thong Cao[1], Anne Rocheleau[1], and Michael King[1]
[1]Cornell University, Ithaca, NY

4:15 pm
E-Selectin-Mediated Rolling and Firm Adhesion Of Pancreatic Cancer Cells In Shear Flow
Daniel Shea[1], Yi Wai Li[1], and Konstantinos Konstantopoulos[1]
[1]Johns Hopkins University, Baltimore, MD

4:30 pm
Mechano-signaling Events by Which Cell Rolling on E-selectin Signals Integrin Activation and Arrest of Human Neutrophils
Vasilios Morikis[1], Scott Simon[2], and John Magnini[3]
[1]University of California, Davis, Woodland, CA, [2]University of California, Davis, Davis, CA, [3]Glycomimetics Inc., Rockville, MD

4:45 pm
Endothelial Glycocalyx Layer Properties and Its Ability to Prevent Neutrophil Adhesion
Luis Delgadillo[1], Julie Kuebel[1], and Richard Waugh[2]
[1]University of Rochester, Rochester, NY, [2]University of Rochester, Rochester, NY

5:00 pm
The Role of Glycocalyx on 4T1 Breast Cancer Cell Attachment to the Endothelium
Solomon Mensah[1], Mark Niedre[1], Vladimir Torchilin[1], and Eno Ebong[1]
[1]Northeastern University, Boston, MA

5:15 pm
Development of a Glycocalyx Mimic to Treat Endothelial Cell Dysfunction
James Wodicka[1,2], Andrea Chambers[1], Gurneet Sangha[1], Craig Goergen[1], and Alyssa Panitch[1]
[1]Purdue University, West Lafayette, IN, [2]Indiana University School of Medicine, Indianapolis, IN

OP-Fri-3-7 — Room 101B

Tracks: Cancer Technologies, Biomechanics

Cancer Mechanobiology II

Chairs: Amit Pathak, Christopher Lemmon

4:00 pm
Glycoprotein-Mediated Tissue Mechanics Regulate Brain Cancer Progression
Matt Barnes[1], Elliot Woods[2], Russell Bainer[3], Kan Lu[1], Jason Tung[1], Yekaterina Miroshnikova[1], Gabriele Bergers[1], Carolyn Bertozzi[2], and Valerie Weaver[1]
[1]UCSF, San Francisco, CA, [2]Stanford University, Palo Alto, CA, [3]Genentech, South San Francisco, CA

4:15 pm
Breaking the Tension: Investigating a Link Between Tissue Mechanics and Tumor Immunity in Breast Cancer
Allison Drain[1], Ori Maller[1], Luke Cassereau[1], Alexander Barrett[2], Brian Ruffell[3], Jennifer Munson[4], Melody Swartz[5], Kirk Hansen[2], Lisa Coussens[6], and Valerie Weaver[1]
[1]University of California, San Francisco, San Francisco, CA, [2]University of Colorado Denver, Denver, CO, [3]University of South Florida, Tampa, FL, [4]University of Virginia, Charlottesville, VA, [5]University of Chicago, Chicago, IL, [6]Oregon Health and Science University, Portland, OR

4:30 pm
Mechanical Phenotyping of Inflammatory Breast Cancer Stem Cells
Weiyi Qian[1], Qianbin Wang[1], Xiaoyu Xu[1], and Weiqiang Chen[1]
[1]New York University, Brooklyn, NY

4:45 pm
A Stiff Microenvironment Induces Multinucleation Downstream of MMP3, Snail, and Cell-Cell Fusion
Allison Simi[1], Tiffaney Hsia[1], Derek Radisky[2], and Celeste Nelson[1]
[1]Princeton University, Princeton, NJ, [2]Mayo Clinic Cancer Center, Jacksonville, FL

5:00 pm
Genomic Variation Across Cancers Scales with Matrix Density and Stiffness
Charlotte Pfeifer[1], Jerome Irianto[1], and Dennis Discher[1]
[1]University of Pennsylvania, Philadelphia, PA

5:15 pm
Using Optical Manipulation To Determine Mechanical Forces In Normal And Tumor Microenvironments *In Vivo*–INVITED
Kandice Tanner[1]
[1]NCI/NIH, Bethesda, MD

OP-Fri-3-8 Room 101C

Tracks: Biomechanics, Tissue Engineering

Biomechanics in Cell and Tissue Engineering

Chairs: Muralidhar Padala, Andrew Kemper

4:00 pm
Erythrocyte Aggregation by Oxygen Nanobubble Interactions during the Onset of Thermal Burn Injury
Harrison Seidner[1], Samantha WeberFishkin[1], Semih Kuric[1], Geoffry Gunter[2], and Mary Frame[1]
[1]Stony Brook University, Stony Brook, NY, [2]Arete Associates, Los Angeles, CA

4:15 pm
Shear Stress Enhances Human iPSC Differentiation to Brain Endothelial Cells via P21 Signaling
Tongcheng Qian[1], Eric Shusta[1], and Sean Palecek[1]
[1]UW-Madison, Madison, WI

4:30 pm
Tension Generation and Wound Healing in Human Dermal Equivalents
Ting-Wei Law[1], Lauren Tinnin[1], Melville Vaughan[1], and Gang Xu[1]
[1]University of Central Oklahoma, Edmond, OK

4:45 pm
Characterizing Physical Properties of Injectable PEG-Fibrinogen Nitric Oxide Releasing Hydrogels
Hannah Fisher[1], Carly Joseph[2], Breanne Spalding[2], Leslie Lalonde[2], Connor McCarthy[2], and Rupak Rajachar[2]
[1]Michigan Technological University, Mattawan, MI, [2]Michigan Technological University, Houghton, MI

5:00 pm
Age and Location-Dependent Variation of Trabecular Length and Trabecular Number per Connection in Human Calcanei
Annalisa De Paolis[1], Sam Tran[1], and Luis Cardoso[1]
[1]The City College of New York, New York, NY

5:15 pm
Computational Modeling of Collective Cell Migration on a Viscoelastic ECM Fiber Network
Min-Cheol Kim[1], Michaelle Mayalu[1], and H. Harry Asada[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

OP-Fri-3-9 Room 101D

Tracks: Tissue Engineering, Nano and Micro Technologies

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

Chairs: Guohao Dai, Jason Gleghorn

4:00 pm
Development of Transparent Ultrathin Membranes for Cellular Barrier and Co-Culture Models
Robert Carter[1], Stephanie Casillo[1], Andrea Mazzocchi[1], and Thomas Gaborski[1]
[1]Rochester Institute of Technology, Rochester, NY

4:15 pm
Human Skin-on-a-Chip: A Microengineered Biomimetic Model for Studies in Skin Mechanobiology
Megan Farrell[1], Thomas Seykora[1], Jeongyun Seo[1], and Dongeun Huh[1]
[1]University of Pennsylvania, Philadelphia, PA

4:30 pm
A Biomimetic on-Chip Model to Reconstitute Lymphedema
Esak Lee[1,2], William J. Polacheck[1,2], Duc-Huy T. Nguyen[1,2], Stella Alimperti[1,2], and Christopher S. Chen[1,2]
[1]Boston University, Boston, MA, [2]Wyss Institute at Harvard University, Boston, MA

4:45 pm
Comprehensive Investigation of Endothelial Specializations for Physiologically Relevant BBB Models
Candice Hovell[1], Yoshitaka Sei[1], Song Ih Ahn[1], Cole Weiler[1], Jiwon Yom[1], Gilda Barabino[2], Lakeshia Taite[3], and YongTae Kim[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]City College of New York, New York, NY, [3]Texas A&M University, College Station, TX

5:00 pm
A Microtissue System Model of Angiogenesis in the Endometrium
Mahama Traore[1], Jessica Lin[1], Venktesh Shirure[1], Susan Olalekan[2], Julie Kim[2], Teresa Woodruff[2], and Steven George[1]
[1]Washington University in Saint Louis, Saint Louis, MO, [2]Northwestern University, Chicago, IL

Friday, October 7 | 4:00 pm–5:30 pm | Platform Session 3

5:15 pm
An *In Vitro* Chondro-Osteo-Vascular Triphasic Model of The Osteochondral Complex
Riccardo Gottardi[1,2], Alessandro Pirosa[1,3], Peter Alexander[1], Paul Manner[4], Dario Puppi[3], Federica Chiellini[3], and Rocky Tuan[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Ri.MED Foundation, Palermo, Italy, [3]Università degli Studi di Pisa, Pisa, Italy, [4]University of Washington, Seattle, WA

OP-Fri-3-10 Room 101E

Track: Biomaterials*

Natural and Bioinspired Materials II

Chairs: Vivek Gupta, Ho-Wook Jun

4:00 pm
Tunable Nitric Oxide Release from SNAP via Catalytic Copper Nanoparticles for Enhanced Antibacterial Properties of Polymeric Biomaterials
Jitendra Pant[1], Marcus Goudie[1], Elizabeth Brisbois[2], Sean Hopkins[1], and Hitesh Handa[1]
[1]University of Georgia, Athens, GA, [2]University of Michigan, Ann Arbor, MI

4:15 pm
Fibronectin Fiber Extrusion Via Silk-inspired Shear Spinning
Matthew Jacobsen[1], Shannon Anderson[1], Joyce Wong[1], and Michael Smith[1]
[1]Boston University, Boston, MA

4:30 pm
Deposition Conversion Approach for Selectively Synthesized Apatite Coatings On Biopolymer Hydrogels
Jacqueline Harding[1] and Melissa Krebs[1]
[1]Colorado School of Mines, Golden, CO

4:45 pm
Collagen-Mimetic Proteins with Tunable Integrin Binding Sites for Vascular Graft Coatings
Juan Felipe Diaz Quiroz[1], Patricia Diaz Rodriguez[1], Tanzil Islam[1], Monty Reichert[2], Magnus Höök[3], and Mariah S. Hahn[1]
[1]Center for Biotechnology and Interdisciplinary Studies, Rensselaer Polytechnic Institute, Troy, NY, [2]Department of Biomedical Engineering,Duke University, Durham, NC, [3]Institute of Biosciences and Technology, Texas A&M Health Science Center, Houston, TX

5:00 pm
Collagen Methacrylamide For Simple, Free-Form Fabrication Of Customized, Fibrillar Scaffolds
Kathryn Drzewiecki[1], Ijaz Ahmed[1], and David Shreiber[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ

5:15 pm
A Conformational Analysis of an Engineered Laminin-mimetic, Elastin-like Fusion Protein Using Molecular Dynamics Simulations
James Tang[1], Charles McAnany[1], Cameron Mura[1], and Kyle Lampe[1]
[1]University of Virginia, Charlottesville, VA

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OP-Fri-3-11 Room 200E

Track: Neural Engineering

Neural Cell Model Systems

Chairs: Tay Netoff, Erkin Seker

4:00 pm
Electrical Stimulation Enhances M2 Macrophage Phenotype
Kathryn Kearns[1] and Deanna Thompson[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

4:15 pm
Microelectrode Array Analysis of Neuroprotection after Glutamate-induced Excitotoxicity
Kate O'Neill[1] and Bonnie Firestein[1]
[1]Rutgers University, Piscataway, NJ

4:30 pm
Engineering 3-D Neural Organoid Morphology Using PVOH-Ca Sacrificial Templates
Carlos Marti-Figueroa[1,2], Jason McNulty[1,2], Joshua Plantz[1,2], Lih-Sheng Turng[1,2], and Randolph Ashton[1,2]
[1]University of Wisconsin-Madison, Madison, WI, [2]Wisconsin Institute for Discovery, Madison, WI

4:45 pm
A Microfluidic Platform for Dopaminergic Neuron Differentiation and *In Situ* Dopamine Uptake Measurements
Yue Yu[1] and Aaron Wheeler[1]
[1]University of Toronto, Toronto, ON, Canada,

5:00 pm
A Culture Platform to Assess Responses of Isolated Ventral Spinal Populations to Extracellular Cues
Nisha Iyer1 and Shelly Sakiyama-Elbert1
1Washington University in St. Louis, Saint Louis, MO

5:15 pm
Self-Rolled-Up 3D Microtube Arrays Enhance Alignment of Hippocampal Neurons in Synthetic Circuits
Olivia V. Cangellaris[1], Elise A. Corbin[1,2], Paul Froeter[1], Xiuling Li[1], and Martha U. Gillette[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]University of Pennsylvania, Philadelphia, PA

Friday, October 7 | 4:00 pm–5:30 pm | Platform Session 3

OP-Fri-3-12 Room 200F

Track: Cellular and Molecular Bioengineering

CMBE Young Innovators II

Chairs: Tejal Desai, Daniel Hammer, Michael King

4:00 pm
Predictive Model of Lymphocyte-specific Protein Tyrosine Kinase (LCK) Autoregulation–INVITED
Jennifer Rohrs[1], Pin Wang[1], and Stacey Finley[1]
[1]University of Southern California, Los Angeles, CA

4:15 pm
Oncogene Knockdown via Active Loading of Small RNAs into Extracellular Vesicles by Sonication–INVITED
Tek Lamichhane[1], Anjana Jeyaram[1], Divya Patel[1], Babita Parajuli[1], Natalie Livingston[1], Navein Arumugasaamy[1], John Schardt[1], and Steven Jay[1]
[1]University of Maryland, College Park, MD

4:30 pm
Mechanical Properties of The Tumor Stromal Microenvironment Probed *Ex Vivo* By *In Situ* Calibrated Optical Trap-Based Active Microrheology–INVITED
Kandice Tanner[1]
[1]NCI/NIH, Bethesda, MD

4:45 pm
Evolution of Local and Systemic Immunity after Targeted Programing of the Lymph Node Environment–INVITED
Christopher Jewell[1,2,3]
[1]University of Maryland, College Park, MD, [2]University of Maryland Medical School, Baltimore, MD, [3]Marlene and Stewart Greenebaum Cancer Center, Baltimore, MD

5:00 pm
Co-assembly Tags Based on Charge Complementarity (CATCH) for Installing Functional Protein Ligands into Supramolecular Biomaterials–INVITED
Dillon Seroski[1], Antonietta Restuccia[1], Anthony Sorrentino[1], Kevin Knox[1], and Gregory Hudalla[1]
[1]University of Florida, Gainesville, FL

OP-Fri-3-13 Room 200D

Track: Bioinformatics, Computational and Systems Biology

Omics Data and Analysis

Chairs: Amina Qutub, Jason Papin

4:00 pm
Local Metabolic Remodeling by Infection Alters the Antibiotic Susceptibility of Pathogens
Jason Yang[1,2], Prerna Bhargava[1,2], Douglas McCloskey[3], Bernhard Palsson[3], and James Collins[1,2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Broad Institute of MIT and Harvard, Cambridge, MA, [3]University of California, San Diego, La Jolla, CA

4:15 pm
Meta-Proteomic Analysis for the Clinic: A Guide Towards Personalized Therapy in Leukemia
Chenyue Hu[1], Steven Kornblau[2], and Amina Qutub[1]
[1]Rice University, Houston, TX, [2]MD Anderson Cancer Center, Houston, TX

4:30 pm
Metabolic Interaction Profiling of a Complete Murine Gut Microbiota
Matthew Biggs[1], Gregory Medlock[1], Thomas Moutinho[1], Hannah Lees[2], Jonathan Swann[2], Glynis Kolling[1], and Jason Papin[1]
[1]University of Virginia, Charlottesville, VA, [2]Imerial College, London, United Kingdom

4:45 pm
A Sensitive High-throughput Assay Platform for Quantifying Nucleo-cytoplasmic Phosphatase Activity
Millie Shah[1] and Kevin Janes[1]
[1]University of Virginia, Charlottesville, VA

5:00 pm
Comparative Mapping of Dengue Virus-Host Interactions Using Systems Biology Approaches
Priya Shah[1], Gwendolyn Jang[1], Jeffrey Johnson[1], John Von Dollen[1], Billy Newton[1], Laura Satkamp[1], Mark Kunitmoi[1], Federico de Maio[2], Ana Fernandez-Sesma[3], Andrea Gamarnik[2], Raul Andino[1], and Nevan Krogan[1]
[1]UCSF, San Francisco, CA, [2]Leloir Institute, Buenos Aires, Argentina, [3]Mount Sinai School of Medicine, New York, NY

5:15 pm
Molecular Network Modeling of Drug-induced Cardiotoxicity in Space of Dose and Time
Huan Wang[1,2], Adam Palmer[3], Sarah Boswell[3], Robert Everley[3], and Peter Sorger[1]
[1]Harvard Medical School, Boston, MA, [2]Harvard Institute of therapeutic science, Boston, MA, [3]Harvard Institute of Therapeutic science, Boston, MA

OP-Fri -3-14 Room 200G

Track: Stem Cell Engineering

Technologies for Stem Cell Engineering

Chairs: Hossein Tavana, Marsha Rolle

4:00 pm
Hierarchical Fabrication of Biomimetic Vascularized Tissue Constructs via Dual 3D Bioprinting and Regional Immobilization–INVITED
Haitao Cui[1], Wei Zhu[1], Margaret Nowicki[1], Xuan Zhou[1], Ali Khademhosseini[2], and Lijie Grace Zhang[1]
[1]The George Washington University, Washington, DC, [2]Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA

Friday, October 7 | 4:00 pm–5:30 pm | Platform Session 3

4:30 pm
Hydrogels for Light-Triggered siRNA Release for Guiding hMSC Osteogenesis
Minh Khanh Nguyen[1], Cong Truc Huynh[1], Mantas Naris[1], Gulen Tonga[2], Vincent Rotello[2], and Eben Alsberg[1]
[1]Case Western Reserve University, Cleveland, OH, [2]University of Massachusetts, Amherst, MA

4:45 pm
Osteogenic Differentiation of Human Mesenchymal Stem Cell in Response to Biomaterial Properties is Inhibited by Selective Serotonin Reuptake Inhibitors
Nancy Ayad[1], Kelly Hotchkiss[1], and Rene Olivares-Navarrete[1]
[1]Virginia Commonwealth University, Richmond, VA

5:00 pm
Engineering Xeno-Free Microcarriers for Human Pluripotent Stem Cell Bioprocessing
Fan Zhang[1], Yongjia Fan[1], and Emmanuel Tzanakakis[1,2]
[1]Tufts University, Medford, MA, [2]Tufts Medical Center, Boston, MA

5:15 pm
Fabrication of Injectable Hydrogel Microspheres for Delivery of Encapsulated Equine Endothelial Progenitor Cells
Wen Seeto[1], Yuan Tian[1], Randolph Winter[1], Fred Caldwell[1], Anne Wooldridge[1], and Elizabeth Lipke[1]
[1]Auburn University, Auburn, AL

OP-Fri-3-15 Room 200C

Track: Biomechanics

Biomechanics of Rehabilitation/Injury

Chairs: Allen Kyle, Jessica Isaacs

4:00 pm
Effect of Exercise Therapy on Supraspinatus Tears During Internal-External Rotation
Gerald Ferrer[1], R Matthew Miller[1], Jason Zlotnicki[1], Scott Tashman[1], Volker Musahl[1], and Richard E Debski[1]
[1]University of Pittsburgh, Pittsburgh, PA

4:15 pm
Ataxic Horses Differ Significantly From Sound Horses In Their Distal Limb Acceleration At A Walk
Megan Aanstoos[1], Birgitte Luining[2], Jeremiah Easley[1], and Yvette Nout-Lomas[1]
[1]Colorado State University, Fort Collins, CO, [2]Utrecht University, Utrecht, Netherlands

4:30 pm
Severe Unilateral Hip Osteoarthritis Alters Hip and Ankle Power Bilaterally During Walking
Robin Queen[1] and Daniel Schmitt[2]
[1]Virginia Tech, Blacksburg, VA, [2]Duke University, Durham, NC

4:45 pm
H-Taping Method for Prophylactic or Temporary Fixation of A2 Pulley Tears During Rock Climbing
Rachel Tufaro[1], Alexander Telis[1], Dustin Larson[1], Deana Mercer[1], and Christina Salas[1]
[1]University of New Mexico, Albuquerque, NM

5:00 pm–5:15 pm
Aging Effects On Muscle-Tendon Interaction Dynamics During Cyclic Contractions in a Rat Model
Jonathan Doering[1] and Gregory Sawicki[1]
[1]NCSU, Raleigh, NC

5:15 pm
Head Kinematics in Human Body Models Of Increasing Complexity vs. Volunteer Data In Frontal Impacts
William Decker[1], Bharath Koya[1], Matthew Davis[1], and F. Scott Gayzik[1]
[1]Wake Forest University, Winston-Salem, NC

OP-Fri-3-16 Room 200H

Track: Drug Delivery

Delivery Systems for Proteins and Vaccines

Chairs: Amir Farnoud, Isidro Zarraga

4:00 pm
Vaccination with Poly(Mannose)-antigen Conjugates Combined with a Novel TLR7 Agonist Enhances Cellular Immune Response
Scott Wilson[1], Sachiko Hirosue[1], Melody Swartz[2], and Jeffery Hubbell[2]
[1]EPFL, Lausanne, Switzerland, [2]University of Chicago, Chicago, IL

4:30 pm
Delivering Nucleic Acid Adjuvants with Nanoparticle Vaccines to Stimulate Pulmonary Immunity
Frances C. Knight[1], Pavlo Gilchuk[1], Sema Sevimli[1], Sebastian Joyce[1], and John T. Wilson[1]
[1]Vanderbilt University, Nashville, TN

4:45 pm
Controlled Release of Thermostabilized Inactivated Polio Vaccine from PLGA-Based Microparticles
Stephany Tzeng[1], Rohiverth Guarecuco[1], Kevin McHugh[1], Evan Rosenberg[1], Yingying Zeng[1], Sviatlana Rose[1], Robert Langer[1], and Ana Jaklenec[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

5:00 pm
Microneedle-Assisted Microfluidic Platform for Efficient Intracellular Delivery
Weiqian Jiang[1], Mingqiang Li[1], Yeh-Hsing Lao[1], and Kam Leong[1]
[1]Columbia University, New York, NY

5:15 pm
Mucoadhesive Polymer Wafers for Preservation and Sublingual Delivery of Vaccines
Samuel Hanson[1], Shailbala Singh[2], Jagannadha Sastry[2], Michael Barry[3], and Chun Wang[1]
[1]University of Minnesota, Minneapolis, MN, [2]MD Anderson Cancer Center, Houston, TX,[3]Mayo Clinic, Rochester, MN

Friday, October 7 | 4:00 pm–5:30 pm | Platform Session 3

OP-Fri-3-17 — Room 200B

Track: Orthopaedic and Rehabilitation Engineering

Skeletal Muscle, Ligaments and Tendons

Chairs: Nelly Andarawis-Puri, Vincent Wang

4:00 pm
Quantitative Muscle Force Measurement using Intramuscular Pressure–INVITED
Kenton Kaufman[1], Shanette Go[1], Shawn O'Connor[2], Benjamin Wheatley[3], William Litchy[1], Tammy Haut Donahue[3], Gregory Odegard[4], Samuel Ward[2], and Richard Lieber[5]
[1]Mayo Clinic, Rochester, MN, [2]University of California-San Diego, La Jolla, CA, [3]Colorado State University, Fort Collins, CO, [4]Michigan Technological University, Houghton, MI, [5]Rehabilitation Institute of Chicago, Chicago, IL

4:30 pm
Gluteus Maximus Activation during Ambulation in Children and Young Adults with Osteogenesis Imperfecta
Jessica Fritz[1], Peter Smith[2], and Gerald Harris[1]
[1]Marquette University/Medical College of Wisconsin, Milwaukee, WI, [2]Shriners Hospitals for Children, Chicago, IL

4:45 pm
Effect of Sarcolemma Water Permeability on Muscle DTI Measures Following Exercise
Noel Naughton[1] and John Georgiadis[1,2]
[1]Univeristy of Illinois at Urbana Champaign, Urbana, IL, [2]Illinois Institute of Technology, Chicago, IL

5:00 pm
Brown and Beige Fat Promote Rotator Cuff Muscle Regeneration through Paracrine Signaling
Anna Bryniarski[1] and Gretchen Meyer[1]
[1]Washington University in St. Louis, St. Louis, MO

5:15 pm
Knockout of Hyaluronan Synthases Differentially Alters Viscoelastic Properties of Mouse Achilles and FDL Tendons
Kristen Renner[1], Katie Trella[2], John Sandy[2], Anna Plaas[2], and Vincent Wang[1]
[1]Virginia Tech, Blacksburg, VA, [2]Rush University Medical Center, Chicago, IL

OP-Fri-3-18 — Room 200I

Track: Biomaterials*

Drug Delivering Biomaterials II

Chairs: Young-sup Yoon, Tara Deans

4:00 pm
Nitric Oxide Releasing Nanomatrix to Enhance Dialysis Fistula Maturation
Patrick Hwang[1], Grant Alexander[2], Maheshika Somarathna[2], Maggie Collier[2], Brigitta Brott[1,2], Jennifer Pollock[2], Timmy Lee[2], and Ho-Wook Jun[1,2]
[1]Endomimetics, LLC, Birmingham, AL, [2]University of Alabama at Birmingham, Birmingham, AL

4:15 pm
Simple Chemical Modification Reduces Acute Systemic Toxicity and Improves Tissue Penetration of Polysaccharide Nanoparticles
Randall Toy[1], Pallab Pradhan[1], Nelson Di Paolo[2], Vijayeetha Ramesh[1], Yoshitaka Sei[1], YongTae Kim[1], Dmitry Shayakhmetov[2], and Krishnendu Roy[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

4:30 pm
Linking Micelle Properties of PEO-PPO-PEO Block Copolymers with Preventing Protein Aggregation
Michael Poellmann[1], Colin Mcfaul[1], and Raphael Lee[1]
[1]University of Chicago, Chicago, IL

4:45 pm
Engineering Polymeric Biomaterials for Controlled Release: Therapeutic Contact Lenses for Glaucoma Treatment
Liana Wuchte[1], Kacie Carlin[1], Freha Tahir[1], Robert Mosley[1], and Mark Byrne[1]
[1]Rowan University, Glassboro, NJ

5:00 pm
Development of Stable, Multivalent Protein-Conjugated GNPs as Viral Entry Inhibitors
Allison Siehr[1], Bin Xu[1], Ronald Siegel[1], and Wei Shen[1]
[1]University of Minnesota, Minneapolis, MN

5:15 pm
Macro-porous Phantom for Improved *In Vitro-In Vivo* Correlation for Mock Drug Release Kinetics for *In Situ* Forming Polymer Implants
Selva Jeganathan[1], Christopher Hernandez[1], Natalia Gawlik[1], and Agata Exner[1]
[1]Case Western Reserve University, Cleveland, OH

*** Biomaterials Track sponsored by**

ACS Biomaterials SCIENCE & ENGINEERING

Friday, October 7 | 4:00 pm–5:30 pm | Platform Session 3

OP-Fri-3-19 **Room 200J**

Track: Cardiovascular Engineering

Heart Valve Structure, Function and Disease II

Chairs: Lakshmi Dasi, Kristen Billiar

4:00 pm
Patient-Specific CFD of Clinical Mitral Regurgitation as a Novel Method to Quantify Regurgitation Severity
Muhammad Jamil[1], Omar Ahmad[2], Kian Keong Poh[3], and Choon Hwai Yap[1]
[1]National University of Singapore, Singapore, Singapore, [2]Comsats Institute of Information Technology Islamabad, Pakistan, Islamabad, Pakistan, [3]Yong Loo Lin School of Medicine, National University of Singapore, Singapore, Singapore

4:15 pm
Effect of Averaging the Extracellular Matrix Fiber Structural Network on the Mechanical Responses of the Tricuspid Valve Leaflets
Vineet S. Thomas[1], Anup D. Pant[1], Keyvan Amini-Khoiy[1], and Rouzbeh Amini[1]
[1]The University of Akron, Akron, OH

4:30 pm
Physiologically Relevant Effects of Fluid Pulsatility On Engineered Valve Tissue Growth
Alex Williams[1], Manuel Perez[1], Arash Moshkforoush[1], Manuel Salinas[1], Omkar Mankame[1], Nikolaos Tsoukias[1], and Sharan Ramaswamy[1]
[1]Florida International University, Miami, FL

4:45 pm
Linking Cell Deformation to Biosynthetic Response: Implications for Mitral Valve Repair
Salma Ayoub[1], Chung-Hao Lee[1], Kathryn Driesbaugh[2], Wanda Anselmo[2], Connor Hughes[1], Giovanni Ferrari[2], and Michael Sacks[1]
[1]The University of Texas at Austin, Austin, TX, [2]University of Pennsylvania, Philadelphia, PA

5:00 pm
Age-Related Changes in the Extracellular Matrix of Human Aortic Heart Valves
Heather Hutson[1], Taylor Marohl[1], Matthew Anderson[1], Kevin Eliceiri[1], Paul Campagnola[1], and Kristyn Masters[1]
[1]University of Wisconsin, Madison, WI

5:15 pm
Patient-specific Computational Modeling of Edge-to-Edge Mitral Valve Repair with MitraClip
Fanwei Kong[1], Thuy Pham[1], Charles Primiano[2], John Elefteriades[3], and Wei Sun[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Hartford Hospital, Hartford, CT, [3]Yale Hospital, New Haven, CT

MEET THE EXPERT

4:00 pm–5:30 pm **Room 204**

Collaborations with Industry

Organized by Dr. Jerry S.H. Lee, *Deputy Director for Cancer Research and Technology, White House Cancer Moonshot Task Force*

Bringing a scientific idea to societal benefit is a time and resource intensive endeavor that may involve a combination of state, federal, non-profit, and for-profit funding. This panel of experts will provide and share experiences of how they have successfully crossed one or more "valleys of death" or helped investigators do so with respective resources.

Panel Members:

- **Peter Kuhn,** Dean's Professor of Biological Sciences, Professor of Medicine and Engineering, University of Southern California (USC)
- **Sean E. Hanlon, PhD,** Associate Director, Center for Strategic Scientific Initiatives (CSSI), Office of the Director, National Cancer Institute, NIH
- **Lauren C. Leiman,** Senior Director for External Partnerships, White House Cancer Moonshot Task Force
- **Syril D. Pettit,** Executive Director, Health and Environmental Sciences Institute (HESI)

SPECIAL SESSION

4:00 pm–5:30 pm **Room 200A**

Educational Approaches to Best Prepare Students for Industry

Chair: Ben Noe

This panel discussion will be informed by data received from the BMES Industry Survey regarding industry's needs and perceptions of BME students as potential employees. The session will focus on educational approaches to best prepare biomedical engineer students at both the undergraduate and graduate levels.

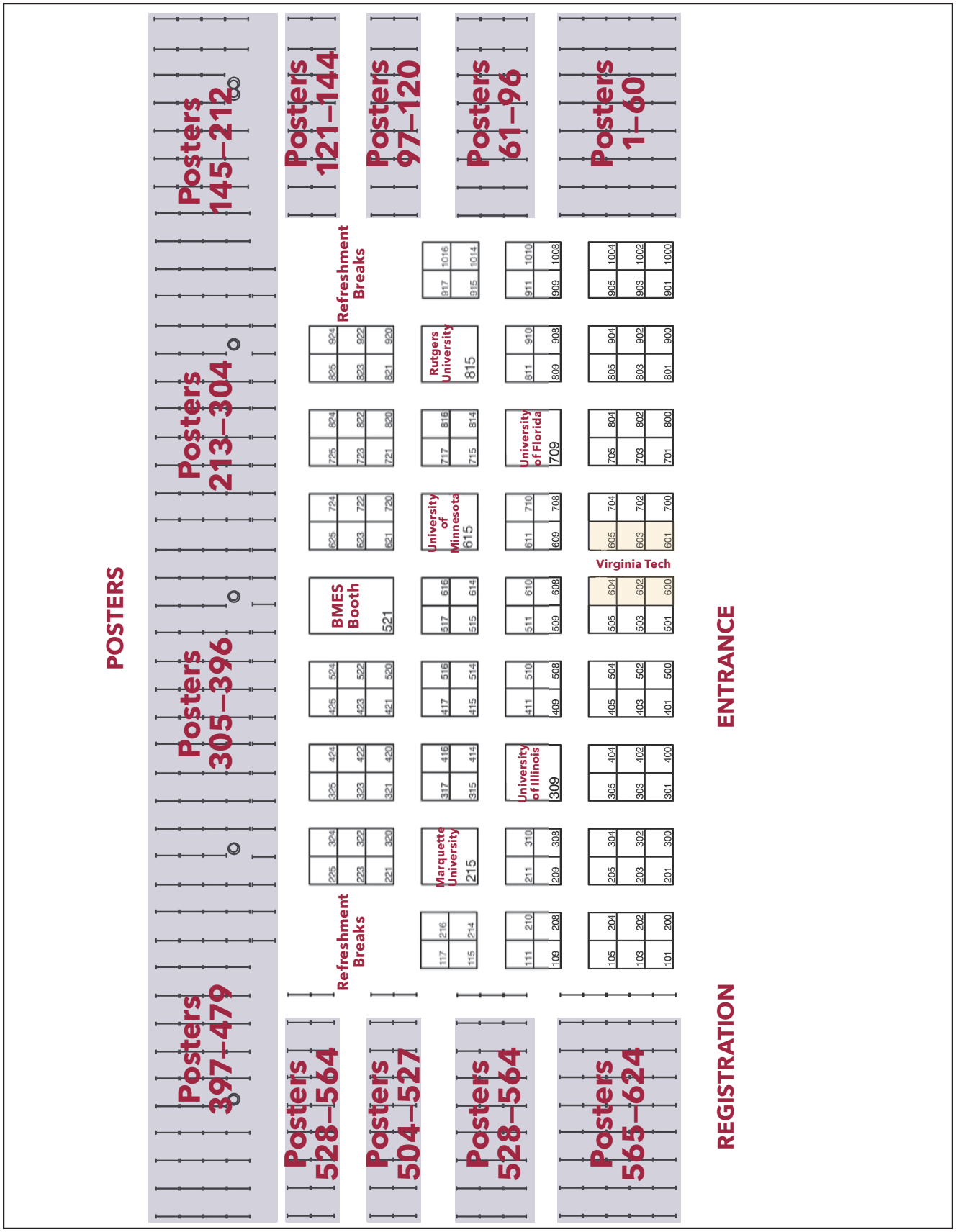
INDUSTRY MIXER

7:30 pm–8:30 pm **The Local Pub Choir Room**

Chair: Ben Noe

Friday, October 7 | 9:30 am–5:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:15 pm–4:00 pm



Friday, October 7 | 9:30 am–5:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:15 pm–4:00 pm

Track: Orthopaedic and Rehabilitation Engineering
Articular Cartilage, Meniscus and Joints

Fri-7
3D Bioprinting Novel Graphene Oxide Scaffold for Improved Human Bone Marrow Mesenchymal Stem Cell Chondrogenic Differentiation

Xuan Zhou[1], Se-jun Lee[1], Margaret Nowicki[1], and Lijie Zhang[1]
[1]The George Washington University, Washington, DC

Fri-8
A Needle-Punch Method to Enhance Cellular Infiltration of Adipose Stem Cells in Allograft Menisci

Rachel Nordberg[1], Adisri Charoenpanich[1], Christopher Vaughn[1], Matthew Fisher[1], Jacqueline Cole[1], Jeffrey Spang[2], and Elizabeth Loboa3
1University of North Carolina Chapel Hill & North Carolina State University, Raleigh, NC,[2]University of North Carolina Chapel Hill, Chapel Hill, NC, [3]University of Missouri, Columbia, MO

Fri-9
Assessment of Articular Surface Damage by Polarized Reflectance Microscopy and Spectroscopy

Ruby Huynh[1], Frances Anne Tosto[1], and Christopher Raub[1]
[1]The Catholic University of America, Washington, DC

Fri-10
Permeability of Articular Cartilage

Ryan McCulloch[1] and Peter Mente[2]
[1]Gonzaga University, Spokane, WA, [2]UNC/NCSU, Raleigh, NC

Fri-11
The Role of Heat Shock Protein 70 in Chondrogenesis of hMSCs

Chenghai Li[1] and Sihong Wang[1]
[1]City College of New York, New York, NY

Track: Orthopaedic and Rehabilitation Engineering
Back Pain and Joint Pain

Fri-12
Pain Measures in a Rodent Model of Intervertebral Disc Degeneration

Elizabeth M. Leimer[1,2,3], Matthew G. Gayoso[1], Taylor L. Comte[1], Munish C. Gupta[1], and Lori A. Setton[1]
[1]Washington University in St. Louis, St. Louis, MO, [2]Duke University, Durham, NC, [3]Albany Medical College, Albany, NY

Track: Orthopaedic and Rehabilitation Engineering
Bone

Fri-13
Surface Roughness of Metal Orthopedic Implants Alters the Biology of Human Mesenchymal Stromal Cells

Eric Lewallen[1], Dakota Jones[1], Roman Thaler[1], Amel Dudakovic[1], Janet Denbeigh[1], Christopher Paradise[1], Martina Gluscevic[1], Endre Soreide[1], Hilal Kremers[1], Matthew Abdel[1], Robert Cohen[2], David Lewallen[1], and Andre van Wijnen[1]
[1]Mayo Clinic, Rochester, MN, [2]Stryker Orthopedics, Mahwah, NJ

Fri-14
Lumbar Bone Mineral Density Measurement and its Clinical Use in Osteopenia Screening and Fracture Prediction

Mona Saffarzadeh[1], Ashley Weaver[1], Caresse Hightower[1], Anna Miller[2], Kristen Beaver[3], and Joel Stitzel[1]
[1]Center for injury Biomechanics, Wake Forest University School of Medicine, Winston Salem, NC, [2]Orthopaedic Surgery, Wake Forest University School of Medicine, Winston Salem, NC,[3]Health and Exercise Science, Wake Forest University, Winston Salem, NC

Fri-15
Evaluation of Bone Ingrowth Into Orthopedic Implant Surfaces Using an Ex-Vivo Bioreactor System

Rupak Dua[1], Hugh Jones[1], and Philip Noble[1,2]
[1]Institute of Orthopedic Research & Education, Houston, TX, [2]Baylor College of Medicine, Houston, TX

Fri-16
Development of Subject-Specific Proximal Femur and Lumbar Spine Finite Element Models of Obese, Older Adults to Evaluate the Effects of Weight Loss on Bone Strength

Samantha Schoell[1], Ashley Weaver[1], Joel Stitzel[1], and Kristen Beavers[2]
[1]Virginia Tech- Wake Forest Center for Injury Biomechanics Winston-Salem, NC, [2]Wake Forest University, Winston-Salem, NC

Tracks: Orthopaedic and Rehabilitation Engineering, Biomechanics
Orthopaedic Mechanobiology and Mechanotransduction

Fri-17
Quantitative Histological Measures of Bone and Synovium Correlate with Behavior in a Rat Model of OA

Heidi Kloefkorn[1] and Kyle Allen[1]
[1]University of Florida, Gainesville, FL

Tracks: Orthopaedic and Rehabilitation Engineering, Biomechanics
Implant and Prosthetic Biomechanics

Fri-18
An Insole Device for the Measurement of Foot Plantar Pressure Distribution during a Gait

Ahnryul Choi[1], Hyun Woo Jung[1], Kyungsuk Lee[2], Hyeseon Chae[2], and Joung Hwan Mun[1]
[1]Sungkyunkwan University, Suwon, Korea, Republic of, [2]Rural Development Administration, Jeonju, Korea, Republic of

Fri-19
Qualitative Regional Wear Analysis of Novel 3D-Printed Variable-Hardness Foot Orthotics

Breanne Przestrzelski[1], Kyle Walker[1], Brian Kaluf[2], Nicole Hooks[2], W. Dan Ballard[3], Tim Pruett[1], Steve Hoeffner[4], and John DesJardins[1]
[1]Clemson University, Clemson, SC, [2]Ability Prosthetics & Orthotics, Greenville, SC, [3]Upstate Pedorthic Services, Greer, SC, [4]Hoeffner Consulting, Easley, SC

Fri-20
Biomechanical Comparison of 5th Metatarsal Jones Fracture Fixation Methods

Aaron Stone[1], Steve Zambrano[1], Neil Duplantier[2], Ronald Mitchell[2], Patrick Mcculloch[2], Joshua Harris[2], David Litner[2], Kevin Varner[2], and Michael Moreno[1,2]
[1]Texas A&M University, College Station, TX, [2]Orthopedics & Sports Medicine Methodist Research Hospital, Houston, TX

Friday, October 7 | 9:30 am–5:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:15 pm–4:00 pm

Fri-21
New Generation of Dental Implants Coated with Low Cost Biocompatible/Corrosion Resistant Ultrananocrystalline Diamond (UNCD) Coating for Superior Performance
Orlando Auciello[1], Daniel Olmedo[2], Maria Gugliemotti[2], Bhavani Patel[3], Isabella Marques[3], Fernanda Alfaro[3], Tarik Shokufar[3], Carl Takoudis[3], Samuel Campbell[3], Carli Sukotjo[3], Mathew Mathew[3], Andriana Duran[1], and Pablo Gurman[1]
[1]University of Texas at Dallas, Richardson, TX, [2]University of Buenos Aires, Buenos Aires, Argentina, [3]University of Illinois-Chicago, Chicago, IL

Fri-22
FDM 3D Printed Proprioceptor for Prosthetic Joint Angle Detection
Steven Lathers[1] and Jeffrey La Belle[1]
[1]Arizona State University, Tempe, AZ

Fri-23
Biomechanical Study of Hybrid Screw Configurations of Locking Plate Humeral Midshaft Fracture Fixation with Incorporating of KryptoniteTM Bone Cement
Trung T. Le[1], Ha V. Vo[1], and Lawrence X. Webb[2]
[1]Mercer University, Macon, GA, [2]Navicent Health Hospital, Macon, GA

Fri-24
Reproducibility of ZrO2-based Freeze Casting for Biomaterials and Biomedical Implants
Yajur Maker[1], Steven Naleway[1], Kate Fickas[2], Marc Meyers[1], and Joanna McKittrick[1]
[1]University of California, San Diego, La Jolla, CA, [2]Oregon State University, Corvallis, OR

Tracks: Orthopaedic and Rehabilitation Engineering, Tissue Engineering
Musculoskeletal Tissue Engineering

Fri-25
Hydrogels with Conditionally Active Reporters for Studying Stem Cell Chondrogenesis
Glendon Plumton[1], Alfonso Martin-Pena[1], Glyn Palmer[1], and Blanka Sharma[1]
[1]University of Florida, Gainesville, FL

Fri-26
Microscale Mechanics of Human Chondrocyte-Seeded Cartilage Constructs
Jill Middendorf[1], Stephen Kennedy[2], Sonya Shortkroff[2], Caroline Dugopolski[2], Joseph Siemiatkoski[2], Lena Bartell[1], Itai Cohen[1], and Lawrence Bonassar[1]
[1]Cornell University, Ithaca, NY, [2]Histogenics Corporation, Waltham, MA

Fri-27
Epigenome Editing Protects Human Adipose Derived Mesenchymal Stem Cells from Inflammatory Cytokines While Maintaining their Therapeutic Properties
Niloofar Farhang[1], Jonathan Brunger[2], Joshua Stover, Pratiksha Thakore[2], Charles Gersbach[2], Brandon Lawrence[1], Farshid Guilak[3], Lori Setton[3], and Robby Bowles[1]
[1]University of Utah, Salt Lake City, UT, [2]Duke University, Durham, NC, [3]Washington University in St. Louis, St. Louis, MO

Fri-28
Effects of Mild Periodic Heat Shock on Osteogenesis of hMSCs Cultured in PLA-HA Scaffolds
Kristifor Sunderic[1], Chenghai Li[1], Luis Cardoso[1], and Sihong Wang[1]
[1]City College of New York, New York, NY

Fri-29
Bone Tissue Regeneration using 3D Printed Microstructure Incorporated with Hybrid Nano Hydrogel
Dong Nyoung Heo[1], Se-Jun Lee[1], and Lijie Grace Zhang[1]
[1]The George Washington University, Washington, DC

Fri-30
Satellite Cell Enhancement of Tissue Engineered Muscle Repair Technologies for the Treatment of Volumetric Muscle Loss
Ellen Mintz[1], Juliana Passipieri[1], Kyle Martin[1], Poonam Sharma[1], and George Christ[1]
[1]University of Virginia, Charlottesville, VA

Fri-31
Promote Challenged Bone Regeneration by Targeting Endogenous Stem Cells and Signals
Qingqing Yao[1], Yangxi Liu[1], and Hongli Sun[1]
[1]University of South Dakota, Sioux Falls, SD

Fri-32
Co-Delivery of Infusion Decellularized Skeletal Muscle with Minced Muscle Autografts Improved Recovery from Volumetric Muscle Loss Injury
Benjamin Kasukonis[1], John Kim[1], Lemuel Brown[1], Tyrone Washington[1], and Jeff Wolchok[1]
[1]University of Arkansas, Fayetteville, AR

Fri-33
Application of Adipose Precursor Cell (APC)-Seeded, Poloxamer-Filled PCL Nerve Conduits for Enhanced Nerve Regeneration in A Rat Model of Peroneal Nerve Ablation.
Juliana Amaral Passipieri[1], Jack Dienes[1], Ellen Mintz[1], Jacqueline Bliley[2], Joseph Frank[1], Joshua Glazier[1], Andrew Portell[1], Kacey Marra[2], and George Christ1
[1]University of Virginia, Charlottesville, VA, [2]University of Pittsburgh, Pittsburgh, PA

Fri-34
Engineering Rotator Cuff Tendon Grafts using Riboflavin-UVA Crosslinked Human Amniotic Membranes
Julien Arrizabalaga[1], Jin Liu[1], and Matthias Nollert[1]
[1]University of Oklahoma, Norman, OK

Fri-35
Catechin-Mediated Surface Chemistry for Enhanced Bone Regeneration
Jung Seung Lee[1], Jong Seung Lee[1], Kisuk Yang[1], Soohwan An[1], Min Suk Lee[2], Kyuei Lee[3], Haeshin Lee[3], Hee Seok Yang[2], and Seung-Woo Cho[1]
[1]Yonsei University, Seoul, Korea, Republic of, [2]Dankook University, Cheonan, Korea, Republic of, [3]Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of

Fri-36
Densified Collagen-Fibril Biomaterials for Craniofacial Bone Tissue Engineering
Lauren Watkins[1], Russell Main[1,2], Marco Bottino[3], and Sherry Voytik-Harbin[1,2]
[1]Purdue University, West Lafayette, IN, [2]Purdue University School of Veterinary Medicine, West Lafayette, IN, [3]Indiana University School of Dentistry, Indianapolis, IN

Fri-37
Muscle-macrophage Tissues for Improved Regeneration *In Vitro* and *In Vivo*
Mark Juhas[1], Jean Ye[1], Zohaib Shaikh[1], Ying Qian[1], and Nenad Bursac[1]
[1]Duke University, Durham, NC

Friday, October 7 | 9:30 am–5:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:15 pm–4:00 pm

Fri-38
Harnessing Cell Substrate Sensing for Effective Scaffold-based Skeletal Muscle Regeneration
Naagarajan Narayanan[1], Chunhui Jiang[1], Chao Wang[1], Shihuan Kuang[1], and Meng Deng[1]
[1]Purdue University, West Lafayette, IN

Fri-39
Size Scale Effects in Engineering Skeletal Muscle Tissue Constructs
Onur Aydin[1], Mohamed Elhebeary[1], and Taher Saif[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

Fri-40
BMP-2 Overexpressing Mesenchymal Stem Cells in CS Hydrogels for Healing of Critical Bone Defects
Seth Andrews[1], Albert Cheng[2], Robin Webb[1], Hazel Stevens[2], Robert Guldberg[2], Lohitash Karumbaiah[1], and Steven Stice[1]
[1]University of Georgia, Athens, GA, [2]Georgia Institute of Technology, Atlanta, GA

Fri-41
Magnetically Responsive Hydrogels for Optimizing Growth Factor Delivery in Bone Regeneration
Seyedeh Zahra Moafi Madani[1], Anne Reisch[1], and Stephen Kennedy[1]
[1]University of Rhode Island, Kingston, RI

Fri-42
Multifunctional Electroactive Matrices Have the Ability to Promote Muscle Regeneration
Xiaoyan Tang[1], Yusuf Khan[1], and Cato Laurencin[1]
[1]Institute for Regenerative Engineering, University of Connecticut Health, Farmington, CT

Tracks: Neural Engineering, Tissue Engineering
Neural Tissue Engineering

Fri-43
Functional 3D Nerve Model Generates Signals from Fascicles Detectable with a Microelectrode Array
Wesley Anderson[1], Dale George[1], Alicia Brown[1], Alexander Bosak[1], Bradley Willenberg[1,2,3], and Stephen Lambert[1]
[1]University of Central Florida College of Medicine, Orlando, FL, [2]University of Florida, Gainesville, FL, [3]Saisijin Biotech, LLC, Orlando, FL

Fri-44
Combining Electrospun Nanofibers with Cell-encapsulating Hydrogel Fibers for Neural Tissue Engineering
Joseph Corey[1,2], Che Chan [1], Christina White[2], Arjun Rastogi[2], Allison Grant[1], Ryan Miller[1], and Keith Duncan[1]
[1]The University of Michigan, Ann Arbor, MI, [2]VA Ann Arbor Healthcare Center, Ann Arbor, MI

Fri-45
Functionalized Rosette Nanotubes as a Scaffold for Neural Regeneration
Marissa Puzan[1], Belete Legesse[1], Hicham Fenniri[1], and Abigail Koppes[1]
[1]Northeastern University, Boston, MA

Fri-46
3D Bioprinting Nano Scaffold with Multi-walled Carbon Nanotubes for Improved Nerve Regeneration
Se-Jun Lee[1] and Lijie Grace Zhang[1]
[1]George Washington University, Washington, DC

Fri-47
Alginate Hydrogel Based Dynamic Neuronal Patterning Method for Designing Neuronal Networks *In Vitro*
Sunghoon Joo[1], Seukyoung Song[1], Yoon Sung Nam[1], and Yoonkey Nam[1]
[1]KAIST, Daejeon, Korea, Republic of

Fri-48
In Vitro 3D Human Innervated Intestinal Tissue Model
Eleana Manousiouthakis[1], Ying Chen[1], and David L. Kaplan[1]
[1]Tufts University, Medford, MA

Fri-49
The Development of Neurovascular Tissue Culture Model by Coculturing NSCs and ECs in a Microfluidic Device
Hiroyuki Uwamori[1], Takuya Higuchi[1], and Ryo Sudo[1]
[1]Keio University, Yokohama, Japan

Fri-50
3D Gelatin Conduits for Differentiation of Mesenchymal Stem Cells into Schwann Cell-like Phenotypes
Metin Uz[1], Melda Buyukoz[2], Anup Sharma[1], Donald Sakaguchi[1], Sacide Alsoy[2], and Surya Mallapragada[1]
[1]Iowa State University, Ames, IA, [2]Izmir Institute of Technology, Izmir, Turkey

Fri-51
Peripheral Nerve Repair with Uncoated Magnesium Metal Filaments
Sarah Pixley[1], Kevin Little[2], Tracy Hopkins[1], and David Hom[1]
[1]University of Cincinnati, Cincinnati, OH, [2]Cincinnati Children's Hospital Medical Center, Cincinnati, OH

Fri-52
Increased Cellular Function and Guidance on Electrospun Aligned Cellulose Acetate Nanofibers
Ramakrishna Sharma[1], Priyanka Ruparelia[2], Lifeng Zhang[1], Dennis LaJeunesse[2], and Shyam Aravamudhan[1]
[1]North Carolina A&T State University, Greensboro, NC, [2]University of North Carolina at Greensboro, Greensboro, NC

Tracks: Neural Engineering, Nano and Micro Technologies
Micro/Nano Tools in Neurosciences

Fri-53
Understanding The Functional Role of Eph Receptor Clustering In Neurogenesis
Chun Yang[1] and David Schaffer[1]
[1]University of California, Berkeley, Berkeley, CA

Fri-54
Patterned Optical Stimulation of Cultured Neuronal Networks for Gold-nanorod Based Neural Inhibition Technique
Hyunjun Jung[1] and Yoonkey Nam[1]
[1]KAIST, Daejeon, Korea, Republic of

Fri-55
Projection Printing Shape Memory Polymer-Based Implantable Neural Interface Devices
Jennifer Burns[1], Lucero Ramirez[1], Aldo Garcia-Sandoval[1], Jonathan Reeder[1], Romil Modi[1], Alexandra Joshi-Imre[1], and Walter E. Voit[1]
[1]The University of Texas at Dallas, Richardson, TX

Fri-56
Flexible 3D Carbon Nanotubes Cuff Electrode for Functional Electrical Stimulation
Wenwen Yi[1], Chaoyan Chen[1], Pan Tian[2], Yang Zhou[1], Jie Hu[2], John Cavanaugh[1], and Mark Ming-Cheng Cheng[1]
[1]Wayne State University, Detroit, MI, [2]Shanghai Jiao Tong University, Shanghai, China, People's Republic of

Fri-57
Non-Viral Gene Delivery to Peripheral Nerve through a Nanostructured Chip Platform
Natalia Higuita Castro[1], Christopher Wier[1], Jordan Moore[1], Alec Sunyecz[1], Chandan Sen[1], Jose Otero[1], Stephen Kolb[1], and Daniel Gallego-Perez[1]
[1]The Ohio State University, Columbus, OH

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Fri-58
Evaluations of Platinum and CNT-MEA Electrodes on Recording EMG as Peripheral Muscular Interfaces
Pan Tian[1], Chaoyan Chen[2], Wenwen Yi[2], Jie Hu[1], Jin Qi[1], Yang Zhou[2], Yousef Alshahrani[2], John Cavanaugh[2], and Mark Ming-Cheng Cheng[2]
[1]Shanghai Jiao Tong University, Shanghai, China, People's Republic of, [2]Wayne State University, Detroit, MI

Fri-59
Smart Nanoparticles for Anti-Oxidant Delivery into The Brain
Michael Furth[1], Julio Rincon[1], Kyung-An Han[1], and Thomas Boland[1]
[1]University of Texas at El Paso, El Paso, TX

Fri-60
Role of Nanoelectrode Shape and Size on its Ability to Penetrate and Stimulate Single-Cells
Komal Garde[1], Jun Yan[1], and Shyam Aravamudhan[1]
[1]North Carolina A&T State University, Greensboro, NC

Track: Neural Engineering
Neural Invasive Devices/Interfaces: Compatibility, Recording and Stimulation

Fri-65
Softening Substrate and Encapsulation for Neural Interfaces: Chronic Spinal Cord Stimulators
Aldo Garcia-Sandoval[1], Asht Mishra[2], Ajay Pal[2], Alexandra Joshi-Imre[1], Adriana C Duran-Martinez[1], Sydney E Sherman[1], Jason B Carmel[2], and Walter Voit[1]
[1]The University of Texas at Dallas, Richardson, TX, [2]Burke Medical Research Institute, White Plains, NY

Fri-66
***In Vitro* Multichannel Single-unit Recordings of Action Potentials from Mouse Sciatic Nerve**
Longtu Chen[1] and Bin Feng[1]
[1]University of Connecticut, Storrs, CT

Fri-67
Electrochemical Performance Single Material Silicon Carbide (SiC) Electrode
Christopher Frewin[1], Felix Deku[1], Evans Bernardin[2], Richard Everly[3], Jawad Ul Hassan4, Erik Janzén4, Joseph Pancrazio[1], and Stephen Saddow[2]
[1]University of Texas at Dallas, Richardson, TX, [2]University of South Florida, Tampa, FL,[3]Nanotechnology Research and Education Center at U.S.F., Tampa, FL, 4Linköping University, Linköping, Sweden

Fri-68
CNT-HA Nanofibrous Composite for Neural Electrical Stimulation
Elisabeth Steel[1] and Harini Sundararaghavan[1]
[1]Wayne State University, Detroit, MI

Fri-69
The Effect of Potassium Chloride on Aplysia Californica Abdominal Ganglion Activity
fanrui fu[1] and Rosalind Sadleir[1]
[1]Arizona State University, Tempe, AZ

Fri-70
Development of Epilepsy-on-a-chip System Based on Microfluidic Perfusion of Organotypic Brain Slice Cultures
Jing Liu[1] and Yevgeny Berdichevsky[1]
[1]Lehigh University, Bethlehem, PA

Fri-71
Inhibition of the Innate Immunity Pathway of CD14 on Blood-Derived Cells Improves Intracortical Microelectrode Performance
John K. Hermann[1,2], Hillary W. Bedell[1,2], Madhumitha Ravikumar[1,2], Dawn M. Taylor[2,3], and Jeffrey R. Capadona[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Louis Stokes Cleveland VA Medical Center, Cleveland, OH, [3]Cleveland Clinic, Cleveland, OH

Fri-72
Simulation of Neuronal Localization Using the Utah Multisite Electrode Array
John Mize[1], Mobashir Shandhi[1], and David Warren[1]
[1]University of Utah, Salt Lake City, UT

Fri-73
Functional Remodeling of Subtype-Specific Markers Surrounding Implanted Neuroprostheses
Joseph Salatino[1] and Erin Purcell[1]
[1]Michigan State University, East Lansing, MI

Fri-74
Effect of Sieve Transparency on Selectivity of Microsieve Electrodes (μSE) in Recruitment of Peripheral Nerve Axons
Juan Pardo[1], Erik Zellmer[1], Leo Li[1], Matthew MacEwan[2], Wilson Ray[2], and Daniel Moran[1]
[1]Washington University in St. Louis, St. Louis, MO, [2]Washington University School of Medicine, St. Louis, MO

Fri-75
The Effect of Synchronous and Asynchronous Microelectrode Stimulation in The Rat Hippocampus
Mark Connolly[1], Robert Gross[1], and Babak Mahmoudi[1]
[1]Emory University, Atlanta, GA

Fri-76
5MHz Ultrasound Activates Inner Ear Vestibular Organs
Marta Iversen[1], Douglas Christensen[1], Dennis Parker[1], Micah Fereck[1], Holly Holman[1], and Richard Rabbitt[1]
[1]University of Utah, Salt Lake City, UT

Fri-77
Characterizing Noise Sources in Flexible, Multiplexed, Capacitive, Active Electrode Arrays
Matthew McCann[1], Jonathan Viventi[1], Michael Trumpis[1], and Ken Chiang[1]
[1]Duke University, Durham, NC

Fri-78
Tetramethyl Orthosilicate as a Delivery Vehicle for Anti-inflammatories to Ameliorate the Foreign Body Response Associated with Micro-device Implantation
Matthew McDermott[1,2] and Kevin Otto[2]
[1]Purdue University, West Lafayette, IN, [2]University of Florida Gainesville, FL

Fri-79
A Self-assembled Bionanomatrix Coating for Intracranial Aneurysm Coils to Enhance Healing
Patrick Hwang[1], Maggie Collier[2], Grant Alexander[2], Brigitta Brott[1,2], Robert Hergenrother[2], Ramanathan Kardivel[3], David Kallmes[3], and Ho-Wook Jun[1,2]
[1]Endomimetics, LLC, Birmingham, AL, [2]University of Alabama at Birmingham, Birmingham, AL,[3]Mayo Clinic, Rochester, MN

Fri-80
Low-cost, Compact Neuro-stimulator for Chronic Stimulation of Rat Retina
Sahar Elyahoodayan[1] and James Weiland[1]
[1]University of Southern California, los angeles, CA

Fri-81
Decoding the Multi-Modal Failures of Microelectrode-Brain Tissue Interface
Takashi Kozai[1]
[1]University of Pittsburgh, Pittsburgh, PA

Fri-82
Viability of a Novel Micro-Electrocorticography Electrode Array Design for Intrasulcal Implantation in Macaca Mulatta Primary Somatosensory Cortex
Taylor Hearn[1], Justin Tanner[1], John Lachapelle[2], John Burns IV[2], Julianne Grainger[2], Jonathan Cheng[3], Edward Keefer[3], and Stephen Helms Tillery[1]
[1]Arizona State University, Tempe, AZ, [2]Draper Laboratory, Cambridge, MA, [3]Nerves Incorporated, Dallas, TX

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Fri-83
On-Chip Data Processing for Large-Scale Neural Recording
Tong Wu[1], Teris Tam[1], and Zhi Yang[1]
[1]University of Minnesota, Minneapolis, MN

Fri-84
Investigation of Online Incremental Feature Extraction Algorithm for On-Chip Spike Sorting
Wenfeng Zhao[1], Tong Wu[1], and Zhi Yang[1]
[1]University of Minnesota, Minneapolis, MN

Track: Neural Engineering
Neuroprotective Strategies

Fri-85
Towards a Neuroprotective Abiotic Surface: Resveratrol Incorporation via Surface Adsorbed Hydrogel Particles
Emily Morin[1], Shuangcheng Tang[1], and Wei He[1]
[1]University of Tennessee, Knoxville, TN

Fri-86
***In Vitro* Modeling of Stroke with Mesenchymal Stem Cells Treatment**
Timo Roehrs[1], Rene Schloss[1], and David Shreiber[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ

Track: Neural Engineering
Noninvasive Neuromodulation

Fri-87
Integration of Transcranial Alternating Current Stimulation and Electroencephalography for the Study of Binocular Rivalry
Abhrajeet Roy[1], Bryan Baxter[1], Chris Cline[1], Sucharit Katyal[1], Steve Engel[1], Sheng He[1], and Bin He[1]
[1]University of Minnesota, Minneapolis, MN

Fri-88
Finite Element Modeling Predicts Electrophosphene Phenomena in tDCS or tACS Recipients
Aprinda Indahlastari[1], Aditya Kasinadhuni[2], Munish Chauhan[1], Kevin Castellano[2], Malcolm Calvin[1], Gayathri Srinivasan[1], Aditya Pendharkar[1], and Rosalind Sadleir[1]
[1]Arizona State University, Tempe, AZ, [2]University of Florida, Gainesville, FL

Fri-89
Efficient Implementation of EEG Beamformers for Source Detection on Mobile Platforms
Ian Sturdevant[1], Ruben Garcia[1], and Kwong Ng[1]
[1]New Mexico State University, Las Cruces, NM

Fri-90
Changes in the EEG Spectrum of a Child with Severe Disabilities in Response to Power Mobility Training
Nadina Zweifel[1], Lisa Kenyon[1], John Farris[1], Naomi Aldrich[2], Paul Stephenson[2], and Samhita Rhodes[1]
[1]Grand Valley State University, Grand Rapids, MI, [2]Grand Valley State University, Allendale, MI

Fri-91
A Real Time EEG-Based Neurofeedback Platform for Attention Training
Reza Abiri[1], Xiaopeng Zhao[1], and Yang Jiang[2]
[1]University of Tennessee, Knoxville, TN, [2]University of Kentucky Lexington, KY

Tracks: Bioinformatics, Computational and Systems Biology
Analysis of Cell Signaling

Fri-92
Glucose-Dependence of Renin-Angiotensin System in Podocytes Cells During Diabetic Kidney Disease
Minu Pilvankar[1], Michele Higgins[1], and Ashlee N. Ford Versypt[1]
[1]Oklahoma State University, Stillwater, OK

Fri-93
Meta-Modeling Reveals that Tyrosine Kinase Receptor Signaling is Primarily Directed by Endocytic Vesicles, Late Endosome, and the Nucleus
Jared Weddell[1] and Princess Imoukhuede[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

Track: Bioinformatics, Computational and Systems Biology
Computational Approaches in Multicellular Systems

Fri-94
Toward an Individual-Based Model for Bone Remodeling
Estee George[1], Gabrielle Van Scoy[2], Olivia Petrey[1], Dominic Conte[1], Alicia Prieto-Langarica[2], and Marnie Saunders[1]
[1]The University of Akron, Akron, OH, [2]Youngstown State University, Youngstown, OH

Track: Biomaterials
Dynamic and Spatially-Patterned Biomaterials

Fri-95
Modulating Cell Migration and Focal Adhesion Dynamics Using Nanotopography
Elena Liang[1], Emma Mah[1], Albert Yee[1], and Michelle Digman[1]
[1]University of California, Irvine, Irvine, CA

Fri-96
Actuating Patterned Hydrogel for Intestinal Tissue Engineering
Jun-Goo Kwak[1], Abhinav Sharma[1], and Jungwoo Lee[1,2,3]
[1]University of Massachusetts Amherst, Amherst, MA, [2]Institute for Applied Life Sciences, Amherst, MA, [3]Molecular and Cellular Biology Graduate Program, Amherst, MA

Track: Bioinformatics, Computational and Systems Biology
Metabolic Models

Fri-97
Integrative Modeling of Acetone-Butanol-Ethanol (ABE) Fermentation
Chen Liao[1], Seung-Oh Seo[1], Venhar Celik[1,2], Huaiwei Liu[1], Wentao Kong[1], Yi Wang[1], Hans Blaschek[1], Yong-Su Jin[1], and Ting Lu[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]University of Firat, Elazig, Turkey

Fri-98
Using Genome-Scale Metabolic Models to Study Uncultivated Organisms from the Oral Microbiome
David Bernstein[1] and Daniel Segre[1]
[1]Boston University, Boston, MA

Fri-99
Predicting the Dynamics of Metabolic Pathways in Pancreatic Ductal Adenocarcinoma
Mahua Roy[1] and Stacey Finley[1]
[1]University of Southern California, Los Angeles, CA

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Fri-100
Mathematical Modeling of the Methylation Cycle In Children With Autism Spectrum Disorder
Troy Vargason[1], Daniel Howsmon[1], Stepan Melnyk[2], S. Jill James[2], and Juergen Hahn[1]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Arkansas Children's Hospital Research Institute, Little Rock, AR

Fri-101
A Combined Approach for the Real-Time Monitoring of in vitro Bone Tissue Engineered Construct
Aaron Simmons[1], Cortes Williams[1], Kylie M. Foster[1], and Vassilios Sikavitsas[1]
[1]University of Oklahoma, Norman, OK

Track: Bioinformatics, Computational and Systems Biology
Multiscale Modeling

Fri-102
A Time-varying Biased Random Walk Model of Growth: Application to Height from Birth to Childhood
Bela Suki[1] and Urs Frey[2]
[1]Boston University, Boston, MA, [2]University Children's Hospital Basel, UKBB, University of Basel, Basel, Switzerland

Fri-103
An Image-Based Multiscale Model Predicts Injury-Prone Regions in Cervical Facet Capsular Ligaments
Sijia Zhang[1], Vahhab Zarei[2], Beth Winkelstein[1], and Victor Barocas[2]
[1]University of Pennsylvania, Philadelphia, PA, [2]University of Minnesota, Minneapolis, MN

Fri-104
New Algorithms to Characterize ET function during Inflammation in Otitis Media Prone Populations
Jennifer Malik[1] and Samir Ghadiali[1]
[1]The Ohio State University, Columbus, OH

Fri-105
Multiscale Mechanobiology of the Nuclear Pore Complex
Mohammad Mofrad[1]
[1]University of California Berkeley, Berkeley, CA

Track: Bioinformatics, Computational and Systems Biology
Single-Cell Measurements and Models

Fri-106
Estimating Myofibril Distribution in Adult Cardiomyocytes: A Subcellular Min-Cost Flow Problem
Tyler Harvey[1], Brian Dean[1], and Delphine Dean[1]
[1]Clemson University, Clemson, SC

Fri-107
Single Cell Analysis of Bacterial Transcription Reveals Dynamic Induction Response Kinetics
Rebecca Breuer[1], Arpan Bandyopadhyay[1], Sofie O'Brien[1], Aaron Barnes[1], Wei-Shou Hu[1], and Gary Dunny[1]
[1]University of Minnesota, Minneapolis, MN

Fri-108
Calcium Transfer Between the ER and Mitochondria is Required for Calcium Oscillations in a Model of Sheared Vascular Endothelial Cells
Richard Buckalew[1,2], Christopher Scheitlin[1], Alex Cetnar[1], Arash Moshkforoush[3], Nikolaos Tsoukias[3], and B. Rita Alevriadou[1]
[1]The Ohio State University, Columbus, OH, [2]University of Minnesota Duluth, Duluth, MN,[3]Florida International University, Tampa, FL

Track: Bioinformatics, Computational and Systems Biology
Systems Approaches to Therapy, Therapeutics, and Precision Medicine

Fri-109
Towards Better Quality in Precision Medicine: A Proposed Framework for Improving Clinical Practice Guidelines with Insights from Mathematical Biology and the Corbin-Strauss Model
Hisham Sherif[1,2]
[1]Christiana Hospital, Newark, DE, [2]University of Delaware, Newark, DE

Fri-110
Systems Modeling of the Contribution of SGLT to Sodium Handling in the Diabetic Kidney
Jessica Boss[1] and Melissa Hallow[1]
[1]University of Georgia, Athens, GA

Fri-111
A Computational Model of Thrombospondin-1 Apoptotic Mechanisms
Qianhui Wu[1] and Stacey Finley[1]
[1]University of Southern California, Los Angeles, CA

Fri-112
Accurate and Predictive Profiling of Humoral Immunity by Immunoglobulin Repertoire Sequencing
Sai Reddy[1]
[1]ETH Zurich, Basel, Switzerland

Fri-113
Predicting Kinase Activities from Phosphoproteomic Measurements
Shweta Ravi[1] and Kristen Naegle[1]
[1]Washington University in St. Louis, St. Louis, MO

Tracks: Bioinformatics, Computational and Systems Biology, Cellular and Molecular Bioengineering
Theory and Practice of Synthetic Biology

Fri-114
Site Specificity of Affinity Tags Significantly Impact the Folding & Function of Synthetic Peptide
Aby Thyparambil[1,2] and Anthony Guiseppi-Elie[1,2]
[1]Texas A & M University, Bryan, TX, [2]Center for Bioelectronics, Biosensors and Biochips (C[3]B®), Bryan, TX

Fri-115
Reprogramming MHC Specificity by Immunogenomic Cassette Exchange
Sai Reddy[1]
[1]ETH Zurich, Basel, Switzerland

Fri-116
Expanding the Genetic Toolbox in Synthetic Biology
I Cody MacDonald[1] and Tara Deans[1]
[1]University of Utah, Salt Lake City, UT

Fri-117
Probing Angiogenesis with Synthetic Biology
Heidi Spears[1], Tyler Page[1], and Tara Deans[1]
[1]University of Utah, Salt Lake City, UT

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Track: Industry
Industry

Fri-118
An Electromagnetic Bead Mill for Applying Controlled and Variable Stresses in Fluid Samples

Kenneth Alfano[1], Michael Tarasev[1], Sumita Chakraborty[1], Randall Bath[1], Steven Meines[2], and Gene Parunak[2]

[1]Blaze Medical Devices, Ann Arbor, MI, [2]in[2]being, LLC, Saline, MI

Fri-119
Development of a Python-based, Open-Source Stereotactic Neurosurgical Planning Software Tool

Diana Johnson[1], Simeng Zhang[1], and Matthew Johnson[2]

[1]University of Minnesota, Minneapolis, MN, [2]Institute for Translational Neuroscience, University of Minnesota, Minneapolis, MN

Fri-120
A Safer and Faster Doffing PPE sor Frontline Health Workers Treating Infectious Diseases

Patience Osei[1], Colby Wilkason[1], Laura Scavo[1], and Youseph Yazdi[1]

[1]Johns Hopkins University, Baltimore, MD

Track: Biomaterials
Biomaterials for Immunoengineering

Fri-128
Self-Assembly Protein Nanogels for Safer Cancer Immunotherapy

Alberto Purwada[1] and Ankur Singh[1]

[1]Cornell University, Ithaca, NY

Fri-129
Capillary Alginate Gel (Capgel) Biomaterials for Injectable T-Cell Immunotherapies

Alexey Goloubev[1], Kunal Dhume[1], Alicia Brown[1], Edward Ross[1], K. Kai McKinstry[1], and Bradley Willenberg[1,2,3]

[1]University of Central Florida College of Medicine, Orlando, FL, [2]University of Florida, Gainesville, FL, [3]Saisijin Biotech, LLC, Orlando, FL

Fri-130
Heterologous Prime-boost with Micro/Nano Vaccine Constructs Enhances CD8+ T cell Responses

Brent Chesson[1] and Jai Rudra[1]

[1]University of Texas Medical Branch, Galveston, TX

Fri-131
Synthetic Nanofiber Vaccines Boost BCG Induced Protection against Mycobacterium tuberculosis

Brent Chesson[1], Matt Huante[1], Rebecca Nusbaum[1], Janice Endsley[1], and Jai Rudra[1]

[1]University of Texas Medical Branch, Galveston, TX

Fri-132
Investigating Macrophage-Endothelial Cell Interactions within PEG-based Hydrogels

Erika Moore[1], Grace Ying[1], and Jennifer West[1]

[1]Duke University, Durham, NC

Fri-133
Combination Nanovaccine Enhances Influenza Vaccine Efficacy in Aged Mice

Kathleen Ross[1], Jonathan Goodman[1], Sujata Senapati[1], Matthew Jefferson[1], Jessica Alley[1], Metin Uz[1], Michael Wannemuehler[1], Surya Mallapragada[1], Marian Kohut[1], and Balaji Narasimhan[1]

[1]Iowa State University, Ames, IA

Fri-134
ECM Coatings Minimize FBR to Chronically Implanted CNS High Density Recording Arrays

Michael Polei[1] and Patrick Tresco[1]

[1]University of Utah, Salt Lake City, UT

Fri-135
Polyhistidine-Tagged Ligand and Antigen Binding to Cobalt Porphyrin Bilayers

Shuai Shao[1], Jumin Geng[1], Hyun Yi[2], Shobhit Gogia[1], Amy Jacobs[2], Sriram Neelamegham[1], and Jonathan Lovell[1]

[1]University at Buffalo, The State University of New-York, Amherst, NY, [2]University at Buffalo, The State University of New-York, Buffalo, NY

Track: Biomaterials
Three-Dimensional Printing and Advanced Biomaterial Manufacturing

Fri-137
3D Bioprinting of Tissue Engineered Aortic Root Scaffolds with Hydrogels

Benjamin Stewart[1], Shahnaz Javani[1], Debra Wilcox[1], Corinne Corinne[1], and Ali Azadani[1]

[1]University of Denver, Denver, CO

Fri-138
3d Printed Brain Model Resembling Mechanical Properties of Brain Matter for Preoperative Planning and Practice

Miriam Navarro[1], Jorge I Rodriguez Devora[1], and Delphine Dean[1]

[1]Clemson University, Clemson, SC

Fri-139
Characterization of Stainless Steel and Hydroxyapatite Powders for Additive Manufacturing of Composite Craniomaxillofacial Implants

Robert Pack[1], Elizabeth Barker[1], Beth Armstrong[2], Claudia Rawn[1], and Brett Compton[1]

[1]The University of Tennessee at Knoxville, Knoxville, TN, [2]Oak Ridge National Laboratory, Oak Ridge, TN

Fri-140
Integrating Electrospun Microfibers into 3D Printed Scaffolds for Nerve Regeneration

Se-Jun Lee[1], Wei Zhu[1], and Lijie Grace Zhang[1]

[1]George Washington University, Washington, DC

Fri-141
Alginate/gelatin Hydrogels as a Tunable Bioprinting Material for 3D Tumor Studies

Tao Jiang[1], Jose Gil Munguia-Lopez[2], Joel Grant[1], Sanahan Vijayakumar[1], and Joseph Kinsella[1]

[1]McGill University, Montreal, QC, Canada, [2]Instituto Potosino de Investigación Científica y Tecnológica, A.C. (IPICyT), San Luis Potosi, Mexico

Fri-142
A Nitrogen-doped Carbon Nanotube and Alginate Composite Hydrogel as a 3D Bioprintingl

Jose Gil Munguia-Lopez[1], Tao Jiang[2], Emilio Muñoz-Sandoval[1], Antonio De Leon-Rodriguez[1], and Joseph Kinsella[2]

[1]Instituto Potosino de Investigación Científica y Tecnológica, A.C. (IPICyT), San Luis Potosi, Mexico, [2]McGill University, Montreal, QC, Canada

Fri-143
3D Printing of Alginate Microstructures with Tunable Degradation Kinetics.

Thomas Valentin[1], Po-Yen Chen[1], Jaskiranjeet Sodhi[1], Marielena Gamboa-Castro[1], Susan Leggett[1], Hayley McClintock[1], Shivaali Maddali[1], and Ian Wong[1]

[1]Brown University, Providence, RI

Fri-144
Evaluation of Carbon Based-Thermoplastic Polyurethane Composites for the Production 3D Printed Articular Cartilage Scaffold

Diana Rodriguez[1], Yejin Ji[1], and NamSoo Kim[1]

[1]The University of Texas at El Paso, El Paso, TX

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Track: Biomaterials
Biomaterial Scaffolds

Fri-145
Growth and Differentiation of Myoblasts on Graphene Foam Bioscaffolds
Angela Nicole Chang[1], Eric Krueger[1,2], Dale Brown[1], Josh Eixenberger[1], Raquel Brown[1], Sepideh Rastegar[1], Kurtis D. Cantley[1], and David Estrada[1]
[1]Boise State University, Boise, ID, [2]Lehigh University, Bethlehem, PA

Fri-146
Computational and Experimental Evaluation of Gradient Scaffolds for Vascularization
Banu Akar[1,2], Sami Somo[1,2], Chenlin Lu[1], Katerina Stojkova[1], Mustafa Ozturk[1], Elif Bayrak[1], Kenneth Tichauer[1], Ali Cinar[1], and Eric Brey[1]
[1]Illinois Institute of Technology, Chicago, IL, [2]Edward Hines, Jr. V.A. Hospital, Hines, IL

Fri-147
Optimizing Anisotropic Polyurethane Scaffolds to Mechanically Match with the Native Myocardium
Cancan Xu[1,2], Yihui Huang[1,2], Jinglei Wu[1,2], Liao Jun[3], Liping Tang[1,2], and Yi Hong[1,2]
[1]University of Texas at Arlington, Arlington, TX, [2]University of Texas at Arlington and The University of Texas Southwestern Medical Center at Dallas, Dallas, TX, [3]Department of Agricultural and Biological Engineering, Mississippi State University, Mississippi, MS

Fri-148
A Novel Approach to Prepare Nanofibrous 3D Scaffolds
Chi Ma[1], Xiaohua Liu[1], and Chi Ma[2]
[1]Texas A&M University Baylor College of Dentistry, Dallas, TX, [2]Texas A&M University Baylor College of Dentistry, dallas, TX

Fri-149
3D Printed Polymeric Bone Scaffolds Withstand Physiological Loads in the Spine Under Static Loading
Constance Maglaras[1] and Antonio Valdevit[1]
[1]Stevens Institute of Technology, Hoboken, NJ

Fri-150
Focal Adhesion Activation State Drives Cell Migration Velocity Dependence on Matrix Mimetic Nanofiber Diameter
Daniel T. Bowers[1], Mary E. McCulloch[1], and Justin L. Brown[1]
[1]The Pennsylvania State University, University Park, PA

Fri-151
Engineering Versatile and Stable Collagen Nanofibers from a Mild Solvent
David Castilla[1] and Jorge Almodovar[1]
[1]Universidad de Puerto Rico-Mayaguez, Puerto Rico

Fri-152
Novel and Simple Method for Fabrication of Multichannel PLCL Nerve Guidance Conduit
DoYeun Park[1] and Sang-Hoon Lee[1,2]
[1]KU-KIST Graduate School of Converging Science and Technology, Korea University, Seoul, Korea, Republic of, [2]School of Biomedical Engineering, College of Health Science, Korea University, Seoul, Korea, Republic of

Fri-153
Engineered Cellulose-Based Cell Culture Platforms
Gulden Camci-Unal[1]
[1]Harvard University, Cambridge, MA

Fri-154
Fabrication of the Nano/micro Grooved Scaffold to Mimic the ECM Structure of Nerve Cells for Neural Regeneration
Ji Hong Min[1], Ui Seok Chung[1], Haejeong Pang[1], Hye Jin Hong[1], and Won-Gun Koh[1]
[1]Yonsei University, Seoul, Korea, Republic of

Fri-155
Strong 1-mm-Diameter Collagen Tubes for Microsurgical Applications
Xuanyue Li[1], Jing Xu[1], Calin Nicolescu[1], Jordann Marinelli[1], and Joe Tien[1]
[1]Boston University, Boston, MA

Fri-156
Electrospun Silk Fibroin Fibrous Scaffolds with Two-stage Hydroxyapatite for Bone Tissue Engineering
Eunkyung Ko[1], Jong Seung Lee[1], Hyunryung Kim[1], Kisuk Yang[1], Won Hyoung Ryu[1], and Seung Woo Cho[1]
[1]Yonsei University, Seoul, Korea, Republic of

Fri-157
A 3-Dimensional Tubular Scaffold for Treating Esophageal Atresia
Jordan Kuiper[1], Jordan Kuiper[1], and Jordan Kuiper[1]
[1]University of South Dakota, Sioux Falls, SD

Fri-158
FAK Control of MSC Alignment and Spreading on Nanofibrous Substrates
Mohammad Andalib[1], Jeong Soon Lee[1], Ligyeom Ha[1], Yuris Dzenis[1], and Jung Yul Lim[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

Fri-159
Fabrication and Development of an Electrospun Scaffold to Mimic Bruch's Membrane as an Approach to Retinal Repair
Ziqian Zeng[1], Phuong Lam[1], Michael Rariden[1], Christian Gutierrez[1], Michael Robinson[1], Katia Del Rio-Tsonis[1], and Justin Saul [1]
[1]Miami University, Oxford, OH

Fri-160
Microparticle Scaffolds Support Bone Growth *In Vivo*
Karolina Stumbraite[1], Ryan Clohessy[1], Barbara D. Boyan[1,2], and Zvi Schwartz[1,3]
[1]Virginia Commonwealth University, Richmond, VA, [2]Georgia Institute of Technology, Atlanta, GA, [3]University of Texas Health Science Center at San Antonio, San Antonio, TX

Fri-161
Engineering Extracellular Matrix Biofibers Via Hollow Fiber Membrane Cell Culture
Kevin Roberts[1], Addison Walker[1], Jacob Schluns[1], Jamie Hestekin[1], and Jeffrey Wolchok[1]
[1]University of Arkansas, Fayetteville, AR

Fri-162
Micropatterened Nickel Titanium Thin Film Scaffold Effect on the Growth of Endothelial Monolayer
Ming Lun Wu[1], Mohanchandra Panduranga[1], and Gregory Carman[1]
[1]University of California, Los Angeles, Los Angeles, CA

Fri-163
Cytocompatibility of Porous Magnetic Nanocomposites with BMSCs
Naiyin Zhang[1], Andro Azer[1], Jessica Si'i[1], Michael Segura[1], and Huinan Liu[1]
[1]University of California at Riverside, Riverside, CA

Fri-164
Growth Factor Presentation to MSCs within Micro-fiber/ Collagen Composites for Ligament Tissue Engineering
Patrick Thayer[1], Linda Dahlgren[1], and Aaron Goldstein[1]
[1]Virginia Tech, Blacksburg, VA

Fri-165
Desferoxamine Decorated Nanofibrous Scaffolds Improve Critial-Sized Bone Regeneration
Qingqing Yao[1], Yangxi Liu[1], and Hongli Sun[2]
[1]Biomedical Engineering, University of South Dakota, Sioux Falls, SD, [2]Biomedical Engineering, University of South Dakota, Sioux Falls, SD

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Fri-166
3D Printed Scaffold Design for Bone Graft Applications Can Withstand Physiological Loading
Rebecca Chung[1] and Antonio Valdevit[1]
[1]Stevens Institute of Technology, Hoboken, NJ

Fri-167
Regulation of The Inflammatory Response to Biodegradable Zinc-Based Implant Materials By Corrosion
Roger Guillory[1], Patrick Bowen[1], Sean Hopkins[1], Emily Shearier[1], Amani Gillette[1], Eli Aghion[2], Martin Bocks[3], Jaroslaw Drelich[1], and Jeremy Goldman[1]
[1]Michigan Technological University, Houghton, MI, [2]Ben-Gurion University of the Negav, Beer-Sheva, Israel, [3]University of Michigan Congenital Heart Center, Division of Pediatric Cardiology, Ann Arbor, MI

Fri-168
Photopolymerization of Microgel Building Blocks into Porous Scaffolds for Tissue Engineering
Shangjing Xin[1], Omar Wyman[1], and Daniel Alge[1]
[1]Texas A&M University, College Station, TX

Fri-169
***In-Vitro* and *In-Vivo* Investigation of Chitosan Based Polyelectrolyte-Complex**
Shiv Mistry[1], Karishma Desai[1], Jordan Tutnauer[1], Rene Schloss[1], and Noshir Langrana[1]
[1]Rutgers University, Piscataway, NJ

Fri-170
Electrospun Conductive PANI/PVDF Blends for Scaffold Engineering
Samerender Nagam Hanumantharao[1], Nastaran Alinezhad[1], Srinivas Kannan[1], and Smitha Rao[1]
[1]Michigan Tech, Houghton, MI

Fri-171
Design of Peptide Hydrogel for Tissue Infiltration
Daisuke Nakayama[1], Yusuke Kambe[2], Tetsuji Yamaoka[2], Sachiro Kakinoki[1], and Yoshiaki Hirano[1]
[1]Kansai University, Osaka, Japan, [2]National Cerebral and Cardiovascular Center, Osaka, Japan

Fri-172
3-D culture of Fibroblasts in Superfine Aginate Nanofibrous Meshes
Young Ju Son[1], Wei Mao[2], and Hyuk Sang Yoo[1]
[1]Kangwon National University, Chuncheon, Korea, Republic of, [2]Kangwon National University, Chuncheon, China, People's Republic of

Track: Biomaterials
Mechanics of Biomaterials

Fri-173
Effect of DDR2 ECD on Collagen I Gel Mechanics
David Yeung[1], David Gutschick[1], Peter Anderson[1], Heather Powell[1], Gregory Lafyatis[1], and Gunjan Agarwal[1]
[1]The Ohio State University, Columbus, OH

Fri-174
Tough, Degradable, HEMA-Based Hydrogels for Trachea Replacement
Elizabeth Mansfield[1], Vaughn Greene, Jr.[1], and Debra Auguste[1]
[1]The City College of New York, New York, NY

Fri-175
Time-Dependent Flexural Properties of Human Cortical Bone
Gavriel Feuer[1] and Subrata Saha[1]
[1]SUNY Downstate, Brooklyn, NY

Fri-176
Analysis of the Effect of Saliva on the Degradation of Absorbable Sutures
Luke Riexinger[1], Jenna Briddell[2], and Donna Ebenstein[1]
[1]Bucknell University, Lewisburg, PA, [2]Geisinger Medical Center, Danville, PA

Fri-177
Thermomechanical Analysis of Thin Shape Memory Polymer Films for Bioelectronic Medicines
Melanie Ecker[1], Vindhya Danda[1], Joseph Pancrazio[1], and Walter Voit[1]
[1]The University of Texas at Dallas, Richardson, TX

Fri-178
Rheological Differences Between Buffer Dialyzed and Water Dialyzed Keratose Films
Nils Potter[1] and Mark Van Dyke[1]
[1]Virginia Tech, Blacksburg, VA

Fri-179
Fatigue Characteristics of 3D Printed Scaffold for Long Term Stability in Segmental Bone Defects
Rebecca Chung[1] and Antonio Valdevit[1]
[1]Stevens Institute of Technology, Hoboken, NJ

Fri-180
Neural Interfaces with Photolithographically-defined, Softening Substrates
Romil Modi[1] and Walter Voit[2]
[1]Univesity of Texas at Dallas, Dallas, TX, [2]Univesity of Texas at Dallas, Richardson, TX

Fri-181
Poly-L-Lactide Fiber Mechanical Properties and Degradation for Bioresorbable Stents
Tre Welch[1] and Nandika DSouza[2]
[1]UT Southwestern Medical Center of Dallas, Dallas, TX, [2]University of North Texas, Denton, TX

Fri-182
The Impact of Sterilization on the Mechanical Properties of Shape Memory Polymers for Bioelectronic Medicines
Vindhya Danda[1], Melanie Ecker[1], Christopher Frewin[1], Andrew Shoffstall[2], Jeffrey Capadona[2], Joseph Pancrazio[1], and Walter Voit[1]
[1]University of Texas-Dallas, Richardson, TX, [2]Case Western Reserve University, Cleveland, OH

Track: Biomaterials
Biomaterials

Fri-183
The Role of Ceria and Selenium Nanoparticles in Alleviating Cellular Stress
Amit Roy[1], Ming Gao[2], Carmen Wu[2], Bo Yuan[2], and Thomas J. Webster[2]
[1]Northeastern University, Shrewsbury, MA, [2]Northeastern University, Boston, MA

Fri-184
Silicone Functionalized with Atomic Layer Deposition: A Novel Material For Antimicrobial Facial Prosthesis
Arghya Kamal Bishal[1], Cortino Sukotjo[1], and Christos G Takoudis[1]
[1]University of Illinois at Chicago, Chicago, IL

Fri-185
Stability and Protein Resistance of Silicones Modified with PEO-Silane Amphiphiles
Bryan Khai Ngo[1], Marc Rufin[1], Shane Stafslien[2], and Melissa Grunlan[1]
[1]Texas A&M University, College Station, TX, [2]North Dakota State University, Fargo, ND

Fri-186
Mesenchymal Transition Of Endothelial And Epithelial Cells On Segmental Polyurethane Elastomers
Calvin Cheah[1], Yusuf Sevencan[1], Yuan Yuan[1], and Debanjan Sarkar[1]
[1]University at Buffalo, Buffalo, NY

Fri-187
Cell Propagation on Solvent-Casted Thermoresponsive Film
Kevin Ortiz-Rivera[1], Yonsil Park[1], Wei-Shou Hu[1], and Chun Wang[1]
[1]University of Minnesota-Twin Cities, Minneapolis, MN

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Fri-188
Single-step Synthesis of Self-Assembled Para-Amino Benzoic Acid Fibers with Graphene-Nanoplatelet Inclusions
Shrishti Singh[1], Ankarao Kalluri[1], Osama Alturkistani[1], Isaac Macwan[1], Prabir Patra[1], and Ashish Aaphale[2]
[1]University of Bridgeport, Bridgeport, CT, [2]University of Connecticut, Storrs, CT

Fri-189
Dynamic Corrosion Behavior of Three Biodegradable Metals (Zn, Fe and Mg) in Phosphate Buffered Saline (PBS)
Yingqi Chen[1,2], Weitai Zhang[1], Manfred F. Maitz[1,3], Meiyun Chen[1], Heng Zhang[1], Jinlong Mao[1], Yuancong Zhao[1], Nan Huang[1], and Guojiang Wan[1]
[1]Key Laboratory of Advanced Technologies of Materials, Southwest Jiaotong University, Chengdu, SC, China, People's Republic of, [2]McGowan institute for regenerative medicine, Pittsburgh, PA, [3]Leibniz Institute of Polymer Research Dresden, Dresden, Germany

Track: Biomechanics
Advances in Biomechanical Testing of Medical Devices

Fri-190
Biomechanical Effects of the Variation of BMI on Joint Loading during Motorized Disinfection
Tae Soo Bae[1], Sang Hyun Lee[1], Jae Woong Han[2], and Kyung Hoon Kim[3]
[1]Jungwon University, Chungbuk, Korea, Republic of, [2]Korea University, Seoul, Korea, Republic of, [3]Hanlim Medical Equipment Co.Ltd, Gyeonggi-do, Korea, Republic of

Track: Biomechanics
Biofluid Mechanics

Fri-191
Flow Dynamics in an Obstructed and Stented Ureter
Dar Weiss[1], Miki Haifler[2], Harry Winkler[2], Nir Kleinmann[2], and Shmuel Einav[1,3]
[1]Tel Aviv University, Tel Aviv, Israel, [2]Chaim Sheba Medical Center, Tel Aviv, Israel, [3]Stony Brook, Stony Brook, NY

Fri-192
Longitudinal Comparison of Aortic Flow Variables and Mechanical Stresses In Turner Syndrome
Dhananjay Radhakrishnan Subramaniam[1], Ephraim J. Gutmark[1], Goutham Mylavarapu[2], Christian Trolle[3], Steffen Ringgaard[3], Claus H. Gravholt[3], Philippe F. Backeljauw[2], and Iris Gutmark-Little[2]
[1]University of Cincinnati, Cincinnati, OH, [2]Cincinnati Children's Hospital Medical Center, Cincinnati, OH, [3]Aarhus University Hospital, Aarhus, Denmark

Fri-193
Patient-Specific Computational Modeling of Aortic Blood Flow In Turner Syndrome
Dhananjay Radhakrishnan Subramaniam[1], Ephraim J. Gutmark[1], Christian Trolle[2], Steffen Ringgaard[2], Claus H. Gravholt[2], Philippe F. Backeljauw[3], and Iris Gutmark-Little[3]
[1]University of Cincinnati, Cincinnati, OH, [2]Aarhus University Hospital, Aarhus, Denmark,[3]Cincinnati Children's Hospital Medical Center, Cincinnati, OH

Fri-194
Transapical Coaptation Plate for Functional Mitral Regurgitation: An In-vitro Study
kailiang zhang[1] and Zhaoming He[1]
[1]Texas Tech University, Lubbock, TX

Fri-195
Modeling Multi-scale Blood Rheology in a Straight Microvessel
Zelin Xu[1] and Clement Kleinstreuer[1,2]
[1]North Carolina State University, Raleigh, NC, [2]NC State University/ UNC Chapel Hill, Raleigh, NC

Track: Biomechanics
Biomechanics in Tissue Engineering and Regenerative Medicine

Fri-196
Effects of Bioengineering Scaffolds Releasing Neurotrophins and Body Weight Supported Treadmill Training on Neuropathic Pain after Spinal Cord Injury
Sarah Townsend[1], Patrick Sheehan[2], Anita Singh[3], Shania Shaji[4], and Andrea Vernengo[5]
[1]Widener University, Collegeville, PA, [2]Widener University, Bellmawr, NJ, [3]Widener University, Media, PA, [4]Widener University, Chester, PA, [5]Rowan University, Glassboro, NJ

Track: Biomechanics
Biomechanics of Biomaterials

Fri-197
Evaluation of the Mechanical Properties of the Brain Tissue Using Indentation Technique
Aref Samadi-Dooki[1], George Voyiadjis[1], and Rhett Stout[1]
[1]Louisiana State University, Baton Rouge, LA

Fri-198
Development of a Decellularized Osteochondral Xenograft Using EGCG as a Chemical Crosslinker
John Clune[1] and Steven Elder[1]
[1]Mississippi State University, Starkville, MS

Fri-199
Measurements of Hysteretic Strain-stress Curves of Porcine Liver Tissue at Different Loading Rates
Ling Li[1], Ahmad Abiri[1], Ashkan Maccabi[1], Warren Grundfest[1], and Robert Candler[1]
[1]University of California, Los Angeles, Los Angeles, CA

Track: Biomechanics
Biomechanics of Rehabilitation

Fri-200
Longitudinal Effect of Nerve Block on Gait Mechanics following Anterior Cruciate Ligament Reconstruction: A Prospective Randomized Control Study
Christopher Nagelli[1,2], Stephanie Di Stasi[2], Nathan Schilaty[1], Albert Chen[2], James Cook[3], and Timothy Hewett[1]
[1]Mayo Clinic, Rochester, MN, [2]The Ohio State University, Columbus, OH, [3]University of Missouri, Columbia, MO

Fri-201
Activity Recognition and Step Counting Using Wrist-worn Inertial Measurement Units
Heesu Park[1], In Won Jung[2], Min Hye Chang[2], and Inchan Youn[2]
[1]Korea University of Science and Technology, Daejeon, Korea, Republic of, [2]Korea Institute of Science and Technology, Seoul, Korea, Republic of

Track: Biomechanics
Biomechanics of the Female Pelvic Floor

Fri-202
Planar Biaxial Mechanical Properties of Swine Vaginal Tissue
Jeffrey McGuire[1] and Raffaella De Vita[1]
[1]Virginia Tech, Blacksburg, VA

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Tracks: Cellular and Molecular Bioengineering, Biomechanics

Cellular and Molecular Biomechanics: Mechanobiology

Fri-203
Mechanical Force Across A-Cadherin Coordinates Proliferation in Epithelial Cell

Abhinav Mohan[1]
[1]Virginia Commonwealth University, Richmond, VA

Fri-204
Multicellular Regulation of Tensional Homeostasis

Alicia Zollinger[1], Elizabeth Canovic[2], Michael Smith[1], and Dimitrije Stamenovic[1]
[1]Boston University, Boston, MA, [2]Massachusetts Institute of Technology, Cambridge, MA

Fri-205
The Effect of Cell Cortex on OMTC Measurements

Amir Vahabikashi[1], Chan Young Park[2], Jeffrey Fredberg[2], and Mark Johnson[1]
[1]Northwestern University, Evanston, IL, [2]Harvard University, Boston, MA

Fri-206
Cytoplasmic Stiffness in Migrating Cells at the Interface of a Chemical/Mechanical Gradient

Andrew Ford[1] and Padma Rajagopalan[1]
[1]Virginia Tech, Blacksburg, VA

Fri-207
Origin of Axonal Tension through the Study of Single Axon Contraction in vivo

Anthony Fan[1], Alireza Tofangchi[1], and Taher Saif[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

Fri-208
Predicting Elastic and Shear Moduli of Regions of the Lens from Lens Fiber Cell Morphology

Bharat Kumar[1] and Matthew Reilly[1]
[1]Ohio State University, Columbus, OH

Fri-209
Mechanically Coupled Cell-Matrix Interactions Predicted with a 2.5-D Computational Model

Maziar Aghvami[1] and Edward Sander[1]
[1]University of Iowa, Iowa City, IA

Fri-210
Interaction of Alcohol Level and Stretch Pattern on Mitochondrial Function in Vascular Smooth Muscle Cells Using Live Imaging

Elizabeth Bartolak-Suki[1]
[1]Boston University, Boston, MA

Fri-211
Oscillations in Microglial Cells are Regulated by Actomyosin Contractility

Eunyoung Park[1], Young Bin Cho[1], Unghyun Ko[1], Jin-Sung Park[1], Sukyung Park[1], and Jennifer H. Shin[1]
[1]Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of

Fri-212
Effect of Membrane Cholesterol on Vascular Smooth Muscle Cell Stiffness and N-Cadherin Adhesion.

Hanna Sanyour[1], Mariah Hoffman[1], Daniel Engebretson[1], and Zhongkui Hong[1]
[1]University of South Dakota, Sioux Falls, SD

Fri-213
The Effects of Membrane Cholesterol on the Adhesion of Vascular Smooth Muscle Cells to Fibronectin

Josh Childs[1] and ZhongKui Hong[1]
[1]University of South Dakota, Sioux Falls, SD

Fri-214
Computational Analysis of Actin Filaments-Actin Binding Protein Complex under the External Force

Junki Baek[1], Chanryeol Rhyou[1], and Hyungsuk Lee[1]
[1]Yonsei university, Seoul, Korea, Republic of

Fri-215
Nanotopography Regulated Fibroblasts Sensing Carbon Nanotubes

Kai Wang[1], Xiaoqing He[1], Will Linthicum[2], Ryan Mezan[1], Liying Wang[3], Yon Rojanasakul[1], Qi Wen[2], and Yong Yang[1]
[1]West Virginia University, Morgantown, WV, [2]Worcester Polytechnic Institute, Worcester, MA,[3]National Institute for Occupational Safety and Health, Morgantown, WV

Fri-216
High-throughput Optomechanical Stiffness Measurement of Single Adherent Cell

Ali Mehrnezhad[1] and Kidong Park[1]
[1]Louisiana State University, Baton Rouge, LA

Fri-217
Probing the Interactions Between α-1, 4-mannobiosemolecules using Atomic Force Microscopy

Komitige Perera[1], Saswati Basu[1], and Preethi Chandran[1]
[1]Howard University, Washington, DC

Fri-218
Thermal Acceleration of Bio-Chemo-Mechanical Aspects of Lens Aging

Matthew Reilly[1]
[1]Ohio State University, Columbus, OH

Fri-219
A High-Throughput Magnetic System to Evaluate Perturbations in Blood Clot Stiffness and Structure Following Inhibition of Platelet Integrin IIb 3

Michael Lawrence[1], Nicole Brackett[1], and William Guilford[1]
[1]University of Virginia, Charlottesville, VA

Fri-220
Measuring Mechanics of Glial Cells in Simulated Traumatic Brain Injury

Nicholas Braun[1], Zaw Win[1], Kerianne Steucke[1], Dezhi Liao[1], and Patrick Alford[1]
[1]University of Minnesota-Twin Cities, Minneapolis, MN

Fri-221
The Role of Motor-head Distribution and Spacing in Regulating the Function of a Muscle Mimetic System

Carly Farris[1], Brianna Manns[1], and Parag Katira[1]
[1]San Diego State University, San Diego, CA

Fri-222
Development of a Low Cost 3D-Printable Live Cell Stretching Device

Paul Arsenovic[1] and Kranthi Bathula[2]
[1]Virginia Commonwealth University, richmond, VA, [2]Virginia Commonwealth University, Richmond, VA

Fri-223
Coordinated Dynamics of RNA Splicing Speckles in The Nucleus

Qiao Zhang[1], Krishna Kota[2], Samer Alam[1], Jeffrey Nickerson[3], Richard Dickinson[1], and Tanmay Lele[1]
[1]University of Florida, Gainesville, FL, [2]Perkin Elmer Inc., Waltham, MD, [3]University of Massachusetts Medical School, Worcester, MA

Fri-224
Determination of an Illumination Threshold for Mitigation of Light-Induced Cell Force Relaxation

Samantha Knoll[1] and Taher Saif[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

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Fri-225
Effect Mechanical Stimulation on the Immune Response in HaCaT Keratinocytes

Seunghee Oh[1,2], Hyewon Chung[3], Sooho Chang[1], Seung Hyeok Seok[3], and Hyungsuk Lee[1]
[1]Yonsei University, Seoul, Korea, Republic of, [2]Samsung Electronics Co. Ltd., Suwon, Korea, Republic of, [3]Seoul National University, Seoul, Korea, Republic of

Fri-226
Role of Progesterone in Modulating the Mechanobiology of Cervical Fibroblasts

Vasudha C. Shukla[1], Victoria Barnhouse[1], Jennifer Leight[1], Douglas Kniss[1,2], and Samir Ghadiali[1,2]
[1]The Ohio State Univeristy, Columbus, OH, [2]The Ohio State University Wexner Medical Center, Columbus, OH

Fri-227
Biomechanical Properties of Murine Mesenchymal Stem Cells Probed By Mitochondria-Tracking Microrheology

Wenlong Xu[1], Elaheh Alizadeh[1], Jordan Castle[1], and Ashok Prasad[1]
[1]Colorado State University, Fort Collins, CO

Fri-228
Stress Fiber Contractile Behaviors in Aortic Valve Interstitial Cells

Yusuke Sakamoto[1], Rachel Buchanan[1], Joannah Adams[2], Farshid Guilak[3], and Michael Sacks[1,4]
[1]The University of Texas at Austin, Austin, TX, [2]Duke University, Durham, NC, [3]Washington University, St. Louis, St. Louis, MO, [4]Biomedical Engineering, Austin, TX

Fri-229
Strain-rate Depenent Mechanical Responses of the Aortic Valve Interstitial Cells

Yusuke Sakamoto[1], Rachel Buchanan[1], Joannah Adams[2], Farshid Guilak[3], and Michael Sacks[1,4]
[1]The University of Texas at Austin, Austin, TX, [2]Duke University, Durham, NC, [3]Washington University, St. Louis, St. Louis, MO, [4]Biomedical Engineering, Austin, TX

Fri-230
The Force Generation of Sarcomere Shortening: Contractile Analysis of iPSC-Cardiomyocytes

Alexandre Ribeiro[1,2,3], Olivier Schwab[1], Yen-Sin Ang[3,4], Deepak Srivastava[3,4], and Beth Pruitt[1,2,5]
[1]Stanford University, Stanford, CA, [2]Stanford Cardiovascular Institute, Stanford, CA,[3]Gladstone Institute of Cardiovascular Disease, San Francisco, CA, [4]University of California San Francisco, San Francisco, CA, [5]Stanford Medicine, Stanford, CA

Fri-231
Rational Design of FRET-Based Tension Sensors

Andrew LaCroix[1], Andrew Lynch[1], and Brenton Hoffman[1]
[1]Duke University, Durham, NC

Fri-232
Age-related Changes in Matrix Proteoglycans Affect the *In Situ* Toughness of Human Bone

Ann Y. huang[1], Abu Saleh Ahsan[1], Sumin Gu[2], Natalie Fan[1], Haoran Xu[1], Trent Hejazi[1], Jean X. Jiang[2], and Xiaodu Wang[1]
[1]University of Texas at San Antonio, san antonio, TX, [2]University of Texas Health Science Center at San Antonio, San Antonion, TX

Fri-233
Determining The Role of Stem Cells in Emery-Dreifuss Muscular Dystrophy Caused by Lamin Mutations

Ashley Kaminski[1], Suzanne Eisenberger[1], Ninad Kanetkar[1], Rebecca Mount[1], Jean Kwon[1], Tyler Kirby[1], and Jan Lammerding[1]
[1]Cornell University, Ithaca, NY

Fri-234
Endothelial Mitochondria Regulate the Intracellular Ca2+ Response to Fluid Shear Stress

Christopher G. Scheitlin[1], Justin A. Julian[1], Santhanam Shanmughapriya[2], Muniswamy Madesh[2], Nikolaos M. Tsoukias[3], and B. Rita Alevriadou[1]
[1]The Ohio State University, Columbus, OH, [2]Temple University, Philadelphia, PA, [3]Florida International University, Miami, FL

Fri-235
High Throughput Image Analysis Reveals Three Dimensional Morphological Changes in Hypertrophically Stimulated Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes

Cassady Rupert[1], Heidi Chang[1], and Kareen Coulombe[1]
[1]Brown University, Providence, RI

Fri-236
Cell Mechanical Determinants of Endothelial Permeability are Global and Not Local

Corey Hardin[1], Joyjit Chattoraj[2], Emanuela Del Gado[2], and Ramaswamy Krishnan[3]
[1]Massachusetts General Hospital, Boston, MA, [2]Georgetown, Washington, DC, [3]Beth Israel Deaconess Medical Center, Boston, MA

Fri-237
Activation of Intracellular Ca2+ Oscillation by High-frequency Ultrasound Stimulation in HIT-T15 Pancreatic Beta cell line

Chi Woo Yoon[1], Changhan Yoon[2], Nan Sook Lee[1], Kyo Suk Goo[1], Hayong Jung[1], and K. Kirk Shung[1]
[1]University of Southern California, Los Angeles, CA, [2]Georgia Institute of Technology, Atlanta, GA

Fri-238
Microchip-Based Examination of Mechanical Interplay of Cadherin- and Integrin-based Adhesions

Erdem Tabdanov[1], Arja Ray[1], Marjorie Carlson[1], and Paolo Provenzano[1]
[1]University of Minnesota, Minneapolis, MN

Fri-239
The Effect of Interleukin-1&[beta] On Osteoblastic Bone Formation

Estee George[1] and Marnie Saunders[1]
[1]The University of Akron, Akron, OH

Fri-240
A Biomimetic Lab-On-A-Chip Platform of Bone Remodeling

Marnie Saunders[1], Estee George[1], Sharon Truesdell[1], Dustin Hayes[1], and Robert Thoerner[1]
[1]The University of Akron, Akron, OH

Fri-241
Biophysical Regulation of Epigenetic Reprogramming during TGF 1-Induced Epithelial-Mesenchymal Transition

Joseph O'Connor[1], Paul Blanchard[1], and Esther Gomez[1]
[1]Pennsylvania State University, University Park, PA

Fri-242
Effect of Fluid Shear Stress on Endothelial Cell Tensional Homeostasis

Han Xu[1], Dimitrije Stamenovic[1], and Michael Smith[1]
[1]Boston University, Boston, MA

Fri-243
Mechanosensitive MicroRNA-181b Impairs Anti-inflammatory Signaling at the Aortic Valve Fibrosa Endothelium

Jack Heath[1], Joan Fernandez Esmerats[1], Rachel Simmons[1], Sandeep Kumar[1], and Hanjoong Jo[1]
[1]Emory University and Georgia Institute of Technology, Atlanta, GA

Fri-244
Aortic Valve Inflammation Is Mediated by Shear-Sensitive MiRNA-1237-3p

Joan Fernandez[1], Jack Heath[2], Sandeep Kumar[2], and Hanjoong Jo[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

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Fri-245
Mechano-sensitivity of Nuclear Lamin Proteins in Endothelial Cells
Yizhi Jiang[1] and Julie Ji
[1]Indiana University Purdue University Indianapolis, Indianapolis, IN

Fri-246
Stretch Control of Beta-catenin Nuclear Translocation in MSCs and Its Mediation by N-cadherin
Jeong Soon Lee[1], Ligyeom Ha[1], and Jung Yul Lim[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

Fri-247
Somatodendritic Distribution and Nanoclustering of SK Channels Is Inder The Control Of PKA
Krithika Abiraman[1], Randall Walikonis[1], Anastasios Tzingounis[1], and George Lykotrafitis[1]
[1]University of Connecticut, Storrs, CT

Fri-248
Effect of Temperature and Dosage of Chemotherapeutic Drugs on Cellular Metabolism
Likitha Somasekhar[1]
[1]Florida Institute of Technology, Melbourne, FL

Fri-249
An Integrated Microfluidic Platform for High-throughput, Single-cell Physical and Biochemical Phenotyping
Lillian Peng[1], Jonathan Lin[1], and Dino Di Carlo[1]
[1]University of California Los Angeles, Los Angeles, CA

Fri-250
Low-Intensity Vibration Mitigates Diabetes-Induced Inflammation in Adipocyte: An In Vitro Study
Maggie Haviland[1], Karen Wong[1], Quynh Nhu Le[1], Vihitaben Patel[1], Clinton Rubin[1], and Mei Lin Chan[1]
[1]State University of New York at Stony Brook, Stony Brook, NY

Fri-251
The Role of miR-744 in Endothelial Inflammation and Atherosclerosis
Rachel Simmons[1], Salim Thabet[1], and Hanjoong Jo[1]
[1]Georgia Institute of Technology, Atlanta, GA

Fri-252
A Large-Scale, Functional Screening of Mammalian Mechanosensitive Genes Using Drosophila RNAi Library- Smarcd3/Bap60 Is a Mechanosensitive Pro-Inflammatory Gene
Sandeep Kumar[1], In Hwan Jang[1], Chanwoo Kim[1], Dong Won Kang[1], Won Jae Lee[2], and Hanjoong Jo[3]
[1]Emory University, Atlanta, GA, [2]National Creative Research Initiative Center for Hologenomics, Seoul National University, Seoul, Korea, Republic of, [3]Georgia Institute of Technology and Emory University, Atlanta, GA

Fri-253
Progerin and Lamin-A are Equally Phosphorylated in iPSC-derived Mesenchymal Stem Cells: Quantitation by Fine-excision & Alignment Mass Spectrometry (FEA-MS)
Sangkyun Cho[1], Amal Abbas[1], and Dennis Discher[1]
[1]University of Pennsylvania, Philadelphia, PA

Fri-254
Molecular Determinants of Cadherin Ideal Bond Formation: Conformation Dependent Unbinding On A Multidimensional Landscape
Kristine Manibog[1], Kannan Sankar [1], Sunae Kim[1], Yunxiang Zhang[2], Robert Jernigan [1], and Sanjeevi Sivasankar[1]
[1]Iowa State University, Ames, IA, [2]Stanford University, Stanford, CA

Fri-255
Microgravity Compromises Actin Cytoskeleton Resulting in Increased Nuclear Height in MSCs
Sol Kim[1], Kaushik Puranam[1], Aditi Senthilnathan[1], Janet Rubin[1], and Gunes Uzer[1]
[1]University of North Carolina at Chapel Hill, Chapel Hill, NC

Fri-256
Endogenous Sheet Tension within an Epithelial Cell Colony is Anisotropic
Venkat Maruthamuthu[1] and Sandeep Dumbali[1]
[1]Old Dominion University, Norfolk, VA

Fri-257
Nuclear Volume Expansion Induced by Cell Shape Changes During Migration
Vincent Tocco[1], Varun Aggarwal[1], Sandra Baker-Groberg[2], Owen McCarty[2], Richard Dickinson[1], and Tanmay Lele[1]
[1]University of Florida, Gainesville, FL, [2]Oregon Health & Science University, Portland, OR

Track: Biomechanics
Neuromuscular Biomechanics

Fri-258
The Effect of Visual Distortion on Human Gait Parameters
Gabrielle Maestas[1], Pranathi Chunduru[1], Seung-jae Kim[2], and Hyunglae Lee[1]
[1]Arizona State University, Tempe, AZ, [2]California Baptist University, Riverside, CA

Tracks: Biomechanics, Orthopaedic and Rehabilitation Engineering
Orthopedic Mechanobiology and Mechanotransduction

Fri-259
Intermittent Vibrations Reduce Inflammation, Apoptotic Signaling and Oxidative Damage in Prolongedly Compressed Muscle Tissues: A Senescence-Accelerated Mouse Model
Brian C. H. Cheung[1], T. K. Pang[1], S. W. Wong[1], and Arthur F. T. Mak[1]
[1]The Chinese University of Hong Kong, Shatin, Hong Kong

Fri-260
Bone-on-Chip to Study Osteocyte Mechano-Transduction and ECM Production
Elisa Budyn[1,2], Morad Bensidhoum[3], Samantha Sanders[1], Eric Schmidt[2], Patrick Tauc[1], Eric Deprez[1], and Herve Petite[3]
[1]Ecole Normale Superieure de Cachan, Cachan, France, [2]University of Illinois at Chicago, Chicago, IL, [3]University Paris 7, Paris, France

Fri-261
Mechanical Loading Attenuates Radiation-induced Bone Loss
Henry Donahue[1], Peter Govey[2], and Yue Zhang[1]
[1]Virginia Commonwealth University, Richmond, VA, [2]Penn State, Hershey, PA

Fri-262
Mechanical Properties of Incudostapedial Joint at High Strain Rate Measured by SHTB
Shangyuan Jiang[1], Huiyang Luo[2], Hongbing Lu[2], and Rong Z. Gan[1]
[1]University of Oklahoma, Norman, OK, [2]University of Texas at Dallas, Richardson, TX

Tracks: Orthopaedic and Rehabilitation Engineering, Biomedical Imaging and Optics
Imaging Techniques for Musculoskeletal System

Fri-263
Ultrasound Elastography Probe Design for Rotator Cuff Diagnosis
Chris Bocklet[1], Emily Kowal[1], Glenn Hefter[1], Mari Marlow[1], Mia Warner[1], Will Harley[1], Delphine Dean[1], and David Kwartowitz[1]
[1]Clemson University, Clemson, SC

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Fri-264
3D Analysis Method of Angular Rotation Between Ideal and Actual Femur Positions in Anterior-posterior X-ray Images
Eungjune Shim[1], Sehyung Park[1], Youngjun Kim[1], and Byung Hoon Lee[2]
[1]Korea Institute of Science and Technology, Seoul, Korea, Republic of, [2]Hallym University Medical Center, Seoul, Korea, Republic of

Fri-265
Skeletal Muscle Blood Flow Measured by Diffuse Correlation Spectroscopy and Fluorescent Microspheres
Ashley Proctor[1], Gabriel Ramirez[1], Tracy Bubel[1], Songfeng Han[1], and Regine Choe[1]
[1]University of Rochester, Rochester, NY

Fri-266
Computer-Aided Detection for Plastic Deformation Fractures in Pediatric Forearm
Yuwei ZHOU[1], Uygar Teomete[1], and Weizhao Zhao[1]
[1]University of Miami, Coral Gables, FL

Tracks: Biomechanics, Biomedical Imaging and Optics
Imaging Techniques in Biomechanics

Fri-267
Multi-channel Light Sheet Microscopy for Intact Mouse Eyeball
Jianguo Ma[1], Liwei Zhang[2], Yichen Ding[1], Parinaz Abiri[1], Guangyu Li[2], Lu Chen[2], and Tzung Hsiai[1]
[1]University of California, Los Angeles, Los Angeles, CA, [2]University of California at Berkeley, Berkeley, CA

Fri-268
The Effects of Collagen Density and Pore Aize on *In Vitro* Cancer Cell Migration
Van Lam[1], Tyler Zimmerman[1], Byung Min Chung[1], and Christopher Raub[1]
[1]The Catholic University of America, Washington, DC

Fri-269
Wide-field Mapping of Collagen Fiber Orientation and Orientation Distribution in Soft Tissues
Will Goth[1], Michael Sacks[1], and James Tunnell[1]
[1]The University of Texas at Austin, Austin, TX

Fri-270
Effect of Nonlinear Inversion Parameters on MR Elastography of Human Brain
Aaron Anderson[1], Curtis Johnson[2], Matthew McGarry[3], Keith Paulsen[3,4], Bradley Sutton[1], Elijah Van Houten[5], and John Georgiadis[6]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]University of Delaware, Newark, DE,[3]Dartmouth College, Hanover, NH, [4]Dartmouth-Hitchcock Medical Center, Lebanon, NH,[5]Universite´ de Sherbrooke, Sherbrooke, QC, Canada, [6]Illinois Institute of Technology, Chicago, IL

Fri-271
Reconstructing Blood Velocity Profiles from Noisy 4D-PCMR Data using Ensemble Kalman Filtering
Ali Bakhshinejad[1], Vitaliy Rayz[1,2], and Roshan M. D'Souza[1]
[1]University of Wisconsin-Milwaukee, Milwaukee, WI, [2]Medical College of Wisconsin, Milwaukee, WI

Fri-272
Exploring the Accuracy of Micro-CT Guided Finite Element Analysis
Ashley Jackson[1]
[1]North Carolina A&T State University, Greensboro, NC

Fri-273
Diffusion Tensor Imaging and MR Elastography of the Mini-Pig Brain *In Vivo*
Charlotte Guertler[1], Ruth Okamoto[1], Alex Cerjanic[2], Curtis Johnson[3], and Philip Bayly[1]
[1]Washington University in St. Louis, St. Louis, MO, [2]University of Illinois at Urbana-Champaign, Urbana, IL, [3]University of Delaware, Newark, DE

Fri-274
Volumetric and Structural Analysis of Intervertebral Disc in Open Upright MRI in Humans During Standing
Christian Weber[1] and Simon Tang[1]
[1]Washington University in St. Louis, St. Louis, MO

Fri-275
Supraspinatus Tendon Degeneration is Correlated with Quantitative Ultrasound Measures
Gerald Ferrer[1], R Matthew Miller[1], Masahito Yoshida[1], Amir A Rahnemai-Azar[1], Volker Musahl[1], and Richard E Debski[1]
[1]University of Pittsburgh, Pittsburgh, PA

Fri-276
Mechanical Anisotropy of Ex Vivo Bovine Intervertebral Disc From Magnetic Resonance Elastography
John Schmidt[1], Pierre-François Beauchemin[2], Ruth Okamoto[1], Joel Garbow[1], Delphine Périé[3,4], and Phil Bayly[1]
[1]Washington University, St. Louis, MO, [2]Rheolution Inc., Montréal, QC, Canada, [3]École Polytechnique de Montréal, Montréal, QC, Canada, 4Centre hospitalier universitaire Sainte-Justine, Montréal, QC, Canada

Fri-277
Visualizing the Nonlinear Mechanics of Collagen in Eye Tissue
Ning-Jiun Jan[1], Michael Iasella[1], Mason Lester[1], Danielle Hu[1], Kira Lathrop[1], Huong Tran[1], Andrew Voorhees[1], Gadi Wollstein[1], Joel Schuman[2], and Ian A. Sigal[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]New York University, New York, NY

Fri-278
Constitutive Modeling of Fibrotic Liver Tissues: A Systems Biology Approach
Yu Wang[1] and Jingfeng Jiang[1]
[1]Michigan Technological University, Houghton, MI

Tracks: Biomedical Imaging and Optics, Tissue Engineering
Imaging Techniques in Tissue Engineering

Fri-279
Differential Z Scanning: A New, Automated Algorithm for Large FOV Acquisition Across a Signal Gradient Using Traditional Confocal and Multiphoton Microscopy Platforms
Kyle Cowdrick[1], Harsh Patolia[1], George christ[2], and frank Marini[1]
[1]Wake Forest Institute of Regenerative Medicine, Winston-Salem, NC, NC, [2]University of Virginia, Charlottesville, Charlottesville, VA

Fri-280
Detecting Silica-Coated Gold Nanostars Within Surface-Enhanced Resonance Raman Spectroscopy Mapping Via Semi-Supervised Framework Combining Feature Selection and Classification
Panos Pardalos[1], Jiaxing Pi[1], and Michael Fenn[2]
[1]University of Florida, Gainesville, FL, [2]Florida Institute of Technology, Melbourne, FL

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Fri-281
Development of a Novel Molecular Probe to Track Viable Mesenchymal Stem Cells
Kabir Dhada[1] and Laura Suggs[1]
[1]University of Texas at Austin, Austin, TX

Tracks: Biomedical Imaging and Optics, Translational Biomedical Engineering
Imaging Technologies in Clinical Translation

Fri-282
Ultrasound Characterization of Interface Oscillation as a Proxy for Ventriculoperitoneal Shunt Function
April Joy Aralar[1], Matthew Bird[1], Robert Graham[1], Beomseo Koo[1], Mahesh Shenai[2], Parag Chitnis[1], and Siddhartha Sikdar[1]
[1]George Mason University, Fairfax, VA, [2]Inova Neuroscience and Spine Institute, Fairfax, VA

Fri-283
Line Scan Microscope for a Leukocyte Differential Based On Colorimetric Ratio
Courtney Hunter[1], Joshua A. Hutcheson[1], Amy J. Powless[1], and Timothy J. Muldoon[1]
[1]University of Arkansas, White Hall, AR

Fri-284
Measurement of Tissue Phantom Optical Properties at Near-Infrared Wavelengths Using Visible Light Spatial Frequency Domain Imaging
Chun Yeung Yim[1], Raeef Istfan[2], Darren Roblyer[2], and Mark Pierce[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ, [2]Boston University, Boston, MA

Fri-285
Segmentation of Breast Tissue for Infrared Image Analysis
Abia Khan[1] and Murray Loew[1]
[1]George Washington University, Washington, DC

Fri-286
Physiological Assessment of Wound Healing using a Near-infrared Optical Scanner
Anuradha Godavarty[1], Arash Dadkhah[1], Xing Pang[1], Jiali Lei[1], Rebecca Kwasinki[1], Ruogu Fang[1], and Francisco Perez-Clavijo[2]
[1]Florida International University, Miami, FL, [2]Podiatry Care Partners, Doral, FL

Fri-287
Objective Measurement of Intraocular Inflammation with Optical Coherence Tomography
Elliot Crane[1], Alexander B. Crane[1], Ronald Rescigno[1], Ben Szirth[1], and David S. Chu[1,2]
[1]Rutgers New Jersey Medical School, Newark, NJ, [2]Metropolitan Eye Research and Surgery Institute, Palisades Park, NJ

Fri-288
Application of Hierarchical Temporal Memory in Anomaly Detection
Jianghao Shen[1] and Murray Loew[1]
[1]George Washington University, Washington, DC

Track: Biomedical Imaging and Optics
Nanotheranostics

Fri-289
Targeted Theranostic Gold Nanoparticles for Imaging and Therapy of Triple Negative Breast Cancer
Nagwa El-Baz[1], Danial Malik[1], Rajat Chauhan[1], Kurtis James[1], Mingming Zhu[1], Junling Li[1], Ayman El-Baz[1], Donald Miller[1], Robert Keynton[1], Chin Ng[1], Paula Bates[1], Mohammad Malik[1], and Martin O'Toole[1]
[1]University of Louisville, Louisville, KY

Track: Biomedical Imaging and Optics
Biomedical Imaging and Optics

Fri-290
Raman Microspectroscopy of Single Cell during Rapid Freezing
Guanglin Yu[1], Yan Rou Yap[1], Katie Pollock[1], and Allison Hubel[1]
[1]University of Minnesota, Minneapolis, MN

Fri-291
Measurement-based and Model-based Scatter Correction in Multi-source Interior Computed Tomography
Hao Gong[1] and Guohua Cao[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

Fri-292
Development of a Mobile Phone-Based Malaria Diagnostic Device
Kokou Dogbevi[1], Cody Lewis[1], Richard Horner[1], and Gerard Cote[1]
[1]Texas A&M University, College Station, TX

Fri-293
Improved Spatial Resolution in Optical Projection Imaging with Enhanced Early Photon Detection
Lagnojita Sinha[1], Wei Zhou[1], Jovan Brankov[2], and Kenneth Tichauer[2]
[1]Illinois Institute of Technology, Chicago, IL, [2]Illinois Institute of Technology, Chicago, IL

Fri-294
Simulating Intravital Imaging of Murine Lung for Enhanced Detection of Bacterial Infection
Madeleine Durkee[1], Fatemeh Nooshabadi[1], Patrick Griffin[1], Jeffrey Cirillo[2], and Kristen Maitland[1]
[1]Texas A&M University, College Station, TX, [2]Texas A&M Health Science Center, Bryan, TX

Fri-295
Comparing Feature-Based Salience Detection Algorithms in Mammograms
Kristina Landino[1] and Murray Loew[1]
[1]George Washington University, Washington, DC

Fri-296
Generalized 2D SVD Reconstruction for Interior Tomography
Rui Liu[1,2,3] and Hengyong Yu[2]
[1]Virginia Tech-Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC, [2]University of Massachusetts Lowell, Lowell, MA, [3]Wake Forest University Health Sciences, Winston-Salem, NC

Fri-297
A Kinetic Model to Estimate Retinal Vascular Permeability from Fluorescein Videoangiography Data
Shaoxian Hu[1], Kenneth Tichauer[1], Jennifer Kang-Mieler[1], Wenqiang Liu[1], and Emily Dosmar[1]
[1]Illinois Institute of Technology, Chicago, IL

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Fri-298
Volumetric Structured Illumination with Non-Mechanical Focal Scanning
Taylor Hinsdale[1]
[1]Texas A&M University, College Station, TX

Fri-299
Real-time Monitoring of Thermal Tissue Damage in *Ex Vivo* Porcine Kidney using Diffuse Reflectance Spectroscopy
Vivek Krishna Nagarajan[1] and Bing Yu[1]
[1]University of Akron, Akron, OH

Tracks: Drug Delivery, Cancer Technologies
Cancer Drug Delivery

Fri-300
Combinational Therapy using Multifunctional Gold Nanoparticles for Cancer Treatment
Binita Shrestha[1] and Liang Tang[1]
[1]University of Texas at San Antonio, San Antonio, TX

Fri-301
The Therapeutic Effect of Epigenetic Drug-encapsulating-lipid Nanoemulsion for Triple Negative Breast Cancer Cells
Bumjun Kim[1] and Debra Auguste[1]
[1]The City College of New York, New York City, NY

Fri-302
Development of Paclitaxel-loaded Polymeric Depots as Drug Delivery System for Cancer Chemotherapy
Chitinart Thedrattanawong[1], Pinunta Nittayacharn[1], and Norased Nasongkla[1]
[1]Mahidol University, Nakhon Pathom, Thailand

Fri-303
Development of Novel Glutathione-Sensitive Nanoparticles For Lung Cancer Treatment
Daria Zhukova[1], Roshni Iyer[1], Cancan Xu[1], Kytai Nguyen[1,2], and Yi Hong[1,2]
[1]University of Texas at Arlington, Arlington, TX, [2]Joint graduate program in biomedical engineering-University of Texas at Arlington and University of Texas Southwestern Medical Center, Arlington, TX

Fri-304
KE108-Conjugated Unimolecular Micelles Loaded with a Novel HDAC Inhibitor Thailandepsin-A for Targeted Neuroendocrine Cancer Therapy
Guojun Chen[1], Renata Jaskula-Sztul[2], April Harrison[3], Ajitha Dammalapati[3], Wenjin Xu[3], Yiqiang Cheng[4], Herbert Chen[2], and Shaoqin Gong[1]
[1]UW-Madison, Madison, WI, [2]University of Alabama at Birmingham, Birmingham, AL,[3]University of Wisconsin-Madison, Madison, WI, [4]University of North Texas Health Science Center, San Anto-Division, TX

Fri-305
HIFU-mediated Extracellular Matrix Remodeling for Enhancing Drug Delivery
Hyounkoo Han[1,2], Jin Hee Na[2], Sangmin Lee[2], Kwangmeyung Kim[2], and Hyuncheol Kim[1,3]
[1]Department of Chemical and Biomolecular Engineering, Sogang University, Seoul, Korea, Republic of, [2]Biomedical Research Center, Korea Institute of Science and Technology, Seoul, Korea, Republic of, [3]Interdisciplinary program of Integrated Biotechnology, Seoul, Korea, Republic of

Fri-306
Tunable Release of Anti-Cancer Agents from Silk-Coated Drug Reservoirs
Jeannine M. Coburn[1,2], Rachel Cunningham[1], Akari Miki[1], Bill Chiu[3], and David L. Kaplan[1]
[1]Tufts University, Medford, MA, [2]Worcester Polytechnic Institute, Worcester, MA, [3]University of Illinois at Chicago, Chicago, IL

Fri-307
Combinatorial miRNA Delivery via Bioreducible Nanoparticles as a Treatment for Human Glioblastoma
Kristen Kozielski[1], Hernando Lopez-Bertoni[1], Bachchu Lal[1], Hannah Vaughan[1], John Laterra[1], and Jordan Green[1]
[1]Johns Hopkins University, Baltimore, MD

Fri-308
The Cellular Response of Gold Nanorods in SKBR3 and Hep2 Cells
Lijun Wang[1] and Liang Tang[1]
[1]University of Texas at San Antonio, San Antonio, TX

Fri-309
Efficacy of 5-aminolevulinic Acid (5-ALA)-mediated Photodynamic Therapy (PDT) using Cold Atmospheric Plasma (CAP) as a Light Source for Anti-tumor Applications
Mian Wang[1], Benjamin Geilich[1], Amit Roy[1], Michael Keidar[2], and Thomas Webster[1,3]
[1]Northeastern University, Boston, MA, [2]Northeastern University, Washington, DC, [3]Wenzhou Medical University, Wenzhou, China, People's Republic of

Fri-310
Screening of Lipid-PLGA Hybrid Nanoparticles for Pulmonary Drug Delivery in Lung Cancer Therapy
Serkan Yaman[1,2], Kubra Cetiner[1,2], Roshni Iyer[1,2], and Kytai T. Nguyen[1,2]
[1]University of Texas at Arlington, Arlington, TX, [2]University of Texas Southwestern Medical Center at Dallas, Dallas, TX

Fri-311
Astrocytic Differentiation of Human Malignant Glioblastoma U87MG Cells Induced by Porous Poly(1,8-octanediol-co-citrate) Wafers Loaded with All-trans Retinoic Acid
Tarielle Sanders[1] and Antonio Webb[1]
[1]University of Florida, Gainesville, FL

Fri-312
Fabrication of Dendrimer Porphyrin-Decorated Gold Nanoshells for Combined Phototherapies of Cancer
Ui Seok Chung[1], Ji Hong Min[1], Byung Ju Yun[1], Byoung Yong Yoo[1], Eunkyoung Kim[1], Woo-Dong Jang[1], and Won-Gun Koh[1]
[1]Yonsei University, Seoul, Korea, Republic of

Fri-313
Drug Delivery Treatment for Canine Osteosarcoma
Vina Nguyen[1], Annie Kovach[1], Jennifer Gambino[1], Lakiesha Williams[1], Jun Liao[1], and Rajkumar Prabhu[1]
[1]Mississippi State University, Mississippi State, MS

Fri-314
Cationic PLGA Nanoparticles for Improved Therapeutics in Non-Small Cell Lung Cancer
Vivek Gupta[1] and Bhuvaneshwar Vaidya[1]
[1]Keck Graduate Institute, Claremont, CA

Fri-315
Using Nanodiamond for Drug Delivery in Liver Cancer Treatment by Adsorbing Epirubicin
Xin Wang[1], Casuarine Low[1], Weixin Hou[1], Lissa Abdullah[1], and Edward Chow[1]
[1]National University of Singapore, Singapore, Singapore

Fri-316
Encapsulation of an Antiproliferative Metal Chelator, Dp44mT, in Polymeric Nanoparticles
You Jung Kang[1], A.B. Madhankumar[2], James R. Connor[2], and Sheereen Majd[3]
[1]Pennsylvania State University, University Park, PA, [2]Penn State Hershey Medical Center, Hershey, PA, [3]University of Houston, Houston, TX

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Fri-317
Tumor-targeted Nanoparticles Deliver a Vitamin D-based Drug Payload for Treatment of EGFR Tyrosine Kinase Inhibitor-Resistant Lung Cancer
Chang Liu[1], Suzanne Shoemaker[2], Tatiana Shaurova[2], Qixin Wang[1], Martin Petkovich[3], Pamela Hershberger[2], and Yun Wu[1]
[1]State University of New York at Buffalo, Buffalo, NY, [2]Roswell Park Cancer Institute, Buffalo, NY, [3]Queen's University, Kingston, ON, Canada

Fri-318
Drug Delivery to a 3D Cancer Spheroid Microarray
Ben Brooks[1,2], Fatenah Karandish[1], David Schuette[1], Nikki Davidoff[2], Sanku Mallik[1], and Amanda Brooks[1]
[1]North Dakota State University, Fargo, ND, [2]Wasatch Microfluidics, Salt Lake City, UT

Fri-319
Stimuli-responsive Polymeric Micelles for Targeting both Cancer Cells and Cancer Stem Cells
Kayla Duval[1], Xing Guo[1], Lin Wang[1], Jing Fan[2], Shaobing Zhou[3], and Zi Chen[1]
[1]Dartmouth College, Hanover, NH, [2]City College of New York, New York, NY, [3]Southwest Jiaotong University, Chengdu, China, People's Republic of

Fri-320
Synergistic Photothermal Ablation and Immunostimulation Treatment of Melanoma Metastasis
Patrick McKernan[1] and Roger Harrison[1]
[1]University of Oklahoma, Norman, OK

Track: Cancer Technologies
Cancer Immunoengineering

Fri-321
Mucin-based Nanovaccines Activate Dendritic Cells and Promote Cell-mediated Immunity against Cancer
Kasturi Banerjee[1], Prakash Kshirsagar[1], Sushil Kumar[1], Mohd Wasim Nasser[1], Shailendra Gautam[1], Kathleen Ross[2], Michael Wannemuehler[2], Surinder Batra[1], Balaji Narasimhan[2], and Maneesh Jain[1]
[1]University of Nebraska Medical Center, Omaha, NE, [2]Iowa State University, Ames, IA

Fri-322
Melanoma Growth Control via Ultrasound Depends on the Adaptive Immune System and Surpasses anti-PD-1.
Kelsie Timbie[1], Lena Badr[1], Benjamin Campbell[1], John McMichael[1], Andrew Buckner[1], Jessica Prince[1], Aaron Stevens[1], Timothy Bullock[1], and Richard Price[1]
[1]University of Virginia, Charlottesville, VA

Fri-323
Tumor Microenvironment Impairs T-cell Antigen Recognition in Mouse Melanoma
Zhou Yuan[1], Nathan Rohner[1], Prithiviraj Jothikumar[1], Susan Thomas[1], and Cheng Zhu[1]
[1]Georgia Institute of Technology, Atlanta, GA

Tracks: Cancer Technologies, Biomechanics
Cancer Mechanobiology

Fri-324
Heterogeneity in Cell-Matrix Adhesion as an Indicator of Tumor Cell Metastatic State
Alexander Fuhrmann[1], Afsheen Banisadr[1], Thea Tlsty[2], and Adam Engler[1]
[1]University of California San Diego, La Jolla, CA, [2]University of California San Francisco, San Francisco, CA

Fri-325
Pancreatic Cancer Microtissues to Investigate the Mechanical Microenvironment of Tumors
Andres Rubiano[1], Dan Delitto[1], Song Han[1], Steven Hughes[1], and Chelsey Simmons[1]
[1]University of Florida, Gainesville, FL

Track: Cancer Technologies
Emerging Technologies for Cancer Treatment

Fri-326
Making Strong and Stable Plasma-stimulated Medium (PSM) by Multi-approaches
Dayun Yan[1], Annie Talbot[1], Niki Nourmohammadi[1], Jonathan Sherman[1], and Michael Keidar[1]
[1]The George Washington University, Washington, DC

Fri-327
Diffuse Correlation Spectroscopy Detects Chemo Induced Blood Flow Change in Breast Cancer Xenografts
Gabriel Ramirez[1], Ashley Proctor[1], Tong Tong Wu[1], Songfeng Han[1], Kelley Madden[1], Edward Brown[1], Thomas Foster[1], Turgut Durduran[2], and Regine Choe[1]
[1]University of Rochester, Rochester, NY, [2]Institue of Phontic Sciences, Barcelona, Spain

Fri-328
Adhesion Potential of Cancer Cells Ablated with Ethanol and HIFU
Gray Halliburton[1], Hakm Murad [1], and Damir Khismatullin [1]
[1]Tulane University, New Orleans, LA

Fri-329
Enhancing Preferential Glioma Ablation Using Pulsed Electric Fields and Molecular Targeting
Jill Ivey[1], Eduardo Latouche[1], Glenn Lesser[2], Waldemar Debinski[2], Rafael Davalos[1], and Scott Verbridge[1]
[1]Virginia Tech-Wake Forest University, Blacksburg, VA, [2]Wake Forest Baptist Medical Center, Winston-Salem, NC

Fri-330
Investigation of Non-thermal Atmospheric Pressure Plasma Treatment Effects on Lung Cancer Cells in 3D Collagen Model
Surya karki[1] and Halim Ayan[1]
[1]University of Toledo, Toledo, OH

Tracks: Cancer Technologies, Biomedical Imaging and Optics
Imaging Strategies and Molecular Profiling in Cancer

Fri-331
OCT and Cold Plasmas: Imaging And Treatment Of Excised Oral Cavity Tumors
Sarah Pickus[1], Jason Zara[1], Nader Sadeghi[2], Dayun Yan[1], and Michael Keidar[1]
[1]George Washington University, Washington, DC, [2]The GW Medical Faculty Associates, Washington, DC

Fri-332
Direct, Multiplexed Molecular Profiling Using Fluorescence Lifetime Imaging
Maha Rahim[1], Rajesh Kota[1], Enrico Gratton[1], and Jered Haun[1]
[1]University of California Irvine, Irvine, CA

Friday, October 7 | 9:30 am–5:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:15 pm–4:00 pm

Track: Cancer Technologies
Precision Medicine and Biomarkers in Cancer

Fri-333
Hybrid Soluble/Cellular Target Selection Schemes Improve Discovery of Translatable Ligands
Lawrence Stern[1], Daniel Woldring[1], and Benjamin Hackel[1]
[1]University of Minnesota-Twin Cities, Minneapolis, MN

Fri-334
Applications of The Cancer Genome Atlas for the Identification of RNA-Based Prognostic Biomarkers and Signatures
Nathan Wong[1], Weijun Liu[1], and Xiaowei Wang[1]
[1]Washington University in St. Louis, Saint Louis, MO

Fri-335
Detecting MicroRNA in Dried Blood for Real-time Monitoring of Treatment Response in Prostate Cancer
Yang Liu[1], Lucas Smith[1], Manish Kohli[2], and Andrew Smith[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Mayo Clinic, Rochester, MN

Track: Cancer Technologies
Cancer Technologies

Fri-336
The Effect of Very Low Dose X-Ray Radiation on the Proliferation of MCF7 Breast Cancer Cells
Bryana Baginski[1], Joseph Wilson[1], Matthew Rusin[1], Endre Takacs[1], and Delphine Dean[1]
[1]Clemson University, Clemson, SC

Fri-337
The Effects of Low Dose Radiation on Articular Cartilage
Hannah Cash[1], Jeffrey Wiley[2], and Delphine Dean[1]
[1]Clemson University, Clemson, SC, [2]Wake Forest University, Winston-Salem, NC

Fri-338
Identifying Shape Changes of Invasive Cancer Cells
Elaheh Alizadeh[1], Samanthe Lyons[1], Katherine Schaumberg[1], Joshua Mannheimer[1], Jordan Castle[1], Zachary Bodmer[1], and Ashok Prasad[1]
[1]Colorado State University, Fort Collins, CO

Fri-339
Multi-analytical Processing of Bronchoalveolar Lavage Samples Using an Automated Exclusion-Based Sample Preparation Platform
Jacob Tokar[1]
[1]University of Wisconsin-Madison, Madison, WI

Fri-340
Individual Contributions Combined with Public Data in Community Assessments
Jon Moon[1], Imad Jafir[1], Phyllis Brown[1], Kelly Kalvelage[2], Michael Dorneich[2], Christopher Seeger[2], Gregory Welk[2], and Stephen Gilbert[2]
[1]MEI Research, Edina, MN, [2]Iowa State University, Ames, IA

Fri-341
Invasion of GL261 Cancer Cells In Vivo is Regulated by Interstitial Flow and Depends on CXCR4 Signaling
Robert Cornelison[1] and Jennifer Munson[1]
[1]University of Virginia, Charlottesville, VA

Fri-342
Cancer Trap for Capturing Metastatic Prostate Cancer
Yihui Huang[1], Amirhossein Hakamivala[1], Ashwin Nair[1], Jer-Tsong Hsieh[2], and Liping Tang[1]
[1]the University of Texas at Arlington, Arlington, TX, [2]University of Texas Southwestern Medical Center, Dallas, TX

Track: Cardiovascular Engineering
Cardiac Electrophysiology

Fri-343
Co-Occurrence of Depolarization and Repolarization Alternans In ECGs
David Wasemiller[1], Siqi Wang[1], Paul Anaya[1], and Abhijit Patwardhan[1]
[1]University of Kentucky, Lexington, KY

Fri-344
Assessing the Effects of Stretch-Activated Channel Blockers in Isolated Swine Hearts
Hanyu Zhang[1], Gregory Walcott[1], and Jack Rogers[1]
[1]University of Alabama at Birmingham, Birmingham, AL

Fri-345
Optogenetic-Mediated Parasympathetic Reduction of Heart Rate in a Transgenic Mouse Model Using Micro LED Illumination.
Jaclyn Brennan[1], Kendal Endicott[2], Angel Moreno[1], Gregory Trachiotis[2], Igor Efimov[1], and Matthew Kay[1]
[1]The George Washington University, Washington, DC, [2]George Washington University Medical Center, Washington, DC

Fri-346
Phrenic Nerve Response to Irreversible Electroporation Therapies
Lars Mattison[1], Sydney Newton[1], Nana Mitsuishi[1], and Paul Iaizzo[1]
[1]University of Minnesota, Minneapolis, MN

Fri-347
Extracellular Calcium Modulates the Conduction Velocity-Extracellular Potassium Relationship
Michael Entz II[1,2] and Steven Poelzing[1,2]
[1]Virginia Polytechnic Institute and State University, Roanoke, VA, [2]Virginia Tech Carilion Research Institute and Center for Heart and Regenerative Medicine, Roanoke, VA

Tracks: Cardiovascular Engineering, Device Technologies and Biomedical Robotics
Cardiovascular Instrumentation and Devices

Fri-348
The Forces Required to Acutely Perforate Human and Swine Left Ventricular Epicardium
Alexander Mattson[1], Justinus Hartoyo[1], Vladimir Grubac[2], Michael Eggen[2], and Paul Iaizzo[1]
[1]University of Minnesota, Minneapolis, MN, [2]Medtronic PLC, Mounds View, MN

Fri-349
Design and Analysis of a Cavopulmonary Assist Device for Right Ventricular Dysfunction
Ssu-Ying Chien[1], Jakin Jagani[1], Alexandrina Untaroiu[1], and Mihai Bleiziffer[2]
[1]Virginia Tech, Blacksburg, VA, [2]Friedrich-Alexander University of Erlangen-Nuremberg, Erlangen, Germany

Fri-350
Bioresorbable Material Characterization for Use in Self-Expanding Stents
Jared Park[1], Debora Porter[1], Jason Porter[1], and Anton Bowden[1]
[1]Brigham Young University, Provo, UT

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Fri-351
Mis-sizing of Stent Promotes Intimal Hyperplasia: Impact of Endothelial Shear and Intramural Stress
Henry Chen[1], Brian Bigelow [2], Deepak Bhatt[3], and Ghassan Kassab[1]
[1]California Medical Innovations Institute, San Diego, CA, [2]St. Vincent Hospital, Indianapolis, IN, [3]Brigham and Women's Hospital, and Harvard Medical School, Boston, MA

Fri-352
Biomechanical Comparison between Mono-, Bi-, and Tri-cuspid Valve Architectures
Henry Chen[1], Sean Chambers[2], Fedor Lurie[3], and Ghassan Kassab[1]
[1]California Medical Innovations Institute, San Diego, CA
[2]COOK Medical, Bloomington, IN,[3]Jobst Vascular Institute, Toledo, OH

Fri-353
Examination of Erythrocyte Microparticle Formation in a Microfluidic High Shear Environment
James Buerck[1], Trevor Snyder[2], Dimitrios Papavassiliou[1], David Schmidtke[3], and Edgar O'Rear[1]
[1]University of Oklahoma, NORMAN, OK, [2]Vadovations, Oklahoma City, OK, [3]The University of Texas at Dallas, Richardson, TX

Fri-354
Mechanically Enhanced Drug Stamping with Micro-patterned Drug Eluting Balloon for Vascular Drug Delivery
Kang Ju Lee[1], Seul Gee Lee[2], Seung Hyun Park[1], Il Ho Seo[1], Duk Hwan Ahn[3], Min Kwon Lee[3], InKwon Jung[3], Jung Sun Kim[2], and WonHyoung Ryu[1]
[1]Yonsei University, Seoul, Korea, Republic of, [2]Yonsei University College of Medicine, Seoul, Korea, Republic of, [3]Genoss Inc., Suwon, Korea, Republic of

Fri-355
Scanning Electron Microscopy Demonstration of Fragmentation of Hydrophilic Coating on Angiographic Guide Wires
Edward Dauer[1], Brad Bradshaw[1], Andrew Brook[2], Ari Spiro[3], David Altschul[3], Richard Zampolin[3], Todd Miller[3], and Allan Brook[3]
[1]University of Miami (Florida), Coral Gables, FL, [2]University of Chicago, Chicago, IL,[3]Montefiore Medical Center, New York, NY

Fri-356
Stent Strut Geometry and Hemodynamics Affect Endothelial Cell Migration and Mitosis
Duy Nguyen[1], Blayne Sarazin[1], Alexander Smith[1], Ali Abdelhamid[1], and Juan Jimenez[1]
[1]University of Massachusetts, Amherst, MA

Fri-357
Comparison of Systolic And Diastolic Time Intervals from Digital Stethoscope with Tissue Doppler Imaging
Shuang Leng[1], Chow Hung Soh[1], Feiqiong Huang[1,2], Jianmin Zhang[3], Chao Wang4, Kevin Chai4, Liang Zhong[1,2], and Ru San Tan[1,2]
*[1]National Heart Centre Singapore, Singapore, Singapore, [2]Duke-NUS Medical School, Singapore, Singapore, [3]Nanyang Technological University, Singapore, Singapore, 4Institute of Microelectronics, A*STAR, Singapore, Singapore*

Fri-358
***In Vitro* Assessment of a Keratose-Paclitaxel Drug Coated Balloon**
Emily Turner[1], Marzieh Atigh[1], Luke Burnett[2], and Saami Yazdani[1]
[1]University of South Alabama, Mobile, AL, [2]Keranetics, Winston-Salem, NC

Tracks: Cardiovascular Engineering, Tissue Engineering

Cardiovascular Tissue Engineering

Fri-359
3D *In-Vivo*-like Neonatal-cardiomyocyte Culture on Wrinkled PDMS
Zhonghai Wang[1], Ailin Wei[1], Xiaoqi Yang[1], Siyu Ma[1], Thomas Borg[1], and Bruce Gao[1]
[1]Clemson University, Clemson, SC

Fri-360
Nanoscaffolds Using Photoluminiscent-Polylactones to Prevent Restenosis After PCI
Aneetta Kuriakose[1,2], Priyesh Rajanikanth[1,2], Upasana Mali[1,2], Zack Xie[3], Liping Tang[1,2], Subhash Banarjee4, Jian Yang[3], and Kytai Nguyen[1,2]
[1]University of Texas at Arlington, Arlington, TX, [2]University of Texas Southwestern Medical Center at Dallas, Dallas, TX, [3]Pennsylvania State University, University Park, PA, 4VA North Texas Health Care System, Dallas, TX

Fri-361
A hiPSC-Derived 3-D Myocardium-On-A-Chip for the Study of Cardiovascular Disease
Bradley Ellis[1], Aylin Acun[1], and Pinar Zorlutuna[1]
[1]University of Notre Dame, South Bend, IN

Fri-362
Cardiomyogenesis Stimulation by Stretch for P19 Embryonic Carcinoma Cells
Akankshya Shradhanjali[1], Jeong Soon Lee[1], Ligyeom Ha[1], and Jung Yul Lim[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

Fri-363
Oligonucleotides Target the SERCA/PLN Complex in Cardiomyocytes
Kailey Soller[1], Jing Yang[1], Raffello Verardi[1], Gianluigi Veglia[1], and Michael Bowser[1]
[1]University of Minnesota, Minneapolis, MN

Fri-364
Using 3D Printing to Customize Engineered Blood Vessel Size
Mai Lam[1], Cameron Pinnock[1], Elizabeth Meier[1], and Bin Wu[1]
[1]Wayne State University, Detroit, MI

Fri-365
Fibroblast Architecture in Patients with Heart Disease Due to LMNA Mutation
Mehrsa Mehrabi[1]
[1]University of California, Irvine, Irvine, CA

Fri-366
Engineering Cardiac Tissues on Matrices with Independent Biochemical and Mechanical Properties
Nethika R. Ariyasinghe[1], Caitlin H. Reck[1], Andrew P. Petersen[1], Davi M. Lyra-Leite[1], Nathan Cho[1], and Megan L. McCain[1]
[1]University of Southern California, Los Angeles, CA

Fri-367
Polymer Microfiber Meshes Facilitate Human Cardiac Stem Cell Proliferation and Differentiation
Lijuan Kan[1], Patrick Thayer[1], Ben Ledford[1], Miao Chen[1], Aaron Goldstein[1], and Jia-Qiang He[1]
[1]Virginia Tech, Blacksburg, VA

Fri-368
Cytoskeletal Reorganization of Marrow Stem Cells in Response to Flow
Sana Nasim[1], Denise Medina[1], Glenda Castellanos[1], Sasmita Rath[1], and Sharan Ramaswamy[2]
[1]Florida International University, Miami, FL

Fri-369
Liver-Mediated Prevention of Ischemic Cardiomyocyte Calcification
Shu Liu[1], Sahil Shah[1], and Yu Wu[1]
[1]Northwestern University, Evanston, IL

Fri-370
A Novel Biphasic Vascular Graft for Engineering Small Diameter Blood Vessels
Vidhya Ramaswamy[1], Allison Goins[1], and Josephine Allen[1]
[1]University of Florida, Gainesville, FL

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Fri-371
Organotypic Culture System for Cardiac Tissue
Yun Qiao[1,2], Quan Dong[1], Chaoyi Kang[1,2], Baichen Li[1], Zhenyu Li[1], and Igor Efimov[1]
[1]George Washington University, Washington, DC
[2]Washington University in St. Louis, St. Louis, MO

Fri-372
Tissue Engineered Tunica Adventitia Graft
Bijal Patel[1], Cameron Pinnock[2], and Mai Lam[2]
[1]Wayne State University, Canton, MI, [2]Wayne State University, Detroit, MI

Fri-373
Engineering a Living Mitral Valve Using a Stabilized Collagen and Elastin-Based Scaffold
Christopher deBorde[1], Dan Simionescu[1], Leslie Sierad[2], Jun Liao[3], Christopher Wright4, and Agneta Simionescu[1]
[1]Clemson University, Clemson, SC, [2]Aptus Bioreactors, Clemson, SC, [3]Mississippi State University, Mississippi State, MS, 4Greenville Hospital System, Greenville, SC

Fri-374
Electrospun Polyurethane and Hydrogel Composite Scaffolds to Study Valve Cell Fibrotic Response
Daniel Puperi[1], Alysha Kishan[2], Zoe Punske[1], Elizabeth Cosgriff-Hernandez[2], Jennifer West[3], and Jane Grande-Allen[1]
[1]Rice University, Houston, TX, [2]Texas A&M, Houston, TX, [3]Duke University, Durham, NC

Fri-375
Surface-modified Poly(vinyl alcohol) Vascular Grafts Improve Endothelialization without Increasing Thrombosis
Deirdre Anderson[1], Marie Cutiongco[2], Pascale Chevallier[3], Diego Mantovani[3], Evelyn Yim4, and Monica Hinds[1]
[1]Oregon Health & Science University, Portland, OR, [2]National University of Singapore, Singapore, Singapore, [3]Laval University, Quebec, Canada, 4University of Waterloo, Waterloo, ON, Canada

Fri-376
Fabrication of an Elastomeric Scaffold with Cell-Derived ECM for Cardiovascular Tissue Engineering
Harleigh Warner[1,2], William D. Wagner[1,3]
[1]Wake Forest- Virginia Tech, Winston Salem, NC, [2]Wake Forest University School of Medicine, Winston Salem, NC, [3]Wake Forest School of Medicine, Winston Salem, NC

Fri-377
Engineering Human Stem Cell-Derived Cardiac Tissues for Heart-on-a-Chip
Joycelyn Yip[1], Nathan Cho[1], and Megan McCain[1]
[1]University of Southern California, Los Angeles, CA

Fri-378
Stable Engineered Vascular Networks from Human iPSC-Derived Endothelial Cells in Synthetic Hydrogels
Matthew Zanotelli[1], Hamisha Ardalani[2], Eric Nguyen[2], Angela Xie[2], Michael Schwartz[2], and William Murphy[2]
[1]Cornell University, Ithaca, NY, [2]University of Wisconsin-Madison, Madison, WI

Fri-379
Nanoengineered Hydrogel Topographies for the Development of Organized Cardiac Tissues
Ali Navaei [1], Nathan Moore [2], Ryan Sullivan[2], Raymond Migrino[3], and Mehdi Nikkhah[2]
[1]Arizona State University, Tempe, AR, [2]Arizona State University, Tempe, AZ, [3]Phoenix Veterans Affairs Health Care System, Phoenix, AZ

Fri-380
Vascular Differentiation of Adipose Derived Stem Cells on Porcine Decellularized Cardiac Slices *In Vitro*
Mickey Shah[1], Pawan KC[1], Keyvan Amini Khoiy[1], Rouzbeh Amini[1], and Ge Zhang[1]
[1]University of Akron, Akron, OH

Fri-381
Stiffness Impacts Tissue Formation and Syncytium Development in Engineered Human Myocardium
Nicholas Kaiser[1] and Kareen Coulombe[1]
[1]Brown University, Providence, RI

Fri-382
Recellularization Strategies to Promote Pre-Vascularization of Decellularized Cardiac Tissue
Pawan KC[1], Mickey Shah[2], and Ge Zhang[2]
[1]The University of Akron, Ridgewood, NY, [2]The University of Akron, Akron, OH

Fri-383
Dynamically Stiffening Hydrogels for Cardiac Tissue Engineering
Rachel Besser[1], Diana Velluto[2], and Ashutosh Agarwal [2]
[1]University of Miami, Boca Raton, FL, [2]University of Miami, Miami, FL

Fri-384
Autologous Decellularized Graft for Vascular Tissue Engineering
Xuefeng Qiu[1,2,3], Benjamin Lee[2], and Song Li[1,2]
[1]University of California, Los Angeles, Los Angeles, CA, [2]University of California, Berkeley, Berkeley, CA, [3]Union Hospital, Tongji Medical School, Huazhong University of Science and Technology, Wuhan, China, People's Republic of

Fri-385
"Off-the-Shelf" Tissue-Engineered Aortic Valve with Surgical and Transcatheter Design
Zeeshan Syedain[1], Brandon Tefft[2], Melissa Young[2], Amir Lerman[2], and Robert Tranquillo[1]
[1]University of Minnesota, Minneapolis, MN, [2]Mayo Clinic, Rochester, MN

Track: Cardiovascular Engineering
Hemodynamics and Vascular Mechanics

Fri-386
Slice-by-Slice Evaluation of Wall Shear Stress in Stented Coronary Arteries Reconstructed Using Optical Coherence and Computed Tomography: Uncovering the Stimuli for Restenosis and Resorption
Ali Aleiou[1], Amirhossein Arzani[2], Shawn Shadden[2], Mehdi Maadooliat[1], Hiromasa Otake[3], and John LaDisa[1,4]
[1]Marquette University, Milwaukee, WI, [2]University of California Berkeley, Berkeley, CA, [3]Kobe University Graduate School of Medicine, Kobe, Japan, [4]Medical College of Wisconsin, Milwaukee, WI

Fri-387
Pulsatile Flow Studies of a Bovine Pericardial Heart Valve Bioprosthesis in Low, Normal, and High Cardiac Outputs: PIV Measurements
Mohammad Barakat[1], Koohyar Vahidkhah[1], Mostafa Abbasi[1], and Ali Azadani[1]
[1]University of Denver, Denver, CO

Fri-388
Elucidating the Mechanisms of Irreversible Vascular Changes after Treatment for Aortic Coarctation
Brandon Wegter[1], Thomas Eddinger[1], Aoy Tomita-Mitchell[2], Karl Stamm[2], Donna Mahnke[2], Mary Goetsch[2], Michael Mitchell[2], Ronald Woods[2], and John LaDisa[1]
[1]Marquette University, Milwaukee, WI, [2]Medical College of Wisconsin, Milwaukee, WI

Fri-389
Small-Scale *Ex Vivo* Perfusion Mock Circulation Model to Simulate Mechanical Circulatory Support
Kevin Soucy[1], Mitchell Buller[1], Guruprasad Giridharan[1], Michael Sobieski[1], and Mark Slaughter[1]
[1]University of Louisville, Louisville, KY

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Fri-390
Ultrasound Indicator Dilution Quantifies Renal Blood Flow Distribution in Rat Models of Hypertension
John Bukowy[1], Louise Evans[1], Allen Cowley[1], and Daniel Beard[2]
[1]Medical College of Wisconsin, Milwaukee, WI, [2]University of Michigan, Ann Arbor, MI

Fri-391
Effect of Pulmonary Vasodilators on Lung Diffusing Capacity during Exercise in Young Healthy Individuals: Preliminary Results
Kirsten Coffman[1], Timothy Curry[1], Niki Dietz[1], and Bruce Johnson[1]
[1]Mayo Clinic, Rochester, MN

Fri-392
Volumetric PIV Investigation of Hemodynamics and Pressure in a Cerebral Aneurysm
Melissa Brindise[1], Benjamin Dickerhoff[2], David Saloner[3], Vitaliy Rayz[4], and Pavlos Vlachos[1]
[1]Purdue University, West Lafayette, IN, [2]Marquette University, Milwaukee, WI, [3]University of California, San Francisco, San Francisco, CA, [4]University of Wisconsin-Milwaukee, Milwaukee, WI

Fri-393
Porcine Small Intestinal Submucosal Mitral Valve Hydrodynamics: Preliminary Assessment
Omkar Mankame[1], Ricardo Hausz[1], Lilliam Valdes-Cruz[2], Steven Bibevski[2], Frank Scholl[2], Sarah Bell[2], Ivan Baez[2], and Sharan Ramaswamy[1]
[1]Florida International University, Miami, FL
[2]Memorial Regional Hospital, Hollywood, FL

Fri-394
Effects of Geometric Variations on Idealized Bifurcation Aneurysm Hemodynamics Treated with Pipeline Embolization Device
Priya Nair[1], Brian Chong[1,2], Matthew Mortensen[1,3], and David Frakes[1]
[1]Arizona State University, Tempe, AZ, [2]Mayo Clinic Hospital, Phoenix, AZ, [3]EndoVantage, LLC, Scottsdale, AZ

Tracks: Biomedical Imaging and Optics, Cardiovascular Engineering
Imaging in Cardiovascular Systems

Fri-395
Effect of Core Temperature on the Venous System
A. Colleen Crouch[1], Olivia Palmer[1], and Joan Greve[1]
[1]University of Michigan, Ann Arbor, MI

Fri-396
A Perfusion Apparatus to Image Semilunar Valve Anatomies in Perfusion-Fixed Human Hearts
Evan Johnson[1], Lars Mattison[1], Alex Mattson[1], and Paul A. Iaizzo[1]
[1]University of Minnesota, Minneapolis, MN

Fri-397
Modified Cerebrovascular Reactivity Parameter Results in Less Variability in Measurements
Madison Burger[1], Mohammed Alwatban[1], Benjamin Hage[1], Edward Truemper[1,2], and Greg Bashford[1,2]
[1]University of Nebraska, Lincoln, NE, [2]Children's Hospital & Medical Center, Omaha, NE

Fri-398
Analysis of Breath-Holding Index as an Assessment of Cerebrovascular Reactivity
Allison Porter[1], Mohammed Alwatban[1], Edward Truemper[1,2], and Greg Bashford[1,2]
[1]University of Nebraska, Lincoln, NE, [2]Children's Hospital & Medical Center, Omaha, NE

Fri-399
Development of a Murine Model to Study the Prevention of Deep Vein Thrombosis
Andrea Chambers[1], James Wodicka[1], Gurneet Sangha[1], Alyssa Panitch[1], and Craig Goergen[1]
[1]Purdue University, West Lafayette, IN

Fri-400
Deconvolution of Multispectral Confocal Microscopic Images Using Measured Point Spread Functions
Azmi Ahmad[1], Jordan Johnson[1], Gustavo Lenis[2], Chris Hunter[1], and Frank Sachse[1]
[1]University of Utah, Salt Lake City, UT, [2]Karlsruhe Institute of Technology, Karlsruhe, Germany

Fri-401
Interactions Between Collagen and Myofibrils in the Heart Revealed by Polarization-Resolved SHG
Zhonhai Wang[1], Cai Yuan[1], Yonghong Shao[2], Thomas K. Borg[3], and Bruce Z Gao[1]
[1]Clemson University, Clemson, SC, [2]Shenzhen University, Shenzhen, China, People's Republic of, [3]Medical University of South Carolina, Charleston, SC

Fri-402
Construction of Magnetic Contrast Agent for Intra-vascular Applications
Candice Gurbatri[1], Trejon Turner[1], James Grace[1], Saparja Nag[1], Yuexin Lue[1], Paul Van Tassel[1], David Holmes III[2], and David Holmes Jr[2]
[1]Yale University, New Haven, CT, [2]Mayo Clinic, Rochester, MN

Fri-403
(Author Cancellation)

Fri-404
***In Vivo* Vibrational Photoacoustic Tomography of Murine Perivascular Fat**
Gurneet Sangha[1], Evan Phillips[1], and Craig Goergen[1]
[1]Purdue University, West Lafayette, IN

Fri-405
Improving Iodine Contrast Agent Sensitivity in Spectral Computed Tomography via Rho-Z Mapping
Olga Pen[1] and Guohua Cao[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

Fri-406
An Automated Method for Quantifying Intermembrane Distances using Image Dilation and Spatial Gradients
Tristan Raisch[1] and Steven Poelzing[1]
[1]Virginia Tech, Roanoke, VA

Fri-407
Fabrication, Characterization and Performance Improvement of a Single Element Forward-Viewing Opto-Acoustic Imaging Device
Supriya Thathachary[1] and Shai Ashkenazi[1]
[1]University of Minnesota, Minneapolis, MN

Fri-408
Large-Scale LSFM for 3-D Localization and Tracking of Progenitor Cells and Ionic Channels in the Murine Hearts
Yichen Ding[1], Jianguo Ma[1], Juhyun Lee[1], Kevin Sung[1], Tomohiro Yokota[1], Neha Singh[1], Mojdeh Dooraghi[1], Parinaz Abiri[1], Yibin Wang[1], Rajan Kulkarni[1], Atsushi Nakano[1], Thao Nguyen[1], Peng Fei[2], and Tzung Hsiai[1]
[1]University of California, Los Angeles, Los Angeles, CA, [2]Huazhong University of Science and Technology, Wuhan, China, People's Republic of

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Track: Cardiovascular Engineering
Lymphatic System

Fri-409
Analysis of Mechanical Contractility of Lymphatic Vessels Under Varying Flow Conditions

Anish Mukherjee[1], Joshua Hooks[1], Zhanna Nepiyushchikh[1], and James Dixon[1]
[1]Georgia Institute of Technology, Atlanta, GA

Fri-410
Mapping Lymphatic Vessels in the Rat Mesentery to Improve Multiscale Lymphatic Flow Models

Caleb Davis[1], Irina Nizamutdinova[2], Michael Moreno[1], and David Zawieja[2]
[1]Texas A&M University, College Station, TX,
[2]Texas A&M Health Science Center, Temple, TX

Fri-411
Characterization of Lymphatic Flow in vivo in Wild-type Mice

Akshay Pujari[1], Daniel Sweet[2], Mark Kahn[2], and Juan Jimenez[1]
[1]University of Massachusetts, Amherst, MA,
[2]University of Pennsylvania, Philadelphia, PA

Track: Cardiovascular Engineering
Microcirculation

Fri-412
Nitrite-mediated Vasodilation Quantified from *In Vivo* Studies in Rat Mesentery

Donald Buerk[1], Kelly A. Zaccheo[1], Kenneth A. Barbee[1], and Dov Jaron[1]
[1]Drexel University, Philadelphia, PA

Fri-413
Development of an Ex Vivo Intact Microvascular Network Model: Evaluation Of Smooth Muscle Cell Constriction

Jessica Motherwell[1], Mohammad Azimi[1], Prasad Katakam[1], and Walter Murfee[1]
[1]Tulane University, New Orleans, LA

Fri-414
A Cell Culture Device with Continuous Oxygen Gradient for Microcirculation Research in vitro

Kanae Kadokura[1], Asako Sato[1], Brice Boudehent[1], and Kosuke Tsukada[1]
[1]Keio University, Yokohama, Japan

Fri-415
Systems Framework for Multi-dimensional Redox System Regulations in Vascular Dysfunction

Sheetal Joshi[1], Hemang Patel[1], and Mahendra Kavdia[1]
[1]Wayne State Univeristy, Detroit, MI

Fri-416
Shear Stress and Cyclic Stretch Regulate Blood Brain Barrier Integrity

Paul Partyka[1] and Peter Galie[1]
[1]Rowan University, Glassboro, NJ

Fri-417
Influence of Red Blood Cell Aggregation on Perfusion of an Artificial Microvascular Network

Nathaniel Piety[1], Walter Reinhart[2], and Sergey Shevkoplyas[1]
[1]University of Houston, Houston, TX, [2]Kantonsspital Graubünden, Chur, Switzerland

Track: Cardiovascular Engineering
Thrombosis and Hemostasis

Fri-418
Platelet GpIb Binding to VWF-A1 is More Prominently Regulated by the Proximal D'D3- Rather than A2-Domain

Changjie Zhang[1], Kelkar Anju[1], Nasirikenari Mehrab[2], Joseph T Lau[2], and Sriram Neelamegham[1]
[1]SUNY at Buffalo, Buffalo, NY, [2]Molecular and Cellular Biology, Roswell Park Cancer Institute, Buffalo, NY

Fri-419
The Development of an Assay to Assess the Priming of Platelets by Multiple Surface Bound Agonists

Colin Eichinger[1] and Vladimir Hlady[1]
[1]University of Utah, Salt Lake City, UT

Fri-420
Targeted Xa Inhibition for the Treatment of Venous Thrombosis

Donny Hanjaya-Putra[1,2]
[1]Harvard Medical School, Boston, MA, [2]Wyss Institute for Biologically Inspired Engineering, Boston, MA

Fri-421
The Influence of Hematocrit on Thrombus Propagation in an In Vitro Model of Venous Thrombosis

Marcus Lehmann[1] and Keith Neeves[1]
[1]Colorado School of Mines, Golden, CO

Fri-422
Do Quadrupeds Develop Edema Post Venous Thrombosis?

Olivia Palmer[1], Jose Antonio Diaz[1], and Joan Greve[1]
[1]University of Michigan, Ann Arbor, MI

Track: Cardiovascular Engineering
Cardiovascular Engineering

Fri-423
Fetuin-A Supplementation as an Effective Therapy in Regulating Phenotypic Differentiation of Smooth Muscle Cells in Vascular Calcification

Justin B. McMahan[1], Amber M. Kay[1], James A. Stewart Jr[1], and C. LaShan Simpson[1]
[1]Mississippi State University, Starkville, MS

Fri-424
Dispersion in Flowing Blood: A Theoretical Structure for Experimental First Passage STudies

Eugene Eckstein[1], Vinay Bhall[1], Mark Leggas[1], JoDe Lavine[1], Baoshun Ma[1], and Jerome Goldstein[1]
[1]University of Memphis, Memphis, TN

Track: Cellular and Molecular Bioengineering
Advanced Single Cell Probes

Fri-425
Rapid Uptake and Ubiquitination of Fluorescent Peptides into Mammalian Cells Using a & β-Hairpin Sequence Motif

Nora Safabakhsh[1], Jeffrey Anderson[1], Manibarathi Vaithiyanathan[1], Jacob pettigrew[1], Gavin Pappas[1], Ted Gauthier[1], and Adam Melvin[1]
[1]Louisiana State University, Baton Rouge, LA

Fri-426
Single Cell Patterning in Stiffness-Tunable Hydrogels for High Throughput Studies

Xiangyu Gong[1] and Kristen Mills[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

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Tracks: Cellular and Molecular Bioengineering, Nano and Micro Technologies

Micro/Nano Tools in Molecular Biology (Genomics, Proteomics)

Fri-427
Towards a Cell-Level Personalization of Nanomedicine: Pathology Dependent *In Situ* Reduction of Gold Nanoparticles by Action of Mammalian Cells.

Aaron Schwartz-Duval[1], Enrique Daza[1], Santosh Misra[1], Elyse Johnson[2], Prabuddha Mukherjee[1], Rohit Bhargava[1], and Dipanjan Pan[1]
[1]University of Illinois Urbana Champaign, Urbana, IL, [2]Cytoviva Inc., Auburn, AL

Fri-428
Visualization of Protein Myristoylation During Cellular Differentiation

Andrew Witten[1], Meghan A. Traore[1], Sarah Calve[1], and Tamara Kinzer-Ursem[1]
[1]Purdue University, West Lafayette, IN

Fri-429
Proteomic Analysis of Exosomes Derived from Neuronal Cells to Determine Factors Promoting Neuronal Differentiation

Doyeon Koo[1], Xuewei Zhao[2], Yuji S. Takeda[2], and Qiaobing Xu[2]
[1]Tufts University, Cambridge, MA, [2]Tufts University, Medford, MA

Fri-430
***In Vivo* Incorporation of Non-Canonical Amino Acids to Determine Protein Turnover During Tissue Assembly**

Alexander Ocken[1], Sawyer Kieffer[1], Tamara Kinzer-Ursem[1], and Sarah Calve[1]
[1]Purdue University, West Lafayette, IN

Fri-431
Hairpin DNA Cascade Amplifier for Detection of microRNA in Living Cells

Shan Chen[1], Qiaoxia Hu[1], Lok Ting Chu[1], and Ting-Hsuan Chen[1]
[1]City University of Hong Kong, Hong Kong, Hong Kong

Fri-432
One-pot Isothermal DNA Extraction and Amplification for the Detection of Enterohemorrhagic E. coli

Sherine Cheung[1], Matthew Yee[1], Nguyen Le[1], Benjamin Wu[1], and Daniel Kamei[1]
[1]University of California Los Angeles, Los Angeles, CA

Track: Cellular and Molecular Bioengineering

Molecular Bioengineering

Fri-433
PAH Afflicted Pulmonary Arteries on-a-Chip to Screen Drugs and Study PAH Pathophysiology

Ahasanul Hasan[1], Ziye Dong[2], Wei Li[2], Amanda Flockton[3], Kurt Stenmark[3], and Fakhrul Ahsan[1]
[1]Texas Tech University Health Sciences Center, Amarillo, TX, [2]Texas Tech University, Lubbock, TX, [3]University of Colorado, Aurora, CO

Fri-434
Genome Editing Enabled Generation of Human iPS Cells for Treating Sickle Cell Disease

Ang Li[1], Ciaran Lee[1], So Hyun Park[1], and Gang Bao[1]
[1]Rice University, Houston, TX

Fri-435
Amperometric Detection of Ultrasound-Induced Secretory Events In Potential Treatment Of Type 2 Diabetes

Bogdan Balteanu[1], Singh Tania[1], Ivan Suarez Castellanos[1], Vesna Zderic[1], and Aleksandar Jeremic[1]
[1]The George Washington University, Washington, DC

Fri-436
Engineering the Next Generation of Lumitoxins

David Nedrud[1] and Daniel Schmidt[1]
[1]University of Minnesota, Minneapolis, MN

Fri-437
Highly Specific and Modular Affinity Labeling of Epigenetic Modifications

Fanny Wang[1], Osama Zahid[1], and Adam Hall[1,2]
[1]Virginia Tech-Wake Forest School of Biomedical Engineering, Winston-Salem, NC, [2]Wake Forest School of Medicine, Winston-Salem, NC

Fri-438
Sortagging as A Bioconjugation Strategy For In Vitro Compartmentalization Applications

Fredrik W. Sadler[1], Igor Dodevski[1], and Casim A. Sarkar[1]
[1]University of Minnesota, Minneapolis, MN

Fri-439
Radioactivity and Mathematical Modeling to Quantify Important Parameters in the Lateral-Flow Immunoassay

Garrett Mosley[1], Phuong Nguyen[1], Benjamin Wu[1], and Daniel Kamei[1]
[1]University of California Los Angeles, Los Angeles, CA

Fri-440
Mutual Information to Inform Protein Library Design

George Markou[1] and Casim Sarkar[1]
[1]University of Minnesota, Minneapolis, MN

Fri-441
De Novo Engineering of Site-Specific Protein Binders by Tethering-RD

Igor Dodevski[1], Irena Cich[1], and Casim Sarkar[1]
[1]University of Minnesota, Minneapolis, MN

Fri-442
Geometry and Expression Enhance Enrichment of Functional Yeast-Displayed Ligands via Cell Panning

Lawrence Stern[1], Ian Schrack[1], Sadie Johnson[1], Aakash Deshpande[1], Nathaniel Bennett[1], Lauren Harasymiw[1], Melissa Gardner[1], and Benjamin Hackel[1]
[1]University of Minnesota-Twin Cities, Minneapolis, MN

Fri-443
An shRNA-Extruding Nanofactory within DNA Origami Nanocapsule

Leo Chou[1], Jaeseung Hahn[1], Rasmus Soresen[1], and William Shih[1]
[1]Wyss Institute, Harvard Medical School, Boston, MA

Fri-444
An Atomic Force Microscopy Study of Ebola Virus Host Cell Interaction

Matthew Dragovich[1], Yan Xu[1], Krista Schutt [1], Michelle Sanabria[1], and X. Frank Zhang[1]
[1]Lehigh Unversity, Bethlehem, PA

Fri-445
Optimization of CRISPR/Cas9 Systems for Treating Cystic Fibrosis with Gene Correction

Mithil Chokshi[1], Ciaran Lee[1], and Gang Bao[1]
[1]Rice University, Houston, TX

Fri-446
Impacts of Hydrodynamic Conditions on the Initial Phases of *Staphylococcus aureus* Biofilms and Their Resistance to Antimicrobial Agents

Patrick Ymele-Leki[1]
[1]Howard University, Washington, DC

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Fri-447
Enhancing Homology-Directed Genome Editing with Orthogonal CRISPR-Cas9 Systems
So Hyun Park[1], Ciaran Lee[1], Harshavardhan Deshmukh[1], and Gang Bao[1]
[1]Rice University, Houston, TX

Fri-448
In-silico Prediction of CRISPR/Cas9 Cutting Efficiency
Yidan Pan[1], Ciaran Lee[1], Timothy Davis[1], Harshavardhan Deshmukh[1], and Gang Bao[1]
[1]Rice University, Houston, TX

Fri-449
Determine Protein Interaction Affinity without Protein Purification by Quantitative FRET (qFRET) Technology
Zhehao Xiong[1], Ling Jiang[1], Raphael Kung[1], Yang Song[1], Yan Liu[1], Amanda Saaredra[1], Songqin Pan[1], and Jiayu Liao[1]
[1]University of California, Riverside, Riverside, CA

Track: Device Technologies and Biomedical Robotics
Implantable Devices and Implantable Electronics

Fri-450
A Parylene-based Peripheral Nerve Cuff Electrode
Angelica Cobo[1], Kee Scholten [1], Victor Pikov[2], and Ellis Meng[1]
[1]University of Southern California, Los Angeles, CA, [2]GlaxoSmithKline, London, United Kingdom

Fri-451
Wireless Power and Data Transfer System for Mandibular Distraction Osteogenesis Implants
Deepak Dileepkumar[1], Brent Nowak[1], and Jeffrey Ward[1]
[1]Grand Valley State University, Grand Rapids, MI

Fri-452
Simple Implantable Wireless Sensor for Monitoring Intracompartmental Pressures
Eric Ledet[1], John Drazan[1], Michael Wassick[1], Khalil Drayton[1], Reena Dahle[2], Luke Beardslee[3], and Nathaniel Cady[3]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]SUNY New Paltz, New Paltz, NY, [3]SUNY Polytechnic Institute, Albany, NY

Fri-453
Mechanical Response of Liquid Crystal Polymer Based Magnetic Microactuators for Glaucoma Drainage Device
Hyunsu Park[1], Simon John[2], and Hyowon Lee[1]
[1]Purdue University, West Lafayette, IN, [2]Howard Hughes Medical Institute, Bar Harbor, ME

Fri-454
Mechanical Responses of Flexible Magnetic Microctuators for Biofouling Removal
Qi Yang[1], Hyowon Lee[1], and Jeffrey Rhoads[1]
[1]Purdue University, West Lafayette, IN

Fri-455
Bacteria Removal Capabilities of Polyimide-Based Magnetic Microactuators
Tran Nguyen[1,2,3], Jacqueline Linnes[1], and Hyowon Lee[1,2,3]
[1]Purdue University, West Lafayette, IN, [2]Birck Nanotechnology Center, West Lafayette, IN,[3]Center for Implantable Devices, West Lafayette, IN

Track: Device Technologies and Biomedical Robotics
Wearable Sensors and Devices

Fri-456
Wearable Biosensors to Detect Stress Indicators in College Students: A Pilot Study
John La[1], Shirley Cheng[1], Kaikai Liu[1], and Alessandro Bellofiore[1]
[1]San Jose State University, San Jose, CA

Fri-457
Preliminary Development of PalmSight: Letting the Visually Impaired See using a Hand-Held Device
Alexandra Delazio[1], Zhixuan Yu[2], Samantha Horvath[2], Jihang Wang[2], John Galeotti[2], Roberta Klatzky[2], and George Stetten[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Carnegie Mellon University, Pittsburgh, PA

Fri-458
Multiple Sclerosis (MS) Sensory Feedback Device to Improve Pinch Grip
Anastasia Ostrowski[1], Nicole Bettè[1], Megan White[1], Evan Chen[1], Joshua Cockrum[1], John Gosbee[1], and Rachael Schmedlen[1]
[1]University of Michigan, Ann Arbor, MI

Fri-459
Use of Electroencephalographic Technology to Predict Blood Glucose Levels Through Brain Activity
Bryce Cranwell[1] and Ricky Castles[2]
[1]East Carolina University, Holly Springs, NC, [2]East Carolina University, Greenville, NC

Fri-460
Fabrication of Highly Conductive Hydrogel-patterned Nanofiber for Bioelectronics Device Applications
Dongnyoung Heo[1], Junghoon Kim[1], and Lijie Grace Zhang[1]
[1]The George Washington University, Washington, DC

Fri-461
The Development of a Novel, Flexible, Low Profile, Configurable, Single Point Pressure Sensor
Erika Vandersteen[1], Jane Saviers-Steiger[1], Tomasz Petelenz[1], and Robert Hitchcock[1]
[1]University of Utah, Salt Lake City, UT

Fri-462
Assessment of Dehydration in the Mouth via Bioimpedance Spectroscopy
Arik Fenstermacher[1] and Gene Fridman[2]
[1]Stevenson University, Baltimore, MD, [2]Johns Hopkins University, Baltimore, MD

Fri-463
Battle of the Minds: Entertainment as Proof of Concept Using Affordable EEG and Processing Systems
Alexander Bashqawi[1], James Steele[1], Samuel Dreyer[1], and Hananeh Esmailbeigi[1]
[1]University of Illinois at Chicago, Chicago, IL

Fri-464
Electromagnetic Resonant Bone Health Sensor Skin Patch for the Detection Of Osteoporosis and Bone Density Changes
Jessica Aldrich[1], Mariam Yassine[1], Nithin Muntimadugu[1], Jeremy Patterson[1], Anil Mahapatro[1], and Kim Cluff[1]
[1]Wichita State University, Wichita, KS

Fri-465
Tongue-Computer Interface: Assistive Technology for Patients with Paralysis or Limited Hand Function
Richard Hickey[1], Kevin Kerr[1], Vincent Nguyen[1], Ricardo Aranda[1], and Hananeh Esmailbeigi[1]
[1]University of Illinois at Chicago, Chicago, IL

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Fri-466
Towards a Continuous Blood Pressure Monitoring System for Training Scenarios
Devon Griggs[1], Arian Naghibi[1], Manuja Sharma[1], Karinne Barbosa[1], and Hung Cao[1]
[1]University of Washington, Bothell, WA

Fri-467
Design of a Wearable Electrochemical Sensor for the Detection of Cocaine in Sweat
Orlando Hoilett[1] and Jacqueline Linnes[1]
[1]Purdue University, West Lafayette, IN

Fri-468
Smartphone Based Fall Risk Assessment Using Dynamic Stability in Healthy Individuals
Seong Moon[1], Rahul Soangra[2], Saba Rezvanian[1], Victoria Smith[1], Christopher Frames[1], Markey Olson[1], and Thurmon Lockhart[1]
[1]Arizona State University, tempe, AZ, [2]Arizona State University, Mesa, AZ

Fri-469
Can Inertial Sensors Measure Movement Variability in Young and Older Subjects
Rahul Soangra[1] and Thurmon Lockhart[2]
[1]Arizona State University, Mesa, AZ, [2]Arizona State University, Tempe, AZ

Fri-470
Consumer Wearable Devices for Health Surveillance and Disease Monitoring
Jessilyn Dunn[1], Xiao Li[1], Denis Salins[1], and Michael Snyder[1]
[1]Stanford University, Palo Alto, CA

Track: Device Technologies and Biomedical Robotics
Device Technologies and Biomedical Robotics

Fri-471
Sensitivity Analysis for Designing Head Alignment Device for Dental Patients during Cone Beam Computer Tomography (CBCT)
Cem Yaba[1], Sinan Onal[1], Sohyung Cho[1], Cyril Pandarakalam[2], Nathalia Garcia[2], and Mohamed Omran[2]
[1]Southern Illinois University Edwardsville, Edwardsville, IL, [2]Southern Illinois University, School of Dental Medicine, Alton, IL

Fri-472
Fast Response Cart Validation with Traceable Gas Blenders
Jon Moon[1], Christopher Bock[2], Erica Wohlers[1], Eric Ruud[1], and Yi Liu[2]
[1]MEI Research, Edina, MN, [2]Florida Hospital, Orlando, FL

Fri-473
Development of a Scaled Bipedal Robot Using Human Kinematics
Jonathan Mueller[1] and Jaydip Desai[1]
[1]Indiana Institute of Technology, Fort Wayne, IN

Fri-474
Smart Needle for Epidural Administration
Michael Greminger[1], Anastasia Zink[2], Brian Krohn[2], and Amit Goyal[2]
[1]University of Minnesota Duluth, Duluth, MN, [2]University of Minnesota, Minneapolis, MN

Fri-475
Dynamically Controlled PCR Based on Direct Monitoring of Primer and Target Hybridization States
Nicholas Adams[1], William Gabella[1], Austin Hardcastle[1], and Frederick Haselton[1]
[1]Vanderbilt University, Nashville, TN

Fri-476
Assessing and Reducing the Toxicity of 3D-printed Parts
Shirin Mesbah Oskui[1], Graciel Diamante[1], Chunyang Liao[1], Wei Shi[2], Jay Gan[1], Daniel Schlenk[1], and William H. Grover[1]
[1]University of California, Riverside, Riverside, CA, [2]Nanjing University, Nanjing, China, People's Republic of

Fri-477
Demonstration of Proof-of-Concept to Enable Microfluidic Density Gradient Separation of PBMCs from Whole Blood
Yuxi Sun[1] and Palaniappan Sethu1
[1]University of Alabama, Birmingham, Birmingham, AL,

Track: Biomaterials
Drug Delivering, Therapeutic, and Theranostic Biomaterials

Fri-478
Bending and Collapse of Pure DPPC and Survanta Monolayers on Microbubbles
Alec Thomas[1], Eduard Benet[1], Franck Vernerey[1], and Mark Borden[1]
[1]University of Colorado at Boulder, Boulder, CO

Fri-479
Piezoelectric Polymer Nano Matrix for Gene Delivery
Carcia Carson[1], Hak-Joon Sung[1], and Richard Mu[2]
[1]Vanderbilt University, Nashville, TN, [2]Fisk University, Nashville, TN

Fri-480
Poly(diol citrate) Modified Bare Metal Stents for Drug Delivery
Darcy Lichlyter[1] and Antonio Webb[1]
[1]University of Florida, Gainesville, FL

Fri-481
GNP-Eluting Hollow Brachytherapy Spacer for Biological *In Situ* Dose Painting for Image-Guided Radiation Therapy
Francis Boateng[1] and Wilfred Ngwa[2,3]
[1]University of Massachusetts Lowell, Lowell, MA, [2]University of Massachusetts Lowell, Lowell, MD, [3]Brigham and Women's Hospital, Boston, MA

Fri-482
Affinity-Mediated Retention and Delivery of High Isoelectric Point Exhibiting Therapeutic Proteins from Molecularly Imprinted Microparticles
John Clegg[1], Joann Gu[1], and Nicholas Peppas[1]
[1]University of Texas at Austin, Austin, TX

Fri-483
Tethered Microparticles for BMP-2 Delivery from Collagen Coated Hydroxyapatite Scaffolds
Laura Gaviria[1], Teja Guda[1], and Joo L. Ong[1]
[1]The University of Texas at San Antonio, San Antonio, TX

Fri-484
Tannic Acid Crosslinked Collagen Type I for Prevention Of Breast Cancer Recurrence
Lauren Jordan[1], Christopher Moody[2], Kendyl Williams[1], and Brian Booth[1,2]
[1]Clemson University, Clemson, SC, [2]Institute for Biological Interfaces of Engineering, Clemson, SC

Fri-485
Aligned Nanofibrillar Scaffolds for Controlled Delivery of Modified mRNA
Ngan Huang[1], Luqia Hou[1], Zachary Strassberg[2], Michael Hopkins[1], Tatiana Zaitseva[3], Eduard Yakubov[4], and Michael Paukshto[3]
[1]Stanford University, Stanford, CA, [2]Veterans Affairs Palo Alto Health Care System, Palo Alto, CA, [3]Fibralign Corporation, Union City, CA, [4]PhaRNA, Houston, TX

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Fri-486
Titanium-Containing Bioactive Glasses for Clinical Applications: Structural Analysis
Omar Rodriguez Perez[1,2], Declan Curran[1,2], Marcello Papini[1], Lana Placek[3], Anthony Wren[3], Emil Schemitsch[2], Paul Zalzal[4], and Mark Towler[1,2,5]
[1]Ryerson University, Toronto, ON, Canada, [2]St. Michael's Hospital, Toronto, ON, Canada,[3]Alfred University, Alfred, NY, [4]Oakville Trafalgar Memorial Hospital, Oakville, ON, Canada,[5]University of Malaya, Kuala Lumpur, Malaysia

Fri-487
Effect on Oligosaccharide Grafting on the Conformation and Protonation State of Polyethylenimine
Saswati Basu[1], Danielle Miller[1], Stacy Apugo[1], and Preethi Chandran[1]
[1]Howard University, Washington, DC

Fri-488
Theranostic Nanoprobes
Tugba Ozel[1], Gabriela Herrera[1], and Tania Betancourt[1]
[1]Texas State University, San Marcos, TX

Fri-489
Antibiofilm activity of Quaternized Chitosan against Mature Dental Biofilms
Wei Lv[1], Yuyu Sun[2], and Ying Deng[1]
[1]University of South Dakota, Sioux Falls, SD, [2]University of Massachusetts Lowell, Lowell, MA

Fri-490
Clicked Gold Nanoclusters for High Drug Payload and Tumor Targeting through EPR Effect
Wei Mao[1] and Hyuk Sang Yoo[1]
[1]Kangwon National University, Chuncheon, Korea, Republic of

Track: Drug Delivery
Multifunctional or Hybrid Systems

Fri-491
High-Throughput Screening of Clinically Approved Drugs That Prime PEI Transfection Reveals Modulation of Mitochondrial Dysfunction Response Improves Gene Transfer Efficiencies
Albert Nguyen[1], Jared Beyersdorf[1], Jean-Jack Riethoven[1], and Angela Pannier[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

Fri-492
Size and Surface Characteristics of Silica Nanoparticles Impact CHO Cell Uptake and Viability
Alexander Kelly[1], Kyle Paul[1], Robert Arnold[1], and Allan David[1]
[1]Auburn University, Auburn, AL

Fri-493
Selective Customization of Preformed Multicomponent Nanoparticles Using Microvortices
Candice Hovell[1], Michael Toth[1], and YongTae Kim[1]
[1]Georgia Institute of Technology, Atlanta, GA

Track: Drug Delivery
Nano to Micro Devices in Delivery

Fri-494
Polyanhydride Nanoparticle Mediates Efficient Killing of Filarial Parasites
Andrea Binnebose[1], Adam Mullis[1], Shannon Haughney[1], Balaji Narasimhan[1], and Bryan Bellaire[1]
[1]Iowa State University, Ames, IA

Fri-495
Gelatin Nanoparticle Encapsulation of Anti-Parasitic Compound and Characterization for Treatment of Leishmaniasis Disease
Carlos Serna[1], Alfredo Ornleas[1], Eva Iniguez[1], Katja Michael[1], Rosa Maldonado[1], and Thomas Boland[1]
[1]The University of Texas at El Paso, El Paso, TX

Fri-496
Synthesis of Structured Microparticles for Tunable, Delayed Protein Release
Dipankar Dutta[1], Chase Fauer[1], Mariama Salifu[1], and Sarah Stabenfeldt[1]
[1]Arizona State University, Tempe, AZ

Fri-497
Anomalous Drug Transport Through Nanochannels at the Ultra-Nanoscale
Giacomo Bruno[1,2], Robert, Lyle Hood[3], and Alessandro Grattoni[1]
[1]Houston Methodist Research Institute, Houston, TX, [2]Politecnico di Torino, Turin, Italy, [3]The University of Texas at San Antonio, San Antonio, TX

Fri-498
A New Method to Produce Nano-Structured, High Strength, Drug-Eluting Sutures
Kunal Parikh[1], Revaz Omiadze[1], Aditya Josyula[1], Richard Shi[1], Abdul Elah Al-Towerki[2], Youseph Yazdi[1], Peter McDonnell[1], Laura Ensign[1], and Justin Hanes[1]
[1]Johns Hopkins University, Baltimore, MD, [2]King Khaled Eye Specialist Hospital, Riyadh, Saudi Arabia

Fri-499
Interrogation of Cellular Innate Immunity by Diamond-nanoneedle-assisted Intracellular Molecular Fishing
Zixun Wang[1] and Peng Shi[1]
[1]City University of Hong Kong, Kowloon, Hong Kong

Fri-500
Nanochannel Drug Delivery System for Intratumoral Delivery of Immunotherapeutics
Priya Jain[1], R. Lyle Hood[1], Giacomo Bruno[1,2], Corrine Ying Xuan Chua[1], and Alessandro Grattoni[1]
[1]Houston Methodist Research Institute, Houston, TX, [2]Politecnico de Turino, Turin, Italy

Fri-501
Establishing Design Criteria for Targeted Nanoparticle Delivery in the Joint
Shannon Brown[1] and Blanka Sharma[1]
[1]University of Florida, Gainesville, FL

Fri-502
Rapid Synthesis, Purification, and Concentration of Unilammelar Liposomes
Steven Roberts[1], Adriana Pacheco-Figueroa[1], Ryan Blower[1], and Nitin Agrawal[1]
[1]George Mason University, Fairfax, VA

Fri-503
Microneedles Integrated with Pancreatic Cells for Smart Insulin Delivery
Yanqi Ye[1,2], Jicheng Yu[1,2], Chao Wang[1,2], Nhu-Y Nguyena [1], John Buse[2], and Zhen Gu[1,2]
[1]University of North Carolina at Chapel Hill and North Carolina State University, Raleigh, NC,[2]University of North Carolina at Chapel Hill, Chapel Hill, NC

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Track: Drug Delivery
Drug Delivery

Fri-504
Ultrasound-enhanced Drug Delivery for Treatment of Onychomycosis

Alina Kline-Schoder[1], Vesna Zderic[1], and Zung Li[1]
[1]The George Washington University, Washington, DC

Fri-505
Design and Development for Transdermal Diabetes Drug Delivery System

Michaela Rizzo[1], Daniel Griffin[1], Sarah Colón[1], Deshawn Gray[1], Brenden Overton[1], and Bin Wang[1]
[1]Widener University, Chester, PA

Fri-506
Enhanced Therapeutic Loading and Delivery Via Protonation of Extracellular Vesicles

Tek Lamichhane[1], Eshan Dahal[1], Babita Parajuli[1], Natalie Livingston[1], and Steven Jay[1]
[1]University of Maryland, College Park, MD

Fri-507
Sustained Release of Dasatinib as Therapeutic for Prevention of Proliferative Vitreoretinopathy

Rayeanne Balgemann[1], Rajat Chauhan[1], Hidetaka Noma[1], Kevin MacDonald[1], Henry Kaplan[1], Tamiya Shigeo[1], and Martin O'Toole[1]
[1]University of Louisville, Louisville, KY

Track: Nano and Micro Technologies
Micro/Nano Fluidic Engineering

Fri-508
Streamline Based Design Guideline for Deterministic Microfluidic Hydrodynamic Single Cell Trap

Allan Guan[1], Aditi Shenoy[1], Richard Smith[1], and Zhenyu Li[1]
[1]George Washington University, Washington, DC

Fri-509
Design Rules for 3D-Printed Autonomous Capillaric Cicrcuits

Ayokunle Olanrewaju[1] and David Juncker[1]
[1]McGill University, Montreal, QC, Canada

Fri-510
Modeling and Validation of Mass Transport in a Microfluidic Vascular Model with On-chip Biosensing

Jeremy Wong[1], Edmond Young[1], and Craig Simmons[1]
[1]University of Toronto, Toronto, ON, Canada

Fri-511
Development of an Integrated Microfluidic Platform for Automated Proteomic Assay Predictive of Radiotherapy Outcomes

Jerome Lacombe[1], Jerome Solassol[2,3], Alain Mange[3], Matthew Barrett[1], Alan Nordquist[1], David Azria[3,4], and Frederic Zenhausern[1]
[1]University of Arizona, Chandler, AZ, [2]CHU Montpellier, Montpellier, France, [3]INSERM U1196, Montpellier, France, [4]ICM Val d'Aurelle, Montpellier, France

Fri-512
Low Cost Stamping Method for Patterning Multi-Analyte and Ladder-Bar Immunoassays

Jessalyn Imdieke[1] and Elain Fu[1]
[1]Oregon State University, Corvallis, OR

Fri-513
Capillary Pressure-Driven Micro-Viscometer to Quantify a Living Zebrafish Fluidic System

Juhyun Lee[1], Dongyang Kang[2], Nelson Jen[1], Dino Di Carlo[1], Yu-Chong Tai[2], and Tzung Hsiai[1]
[1]University of California, Los Angeles, Los Angeles, CA, [2]California Institute of Technology, Pasadena, CA

Fri-514
A Self-Contained and Self-Powered Microfluidic Device for Point-of-Care Diagnostics

Tae-Hoon Kim[1] and Jungkyu (Jay) Kim[1]
[1]Texas Tech University, Lubbock, TX

Fri-515
High-Throughput Inertial Focusing of Micron and Submicron Particles: from Bacteria to Subcellular Organelles

Lei Wang[1] and David Dandy[1]
[1]Colorado State University, Fort Collins, CO

Fri-516
Smartphone-Fluidics Based Microscopy and Flow Cytometry for Islet Quantification

ManWai Chan[1], Yuan Xing[1], Mohammad Nourmohammadzadeh[1], Joshua Mendoza Eliasa[1], James McGarrigle[1], Jade Yeh[1], José Oberholzer[1], and Yong Wang[1]
[1]University of Illinois at Chicago, CHICAGO, IL

Fri-517
Generation and Detection of An Oxygen Gradient From a Single Source Inside A Microfluidic Platform

Md. Daud Khan[1], John Cressman[1], Paige Epler[1], and Nitin Agrawal[1]
[1]George Mason University, Fairfax, VA

Fri-518
Red Blood Cell Separation via Integrated Microfluidic Paper-based Electric Field Generation Systems

Garrett Benedict[1], Sarah Fowler[1], Sarah Wells[1], Jordan Backer[1], Paul Carlquist[1], Scott Evans[1], Sam Ginsburg[1], Kathleen Seeley[1], Evan VanBelle[1], and Melanie Watson[1]
[1]Trine University, Angola, IN

Fri-519
Affinity-Based Systems for Efficient Cell Separation and Release in Microfluidic Channels

Mengen Zhang[1], Bin Xu[1], and Wei Shen[1]
[1]University of Minnesota, Minneapolis, MN

Fri-520
Orientation-based Control of Microfluidics

Nazila Norouzi[1], Heran Bhakta[1], and William. H Grover[1]
[1]University of California, Riverside, Riverside, CA

Fri-521
Bi-directional Frequency-tuned Microfluidic Valve

Rahil Jain[1] and Barry Lutz[1]
[1]University of Washington, Seattle, WA

Fri-522
Improved Mixing Efficiency Using Convex Grooves In Passive Micro-mixer With Low Reynolds Number Scheme

Tae Joon Kwak[1], Young Gyu Nam[1], Maria Alejandra Najera[2], Sang Woo Lee[3], J. Rudi Strickler[4], and Woo-Jin Chang[1]
[1]Mechanical Engineering Department, University of Wisconsin-Milwaukee, Milwaukee, WI [2]Industrial Engineering Department, University of Wisconsin-Milwaukee, Milwaukee, WI [3]Department of Biomedical Engineering, Yonsei University, Wonju, Korea, Republic of, [4]Great Lakes Water Institute, University of Wisconsin-Milwaukee, Milwaukee, WI

Fri-523
Propagating Microvortices to Engineer Drug Loaded High-Density Lipoprotein Mimetic Nanomaterials

Yoshitaka Sei[1] and YongTae Kim[1]
[1]Georgia Institute of Technology, Atlanta, GA

Fri-524
A Pumpless Microfluidic Device Driven by Surface Tension for Pancreatic Islet

Yuan Xing[1], Mohammad Nourmohammadzadeh[1], Joshua Mendoza-Elias[1], Zequn Chen[1], James McGarrigle[1], Jose Oberholzer[1], and Yong Wang[1]
[1]University of Illinois at Chicago, Chicago, IL

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Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:15 pm–4:00 pm

Fri-525
Voltage-Controlled Molecular Release from Nanoporous Gold Electrodes in Microfluidic Channel
Zidong Li[1], Ling Wang[1], Ozge Polat[1], and Erkin Seker[1]
[1]University of California Davis, Davis, CA

Track: Drug Delivery
Nucleic Acid Delivery

Fri-526
Polycation Gene Delivery: Investigation of Opposing Trends in mRNA and Plasmid DNA Transfection
Albert Yen[1], Yilong Cheng[1], Sanyogitta Puri[2], Katie Barker[2], and Suzie Pun[1]
[1]University of Washington, Seattle, WA, [2]AstraZeneca UK Ltd., Macclesfield, United Kingdom

Fri-527
Dual Peptide-Mediated Targeted Delivery of SiRNAs for the Treatment of Oral Cancer
Angela Alexander-Bryant[1,2], Haiwen Zhang[2], Christopher Attaway[2], William Pugh[2], Laurence Eggart[2], Lu Dinh[2], Robert Sansevere[2], Lourdes Andino[2], and Andrew Jakymiw[1,2]
[1]Clemson University, Clemson, SC, [2]Medical University of South Carolina, Charleston, SC

Fri-528
Cytocompatible Catalyst-free Hydrogel for UV-triggered RNA Release to Induce hMSC Osteogenesis
Cong Truc Huynh[1], Minh Khanh Nguyen[1], Zijie Zheng[1], Alexandra McMillan[1], Gulen Y. Tonga[2], Vincent M. Rotello[2], and Eben Alsberg[1]
[1]Case Western Reserve University, Cleveland, OH, [2]University of Massachusetts, Amherst, MA

Fri-529
Delivery of DNA Probes for Competitive Transcription Factor Antagonism in Pulmonary Fibrosis
Dwight Chambers[1] and Thomas Barker[2]
[1]Georgia Institute of Technology and Emory Univeristy, Atlanta, GA, [2]University of Virginia, Charlottesville, VA

Fri-530
Chitosan-Zein Nano-in-Microparticles for Oral Gene Delivery
Eric Farris [1], Amanda Ramer-Tait[1], Deborah Brown [1], and Angela Pannier [1]
[1]University of Nebraska-Lincoln, Lincoln, NE

Fri-530
A Novel Rac1-dependent Endocytotic Route for Gene Uptake in Electrotransfection
Mao Mao[1], Liangli Wang[1], Chun-Chi Chang[1], Jianyong Huang[1], and Fan Yuan[1]
[1]Duke University, Durham, NC

Fri-532
Using Spherical DNA Aptamer-Conjugated Nanoparticles for Personalized Treatment of Small Cell Lung Carcinoma
Ricky Whitener[1], Padma Sundaram[1], Katherine Windham[1], Jacek Wower[1], and Mark Byrne[1,2]
[1]Auburn University, Auburn University, AL, [2]Rowan University, Glassboro, NJ

Fri-533
Cationic Amphiphilic Copolymer for pTK and GCV Delivery in Spinal Cord Tumor
So-Jung Gwak[1], Justin Nice[1], Christian Macks[1], and Jeoung Soo Lee[1]
[1]Clemson University, Clemson, SC

Track: Drug Delivery
Novel Materials and Self Assembly

Fri-534
Accurate Models of Cell Membranes for In Vitro Screening of Membrane Interactions
Graham Taylor[1] and Stephen Sarles[1]
[1]University of Tennessee, Knoxville, Knoxville, TN

Fri-535
Integrating Multiple Types of Inorganic Nanoparticles into Biodegradable Polymersomes
Murali Ramamoorthi[1], Sanaz Ebrahimi Samani[1], Simon Tran[1], and Joseph Kinsella[1]
[1]McGill University, Montreal, QC, Canada

Fri-536
Supramolecular Assemblies of Alkane Functionalized Poly Ethylene Glycol Copolymer for Drug Delivery
Lida Zhu[1] and Katie Bratlie[1]
[1]Iowa State University, Ames, IA

Fri-537
Optically Clear, In-Situ Forming Self-Assembled Nanogels for the Delivery of Ocular Pharmaceutics
Laura Osorno[1], Mark Byrne[1], and Mindy George-Weinstein[2]
[1]Rowan University, Glassboro, NJ, [2]Copper Medical School of Rowan University, Camden, NJ

Fri-538
Feasibility of Liposomal Encapsulation Of Complex Black Raspberry Phytochemical Fractions
Lauren Cosby[1], Thomas Knobloch[1], Christopher Weghorst[1], and Robert Lee[1]
[1]The Ohio State University, Columbus, OH

Fri-539
Stretch Activated Formation of Artificial Model Cell Membranes
Reza Razavi[1] and Stephen Sarles[1]
[1]University of Tennessee Knoxville, Knoxville, TN

Track: Nano and Micro Technologies
Micro/Nano Sensors

Fri-540
An Impedance-Based Thermal Flow Sensor for Physiological Fluids
Alex Baldwin[1] and Ellis Meng[1]
[1]University of Southern California, Los Angeles, CA

Fri-541
Enhancing Performance of Enzyme-based Amperomteric Biosensors Through Interfacial Engineering
Christian Kotanen[1,2] and Anthony Guiseppi-Elie[1,2,3]
[1]Texas A&M University, College Station, TX, [2]Center for Bioelectronics, Biosensors and Biochips (C[3]B), College Station, TX, [3]ABTECH Scientific, Inc., Richmond, VA

Fri-542
Single Cell Analysis Based on Magnetic Beads Assay
Fan Liu[1], Pawan KC[1], Ge Zhang[1], and Jiang Zhe[1]
[1]The University of Akron, Akron, OH

Fri-543
Molecular Characterization of Hyaluronic Acid (HA) With Solid-State Nanopores
Felipe Rivas[1], Osama Zahid[1], Courtney Smith[1], Elaheh Rahbar[1], and Adam Hall[1]
[1]Virginia Tech-Wake Forest School of Biomedical Engineering, Winston-Salem, NC

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Fri-544
Nanozymes: Next Generation of Artificial Enzymes
Hui Wei[1]
[1]Nanjing University, Nanjing, China, People's Republic of

Fri-545
Synthesis and Characterization Of Polymer-Coupled Gold Nanorods
Katherine Carrizales[1], Gilbert Bustamante[1], and Jing Yong Ye[1]
[1]University of Texas at San Antonio, San Antonio, TX

Fri-546
Encapsulated Arrays of Asymmetric Synthetic Lipid Bilayers with in situ Electrical Measurements for Membrane Based Studies
Mary-Anne Nguyen[1] and Stephen Sarles[1]
[1]University of Tennessee, Knoxville, TN

Fri-547
Integrating Cell-Free Synthetic Biology with Mobile Microfluidics-Based Fluorescent Microscopy to Detect Clinically Relevant Analytes
MaryJoe Rice[1], John Lake[1], and Warren Ruder[1]
[1]Virginia Tech, Blacksburg, VA

Fri-548
Hydrogel Microarray: A New System for A Metal Enhanced Fluorescence-Based Protein Assay
Minsu Kim[1], Sang Won Han[1], Haejeong Pang[1], Hye Jin Hong[1], and Won-Gun Koh[1]
[1]Yonsei university, seoul, Korea, Republic of

Fri-549
Interference of KCl on Cobalt Nanoparticle-based Electrochemical Low-cost Disposable Phosphate Sensor
Misong Ryu[1] and Woo-Jin Chang[1]
[1]Mechanical Engineering Department, University of Wisconsin-Milwaukee, Milwaukee, WI

Fri-550
In Vivo Biosensing Via Single Walled Carbon Nanotubes
Nicole Iverson[1,2], Paul Barone[2], Mia Shandell[2], Laura Trudel[2], Selda Sen[2], Fatih Sen[2], Vsevolod Ivanov[2], Esha Atolia[2], Edgardo Farias[2], Thomas McNicholas[2], Nigel Reuel[2], Nicola Parry[2], Gerald Wogan[2], and Michael Strano[2]
[1]University of Nebraska Lincoln, Lincoln, NE, [2]Massachusetts Institute of Technology, Cambridge, MA

Fri-551
Integration of Flexible Wearable Sensors with Wireless Communication Systems for Health Monitoring
Qiwei Wang[1], Ji Young Lee[1], Teddrick Schaffer[1], Sung Y. Shin[1], and Hyeun Joong Yoon[1]
[1]South Dakota State University, Brookings, SD

Fri-552
Measuring Extracellular Amino Acid Dynamics from 3T3-L1 Adipocytes Using Online Microdialysis-Capillary Electrophoresis
Rachel Harstad[1] and Michael Bowser[1]
[1]University of Minnesota, Minneapolis, MN

Fri-553
Hydrogel-framed Nanofiber Matrix Integrated with a Microfluidic based Assay Chip for Fluorescence Detection of Matrix Metalloproteinases-9
Sang Won Han[1], Minsu Kim[1], Kanghee Cho[1], Sung Ho Cha[1], and Won-Gun Koh[1]
[1]Yonsei University, Seoul, Korea, Republic of

Fri-554
Super-Capacitive Conductive Nanocomposites for Biosensing
Shrishti Singh[1], Maitri Jariwala[1], Osama Alturkistani[1], Ankarao Kalluri[1], Prabir Patra[1], Isaac Macwan[1], and Ashish Aaphale[2]
[1]University of Bridgeport, Bridgeport, CT, [2]University of Connecticut, Storrs, CT

Fri-555
Electrochemical Detection of Volatile Organic Compounds (VOCs) associated with Colorectal Cancer via Nickel Functionalized Titania Nanotube Arrays (TNAs)
Anurag Tripathy[1], Dhiman Bhattacharyya[1], Mano Misra[1], and Swomitra Mohanty[1]
[1]University of Utah, Salt Lake City, UT

Fri-556
Immobilization of Protein-G on Assembled Gold Nanorods for Label-free Detection of Human IgG
Victor Aguero Villarreal[1] and Liang Tang[1]
[1]The University of Texas at San Antonio, San Antonio, TX

Fri-557
Three-dimensional Mapping and Regulation of Action Potential Propagation
Xiaochuan Dai[1], Wei Zhou[2], and Charles Lieber[1]
[1]Harvard University, Cambridge, MA, [2]Virginia Tech, Blacksburg, VA

Track: Nano and Micro Technologies
Nano and Micro Technologies

Fri-558
Investigation of Glass Formation Characteristics in Trehalose-water Binary System using Raman Microspectroscopy
Mian Wang[1] and Nilay Chakraborty[1]
[1]University of Michigan Dearborn, Dearborn, MI

Fri-559
A High-throughput Microfluidic Device for 1000-fold Leukocyte Reduction of Platelet Rich Plasma
Hui Xia[1], Briony Strachan[1], Sean Gifford[2], and Sergey Shevkoplyas[1]
[1]University of Houston, Houston, TX, [2]Halcyon Biomedical Incorporated, Friendswood, TX

Fri-560
Monitoring the Activity of P-glycoprotein Reconstituted in Giant Liposomes
SooHyun Park[1] and Sheereen Majd[1,2]
[1]Penn State University, University Park, PA, [2]University of Houston, Houston, TX

Fri-561
A Simple Culture System for Long Term Imaging of Individual *C. Elegans*
Will Pittman[1] and Zachary Pincus[1]
[1]Washington University in St Louis, St. Louis, MO

Track: Stem Cell Engineering
Advanced Biomanufacturing: Nano, Cell and Tissue-Based Therapeutic Agents Manufacturing Science and Engineering

Fri-562
Direct Production of Human Cardiac Tissues by Pluripotent Stem Cell Encapsulation in PEG-Fibrinogen Microspheres
Petra Kerscher[1], Wen Seeto[1], and Elizabeth Lipke[1]
[1]Auburn University, Auburn, AL

Fri-563
A Regenerative Bio-minipump Created by Cardiac Stem Cells Encapsulated in Thermo-sensitive Microgel
Junnan Tang[1,2,3], Xiaolin Cui4, Michael Hensley[1,3], Adam Vandergriff[1], Jhon Cores[1], Tyler Allen[3], Phuong-Uyen Dinh[3], Jinying Zhang[2], Hu Zhang[4], and Ke Cheng[1,3]
[1]University of North Carolina at Chapel Hill and North Carolina State University, Raleigh, NC,[2]First Affiliated Hospital of Zhengzhou University, Zhengzhou, China, People's Republic of,[3]North Carolina State University, Raleigh, NC, [4]University of Adelaide, Adelaide, Australia

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Track: Stem Cell Engineering
Directing Stem Cell Differentiation

Fri-564
A Computational Model of Hematopoietic Stem Cell Differentiation in Culture

Bhushan Mahadik[1], Bruce Hannon[2], and Brendan Harley[1]
[1]University of Illinois at Urbana Champaign, Urbana, IL, [2]University of Illinois at Urbana-Champaign, Urbana, IL

Fri-565
Arterial Differentiation of Pluripotent Stem Cells Via Modulating Early VEcad+Nrp[1]+ Endothelial Progenitors

Diana Kim[1] and Guohao Dai[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

Fri-566
A Customizable Assay to Investigate Parallel & Competing Roles of Microenvironmental Factors on Stem Cell Fate and Behavior

Jayant Saksena[1], Liana Boraas[1], Samuel Charles Sklare[1], Lowry Curley[1], Ben Vinson[1], Tabassum Ahsan[1], and Douglas Chrisey[1]
[1]Tulane University, New Orleans, LA

Fri-567
Utilizing Genetic Circuits for Enhancing Cell Fate Outcomes

Michael Fitzgerald[1] and Tara Deans[1]
[1]University of Utah, Salt Lake City, UT

Fri-568
Designing a Synthetic Bone Marrow Microenvironment to Drive Adaptive Immunity

Nisarg Shah[1], Angelo Mao[1], Ting-Yu Shih[1], David Mooney[1], and David Scadden[1]
[1]Harvard University, Cambridge, MA

Fri-569
Role of Dynamic Stiffening on hMSC Differentiation towards Osteogenic or Adipogenic Lineage

Shane Allen[1], Alexis Atequera[1], and Laura Suggs[1]
[1]The University of Texas at Austin, Austin, TX

Fri-570
MicroRNA-191 Regulates Mesenchymal Stem Cells Differentiation through ZO-1/ZONAB Pathway

Xiao-Fei Zhang[1] and Xiaofeng Cui[1,2,3,4]
[1]Wuhan University of Technology, Wuhan, China, People's Republic of, [2]Stemorgan Therapeutics, Albany, NY, [3]Rensselaer Polytechnic Institute, Troy, NY, [4]Technical University Munich, Munich, Germany

Fri-571
Patterned Porous Silicon Photonics for Integrated Biosensing and Spatial Control of Neural Stem Cell Differentiation

Yi Pei[1], Tiffany Huang[1], Douglas Zhang[1], Yanfen Li[1], and Kristopher Kilian[1]
[1]University of Illinois, Urbana, IL

Track: Stem Cell Engineering
Engineering in Developmental Biology

Fri-572
Understanding the Role of Tissue-Level Forces in Mesoderm Specification of Human Embryonic Stem Cells

Jonathon Muncie[1], Laralynne Przybyla[2], Johnathon Lakins[2], Raimon Sunyer[3], Xavier Trepat[3,4], and Valerie Weaver[2]
[1]Joint Graduate Group in Bioengineering, UCSF and UC Berkeley, San Francisco, CA, [2]University of California San Francisco, San Francisco, CA, [3]Institute for Bioengineering of Catalonia, Barcelona, Spain, [4]Universitat de Barcelona and Institució Catalana de Recerca i Estudis Avançats, Barcelona, Spain

Fri-573
(Author Cancellation)

Track: Stem Cell Engineering
Engineering Stem Cell Environments

Fri-574
Engineering Novel Thermoreverisble Hydrogels for Large Scale Expansion of Stem Cells

Barbara Ekerdt[1], Christina Fuentes[1], Yuguo Lei[2], Rachel Segalman[3], and David Schaffer[1]
[1]University of California Berkeley, Berkeley, CA, [2]University of Nebraska, Lincoln, NE, [3]University of California Santa Barbara, Santa Barbara, CA

Fri-575
Alignment of hPSC-derived Myogenic Cells in Response to Nanotopographical Cues and Biochemical Ligands

Bin Xu[1], Alessandro Mali[1], Yoska Anugrah Liu[1], Steven Koester[1], Rita Perlingeiro[1], and Wei Shen[1]
[1]University of Minnesota, Twin Cities, Minneapolis, MN

Fri-576
Mesenchymal Stem Cell Response to Static Tension, Cyclic Tension, and Vibration

Brooke McClarren[1], Ayesha Aijaz[1], Sneha Mehta[1], and Ronke Olabisi[1]
[1]Rutgers University, Piscataway, NJ

Fri-577
Engineering the Microenvironment Niche of Human BM derived MSC Spheroids for Enhanced Cardiomyogenesis

Jyotsna Joshi[1], Vincent Beachley[2], and Chandra Kothapalli[1]
[1]Cleveland State University, Cleveland, OH
[2]Rowan University, Glassboro, NJ

Fri-578
Tunable Surface Repellency maintains Stemness and Redox Capacity of Human Mesenchymal Stem Cells

Daniel Balikov[1], Spencer Crowder[1], Tim Boire[1], Jung Bok Lee[1], Mukesh Gupta[1], and Hak-Joon Sung[1]
[1]Vanderbilt University, Nashville, TN

Fri-579
Alginate Encapsulated Mesenchymal Stromal Cells for Osteoarthritis Treatment

Ileana Marrero-Berrios[1], Rene Schloss[1], and Martin Yarmush[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ

Fri-580
Investigating the Role of Glycosaminoglycans (GAGs) in Neural Stem Cells (NSCs) Differentiation

Jie Shi Chua[1], Anna Sung[1], and Kuberan Balagurunathan[1]
[1]University of Utah, Salt Lake City, UT

Fri-581
Algorithm Optimization of Non-DMSO Cryopreservation Protocols Results In Improved Mesenchymal Stem Cell Functionality

Kathryn Pollock[1], Joseph Budenske[1], Elizabeth Moy[1], David H. McKenna[2], Peter Dosa[1], and Allison Hubel[1]
[1]University of Minnesota, Minneapolis, MN, [2]University of Minnesota, St Paul, MN

Fri-582
Elucidating the Effect of the Enteric Nervous System on Intestinal Health and Permeability

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

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Fri-583
Formulation of Defined Conditions for Human Hematopoietic Progenitor Expansion Based on a High-Throughput, Evolutionary Algorithm-Directed Closed Loop System
Michelle Kim[1] and Julie Audet[1]
[1]University of Toronto, Toronto, ON, Canada

Fri-584
Molecular Regulation of Colony Size-Dependent Neural Differentiation of Embryonic Stem Cells in a Heterocellular Niche
Ramila Joshi[1], James Buchanan[1], Nathan Morris[2], and Hossein Tavana[1]
[1]University of Akron, Akron, OH, [2]Case Western Reserve University, Cleveland, OH

Track: Stem Cell Engineering
Scaling Up Stem Cell Production/ Stem Cell Derived Progenitors

Fri-585
Expandable and Rapidly Differentiating Human Induced Neural Stem Cell Lines For Multiple Tissue Engineering Applications
Dana Cairns[1], Karolina Chwalek[1], Yvonne Moore[2], Matt Kelley[2], Rosalyn Abbott[1], Stephen Moss[2], and David Kaplan[1]
[1]Tufts University, Medford, MA, [2]Tufts University, Boston, MA

Fri-586
Shear Susceptibility of Primary Human Mesenchymal Stem Cells (hMSCs) Increases with Generation Number
Peter Amaya[1], Eric Plencner[1], Peter Rapiejko[2], and Jeffrey Chalmers[1]
[1]Ohio State University, Columbus, OH, [2]EMD Millipore Corporation, Bedford, MA

Tracks: Stem Cell Engineering, Cellular and Molecular Bioengineering
Stem Cell Programming

Fri-587
Enhancing Nonviral Gene Delivery to Human Mesenchymal Stem Cells Using Glucocorticoid Pathways
Andrew Hamann[1] and Angela Pannier[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

Fri-588
Neutrophil Phenotype Analyzed from Expanded CD34+ Human Umbilical Cord Blood Hematopoietic Stem Cells
Leif Anderson[1], Vasilios Morikis[1], and Scott Simon[1]
[1]UC Davis, Davis, CA

Fri-589
Physical and Chemical Conditions to Promote Differentiation of Human iPSCs to Nucleus Pulposus-like Cells
Ruhang Tang[1], Liufang Jing[1], Vincent Willard[2], Farshid Guilak[1], Lori Setton[1], and Jun Chen[2]
[1]Washington University in St Louis, St. Louis, MO, [2]Duke University, Durham, NC

Fri-590
High-Throughput Screening of Neurotoxicity on Neural Stem Cell Microarrays
Kyeong-Nam Yu[1], Pranav Joshi[1], Seok-Joon Kwon[2], Chandrasekhar Kothapalli[1], and Moo-Yeal Lee[1]
[1]Cleveland State University, cleveland, OH, [2]Rensselaer Polytechnic Institute, Troy, NY

Track: Tissue Engineering
Inflammation and Immunomodulation

Fri-591
The Effects of Scaffold Rigidity on Retinal Pigment Epithelial Inflammation and Microglial Activation
Corina White[1] and Ronke Olabisi[2]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ, [2]Rutgers University, Piscataway, NJ

Fri-592
Isolation and 3D Culture of Lymph Node Fibroblastic Reticular Cells to Restore Self-tolerance
Freddy Gonzalez Badillo[1,2], Maria Abreu[1], Vita Manzoli[1,3], Diana Velluto[1], and Alice Tomei[1,2]
[1]Diabetes Research Institute-University of Miami-Miller School of Medicine, Miami, FL,[2]Department of Biomedical Engineering-University of Miami, Coral Gables, FL, [3]Department of Electronics, Information and Bioengineering-Politecnico di Milano, Milano, Italy

Fri-593
Dual-Affinity Heparin Hydrogels Achieve Localized Immunomodulation and Enhance Microvascular Remodeling
Molly Ogle[1], Jack Krieger[1], Jennifer McFaline-Figueroa[1], Johnna Temenoff[1], and Edward Botchwey[1]
[1]Georgia Institute of Technology, Atlanta, GA

Fri-594
Development of a Hemoglobin-Based Treatment to Promote M2 Macrophage Polarization in Inflammation
Paulina Krzyszczyk[1], Kristopher Richardson[2], Martin Yarmush[1], Andre Palmer[2], and Francois Berthiaume[1]
[1]Rutgers University, Piscataway, NJ, [2]Ohio State University, Columbus, OH

Fri-595
Endothelial Dysfunction Caused By Polarized Macrophages In Atherosclerosis
Radhika Josi[1] and Damir Khismatullin[1]
[1]Tulane University, New Orleans, LA

Fri-596
Engineered PGE2 for Bone Regeneration By Modulating Both Inflammation and Osteogenesis
Yangxi Liu[1], Qingqing Yao[1], and Hongli Sun[1]
[1]University of South Dakota, Sioux Falls, SD

Track: Tissue Engineering
Integration of Developmental Biology and Morphogenesis in Tissue Engineering

Fri-597
A Microphysiological Approach to Elucidate Gene-Environment Interactions in Orofacial Clefting
Brian Johnson[1], Angela Xie[1], Dustin Fink[1], Ross Vitek[1], William Murphy[1], David Beebe[1], and Robert Lipinski[1]
[1]UW-Madison, Madison, WI

Fri-598
Liver-on-a-chip for in vitro Alcoholic Liver Fibrosis Model
JaeSeo Lee[1] and Sang-Hoon Lee[1]
[1]Korea University, Seoul, Korea, Republic of

Fri-599
In-vitro Multi-tissue Interface Model Provides Mechanistic Insight for Vascularizing Tissues
Kevin Buno[1], Xuemei Chen[1], Justin Weibel[1], Stephanie Thiede[1], Suresh Garimella[1], Mervin Yoder[1,2], and Sherry Voytik-Harbin[1]
[1]Purdue University, West Lafayette, IN, [2]Indiana University School of Medicine, Indianapolis, IN

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Track: Tissue Engineering
Printing and Patterning in Tissue Engineering

Fri-600
Tuned Fibroblast Cell Alignment on Polyelectrolyte Nano-wrinkles

Ariel Ash-Shakoor[1], Eric Finkelstein[1], James Henderson[1], and Patrick Mather[1]
[1]Syracuse University, Syracuse, NY

Fri-601
Design and Engineering of Complex Biological Structures through Micro Extrusion

Geoffrey Navarro[1], Inti Garcia[1], Paul Sundaram[1], and Nanette Diffoot[1]
[1]University of Puerto Rico, Mayaguez, PR

Fri-602
Multiscale 3D Vascular Network Hydrogel Formed by 3D Printing with Sacrificial Fibers

Jung Bok Lee[1], Brian O'Grady[1], Shannon Faley[1], Hak-Joon Sung[1], and Leon Bellan[1]
[1]Vanderbilt University, Nashville, TN

Fri-603
The Water Soluble Matrix of Nacre Exerts Microspatial Control of Osteogenic Mineralization

Kristopher White[1] and Ronke Olabisi[1]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ

Fri-604
Evaluation of Printed Cell Viability, Proliferation, and Insulin Production on Various Alginate-Gelatin Hydrogels

Luis Solis[1], Julio Rincon[1], Armando Varela-Ramirez[1], Renato Aguilera[1], and Thomas Boland[1]
[1]University of Texas at El Paso, El Paso, TX

Fri-605
Feasibility of 3-D Printing for the Replication of Tri-Leaflet Heart Valve Shape

Mohammad Shaver[1], Arvind Agarwal[1], Sara Rengifo[1], and Sharan Ramaswamy[1]
[1]Florida International University, Miami, FL

Fri-606
Development of Cell-laden Graphene Oxide/ Gelatin Based Bioinks for 3D Bioprinting of Regenerative Tissues

Shayan Shafiee[1] and Tolou Shokuhfar[1]
[1]University of Illinois at Chicago, Chicago, IL

Fri-607
4D Printing Smart Biomedical Scaffolds with Novel Soybean Oil Epoxidized Acrylate

Shida Miao[1], Wei Zhu[1], Nthan, J Castro[1], Haitao Cui[1], Xuan Zhou[1], John P. Fisher[2], and Lijie Zhang[1]
[1]The George Washington University, Washington, DC, [2]University of Maryland, College Park, MD

Fri-608
3D Bio-Printed Vascularized Skin Tissue

Vivian Lee[1], Seung-Schik Yoo[2], Pankaj Karande[1], and Guohao Dai[1,3]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Brigham and Women's Hospital, Harvard Medical School, Boston, MA, [3]Rernsselaer Polytechnic Institute, Troy, NY

Fri-609
Rapid Multi-Material Bioprinting

Yu Shrike Zhang[1], Wanjun Liu[1], Marcel Heinrich[1], Fabio De Ferrari[1], Mehmet Dokmeci[1], and Ali Khademhosseini[1]
[1]Harvard Medical School, Cambridge, MA

Track: Stem Cell Engineering
Stem Cell Technologies for Drug Development

Fri-610
Microengineered Stem Cell-Derived Human Liver Platform for Infectious Disease Applications

Christine Lin[1,2] and Salman Khetani[2]
[1]Colorado State University, Chicago, IL, [2]University of Illinois at Chicago, Chicago, IL

Fri-611
Fluid Flow Induction of Genes in Human Dermal Fibroblasts – Engineering a Patient-Specific Drug Screening Platform

Nikita Zabinyakov[1], Deborah Studer[1], Robert Shepherd[1], and Kristina Rinker[1,2]
[1]University of Calgary, Calgary, AB, Canada, [2]Libin Cardiovascular Institute, Calgary, AB, Canada

Fri-612
Recapitulating Stem Cell Therapy for Idiopathic Pulmonary Fibrosis Within Microfluidic Platforms

Matthew Ishahak[1] and Ashutosh Agarwal[1]
[1]University of Miami, Coral Gables, FL

Fri-613
The Role of Baz and aPKC in Asymmetric Cyst Stem Cell Divisions

Zhinan Wang[1], Wei Shen[1], and Jun Cheng[1]
[1]University of Illinois at Chicago, Chicago, IL

Track: Translational Biomedical Engineering
Bio-Nanomedicine in Healthcare

Fri-614
Self-Assembled Collagen-mimetic Triple Helices with Anitmicrobial Peptide Amphiphiles as Novel Antibacterial Agents

Kanny (Run) Chang[1], Linlin Sun[1,2], and Thomas Webster[1]
[1]Northeastern University, Boston, MA, [2]Wenzhou Institute of Biomaterials and Engineering, Wenzhou, China, People's Republic of

Fri-615
A BCS Class IIb Drug Dabigatran Etexilate Self-nanoemulsifying System to Treat Cardiovascular Disease

Fujuan Chai[1], Linlin Sun[2 3], Yafei Ding[1], Yajie Zhang[1], and Thomas J. Webster[2 3 4]
[1]China Pharmaceutical University, Nanjing, China, People's Republic of, [2]Wenzhou Institute of Biomaterials and Engineering, Wenzhou, China, People's Republic of, [3]Northeastern University, Boston, MA, [4]King Abdulaziz University, Jeddah, Saudi Arabia

Track: Translational Biomedical Engineering
Translational Approaches for Biomedical Products and Devices

Fri-616
Effects of Gamma Irradiation on the Mechanical and Surface Properties of PTFE

Corayma Duarte[1], Naushadh Wazit[2], and Guna Selvaduray[1]
[1]San Jose State University, San Jose, CA, [2]San Jose State University, Fremont, CA

Friday, October 7 | 9:30 am–5:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am and 3:15 pm–4:00 pm

Fri-617
Aqueous Two-Phase Systems Enhance the Detection of Streptococcus mutans via the Lateral-Flow Immunoassay
David Pereira[1], Alison Thach[1], Christina Pearce[1], Benjamin Wu[1], and Daniel Kamei[1]
[1]UCLA, Los Angeles, CA

Fri-618
Non-Thermal Plasma Treatment Safely and Rapidly Disinfects MRSA Infected Wounds
Kerry A. Morrison[1], Rachel Akintayo[1], Julia Jin[1], Ross Weinreb[1], Omer Kaymakcalan[1], Xue Dong[1], Sarah Karinja[1], Andrew Abadeer[1], Lars F. Westblade[2], Czeslaw Golkowski[3], and Jason A. Spector[1]
[1]Laboratory of Bioregenerative Medicine and Surgery, Division of Plastic Surgery, Weill Cornell Medical College, New York, NY, [2]Department of Pathology and Laboratory Medicine, Weill Cornell Medical College, New York, NY, [3]Steri Free Med, Inc., Cornell University, Ithaca, NY

Fri-619
Biomimetic Nanotechnology for Improved Capture of Circulating Tumor Cells
Seungpyo Hong[1,2], Andrew Wang[3], Ja Hye Myung[1], Michael Eblan[3], and Sin-jung Park[1]
[1]University of Illinois, Chicago, IL, [2]Yonsei University, Seoul, Korea, Republic of, [3]University of North Carolina, Chapel Hill, NC

Fri-620
Magnetic Levitation Platform for Rapid, On-Site Disease Diagnostics
Stephanie Knowlton[1], Bekir Yenilmez[1], Chu Hsiang Yu[1], Matthew Heeney[2], Farzana Pashankar[3], and Savas Tasoglu[1]
[1]University of Connecticut, Storrs, CT, [2]Harvard Medical School, Boston, MA, [3]Yale University School of Medicine, New Haven, CT

Track: Translational Biomedical Engineering

Translational Approaches for Regenerative Medicine

Fri-621
Clinical Grade Expansion of Human Intestinal Smooth Muscle Cells using Human Platelet Lysate as a Substitute for Fetal Bovine Serum
Elie Zakhem[1], Mohammad Z Albanna[2,3], and Khalil N Bitar[1,4]
[1]Wake Forest Institute for Regenerative Medicine, Winston Salem, NC, [2]Pinnacle Transplant Technologies, Phoenix, AZ, [3]Wake Forest School of Medicine, Winston Salem, NC, [4]Virginia Tech-Wake Forest University, Winston Salem, NC

Fri-622
Development of a Quantitative Histology Scale for Capsular Contracture Severity
Katherine Degen[1], Kurtis Moyer[1,2], and Robert Gourdie[1,3]
[1]Virginia Tech, Roanoke, VA, [2]Carilion Clinic, Roanoke, VA, [3]Virginia Tech Carilion Research Institute, Roanoke, VA

SATURDAY'S HIGHLIGHTS

Platform Sessions-Sat-1
8:00 am–9:30 am — **Convention Center**
See pages 197-205

Meet the Expert: Meet the Experts on Data Sharing
8:00 am–9:30 am — **Room 204**
See page 205

Exhibit Hall Open
9:30 am–5:00 pm — **Exhibit Hall**

Poster Session
9:30 am–1:00 pm — **Exhibit Hall**

Poster Viewing with Authors & Refreshment Break
9:30 am–10:15 am — **Exhibit Hall**

Plenary Session
10:30 am–11:30 am — **Auditorium**

Rita Schaffer Young Investigator Lecture
Jennifer Munson, PhD

BMES Diversity Lecture Award
Srinivas Sridhar, PhD

Platform Sessions-Sat-2
1:30 pm–3:00 pm — **Convention Center**
See pages 206-213

Platform Sessions-Sat-3
3:15 pm–4:45 pm — **Convention Center**
See pages 213-220

OP-Sat-1-1 — Auditorium 1

Track: Cellular and Molecular Bioengineering

Mechanobiology of Cell Adhesion I

Chairs: Ashley Brown, Matthew Paszek

8:00 am
Cells Feel the Force, Then They Don't: Implications in Wound Repair and Fibrosis –INVITED
Thomas Barker[1]
[1]University of Virginia, Charlottesville, VA

8:15 am
Physical Determinants of the Subcellular Distribution of Vinculin Tension
Andrew LaCroix[1] and Brenton Hoffman[1]
[1]Duke University, Durham, NC

8:30 am
Provisional Matrix Citrullination Contributes to Aberrant Wound Healing
Victoria Stefanelli[1], Kelly Pesson[1], and Thomas Barker[2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]University of Virginia, Charlottesville, VA

8:45 am
Anisotropic Traction Forces from Spatially Constrained Focal Adhesions Drive Contact-guided Cell Migration
Arja Ray[1], Oscar Lee[2], Zaw Win[1], Rachel Edwards[1], Patrick Alford[1], Deok-Ho Kim[2], and Paolo Provenzano[1]
[1]University of Minnesota, Twin Cities, Minneapolis, MN, [2]University of Washington, Seattle, Seattle, WA

9:00 am
Obesity-associated ECM Remodeling Promotes Proangiogenic Endothelial Cell Behavior
Lu Ling[1], Bo Ri Seo[1,2], Andrew J Dannenberg[3], and Claudia Fischbach-Teschl[1]
[1]Cornell University, Ithaca, NY, [2]Harvard University, Cambridge, MA, [3]Weill Cornell Medical College, New York City, NY

9:15 am
Contractile Fibroblasts Activate an Extracellular Integrin "Switch" Implicated in Fibrotic Progression
John Nicosia[1], Lizhi Cao[2], Jacqueline Larouche[1], and Thomas Barker[3]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Biogen Idec, Cambridge, MA, [3]University of Virginia, Charlottesville, VA

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

OP-Sat-1-2 Auditorium 2

Track: Cancer Technologies

Cancer Drug Delivery

Chairs: Michael King, Walter Murfee

8:00 am
Chitosan/Poly(lactide) Drug-loaded Nanoparticles for Breast Cancer Therapy
Rupali Hire[1] and Cheryl Gomillion[1]
[1]University of Georgia, Athens, GA

8:15 am
Halofuginone as a Stroma-targeted Therapy Agent in Pancreatic Ductal Adenocarcinoma
Kianna Elahi Gedwillo[1], Marjorie Carlson[1], and Paolo Provenzano[1]
[1]University of Minnesota, Minneapolis, MN

8:30 am
PolyDots for Glioblastoma: Drug Delivery, Release, and Distribution
Mark Calhoun[1], Gauri Nabar[2], Jihong Xu[2], Alessandra Welker[2], Vinay Puduvalli[2], and Jessica Winter[2]
[1]The Ohio State University, Columbus, OH, [2]OSU, Columbus, OH

8:45 am
A Bi-directional, Light-based Combination Therapy For Pancreatic Cancer
Huang-Chiao Huang[1], Imran Rizvi[1], Joyce Liu[1], Ashish Kalra[2], Helen Lee[2], Jaeyeon Kim[2], Jonathan Fitzgerald[2], and Tayyaba Hasan[1,3]
[1]Massachusetts General Hospital and Harvard Medical School, Boston, MA, [2]Merrimack Pharmaceuticals, Inc., Cambridge, MA, [3]Harvard University and Massachusetts Institute of Technology, Cambridge, MA

9:00 am
Irridation of Bladder Cancer via Targeted Carbon Nanotubes for Photothermal Therapy
Needa Virani[1], Carole Davis[2], Paul Hauser[3], Robert Hurst[2], Joel Slaton[2], and Roger Harrison[1]
[1]University of Oklahoma, Norman, OK, [2]University of Oklahoma Health Sciences Center, Oklahoma City, OK, [3]Baylor, Waco, TX

9:15 am
Filomicelles Self-assembled From Degradable Di-block Copolymers Deliver Retinoids and Chemotherapeutics in Durable Control of Carcinoma Cell Fate
Praful Nair[1] and Dennis Discher[1]
[1]University of Pennsylvania, Philadelphia, PA

OP-Sat-1-3 Auditorium 3

Track: Translational Biomedical Engineering

Clinical Translation of Engineered Tissues

Chairs: Pinar Zorlutuna, Milica Radisic

8:00 am
Clinical Translation of Engineered Tissues: Bedside to Bench and Back–INVITED
Michael Yaszemski[1]
[1]Mayo Clinic, Rochester, MN

8:30 am
"Off-the-Shelf" Tissue-Engineered Vascular Graft with Growth Potential for Pediatric Application
Zeeshan Syedain[1], Jay Reimer[1], Mathew Lahti[1], James Berry[1], and Robert Tranquillo[1]
[1]University of Minnesota, Minneapolis, MN

8:45 am
Enhancing Regulatory Review of Computational and Mathematical Modeling and Simulation for Regenerative Medicine Products
Ryan Ortega[1], Tina Morrison[1], Brian Pullin[1], and Alex Bailey[1]
[1]Food and Drug Administration, Silver Spring, MD

9:00 am
FGF-8 and TGF- 2 Effects on Ligamentous Formation for Bioengineered ACL Matrices
Paulos Mengsteab[1,2], Lakshmi Nair[1,2,3], and Cato Laurencin[1,2,3]
[1]University of Connecticut, Storrs, CT, [2]University of Connecticut Health, Farmington, CT,[3]University of Connecticut, Farmington, CT

9:15 am
New Retina Reattachment Procedure Based on Magnetic Field Force on Biocompatible Super-paramagnetic Nanoparticles Injected in the Eye
Orlando Auciello[1], Mario Saravia[2], Pablo Gurman[1], Roberto Zysler[3], and Alejandro Berra[4]
[1]University of Texas at Dallas, Richardson, TX, [2]Hospital Austral, Buenos Aires, Argentina,[3]CONICET, Bariloche, Argentina, [4]University of Buenos Aires, Buenos Aires, Argentina

OP-Sat-1-4 Room 102AB

Track: Biomaterials*

Biomaterials for Immunoengineering IV

Chairs: Chandra Kothapalli, Daniel Alge

8:00 am
Hydrophilicity Provides Translatable Regulation of Immune Response to Biomaterials
Kelly Hotchkiss[1], Victor Garcia-Perez[1], and Rene Olivares-Navarrete[1]
[1]Virginia Commonwealth University, Richmond, VA

8:15 am
Effects of Extracellular Matrix and Cytokine Microenvironment on Macrophage Migration
Tim Smith[1], Jessica Hsieh[1], and Wendy Liu[1]
[1]University of California, Irvine, Irvine, CA

8:30 am
Localised Control of T Cell Activation Using Biodegradable Artificial Antigen Presenting Cells
Derfogail Delcassian[1,2], Omar Qutachi[1], and Kevin Shakesheff[1]
[1]University of Nottingham, Nottingham, United Kingdom, [2]MIT, Cambridge, MA

8:45 am
Interaction of Macrophages with Different Topographies of Polytetrafluoroethylene
Sujan Lamichhane[1], Jordan Anderson[1], Tyler Remund[2], Hongli Sun[1], Mark Larson[3], Patrick Kelly[4], and Gopinath Mani[1]
[1]The University of South Dakota, Sioux Falls, SD, [2]Sanford Research, Sioux Falls, SD,[3]Augustana University, Sioux Falls, SD, [4]Sanford Health, Sioux Falls, SD

9:00 am
Nanomaterials-based Vaccines against Cocaine Addiction
Joshua Snook[1], Ye Ding[1], Harshini Neelakantan[1], Haiying Chen1, Jia Zhou[1], Kathryn Cunningham[1], and Jai Rudra[1]
[1]University of Texas Medical Branch, Galveston, TX

9:15 am
Engineering Antioxidant Nanoscale Layer-by-Layer Coatings for Islet Transplantation
Nicolas Abuid[1], Kerim Gattas-Asfura[1], Ethan Yang[2], Mike Valdes[2], and Cherie Stabler[1]
[1]University of Florida, Gainesville, FL, [2]University of Miami, Miami, FL

*** Biomaterials Track sponsored by**

OP-Sat-1-5 — Room 102C

Track: Cardiovascular Engineering

Cardiac Electrophysiology

Chairs: Daniel Conway, Karen May-Newman

8:00 am
Probing the Effects of MYBPC3 Truncating Mutations Using Computational Models and Engineered Human Myocardium–INVITED
Jonas Schwan[1], Yongming Ren[1], Yibing Qyang[1], and Stuart Campbell[1]
[1]Yale University, New Haven, CT

8:15 am
Ion Channel Expression and Distribution are Modulated by Phosphorylation of Focal Adhesion Kinase
Swarnali Bjergaard[1], Brenton Hoffman[1], and Nenad Bursac[1]
[1]Duke University, Durham, NC

8:30 am
Improved Cardiac Function by Chronic Activation of Hypothalamic Oxytocin Neurons in a Rat Model of Heart Failure
Kara Garrott[1], Edmund Cauley[1], Sarah Kuzmiak-Glancy[1], Xin Wang[1], David Mendelowitz[1], and Matthew Kay[1]
[1]The George Washington University, Washington, DC

8:45 am
Extracellular Matrix Regulation of Conduction Velocity In Engineered Cardiac Tissues
Andrew Petersen[1], Davi Lyra-Leite[1], Nethika Ariyasinghe[1], Nathan Cho[1], Joon Young Kim[1], and Megan McCain[1]
[1]University of Southern California, Los Angeles, CA

9:00 am
Intercalated Disk Localization of the Inward Rectifier Current (IK1) Modulates Cardiac Conduction
Seth Weinberg[1], Swarnali Bjergaard[2], and Nenad Bursac[2]
[1]Old Dominion University, Suffolk, VA, [2]Duke University, Durham, NC

9:15 am
Novel Multiscale Entropy Approach for Rotor Pivot Point Identification
Shivaram Poigai Arunachalam[1], Elizabeth Annoni[1], and Elena Tolkacheva[1]
[1]University of Minnesota, Minneapolis, MN

OP-Sat-1-6 — Room 101A

Track: Cellular and Molecular Bioengineering

Cancer Cell Motility and Migration

Chairs: Kristen Mills, Jennifer Munson

8:00 am
The Hypoxic Tumor Microenvironment Alters CXCR4 Expression and Collective Cell Migration of Breast Tumor Cells
Priscilla Hwang[1] and Steven George[1]
[1]Washington University in St Louis, St Louis, MO

8:15 am
Podocalyxin Promotes Migration of Pancreatic Cancer Cells by Altering Cytoskeletal Dynamics
Bin Sheng Wong[1], Daniel Shea[1], Robert Law[1], and Konstantinos Konstantopoulos[1]
[1]Johns Hopkins University, Baltimore, MD

8:30 am
Metastatic Migration in Microtracks is Mediated by Cell Polarization through Girdin
Aniqua Rahman[1], Shuo Shan[1], and Cynthia Reinhart-King[1]
[1]Cornell University, Ithaca, NY

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

8:45 am
Characterization of Cancer Cell Confined Migration in Embryonic Zebrafish and Microchannels
Colin Paul[1], Alexus Devine[1], and Kandice Tanner[1]
[1]National Cancer Institute, Bethesda, MD

9:00 am
Migration Against the Direction of Shear Flow is LFA-1 Dependent in Human Hematopoietic Stem Cells
Alexander Buffone, Jr.[1], Nicholas Anderson[1], and Daniel Hammer[1]
[1]University of Pennsylvania, Philadelphia, PA

9:15 am
Metabolic Signaling Crosstalk Promotes Brain Cancer Progression
Sanjana Ranganathan[1], Ka Wai Lin[1], Angela Liao[1], and Amina Qutub[1]
[1]Rice, Houston, TX

OP-Sat-1-7 Room 101B

Track: Cardiovascular Engineering

Computational Modeling in Cardiovascular Systems I

Chairs: Ranjan Dash, Sharan Ramaswamy

8:00 am
Quantitative + Computational Biology: Towards Directed Control of Neovascularization–INVITED
Princess Imoukhuede[1]
[1]University of Illinois Urbana Champaign, Urbana, IL

8:30 am
In Silico Organ-Level Modeling of Infarcted Myocardium and Cardiac Function Impairment
Joao S. Soares[1], David S. Li[1], Samarth Raut[1], Joseph H. Gorman III[2], Robert C. Gorman[2], and Michael S. Sacks[1]
[1]University of Texas at Austin, Austin, TX, [2]University of Pennsylvania, Philadelphia, PA

8:45 am
Assessment of Organ-Scale Left Ventricular Mechanics and Physiology using a Cellular-Based Active Contraction Model
Sheikh Mohammad Shavik[1], Joakim Sundnes[2], Samuel Wall[2], Daniel Burkhoff[3], and Lik Chuan Lee[1]
[1]Michigan State University, East Lansing, MI, [2]Simula Research Laboratory, Oslo, Norway,[3]Columbia University, New York, NY

9:00 am
Fluid Dynamics Effect of Peristalsis-like Right Ventricular Wall motion in 20 Weeks Old Human Fetuses
Hadi Wiputra[1], Khong Chun Chua[1], Nivetha Raju[1], Hwa Liang Leo[1], and Choon Hwai Yap[1]
[1]National University of Singapore, Singapore, Singapore

9:15 am
Using Graph Theory to Predict Ablation Targets in Patient Specific Models of Left Atrial Flutter
Erica Schwarz[1], Sohail Zahid[1], Kaitlyn Whyte[1], Patrick Boyle[1], Jonathan Chrispin[2], Robert Blake[3], Adityo Prakosa[1], Esra Ipek[2], Henry Halperin[2], Hugh Calkins[2], Ronald Berger[2], Saman Nazarian[2], and Natalia Trayanova[1]
[1]Johns Hopkins University, Baltimore, MD, [2]Johns Hopkins Hospital, Baltimore, MD,[3]CardioSolv Ablation Technologies, Baltimore, MD

OP-Sat-1-8 Room 101C

Track: Tissue Engineering

Integration of Developmental Biology and Morphogenesis in Tissue Engineering

Chairs: Lauren Black III, Kelly Stevens

8:00 am
Engineering CNS Tissue Morphogenesis *In Vitro*–INVITED
Gavin Knight[1,2], Carlos Marti-Figueroa[1,2], Jason McNulty[1,2], Jake Tokar[1,3], Ethan Lippmann[1,2], David Beebe[1,3], Lih-Sheng Turng[1,2], and Randolph Ashton[1,2]
[1]University of Wisconsin Madison, Madison, WI, [2]Wisconsin Institute for Discovery, Madison, WI, [3]Wisconsin Institutes for Medical Research, Madison, WI

8:30 am
Architectural Cues Mediate Engineered Human Liver Tissue Expansion *In Vivo*
Kelly Stevens[1], Chelsea Fortin[1], Margaret Scull[2], Vyas Ramanan[3], Christopher Chen[4], Charles Rice[2], and Sangeeta Bhatia[3]
[1]University of Washington, Seattle, WA, [2]Rockefeller University, New York, NY, [3]Massachusetts Institute of Technology, Cambridge, MA, [4]Boston University, Boston, MA

8:45 am
FGF8-mediated Tensional Gradients Drive Collective Cell Movements During Early Endoderm Morphogenesis
Nandan Nerurkar[1], L Mahadevan[2], and Cliff Tabin[1]
[1]Harvard Medical School, Boston, MA, [2]Harvard University, Cambridge, MA

9:00 am
Directed Folding of Synthetic Biological Tissues Via Programmed Cellular Contractility
Alex Hughes[1], Max Coyle[1], Jesse Zhang[1], and Zev Gartner[1]
[1]University of California, San Francisco, San Francisco, CA

9:15 am
A Method to Characterize Extracellular Matrix Composition and 3D Structure During Embryonic Development
Michael Drakopoulos[1] and Sarah Calve[1]
[1]Purdue University, West Lafayette, IN

OP-Sat-1-10 Room 101E

Track: Biomaterials*

Hydrogel Biomaterials I

Chairs: Jamal Lewis, Janet Zoldan

8:00 am
Temporally Controlled Release of Platelet-Rich Plasma from Biodegradable PEG Microgels
Era Jain[1], Saahil Sheth[1], Scott Sell[1], and Silviya Zustiak[1]
[1]Saint Louis University, Saint Louis, MO

8:15 am
PPS-based, Thermoresponsive Hydrogels Protect Primary Human Pancreatic Islets from Cytotoxic ROS
Bryan Dollinger[1], Mukesh Gupta[1], John Martin[1], Nicolas Vierra[1], David Jacobson[1], and Craig Duvall[1]
[1]Vanderbilt University, Nashville, TN

8:30 am
MMP-Triggered Activation of Mammalian Genetic Circuits in Recombinant Protein Hydrogels
Mitchell Weisenberger[1], Martin Jensen[1], Hamid Ghandehari[1], and Tara Deans[1]
[1]University of Utah, Salt Lake City, UT

8:45 am
Analysis of Gellan Hydrogel Drug Release Kinetics and Rheological Properties
Shashank Shukla[1], Anubhav Tripathi[1], and Anita Shukla[1]
[1]Brown University, Providence, RI

9:00 am
A Biodegradable, Thermally Responsive Injectable Hydrogel with Reactive Oxygen Species Scavenging Effect
Yang Zhu[1,2], Murugesan Velayutham[1], Yasumoto Matsumura[1], and William Wagner[1,2,3,4]
[1]McGowan Institute for Regenerative Medicine, University of Pittsburgh, Pittsburgh, PA,[2]Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, [3]Department of Surgery, University of Pittsburgh, Pittsburgh, PA, [4]Department of Chemical Engineering, University of Pittsburgh, Pittsburgh, PA

9:15 am
Development of Smart Responsive Hydrogel Vehicles for Controlled Delivery of Analgesics
Liangju Kuang[1], Nurul Sulimai[1], Mario Cano-Vage[1], Jeff Ko[1], Gert Breur[1], and Meng Deng[1]
[1]Purdue University, West Lafayette, IN

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ACS Biomaterials SCIENCE & ENGINEERING

OP-Sat-1-11 Room 200E

Track: Nano and Micro Technologies

Applications of Nanopores and Nanoparticles

Chairs: Adam Hall, Alptekin Aksan

8:00 am
Biofouling-Resilient Nanoporous Gold Electrodes for Electrochemical DNA Detection
Pallavi Daggumati[1], Zimple Matharu[1], Ling Wang[1], and Erkin Seker[1]
[1]University of California, Davis, Davis, CA

8:15 am
Selective Detection of miRNAs and Other Sequence Biomarkers with Solid-State Nanopores
Osama K. Zahid[1], Fanny Wang[1], and Adam R. Hall[1,2]
[1]Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC, [2]Comprehensive Cancer Center of Wake Forest University, Winston-Salem, NC

8:30 am
Nanowarming of Tissues
Zhe Gao[1], Navid Manuchehrabadi[1], Jinjin Zhang[1], Hattie Ring[1], Qi Shao[1], Feng Liu[1], Michael McDermott[1], Kelvin Brockbank[2,3], Michael Garwood[1], Christy Haynes[1], and John Bischof[1]
[1]University of Minnesota, Minneapolis, MN, [2]Tissue Testing Technologies LLC, North Charleston, SC, [3]Clemson University, Clemson, SC

8:45 am
Chitosan-coated Selenium Nanoparticles for the Selective Inhibition Bacteria Growth
Michelle Stolzoff[1], Nicholas de la Torre[1], and Thomas J Webster[1]
[1]Northeastern University, Boston, MA

9:00 am
Accurate Detection of Serum Biomarkers Using Iron Oxide Nanoparticle-linked Immunosorbent Assay
Linlin Zhang[1], Sheng Tong[1], and Gang Bao[1]
[1]Rice University, Houston, TX

9:15 am
Electrically-Guided DNA Printing and Multiplexed DNA Detection with Nanoporous Gold Electrodes in Microfluidic Device
Zidong Li[1], Pallavi Daggumati[1], Ling Wang[1], and Erkin Seker[1]
[1]University of California Davis, Davis, CA

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

OP-Sat-1-12 Room 200F

Track: Biomedical Imaging and Optics

Applications of MRI and Focused Ultrasound

Chairs: Wilson Miller, Richard Price

8:00 am
Non-Invasive Ultrasound Liver Ablation using Histotripsy: Chronic Study in an *In Vivo* Rodent Model
Eli Vlaisavljevich[1], Joan Greve[1], Xu Cheng[1], Kimberly Ives[1], Jiaqi Shi[1], Tim Hall[1], Theodore Welling[1], Gabe Owens[1], William Roberts[1], and Zhen Xu[1]
[1]University of Michigan, Ann Arbor, MI

8:15 am
MR Image-Guided Delivery of Non-Viral miRNA-34a Gene Vectors via Focused Ultrasound Inhibits Tumor Growth in a Mouse Glioma Model
Colleen Curley[1], Ying Zhang[1], Karina Negron[2], G. Wilson Miller[1], Alexander Klibanov[1], Roger Abounader[1], Jung Soo Suk[2], Justin Hanes[2], and Richard Price[1]
[1]University of Virginia, Charlottesville, VA, [2]Johns Hopkins University, Baltimore, MD

8:30 am
Characterization of Uterine Fibroid Tissue Properties for MRgFUS Thermal Therapies
Christopher Dillon[1], Margit Janát-Amsbury[1], and Allison Payne[1]
[1]University of Utah, Salt Lake City, UT

8:45 am
High Sensitivity Magnetic Resonance Thermometry of Focused Ultrasound Heating–INVITED
Wilson Miller[1] and Yuan Zheng[1]
[1]University of Virginia, Charlottesville, VA

9:00 am
Focused Ultrasound Blood Brain Barrier Disruption Enables Non-invasive Delivery of Contrast Agents for Multiscale Imaging of the Brain
Robin Hartman[1,2], Flor Medina[1], R. Andrew Fowler[1], Kristina Hallam[3], S. M. Shams Kazmi[1], Stanislav Emelianov[2,3], and Andrew Dunn[1]
[1]University of Texas at Austin, Austin, TX, [2]Georgia Institute of Technology, Atlanta, GA,[3]Georgia Institute of Technology and Emory University School of Medicine, Atlanta, GA

9:15 am
MR-guided High Intensity Contact Ultrasound using CMUTs for Thermal Lesions in Brain–*In Vivo*
Christopher Bawiec[1,2], W. Apoutou N'Djin[1,2], Loïc Daunizeau[1,2], Jérémy Vion[1,2], Guillaume Bouchoux[1,2,3], Nicolas Sénégond[4], Alexandre Carpentier[3], and Jean-Yves Chapelon[1,2]
[1]Inserm, U1032, LabTAU, Lyon, France, [2]Univ Lyon, Université Lyon 1, Lyon, France, [3]CarThera Research Team, Brain and Spine Institute, Paris, France, [4]Vermon SA, Tours, France

OP-Sat-1-13 Room 200D

Track: Biomedical Imaging and Optics

Optical Imaging & Microscopy

Chairs: Nozomi Nishimura, Miguel Moreira

8:00 am
Wide-field Synovial Fluid Analysis Using Lens-free Polarized Microscopy for Gout Diagnosis
Yibo Zhang[1], Seung Yoon Celine Lee[1], Yun Zhang[1], Daniel Furst[1], John Fitzgerald[1], and Aydogan Ozcan[1]
1University of California Los Angeles, Los Angeles, CA

8:15 am
Lattice Light Sheet Microscopy: Imaging Molecules, Cells, and Embryos at High Spatiotemporal Resolution
Wesley Legant[1], Eric Betzig[1], and Luke Lavis[1]
[1]HHMI Janelia Research Campus, Ashburn, VA

8:30 am
Rapid Rearrangement Restores Patterning of Lgr5+ Stem Cells in Intestinal Crypt after Femtosecond Laser Ablation in Mouse
Jiahn Choi[1], Daniel Joe[1], Poornima Gadamsetty[1], Nikolai Rakhilin[1], Steven Lipkin[2], Xiling Shen[3], and Nozomi Nishimura[1]
[1]Cornell University, Ithaca, NY, [2]Weill Cornell College of Medicine, New York, NY, [3]Duke University, Durham, NC

8:45 am
Monte Carlo Simulation of Laser Speckle Contrast Imaging of Perfusion in the Skin
Caitlin Regan[1], Carole Hayakawa[1], Vasan Venugopalan[1], and Bernard Choi[1]
[1]University of California, Irvine, Irvine, CA

9:00 am
Optical Imaging of Membrane Potential in the *In Situ* Stomach
Hanyu Zhang[1], Joshua Hughes[2], Jack Price[1], Niranchan Paskaranandavadivel[3], Gregory Walcott[1], Greg O'Grady[3], Leo Cheng[3], and Jack Rogers[1]
1University of Alabama at Birmingham, Birmingham, AL, [2]Johns Hokpins University, Baltimore, MD, [3]University of Auckland, Auckland, New Zealand

9:15 am
Automation of Collagen Birefringence Imaging at Multiple Polarization Angles
Jade Montgomery[1,2] and Robert Gourdie[1,2]
1Virginia Tech, Blackburg, VA, [2]Virginia Tech Carilion Research Institute, Roanoke, VA

OP-Sat-1-14 Room 200G

Track: Stem Cell Engineering

Pluripotent Stem Cell Engineering

Chairs: Gulden Camci-Unal, Hossein Tavana

8:00 am
Mechanical Modulation of Mesodermal Differentiation–INVITED
Taby Ahsan[1]
[1]Tulane University, New Orleans, LA

8:30 am
Matrix Tension Directs Tissue-level Organization to Prime Embryonic Stem Cells for Differentiation
Laralynne Przybyla[1], Johnathon Lakins[1], Jonathon Muncie[1,2], and Valerie Weaver[1]
[1]University of California San Francisco, San Francisco, CA, [2]University of California Berkeley, Berkeley, CA

8:45 am
Mechano-modulation of E-cadherin Clustering Regulates Early-Stage Differentiation of Human Pluripotent Stem Cells
Maricela Maldonado[1], Gerardo Ico[1], Rebeccah Luu[1], and Jin Nam[1]
[1]University of California, Riverside, CA

9:00 am
NANOG Restores the Effects of Senescence on Extracellular Matrix Deposition
Na Rong[1], Panagiotis Mistriotis[1], Xiaoyan Wang[1], Georgios Tseropoulos[1], and Stelios Andreadis[1]
[1]University of New York at Buffalo, Buffalo, NY

9:15 am
Directing the Cancer Stem Cell State through Interface Engineering
Junmin Lee[1] and Kristopher Kilian[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

OP-Sat-1-15 Room 200C

Track: Drug Delivery

Nano to Micro Devices in Drug Delivery

Chairs: Dennis Discher, Ron Ortiz

8:00 am
Microscale Devices Sealed with Nanostraw Membranes for Oral Drug Delivery
Cade Fox[1], Yuhong Cao[2], Cameron Nemeth[1], Hariharasudhan Chirra[1], Rachel Chevalier[1], Alexander Xu[2], Nicholas Melosh[2], and Tejal Desai[1]
[1]University of California, San Francisco, San Francisco, CA, [2]Stanford University, Stanford, CA

8:15 am
Injectable Microfabricated Particles with Pulsatile Release Kinetics
Kevin McHugh[1], Thanh Nguyen[1], Allison Linehan[1], David Yang[1], Stephany Tzeng[1], Adam Behrens[1], Jennifer Lu[1], Zachary Tochka[1], Sviatlana Rose[1], Austin Wang[1], Robert Langer[1], and Ana Jaklenec[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

8:30 am
IL4 Conjugated Gold Nanoparticles Direct Macrophage Polarization *In Vivo* Following Ischemia Surgery
Theresa Raimondo[1] and David Mooney[1]
[1]Harvard University, Cambridge, MA

8:45 am
Non-covalent Functionalization of Single Wall Carbon Nanotubes with Engineered Proteins for Targeted Subcellular Delivery
Kris Dahl[1] and Mohammad Islam[1]
[1]Carnegie Mellon University, Pittsburgh, PA

9:00 am
Optimizing Nanoparticle Platforms to Penetrate Colorectal Mucosa for Rectal Pre-Exposure Prophylaxis (PrEP) for HIV
Antoinette Nelson[1], Dan Myers[1], Jennifer Holloway[1], Xiaoping Zhang[1], Zoltan Szekely[1], and Patrick Sinko[1]
[1]Rutgers University, Piscataway, NJ

9:15 am
Controlled Delivery of Lentivectors via Micropatterned Hydrogels
Justin Madrigal[1], Roberta Stilhano[2], Christian Siltanen[1], Kimberly Tanaka[1], Alexander Revzin[1], Sang Won Han[3], and Eduardo Silva[1]
[1]University of California Davis, Davis, CA, [2]Federal University of São Paulo, Sao Paulo, Brazil,[3]Federal University of São Paulo, Sao Paulo, Brazil

OP-Sat-1-16 Room 200H

Track: Neural Engineering

Noninvasive Neuromodulation

Chairs: David James Warren, Ayesgul Gunduz

8:00 am
Ultrasound Stimulation of the Brain, Nerves and Whatever Else for Achieving Activation–INVITED
Mark Hamilton[1], Hongsun Guo[1], Sarah Offutt[2], Yohan Kim[2], Cory Gloeckner[1], Jamu Alford[2], and Hubert Lim[1]
[1]University of Minnesota, Minneapolis, MN, [2]Medtronic, Minneapolis, MN

8:15 am
Transcranial Current Stimulation Alters Brain Computer Interface Task Performance
Bryan Baxter[1], Bradley Edelman[1], Nicholas Nesbitt[1], and Bin He[1,2]
[1]University of Minnesota, Minneapolis, MN, [2]Institute for Engineering in Medicine, Minneapolis, MN

8:30 am
Stimulation of Deep Layers But Not Surface Of Auditory Cortex Induces Strong Suppression Of Activity: Implications For Tinnitus Treatment
Mark Hamilton[1] and Hubert Lim[1]
[1]University of Minnesota, Minneapolis, MN

8:45 am
Effect of Intermittent Theta Burst Stimulation on Cortical and Corticospinal Excitability in Healthy Subjects: A TMS-EEG-EMG Study
Tamara Gedankien[1], Peter J. Fried[1], Alvaro Pascual-Leone[1], and Mouhsin Shafi[1]
[1]Beth Israel Deaconess Medical Center, Boston, MA

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

9:00 am
Can Ultrasound Activate Nerves *In Vivo*?
Hongsun Guo[1], Mark Hamilton[1], Sarah Offutt[2], Yohan Kim[2], Cory Gloeckner[1], Jamu Alford[2], and Hubert Lim[1]
[1]University of Minnesota, Minneapolis, MN, [2]Medtronic, Minneapolis, MN

9:15 am
Transcranial Direct Current Stimulation Transiently Increases the Blood-Brain Barrier Solute Permeability *In Vivo*
Da Wi Shin[1], Niranjan Khadka[1], Jie Fan[1], Marom Bikson[1], and Bingmei Fu[1]
[1]The City College of the City University of New York, New York, NY

OP-Sat-1-17 Room 200I

Track: Neural Engineering

Neural Progenitor and Stem Cell Engineering

Chairs: Randolph Ashton, Shelly Sakiyama-Elbert

8:00 am
Acutely-activated Microglia Differentially Regulates Neural Stem Cell Phenotype and Genotype
Kurt Farrell[1] and Chandra Kothapalli[1]
[1]Cleveland State University, Cleveland, OH

8:15 am
Optimizing Label-free Human Neural Stem Cell Sorting Using 3D Dielectrophoresis
Tayloria Adams[1], Clarissa Ro[1], Nicolo Mendoza[1], Stephen Flynn[1], Jamison Nourse[1], and Lisa Flanagan[1]
[1]University of California Irvine, Irvine, CA

8:30 am
The Social Networks of Neural Progenitor Cells
Arun Mahadevan[1], Jacob Robinson[1], and Amina Qutub[1]
[1]Rice University, Houston, TX

8:45 am
The Effect of Peptide Affinity in Neural Progenitor Cell Mechanosensing
Jessica Stukel[1] and Rebecca Willits[1]
[1]University of Akron, Akron, OH

9:00 am
Engineering Organotypic Spinal Cord Slice Cultures from Human Pluripotent Stem Cells
Gavin Knight[1,2] and Randolph Ashton[1,2]
[1]University of Wisconsin-Madison, Madison, WI, [2]Wisconsin Institute for Discovery, Madison, WI

9:15 am
Characterization of Spontaneous and Light-evoked Activity of Mouse Embryonic Stem Cell Derived Motor Neurons using Optogenetic Stimulation and Multi-electrode Electrophysiology
Gelson Pagan-Diaz[1], Caroline Cvetkovic[1], Rashid Bashir[1], and Parijat Sengupta[1]
[1]University of Illinois at Urbana-Champaign, Champaign, IL

OP-Sat-1-18 Room 200J

Track: Cardiovascular Engineering

Angiogenesis

Chairs: Ho-Wook Jun, Eduardo Silva

8:00 am
Vascularization of Engineered Tissues–INVITED
Eric Brey[1]
[1]Illinois Institute of Technology, Chicago, IL

8:30 am
Isolation of a Highly Angiogenic Subpopulation of CD31+ Cells
Brandon Johnson[1,2], Young-Doug Sohn[2], Ji Han[2], Ho-Wook Jun[3], and Young-Sup Yoon[2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA, [3]University of Alabama at Birmingham, Birmingham, AL

8:45 am
PI3K and PLC Pathways Regulate VEGF-A-VEGFR1-Mediated Cell Migration
Jared Weddell[1] and Princess Imoukhuede[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

9:00 am
Topographical Guidance of Tumor Angiogenesis at an Interface of Collagen Densities
Matthew Zanotelli[1], Francois Bordeleau[1], and Cynthia Reinhart-King[1]
[1]Cornell University, Ithaca, NY

9:15 am
Microvessel Elicitation in Ischemic Myocardium by Dual Growth Factor Delivery
Alexander Xu[1], Kayle Shapero[1], Jared Geibig[1], Daniel Pitts[1], Elaine Hillis[2], Matthew Firpo[2], and Robert Peattie[1]
[1]Tufts Medical Center, Boston, MA, [2]University of Utah, Salt Lake City, UT

OP-Sat-1-19 **Room 200B**

Track: Undergraduate Research, Design & Leadership

Undergraduate Research, Design & Leadership I: Cell Microenvironment and Bioinformatics

Chairs: Delphine Dean, Jordon Gilmore

8:00 am
Myoferlin Depletion in MDA-MB-231 Breast Cancer Cells Reduces Autocrine TGF-β Production
Victoria Barnhouse[1], Jessica Weist[1], and Jennifer Leight[1]
[1]The Ohio State University, Columbus, OH

8:09 am
Advanced Glycation End-products and Intervertebral Disc Degeneration in Type I and Type II Diabetes
Jennifer Liu[1]
[1]Washington University in St. Louis, St Louis, MO

8:18 am
Identifying Cancer Stem Characteristics in Lung Cancer Cells Pre-Exposed to Hypoxia or Radiation
Raisa Rasul[1]
[1]University of Arkansas, Fayetteville, AR

8:27 am
Identification of Cancer Specific Metabolic Pathways in Cell-Line Metabolic Models
Sanket Mehta[1], André Schultz[1], and Amina Qutub[1]
[1]Rice University, Houston, TX

8:36 am
Role of Caldesmon in TGF- 1 -Induced Epithelial-Mesenchymal Transition
Samantha Stewart[1], Gage Virgi[2], Joseph O'Connor[2], and Esther Gomez[2]
[1]University of South Carolina, Columbia, SC
[2]Pennsylvania State University, University Park, PA

8:45 am
Sec24c-Deficiency Causes Post-Mitotic Neuronal Death in the Embryonic Mouse Brain
Rebecca Mount[1,2], Bo Wang[1,3], and Mondira Kundu[1]
[1]St. Jude Children's Research Hospital, Memphis, TN, [2]Cornell University, Ithaca, NY,[3]University of Tennessee Health Science Center, Memphis, TN

8:54 am
Understanding Cardiac Macrophage Polarization After Myocardial Infarction Through a Signaling Model
Jingyuan Zhang[1], Angela Zeigler[1], Kristine DeLeon-Pennell[2], Merry Lindsey[2,3], and Jeffrey Saucerman[1]
[1]University of Virginia, Charlottesville, VA, [2]University of Mississippi Medical Center, Jackson, MS, [3]G.V. (Sonny) Montgomery Veterans Affairs Medical Center, Jackson, MS

9:03 am
Catch the Wave: Using Prior Knowledge of Action Potentials to Identify Neurons in Chronic Recordings
Shruti Vempati[1], Adam Snyder[1,2], and Matthew Smith[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Carnegie Mellon University, Pittsburgh, PA

9:12 am
Transcriptional and Metabolic Characterization of Antimalarial Resistant and Sensitive Malaria Parasites
Ana Untaroiu[1], Maureen Carey[1], Jason Papin[1], Jennifer Guler[1]
[1]University of Virginia, Charlottesville VA

9:21 am
Integrating Gene Expression Data into a Computational Model to Ascertain the Role of Genetic Background in Cardiomyocyte Hypertrophy
Kathryn Bridges[1]
[1]University of Virginia, Charlottesvile, VA

MEET THE EXPERT

8:00 am–9:30 am **Room 204**

Meet the Experts on Data-Sharing

Organized by Dr Pep Pàmies, *Chief Editor, Nature Biomedical Engineering*

Scientific research flourishes when data are preserved and made accessible. The Human Genome Project has become one prominent example of how making data broadly available prior to publication can be profoundly valuable to scientists, industry and the public. Panelists will discuss current bottlenecks to, and ways to promote, a culture of data sharing in biomedical engineering. The session will feature 10-min presentations from each of the panel members and a round-table discussion.

Panel Members:

- **Prof Kevin Peterson,** Department of Family Medicine and Community Health, University of Minnesota
- **Dr Andrew A. Quong,** Director, Partnership Development Office, Frederick National Laboratory for Cancer Research and Leidos Biomedical Research, Inc.
- **Dr Michelle A. Berny-Lang,** Program Director, Center for Strategic Scientific Initiatives, National Cancer Institute, National Institutes of Health
- **Connie Lee,** Big Data Scientist Training Enhancement Program (BD-STEP) Director, Veterans Health Administration

Saturday, October 8 | 1:30 pm–3:00 pm | Platform Session 2

OP-Sat-2-1 Auditorium 1

Track: Cellular and Molecular Bioengineering

Mechanobiology of Cell Adhesion II

Chairs: Amit Pathak, Aaron Baker

1:30 pm
Mechanosensitivy of Integrins and Adhesions are Modulated by Lipid Order
Seoyoung Son[1], George Moroney[1], and Peter Butler[1]
[1]The Pennsylvania State University, State College, PA

1:45 pm
Conformational Switch, Activation and Clustering in Transmembrane Signaling and Mechanotransduction
Mohammad Mofrad[1]
[1]UC Berkeley, Berkeley, CA

2:00 pm
Optical Trapping to Determine Mechanical Forces in Living Zebrafish
Jack Staunton[1], Ben Blehm[1], Alexus Devine[1], and Kandice Tanner[1]
[1]National Cancer Institute (NIH), Bethesda, MD

2:15 pm
Nanotopography-Induced Structural Anisotropy and Sarcomere Development in Human Cardiomyocytes Derived from Induced Pluripotent Stem Cells
Daniel Carson[1], Marketa Hnilova[1], Xiulan Yang[1], Cameron Nemeth[1], Jonathan Tsui[1], Alec Smith[1], Alex Jiao[1], Michael Regnier[1], Charles Murry[1], Candan Tamerler[2], and Deok-Ho Kim[1]
[1]University of Washington, Seattle, WA, [2]University of Kansas, Lawrence, KS

2:30 pm
Novel Role of Cadherin 11 in Extracellular Matrix Synthesis and Muscular Physiology
Yayu Liu[1], Seldeen Kenneth[1,2], Sindhu Row[1], Troen Bruce[1,2], Sandeep Agarwal[3], and Andreadis Stelios[1]
[1]University at Buffalo, Buffalo, NY, [2]Veterans Affairs Western NY Healthcare System, Buffalo, NY, [3]Baylor College of Medicine, Houston, TX

2:45 pm
Force Activated Protein Dynamics in Focal Adhesion Stability
Katheryn Rothenberg[1] and Brenton Hoffman[1]
[1]Duke University, Durham, NC

OP-Sat-2-2 Auditorium 2

Track: Cancer Technologies

Engineered Models of Cancer Metastasis and Treatment Response

Chairs: Thomas Zangle, Pamela Kreeger

1:30 pm
Targeting Flow-induced Heterogeneity in Ovarian Cancer with Engineered 3D Models
Imran Rizvi[1], Huang-Chiao Huang[1], Yujiro Tsujita[1], Sriram Anbil[1,2,3], William Hanna[4], Jonathan Celli[4], Utkan Demirci[5], and Tayyaba Hasan[1]
[1]Massachusetts General Hospital, Harvard Medical School, Boston, MA, [2]Howard Hughes Medical Institute, Chevy Chase, MD, [3]University of Texas Health Science Center at San Antonio, San Antonio, TX, [4]University of Massachusetts Boston, Boston, MA, [5]Stanford University School of Medicine, Palo Alto, CA

1:45 pm
3D Micro-scale Model of Cortical Inclusion Cysts in Early Ovarian Cancer
Andrew Fleszar[1], Peyton Uhl[1], and Pamela Kreeger[1]
[1]University of Wisconsin-Madison, Madison, WI

2:00 pm
A 3D Bioprinting Biomimetic Cell-laden Bone Matrix for Breast Cancer Metastasis Study
Xuan Zhou[1], Wei Zhu[1], Benjamin Holmes[1], Shida Miao[1], Haitao Cui[1], and Lijie Zhang[1]
[1]The George Washington University, Washington, DC

2:15 pm
The Role of the Blood Microenvironment in Cancer Metastasis
Joanna Sylman[1], Annachiara Mitrugno[1], Sandra Baker-Groberg[1], Garth Tormoen[1], Rosalie Sears[1], Xiaolin Nan[1], Travis Walker[2], Paul Newton[3], Peter Kuhn[3], Pallavi Dhagat[2], and Owen McCarty[1]
[1]Oregon Health Science University, Portland, OR, [2]Oregon State University, Corvallis, OR, [3]University of Southern California, Los Angeles, CA

2:30 pm
Pro-Survival Integrin Signaling and Tissue Stiffness in Engineered Tumor Microenvironment Regulate B Cell Receptor Activity in Aggressive Human B Cell Lymphomas
FNU Apoorva[1], Ye Tian[1], Leandro Cerchietti[2], Ari Melnick[2], and Ankur Singh[1]
[1]Cornell University, Ithaca, NY, [2]Weill Cornell Medical College, New York, NY

2:45 pm
A 3D Acoustofluidic Tumor Model for Localized Drug Release and Response to Chemotherapy
Ioannis Zervantonakis[1] and Costas Arvanitis[2]
[1]Harvard Medical School, Boston, MA, [2]Brighwam and Women's Hospital, Boston, MA

OP-Sat-2-3 — Auditorium 3

Track: Biomechanics

Advances in Biomechanical Testing of Medical Devices

Chairs: Ruth Ochia, Muralidhar Padala

1:30 pm
Mechanical Surrogates of Brain Tissue
Daniel Stewart[1], Andrés Rubiano[1], and Chelsey Simmons[1]
[1]University of Florida, Gainesville, FL

1:45 pm
Biomechanical Effects of Strap Tension on the Corrective Force Capacity of a Scoliosis Brace
Chloe Chung[1], Derek Kelly[2], Jack Steele[3], Terrell Tate[3], Cody Bateman[1], and Denis DiAngelo[1]
[1]UTHSC, Memphis, TN, [2]Campbell Clinic Orthopaedics and Le Bonheur Children's Hospital, Collierville, TN, [3]The Center for Orthotics and Prosthetics, Inc., Memphis, TN

2:00 pm
Feasibility of Inertial Measurement Units for Biomechanical Testing and Ergonomic Evaluation of Neck Posture During Surgical Instrument Operation
Bethany Lowndes[1], Melissa Morrow[1], Emma Fortune[1], and Susan Hallbec[1]
[1]Mayo Clinic, Rochester, MN

2:15 pm
Modeling and Simulating Fatigue in Bioprosthetic Heart Valves: Permanent Set as a First Step
Will Zhang[1] and Michael Sacks[1]
[1]The University of Texas at Austin, Austin, TX

Sat-2-4 — Room 102AB

Track: Biomaterials*

Dynamic Biomaterials

Chairs: Yan Li, Rebecca Willits

1:30 pm
Biodegradable and Conductive Polyurethane Elastomers
Xinzhu Gu[1], Zhongwei Mao[1,2], Souvik Roy[1], and William Wagner[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Tsinghua University, Beijing, China, People's Republic of

1:45 pm
Integrating Chemical and Optical Responsive Cells and Flexible Materials for a Biosensing Soft Robot
Kyle Justus[1], Daniel Lewis[2], Carmel Majidi[1], Philip LeDuc[1], and Cheemeng Tan[2]
[1]Carnegie Mellon University, Pittsburgh, PA, [2]University of California, Davis, Davis, CA

2:00 pm
Development of a Combinatorial Hydrogel Platform for Screening 3D Cell-Biomaterial Interactions
Sebastian Vega[1], Kwang Hoon Song[1], and Jason Burdick[1]
[1]University of Pennsylvania, Philadelphia, PA

2:15 pm
Rapid, Visible-light Triggered Degradation of Hydrogels Crosslinked by Photoactive Ruthenium Complex
Christopher Highley[1], Teresa Rapp[1], Ivan Dmochowski[1], and Jason Burdick[1]
[1]University of Pennsylvania, Philadelphia, PA

2:30 pm
Spatiotemporal Control of Cardiac Anisotropy Using Dynamic Nanotopographic Cues
Paulos Mengsteab[1], Koichiro Uto[1], Alec Smith[1], Sam Frankel[1], Elliot Fisher[1], Zeid Nawas[1], Jesse Macadangdang[1], Mitsuhiro Ebara[2], and Deok-Ho Kim[1]
[1]University of Washington, Seattle, WA, [2]National Institute for Materials Science, Tsukuba, Japan

2:45 pm
Shape Change in Water-responsive Liquid Crystal Elastomer Bilayers
Jennifer Boothby[1], Angela Moncy[1], and Taylor Ware[1]
[1]The University of Texas at Dallas, Richardson, TX

*** Biomaterials Track sponsored by**

ACS Biomaterials SCIENCE & ENGINEERING

OP-Sat-2-5 — Room 102C

Tracks: Biomedical Imaging and Optics, Cardiovascular Engineering

Imaging in Cardiovascular Systems I

Chairs: Joan Greve, Craig Goergen

1:30 pm
New Generation CMOS Panoramic Imaging System for Cardiac Electrophysiology
Christopher Gloschat[1], Matthew Kay[1], and Igor Efimov[1]
[1]The George Washington University, Washington, DC

1:45 pm
Development of a High Frame Rate Ultrasound Tissue Doppler Imaging Method to Assess Intrinsic Wave Propagation through the Myocardium
Aaron Engel[1] and Greg Bashford[1]
[1]University of Nebraska, Lincoln, NE

2:00 pm
Multiphoton Microscopy Platform Enables Visualization of *In Vivo* Cellular Dynamics within the Beating Mouse Heart
Jason Jones[1], David Small[1], and Nozomi Nishimura[1]
[1]Cornell University, Ithaca, NY

2:15 pm
Noise Amplitude and Reduced Leads Increase Uncertainty in Electrocardiographic Imaging
Jessie France[1] and Chris Johnson[1]
[1]Scientific Computing and Imaging Institute, University of Utah, Salt Lake City, UT

Saturday, October 8 | 1:30 pm–3:00 pm | Platform Session 2

2:30 pm
Real-time MRI Motion Tracking of the Cardiac Cycle in Breath-Held, Normal and Heavy Breathing
F. Scott Gayzik[1], Craig Hamilton[1], and Ashley Weaver[1]
[1]Wake Forest University School of Medicine, Winston-Salem, NC

2:45 pm
Investigating Mechanisms and Prevention of Alcohol-induced Congenital Heart Defects using OCT Imaging
Andrew Rollins[1], Pei Ma1, Shi Gu[1], Ganga Karunamuni[1], Lindsy Peterson[1], Megan Sheehan[1], Cameron Pedersen[1], Michael Jenkins[1], and Michiko Watanabe[1]
[1]Case Western Reserve University, Cleveland, OH

OP-Sat-2-7 — Room 101B

Track: Cardiovascular Engineering

Computational Modeling in Cardiovascular Systems II

Chairs: Amanda Randles, Wei Sun

1:30 pm
Investigation of Pericyte Dynamics using *In Vivo* Imaging and Computational Modeling–INVITED
Shayn Peirce[1]
[1]University of Virginia, Charlottesville, VA

2:00 pm
SimVascular: An Open Source Pipeline for Image-Based Cardiovascular Simulation
Hongzhi Lan[1], Adam Updegrove[2], Nathan Wilson[3], Shawn Shadden[2], and Alison Marsden[1]
[1]Stanford University, Stanford, CA, [2]University of California–Berkeley, Berkeley, CA, [3]Open Source Medical Software Corporation, Santa Monica, CA

2:15 pm
Numerical Simulation of Coronary Artery Motion and Blood Flow Using a Fluid Structure Interaction Model
Daphne Meza[1], David A. Rubenstein[1], and Wei Yin[1]
[1]Stony Brook University, Stony Brook, NY

2:30 pm
Inward Rectifying Potassium Channels and Spreading Vasodilation in the Cerebral Vasculature
Arash Moshkforoush[1] and Nikolaos Tsoukias[1]
[1]Florida international University, Miami, FL

2:45 pm
Anatomically-Driven Mulitiscale Model of Ascending Thoracic Aorta, with Application to Multidirectional Experiments
Rohit Dhume[1], Christopher Korenczuk[1], and Victor Barocas[1]
[1]University of Minnesota, Minneapolis, MN

SOP-Sat-2-8 — Room 101C

Track: Tissue Engineering

Stem Cells in Tissue Engineering

Chairs: Kristopher Kilian, Kelly Stevens

1:30 pm
Bioinspired Materials Systems to Study and Regulate Stem Cell Biology–INVITED
Kevin Healy[1]
[1]University of California, Berkeley, Berkeley, CA

2:00 pm
Biomimetic Self-assembled Scaffolds Enhance Muscle Stem Cell Transplantation
Benjamin Cosgrove[1,2], Eduard Sleep[3], Mark McClendon[3], Adam Preslar[3], Russell Haynes[2], Thomas Meade[3], Samuel Stupp[3], and Helen Blau[2]
[1]Cornell University, Ithaca, NY, [2]Stanford University, Stanford, CA, [3]Northwestern University, Chicago, IL

2:15 pm
Breast Cancer Cell-derived Factors Promote Osteogenic Differentiation of Mesenchymal Stem Cells
Aaron Chiou[1], Maureen Lynch[2], and Claudia Fischbach[1]
[1]Cornell University, Ithaca, NY, [2]University of Massachusetts Amherst, Amherst, MA

2:30 pm
Generation of Functional Skeletal Muscle Tissues from Human Pluripotent Stem Cells (hPSCs)
Lingjun Rao1 and Nenad Bursac[1]
[1]Duke University, Durham, NC

2:45 pm
Salivary Gland Engineering via the Combination of Human Stem/Progenitor Cells and Synthetic Matrices
Padma Pradeepa Srinivasan[1], Tugba Ozdemir[1], Eric Fowler[1], Shuang Liu[1], Daniel Harrington[2], Robert Witt[3,4], Mary C. Farach-Carson[1,2], Xinqiao Jia[1], and Swati Pradhan-Bhatt[1,4]
[1]University of Delaware, Newark, DE, [2]Rice University, Houston, TX, [3]Thomas Jefferson University, Philadelphia, PA, [4]Helen F. Graham Cancer Center & Research Institute, Newark, DE

OP-Sat-2-9 — Room 101D

Track: Device Technologies and Biomedical Robotics

Medical Device Development and Computational Models

Chairs: Ramesh Raghupathy, Ferris Pfeiffer

1:30 pm
Beat-by-beat Control of the Heart: Prevention and Control of Cardiac Alternans
Kanchan Kulkarni[1], Christopher Johnson[1], and Elena Tolkacheva[1]
[1]University of Minnesota, Minneapolis, MN

1:45 pm
Optimized Programming Algorithm for Cylindrical and Directionally Segmented Deep Brain Stimulation Electrodes
Daria Nesterovich Anderson[1], Braxton Osting[1], Alan "Chuck" Dorval[1], and Christopher Butson[1]
[1]University of Utah, Salt Lake City, UT

2:00 pm
Effects of Unilateral Exoskeleton Propulsive Assistance on Cost of Transport
Tracy Giest[1], Richard Nuckols[1], and Greg Sawicki[1]
[1]North Carolina State University, Raleigh, NC

2:15 pm
Integration of Music, Thermal, and Mechanical Stimulation for Management of Alzheimer's Disease
Xinghua Jia[1], Dong Wang[1], Kathryn Kaltenmark[1], Byron Carper[1], Douglas Scharre[2], Scott Galster[3], and Mingjun Zhang[1]
[1]Department of Biomedical Engineering, College of Engineering, The Ohio State University, Columbus, OH, [2]Department of Neurology, Division of Cognitive Neurology, The Ohio State University Wexner Medical Center, Columbus, OH, [3]711th Human Performance Wing, Air Force Research Laboratory, WPAFB, OH

2:30 pm
Development of a Novel Device for Tube Thoracostomy in Trauma Patients
Shannen Kizilski[1,2], Xiang Zhang[2], Nigel Kojimoto[2], Kristi Oki[2], Sheng Jiang[2], Tyler Wortman[2], and Nevan Hanumara[2]
[1]University of Minnesota, Minneapolis, MN, [2]Massachusetts Institute of Technology, Cambridge, MA

2:45 pm
Handheld Microfluidic Immunoassay System for Point-of-Care Diagnostics
Baichen Li[1] and Zhenyu Li[1]
[1]The George Washington University, Washington, DC

OP-Sat-2-10 — Room 101E

Track: Biomaterials*

Hydrogel Biomaterials II

Chair: Yujian Huang

1:30 pm
Nanoparticle Enhanced Adhesion of Mussel Inspired Hydrogels for Tissue Interfacing
Nikhil Pandey[1], Amirhossein Hakamivala[1], Prashant Hariharan[1], Boris Rodionov[1], Zhong Huang[1], Philippe Zimmern[2], Kytai Nguyen[1], Liping Tang[1], and Yi Hong[1]
[1]University of Texas at Arlington, Arlington, TX, [2]UT Southwestern, Dallas, TX

1:45 pm
Supramolecular Peptide Hydrogels Adjuvant Protective Antibody Responses against West Nile Virus
Brian Friedrich[1], Joshua Snook[1], David Beasley[1], and Jai Rudra[1]
[1]University of Texas Medical Branch, Galveston, TX

2:00 pm
Cell-Cell Communication in PEG Hydrogel Microenvironment for Improved Beta Cell Function
Seda Kizilel[1], Tugba Bal[1], and Erdal Karaoz[2]
[1]Koc University, Istanbul, Turkey, [2]Liv Hospital, Istanbul, Turkey

2:15 pm
Fabricating Anti-Fas Conjugated Hyaluronic Acid Microsphere Gels for Neural Stem Cell Transplantation
Dalia Shendi[1], Dirk Albrecht[1], and Anjana Jain[1]
[1]Worcester Polytechnic Institute, Worcester, MA

2:30 pm
Ultra-Strong, Thermoresponsive Double Network Membranes for Implanted Glucose Biosensors
Anna Kristen Means[1], Ruochong Fei[1], Alexander Abraham[1], Andrea Locke[1], Gerard Cote[1], and Melissa Grunlan[1]
[1]Texas A&M University, College Station, TX

2:45 pm
Fiber Textile Technology for Musculoskeletal Tissue Engineering Applications
Iman Yazdi[1], Afsoon Fallahi[1], Raquel Costa-Almeida[1], Huseyin Avci[1], Ali Tamayol[1], and Ali Khademhosseini[1]
[1]Brigham and Women's Hospital, Cambridge, MA

*** Biomaterials Track sponsored by**

ACS Biomaterials SCIENCE & ENGINEERING

OP-Sat-2-11 — Room 200E

Track: Nano and Micro Technologies

Advances in Pathogen Detection

Chairs: Jacqueline Linnes, Xuanhong Cheng

1:30 pm
A New Approach to Rapid Pathogen Isolation using Molecular Buoys
Shannon Weigum[1], Lichen Xiang[1], Erica Osta1, Linying Li[2], and Gabriel Lopez[2,3]
[1]Texas State University, San Marcos, TX, [2]Duke University, Durham, NC, [3]University of New Mexico, Albuquerque, NM

1:45 pm
RNA Extraction from a Mycobacterium under Ultrahigh Electric Field Intensity in a Microfluidic Device
Sai Ma[1], Bryan Bryson[2], Chen Sun[1], Sarah Fortune[2], and Chang Lu[1]
[1]Virginia Tech, Blacksburg, VA
[2]Harvard School of Public Health, Boston, MA

2:00 pm
Single-Step Paper Diagnostic that Improves the Limit of Detection of Chlamydia through Thermodynamic Target Concentration
Garrett Mosley[1], Yue Han[1], Benjamin Wu[1], and Daniel Kamei[1]
[1]University of California Los Angeles, Los Angeles, CA

Saturday, October 8 | 1:30 pm–3:00 pm | Platform Session 2

2:15 pm
Vertical Gold Nanorod Array Based DNA Sensing with Improved Performance
Zhong Mei[1] and Liang Tang[1]
[1]University of Texas at San Antonio, San Antonio, TX

2:30 pm
Diagnostic Chewing Gums Targeting the Tongue as 24/7 Available Detector
Jennifer Ritzer[1], Tessa Lühmann[2], Claudia Rohde[3], Miriam Pein-Hackelbusch[4], Cecilia Amstalden[1], Caroline Kleider[1], Uwe Schedler[5], Thomas Thiele[5], Ralf Wyrwa[3], Matthias Schnabelrauch[3], and Lorenz Meinel[1]
[1]University of Würzburg, Würzburg, Germany, [2]University of Würzburg, Würzburg, Ghana,[3]Innovent, Jena, Germany, [4]University of Düsseldorf, Düsseldorf, Germany, [5]PolyAn GmbH, Berlin, Germany

2:45 pm
***In Vivo* Monitoring of Branched Chain Amino Acid Dynamics Using Online Microdialysis-Capillary Electrophoresis**
Megan Weisenberger[1] and Michael T. Bowser[1]
[1]University of Minnesota, Minneapolis, MN

OP-Sat-2-12 — Room 200F

Track: Biomedical Imaging and Optics

Ultrasound Imaging

Chair: Brooks Lindsey, Greg Bashford

1:30 pm
GPU-accelerated Speckle Tracking Toward High Quality Volumetric Strain Elastography
Bo Peng[1] and Jingfeng Jiang[1]
[1]Michigan Technological University, Houghton, MI

1:45 pm
Molecular Acoustic Angiography: Assessing Sensitivity and Tortuosity in Combined High Resolution Ultrasound Molecular and Micro-vascular Imaging
Brooks Lindsey[1], Sarah Shelton[1], F. Stuart Foster[2], and Paul Dayton[1]
[1]University of North Carolina, Chapel Hill, NC, [2]Sunnybrook Health Sciences Centre, Toronto, ON, Canada

2:00 pm
Functional Pulsatility Index as a New Measure to Assess Arterial Stiffness
Mohammed Alwatban[1], Benjamin Hage[1], Jessie Patterson[1], Alaina Bassett[1], Edward Truemper[1,2], Julie Honaker[1], and Greg Bashford[1,2]
[1]University of Nebraska, Lincoln, NE, [2]Children's Hospital & Medical Center, Omaha, NE

2:15 pm
Assessment of the Nonlinear Shear Modulus using Compression of *Ex Vivo* Kidneys and Shear Wave Elastography
Sara Aristizabal[1], Carolina Amador[1], James F. Greenleaf[1], and Matthew W. Urban[1]
[1]Mayo Clinic College of Medicine, Rochester, MN

2:30 pm
Building an Open-source Simulation Platform of Acoustic Radiation Force-based Breast Elastography
Yu Wang[1], Bo Peng[1], David Rosen[1], and Jingfeng Jiang[1]
[1]Michigan Technological University, Houghton, MI

2:45 pm
The Vibro Acoustography System Characterization Using Different $\triangle$f
Nikan Namiri[1], Ashkan Maccabi[2], Maie St. John[3], George Saddik[2], Zachary Taylor[2], and Warren Grundfest[1]
[1]Department of Bioengineering, University of California, Los Angeles, Los Angeles, CA,[2]Department of Electrical Engineering, University of California, Los Angeles, Los Angeles, CA,[3]Department of Head and Neck Surgery, University of California, Los Angeles, Los Angeles, CA

OP-Sat-2-13 — Room 200D

Track: Biomedical Imaging & Optics

MRI I

Chairs: Samuel Grant, Paolo Decuzzi

1:30 pm
Imaging and Targeting Efficacy of Nanoparticles for Atherosclerosis with Varying Gadolinium Chelators
Sang Pil Yoo[1], Matthew Tirrell[1], and Eun Ji Chung[2]
[1]University of Chicago, Chicago, IL, [2]University of Southern California, Los Angeles, CA

1:45 pm
Metabolic Assessments of a Migraine Model using Relaxation-Enhanced ^{1}H Spectroscopy at Ultra-High Field
Nastaren Abad[1,2], Jens Rosenberg1, Dillon Grice[1], Tangi Roussel[3], Michael Harrington[4], and Samuel Grant[1,2]
[1]Florida State University, Tallahassee, FL, [2]National High Magnetic Field Laboratory, Tallahassee, FL, [3]Weizmann Institute of Science, Rehovot, Israel, [4]Huntington Medical Research Institutes, Pasadena, CA

2:00 pm
Rationally Designing the Magnetic Resonance Imaging performace of Theranostic Nanoconstructs
Miguel Ferreira[1], Aeju Lee[1], Yanfei Hu[1], Anna Palange[1], and Paolo Decuzzi[1]
[1]Istituto Italiano di Tecnologia, genova, Italy

2:15 pm
Dipole Array Design for MRI at 10.5 Tesla
Jinfeng Tian[1], Russell Lagore[1], Arcan Erturk[1], Lance Delabarre[1], Yigitcan Eryaman[1], Lynn Utecht[1], Gregory Metzger[1], J. Thomas Vaughan[1,2], Kamil Ugurbil[1], and Gregor Adriany[1]
[1]University of Minnesota, Minneapolis, MN [2]Columbia University, New York, NY

2:30 pm
Genetically Encodable Acoustomagnetic Reporters for Background-Free Molecular and Cellular MRI
George Lu[1], Arash Farhadi[1], Jerzy Szablowski[1], Samuel Barnes[2], Anupama Lakshmanan[1], Raymond Bourdeau[1], and Mikhail Shapiro[1]
[1]California Institute of Technology, Pasadena, CA, [2]Loma Linda University, Loma Linda, CA

2:45 pm
Multiple Overlapping Thin Slice Acquisition (MOTSA) for Applications in Studying Preclinical Models of Cardiovascular Disease
Amos Cao[1] and Joan Greve[1]
[1]University of Michigan, Ann Arbor, MI

OP-Sat-2-14 Room 200G

Track: Drug Delivery

Cancer Drug Delivery I

Chairs: Bingmei Fu, Vivek Gupta

1:30 pm
Theranostic Delivery to Canine Intracranial Gliomas via Convection-Enhanced Delivery
Michael Caplan[1], Simon Platt[2], Hope Jehng[1], Courtenay Freeman[2], Alexandros Bouras[3], and Costas Hadjipanayis[3]
[1]Arizona State University, Tempe, AZ, [2]University of Georgia, Athens, GA, [3]Mount Sinai Beth Israel, New York, NY

1:45 pm
Multifunctional Unimolecular Micelles Loaded with the Anti-Cancer Drug Aminoflavone for Triple-Negative Breast Cancer Therapy
Guojun Chen[1], Ashley Brinkman[1], Yidan Wang[1], Curtis Hedman[1], Thomas Havighurst[1], Nathan Sherer[1], Wei Xu[1], and Shaoqin Gong[1]
[1]University of Wisconsin-Madison, Madison, WI

2:00 pm
Bis(indolyl)methane Based Retinoid X Receptor Agonist for Efficient Nanotherapy in Onco-Pigs via In-Silico-to-*In Vivo* Approach
Santosh Misra[1], Mao Ye[1], Arun De[1], Laurie Rund[1], Lawrence Schook[1], and Dipanjan Pan[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

2:15 pm
A Multi-functional Drug Delivery System for the Treatment of Drug-resistant Breast Cancers
Song Lou[1], Micah Dezort[1], Taylor Lohneis[1], Zongmin Zhao[1], and Chenming Zhang[1]
[1]Virginia Tech, Blacksburg, VA

2:30 pm
Elevated AQP3 Expression Enhances H2O2 Permeability: Implications for Improving Ascorbate Therapy
Dieanira Erudaitius[1], Andrew Huang[1], Sarah Kazmi[1], Garry Buettner[2], and Victor Rodgers[1]
[1]University of California Riverside, Riverside, CA, [2]University of Iowa, Iowa City, IA

2:45 pm
Mechanistic Studies on the Self-Assembly of PLGA Patchy Particles and their Biomedical Applications
Carolina Salvador-Morales[1,2], Valeria Márquez-Miranda[3], Ingrid Araya-Duran[3], Jonathan Canan[4], Fernando Gonzalez-Nilo[3], Cristian Vilos[5], Juan Cebral[1], Fernando Mut[1], Rainald Lohner[6], Brian Leong[7], Gobalakrishnan Sundaresan[7], and Jamal Zweit[7]
[1]George Mason University, Bioengineering Department, Fairfax, VA, [2]George Mason University, Krasnow Institute, Fairfax, VA, [3]Universidad Andres Bello, Santiago, Chile, [4]Fundación Fraunhofer Chile Research, Santiago, Chile, [5]Universidad Andres Bello, Center for Integrative Medicine and Innovative Science, Faculty of Medicine, Santiago, Chile, [6]George Mason University, Center for Computational Fluid Dynamics, College of Sciences, Fairfax, VA,[7]Virginia Commonwealth University, Richmond, VA

OP-Sat-2-15 Room 200C

Track: Drug Delivery

Targeted or Responsive Delivery Systems I

Chairs: Michael Lawrence, Katie Bratlie

1:30 pm
Antioxidant Porous Polymersomes to Treat Neuropathic Pain
Sonia Karha[1], Christine Weisshaar[1], Andrew Tsourkas[1], Beth Winkelstein[1], and Zhiliang Cheng[1]
[1]University of Pennsylvania, Philadelphia, PA

1:45 pm
A Nanoscale Magnetically-Activated, Spatially-Targeted Drug Delivery Device
Jessica Liu[1], Anrew Tsourkas[1], and David Issadore[1]
[1]University of Pennsylvania, Philadelphia, PA

2:00 pm
Improving Distribution of Agents Released from PLGA Implants Using Therapeutic Ultrasound
Chawan Manspon[1], Christopher Hernandez[2], Norased Nasongkla[1], and Agata Exner[2]
[1]Mahidol University, Salaya, Thailand, [2]Case Western Reserve University, Cleveland, OH

2:15 pm
The Evolution of Targeted Multivalent Nano-particle Adhesion
Mingqiu Wang1, Shreyas Ravindranath1, Maha Rahim1, Elliot Botvinick1, and Jered Haun1
1University of California, Irvine, Irvine, CA

2:30 pm
Multilayer Polymeric Films Exhibiting Controlled -Lactamase-Triggered Antibiotic Release
Dahlia Alkekhia[1] and Anita Shukla[1]
[1]Brown University, Providence, RI

2:45 pm
Doxorubicin Encapsulated in Stealth Liposomes Conferred with Light-triggered Drug Release
Dandan Luo[1], Kevin Carter[1], Adia Razi[2], Jumin Geng[1], Shuai Shao[1], Daniel Giraldo[1], Ulas Sunar[3], Joaquin Ortega[2], and Jonathan Lovell[1]
[1]University at Buffalo, State University of New York, Buffalo, NY, [2]McMaster University, Hamilton, ON, Canada [3]Wright State University, Dayton, OH

Saturday, October 8 | 1:30 pm–3:00 pm | Platform Session 2

OP-Sat-2-16 — Room 200H

Track: Neural Engineering

NeuroDevices/Neuromodulation

Chairs: Ryan Koppes, Zhi Yang

1:30 pm
Investigating Simultaneous microECoG Recordings and *In Vivo* Vascular Imaging with Concomitant MRI in a Chronic Photothrombotic Stroke Model–INVITED
Kyle Swanson[1], Sarah Brodnick[1], Jared Ness[1], Joseph Novello[1], Aaron Dingle[1], Wendell Lake[1], David Niemann[1], and Justin Williams[1]
[1]University of Wisconsin, Madison, WI

1:45 pm
Controlling Plasticity in Sensory Cortical Regions Using Multisensory Neuromodulation
Cory Gloeckner[1], Jio Nocon[1], and Hubert Lim[1]
[1]University of Minnesota, Minneapolis, MN

2:00 pm
Quadruple Labelled Mouse to Study Tissue Response to Brain Implanted Devices
Janak Gaire[1], Heui Chang Lee[1,2], Seth Currlin[1], and Kevin J. Otto[1]
[1]University of Florida, Gainesville, FL, [2]Purdue University, West Lafayette, IN

2:15 pm
Evaluation of Novel Amorphous Silicon Carbide Ultramicroelectrodes for Neural Interfacing
Felix Deku[1], Yarden Cohan[2], Ben Pearre[2], Alexandra Joshi-Imre[1], Atefeh Ghazavi[1], Winthrop Gillis[2], Timothy Gardner[2], and Stuart Cogan[1]
[1]University of Texas at Dallas, Richardson, TX, [2]Boston University, Boston, MA

2:30 pm
Simultaneous Optical and Electrical *In Vivo* Analysis of the Enteric Nervous System
Nikolai Rakhilin[1], Bradley Barth[2], Jiahn Choi[1], Nozomi Nishimura[1], and Xiling Shen[2]
[1]Cornell University, Ithaca, NY, [2]Duke University, Durham, NC

2:45 pm
Integrated Electroencephalography & Transcranial Direct Current Stimulation Device
L. Savannah Dewberry,[1] Matthew N. Gray,[1] and Aaron R. Sears.[1]
[1]University of Alabama at Birmingham, Birmingham, AL

OP-Sat-2-17 — Room 200I

Track: Neural Engineering

Glial Cell Engineering

Chairs: Maribel Vazquez, Pam VanderVord

1:30 pm
PEG-based Hydrogels Support Oligodendrocyte Survival, Proliferation, and Maturation as a Function of 3D Hydrogel Mechanics
Kyle Lampe[1] and Lauren Russell[1]
[1]University of Virginia, Charlottesville, VA

1:45 pm
Synthetic Nanoparticles to Regulate Synuclein Trafficking and Reduce Microglial Activation
Neal Bennett[1], Rebecca Chmielowski[1], Nicola Francis[1], Jean Baum[1], Kathryn Uhrich[1], and Prabhas Moghe[1]
[1]Rutgers University, Piscataway, NJ

2:00 pm
3D Neural Culture Platform as a Physiological Model of Peripheral Myelin.
Ashwin Sivakumar[1], Reed Gioe[1], Parastoo Khoshakhlagh[2], and Michael Moore[1]
[1]Tulane University, New Orleans, LA, [2]Harvard University, Massachussets, MA

2:15 pm
Enhancing Schwann Cell Proliferation Via Light Stimulation Using Visible Light: A Prelude To Peripheral Nerve Regeneration Using Optogenetics
David Diaz Vera[1], Coleman Clifford[1], Erin Cram[1], Ryan Koppes[1], and Abigail Koppes[1]
[1]Northestern University, Boston, MA

2:30 pm
Growth Factor Mediated Migration of Neonatal Schwann Cells (nnSC)
Tanya Singh[1] and Maribel Vazquez[1]
[1]City College of New York, New York, NY

2:45 pm
Ability of Astrocyte Extracellular Matrix To Support Axon Growth Depends on Astrocyte Phenotype
Russell Thompson[1] and Shelly Sakiyama-Elbert[1]
[1]Washington University in St Louis, St Louis, MO

OP-Sat-2-18 — Room 200B

Track: Undergraduate Research, Design & Leadership

Undergraduate Research, Design & Leadership II: Biomaterials and Tissue Engineering

Chairs: Sherry Harbin, Renee Cottle

1:30 pm
Enhancing Chitosan Nanoparticle Delivery to Lung Epithelial Cells
Blake Lash[1], Joscelyn Mejías[1], and Krishnendu Roy[1]
[1]Georgia Institute of Technology, Atlanta, GA

1:39 pm
Development of bFGF-Eluting Biodegradable Elastomeric Inks for Three-Dimensionally Printed Tympanic Membrane Perforation Patches
Sabrina Liu[1], Nicole Black[1], Elliott Kozin[2], Aaron Remenschneider[2], and Jennifer Lewis[1]
[1]Harvard University, Cambridge, MA, [2]Massachusetts Eye and Ear Infirmary, Boston, MA

1:48 pm
The Role of Mechanical Loading In ECM Bioscaffold Mediated Skeletal Muscle Remodeling
Riddhi Gandhi[1], Jenna Dziki[1], Ross Giglio[1], Brian Sicari[1], Derek Wang[2], Ricardo Londono[1], and Christopher Dearth[3]
[1]University of Pittsburgh, Pittsburgh, PA, [2]McGowan Institute for Regenerative Medicine, Pittsburgh, PA, [3]Walter Reed National Military Medical Center, Bethesda, MD

1:57 pm
TSG-6 Modulation of Neutrophil Migration Patterns in Excisional Skin Wound Repair
Kathryn Hardin[1,2], Sajina Shakya[1,3], Judith Mack[1], and Edward Maytin[1]
[1]Cleveland Clinic, Cleveland, OH, [2]Boston University, Boston, MA, [3]Cleveland State University, Cleveland, OH

2:06 pm
dECM Endothelialization to Create a Non-Thrombogenic Interface of an Engineered Vascular Structure
Hamsini Sriraman[1], Christopher Broda[2], Eric Chau[3], Rachel Van Druren[3], Luiz Sampaio[3], Andrea Gobin[3], and Doris Taylor[3]
[1]Rice University, Houston, TX, [2]Baylor College of Medicine, Houston, TX, [3]Texas Heart Institute, Houston, TX

2:15 pm
The Effect of Environmental Aging on the Material Properties of Soft-Polymer Materials for 3D-Printed Custom Foot Orthotics
Shannon Hall[1], Lauren Jackson[1], Breanne Przestrzelski[1], John DesJardins[1], Brian Kaluf[2], Nikki Hooks[2], Walter D. Ballard II[3], Timothy Pruett[1], and Steven Hoeffner[1]
[1]Clemson University, Clemson, SC, [2]Ability Prosthetics & Orthotics, Greenville, SC, [3]Upstate Pedorthic Services, Greer, SC

2:24 pm
Culture with Trimethylamine N-oxide After Transient Chondroitinase ABC-Treatment as a Strategy for Functional Tissue Engineering of Cartilage Derived from Adult Chondrocytes
WIlliam Yu[1], Andrea Tan[1], James Cook[2], Gerard Ateshian[1], and Clark Hung[1]
[1]Columbia University, New York, NY, [2]University of Missouri, Columbia, MO

2:33 pm
Continuous Cocaine Administration Results In Significant Trabecular Bone Deterioration
Amna Haider[1], Brandon Zhuang[1], Hyunsu Shin[1], Kevin Clare[1], Craig Allen[1], Gabriel Pagnotti[1], Congwu Du[1], Clinton Rubin[1], and M. Ete Chan[1]
[1]Stony Brook University, Stony Brook, NY

2:42 pm
Novel PEDOT Coating Functionalization Methods for Bio-interfacing Applications
Bingchen Wu[1], Bin Cao,[1], and Xinyan Cui[1]
[1]University of Pittsburgh, Pittsburgh, PA

2:51 pm
A Microfluidic Device Based Angiogenesis Assay to Study the Effects of Interstitial Flow
Arnold Tao[1], Venktesh S. Shirure[1], and Steven C. George[1]
[1]Washington University in Saint Louis, St.Louis, MO

OP-Sat-3-1 Auditorium 1

Tracks: Cellular and Molecular Bioengineering, Stem Cell Engineering

Stem Cell Programming

Chairs: Marsha Rolle, Melissa Krebs

3:15 pm
Engineering Approaches for Enhanced Survival and Potential of Mesenchymal Stem Cells–INVITED
Kent Leach[1]
[1]UC Davis, Davis, CA

3:45 pm
Prevention of Undesirable Maturation of Chondrocyte using pPhenotype-specific Gene Circuits
Biming Wu[1], Sanjana Murali[1], Meghan Burns[1], and Rhima Coleman[1]
[1]University of Michigan, Ann Arbor, MI

4:00 pm
Mechanical Programming of Rapid Chemokine Induction in Mesenchymal Stem Cells
Jae-Won Shin[1], Madeline Cooper[2], and David Mooney[2]
[1]University of Illinois College of Medicine, Chicago, IL, [2]Harvard University, Cambridge, MA

4:15 pm
Micropatterning Human Cells to Track and Control Induction of Human Pluripotent Stem Cells
Ty Harkness[1], Ryan Prestil[1], Stephanie Seymour[1], Jared Carlson-Stevermer[1], Nicole Piscopo[1], and Krishanu Saha[1]
[1]University of Wisconsin-Madison, Madison, WI

4:30 pm
Dynamic Culture Improves Cell Reprogramming Efficiency
Junren Sia[1], Raymond Sun[1], and Song Li[1]
[1]UC Berkeley, Berkeley, CA

OP-Sat-3-2 Auditorium 2

Track: Cancer Technologies

Engineered Models of Breast Cancer and the Tumor Microenvironment

Chairs: Matt Kinsella, Anthony Dickherber

3:15 pm
Dynamically Stiffening Hydrogels Promote Malignant Transformation via Collective Mechanical Signaling
Matthew Ondeck[1] and Adam Engler[1,2]
[1]University of California San Diego, La Jolla, CA, [2]Sanford Consortium for Regenerative Medicine, La Jolla, CA

3:30 pm
Dynamic Increase in Matrix Stiffness Alters MCF10A Response to Extracellular Vesicles *In Vitro*
Shane Allen[1] and Laura Suggs[1]
[1]The University of Texas at Austin, Austin, TX

Saturday, October 8 | 3:15 pm–4:45 pm | Platform Session 3

3:45 pm
Breast Cancer-Shed Extracellular Vesicles Stimulate Adipose Stem Cell Differentiation into Myofibroblasts By Activating MAPK Signaling
Young Hye Song[1], Sung Jin Choi[1], Christine Warncke[1], Siyoung Choi[1], Marc Antonyak[1], Richard Cerione[1], and Claudia Fischbach[1]
[1]Cornell University, Ithaca, NY

4:00 pm
Bacterial Quorum-Sensing Signals in the Breast Tumor Microenvironment: Implications on Breast Cancer Survival and Proliferation
Brittany Balhouse[1] and Scott Verbridge[1]
[1]Virginia Tech, Blacksburg, VA

4:15 pm
3D Hydrogel Microwell Arrays with Encapsulated Adipocytes as a Tumor Microenvironment Model for Studying Breast Cancer
Xiaoshan Yue[1], John Casey[1], Trung Dung Nguyen[1], Victoria Zellmer[1], Siyuan Zhang[1], and Pinar Zorlutuna[1]
[1]University of Notre Dame, Notre Dame, IN

4:30 pm
Single Cell Tracking of the Epithelial-Mesenchymal Transition in 3D Tumor Organoids
Susan Leggett[1], Thomas Valentin[1], Marielena Gamboa Castro[1], and Ian Wong[1]
[1]Brown University, Providence, RI

OP-Sat-3-3 — Auditorium 3

Track: Biomaterials*

Integration of Biomaterials with Chips and Devices

Chairs: Ryan Koppes, Blanka Sharma

3:15 pm
Non-swelling Microchanneled Hydrogels Reveal that Matrix Degradability Controls Cell Invasion Mode
Brendon Baker[1], Britta Trappmann[1], Jason Burdick[2], and Christopher Chen[1]
[1]Boston University, Boston, MA, [2]University of Pennsylvania, Philadelphia, PA

3:30 pm
Sprayable Thermoresponsive Polymeric Coatings for Intestinal Tissue Regeneration
Meryem Pehlivaner[1] and Adam Ekenseair[1]
[1]Northeastern University, Boston, MA

3:45 pm
Precision-engineered Porous Material with Tunable Mechanical Property for Vascular Graft Application
Le Zhen[1] and Buddy Ratner[1]
[1]University of Washington, Seattle, WA

4:00 pm
A Three-Component Self-Assembling Peptide Hydrogel System to Independently Control Matrix Stiffness and Adhesiveness
Nathaniel Hogrebe[1], Alisha Sarang-Sieminski[2], James Reinhardt[1], and Keith Gooch[1]
[1]The Ohio State University, Columbus, OH, [2]Olin College, Needham, MA

4:15 pm
Shape Memory Polyurethane Urea for Ureteral Stents
Yang Zhu[1,2], Zuwei Ma[1], Sang-ho Ye[1], and William Wagner[1,2,3,4]
[1]McGowan Institute for Regenerative Medicine, University of Pittsburgh, Pittsburgh, PA, [2]Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, [3]Department of Surgery, University of Pittsburgh, Pittsburgh, PA, [4]Department of Chemical Engineering, University of Pittsburgh, Pittsburgh, PA

4:30 pm
***In Situ* Oxygen Generation within Immunoisolating Device Improves Efficacy in Diabetic Rodent Model**
Maria Coronel[1] and Cherie Stabler[2]
[1]University of Florida, Gainesvillle, FL, [2]University of Florida, Gainesville, FL

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OP-Sat-3-4 — Room 102AB

Track: Biomaterials*

Biomaterials for Regenerative Medicine

Chairs: Maureen Lynch, Abigail Koppes

3:15 pm
Transcatheter Tissue-Engineered Venous Valve
Zeeshan Syedain[1], Cole Feagler[1], Thanh Le[1], and Robert Tranquillo[1]
[1]University of Minnesota, Minneapolis, MN

3:30 pm
Biodegradable Sponge Fabrication for Use In Deep Tissue Negative Pressure Wound Therapy
Harleigh Warner[1,2] and William D. Wagner[1,2]
[1]Wake Forest- Virginia Tech, Winston Salem, NC, [2]Wake Forest University School of Medicine, Winston Salem, NC

3:45 pm
Hemocompatibility Evaluation of Nitric Oxide Releasing Dual-lumen Catheters in a Chronic Rabbit Model
Elizabeth Brisbois[1], Maria Kim[1], Azmath Mohammed[1], Terry Major[1], Hitesh Handa[2], Mark Meyerhoff[1], and Robert Bartlett[1]
[1]University of Michigan, Ann Arbor, MI, [2]University of Georgia, Athens, GA

4:00 pm
Effect of Capsule Size, Material, and Geometry on the Insulin Release Profile of Encapsulated Islets
Peter Buchwald[1], Alejandro Tamayo-Garcia[1], Alice Tomei[1], and Cherie Stabler[2]
[1]University of Miami, Miami, FL, [2]University of Florida, Gainesville, FL

4:15 pm
Extrahepatic Islet Transplantation with A Citrate-based Thermoresponsive Hydrogel
Yunxiao Zhu[1], Xiaomin Zhang[2], Xunrong Luo [2], and Guillermo Ameer[1]
[1]Northwestern University, Evanston, IL, [2]Northwestern University, Chicago, IL

4:30 pm
Biomimetic Microgels with "Switchable" Deformability to Promote Wound Repair
Erin Sproul[1] and Ashley Brown[1]
[1]North Carolina State University and The University of North Carolina at Chapel Hill, Raleigh, NC

*** Biomaterials Track sponsored by**

ACS Biomaterials SCIENCE & ENGINEERING

OP-Sat-3-5 — Room 102C

Tracks: Biomedical Imaging and Optics, Cardiovascular Engineering

Imaging in Cardiovascular Systems II

Chairs: F. Scott Gayzik, Greg Bashford

3:15 pm
MRI Analysis of Age-Related Changes in the Murine Venous System
Calvin Chiu[1], Olivia Palmer[1], Amos Cao[1], Ulrich Scheven[1], Jose Diaz[1], and Joan Greve[1]
[1]University of Michigan, Ann Arbor, MI

3:30 pm
Investigating Early Development in a Murine Model of Abdominal Aortic Aneurysms
Evan Phillips[1], Ryan Grant[1], and Craig Goergen[1]
[1]Purdue University, West Lafayette, IN

3:45 pm
Toward Cerebral Blood Flow Velocity Mapping using Synchrotron X-ray Phase Contrast Imaging
Mohammad Izadifar[1,2], Michael E. Kelly[1,2], and Lissa Peeling[1,2]
[1]University of Saskatchewan, Saskatoon, SK, Canada, [2]Saskatchewan Cerebrovascular Centre, Saskatoon, SK, Canada

4:00 pm
Determination of Vascular Permeability Without Knowledge of an Arterial Input Function
Joe Tien[1], Xuanyue Li[1], Raleigh Linville[1], and Evan Feldman[1]
[1]Boston University, Boston, MA

4:15 pm
3-Dimensional Light Sheet Fluorescent Imaging and High-Frequency Ultrasonic Transducers to Characterize Doxorubicin-Induced Cardiac Injury and Regeneration
Rene Packard[1], Tyler Beebe[1], Nelson Jen[1], Peng Fei[2], BongJin Kang[3], Yichen Ding[1], Jianguo Ma[1], Po-Heng Chen[3], Jonathan Tang[1], Hillary Yen[1], Yu-Huan Shih[4], Yonghe Ding[4], K. Kirk Shung[3], Xiaolei Xu[4], and Tzung Hsiai[1]
[1]UCLA, Los Angeles, CA, [2]Huazhong University of Science and Technology, Wuhan, China, People's Republic of, [3]USC, Los Angeles, CA, [4]Mayo Clinic College of Medicine, Rochester, MN

4:30 pm
Analysis of Registration Methods for Motion Artifact Correction in Cardiac Optical Mapping
Marcela Rodriguez[1] and Anders Nygren[1]
[1]University of Calgary, Calgary, AB, Canada

OP-Sat-3-7 — Room 101B

Track: Cardiovascular Engineering

Thrombosis/Hemostasis

Chairs: Anjelica Gonzalez, Danny Bluestein

3:15 pm
Neutrophil-Platelet Aggregation Enabled Vaso-occlusion in Sickle Cell Disease
Maritza Jimenez[1] and Prithu Sundd[1]
[1]University of Pittsburgh, Pittsburgh, PA

3:30 pm
Flow-Induced Damage to Blood Cells in Aortic Valve Stenosis: A Multiscale Analysis
Koohyar Vahidkhah[1], Dan Cordasco[2], Mostafa Abbasi[1] Liang Ge[3], Elaine Tseng[3], Prosenjit Bagchi[2], and Ali Azadani[1]
[1]University of Denver, Denver, CO, [2]Rutgers University, Piscataway, NJ, [3]University of California at San Francisco, San Francisco, CA

3:45 pm
The Effect of Factor XI on Clot Structure and Mechanical Strength
Joanna Sylman[1], Xiaolin Nan[1], Jevgenia Rudenko[1], Cristina Puy[1], Erik Tucker[2], Uranbileg Daalkhaijav[3], Travis Walker[3], Andras Gruber1[,2], and Owen McCarty[1]
[1]Oregon Health Science University, Portland, OR, [2]Aronora, Inc., Portland, OR, [3]Oregon State University, Corvallis, OR

4:00 pm
Synthetic Platelet (SynthoPlate®) Nanotechnology in Prophylactic and Emergent Treatment of Bleeding
DaShawn A. Hickman[1], Christa L. Pawlowski[1], Meenal Shukla[2], Mitchell Dyer[3], Ann Kim[4], Andrew Shevitz[4], Keith R. McCrae[2], Matthew D. Neal[3], Vikram Kashyap[4], and Anirban Sen Gupta[1]
1Case Western Reserve University, Cleveland, OH, [2]Cleveland Clinic Foundation, Cleveland, OH, [3]University of Pittsburgh Medical Center, Pittsburgh, PA, [4]University Hospitals Case Medical Center, Cleveland, OH

Saturday, October 8 | 3:15 pm–4:45 pm | Platform Session 3

4:15 pm
Efficacy of Antiplatelet Drugs on Shear-Mediated Platelet Activation in Ventricular Assist Devices
Jawaad Sheriff[1], Phat L. Tran[2], Lorenzo Valerio[3], Marcus Hutchinson[2], William Brengle[2], Marvin J. Slepian[2], and Danny Bluestein[1]
[1]Stony Brook University, Stony Brook, NY, [2]University of Arizona, Tucson, AZ, [3]Politecnico di Milano, Milan, Italy

4:30 pm
***In Situ* Regeneration of Bioactive Coatings Enabled by an Evolved Staphylococcus aureus Sortase A**
Hyun Ok Ham[1], Zheng Qu[1], Carolyn Haller[1], Brent Dorr[2], Erbin Dai[1], Wookhyun Kim[1], David Liu[2], and Elliot Chaikof[1]
[1]Beth Israel Deaconess Medical Center/ Harvard Medical School, Boston, MA, [2]Howard Hughes Medical Institute/ Harvard University, Cambridge, MA

OP-Sat-3-8 — Room 101C

Track: Tissue Engineering

Inflammation and Immune-Modulation

Chairs: Rene Olivares-Navarrete, Haipeng Liu

3:15 pm
Dendritic Cell-Targeted Immunomodulation for Tolerance–INVITED
Benjamin Keselowsky[1]
[1]University of Florida, Gainesville, FL

3:45 pm
GPNMB Regulates the Crosstalk between Macrophages and MSCs towards Diabetic Wound Repair
Bing Yu[1], Talib Alboslemy[1], Layla Almutairi[1], and Min-Ho Kim[1]
[1]Kent State University, Kent, OH

4:00 pm
Understanding the Therapeutic Potential of Human Mesenchymal Stem Cells for Osteoarthritis Treatment
Patricia Diaz-Rodriguez[1], Satyavrata Samavedi[1], and Mariah Hahn[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

4:15 pm
Localizing Pro-Regenerative Inflammation Promotes Skeletal Muscle Repair
Cheryl Lau[1], Claire Segar[1], and Edward Botchwey[1]
[1]Georgia Institute of Technology, Atlanta, GA

4:30 pm
Spatiotemporal Regulation of Inflammation using Engineered Hydrogels
Claire Segar[1], Jose Garcia[2], Andres Garcia[2], and Edward Botchwey[1]
[1]Georgia Institute of Technology and Emory University, Atlanta, GA, [2]Georgia Institute of Technology, Atlanta, GA

OP-Sat-3-9 — Room 101D

Track: Biomedical Engineering Education (BME)

Biomedical Curriculum

Chairs: Brittany Zick, Donald Gaver

3:15 pm
Utilizing Cell Phones, Plasma, and Imaging Software to Introduce Surface Engineering to Freshman
Samuel Bechara[1], Jay Goldberg[1], Miguel Sotelo[1], and Scott Beardsley[1]
[1]Marquette University, Milwaukee, WI

3:30 pm
Ten Years of Interdisciplinary Undergraduate Student Research: Outcomes and Lessons Learned
Attiyya Houston[1], Carin McAbee[1], Jabari Knight[1], Kendra Oliver[1], Jonathan Ehrman[1], Stacy Sherrod[1], John Wikswo[1], and Christina Marasco[1]
[1]Vanderbilt University, Nashville, TN

3:45 pm
Systematic Design and HRV Analysis of a Portable ECG System for Biomedical Engineering Education and Curriculum
Mehdi Shokoueinejad[1], Samual Lines[1], Fa Wang[1], Amit J. Nimunkar[1], and John G. Webster[1]
[1]UW-Madison, Madison, WI

4:00 pm
Duke-Makerere BME Partnership
William Reichert[1], Ashutosh Chilkoti[1], Charles Ibingira[2], and Robert Ssekitoleko[2]
[1]Duke University, Durham, NC, NC, [2]Makerere University, Kampala, Uganda

4:15 pm
A Peer-Learning Nursing-Engineering Pedagogy for Senior Design Projects.
Colin Drummond[1]
[1]Case Western Reserve University, Cleveland, OH

4:30 pm
Effectiveness of Summer Undergraduate Research Experiences in Biomedical Engineering at Carnegie Mellon University
Conrad Zapanta[1] and Keith Cook[1]
[1]Carnegie Mellon University, Pittsburgh, PA

OP-Sat-3-10 — Room 101E

Track: Biomaterials*

Hydrogel Biomaterials III

Chairs: Jeannine Coburn, Rhima Coleman

3:15 pm
Self-assembly of Hepatic Spheroids Inside Core-shell Poly(ethylene glycol) Microcapsules
Christian Siltanen[1], Michaela Diakatou[1], Jeremy Lowen[1], Amranul Haque[1], and Alexander Revzin[1]
[1]UC Davis, Davis, CA

3:30 pm
Rupture Force of Cell Adhesion Ligand Tethers Modulates Biological Activities of a Cell-laden Hydrogel
Min Kyung Lee[1], Jooyeon Park[1], Xuefeng Wang[1], Mehdi Roein-Peikar[1], Eunkyung Ko[1], Ellen Qin[1], Jonghwi Lee[2], Taekjip Ha[1], and Hyunjoon Kong[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Chung-Ang University, Seoul, Korea, Republic of

3:45 pm
Bioorthogonal Conjugation of Bioactive Proteins to Thiol-Ene Click Microparticles
Faraz Jivan[1] and Daniel Alge[1]
[1]Texas A&M University, College Station, TX

4:00 pm
Zwitterionic Hydrogels Resist Foreign-body Response in a Stiffness Dependent Manner
Lauren E Jansen[1], Luke D Amer[2], Thuy V Nguyen[1], Raghu Thyagarajan[1], Dave Ford[1], Stephanie J Bryant[2], and Shelly R Peyton[1]
[1]University of Massachusetts Amherst, Amherst, MA, [2]University of Colorado Boulder, Boulder, CO

4:15 pm
Particle Scaffolds Using Amino Acid Chirality for Spatial Control of Immune Activation in Wounds
Donald Griffin[1], Elias Sideris[1], Westbrook Weaver[1], Philip Scumpia[1], Jaekyung Koh[1], Dino Di Carlo[1], and Tatiana Segura[1]
[1]UC Los Angeles, Los Angeles, CA

4:30 pm
Controlling PEG Hydrogel Mechanics through Crosslinking Structure to Promote Microvascularization
Ryan Schweller[1], Bruce Klitzman[1], and Jennifer West[1]
[1]Duke University, Durham, NC

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OP-Sat-3-11 — Room 200E

Track: Nano and Micro Technologies

Advances in Micro/Nano Manufacturing

Chairs: Vinay Abhyankar, Xiaolong Luo

3:15 pm
Pre-aligned Microfiber for Engineering Linear Tissues
Chunxiao Cui[1], Mingkun Wang[1], and Li-Hsin Han[1]
[1]Drexel University, Philadelphia, PA

3:30 pm
Leaf-inspired Artificial Microvascular Networks (LIAmN) for Three-dimensional Cell Culture
Rong Fan[1], Yihang Sun[1], and Jiandi Wan[1]
[1]Rochester Institute of Technology, Rochester, NY

3:45 pm
Magnetic NiFe Electroformed Trap (MagNET): Fabrication Strategy for >100mL/hr Immunomagnetic Sorting
Venkata Yelleswarapu[1], Jina Ko[1], Anup Singh[1], Nishal Shah[1], and David Issadore[1]
[1]University of Pennsylvania, Philadelphia, PA

4:00 pm
Parallelized Microfluidics for Large-scale Synthesis of Multicomponent Nanoparticles
Michael Toth[1] and YongTae Kim[1]
[1]Georgia Institute of Technology, Atlanta, GA

4:15 pm
A Reversibly Sealed Easy Access Modular (SEAm) Microfluidic Architecture to Establish *In Vitro* Tissue Interfaces
Vinay Abhyankar[1], Chung-Yan Koh[2], Meiye Wu[2], and Anson Hatch[2]
[1]UT Arlington Research Institute, Fort Worth, TX, [2]Sandia National Labs, Livermore, CA

4:30 pm
Robotic Control of Magnetic Particles and Biological Cells Using Magnetic Microwheels
Tonguc Tasci[1], Tao Yang[1], Kuldeepsinh Rana[1], Keith Neeves[1], and David Marr[2]
[1]Colorado School of Mines, Golden, CO, [2]Colorado School Of Mines, Golden, CO

OP-Sat-3-12 — Room 200F

Track: Biomedical Imaging and Optics

Nanotheranostics

Chairs: Santosh Aryal, Paolo Decuzzi

3:15 pm
Array-Based Identification of Triple-Negative Breast Cancer Cells Using Fluorescent Nanodot- Graphene Oxide Complexes
Yu Tao[1] and Debra Auguste[1]
[1]City College of New York, New York, NY

3:30 pm
Magnetomotive Displacement of the Tympanic Membrane for Sound Perception
Pin-Chieh Huang[1], Eric Chaney[1], Ryan Shelton[1], and Stephen Boppart[1]
[1]University of Illinois at Urbana–Champaign, Urbana, IL

3:45 pm
Dual Energy CT Imaging of the Vascular Effects of Gold Nanoparticles in Radiation Therapy
Jeffrey Ashton[1], Jocelyn Hoye[1], Katherine Deland[2], David Kirsch[2], Jennifer West[1], and Cristian Badea[2]
[1]Duke University, Durham, NC, [2]Duke University Medical Center, Durham, NC

4:00 pm
Fluorescent Nanoplatelets for Cellular Imaging and Delivery: Flat Nanoprobes with Rapid Cellular Entry
Sung Jun Lim[1], Minjee Kang[1], Daniel R. McDougle[1], Mohammed U. Zahid[1], Liang Ma[1], Cecilia Leal[1], Aditi Das[1], and Andrew M. Smith[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

Saturday, October 8 | 3:15 pm–4:45 pm | Platform Session 3

4:15 pm
RGD Guided Near-infrared Fluorescent Peptide Nanoparticles For Non-invasive Esophageal Cancer Prognosis Imaging
Zhen Fan[1,2], Chaochu Cui[3,4], Leming Sun[1,2], Zui Pan[4], and Mingjun Zhang[1,2,5]
[1]Department of Biomedical Engineering, College of Engineering, The Ohio State University, Columbus, OH, [2]Dorothy M. Davis Heart & Lung Research Institute, The Ohio State University, Columbus, OH, [3]Sun Yat-sen University Cancer Center; State Key Laboratory of Oncology in South China; Collaborative Innovation Center for Cancer Medicine, Guangzhou, China, People's Republic of, [4]Department of Surgery–Thoracic Surgery, The Ohio State University, Columbus, OH, [5]Interdisciplinary Biophysics Graduate Program, The Ohio State University, Columbus, OH

4:30 pm
Biocompatible and Photostable Fluorescent Peptide Nanoparticles For *In Vivo* Imaging
Zhen Fan[1,2], Leming Sun[1,2], Mark Ruegsegger[1], Derek Hansford[1], Chaochu Cui[3,4], Zui Pan[4], Scott Galster[5], Peter Mohler[2], and Mingjun Zhang[1,2,6]
[1]Department of Biomedical Engineering, College of Engineering, The Ohio State University, Columbus, OH, [2]Dorothy M. Davis Heart & Lung Research Institute, The Ohio State University, Columbus, OH, [3]Sun Yat-sen University Cancer Center; State Key Laboratory of Oncology in South China; Collaborative Innovation Center for Cancer Medicine, Guangzhou, China, People's Republic of, [4]Department of Surgery–Thoracic Surgery, The Ohio State University, Columbus, OH, [5]711th Human Performance Wing, Air Force Research Laboratory, WPAFB, OH, [6]Interdisciplinary Biophysics Graduate Program, The Ohio State University, Columbus, OH

OP-Sat-3-13 — Room 200D

Track: Biomedical Imaging and Optics

MRI II

Chairs: Miguel Moreira

3:15 pm
Diffusion Altering Reporter Genes for Magnetic Resonance Imaging
Arnab Mukherjee[1], Di Wu[1], Hunter Davis[1], and Mikhail Shapiro[1]
[1]California Institute of Technology, Pasadena, CA

3:30 pm
Bio-Orthogonal MRI Imaging-A Novel Method Proposed for Metastatic Cancer Detection
Tanner Ravsten[1], William Pitt[1], and Neal Bangerter[1]
[1]Brigham Young University, Provo, UT

3:45 pm
Preclinical MRI and FDOPA-PET/CT for Monitoring Therapeutic Response in a Syngeneic Mouse Model of Multiple Myeloma
Deep Hathi[1], Alexander Bollerman-Nowlis[1], Wadha Alyami[2], John Engelbach[1], Walter Akers[1], Joel Garbow[1], Jonathan McConathy[3], and Monica Shokeen[1]
[1]Washington University in St. Louis, St. Louis, MO, [2]King Saud University, Riyadh, Saudi Arabia, [3]University of Alabama Birmingham, Birmingham, AL

4:00 pm
Magnetic Resonance Glowing Red Blood Cells–INVITED
Santosh Aryal[1]
1Kansas State University, Manhattan, KS

4:15 pm
Methods for Whole-brain Probabilistic Tractography in Acute and Chronic Stroke Survivors
Miguel Sotelo[1] and Brian Schmit[2]
[1]Marquette University, Greenfield, WI, [2]Marquette University, Milwaukee, WI

4:30 pm
Significance of Electrode Orientation in Magnetic Resonance Electrical Impedance Tomography (MREIT)
Neeta Ashok Kumar[1], Munish Chauhan[1], and Rosalind J. Sadleir[1]
[1]Arizona State University, Tempe, AZ

OP-Sat-3-14 — Room 200G

Track: Drug Delivery

Cancer Drug Delivery II

Chairs: Bingmei Fu, Teja Guda

3:15 pm
Improving Selective Targeting to Macrophage Subpopulations Through Modifying Liposomes with Arginine based Materials
Katie Bratlie[1]
[1]Iowa State University, Ames, IA

3:30 pm
The Preparation and Characterization of Long-Circulating Thermosensitive Liposomes for Oxaliplatin
Yan Shen[1], Yanan Li[2], Linlin Sun[1], and Thomas Webster[3]
[1]Northeastern University, Boston, MA, [2]China Pharmaceutical University, Nanjing, China, People's Republic of, [3]Northeastern University, Boston, Afghanistan

3:45 pm
Efficacy of E-selectin/TRAIL Liposomes to Treat Patient Circulating Tumor Cells in Flowing Whole Blood
Jocelyn Marshall[1], Zeinab Mohamed[1], Edward Messing[2], Deepak Sahasrabudhe[2], and Michael King[1]
[1]Cornell University, Ithaca, NY, [2]University of Rochester, Rochester, NY

4:00 pm
Shear Resistance of Circulating Tumor Cells with Cancer-associated Fibroblasts
Jocelyn Marshall[1], Andrea Clinch[1], and Michael King[1]
[1]Cornell University, Ithaca, NY

4:15 pm
A Unique Enzyme Conjugation Strategy for Enhanced Nanoparticle Tumor Penetration and Highly Efficient Antitumor Efficacy
Hao Zhou[1], Zhiyuan Fan[1], Junjie Deng[1], Pelin Lemons[1], Dimitrios Arhontoulis[1], Wilbur Bowne[1], and Hao Cheng[1]
[1]Drexel University, Philadelphia, PA

4:30 pm
Bioresponsive Polymer Coating on Targeted Drug Nanorods
Sutapa Barua[1]
[1]Missouri University of Science and Technology, Rolla, MO

OP-Sat-3-15 Room 200C

Track: Drug Delivery

Targeted or Responsive Delivery Systems II

Chairs: Craig Duvall, Michael Lawrence

3:15 pm
Translational Nanomaterials for Efficient Targeting of Adipose Tissue Macrophages in Obesity
Liang Ma[1], Tzu-wen Liu[1], Kelly Swanson[1], and Andrew Smith[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

3:30 pm
A Nitro-furan Antibiotic Turns Oncolytic to Selectively Reduce Breast Cancer Stem Cell and Tumor Growth via STAT-3 Modulation
Santosh Misra[1], Zhe Wu[1], Mao Ye[1], Klaus Schulten[1], and Dipanjan Pan[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

3:45 pm
Reversal of Arterial Calcification in A Rat Model Of Chronic Kidney Disease By Targeted Chelation Therapy With EDTA Loaded BSA Nanoparticles
Saketh Karamched[1], Nasim Nosoudi[1], Hannah Moreland[1], and Narendra Vyavahare[1]
[1]Clemson University, Clemson, SC

4:00 pm
Recovering Antibiotic Utility with Silica-Lipid Nanoparticle Composites
Brandon Slaughter[1], Christopher Lino[1], Amber McBride[1], Patrick Fleig[1], Marissa Conroy[1], Claire Melo[1], Terry Wu[2], Natalie Adolphi[2], Scott Reed[1], Carol Ashley[1], Jeff Brinker[1,2], Eric Carnes[1], and Carlee Ashley[1]
[1]Sandia National Laboratories, Albuquerque, NM, [2]The University of New Mexico, Albuquerque, NM

4:15 pm
Hydrogel Microspheres for Spatiotemporally Controlled Delivery of siRNA
Alexandra McMillan[1], Minh K. Nguyen[1], Samantha Sarett[2], Craig Duvall[2], and Eben Alsberg[1,3]
[1]Case Western Reserve University, Cleveland, OH, [2]Vanderbilt, Nashville, TN, [3]Case Western Reserve University, Cleveland, OH

OP-Sat-3-16 Room 200H

Track: Biomechanics

Biofluids

Chairs: Ashley Brown, Walter Murfree

3:15 pm
Spatial Temporal Correlation 4D Imaging of Chick Embryonic Heart
Sheldon Ho[1], Germaine Xin Yi Tan[1], Toon Jin Foo[1], Phan-Thien Nhan[1], and Choon Hwai Yap[1]
[1]NUS, Singapore, Singapore

3:30 pm
Perivascular Flow of Cerebrospinal Fluid in The Brain
Vinod Suresh[1] and James Grotberg[2]
[1]University of Auckland, Auckland, New Zealand, [2]University of Michigan, Ann Arbor, MI

3:45 pm
Effect of the Perilymph Hydrodynamic Behavior on the Traveling Wave Motion of the Basilar Membrane in the Cochlea
A. De Paolis[1], M. Bikson[1], J.T. Nelson[2], M. Packer[2], and L. Cardoso[1]
[1]The City College of New York, Department of Biomedical Engineering, New York, NY,[2]Department of Defense, Hearing Center of Excellence, Lackland, AFB, TX

4:00 pm
Using *In-Vivo* 4D PC-MRI to Obtain Boundary Conditions for CFD Simulations of Flow in Cerebral Aneurysms
Alireza Vali[1], Benjamin Dickerhoff[2], Farshid Faraji[3], David Saloner[3], and Vitaliy Rayz[1,4]
[1]Medical College of Wisconsin, Milwaukee, WI, [2]Marquette University, Milwaukee, WI,[3]University of California at San Francisco, San Francisco, CA, [4]University of Wisconsin–Milwaukee, Milwaukee, WI

4:15 pm
***In Vivo* Characterization of Wall Shear Stress Environment in Fetus Umbilical Arteries and Veins**
Shier Nee Saw[1], Dawn Chia[2], Citra Nurfarah Zaini Mattar[2], Arijit Biswas[2], and Choon Hwai Yap[1]
[1]National University of Singapore, Singapore, Singapore, [2]National University of Health Sciences, Singapore, Singapore

4:30 pm
Simulations and Experiments of Airflow in Models of Damaged Human Trachea for Surgical Planning
Grant Armstrong[1]
[1]University of Central Oklahoma, Edmond, OK

OP-Sat-3-17 Room 200I

Track: Neural Engineering

Neural Invasive Devices/Interfaces: Compatibility, Stimulation, Recording and Modeling

Chairs: Teresa Murray, Matthew Johnson

3:15 pm
Close-Packed Microelectrodes for Awake Headfixed 1020-Channel Neural Recording
Jorg Scholvin[1], Brian Allen[1], Jacob Bernstein[1], Chris Chronopoulos[2], Justin Kinney[1], Charlie Lamantia[2], Caroline Moore-Kochlacs[3], Nancy Kopell[3], Clifton Fonstad[1], and Edward Boyden[1]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]LeafLabs, Cambridge, MA, [3]Boston University, Boston, MA

3:30 pm
Electrocorticographic Features of Therapeutic Deep Brain Stimulation in Tourette Syndrome
Jonathan Shute[1], Enrico Opri[1], Rene Molina[1], Justin Rossi[1], Kelly Foote[1], Michael Okun[1], and Aysegul Gunduz[1]
[1]University of Florida, Gainesville, FL

Saturday, October 8 | 3:15 pm–4:45 pm | Platform Session 3

3:45 pm
Computational Modeling of STN-DBS for Predicting Neuronal Activation Around Directional DBS Arrays
Benjamin Hoenes[1], Simeng Zhang[1], and Matthew Johnson[1]
[1]University of Minnesota, Minneapolis, MN

4:00 pm
Multicolor Genetically-Encoded Calcium-Sensitive Bioluminescent Reporters of Neural Activity for Brain-Machine Interfaces
Mitchell Pender[1], Karen Lin[1], Eva Ding[1], Amanda Bares[1], Michael Kaplitt[2], Chris Schaffer[1], and Nozomi Nishimura[1]
[1]Nancy E. and Peter C. Meinig School of Biomedical Engineering, Cornell University, Ithaca, NY,[2]Brain and Spine Center, Weill Cornell Medical College, New York, NY

4:15 pm
A Rat Model for Isolating Basal Ganglia Pathways for the Study of Information Transmission
Katherine Lambert[1], John White[2], and Alan Dorval[1]
[1]University of Utah, Salt Lake City, UT, [2]Boston University, Boston, MA

4:30 pm
A New Neurotechnology for Continuous, Simultaneous Neural Recording and Stimulation
Jian Xu[1], Anh Tuan Nguyen[1], Tong Wu[1], Teris Tam[1], Wenfeg Zhao[1], and Zhi Yang[1]
[1]University of Minnesota, Minneapolis, MN

OP-Sat-3-18 — Room 200B

Track: Undergraduate Research, Design & Leadership

Undergraduate Research, Design & Leadership III: Nano/Micro Technology and Bioimaging

Chairs: Delphine Dean, Fang Huang

3:15 pm
Point-of-Care Microfluidic Biochip to Quantify Inflammatory Response by Measuring IL6 from Whole Blood
Michael Rappleye[1], Jackson Winter[1], Manish Patel[1], Paula Duerte Guevara[1], Emilee Flaugher[1], Umer Hassan[1], Bobby Reddy[1], and Tor Jensen[2]
[1]University of Illinois at Urbana-Champaign, Champaign, IL, [2]Carle Foundation Hospital, Urbana, IL

3:24 pm
Quantitative Bacterial Chemotaxis Study In Membrane-Enabled Static Gradient Device
Kathleen O'Brien[1], David Quan[2], Gary W. Rubloff[2], Herman O. Sintim[3], William E. Bentley[2], and Xiaolong Luo[1]
[1]The Catholic University of America, Washington, DC, [2]University of Maryland, College Park, MD, [3]Purdue University, West Lafayette, IN

3:33 pm
Development of the Fabrication Process and Design of 3D-Folding Shrinky Dinks
Christian Danielson[1] and Kidong Park[1]
[1]Louisiana State University, Baton Rouge, LA

3:42 pm
Evaluation of Adipose-derived Mesenchymal Stem Cell Therapy on Neovascularization in Diabetic Mice
Hannah Bouvin[1,2], Jamila Hedhli[1], Iwona Dobrucka[1], and Lawrence W. Dobrucki[1]
[1]University of Illinois at Urbana-Champaign, Champaign, IL, [2]Iowa State University, Ames, IA

3:51 pm
Comparative Deformability and Microfluidic Perfusion of Human and Nonhuman Red Blood Cells
Pranav Murugan[1], Kian Torabian[1], Nathaniel Piety[1], and Sergey Shevkoplyas[1]
[1]University of Houston, Houston, TX

4:00 pm
Modeling The Human Bone Marrow Perivascular Niche In A Microfluidic Chip
Vittorio Orlandi[1], Yang Xiao[1], and Rong Fan[1]
[1]Yale University, New Haven, CT

4:09 pm
***In Vitro* Cardiac Organoid Induction: Advancing a 3D "Organ in a Dish" Model for Biomechanical Studies of Early Cardiac Development**
Micah Feeney[1]
[1]University of Pittsburgh, Pittsburgh, PA

4:18 pm
Intravascular Ultrasound Comparison of 3D Printed Versus *In Vivo* Superficial Femoral Artery
Hannah Cebull[1,2], W. Michael Park[2], and Paul Bishop[1,2]
[1]University of Akron, Akron, OH, [2]Cleveland Clinic, Cleveland, OH

4:27 pm
Automated Analysis of Cell Migration and Nuclear Envelope Rupture in Confined Environments
Joshua Elacqua[1], Alexandra McGregor[1], and Jan Lammerding[1]
[1]Cornell University, Ithaca, NY

4:36 pm
A Novel Algorithm to Automate Segmentation and Analysis of Trabecular Bone in Rodents
Gregory Dadourian[1], Ronald Wood[2], and Hani Awad[2]
[1]University of Rochester, Bryn Mawr, PA, [2]University of Rochester, Rochester, NY

Saturday, October 7 | 9:30 am–1:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am

Bioinformatics, Computational and Systems Biology—Undergraduate

Sat-41
Graphical GAIN: User-Friendly Automated Neural Cell Image Processor

Hanyang Li[1], Byron Long[1], Tien Tang[1], Nicholas Grandel[1,2], Kylie Balotin[1], Arun Mahadevan[1], and Amina Qutub[1]
[1]Rice University, Houston, TX, [2]Stanford University, Stanford, CA

Sat-42
Using Machine Learning Models to Identify Disease-Causing Single Nucleotide Variants

Andrianna Ayiotis[1], Zhuo Liu[2], and Rui Jiang[2]
[1]University of Southern California, Los Angeles, CA, [2]Tsinghua University, Beijing, China, People's Republic of

Sat-43
The Protein Data Bank Japan (PDBj): Uncovering Hidden Trends in Macromolecular Structure Data

Michelle Ragsac[1], Akira Kinjo[2], and Haruki Nakamura[2]
[1]University of California, San Diego, La Jolla, CA, [2]Osaka University, Suita, Osaka, Japan

Sat-44
Correlation Revealed in Simultaneously Recorded Multichannel EGG and Antro-Duodenal Manometry

Alex Beltran[1], Armen Gharibans[1], Hayat Mousa[1], and Todd Coleman[1]
[1]University of California, San Diego, La Jolla, CA

Sat-45
Stochastic Parameterization of the Proliferation-Diffusion Model of Brain Cancer in Mice

Barrett Anderies[1], Eric Kostelich[1], Erica Rutter[1], Tracy Stepien[2], and David Frakes[1]
[1]Arizona State University, Tempe, AZ, [2]University of Arizona, Tucson, AZ

Sat-46
A New Assay for Profiling Endogenous Phosphatase Activity

Megan Burton[1], Lindsey Szymczak[1], Maria Cabezas[1], and Milan Mrksich[1]
[1]Northwestern University, Evanston, IL

Sat-47
Inference of a Cardiac Differentiation Network From Mass Cytometry

Catherine Weathered[1], Laura Woo[1], Eli Zunder[1], and Jeffrey Saucerman[1]
[1]University of Virginia, Charlottesville, VA

Sat-48
A Deep Network for Predicting the Epoxidation of Drug-like Molecules Generalizes to an External Test Set

Ayush Kumar[1]
[1]Washington University in St Louis, St. Louis, MO

Sat-49
High Oxidant Concentration as an Agent of Cell Death

Priyank Madria[1], Hailee Scelsi[1], and Cassie Mitchell[1]
[1]Georgia Institute of Technology, Atlanta, GA

Sat-50
Creating a 3-D Hydrogel Model of the Human Endometrium and its Interactions with Immunological Factors

Deborah Plana[1], Abby Hill[1], Christi Cook[1], Linda Griffith[1], and Douglas Lauffenburger[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

Sat-51
Discovery of lncRNA-Encoded Peptidome in Mouse Kidney Inner Medulla

Cameron Flower[1], Chin-Rang Yang[2], and Mark Knepper[2]
[1]University of Connecticut, Burlington, CT, [2]National Institutes of Health, Bethesda, MD

Sat-52
Molecular Dynamics Simulation of Nanoscale Membrane Organization to Examine Influenza Virus Binding

Cara Broshkevitch[1] and Peter Kasson[1]
[1]University of Virginia, Charlottesville, VA

Sat-53
Understanding the Structure and Energetics of Phosphate-Protein Recognition

Sydney Hutton[1], Rui Qi[2], and Pengyu Ren[2]
[1]Stanford University, Austin, TX, [2]The University of Texas at Austin, Austin, TX

Sat-54
Detection of Pancreatic Ductal Adenocarcinoma by Evaluating the Biophysical Properties of Extracellular Vesicles in Human Peripheral Blood Using Particle-Tracking Analysis

Zilu Tang[1,2], Francis San Lucas[1], Gabrielle Davis[1], Dong Kim[1], Jonathan Castillo[1], Peter Gascoyne[1,3], Donghui Li[1], Hector Alvarez[1], and Anirban Maitra[1]
[1]The University of Texas MD Anderson Cancer Center, Houston, TX, [2]Rice University, Houston, TX, [3]ContinuumDx, Inc, Austin, TX

Sat-55
Design of Multianalyte Biosensor Hardware

Rafael Viana[1], John Aggas[2], Ankita Bhat[3], and Anthony Guiseppi-Elie[3]
[1]Texas A&M, college station, TX, [2]Texas A&M, College Station, TX, [3]Texas A&M, College station, TX

Sat-56
Automated Cardiomyocyte Segmentation to Identify Novel Regulators of Hypertrophy

Matthew Van de Graaf[1], Philip Tan[1], Jop van Berlo[2], and Jeffrey Saucerman[1]
[1]University of Virginia, Charlottesville, VA, [2]University of Minnesota, Minneapolis, MN

Sat-57
Classification of Rett Syndrome Behavior Using Machine Learning

Laryssa Gavala[1], F. Quentin Hickam[2], Sarah Mbiki[2], Jared Wells[3], Neelasaranya Avudaiappan[3], and Brian C. Dean[3]
[1]Bucknell University, Lewisburg, PA, [2]Appalachian State University, Boone, NC, [3]Clemson University, Clemson, SC

Sat-58
Quantification of Angiogenic Receptor Levels and Heterogeneity on Co-cultured HUVECs and HDFs

Kareem Al-Qadi[1], Brendan Mathias[1], Si Chen[1], and Princess Imoukhuede[1]
[1]University of Illinois at Urbana Champaign, Champaign, IL

Sat-59
Design of Stereoscopic Visualization of Mastectomy Specimens for Augmented Reality Glasses

Emilio Loera[1,2], Krista Nicklaus[2,3], Mary Bordes[3], Juhun Lee[4], Audrey Cheong[5], Michelle Fingeret[3], Fatima Merchant[5], Gregory Reece[3], and Mia Markey[2,3]
[1]The University of Texas at El Paso, El Paso, TX, [2]The University of Texas at Austin, Austin, TX,[3]The University of Texas MD Anderson, Houston, TX, 4University of Pittsburgh, Pittsburgh, PA,5University of Houston, Houston, TX

Sat-60
Interactions Between the Immune System and Healthy Aging

Samuel Krause[1]
[1]University of North Carolina at Chapel Hill, Chapel Hill, NC

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Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am

Biomaterials - Undergraduate

Sat-221
Engineering Collagen Fibril Microstructure and Tuning ECM Stiffness To Study Migration Strategies Of Cancer Cells In 3-D Microenvironments

Jiranuwat Sapudom[1], Raymond Chin[1,2], Steve Martin[1], Liv Kalbitzer[1], and Tilo Pompe[1]
[1]Universität Leipzig, Leipzig, Germany, [2]University of Rochester, New York, NY

Sat-222
Calcium Phosphate Nanoparticle-Assisted Dissolving Microneedles for Transdermal DNA Delivery

Abigail Magee[1], Min-Hua Chen[2], and Nobutaka Hanagata[2]
[1]University of Central Oklahoma, Edmond, OK, [2]National Institute of Materials Science, Tsukuba, Japan

Sat-223
Varying Levels of Degradation in Synthetic Polymers In Vivo

Rachel Slappy[1]
[1]University of Tennessee at Knoxville, Knoxville, TN

Sat-224
Relative Effects of Substrate Stiffness on Neuronal Phenotype Modulation in 2D and 3D Microenvironments

Rachel Tchen[1], Rodrigo Zurita[1], Zach Nickle[2], Andrea Jimenez Vergara[1], and Dany Munoz Pinto[1]
[1]Trinity University, San Antonio, TX, [2]McGill University, Montreal, QC, Canada

Sat-225
Myoblast Response to Tissue Specific Extracellular Matrix Environments

Nicole Friend[1], Jessica Ungerleider [1], and Karen Christman [1]
[1]University of California, San Diego, La Jolla, CA

Sat-226
Characterizing the ECM Composition and Mechanical Properties of Ovarian Tissue-Derived Hydrogels

Ziyu Xian[1,2], Michael Buckenmeyer[2], and Bryan Brown[2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]McGowan Institute for Regenerative Medicine, Pittsburgh, PA

Sat-227
A Personalized 3D Medpor Conformal Process Feasibility Study

Jason Yang[1] and Amanda Nguyen[1]
[1]Arizona State University, Tempe, AZ

Sat-228
Retention and Release of Model Drugs from Hydrogels Impregnated with Magneto-Liposomes

Mickey Colombo[1], Ryan Lynn[1], Geoffrey Bothun[1], and Stephen Kennedy[1]
[1]University of Rhode Island, Kingston, RI

Sat-229
The Properties of Hyaluronic Acid For Double Network Hydrogels

Anna Hrbac[1], Alexander Jannini[2], and Julie Hasenwinkel[2]
[1]University of Rochester, Manlius, NY, [2]Syracuse Biomaterials Institute, Syracuse, NY

Sat-230
Novel Poly[(1,8-octanediol)-co-(citric acid)-co-(suberic acid)] Scaffolds for Vascular Tissue Engineering

Jacob Irwin[1], Gloria Kim[2], and Jian Yang[2]
[1]Arizona State University, Tempe, AZ, [2]Pennsylvania State University, State College, PA

Sat-231
Design and Synthesis of Functionalized Polymers for 3D Printing Tissue Engineering Scaffolds

Rachel Fan[1], Caroline Kaufman[1], Patricia Morales[1], Divya Patel[1], and Lesley Chow[1]
[1]Lehigh University, Bethlehem, PA

Sat-232
The Effects of Different Shoe Inserts On Force Applied to the Foot

Janki Patel[1], Caroline Merz[1], Amy Lloyd[1], and Ha Van Vo[1]
[1]Mercer University, Macon, GA

Sat-233
Shear Stress in Stromal-Like Conditions is a Metric for Metastatic Potential

Mackenzie Coston[1], Afsheen Banisadr [2], Pranjali Beri [2], and Adam Engler [2]
[1]University of Washington, Seattle, WA, [2]University of California, San Diego, La Jolla, CA

Sat-234
Highly Stretchable, Tough, and Thermo-responsive Hydrogels

Serena Blacklow[1], Jianyu Li[1,2], and David Mooney[1,2]
[1]School of Engineering and Applied Sciences at Harvard University, Cambridge, MA, [2]Wyss Institute for Biologically Inspired Engineering at Harvard University, Boston, MA

Sat-235
Live Cell Tracking of U87MG-EGFP Glioma Cells Encapsulated in 3D Brain-mimetic Hydrogel Scaffolds

Kylie Balotin[1], Meghan Logun[2], and Lohitash Karumbaiah[2]
[1]Rice University, Houston, TX, [2]University of Georgia, Athens, GA

Sat-236
"Self-Fitting" Shape Memory Polymer, Semi-IPN Scaffolds for Cranial Defect Repair

Vanessa Page[1], Melissa Grunlan[1], Lindsay Woodard[1], and Kevin Kmetz[1]
[1]Texas A&M University, College Station, TX

Sat-237
Biomimetic Substrates for Mechanobiology Investigations of Pancreatic Cancer

Wisam Fares[1], Abigail De La Pena[1], Andrés Rubiano[1], Codi Elliott[2], and Chelsey Simmons[1]
[1]University of Florida, Gainesville, FL, [2]Sarasota High School, Sarasota, FL

Sat-238
Characterizing The Release of Therapeutic Agents from Thin Fibrin Membranes

Alexandra Burr[1], Megan Chrobak[1], Meagan Carnes[1], George Pins[1], and Alexandra Burr[1]
[1]Worcester Polytechnic Institute, Worcester, MA

Sat-239
Magnetic Freeze Casting with Surface Magnetized Hydroxyapatite for Bioinspired Bone Implants

Cindy Ayala[1], Michael Frank[2], Louis Guibert[3], Sze Hei Siu[1], Olivia A. Graeve[1], Joanna M. McKittrick[1], Keyur Karandikar[1], and Chin-Hung Liu[1]
[1]University of California- San Diego, La Jolla, CA, [2]University of California- San Diego, La Jolla, CA, [3]Department of Materials Sciences, École Polytechnique de l'Université de Nantes, France, Nates, France

Sat-240
3D Printed Haversian Scaffolds for Critical Bone Trauma

Brian Ruliffson[1]
[1]UTSA, San Antonio, TX

Sat-241
Synthesis and Electrical Characterization of PAn-PAAMPSA Nanofibers in PolyHEMA Hydrogels

Blake Smith[1], John Aggas[1], Anthony Guiseppi-Elie[1], and Jodie Lutkenhaus[1]
[1]Texas A&M University, College Station, TX

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Sat-242
3D-Printed Dielectric Elastomer Actuators for Artificial Muscles and Soft Robotics
Julia Khoury[1] and Yigit Menguc[1]
[1]Oregon State University, Corvallis, OR

Sat-243
Digitizing Biological Signals Using a Biocompatible Sample and Hold Circuit
Earl Hughes III[1], John Aggas[2], and Anthony Guiseppi-Elie[2]
[1]Hampton University, College Station, TX, [2]Texas A & M, College Station, TX

Sat-244
Induced Metastatic Breast Cancer Hyperthermia Using Composite Scaffolds
Heather Fong[1], Francisco Pelaez[1], Navid Manuchehrabadi[1], John Bischof[1], and Samira Azarin[1]
[1]University of Minnesota-Twin Cities, Minneapolis, MN

Sat-245
Neuropeptides Conjugated with DNA Structures Improve Diabetic Wound Healing
Richard Walsh[1]
[1]Beth Israel Deaconness Medical Center, Boston, MA

Sat-246
Demineralized Bone Matrix Fibers Support Adipose Mesenchymal Stem Cells and Mineralization In Vitro
Jacob DeRoo[1]
[1]Colorado State University, Fort Collins, CO

Sat-247
Change in The Binding Ability In Different 3D Printed Polyurethane Gels
Josue Campos[1], Pengrui Wang[1], and Shaochen Chen[1]
[1]University of California San Diego, San Diego, CA

Sat-248
Engineering Heparin-Binding Culture Substrates for Spatiotemporal Control of Human Embryonic Stem Cell-derived Neural Tissue Morphology
Brady Lundin[1], Gavin Knight[1], and Randolph Ashton[1]
[1]University of Wisconsin-Madison, Madison, WI

Sat-251
The Effect of Substrate Stiffness and ECM Protein Coating on Macrophage Activation
Emily Burtch[1], Jefferson Overlin[1], Kelly Hotchkiss[1], and Rene Olivares-Navarrete[1]
[1]Virginia Commonwealth University, Richmond, VA

Sat-252
Design of Biocompatible Chemical Crosslinkers for Tuning the Degradation in Polyethylene Hydrogels
Stephanie Kroger[1], Aaron Stock[1], Lindsay Hill[1], Era Jain[1], and Silviya Zustiak[1]
[1]Saint Louis University, St Louis, MO

Biomechanics - Undergraduate

Sat-253
Biomechanical Changes Following An Exercise Intervention In Females With Ehlers-Danlos Syndrome-Hypermobility Type Stratified By Age And Experience
Jennifer Mathews[1], Micah Garcia[2], Stephanie Sabo[2], Matthew Kanetzke[3], and Jason Long[2]
[1]Saint Louis Universty, Saint Louis, MO, [2]Cincinnati Children's Hospital Medical Center, Cincinnati, OH, [3]University of Cincinnati, Cincinnati, OH

Sat-254
Characterization Of Glucagon Via Electrochemical Impedence Spectroscopy In Complex Solution
Connor Beck[1], Aldin Malkoc[1], David Probst[1], Mukund Khanwalker[1], Chi lin[1], and Jeffrey LaBelle[1]
[1]Arizona State University, Tempe, AZ

Sat-255
Cadaveric Modeling of Odontoid Fractures with Common Associated Ligamentous Injuries
Rahul Ramanathan[1,2], Nicholas Vaudreuil[1], Robert Tisherman[1], Rob Hartman[1], Joon Lee[1], and Kevin Bell[1]
[1]Ferguson Laboratory for Spine Research, Pittsburgh, PA, [2]Swanson School of Engineering, Pittsburgh, PA

Sat-256
Physical Modeling of the Effects of Human Dural Membranes on Brain Biomechanics
Ramona Durham[1], Andrew Badachhape[1], Ruth Okamoto[1], Curtis Johnson[2], Dzung Pham[3], and Philip Bayly[1]
[1]Washington University in St. Louis, St. Louis, MO, [2]University of Delaware, Newark, DE, [3]The Henry M. Jackson Foundation for the Advancement of Military Medicine, Bethesda, MD

Sat-257
Changes in Side-to-side Symmetry During a 2 Mile Run
Mackenzie Wenrick[1] and Robin Queen[1]
[1]Virginia Tech, Blacksburg, VA

Sat-258
Regional Differences In Viscoelastic Heating Of Tendon Due To Cyclic Compression
Harrah Newman[1], Stephanie Kamau[1], and Amanda Tian[1]
[1]University of Rochester, Rochester, NY

Sat-259
Frequency-dependent Viscoelastic Heating In Cyclically Compressed Tendons
Stephanie Kamau [1], Harrah Newman [1], and Amanda Tian [1]
[1]University of Rochester, Rochester, NY

Sat-260
Influence of Posture on Thoracoabdominal Organs among 5th, 50th and 95th Percentile Male Subjects
Katelyn Greene[1], James Gaewsky[2], F. Scott Gayzik[2], and Ashley Weaver[2]
[1]UC Berkeley, Berkeley, CA, [2]Wake Forest University, Winston-Salem, NC

Sat-261
Relating Collagen Fiber Structure and Mechanical Properties in Healing Myocardial Scar Tissue
Abigail Teitgen[1] and Jeffrey Holmes[1]
[1]University of Virginia, Charlottesville, VA

Sat-262
Interaction between CT-based BMAT and Total Body Fat during Intentional Weight Loss in Older Adults
Elizabeth Lopez[1], Samantha Schoell[2], Caresse Hightower[2], Jack Rejeski[3], Michael Walkup[3], Ashley Weaver[2], and Kristen Beavers[3]
[1]Arizona State University, Prescott Valley, AZ, [2]Virginia Tech–Wake Forest University, Winston Salem, NC, [3]Wake Forest University, Winston Salem, NC

Sat-263
The Role of Hyaluronic Acid in Liver Cirrhosis and Hepatocellular Carcinoma
Abigail Loneker[1], LiKang Chin[1], and Rebecca Wells[1]
[1]University of Pennsylvania, Philadelphia, PA

Sat-264
Quantification of Lymphatic Permeability via Near-Infrared Imaging
Mindy Ross[1], Tyler Nelson[1], and J. Brandon Dixon[1]
[1]Georgia Institute of Technology, Atlanta, GA

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Sat-265
Recognition of Human Dynamic And Static Activity During Independent Time Periods Using Wearable Sensor
Austin Tielke[1], Gabrielle Miil[2], Christopher Frames[2], Saba Rezvanian[2], and Thurmon Lockhart[2]
[1]Arizona State University, tempe, AZ, [2]Arizona State University, Tempe, AZ

Sat-266
Hemodynamic Quantification of Magnetohydrodynamic Voltages through a Flow Phantom
Morgan DaSilva[1], Kevin Wu[2], Stan Gregory[2], Jonathan Murrow[3], and Zion Tse[2]
[1]University of Connecticut, Storrs, CT, [2]University of Georgia, Athens, GA, [3]Athens Regional Medical Center, Athens, GA

Sat-267
Effects of Inflammatory Bowel Disease on Bone Strength and Density during Early Life
Malik Snowden[1,2], Cory Lindeman[2], and Iwona Jasiuk[2]
[1]University of Pittsburgh, Gambrills, MD, [2]University of Illinois at Urbana-Champaign, Urbana, IL

Sat-268
Development of Kinematically Accurate Cervical Spine Model for Biomechanical Testing Optimization
Casey Weinstein[1,2] and Philip Brown[2]
[1]Arizona State University, Tempe, AZ, [2]Wake Forest University, Winston-Salem, NC

Sat-269
Determining Static and Dynamic Movement Between Human Gender with Inertial Measurement Unit
Ryan Bridges[1], Sydney Connor[1], Seong Hyun Moon[1], Victoria Smith[1], Rahul Soangra[1], and Thurmon Lockhart[1]
[1]Arizona State University, Tempe, AZ

Sat-270
Bacterial Adhesive Dynamic Simulation of FimA Mutant With Low Uncoiling Force
Natacha Comandante Lou[1], Saugat Poudel[1], Maia Schumacher[2], Juan Vizcarra[1], and Wendy Thomas[1]
[1]University of Washington, Seattle, WA, [2]Seattle University, Seattle, WA

Sat-271
Biomechanical Evaluation of Football Practice Drills in Youth Athletes
Alexander Lord[1], Mireille Kelley[1], Joel Stitzel[1], and Jillian Urban[1]
[1]Virginia Tech - Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC

Sat-272
Investigation of the Reliability Of AFM Nanoindentation-Derived Measurements of Cell Mechanics
Matthew Dragovich[1], Jared Feindt[1], Daniel Altman[1], Cassandra Christman[1], Nathan DeRaymond[1], Ibrahim Hashmi[1], Adama Shaw[1], Katie Wu[1], Serge Ayinou[1], Felipe Torres[1], X. Frank Zhang[1], and Hannah Dailey[1]
[1]Lehigh Unversity, Bethlehem, PA

Sat-273
Bone Microarchitecture and Strength Diminished in Mice with Chronic Kidney Disease and Aging
Danielle Howe[1], Chelsea Heveran[2], Eric Livingston[3], Ted Bateman[3], Karen King4, Moshe Levi4, Virginia Ferguson[2],4, and Anthony Lau[1]
[1]The College of New Jersey, Ewing, NJ, [2]University of Colorado, Boulder, CO, [3]University of North Carolina, Chapel Hill, NC, 4University of Colorado School of Medicine, Aurora, CO

Sat-274
Effect of Sliding-Induced Tribological Rehydration on Chondrocyte Viability in Cartilage Explants
David Sun[1,2], Michael Lan[2], Brian Graham[2], Axel Moore[2], David Burris[2], and Christopher Price[2]
[1]Washington University in St. Louis, St Louis, MO, [2]University of Delaware, Newark, DE

Sat-275
Contraction Wave Propagation in an Excitable Epithelial Tissue
David Denberg[1], Jonathan Rubin[2], and Lance Davidson[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]University of Pittsuburgh, Pittsburgh, PA

Sat-276
Effects of Mechanical Preconditioning on the Material Properties of Murine Cartilage
Chandler Woo[1], Alexander Kotelsky[1], and Mark R. Buckley[1]
[1]University of Rochester, Rochester, NY

Sat-277
Developing an in vivo, X-Ray Detectable Strain Sensing Device for Use in Dynamic Hip Screws
Bryce Kunkle[1], Nathan Carrington[1], Jeffrey Anker[1], John DesJardins[1], Thomas Pace [2], and Caleb Behrend [3]
[1]Clemson University, Clemson, SC, [2]Greenville Health System, Greenville, SC, [3]Virginia Tech Carillion School of Medicine and Research Institute, Roanoke, VA

Sat-278
Analysis of Bone Strength Losses Due To Space Radiation
Alexander Borg[1], Dale Johnson[1], Summer Lawrence[2], Eric Livingston[2], Robert Hienz[3], Catherine Davis[3], and Anthony Lau[1]
[1]The College of New Jersey, Ewing, NJ, [2]University of North Carolina, Chapel Hill, Chapel Hill, NC, [3]Johns Hopkins University, Baltimore, MD

Sat-279
Assessment of Strain in the Achilles Tendon Insertion During Exercise Using Ultrasound Elastography
Rachel E. Olson[1], Grace E. Weyand[1], Mary A. Bucklin[2], Ruth L Chimenti[3], Michael S. Richards[1], and Mark R. Buckley[1]
[1]University of Rochester, Rochester, NY, [2]North Western University, Manlius, NY, [3]University of Iowa, Iowa City, IA

Sat-280
Case Study: Investigating Ideal Helmet Properties to Prevent Facial Fracture in Bicycle Accident
Brett Salazar[1], Mehmet Kurt[1], Michael Fanton[1], and David Camarillo[1]
[1]Stanford University, Stanford, CA

Sat-281
Development of Subject-Specific Musculoskeletal Models to Predict Quadriceps Strength
Brett Whorley[1,2], Anthony Kulas[1], and Zachary Domire[1]
[1]East Carolina University, Greenville, NC, [2]University of Nebraska-Lincoln, Lincoln, NE

Sat-282
Amputee Gait During Load Carriage with An Energetically Passive And Powered Knee
Charles Humphries[1,2], Andrea Brandt[1,2], and He (Helen) Huang[1,2]
[1]North Carolina State University, Raleigh, NC, [2]University of North Carolina Chapel Hill, Chapel Hill, NC

Sat-283
Effects of Cyclic Mechanical Strain on Human Breast Adenocarcinoma Behavior
Daniel Chavarria[1], Adrianne Spencer[2], Jason Lee[2], Tamer Kaoud[2], Kevin Dalby[2], and Aaron Baker[2]
[1]The University of Texas at El Paso, El Paso, TX, [2]The University of Texas at Austin, Austin, TX

Sat-284
Polyethylene Bearing Conformity Impacts Articular Constraint in Total Knee Replacements
Sean Flannery[1], Matthew Trowbridge[1], Kyle Snethen[1], and Melinda Harman[1]
[1]Clemson University, Clemson, SC

Sat-285
Gait and Limb Length Analysis using MatScan by Tekscan Software
Megan McKinney[1], Alexis Tillery[1], and Ha Van Vo[2]
[1]Mercer University, Cohutta, GA, [2]Mercer University, Macon, GA

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Sat-286
Increased Biofidelity of Simplified Human Body Models Through Compliant Element Implementation
Woojae Koh[1], Berkan Guleyupoglu[2], Bharath Koya[2], and Francis Gayzik[2]
[1]University of Maryland, College Park, MD, [2]Wake Forest University School of Medicine, Winston Salem, NC

Sat-287
Robust Method for Mechanical Testing of Rat Vertebrae to Determine Compressive Bone Properties
Jason M. Chang[1], Shannon R. Emerzian[2], Megan M. Pendleton[2], Tony M. Keaveny[2], and Grace D. O'Connell[2]
[1]University of Texas at Dallas, Richardson, TX, [2]University of California - Berkeley, Berkeley, CA

Sat-288
Comparative Gait Rehabilitation with Virtual Reality Headset
Kristin Ladia[1], Josiah Keime[1], Briana Corlew[1], and Derek Lura[1]
[1]Florida Gulf Coast University, Fort Myers, FL

Sat-289
Investigating the Impact of Biophysical Factors on Cell Adhesion and Fibroblast-to-Neuron Reprogramming
Giang Ha[1], Douglas Kelkhoff[1], Jennifer Soto[1], Sze Yue Wong[1], and Song Li[2]
[1]University of California, Berkeley, Berkeley, CA, [2]University of California, Los Angeles, Los Angeles, CA

Sat-290
Development and Mechanical Characterization of Gelatin-based Synthetic Blood Vessel Phantoms
Nicholas DeMaio[1]
[1]Rutgers University, Holmdel, NJ

Sat-291
Calculating Forces on the Femoral Head During Bridging Exercise Using OpenSim
Kyle Berkow[1], Navit Roth[2], and Orit Braun-Benyamin[2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]ORT Braude College of Engineering, Karmi'el, Israel

Sat-292
Comparative Analysis of Photogrammetry to Laser-Based Methods of Measuring the Physical Dimensions of Soft Tissues
Iman Benbourenane[1], Deanna Easley[1], Maurice Kotz[1], and Steven Abramowitch[1]
[1]University of Pittsburgh, Pittsburgh, PA

Sat-293
Verifying Normality of Ocular Tissue Through Development of a Semi-Automated Optic Nerve Axon Counting Method
Katelyn Axman[1]
[1]University of Pittsburgh, Pittsburgh, PA

Sat-294
The Role of Substrate Stiffness in Epithelial to Mesenchymal Transition of Premalignant and Malignant Breast Epithelial Cells
Nadiah Hassan[1], Lauren Griggs[1], and Christopher Lemmon[1]
[1]Virginia Commonwealth University, Richmond, VA

Sat-295
Accurate Model of Moment Arms of the Elbow Flexors Using a Multiple Polynomial Equation Approach
Alexandra Deghand[1] and Zachary Domire[2]
[1]Wichita State University, De Soto, KS, [2]East Carolina University, Greenville, NC

Biomedical Engineering Education (BME) –Undergraduate

Sat-31
A Student-Taught Skills-Based Course to bring Research to the Introductory Biomedical Curriculum
Daniel Naveed Tavakol[1], Cara Broshkevitch[1], William H. Guilford[1], and Shayn M. Peirce[1]
[1]University of Virginia, Charlottesville, VA

Sat-32
Effect of GFP Expression and DiR labeling on DiR Fluorescence and Cytotoxicity of iNSCs In Vitro
Courtney McClure[1,2]
[1]Delaware State University, Dover, DE, [2]University of Georgia, Athens, GA

Sat-33
CT Perfusion Image Super-Resolution Using a Deep Convolutional Network
Paul Naghshineh[1], Peng Liu[2], and Ruogu Fang[2]
[1]The George Washington University, Washington, DC, [2]Florida International University, Miami, FL

Sat-34
Characterization of a Nanoparticle-hydrogel Ocular Drug Delivery System
Geeya Patel[1], Priyanka Ghosh[1], Emily Dosmar[1], and Jennifer Kang-Mieler[1]
[1]Illinois Institute of Technology, Chicago, IL

Sat-35
Development and Validation of a Brain Phantom for Therapeutic Cooling
Megan Fritz[1,2], Ryan Packett[2,3], Philip Brown[2,3], Guatam Popli[3], and F. Scott Gayzik[2,3]
[1]University of Illinois at Urbana-Champaign, Champaign, IL, [2]Virginia Tech-Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC, [3]Wake Forest University School of Medicine, Winston-Salem, NC

Sat-36
Degradable Ceramic- Hydrogel Composite Scaffolds for Bone Tissue Engineering
Abigail Avila[1], Banu Akar [1], and Eric M. Brey[1]
[1]Illinois Institue of Technology, Chicago, IL

Sat-37
Optimization of Fibronectin Micro-contact Printing Protocol for Potential Nanoparticle Uptake Study
Laura McGimpsey[1], Pouria Fattahi[1], Justin L. Brown[1], and Peter J. Butler[1]
[1]Pennsylvania State University, Allentown, PA

Sat-38
GFP-HeLa Cell Viability in Sugar Augmented Alginate Bio Inks
Gabriel Garcia[1] and Thomas Boland[1]
[1]University of Texas at El Paso, El Paso, TX

Saturday, October 8 | 9:30 am–1:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am

Biomedical Imaging and Optics–Undergraduate

Sat-62
Efficient and Automated Neuronal Tracking on Global Brain Imaging with Point Registration.

Yun-Hsuan Lee[1,2], Charles Zhao[1], Kathleen Bates[1], and Hang Lu[1]
[1]Georgia Tech, Atlanta, GA, [2]Emory University, Atlanta, GA

Sat-63
Quantifying Quantum Dot Nanosensor Binding Affinities to Angiogenic Receptors via SPR-Based Assay

Jacob Erstling[1,2], Cassandra Jensen[2], Samantha Schad[2], Mallory Wall[2], Spencer Mamer[2], Si Chen[2], and P.I. Imoukhuede[2]
[1]Florida International University, Miami, FL, [2]University of Illinois at Urbana-Champaign, Urbana, IL

Sat-64
Dynamic Axial Biometry of the Eye in Accommodation using Extended-depth OCT

Keke Liu[1,2], Yu-Cherng Chang[1,2], Carolina de Freitas[1,2], Alex Pham[1,2], Florence Cabot[1,3], Siobhan Williams[1,2], Ethan Adre[1,2], Giovanni Gregori[4], Marco Ruggeri[1,2], Sonia Yoo[3], Arthur Ho[1,5,6], Jean-Marie Parel[1,2,6], and Fabrice Manns[1,2]
[1]Ophthalmic Biophysics Center, Bascom Palmer Eye Institute, University of Miami Miller School of Medicine, Miami, FL, [2]Biomedical Optics and Laser Laboratory, Department of Biomedical Engineering, University of Miami College of Engineering, Coral Gables, FL, [3]Anne Bates Leach Eye Hospital, Bascom Palmer Eye Institute, University of Miami Miller School of Medicine, Miami, FL, [4]Quantitative Imaging Center, Bascom Palmer Eye Institute, University of Miami Miller School of Medicine, Miami, FL, [5]School of Optometry & Vision Science, University of New South Wales, Sydney, Australia, [6]Brian Holden Vision Institute, Sydney, Australia

Sat-65
An Automated Comparison of the Distribution of Extracellular Matrix Molecules in the Brain

Jessie Liu[1] and Michel Modo[1]
[1]University of Pittsburgh, Pittsburgh, PA

Sat-66
Diffuse Correlation Tomography to Image Temporal and Spatial Changes of Blood Flow in a Mouse Model

Nathaniel Barber[1], Songfeng Han[1], Ashley Proctor[1], Gabriel Ramirez[1], Danielle Benoit[1], and Regine Choe[1]
[1]University of Rochester, Rochester, NY

Sat-67
A Field-Deployable, Automatically-Tracking Microscope Stage for Microfluidic Systems

Vasilios Dounis[1], Keith Heyde[1], John Lake[1], and Warren Ruder[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg VA, VA

Sat-68
Resolving Coarse Fluorescence Molecular Tomography Images Using Boundary Conditions

Samveg Shah[1], Pradeep Wyss[2], Nicola Sebert[2], Melika Sarem[2], and V. Prasad Shastri[2]
[1]Western University, Windsor, ON, Canada, [2]University of Freiburg, Freiburg, Germany

Sat-69
Structural Connectivity Analysis Can Predict Poor Walking Performance in Multiple Sclerosis

Jorge Maldonado[1,2], Bradley Sutton[3], Robert Motl[3], and Elizabeth Hubbard[3]
[1]Universidad del Este, Carolina, PR, Puerto Rico, [2]University of Illinois at Urbana Champaign, Urbana-Champaign, IL, [3]University of Illinois at Urbana Champaign, Urbana-Champaign, Urbana-Champaign, IL

Sat-70
Towards Non-invasive Vascular Imaging of Murine Allografts with the Diffuse Optical Tomography

Haitong Wang[1], Jingxuan Ren [1], Ashley R. Proctor[1], Songfeng Han [1], and Regine Choe[1]
[1]University of Rochester, Rochester, NY

Sat-71
Ultrasonic Shear Wave Imaging of Median Nerve

Thammathida Ketsiri[1], Samantha Lipman[1], Anna Knight[1], Lisa Hobson-Webb[2], and Kathryn Nightingale[1]
[1]Duke University, Durham, NC, [2]Duke University School of Medicine, Durham, NC

Sat-72
Comparison of Novel CAD system and Histopathology for Volumetric Analysis of Prostate Cancer Lesions

Claire Kaiser[1], Nathan Lay[2], Baris Turkbey[2], and Ronald Summers[2]
[1]University of Rochester, Rochester, NY, [2]National Institutes of Health, Bethesda, MD

Sat-73
Accommodative Changes in the Internal Structure of the Lens Measured with SD-OCT

Ethan Adre[1,2], Yu-Cherng Chang[1,2], Marco Ruggeri[1], Georgios Kontadakis[3], Sonia Yoo[3], Fabrice Manns[1,2], and Jean-Marie Parel[1,2,4]
[1]Bascom Palmer Eye Institute, Miami, FL, [2]University of Miami, Coral Gables, FL, [3]Basom Palmer Eye Institute, Miami, FL, [4]Vision Cooperative Research Center, Sydney, Australia

Sat-74
Biometry Of The Aging Human Lens Using Optical Coherence Tomography: Thickness And Curvature

Alex Pham[1,2], Yu-Cherng Chang[1,2], Ethan Adre[1,2], Florence Cabot[1,3], Ivan Shestopalov[1,2], Keke Liu[1,2], Siobhan Williams[1,2], Giovanni Gregori[4], Marco Ruggeri[1,2], Sonia Yoo[3], and Jean-Marie Parel[1,2,5]
[1]Ophthalmic Biophysics Center, Bascom Palmer Eye Institute, Miami, FL, [2]University of Miami College of Engineering, Coral Gables, FL, [3]Anne Bates Leach Eye Hospital, Bascom Palmer Eye Institute, Miami, FL, [4]Quantitative Imaging Center, Bascom Palmer Eye Institute, Miami, FL,[5]Vision Cooperative Research Centre, Sydney, Australia

Sat-75
Single-Molecule Analysis of Cytokine-Induced Macrophage Polarization using Quantum Dots

Sophie Xie[1], Phuong Le[2], and Andrew Smith[2]
[1]Vanderbilt University, Nashville, TN, [2]University of Illinois at Urbana-Champaign, Urbana, IL

Sat-76
Three-Dimensional Reconstruction of In Vivo Murine Cardiovascular System

Grey Braybrooks[1], Olivia Palmer[1], and Joan Greve[1]
[1]University of Michigan, Ann Arbor, MI

Sat-77
Image Analysis Method for All-Optical Stimulation and Recordings from Neurons in Culture

Denise M. Almora[1], Javier I. Suarez[2], and Stephen A. Boppart[2]
[1]Florida International University (FIU), Miami, FL, [2]University of Illinois at Urbana-Champaign, Urbana, IL

Sat-78
Breast Cancer Detection by an Infrared Imager: Evaluating the Thermal Resolution

Nada Kamona[1] and Murray Loew[1]
[1]The George Washington University, Washington, DC

Sat-79
Imaging Biomechanical Properties of Soft tissue with Artificial Neural Networks

Wendy Reyes[1], Cameron Hoerig[2], Léo Fabre [3], Jamshid Ghaboussi4, and Michael F. Insana4
[1]The Catholic University of America, Washington, DC, [2]University of Illinois Urbana-Champaign, Urbana, IL, [3]École Centrale de Lille, Cité Scientifique, France, 4University of Illinois at Urbana-Champaign, Urbana, IL

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Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am

Sat-80
Investigating Methods of Signal Interpolation in Synthetic Aperture Ultrasound Imaging
Kathleen Larson[1] and Stephen McAleavey[1]
[1]University of Rochester, Rochester, NY

Sat-81
IR Imaging Detects Biochemical Changes in Steatohepatitis Progression in the Liver
Christine Massie[1], Hari Sreedhar[1], Vishal Varma[1], Grace Guzman[1], Natalia Nieto[1], and Michael Walsh[1]
[1]University of Illinois at Chicago, Chicago, IL

Sat-82
Skeletal Visualization in Rat Embryos Using Optical Projection Tomography and a Novel Clearing Agent
Alexander Magsam[1] and Mark Pierce[2]
[1]University of Nebraska-Lincoln, Lincoln, NE, [2]Rutgers, The State University of New Jersey, Piscataway, NJ

Sat-83
Characterization of Survival And Proliferation In Glioblastoma Mouse Models
Brooke Braman[1], Chao Liu[1], Ghaidan Shamsan[1], Rebecca Klank[1], Stephan McFarren[1], Barbara Tschida[1], Steven Rosenfeld[2], David Largaespada[1], and David Odde[1]
[1]University of Minnesota, Twin Cities, Minneapolis, MN, [2]Cleveland Clinic, Cleveland, OH

Sat-84
Computerized Analysis of Breast Cancer Microenvironment Through Fourier Transform Infrared (FT-IR) Spectroscopy and Machine Learning
Matthew Kavanaugh[1], Saumya Tiwari[2], and Rohit Bhargava[2]
[1]University of Kansas, Leawood, KS, [2]University of Illinois, Urbana, IL

Sat-85
Real-Time 3D Reconstruction for Biomedical Systems
Jose Botello[1] and Zhen Zhu[2]
[1]East Carolina University, Tarboro, NC, [2]East Carolina University, Greenville, NC

Sat-86
Atomic Force Microscopy of Plasmodium falciparum Lipid Rafts and GPI-Anchored Proteins
Alison Long[1,2,3], Albert Jin[2], and David Narum[3]
[1]University of California Berkeley, Temecula, CA, [2]National Institute of Biomedical Imaging and Bioengineering, Bethesda, MD, [3]Laboratory of Malaria Immunology and Vaccinology, Rockville, MD

Sat-87
Optical Imaging of Cell Metabolism in Metastatic and Non-metastatic Breast Cancer Cells
Kinan Alhallak[1], Lisa Rebello[1], Timothy Muldoon[1], Kyle Quinn[1], and Narasimhan Rajaram[1]
[1]Arkansas, Fayetteville, AR

Sat-88
Large Field of View Single Pixel Interference Projection Imaging
Robert Stokoe[1], Patrick Stockton[1], Jeffrey Field[1], and Randy Bartels[1]
[1]Colorado State University, Fort Collins, CO

Sat-89
Luminescent Porous Silicon as Single Particle Ratiometric Probes
Mollie Sewell[1], Geoffrey Hollett[2], David Roberts[2], and Emma Wensley[2]
[1]North Carolina A&T State University, Greensboro, NC, [2]University of California San Diego, La Jolla, CA

Sat-90
Automatic Analysis of 3D Engineered Muscle Contractions with Digital Image Processing
Steven Pirvu[1], Hyeonyu Kim[2], and H. Harry Asada[2]
[1]Louisiana Tech University, Ruston, LA, [2]Massachusetts Institute of Technology, Cambridge, MA

Sat-91
Exploring Iron Oxide Response Under Biological Conditions Using Magnetic Particle Spectrometry
Daniel Prestridge[1,2], Rohan Dhavalikar[1], Ana Bohorquez[1], Nicolas Garraud[1], Mythreyi Unni[1], Andreina Chiu-Lam[1], David Arnold[1], and Carlos Rinaldi[1]
[1]University of Florida, Gainesville, FL, [2]Santa Fe College, Gainesville, FL

Sat-92
Towards Spectrally-Resolved Super-Resolution Microscopy Using a Spatial Light Modulator
Sravan Munagavalasa[1], Bryce Schroeder[1], and Shu Jia[1]
[1]Stony Brook University, Stony Brook, NY

Sat-93
Development of a 3D-printed Laser Speckle Contrast Imaging System
Dylan Beam[1,2], Colin Sullender[2], Jeremy Arkin[2], Lisa Richards[2], and Andrew Dunn[2]
[1]The Ohio State University, Columbus, OH, [2]The University of Texas at Austin, Austin, TX

Sat-94
Dynamic Model to Optimize Ultrasound Elasticity Imaging of Tendon for Assessment of Tendinopathies
Hannah Schmitz[1], Liang Gao[2], Andres Nuncio Zuniga[1], Cindy Fastje[1], Mihra Taljanovic[1], Daniel Latt[1], and Russell Witte[1]
[1]University of Arizona, Tucson, AZ, [2]University of Washington, Seattle, WA

Sat-95
Quantitative Ultrasound Techniques used in the Detection of Fatty Liver
Shaun Meyer[1], Lynn Gerber[1,2], Siddhartha Sikdar[1], Hussain Allawi[3], and Zobair Younossi[3]
[1]George Mason University, Fairfax, VA, [2]INOVA, Falls Church, VA, [3]Betty and Guy Beatty Center for Integrated Research Inova, Falls Church, VA

Cancer Technologies - Undergraduate

Sat-103
Metabolic Profiling of Macrophages Conditioned in Glioblastoma Stem Cell Environments
Victoria Lee[1], Travis Salzillo[1], and Pratip Bhattacharya[1]
[1]The University of Texas MD Anderson Cancer Center, Houston, TX

Sat-104
The Effect of Salinomycin On Glioblastoma Cancer Stem Cells
Justin Magrath[1] and Yonghyun Kim[1]
[1]The University of Alabama, Tuscaloosa, AL

Sat-105
Effects of Tasquinimod, An Inhibitor of S100A9 in Breast Cancer Metastasis
Tiffany-Rae Robinson[1]
[1]Western New England University, Dalton, MA

Sat-106
Examining the 3D Tumor Microenvironment Via Microbioreactors
Matthew Rogers[1], Tammy Sobolik[1], David Schaffer[1], Philip Samson[1], John Wikswo[1], and Ann Richmond[2,3]
[1]Vanderbilt University, Nashville, TN, [2]Vanderbilt University Medical Center, Nashville, TN,[3]Tennessee Valley Healthcare System, Nashville, TN

Sat-107
Bioorthogonal Conjugated Probes for Enhancing Tumor Cell Imaging
Jasmin Vanessa Guerrero[1], Irma Fernandez[2], Maha K. Rahim[2], and Jered B. Haun[2]
[1]University of California, Irvine, Santa Barbara, CA, [2]University of California, Irvine, Irvine, CA

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Sat-108
The Effect of Fluid Shear and Metastatic Potential on Breast Cancer Cell Migration
Jae Hyun Lim[1], Brandon Riehl[2], Ravi Raghani[2], Jeong Soon Lee[2], and Jung Yul Lim[2]
[1]Lincoln Southwest High School, Lincoln, NE, [2]University of Nebraska-Lincoln, Lincoln, NE

Sat-109
A 3-D Model of Breast Tumor and Endothelial Cell Interactions
Olivia Ngo[1], Swathi Swaminathan[1], and Alisa Morss Clyne[1]
[1]Drexel University, Philadelphia, PA

Sat-110
Influence of Tumor Microenvironment Mechanics on Myoferlin-Mediated Changes in Breast Cancer Cell Migration
Kelsey Watts[1], Vasudha Shukla[1], and Samir Ghadiali[1]
[1]The Ohio State University, Columbus, OH

Sat-111
Ionic Driven Embedment of Lipid Nanoparticles in Polymer Films for Local Therapeutic Delivery
Stephen Hayward[1], David Francis[2], Matthew Sis[3], and Srivatsan Kidambi[3,4,5]
[1]University of Michigan-Ann Arbor, Ann Arbor, NE, [2]Georgia Institute of Technology, Atlanta, GA, [3]University of Nebraska-Lincoln, Lincoln, NE, 4University of Nebraska-Linocln, Lincoln, NE,5University of Nebraska Medical Center, Omaha, NE

Sat-112
Gut Microbiota Modulates Cisplatin Induced Systemic Toxicity
Miranda Dawson[1,2], Soumen Roy[2], Amiran Dzutsev[2], Gianluca Pegoraro[2], and Giorgio Trinchieri[2]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]National Cancer Institute, National Institutes of Health, Bethesda, MD

Sat-113
Breast Cancer Cell Behavior on Electrospun Fibrous Scaffolds
Alston-Lauren Feggins[1], Alicia Allen[2], and Janet Zoldan[2]
[1]Florida Institute of Technology, Melbourne, FL, [2]University of Texas at Austin, Austin, TX

Sat-114
The Effects of Hemodynamic Shear Stress on Stemness of Acute Myelogenous Leukemia
Andrew Raddatz[1], Ursula Triantafillu[1], and Yonghyun (John) Kim[1]
[1]The University of Alabama, Tuscaloosa, AL

Sat-115
M1 Macrophage Polarization Decreases with an Increase of Stiffness
Adiel Hernandez[1], Shane Allen[2], and Laura Suggs[2]
[1]University of Miami, Miami, FL, [2]The University of Texas at Austin, Austin, TX

Sat-116
Use of EGFR Tracking in Detection of Epithelial-Mesenchymal Transition in Cancer Cells
Hannah Horng[1], Yen-Liang Liu[2], Chun-Liang Chen[3], and Hsin-Chih Yeh[2]
[1]University of Maryland, College Park, Derwood, MD, [2]The University of Texas at Austin, Austin, TX, [3]UT Health Center at San Antonio, San Antonio, TX

Sat-117
The Feasibility and Optimization of a Percutaneous Carbon Dioxide-¬based Cryoprobe
Bailey Surtees[1], Sarah Lee[1], Ben Lee[1], Sonia Trakru[1], Monica Rex[1], Yechan Kang[1], Nikhil Jois[1], and Alwin Hui[1]
[1]Johns Hopkins University, Baltimore, MD

Sat-118
PC3 Detachment from Surface-Modified Scaffolds in 3D Perfusion Bioreactors
Gabriel Ratcliff[1], Cortes Williams[1], and Vassilios Sikavitsas[1]
[1]University of Oklahoma, Norman, OK

Sat-119
Anti-tumor (M1) Macrophages Secrete Cytokines that Prime Breast Cancer Cells for Apoptosis
Maya McKeown[1], Jennifer Guerriero[2], and Anthony Letai[2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Dana-Farber Cancer Institute, Boston, MA

Sat-120
The Effect of Degraded Collagen upon the Epithelial-Mesenchymal Transition in Cancer Progression
Pierce Hadley[1,2], Mark Gryka[1,2], Saumya Tiwari[1,2], Nicolas Spegazzini[1,2], and Rohit Bhargava[1,2]
[1]University of Illinois (Urbana-Champaign), Urbana, IL, [2]Beckman Institute for Advanced Science and Technology, Urbana, IL

Cardiovascular Engineering–Undergraduate

Sat-192
The Fluid Mechanics of Aortic Regurgitation-A Simplified Experiment
Samantha Houser[1], Ikechukwu Okafor[1], Vrishank Raghav[1], and Ajit Yoganathan[1]
[1]Georgia Institute of Technology, Atlanta, GA

Sat-193
Lumped Parameter Modeling of the Left Ventricle to Study Energy Loss during Aortic Regurgitation
Elizabeth Stayduhar[1], Vrishank Raghav[1], Ikechukwu Okafor [1], and Ajit Yoganathan[1]
[1]Georgia Institute of Technology, Atlanta, GA

Sat-194
A Flow Bioreactor Enabling Simultaneous High-Resolution Microscopy of Monolayer Culter
Zachary Davis[1], Julia Brekke[1], Nian Shen[1,2], Michael Monaghan[1,2], Katja Schenke-Layland[1,2,3], and Shannon Layland[2]
[1]Eberhard Karls University, Tübingen, Germany, [2]Fraunhofer Institute for Interfacial Engineering and Biotechnology, Stuttgart, Germany, [3]University of California, Los Angeles, CA

Sat-195
Single Institution Experience in 3D Modeling of Congenital Heart Defects
Alex Demers[1], Robert Hannan[2,3], Robert Wesley[2], Redmond Burke[2,3], and Juan Carlos Muniz[2,3]
[1]Miami University, Oxford, OH, [2]Nicklaus Children's Hospital, Miami, FL, [3]Florida International University Herbert Wertheim College of Medicine, Miami, FL

Sat-196
Fabrication of Patient-Specific Intracranial Aneurysm Models For Burst Testing
Toby Zhu[1], Joseph Pichamuthu[1], Hritwick Banjeree[2], Hongliang Ren[2], Justin Weinbaum[1], and David Vorp[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]National University of Singapore, Singapore, Singapore

Sat-197
Cardiomyocyte Differentiation on Polyurethane Nanofibers for Cardiac Tissue Engineering
Hannah Shield[1], Akankshya Shradhanjali[2], Mohammad Andalib[2], and Jung Yul Lim[2]
[1]Emporia State University, Emporia, KS, [2]University of Nebraska-Lincoln, Lincoln, NE

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Sat-198
Extracellular Matrix Remodeling Due to Hypoxia in Porcine Aortic and Mitral Valves
Qiaochu Zhang[1], Varun Krishnamurthy [1], Matthew Sapp[1], Dragoslava Vekilov [1], and Jane Grande-Allen[1]
[1]Rice University, Houston, TX

Sat-199
Use of Neural Networks to Predict Peripheral Artery Pathology
Andreas Seas[1], Jason MacTaggart[2], Mariajose Castellanos[1], and Alexey Kamenskiy[2]
[1]University of Maryland, Baltimore County, Ellicott City, MD, [2]University of Nebraska Medical Center, Omaha, NE

Sat-200
Optogenetics for the Maturation of hiPS-CMs
Christopher Shen[1], Stephen Ma[1], Olaia Vila[1], and Gordana Vunjak-Novakovic[1]
[1]Columbia University, New York, NY

Sat -201
Optimization of a Decellularization Technique for the Study of Human Mitral Valve Interstitial Cells
Ethan Kwan[1], Elizabeth Shih[1], Connor Hughes[1], Kayla Walter[1], Salma Ayoub[1], and Michael Sacks[1]
[1]The University of Texas Austin, Austin, TX

Sat-202
Modeling and in-silico Analysis of Clinically Used Coronary Artery Stents
Jacob Herman[1,2] and Zhi Ang[2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]National University of Singapore, Singapore, Singapore

Sat-203
Studying The Restorative Feature of Stem Cells Through Mitochondrial Transfer
David Templeton[1], Xiaoqi Yang[1], Raymond Runyan[2], and Bruce Gao[1]
[1]Clemson University, Clemson, SC, [2]University of Arizona, Tuscon, AZ

Sat-204
Investigating Cellular Defects Arising from the LMNA Mutation
Zachery Robinson[1], Jason Core[2], Hamza Atcha[2], Waleed Dahbour[2], and Anna Grosberg[2]
[1]University of California, Irvine, fontana, CA, [2]University of California, Irvine, Irvine, CA

Sat-205
Design of a Versatile Physical Model of Multi-Lymphangion Systems
Luke Riexinger[1], James Baish[1], and Lance Munn[2,3]
[1]Bucknell University, Lewisburg, PA, [2]Harvard Medical School, Boston, MA, [3]Massachusetts General Hospital, Boston, MA

Sat-206
CLARITY Optimization of Cardiac Tissue
Devon Guerrelli[1], Aaron Koppel[1], Jaclyn Brennan[1], and Igor Efimov[1]
[1]The George Washington University, Washington, DC

Sat-207
Stress Analysis of Pulmonary Autograft in One Year Postoperative Ross Patients
Matthew Zweber[1], Jing Liu[1], Yue Xuan[1], Ismail El-Hamamsy[1], Elaine Tseng[1], and Liang Ge[1]
[1]San Francisco VA Medical Center, San Francisco, CA

Sat-208
Isolation of The Opposing Effects of Fluid Mechanical Forces On Endothelial Sprouting
Griffin Spychalski[1], Ehsan Akbari[1], Kaushik Rangharajan[1], Shaurya Prakash[1], and Jonathan Song[1,2]
[1]The Ohio State University, Columbus, OH, [2]OSU Comprehensive Cancer Center, Columbus, OH

Sat-209
Characterizing a Magnetic Bead Microrheometry System to Measure the Local Elasticity of Thrombi
Ryan Betzold[1], Peter Butler[1], and Keefe Manning[1,2]
[1]The Pennsylvania State University, University Park, PA, [2]Penn State Hershey Medical Center, Hershey, PA

Sat-210
Sarcomeric Addition under Uniaxial Stress Loads
Tiffany Yu[1], Zhonghai Wang[2], and Bruce Gao[2]
[1]Clemson University, Central, SC, [2]Clemson University, Clemson, SC

Sat-211
Influence of Variations in Circle of Willis Anatomy on Cerebral Circulation & Embolus Distribution
Neel Jani[1], Debanjan Mukherjee[1], and Shawn Shadden[1]
[1]UC Berkeley, Berkeley, CA

Sat-212
Trypsin Upregulates Membrane PDGFR Localization
Dipen Kumar[1], Si Chen[1], and Princess Imoukhuede[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

Sat-213
Changes in Pulmonary Arterial Hemodynamics Prior To LVAD Implant and The Association with RV Failure
Courtney Vu[1], Timothy Bachman[1], Luigi Lagazi[1], Robert Kormos[1], and Marc Simon[1]
[1]University of Pittsburgh, Pittsburgh, PA

Sat-214
The Virtual Implantation of the Penn State Pediatric Total Artificial Heart
Shyanthony R Synigal[1], Keefe B Manning[2], and William J Weiss[3]
[1]Louisiana Tech University, Ruston, LA, [2]Pennsylvania State University, University Park, PA,[3]Pennsylvania State Hershey Medical Center, Hershey, PA

Sat-215
Effect of DRP Additives on Leukocytes in Microvessels: A Potential Method to Reduce Inflammation
Soumya Vhasure[1,2], Daniel Crompton[1,2], and Marina Kameneva[1,2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]McGowan Institute for Regenerative Medicine, Pittsburgh, PA

Sat-216
Developing a LabVIEW Virtual Instrument for a Planar Biaxial Bioreactor System
Lindsay Lehman[1], Brenda Rodriguez[1], Annie Mara[1], Ethan Kwan[1], Salma Ayoub[1], and Michael Sacks[1]
[1]The University of Texas at Austin, Austin, TX

Sat-219
Effect of DRP Additives on Thrombocytes in Microvessels: A Potential Treatment for Thrombosis
Siddharth Balakrishnan[1], Dan Crompton[2], and Marina Kameneva[2]
[1]University of Pittsburgh, Pittsburgh, VA, [2]Univeristy of Pittsburgh, Pittsburgh, PA

Sat-220
Right Ventricular Function in a Simian Immunodeficiency Virus Model of Early Pulmonary Hypertension
Ian Christman[1], Rebecca Vanderpool[2], Rebecca Tarantelli[3], Karen Norris[3], and Marc Simon[2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Pittsburgh Vascular Medicine Institute, Pittsburgh, PA, [3]University of Pittsburgh Department of Immuninology, Pittsburgh, PA

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Cellular and Molecular Bioengineering–Undergraduate

Sat-296
Effect of Extracellular Matrix Strain in Triggering Myofibroblastic Differentiation
Jacqueline Larouche[1], John Nicosia[1], and Thomas Barker[2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]University of Virginia, Charlottesville, VA

Sat-297
Establishing a Biological Switch for the Inducible Overproduction of Farnsyl Pyrophosphate
Shreya Udani[1], Andrew Younger[1], Andrea Shepard[1] and Joshua Leonard[1]
[1]Northwestern University, Evanston, IL

Sat-298
Tagging Endogenous Genes Using a Universal Nuclease Assisted Vector Integration System
Nikhil Shiva[1], Alexander Brown[1], Wendy Woods[1], and Pablo Perez-Pinera[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

Sat-299
Investigating the Role of Vinculin Tension in Cell Spreading and Polarization
Karen Xu[1]
[1]Duke University, Durham, NC

Sat-300
Construction of Pancreatic Islet-Mimetics by Optimizing Three-Dimensional MIN6 Cell Culture
Connor Verheyen[1], Vita Manzoli[2,3], and Alice Tomei[1,2]
[1]University of Miami, Coral Gables, FL, [2]University of Miami - Miller School of Medicine, Miami, FL, [3]Politecnico di Milano, Milan, Italy

Sat-301
Molecular Genetic Analysis of an In Vitro Model of Chronic Coxsackieviral Infection
Elise Gray-Gaillard[1], Millie Shah[1], Christian Smolko[1], and Kevin Janes[1]
[1]University of Virginia, Charlottesville, VA

Sat-302
Engineering Macrophages to Eat Solid Tumors by Inhibiting "Self" Signaling
Brandon Hayes[1], Cory Alvey[1], Jake Hsu[1], and Dennis Discher[1]
[1]University of Pennsylvania, Philadelphia, PA

Sat-303
Precise Quantitation of Single DNA Molecules Bound to Protein
Lauren Pruett[1], Hidetaka Ohnuki[2], and Giovanna Tosato[2]
[1]Clemson University, Clemson, SC, [2]National Institutes of Health, National Cancer Institute, Bethesda, MD

Sat-304
Modulation of Cancer-Associated Fibroblast Contractility Quantified by 3D Image Analysis
Brian Hughes[1], Mary-Kathryn Sewell-Loftin[1], Elizabeth Crist[1], Samantha van Hove[2], Gregory Longmore[2], and Steven George[1]
[1]Washington University in St. Louis, St. Louis, MO, [2]Washington University in St. Louis School of Medicine, St Louis, MO

Sat-305
The Effects of Amyloid Beta and Mechanical Stretch on Astrocyte Activation
Sruti Bheri[1], Julia Raykin[1], John Mulvihill[1], Laura Weinstock[1], Levi Wood[1], and C. Ross Ethier[1]
[1]Georgia Institute of Technology, Atlanta, GA

Sat-306
High-Throughput Functional Screening for Influenza HA Antigenic Drift Variants using Drop Based Microfluidics
Elina Davé[1,2]
[1]Harvard University, Cambridge, MA, [2]Union College, Schenectady, NY

Sat-307
Ca2+ Response in Endothelial Cells Exposed to Different Flows: Experiments and Mathematical Modeling
Alexander Cetnar[1], Christopher Scheitlin[1], Richard Buckalew[1], and B. Rita Alevriadou[1]
[1]The Ohio State University, Columbus, OH

Sat-308
Inhibition of an RTX Toxin Using Small, Receptor-Based Peptides
Shannon Hayes[1]
[1]Lehigh University, Bethlehem, PA

Sat-309
Role of Desmosome and Nuclear LINC Complex Forces in Cardiomyocytes
Nicole Duggan[1], Paul Arsenovic[1], and Daniel Conway[1]
[1]Virginia Commonwealth University, Richmond, VA

Sat-310
How the Stiffness of the Microenvironment Affects Breast Cancer Cells' Drug Resistance
Rachel Hegab[1], Marshall Joyce[2], and Amy Brock[2]
[1]Louisiana Tech University, Ruston, LA, [2]The University of Texas at Austin, Austin, TX

Sat-311
Point-of-Care Lysis and Amplification Of Neonatal Sepsis Causing Pathogens
Gregory Berglund[1], Elizabeth Phillips[1], and Jacqueline Linnes[1]
[1]Purdue University, West Lafayette, IN

Sat-312
The Protective Role of Rndothelial Glycocalyx in Regards to oxLDL Uptake in Cell Culture Studies and Atherosclerotic Mice Models
Irina Ahn[1], Gerard O'Neil[1], Ashlee Asada[1], Ming Cheng[1], Ning Hua[2], Ian Harding[1], James Hamilton[2], and Eno Ebong[1]
[1]Northeastern University, Boston, MA, [2]Boston University, Boston, MA

Sat-313
Utility of a Low Volume Imaging Assay to Assess the Granular Phenotype and Activity of Neonatal Platelets
Marisa Thierheimer[1], Anh Ngo[1], Sandra Baker-Groberg[1], Ayesha Khader[1], Joseph Aslan[1], Susan Lattimore[1], Michael Recht[1], Kristina Haley[1], and Owen McCarty[1]
[1]Oregon Health & Science University, Portland, OR

Sat-314
Low-Intensity Mechanical Vibrations Increase Cytoskeleton Structure in Adipocytes
Robert Bruce[1], Renata Bruno[2], Stefanie Blanco[1], Yusef Saad-Eldin[1], Clinton Rubin[1], and Mei Lin Chan[1]
[1]State University of New York Stony Brook, Stony Brook, NY, [2]Kings Park High School, Kings Park, NY

Sat-315
Adaptive PCR Enables Detection of Nucleic Acid Biomarkers in Urine with No Sample Preparation
Austin Hardcastle[1], Nicholas Adams[1], and Rick Haselton[1]
[1]Vanderbilt University, Nashville, TN

Sat-316
Assessing Slc26a6 & NaDC1 (INDY) Interaction on Calcium Oxalate Crystal Formation in a Drosophila Model of Kidney Stones
Jessica Lin[1,2], Jacob Anderson[2], Adam Rossano[2], Thomas Burghardt[2], and Michael Romero[2]
[1]Washington University in St. Louis, St. Louis, MO, [2]Mayo Clinic College of Medicine, Rochester, MN

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Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am

Sat-317
Biological Response of Superficial Zone Chondrocytes To Combined Compression And Shear
Sarina Veale[1], Matt Gong[1], Felix Hsu[1], and Robert Sah[1]
[1]University of California San Diego, La Jolla, CA

Sat-318
The Soluble Effects of Microgravity-Exposed Osteocytes on Bone Resorption
Sharon Truesdell[1], Estee George[1], Soham Mukherjee[1], and Marnie Saunders[1]
[1]Univeristy of Akron, Akron, OH

Sat-319
Bio Logic Gate: AND Gate Constructed in Cyanobacteria
Kevin Walsh[1], Aidan Ceney[1], Sharon Lian[1], Sam Mellentine[1], Dylan Miller[1], Jen Steyaert[1], and Christie Peebles[1]
[1]Colorado State University, Fort Collins, CO

Sat-321
Using CRISPR/Cas9 to Assess the Role of Rif1 In DNA End-processing During Non-homologous End Joining In Saccharomyces cerevisiae
Stephen Lee[1] and Katherine Friedman[2]
[1]Searle Systems Biology and Bioengineering Undergraduate Research Program, Vanderbilt University, Nashville, TN, [2]Department of Biological Sciences, Vanderbilt University, Nashville, TN

Sat-322
Long-term Expression of Cathepsin K Induces Unexpected Proteolytic Feedback to Maintain Proteostasis
Marc Shuler[1], Meghan Ferrall-Fairbanks[2], Maurizio Affer[2], and Manu Platt[2]
[1]The Pennsylvania State University, Philadelphia, PA, [2]Georgia Institute of Technology, Atlanta, GA

Sat-323
HSPG Glypican-1 as a Primary Mechanosensor for NO Production in RFPECs
Anne Marie Weber[1], Rick Mathews[1], and John Tarbell[1]
[1]The City College of New York, New York, NY

Sat-324
Laser Ablation of Epithelial Sheets: Guidance on the Role of Biomechanics from Physical Analogs
Aiden Reuter[1]
[1]University of Pittsburgh, Wexford, PA

Device Technologies and Biomedical Robotics - Undergraduate

Sat-131
Preliminary Development of a Flexible Drill for Robotic Minimally Invasive Transoral Surgical System
Michelle Botyrius[1,2], Quanquan Liu[2], and Hongliang Ren[2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]National University of Singapore, Singapore, Singapore

Sat-132
Development of the 1DoF Haptic Renderer: Controller-Based Membrane Modeling for Haptic Devices
Avin Khera[1], Randy Lee[1], Zhixuan Yu[2], Roberta Klatzky[2], and George Stetten[2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Carnegie Mellon University, Pittsburgh, PA

Sat-133
Path Oriented Powered Wheelchair Navigation Assistance
Jason Dekarske[1]
[1]UW-Madison, Sheboygan, WI

Sat-134
Effect of an Alternating Pressure Operating Room Table Overlay On Sacral Skin Blood Flow
Michael Churilla[1], David Brienza[1], and Tricia Karg[1]
[1]University of Pittsburgh, Pittsburgh, PA

Sat-135
The iSurgeon: A Sensor and Expert-Model Based Training System for Laparoscopic Suture Knot Tying
Carly Garrow[1,2], Karl-Friedrich Kowalewski[2], Jonathan Hendrie[2], Mona Schmidt[2], Thomas Bruckner[2], Sai Paul[2], Sebastian Bodenstedt[3], Hannes Kenngott[2], Stefanie Speidel[3], Beat Mueller-Stich[2], and Felix Nickel[2]
[1]University of Missouri, Columbia, MO, [2]University of Heidelberg, Heidelberg, Germany,[3]Karlsruhe Institute of Technology, Karlsruhe, Germany

Sat-136
The Development of a Portable Semiautonomous IV Catheter Placement Device for Prehospital Use
Nicholas Hirdt[1], Peter Schwarzenberg[1], Matthew Bilsky[1], and Susan Perry[1]
[1]Lehigh University, Bethlehem, PA

Sat-137
Wireless Muscle Stimulation Data Transmission for Peripheral Nerve Prosthesis Development
Adam Smoulder[1], Sudip Nag[2], and Shih-Cheng Yen[2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]National University of Singapore, Singapore, Singapore

Sat-138
Surgical Screwdriver to Optimize Insertional Torque and Energy
Andrea Rich[1] and Philip Brown[2]
[1]University of North Carolina - Chapel Hill, Chapel Hill, NC, [2]VT-WFU School of Biomedical Engineering and Sciences, Winston-Salem, NC

Sat-139
A Continuous Biosensor for The Rapid Detection of Insulin to Better Manage Diabetes Mellitus
Mukund Khanwalker[1], Connor Beck[1], Aldin Malkoc[1], Chi Lin[1], Jeffrey Labelle[1], and David Probst[1]
[1]Arizona State University, Tempe, AZ

Sat-140
Mathematical Modeling of Gastroparesis and Endocrine Dynamics in Type I Diabetics with Continuous Glucose Monitoringand 13C Breath Test Data
Nolan Meyer[1], Dushyant Mehra[2], Gopanandan Parthasarathy[2], Adil Bharucha[2], Yogish Kudva[2], Armando Manduca[2], and Zeljko Bajzer[2]
[1]University of Minnesota, Rochester, MN, [2]Mayo Clinic, Rochester, MN

Sat-141
Potassium Biosensor for The Pathophysiology of Trauma
Alyssa Seunarine[1], John Aggas[1], Christian Kotanen[1], and Anthony Guiseppi-Elie[1]
[1]Texas A&M University, College Station, TX

Sat-142
Powered Five-Finger Supportive Exoskeleton for the Human Hand
Christopher Gearhart[1], Dayberkis Arias[1], and Brett BuSha[1]
[1]The College of New Jersey, Ewing, NJ

Sat-143
Toward Development of Implantable Single Use Drug Delivery Device for Opioid Overdose
Bahar Dhowan[1] and Hugh Lee[2]
[1]Purdue university, West Lafayette, IN, [2]Purdue University, West Lafayette, IN

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Sat-144
A Potentially Low-Cost, Customized Stroke Rehabilitation Tool: Assist in Small Steps
Mohiuddin Ahmed[1], Peter Cooman[2], Tim Tang[1], Felix Huang[2,3], and James Patton[1,2]
[1]University of Illinois at Chicago, Chicago, IL, [2]Rehabilitation Institute of Chicago, Chicago, IL,[3]Northwestern University, Evanston, IL

Drug Delivery - Undergraduate

Sat-487
Inhibition of Glioma Tumor Growth Using Hyaluronan Targeting Nanoparticles to Modify Brain Extracellular Matrix
Sayeduzzaman Khan[1], Nitish Yeredla[1], and Mathumai Kanapathipillai[1]
[1]University of Michigan - Dearborn, Dearborn, MI

Sat-488
Degradable Poly(ethylene glycol) Hydrogels For Temporal Control Of Nanoparticle-mediated SiRNA Delivery
Sue Zhang[1], Yuchen Wang[1], and Danielle Benoit[1]
[1]University of Rochester, Rochester, NY

Sat-489
Novel PEG-OES Nanocarriers for Local Immunomodulation in Pancreatic Islet Grafts
Connor Walsh[1], Diana Velluto[2], Vita Manzoli[2,3], and Alice A. Tomei[1,2]
[1]University of Miami, Coral Gables, FL, [2]University of Miami - Miller School of Medicine, Miami, FL, [3]Politecnico di Milano, Milano, Italy

Sat-490
Controlled Release of Immuno-modulatory Small Molecules from Poly(lactide-co-glycolide) Films.
Zachary Brown[1], Mohammad Arifuzzaman[2], Fan Yuan[1], and Soman Abraham[3]
[1]Pratt School of Engineering, Durham, NC, [2]Duke University, Durham, NC, [3]Duke University School of Medicine, Durham, NC

Sat-491
Characterization of Particulate and Vapor Phase Nicotine in Electronic Cigarettes
Mark Daley[1], James Baish[1], Dabrina Dutcher[1], and Timothy Raymond[1]
[1]Bucknell University, Lewisburg, PA

Sat-492
Magnetic Control of Multiple Drug Deliveries Using Multi-Compartment Ferrogels
Miranda Mitchell[1], Celia Dunn[1], and Stephen Kennedy[1]
[1]University of Rhode Island, Kingston, RI

Sat-493
Free Radical Scavenging Potential of Acrylated Polyethylene Glycol Polymers for TBI Treatment
Emily DiMartini[1], Christopher Lowe[2], and David Shreiber[2]
[1]The College of New Jersey, Ewing, NJ, [2]Rutgers, The State University of New Jersey, Piscataway, NJ

Sat-494
Acoustic Vaporization of Perfluorocarbon Nanoemulsions
Tristan Ford[1], Satya Kothapalli[2], Eric Lambert[3], Lu Liu[3], Jelena Janjic[3], and Hong Chen[2]
[1]University of Rochester, Rochester, NY, [2]Washington University in St. Louis, St. Louis, MO,[3]Duquesne University, Pittsburgh, PA

Sat-495
Addition of Protein Stabilizers to Nanoparticles Derived from Pig Lung Extracellular Matrix
Gabrielle Cotman[1], Patrick Link[1], Robert Pouliot[1], and Rebecca Heise[1]
[1]Virginia Commonwealth University, Richmond, VA

Sat -496
Localized FK506 Delivery System for Peripheral Nerve Repair
Susan Wojtalewicz[1], Brett Davis[2], Pratima Labroo[2], Ching-wen Li[3], Jill Shea[2], Himanshu Sant[2], Bruce Gale[2], and Jay Agarwal[2]
[1]University of Utah, Midvale, UT, [2]University of Utah, Salt Lake City, UT, [3]National Chung Hsing University, Taichung, Taiwan

Sat-497
Novel Micellar Drug Delivery System Using Poly (-amino ester)-Poly(ethylene glycol) Copolymer
James Shamul[1], Yechan Kang[1], Jayoung Kim[1], and Jordan Green[1]
[1]Johns Hopkins University, Baltimore, MD

Sa-498
Characterization of the Antimicrobial Effects of a Silver-Doped Titanium Dioxide-PDMS Hybrid Coating on the Adherence and Proliferation of Multi-Drug Resistant A. baumannii and Vancomycin Resistant E. faecalis on Spinal Implant Rods of Varying Compositions
Anthony Minnah[1], Eric Nguyen[1], Dioscaris Garcia[1,2,3], John Jarrell[1,3], and Christopher Born[1,2,3]
[1]Brown University, Providence, RI, [2]Rhode Island Hospital, Providence, RI, [3]BioIntraface, Inc., North Kingston, RI

Sat-499
Evaluation of Curcumin Loaded Nanoliposomes for the Treatment of Age-Related Macular Degeneration
Sriramya Ayyagari[1], Haris Dar[1], Vivian Morton[1], Kevin Moy[1], Chadni Patel[1], Lalithasri Ramasubramanian[1], Nivetita Ravi[1], Samantha Wood[1], Andrew Zhao[1], Melanie Zheng[1], Kiet Zhou[1], and Jose Helim Aranda Espinoza[1]
[1]University of Maryland College Park, College Park, MD

Sat-500
Validation of a Galectin-8 Reporter as a Measure of Nanocarrier Endosomal Escape and Biologic Drug Intracellular Bioavailability
Somtochukwu Dimobi[1], Kameron Kilchrist[1], Thomas Werfel[1], and Craig Duvall[1]
[1]Vanderbilt University, Nashville, TN

Industry–Undergraduate

Sat-501
High Throughput Droplet Sorting using Surface Acoustic Waves
Elina Davé[1,2]
[1]Harvard University, Cambridge, MA, [2]Union College, Schenectady, NY

Sat-502
How Medical Device Regulation Changes Business Practice
Siyu Chen[1], Ben Johnston[1], and Nicholas Lemme[1]
[1]Brown University, Providence, RI

Sat-503
Industry Analysis of the Largest Medical Device and Pharmaceutical Companies
Sylvia Brown[1]
[1]Brown University, Providence, RI

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Nano and Micro Technologies–Undergraduate

Sat-504
Design of Plasmon Rulers for Study of RNA Splicing
Bara Saadah[1], AbderRahman Sobh[1], Progna Banerjee[1], Zhaleh Ghaemi[1], Nahil Sobh[1], and Prashant Jain[1]
[1]University of Illinois at Urbana–Champaign, Urbana, IL

Sat-505
Characterization of Model Middle Molecular Weight Solute Sieving in the Bioartificial Kidney
Jeff Hsiao[1], Benjamin Feinberg[1], William Fissell[2], Andrew Zydney[3], and Shuvo Roy[1]
[1]University of California, San Francisco (UCSF), San Francisco, CA, [2]Vanderbilt University, Nashville, TN, [3]The Pennsylvania State University, University Park, PA

Sat-506
Characterization of Nanoparticle-Membrane Interaction through Cell Membrane Model Platform
Colleen O'Connor[1], Michelle Mansour[2], Eric Freeman [2], and Xianqiao Wang[2]
[1]The University of Texas at Austin, Austin, TX, [2]University of Georgia, Athens, GA

Sat-507
Fabrication and Characterization of a Microwell Array With A Gradient of Well Concavity For Cell-Cell Interaction Studies
Saurin Kantesaria[1,2], Akash Shah[1], Matthew Disalvo[1,2], Yuli Wang[1], Chris Sims[1], and Nancy Allbritton[1,2]
[1]University of North Carolina at Chapel Hill, Chapel Hill, NC, [2]North Carolina State University, Raleigh, NC

Sat-508
Profiling the Effect of Cancer-Associated Fibroblasts on Matrix Alignment and Hydraulic Permeability
Jonathan Chang[1], Alex Avendano[1], Christina Ennis[1], Amanda Stratton[1], and Jonathan Song[1]
[1]The Ohio State University, Columbus, OH

Sat-509
Modulation of Plant Viral Nanoparticle–Cellular Interactions for Biomedical Applications
Xingjian Gong[1], Yulia Meshcheriakova[2], George Lomonossoff[2], Sourabh Shukla[1], and Nicole Steinmetz[1,3]
[1]Case Western Reserve University, Cleveland, OH, [2]John Innes Centre, Norwich, United Kingdom, [3]Case Comprehensive Cancer Center, Division of General Medical Sciences-Oncology, Cleveland, OH

Sat-510
Transformation of Standard Hygiene Wipe into Biosensor Using Polydiacetylele Nanofibers
John Brennan[1]
[1]Colorado State University, Fort Collins, CO

Sat-511
Encapsulation of Retinol in Monodisperse Silicone Gel Particles for Programmed Release
Erica Osta[1,2], C. Wyatt Shields IV[2], John White[2], Nickolas Kirby[2], Gabriel López[2,3], and Stefan Zauscher[2]
[1]Texas State University, San Marcos, TX, [2]Duke University, Durham, NC, [3]University of New Mexico, Albuquerque, NM

Sat-512
Enzyme-Carbon Nanomaterial Conjugates in pHEMA-based Hydrogels for Glucose Detection
Andrew Sedler[1,2], John Aggas[1], and Anthony Guiseppi-Elie[1]
[1]Texas A&M University, College Station, TX, [2]Clemson University, Clemson, SC

Sat-513
Single Walled Carbon Nanotube Fluorescence Detection to Quantify In Vitro Nitric Oxide Concentration
Victoria Bart[1], Eric Hofferber[1], Joseph Stapleton[1], Janelle Adams[1], and Nicole Iverson[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

Sat-514
Optimization of Mixed Metal Oxide Magnetic Nanoparticles for Point-of-Care Biosensors
Hannah Smith[1], Haley Marks[1], and Gerard Cote[1]
[1]Texas A&M University, College Station, TX

Sat-515
Characterization of a Microfluidics in vitro Model of the Gastrointestinal Human-Microbe Interface
Amanda Nguyen[1,2], Jianing Yang[2], Carla Brooks[2], and Frederic Zenhausern[1,2]
[1]Translational Genomics Research Institute, Phoenix, AZ, [2]University of Arizona, Chandler, AZ

Sat-516
A Cost-Effective Micro Milling Platform for Rapid Prototyping of Micro Devices
Daniel Yen[1] and Keyue Shen[2]
[1]University of Southern California, Rancho Palos Verdes, CA, [2]University of Southern California, Los Angeles, CA

Sat-517
Assessing Uptake of Magnetite Nanoparticles by Fibroblasts Using Transmission Electron Microscopy
Nardine Ghobrial[1], Benjamin Fellows[1], O. Thompson Mefford[1], and Delphine Dean[1]
[1]Clemson University, Clemson, SC

Sat-518
Oral Mucosa-on-a-Chip for Cytotoxicity Testing of Biomaterials on Human Gingival Cells
Dominic Padova[1], Christopher Raub[1], Diane Bienek[2], Gili Kaufman[2], and Xiaolong Luo[1]
[1]Catholic University of America, Washington, DC, [2]ADA Foundation, Gaithersburg, MD

Sat-519
Reversible Blood Clotting via pH Controllable Protein Polymers
Jessica Polka[1,2], Camilo Ruiz[1,2], Bryan Hsu[1,2], and Pamela Silver[1,2]
[1]Harvard Medical School, Boston, MA, [2]Wyss Institute for Biologically Inspired Engineering, Boston, MA

Sat-520
Phase Separating Liposomes For In Vitro Fusion to Membrane Targets
Grant Ashby[1], Zachary Imam[2], and Jeanne Stachowiak[2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]University of Texas at Austin, Austin, TX

Sat-521
Using Computational Modeling for the Design and Optimization of Novel Cancer Theranostics
Binal Brahmbhat [1], Dora Obodo[1], Kaitlyn Scott[1], Vedalakshmi Prasad[1], Brian Schnoor [1], Carolina Salvador-Morales[1], Juan Cebral[1], Rainald Lohner[1], and Fernando Mut[1]
[1]George Mason University, Fairfax, VA

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Neural Engineering–Undergraduate

Sat-528
Targeting CD14 Pathway on Blood-Derived or Resident Brain Immune Cells Improves Neural Recording
Shushen Lin[1], Hilary Bedell[1,2], Madhumitha Ravikumar[1,2], Ashley Rein[1], Xujia (Jessica) Li[1], and Jeffery Capadona[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Louis Stokes Cleveland VA Medical Center, Cleveland, OH

Sat-529
Direct Current Stimulation of Endothelial Monolayers Induces a Transcient and Reversible Increase in Transport Due to Electro-osmotic Effect
Katherin Arias[1], Limary Cancel[1], Marom Bikson[1], and John Tarbell[1]
[1]The City College of New York, New York, NY

Sat-530
Mirror Movements in Chronic Stroke: Origins and Their Influence on Interpretation About Recovery
Bryana Baginski[1], Nicole Varnerin[2], David Cunningham[2], Kelsey Potter-Baker[2], Jesus Cardenas[2], Vishwanath Sankarasubramanian[2], and Ela Plow[2]
[1]Clemson University, Clemson, SC, [2]Cleveland Clinic, Cleveland, OH

Sat-531
Effects of Phase-Delaying Optogenetic Stimulation of the Suprachiasmatic Nucleus On Mood
Christine Heisler[1], Chelsea Vadnie[2], Ryan Logan[2], and Colleen McClung[2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]University of Pittsburgh School of Medicine, Department of Psychiatry, Translational Neuroscience Program, Pittsburgh, PA

Sat-532
The Effect of Nanopatterned Surface on Intracortical Microelectrode Biocompatibility
Cara Smith[1], Seth Meade[1], Keying Chen[1], Jeffrey Capadona[1], and Evon Ereifej[1]
[1]Case Western Reserve University, Cleveland, OH

Sat-533
Cortical Cell Network Response to Ultrasound Stimulation
Sarah Shaykevich[1], Michael Plaksin[2], Yonatan Weissler[2], and Shy Shoham[2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Technion–Israel Institute of Technology, Haifa, Israel

Sat-534
Generation of Ca2+ Networks to Study Intercellular Communication of Human Neural Progenitor Cells
Nicolas Grandel[1], Arun Mahadevan[2], Jacob Robinson[2], and Amina Qutub[2]
[1]Stanford University, Stanford, CA, [2]Rice University, Houston, TX

Sat-535
Modeling of Axonal Block Induced by Extracellular Potassium Accumulation in Hippocampal CA1 Region
Amulya Veldanda[1], Daniel Tamashiro[1], and Xuefeng Wei[1]
[1]The College of New Jersey, Ewing, NJ

Sat-536
Neural Recruitment and Tissue Damage Propensity for Fractal Deep Brain Stimulation Electrodes
Aakhila Rameeza[1] and Xuefeng Wei[1]
[1]The College of New Jersey, Ewing, NJ

Sat-537
Neural Networks and Hand Dominance
Temilade Aladeniyi[1,2] and J.C. Mizelle[1]
[1]East Carolina University, Greenville, NC, [2]North Carolina Central University, Durham, NC

Sat-538
Characterization of Electrodes for High-voltage Nanosecond Pulsed Electric Field Exposure of Adrenal Chromaffin Cells
Jordanna Payne[1], Josette Zaklit[1], Hao Li[1], Robert Terhune[1], Indira Chatterjee[1], and Gale Craviso[1]
[1]University of Nevada, Reno, Reno, NV

Sat-539
Effect on Rat Motor Behavior of Chronic Intracortical Microelectrodes Implanted in the Motor Cortex
Keith Dona[1], Monika Goss[1], Justin McMahon[1], Andrew Shoffstall[1], Evon Ereifej[1], and Jeffrey Capadona[1]
[1]Case Western Reserve University, Cleveland, OH

Sat-540
Photostimulation of Microglia Indicates Cytotoxicity
Yang Lin[1], David Diaz[1], and Abigail Koppes[1]
[1]Northeastern University, Boston, MA

Sat-541
A Neural Recording Device for Monitoring Preclinical Deep Brain Stimulation Therapy
Anupam Kumar[1], James Fallon[2], Hugh McDermott[2], and Joel Villalobos[2]
[1]Bionics Institute, Melbourne, Australia, [2]Bionics Institute, East Melbourne, Australia

Sat-542
EEG Dynamics in Epilepsy: From IED Inverse Solution to Microstates
Alexandra Rodriguez Rojas[1]
[1]Florida International University, Miami, FL

Sat-543
Targeted Effects of FGF-9 Deletion in Scleraxis Lineage Cells
Emily Hudson[1], Michael Sonnenfelt[1], Anna Klintsova[1], and Megan Killian[1]
[1]University of Delaware, Newark, DE

Orthopaedic and Rehabilitation Engineering–Undergraduate

Sat-544
Polymer Clip Design Affects Migration Resistance and Pressure in Simulated Surgical Conditions
Madeline Simon[1], Hao Li[1], Richard Lebens[1], Kevin Loeppke[1], Zhifeng Lu[1], Connor Darrough[1], Blake Darkow[1], and Carly Garrow[1]
[1]Nanova Biomaterials, Inc., Columbia, MO

Sat-545
Growth of Mineral Coatings on Inert Materials Using Electric-Field-Induced Surface Charge
Ian O'Donnell[1], Abdulrahman Alsasa[1], and Stephen Kennedy[1]
[1]University of Rhode Island, Kingston, RI

Sat-546
Validating an Experimental Dynamic Gait Arena for Measuring Vertical Ground Reaction Forces in Mice
Samantha Haus[1], Emily Lakes[1], Brittany Jacobs[1], and Kyle Allen[1]
[1]University of Florida, Gainesville, FL

Sat-547
Characterization of Articular Cartilage By Raman Spectromicroscopy
Kiara Chan[1], Alexander Boys[1], Lawrence Bonassar[1], and Lara Estroff[1]
[1]Cornell University, Ithaca, NY

Sat-548
Effects of Grader Skill Level on Measurement Variability
Joshua Berko[1], Heidi Kloefkorn[1], and Kyle Allen[1]
[1]University of Florida, Gainesville, FL

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Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am

Sat-549
Development of Cell Seeded Tissue Engineered Meniscal Entheses with Functional Solute Gradients
Leanne Iannucci[1], Mary Clare McCorry[1], Tyler Khilnani[1], and Lawrence Bonassar[1]
[1]Cornell University, Ithaca, NY

Sat-550
Software Design and Mechanical Verification of An IMU System To Monitor Cervical Spine Movement
Michelle Riffitts[1], Marcus Allen[1], and Kevin Bell[1]
[1]University of Pittsburgh, Pittsburgh, PA

Sat-551
The Effect of Environmental Aging on Shore Hardness of Additive Manufactured Materials for 3D-Printed Custom Foot Orthotics
Kyle Walker[1], Manav Jain[1], Shannon Hall[1], Lauren Jackson[1], Breanne Przestrzelski[1], Brian Kaluf[2], Nikki Hooks[2], Dan Ballard[3], Timothy Pruett[1], Steven Hoeffner[1], and John DesJardins[1]
[1]Clemson University, Clemson, SC, [2]Ability Prosthetics & Orthotics, Greenville, SC, [3]Upstate Pedorthic Services, Greer, SC

Sat-552
Gait Analysis of Vietnamese Amputees Wearing Mercer Universal Prosthesis versus Customized Prosthesis
Brittany White[1] and Cheyenne Andrew[1]
[1]Mercer University, Macon, GA

Sat-553
Case Studies of Pediatric Poliomyelitis Patients fit with Lower Extremity Orthotics
Andrew Roy[1]
[1]Mercer University, Macon, GA

Sat-554
Quantifying the Effect of Varying User Conditions on EMG Features for Upper-limb Pattern Recognition
Caroline Li[1], Dustin Crouch[2], and He Huang[2]
[1]Wake Forest University, Winston-Salem, NC, [2]UNC/NCSU Joint Department of Biomedical Engineering, Raleigh, NC

Sat-555
Treatment of Poliomyelitis Patient Using Ankle-Foot Orthosis (AFO) and Analysis of Gait Improvement
Gabriel Gonzalez Quintero[1]
[1]Mercer University, School of Engineering, Macon, GA

Sat-556
Establishing System to Mimic Hand Acceleration During Parkinsonian Active Writing Tremors
Sidney Cannon-Bailey[1], Orit Braun Benyamin[2], and Navit Roth[2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]ORT Braude College of Engineering, Karmi'el, Israel

Sat-557
Developing a Smart Sock to Assist in the Treatment of Plantar Fasciitis
Jack McGreevey[1], Bryce Kuncle[1], Ryan Gilbert[1], Zachariah Lindower[1], Alex Giron[1], Omar Abdeladl[1], and Vladimir Reukov[1]
[1]Clemson University, Clemson, SC

Respiratory Bioengineering–Undergraduate

Sat-558
Linking Cellular Membrane Disruption and Blood-Gas Barrier Leak in Ventilator-Induced Lung Injury
Chantel Charlebois[1], Gregory Roy[1], Katharine Hamlington[1], Adele Julianelle[1], Alyx Cleveland[1], Bradford Smith[1], and Jason Bates[1]
[1]University of Vermont College of Medicine, Burlington, VT

Sat-559
Design and Testing Of An Automated Bioreactor System to Maintain Airway Segments Viable for Extended Durations Under Conditions Mimicking Tidal Breathing
Suzanne Stasiak[1], Daniel Brewster[1], Harikrishnan Parameswaran[1], and Kenneth Lutchen[1]
[1]Boston University, Boston, MA

Sat-560
Cellular Endoplasmic Reticulum Stress and Cytokine Response in Age-Associated Experimental Ventilator Induced Lung Injury
Franck Kamga Gninzeko[1], Michael Valentine[1], Joseph Herbert[1], Matthew Schneck[1], and Rebecca Heise[1]
[1]Virginia Commonwealth University, Richmond, VA

Sat-561
Microtubule Dynamics and Exogenous Gene Expression on Polyacrylamide Gels Of Varying Stiffness
Daniel Bordner[1] and Robert Geiger[1]
[1]Florida Gulf Coast University, Ft Myers, FL

Sat-562
Bilayer Epithelial/Smooth Muscle Constructs as an *In Vitro* Bronchial Model
Peter Sariano[1], Joshua Morgan[1], and Jason Gleghorn[1]
[1]University of Delaware, Newark, DE

Sat-563
Assessing the Host Inflammatory Response to Acellular Lung Scaffolds
Joshua Tarantino[1], Clint Skillen[2], and Bryan Brown[2]
[1]University of Pittsburgh, Mechanicsburg, PA, [2]McGowan Institute for Regenerative Medicine, Pittsburgh, PA

Sat-564
Pentagalloyl Glucose Treatment to Mitigate Effects of Cigarette Smoke Extract in Vitro
Mario F Garcia Duarte[1], Vaideesh Parasaram[2], Jorge I Rodriguez-Devora[2], and Naren Vyavahare[2]
[1]University of Texas at El Paso, El Paso, TX, [2]Clemson University, Clemson, SC

Stem Cell Engineering–Undergraduate

Sat-565
Influencing Differentiation of Neural Progenitor Cells with Gene Silencing
Meghan Wyatt[1], William Ong[2], Wai Hon Chooi[2], and Sing Yian Chew[2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Nanyang Technological University, Singapore, Singapore

Sat-566
Regulation of Adenosine A2B Receptor Signaling on Osteogenic Differentiation of Mesenchymal Stem Cells
Morgan Cobban[1,2], Yuru Shih[2], Masayuki Iida[2], and Shyni Varghese[2]
[1]Arizona State University, Tempe, AZ, [2]University of California San Diego, La Jolla, CA

Sat-567
Role for Stiffness in Vascular Fate
Lian Wong[1], Je Chua[1], Drew Glaser[2], and Kara McCloskey[1]
[1]University of California, Merced, Merced, CA, [2]Washington University in St. Louis, Saint Louis, MO

Sat-568
Differentiation of Mesenchymal Stem Cells into Schwann Cell-like Phenotype by Electrical Stimulus
Matthew Lentner[1], Metin Uz[2], Suprem Das[2], Don Sakaguchi[2], Surya Mallapragada[2], and Jonathan Claussen[2]
[1]Iowa State University, Ham Lake, MN, [2]Iowa State University, Ames, IA

Saturday, October 8 | 9:30 am–1:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am

Sat-569
Development of Immobilized Bioactive Signals for Pluripotent Stem Cell Differentiation
Alexander Grath[1], Taylor Dorsey[1], and Guohao Dai[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

Tissue Engineering–Undergraduate

Sat-570
An In Vitro Approach to Identify Skin Sensitizers with Classification Tools
Lingting Shi[1], Talia Greenstein[1], Serom Lee[1], Rene Schloss[1], and Martin Yarmush[1]
[1]Rutgers University, Piscataway, NJ

Sat-571
Optimization of Electroactive Hydrogel Characteristics for a Composite Skeletal Muscle Scaffold
Caroline Wood[1,2]
[1]Rutgers, The State University of New Jersey, Piscataway, NJ, [2]The College of New Jersey, Ewing, NJ

Sat-572
Optimizing Osteo-Differentiation Factor Delivery Profiles for Enhanced Bone Regeneration
Anne Reisch[1], Seyedeh Zahra Moafi Madani[1], and Stephen Kennedy[1]
[1]University of Rhode Island, Kingston, RI

Sat-573
Towards Elimination Of The In Vitro Dynamic Culture Period of SVF Cell-Seeded TEVGs
Kamiel Saleh[1], Darren Haskett[2,3], Lauren Kokai[3,4], Justin Weinbaum[1,3], Antonio D'Amore[1,2,3], William Wagner[1,2,3,5], J. Peter Rubin[3,4], and David Vorp[1,2,3,5,6]
[1]University of Pittsburgh, Department of Bioengineering, Pittsburgh, PA, [2]University of Pittsburgh, Department of Surgery, Pittsburgh, PA, [3]McGowan Institute for Regenerative Medicine, Pittsburgh, PA, [4]University of Pittsburgh, Department of Plastic Surgery, Pittsburgh, PA, [5]Center for Vascular Remodeling and Regeneration, Pittsburgh, PA, [6]University of Pittsburgh, Department of Cardiothoracic Surgery, Pittsburgh, PA

Sat-574
Utilizing Microfluidics to Recapitulate the Microenvironment of Glioblastoma
Elijah Karvelis[1], Mai Ngo[1], Aidan Gilchrist[1], Roger Kamm[2], and Brendan Harley[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Massachusetts Institute of Technology, Cambridge, MA

Sat -575
3D Printed Biodegradable Scaffold Loaded with Anti-Inflammatory Cytokines for Local Immunomodulation and Bone Regeneration
Hae Seong Kim[1]
[1]Columbia University, New York, NY

Sat-576
Engineering The Bone-Cartilage Interface: An Osteochondral Microphysiological System
Kalon Overholt[1], Riccardo Gottardi[1], Alessandro Pirosa[1], and Rocky Tuan[1]
[1]University of Pittsburgh, Pittsburgh, PA

Sat-577
Development of A Bioreactor Aimed At Designing Spatial And Temporal Drug Delivery Profiles For Bone Regeneration Protocols
Inderbir Sondh[1], Derek Nichols[1], Emily Bayer[1], Riccardo Gottardi[1], and Steven Little[1]
[1]University of Pittsburgh, Pittsburgh, PA

Sat-578
Centrifugation-based Fabrication of Laminar High-density Tissue Aggregates
Uma Balakrishnan[1], Joseph Shawky[1], and Lance Davidson[1]
[1]University of Pittsburgh, Pittsburgh, PA

Sat-579
Characterization of Breast Cancer Metastasis using a Two-Dimensional and a Three-Dimensional Assay
Awa Bakayoko[1], Brittany Jenkins[2], Rupali Hire[2], Melissa Davis[2], and Cheryl Gomillion[2]
[1]University of Maryland, Baltimore County, Silver Spring, MD, [2]University of Georgia, Athens, GA

Sat-580
Effects of Hormonal Stimulation on Endometrial Vascular Morphogenesis in 3D PEG Hydrogels
Alyssa Mendenhall[1], Alex Brown[2], Christi Cook[2], and Linda Griffith[2]
[1]University of Iowa, Iowa City, IA, [2]Massachusetts Institute of Technology, Cambridge, MA

Sat-581
Developing a Hydrogel-Loaded Gradient Microarray
Kunal Shah[1], Lauren Cross[1], and Akhilesh Gaharwar[1]
[1]Texas A&M University, College Station, TX

Sat-582
Characterization of a Microfluidic Platform to Tissue Engineer Arterioles
Hongyi Li[1]
[1]Washington University in Saint Louis, St. Louis, MO

Sat -583
Real Time Monitoring of Heart Valve Hydrodynamic in Pulse Duplicator
Thanh Le[1], Zeeshan Syedain[1], and Robert Tranquillo[1]
[1]University of Minnesota Twin Cities, Minneapolis, MN

Sat-584
Assessment of Schwann Cell Migration In Vitro And In Vivo Following Application of a Peripheral Nerve Specific Hydrogel
Mara Palmer[1], Travis Prest[1], and Bryan Brown[1]
[1]University of Pittsburgh, Pittsburgh, PA

Sat-585
Chitosan Nanoparticle-Loaded Collagen Gels for a Tissue-Engineered Brain Patch
Sakshi Shah[1] and Sarah Anderson[1]
[1]Harvey Mudd College, Claremont, CA

Sat-586
Analysis of Vascularization Following Implantation of Prevascularized Fibrin Scaffolds in a Cranial Defect Model
Woojin Pang[1], Brianna Roux[1,2], Banu Akar[1,2], and Eric Brey[1,2]
[1]Illinois Institute of Technology, Chicago, IL, [2]Edward Hines Jr. VA Hospital, Hines, IL

Sat-587
Effect of HIF1 Activity on CD44 Variant Expression And Matrix Production During Chondrogenic Differentiation Of Human Mesenchymal Stem Cells
Emily Durisin[1], Rhima Coleman[1], and Biming Wu[1]
[1]University of Michigan, Ann Arbor, MI

Sat-588
Analysis of Extracellular Matrix in Mice with Muscular Dystrophy and its Effect on Myoblast Function
Felicia Sadikin[1], Ashley Kaminski-Earle[1], and Jan Lammerding[1]
[1]Cornell University, Ithaca, NY

Sat-589
Electrospinning: Creating 3D Biocompatible Scaffolds
Victoria Myers[1] and Barbara Muller-Borer[2]
[1]East Carolina University, Linden, NC, [2]East Carolina University, Greenville, NC

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Sat-590
In Vitro Characterization and In Vivo Survival of Three-Dimensional Vascular Networks in Fibrin Scaffolds
Beatriz Barrera[1], Brianna Roux[1,2], Banu Akar[1,2], and Eric Brey[1,2]
[1]Illinois Institute Of Technology, Chicago, IL, [2]Edward Hines Jr. VA Hospital, Hines, IL

Sat-591
In Vitro Development of a Vascularized Full Thickness Skin Equivalent Model
Andrew Ramos[1,2], Maryna Pavolva[1], Anna Jakimenko[1], and Ganna Bilousova[1]
[1]University of Colorado, Anschutz Medical Campus, Aurora, CO, [2]Charles. C Gates Center of Regenerative Medicine, Aurora, CO

Sat-592
Lyophilized Platelet-Rich Plasma Increases Osteoblast Proliferation and Alkaline Phosphatase Activity
Rachel Rone[1], Scott Sell[1], and Natasha Case[1]
[1]Saint Louis University, Saint Louis, MO

Sat-593
Extracellular Matrix Mediation of Adipose Tissue Differentiation and Function
Christopher Mayhugh[1], Feipeng Yang[1], Ronald Cohen[2], and Eric Brey[1]
[1]Illinois Institute of Technology, Chicago, IL
[2]The University of Chicago, Chicago, IL

Sat-594
Cellular Response to Spider Silk Scaffolds
Dallas Montag[1], Katherine Hafner[2], Marian Kennedy[2], and Delphine Dean[2]
[1]Marietta College, Marietta, OH, [2]Clemson University, Clemson, SC

Sat-595
The Development of a Novel PPLG Hydrogel System to Promote the Vascularization of iPS-Derived Endothelial Cells
Kwasi Amofa[1], Hongkun He[2], Alex Wang[2], Marianna Sofman[2], Linda Griffith[2], and Paula Hammond[2]
[1]Western New England University, Springfield, MA
[2]Massachusetts Institute of Technology, Boston, MA

Sat-596
Approaches to Antigen Removal from a Porcine Osteochondral Xenograft
Ruth Recinos[1], Emily Wright[1], and Steven Elder[1]
[1]Mississippi State University, Starkville, MS

Sat-597
Analysis of Structure and Strength of Tissue Rings Fabricated in Custom Machined Culture Wells
Kathy Suqui[1], Hannah Strobel[1], Christopher Nycz[1], Gregory Fischer[1], and Rolle Marsha[1]
[1]Worcester Polytechnic Institute, Worcester, MA

Sat-598
Vacuum-assisted Recellularization of Decellularized Porcine Mitral Valve Scaffold
Brianna Sanchez[1], Christopher deBorde[2], Lee Sierad[2], Jorge I Rodriguez-Devora[2], and Aggie Simionescu[2]
[1]University of Texas at El Paso, El Paso, TX, [2]Clemson University, Clemson, SC

Sat-599
Additive Manufacturing to Produce Biomechanically Anisotropic Hydrogels for Cardiac Tissue Engineering
Yasmeen Rose[1], Brittany Banik[2], and Justin Brown[2]
[1]The University of Iowa, Iowa City, IA, [2]The Pennsylvania State University, University Park, PA

Sat-600
Epithelial Wound Closing in Engineered Microtissues
Jaclyn Grode[1], Mahmut Sakar[2], Christopher Chen[1,3], and Jeroen Eyckmans[1,3]
[1]Boston University, Boston, MA, [2]Institute of Mechanical Engineering, Ecole Polytechnic Federale de Lausanne, Lausanne, Switzerland, [3]Wyss Institute for Biologically Inspired Engineering, Harvard University, Boston, MA

Sat-601
Comparison of Polysulfone and Collagen Substrates as a Membrane for the Growth of Murine Myoblast Cell Culture
Katherine Glaittli[1], Lori Caldwell[1], Annelise Dykes[1], Charles Harding[1], David Britt[1], and Elizabeth Vargis[1]
[1]Utah State University, Logan, UT

Sat-602
Mechanics of Collagen Gels vs. Collagen-Hyaluronic Acid Co-Gels in Confined Compression.
Scottland Adkins[1]
[1]University of Minnesota-Twin Cities, Lake Elmo, MN

Translational Biomedical Engineering—Undergraduate

Sat-373
Engineering Dermal Therapeutics
Madelyn O'Gorman[1], Stella Hartono[1], MaKayla Serres[1], Victoria Bedell[2], Alexander Meves[1], Luke Hoeppner[3], Debabrata Mukhopadhyay[1], and Stephen Ekker[1]
[1]Mayo Clinic, Rochester, MN, [2]University of Pennsylvania, Philadelphia, PA, [3]Hormel Institute, Austin, MN

Sat-374
Microenvironment Stiffness as a Phagocytic Control Mechanism of "Self" Signaling by Macrophages
Rachel Coler[1], Cory Alvey[1], and Dennis Discher[1]
[1]University of Pennsylvania, Philadelphia, PA

Sat-375
Method for the Determination of Adipose Distribution on the Epicardial Surface of Human Hearts
Mario Soto[1,2], Alexander Mattson [2,3], and Paul Iaizzo[2]
[1]University of Puerto Rico-Mayaguez Campus, Moca, PR, [2]University of Minnesota, Minneapolis, MN, [3]Medtronic Inc., Minneapolis, MN

Sat-376
A Novel Biomarker for Early Diagnosis of Diabetic Retinopathy Through Analysis of Clinically Relevant Fluorescein Videoangiography Data
Miranda Poklar[1], Leanne Horvath[1], Ken Tichauer[1], Shaoxian Hu[1], Emily Dosmar[1], Wenqiang Liu[1], Jennifer Kang-Mieler[1], and William Mieler[1]
[1]Illinois Institute of Technology, Chicago, IL

Sat-377
Early Detection of Diabetic Retinopathy using a Non-invasive Measure of Retinal Vascular Permeability
Leanne Horvath[1], Miranda Poklar[1], Shaoxian Hu[1], Emily Dosmar[1], Wenqiang Liu[1], William Mieler[2], Jennifer Kang-Mieler[1], and Kenneth Tichauer[1]
[1]Illinois Institute of Technology, Chicago, IL, [2]University of Illinois at Chicago, Chicago, IL

Sat-378
Methicillin-Resistant Staphylococcus Aureus Inhibited by Photodynamic Antimicrobial Therapy
Anna Martinez[1,2], Nicholas Nolan[2], Heather Durkee[2], Alejandro Arboleda[2], Nidhi Batra[2], Mariela Aguilar[2], Cornelis Rowaan[2], Alex Gonzalez[2], Guillermo Amescua[2], Harry Flynn[2], Darlene Miller[2], and Jean-Marie Parel[2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Bascom Palmer Eye Institute, Miami, FL

Sat-379
Design and Construction of a Virtual Bioamplification Machine
Parker Schibel[1], Kevin Jones[1], and Olivia Coiado[1]
[1]University of Portland, Portland, OR

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Sat-380
Nitric Oxide Releasing Bioresorbable Polymers for Medical Applications
Nettie Brown[1], Priya Singha[1], Jennifer McCarty[1], Hitesh Handa[1], and Jsaon Locklin[1]
[1]University of Georgia, Athens, GA

Sat-381
Development of Lifelike Training Device for Simulated Radial Artery Cannulation
Mark Doose[1]
[1]University of Illinois at Urbana Champaign, Urbana, IL

Sat -382
The Effect of Red Blood Cell Morphology on Cellular Membrane Stiffness
Samuel Boland[1], Carey Womack[2], Siu Ling Leung[1], and Peter Butler[1]
[1]The Pennsylvania State University, University Park, PA, [2]University of Memphis, Memphis, TN

Sat-383
Quantification of Nanoparticles in the Systemic Circulation After Intracranial Administration by Convection-Enhanced Delivery
Christina Huang[1], Jenna DiRito[1], Alice Gaudin[1], Gregory Tietjen[1], and Mark Saltzman[1]
[1]Yale University, New Haven, CT

Sat-384
The Advantage of Hospital-University Partnerships for Introducing New Devices into the Healthcare System
Michelle Archambault[1], Addison Haxo[1], Kaitlin Mowery[1], Henry Stann[1], S. Mark Poler[2], Daniel Cavanagh[1], and Eric Kennedy[1]
[1]Bucknell University, Lewisburg, PA, [2]Geisinger, Danville, PA

Sat-385
Detection of Nanoscale ATP-dependent Membrane Mechanics Using a Modified Optical Trap
Carey Womack[1], Samuel Boland[2], Siu Liu Leung[2], and Peter Butler[2]
[1]The University of Memphis, Memphis, TN, [2]The Pennsylvania State University, State College, PA

Sat-386
Effect of AOT Concentration on Gelatin Nanoparticle Diameter
Akindele Davies[1], Justin Dinenberg[2], James Coyne[2], and Yong Wong[3]
[1]Carnegie Mellon University, Long Beach, CA, [2]Penn State Univeristy, Philadelphia, PA, [3]Penn State Univeristy, State College, PA

Sat-387
iPSC-generated HSPCs Exhibit Critical Integrins and *In-Vivo*-like Cell Sprouting
Michael Drakopoulos[1,2], Luigi Alvarado[2], Ishan Asokan[2,3], Christian Combs[4], and Andre Larochelle[2]
[1]Purdue University, West Lafayette, IN, [2]National Heart, Lung, and Blood Institute, Hematology Branch, National Institutes of Health, Bethesda, MD, [3]Vanderbilt University School of Medicine, Nashville, TN, [4]National Heart, Lung, and Blood Institute, Light Microscopy Core, National Institutes of Health, Bethesda, MD

Sat-388
Advancing Capstone Projects Beyond the First Generation: An Emergency Rapid Injection Device
Pamela Johnson[1], Rebecca Osborne[1], Fatima Rezaei[1], Katherine Solley[1], Kevin Grimm[2], Eric Kennedy[1], and Daniel Cavanagh[1]
[1]Bucknell University, Lewisburg, PA, [2]Geisinger Health System, Danville, PA

Undergraduate Research, Design & Leadership

Sat-389
Multifunctional Hyaluronic Acid Dressings with Antimicrobial Properties for Chronic Wound Healing
Lindsay Lozeau[1], Dalia Shendi[1], Alicia Aquino[1], Anjana Jain[1], and Terri Camesano[1]
[1]Worcester Polytechnic Institute, Worcester, MA

Sat-390
Design and Experimental Evaluation of an Improved Breast Milk Delivery Device for Premature Neonates
Guiselle Esquivel[1], Jorge Lizano[1], Johanna Madrigal[1], and Eric Richardson[2]
[1]Instituto Tecnologico de Costa Rica, Cartago, Costa Rica, [2]Rice University, Houston, TX

Sat-391
Characterizing a Peripheral-Simulating Bioreactor Bench-top Model
Carson Schaff[1], Saami Yazdani[1], John Faulk[1], and Jesus Estaba[1]
[1]University of South Alabama, Mobile, AL

Sat-392
Laminar Profile Underlying the Propagation of CSD: From Single Neurons to Population Activity
Daniel Rivera[1], Darlene Ramos[1], Sarahy Garcia[1], Yisel Frometa[1], Yoichiro Mori[2], and Jorge Riera[1]
[1]Florida International University, Miami, FL, [2]University of Minnesota, Minneapolis, MN

Sat-393
Osseointegration Correlates with Peri-prosthetic Bone Mass in Compromised Murine Bone
Arvinth Sethuraman[1], Xu Yang[1], Benjamin Ricciardi[1], Aleksey Dvorzhinskiy[1], Yuo-yu Lee[1], Joseph Koressel[1], Joseph Choi[1], Zachary Lane[1], Kevin Nishida[1], Matthew Shirley[1], Zhiwei Wang[1], Marjolein van der Meulen[1,2], and Mathias Bostrom[1]
[1]Hospital for Special Surgery, New York, NY, [2]Cornell University, Ithaca, NY

Sat-394
An In Vitro Inverted Vertical Invasion Assay to Avoid Manipulation of Rare or Sensitive Cell Types
Tanner McArdle[1], Brenda Ogle[1], and Felicite Noubissi[1,2]
[1]University of Minnesota, Minneapolis, MN, [2]Jackson State University, Jackson, MS

Sat-395
A Novel Liposomal Formulation Targeting Candida albicans
Sarah Cowles[1], Noel Vera-Gonzalez[1], Christina Bailey[1], and Anita Shukla[1]
[1]Brown University, Providence, RI

Sat-396
Contractile Dysfunction and VF During Sodium-Calcium Exchanger Inhibition in Hearts from TAC Rats
Mary Kate Dwyer[1], Sarah Kuzmiak-Glancy[1], Kara Garrott[1], and Matthew Kay[1]
[1]The George Washington University, Washington, DC

Sat-397
The Use of iPS-Derived Endothelial Cells in Organ-on-a-Chip Applications
Rose Yin[1], Yosuke Kurokawa[1], Michael Shang[1], and Steven C. George[1]
[1]Washington University in St. Louis, St. Louis, MO

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Sat-398
Silk Hydrogel Microfluidics Using 3D Printed Pluronic Sacrificial Elements
Shivaali Maddali[1], Thomas Valentin[1], and Ian Wong[1]
[1]Brown University, Providence, RI

Sat-399
Synergistically Inducing Neural Differentiation via 3D Printed Aligned Structure and Bio-inspired Immobilization of Growth Factors
Fahed Masood[1], Wei Zhu[2], and Lijie Grace Zhang[3]
[1]University of Maryland, College Park, Silver Spring, MD, [2]The George Washington University, Washington, DC, [3]The George Washington University, Washington D.C, DC

Sat-400
A Glucose Dehydrogenase Based Electrochemical Biosensor for Detection of Glucose in Human Saliva
Alaina Jenish[1], Chi Lin[1], Breanna Pratt[1], Amnah Alkhan[1], Susan Sheffield[1], Jonus Reyna[1], Cael Muggeridge[1], and Jeffrey LaBelle[1]
[1]Arizona State University, Tempe, AZ

Sat-401
Role of Nanoparticles' Mechanical Stiffness in Cellular Uptake
Emily Lindberg[1], Jin Xie[2], Liuyang Zhang[2], Shiyi Zhou[2], and Xianqiao Wang[2]
[1]Syracuse University, Syracuse, NY, [2]University of Georgia, Athens, GA

Sat-402
Software for 3D Quantitative Analysis of the Eye Vasculature
Felipe Suntaxi[1], Ning-Jiun Jan[1], Andrew Voorhees[1], Konstantinos Verdelis[1], and Ian A. Sigal[1]
[1]University of Pittsburgh, Pittsburgh, PA

Sat-403
Preventing Infection in Silicone Based Medical Devices Using Nitric Oxide Release
Kaylee O'Connor[1], Marcus Goudie[2], Priyadarshini Singha[2], Jennifer McCarty[2], and Hitesh Handa[2]
[1]University of Alabama, Tuscaloosa, AL, [2]University of Georgia, Athens, GA

Sat-404
Replicating Trabecular Meshwork Cellularity Changes in Glaucoma: A Modified in vitro Model
Richard Vannatta[1], Ross Ethier[1], and Eric Snider[1]
[1]Georgia Institute of Technology, Atlanta, GA

Sat-405
Modeling and Experimental Analysis of the Temporary, Fully-Retreivable Stent for Traumatic Hemorrhage Control
Mark Littlefield[1], Yanfei Chen[1], Bryan Tillman[2], Sung Kwon Cho[1], and Youngjae Chun[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]University of Pittsburgh Medical Center, Pittsburgh, PA

Sat-406
Dual Fiber Bragg Gratings Embedded Catheter for Temperature Insensitive Contact Force Sensing in Electrophysiology Therapy
Leah Feuerman[1,2], Li Xu[2], Zion Tse[2], and Mable Fok[2]
[1]Occidental College, Los Angeles, CA, [2]University of Georgia, Athens, GA

Sat-407
MIP-1 Up-Regulates Mesothelial Expression of P-selectin to Increase Ovarian Cancer Cell Adhesion
Anne-Sophie Mancha[1], Molly J. Carroll[2], and Pamela K. Kreeger[2]
[1]Fort Lewis College, Durango, CO, [2]University of Wisconsin-Madison, Madison, WI

Sat-408
Thallium Detection Using Paper-Based Cell-Free Sensor Circuitry
Maya Lemmon-Kishi[1], Venkata Peddada[1], Claire Chu[1], Maddie Perdoncin[1], Aife Ni Chochlain[1], Lisa Antoszewski[2], Jason Lohmueller[1], Natasa Miskov-Zivanov[1], Cheryl Telmer[3], Sanjeev Shroff[1], and Alex Deiters[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Grove City College, Grove City, PA, [3]Carnegie Mellon University, Pittsburgh, PA

Sat-409
Using Texture Analysis to Characterize a Pediatric Brain Tumor Model
Kathleen Francis[1], Tien Tang[1], and M. Waleed Gaber[2]
[1]Rice University, Houston, TX, [2]Texas Children's Hospital, Houston, TX

Sat-410
Differential Gene Expression of ECM Proteins and Adhesion Molecules In Tailored Polyacrylamide Gels
Zachary Weishampel[1], Dalton Berrie[1], Andria Doty[1], and Sarah Glover[1]
[1]University of Florida, Gainesville, FL

Sat-411
The effect of Hydrostatic Pressure on Neuronal Cell Morphology In Vitro the Effect of Hydrostatic Pressure on Neuronal Cell Morphology In Vitro
Kallie Etten[1], Jiro Nagatomi[1], and Curtis Harper[1]
[1]Clemson University, Clemson, SC

Sat-412
Axolotl Retinal ECM Promotes Down-regulation of ERK 1/2 Expression in Human Retinal Progenitor Cells.
Aanie Phillips[1], Joydip Kundu[1], and Rebecca Carrier[1]
[1]Northeastern University, Boston, MA

Sat-413
Effects of Low Dose Radiation and Tetanus Toxoid on the Strength of Bone
Philip Binaco[1], Steve Ayala[1], Danielle Howe[1], Michael Pecaut[2], Nina Nishiyama[3], Xiao Mao[2], Denise Rodriguez[2], Andy Kwok[4], Ted Bateman[5], Stephen Chapes[6], Jeffrey Willey[4], and Anthony Lau[1]
[1]The College of New Jersey, Ewing, NJ, [2]Loma Linda University Department of Basic Sciences, Loma Linda, CA, [3]Loma Linda University School of Medicine Loma Linda, Loma Linda, CA,[4]Wake Forest School of Medicine, Winston-Salem, NC, [5]University of North Carolina Chapel Hill, Chapel Hill, NC,[6]Kansas State University, Manhattan, KS

Sat-414
Creating a Scalable Tibia Model to Predict Tibial Stresses
Julie Liu[1], Karleen Bartol[1], Leela Goel[1], John Willson[1], and Stacey Meardon[1]
[1]East Carolina University, Greenville, NC

Sat-415
Development of a PNA-Based Microfluidic Assay for the Detection and Quantification of HIV
Alden Moss[1], Kaylyn Oshaben[2], Daniel Appella[2], Nicole Morgan[2], and Thomas Pohida[2]
[1]Oregon State University, Corvallis, OR, [2]National Institutes of Health, Bethesda, MD

Sat-416
Title: Estimation of the Viscous Properties of Skin and Subcutaneous Tissues with an Image-based Method
Ingram Jansen[1] and Jason Yao[2]
[1]East Carolina University, Fayetteville, NC, [2]East Carolina Universtiy, Winterville, NC

Sat-417
Investigating the Role of Exosomes in Mesenchymal Stem Cell-Based Immunomodulation
Mariko Kanai[1], Holly Wobma[1], Bohao Liu[1], and Gordana Vunjak-Novakovic[1]
[1]Columbia University, New York, NY

Saturday, October 8 | 9:30 am–1:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am

Sat-418
Flexible Biosensor to Monitor Ion Concentrations Via Sweat Analysis
Christopher Rumrill[1], Qiwei Wang[1], and Hyeun Joong Yoon[1]
[1]South Dakota State University, Brookings, SD

Sat-419
Rapid Decrease in The Cortical Bone Mineral Density in Response to The Intake Of Cocaine
Brandon Zhuang[1], Amna Haider[1], Hyunsu Shin[2], Kevin Clare[1], Craig P. Allen[1], Gabriel Pagnotti[1], Congwu Du[1], Clinton T. Rubin[1], and M. Ete Chan[3]
[1]Stony Brook University, Stony Brook, NY, [2]Half Hollow HIlls High School East, Stony Brook, NY,[3]Stony Brook University, Stony Brook University, NY

Sat-420
The Effects of Modulated Glucocorticoid Receptors on Lipopolysaccharide Mediated Inflammation
Ioana Soaita[1], Irina Hutson[2], Kevin Bauerle[2], and Charles Harris[2]
[1]Stony Brook University, Stony Brook, NY, [2]Washington University in St. Louis School of Medicine, St. Louis, MO

Sat-421
Vimentin Affects Formation of Cellular Protrusions in hMSCs with SDF-1 During Transwell Migration
Tejasvi Peesay [1], Carlos Luna [1], Poonam Sharma [1], and Adam Hsieh[1]
[1]University of Maryland, College Park, MD

Sat-422
Association of Negative Symptoms of Schizophrenia with Fear Network Dysregulation
Phillip Dmitriev[1], Megan Quarmley[1], Daniel Wolf[1], Bruce Turetsky[1], Petra Rupert[1], Ruben Gur[1], and Raquel Gur[1]
[1]University of Pennsylvania, Philadelphia, PA

Sat-423
Fetal Development of the Bovine Anterior Mitral Valve Leaflet
Robert Laureijs[1] and Sarah Wells[1]
[1]Dalhousie University, Halifax, NS, Canada

Sat-424
Quantitative Diffuse Optical Spectroscopy of Radiation Therapy Resistance in Tumors
Paola Monterroso Diaz[1], Kinan Alhallak[1], Dakory Lee[1], Ruud Dings[2], and Narasimhan Rajaram[1]
[1]University of Arkansas, Fayetteville, AR, [2]University of Arkansas for Medical Sciences, Little Rock, AR

Sat-425
MR-Based Wall Shear Stress Calculation in Pulmonary Hypertension
Jennifer Rickens[1] and Stephanie George[2]
[1]Thiel College, Greenville, PA, [2]East Carolina University, Greenville, NC

Sat-426
VEGFR1 Signaling Induced by VEGFA Stimulation
Nicole Grubb[1,2], Jared Weddell[2], and P.I. Imoukhuede[2]
[1]Florida State University, Kissimmee, FL,
[2]University of Illinois Urbana-Champaign, Urbana, IL

Sat-427
A Low-Cost Device for Quantifying Tissue Stiffness with Ultrasound
Bowen Shaner[1], Kristy Walsh[1], Mark Palmeri[2], and Brett Byram[1]
[1]Vanderbilt University, Nashville, TN, [2]Duke University, Durham, NC

Sat-428
Multi-Scale Modeling of T Cell and Antigen Presenting Cell Interaction in the Tumor Microenvironment
Jose Perez[1], Meghan Bloom[2], and Marcelo Behar[2]
[1]The University of Texas at El Paso, El Paso, TX,
[2]The University of Texas at Austin, Austin, TX

Sat-429
Assessment of Medical Equipment in Kisarawe, Tanzania
Casey Young[1], Ian DeMass[1], Carson Brewer[1], Ryan Gilbert[1], Kaleb Guion[1], Melissa McCullough[1], John DesJardins[1], and Delphine Dean[1]
[1]Clemson University, Clemson, SC

Sat-430
Towards Developing a Convenient Tripping Testing Procedure
Vibhavari Vempala[1]
[1]University of North Carolina at Chapel Hill and North Carolina State University, Raleigh, NC

Sat-431
Investigating the Detachment of Breast Cancer Cells in 3D Tissue Constructs under Flow Perfusion Conditions.
Ariel Cross[1], Cortes Williams[1], and Vassilios Sikavitsas[1]
[1]University of Oklahoma, Norman, OK

Sat-432
Characterizing Infarcted Myocardium Ultrastructure using Electron Microscopy
Elizabeth Shih[1], Ethan Kwan[1], Salma Ayoub[1], David Li[1], Michael Sacks[1], Joseph Gorman III[2], and Robert Gorman[2]
[1]The University of Texas at Austin, Austin, TX, [2]The University of Pennsylvania, Philadelphia, PA

Sat-433
Examining Effects of PEG Length and Silica Nanoparticle Size On Cell Viability
Kyle Paul[1], Alexander Kelly[1], and Allan David[1]
[1]Auburn University, Auburn, AL

Sat-434
The Effect of SOD Conjugates on the Release Of Free Radicals by Inflammatory Cells
Jeannette Rodriguez[1], Dmitry Gil[1], and Vladimir Reukov[1]
[1]Clemson University, Clemson, SC

Sat-435
Circulating MicroRNA in Blood Serum as Promising Biomarkers for Treatment Progression against Colorectal Cancer
Judy (Jiaqi) Wang[1,2]
[1]Johns Hopkins University, Baltimore, MD, [2]VU Medical Center, Amsterdam, Netherlands

Sat-436
Development of Two-Photon Calcium Imaging Methods for Circuit Mapping In Mouse Motor Cortex
Dillon Thomas[1], Bryan Hooks[1], Brett Saltrick[1], and Sandra Okoro[1]
[1]University of Pittsburgh, Pittsburgh, PA

Sat-437
Spatial Frequency Domain Imaging of Tissue Phantom Models of Tumor Margins
Nyrobi Celestine[1], Will Goth[2], and James Tunnell[2]
[1]Milwaukee School of Engineering, Milwaukee, WI,
[2]The University of Texas at Austin, Austin, TX

Saturday, October 7 | 9:30 am–1:00 pm | Poster Session | Exhibit Hall BC

Poster Viewing with Authors & Refreshment Break | 9:30 am–10:15 am

Sat-438
Synthesis Of Fe3O4 Nanoparticles and Quantification Of Nanoparticle Uptake In U87MG-EGFP Glioma Cells And Primary Astrocytes.
Lauren Mehanna[1], Meghan Logun[2], Wujun Zhao[2], Leidong Mao[2], and Lohitash Karumbaiah[2]
[1]University of Kentucky, Lexington, KY, [2]University of Georgia, Athens, GA

Sat-439
Breast Cancer Paracrine Signals Alter Osteocyte Phenotype in a 3D Bone Scaffold
Jeremy Keys[1], Mary Hagen[1], Blayne Sarazin[1], and Maureen Lynch[1]
[1]University of Massachusetts Amherst, Amherst, MA

Sat-440
Cumulative Head Impact Exposure On Offseason DTI and DKI Changes In Youth Football Athletes
Jordan Scott[1,2], Elizabeth Davenport[3], Jillian Urban[2], Joel Stitzel[2], Joseph Maldjian[3], and Christopher Whitlow[2]
[1]University of Michigan, Ann Arbor, MI, [2]Virginia Tech-Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC, [3]University of Texas Southwestern, Dallas, TX

Sat-441
Effects of Orbital Shear Stress on Exogenous Gene Expression
Morghan Alters[1], Shane Noble[1], Daniel Bordner[1], and R.Christopher Geiger[1]
[1]Florida Gulf Coast University, Fort Myers, FL

Sat-442
The Effect of Hydrogel Degradation Mechanism on Encapsulated Submandibular Gland Cells
Brittany Schutrum[1], Andrew Shubin[1], Catherine Ovitt[1], and Danielle Benoit[1]
[1]University of Rochester, Rochester, NY

Sat-443
The Use of Microfluidics to Compare the Dynamic Behavior of Microtubule Plus and Minus Ends
Nikita Thomas[1] and Marija Zanic[1]
[1]Vanderbilt University, Nashville, TN

Sat-444
Effect of Chemically Induced Locomotion and Enzyme Activity on Janus Particle Conjugate
Dev Mandavia[1], Andrew Pan[1], and Rick Saha[1]
[1]Georgia Institute of Technology, Atlanta, GA

Sat-445
Pain Away with RA - Handheld Device for Improving Hand Pain and Stiffness in Patients with Rheumatoid Arthritis
Kelli Lynch[1]
[1]Northeastern University, Boston, MA

Sat-446
Effects of Space-flight Head-ward Fluid Shifts on Neurocognitive Abilities and Cerebral Blood Flow
Robert Hazel[1]
[1]University of North Carolina at Chapel Hill, Chapel Hill, NC

Sat-447
TNF- and VEGF Modulate Oligomerization of Amyloid Beta By Neurovascular Cells
Andrew Hong[1]
[1]Georgia Institute of Technology, Atlanta, GA

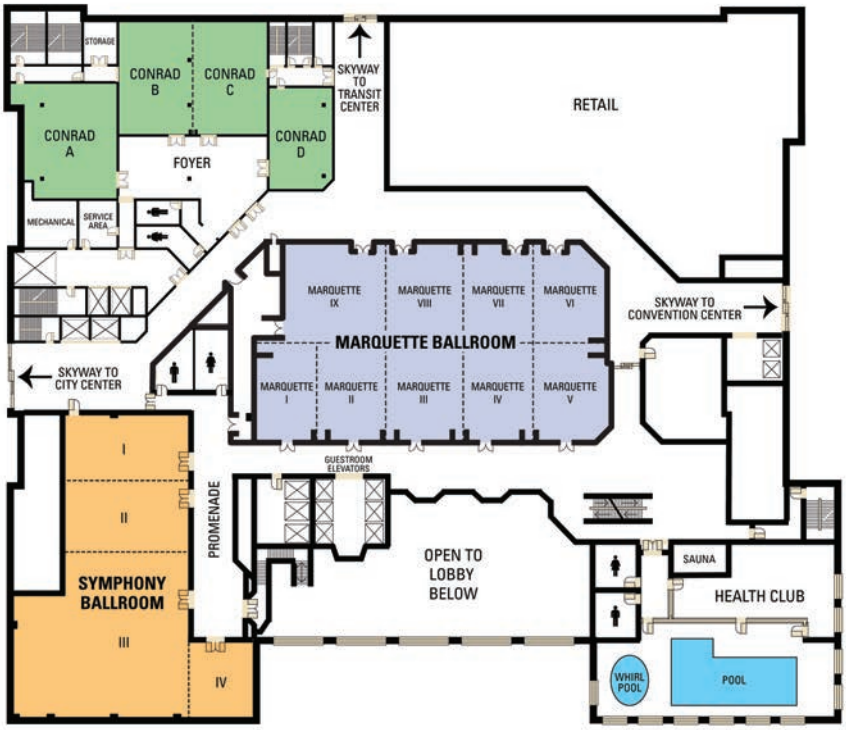
Sat-448
Bodies in Motion: Biomechanical Data Acquisition with a Skeleton Tracking Sensor
Bruce Coluccio[1], M. Ete Chan[1], Richard Mckenna[1], Zhengyang Liu[1], Amna Haider[1], Gabriel Pagnotti[1], and Clinton Rubin[1]
[1]Stony Brook University, Stony Brook, NY

Sat-449
Bead-based IL-6 Immunoassay on a Chip
Damian Hernandez[1]
[1]Illinois Institute of Technology, Chicago, IL

Sat-450
Bone Marrow Mesenchymal Stem Cell Derived Exosomes Attenuate Ischemia Induced Retinal Injury
Sara Mohamed[1], Biji Mathew[1], Leianne Torres[1], Jasmine lopez[1], Samantha Keil[1], Clara stelman[1], Andrew Schwartz[1], and Steven Roth[1]
[1]University of Illinois at Chicago, Chicago, IL

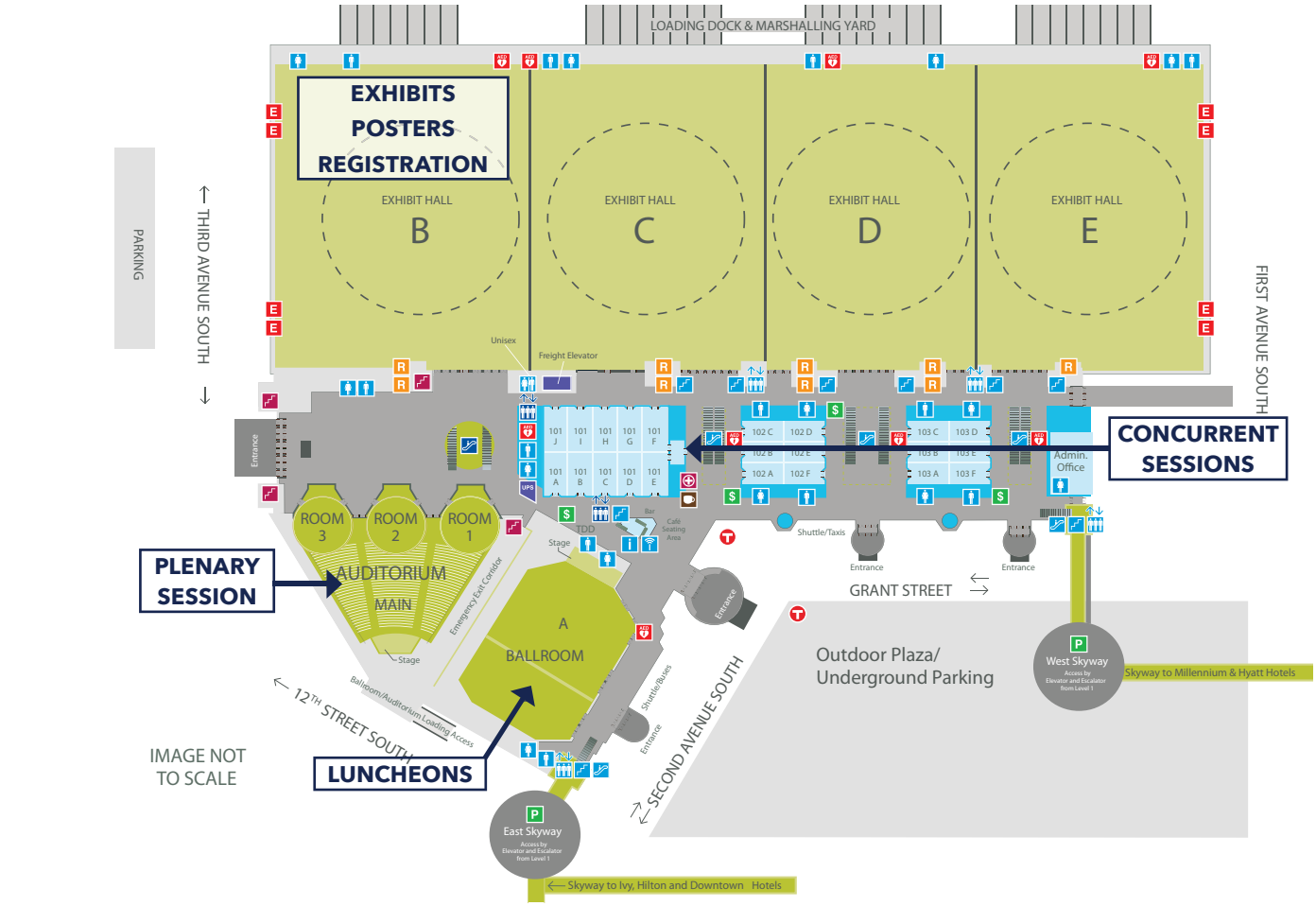
Minneapolis Hilton | 1001 Marquette Avenue, Minneapolis, MN 55403

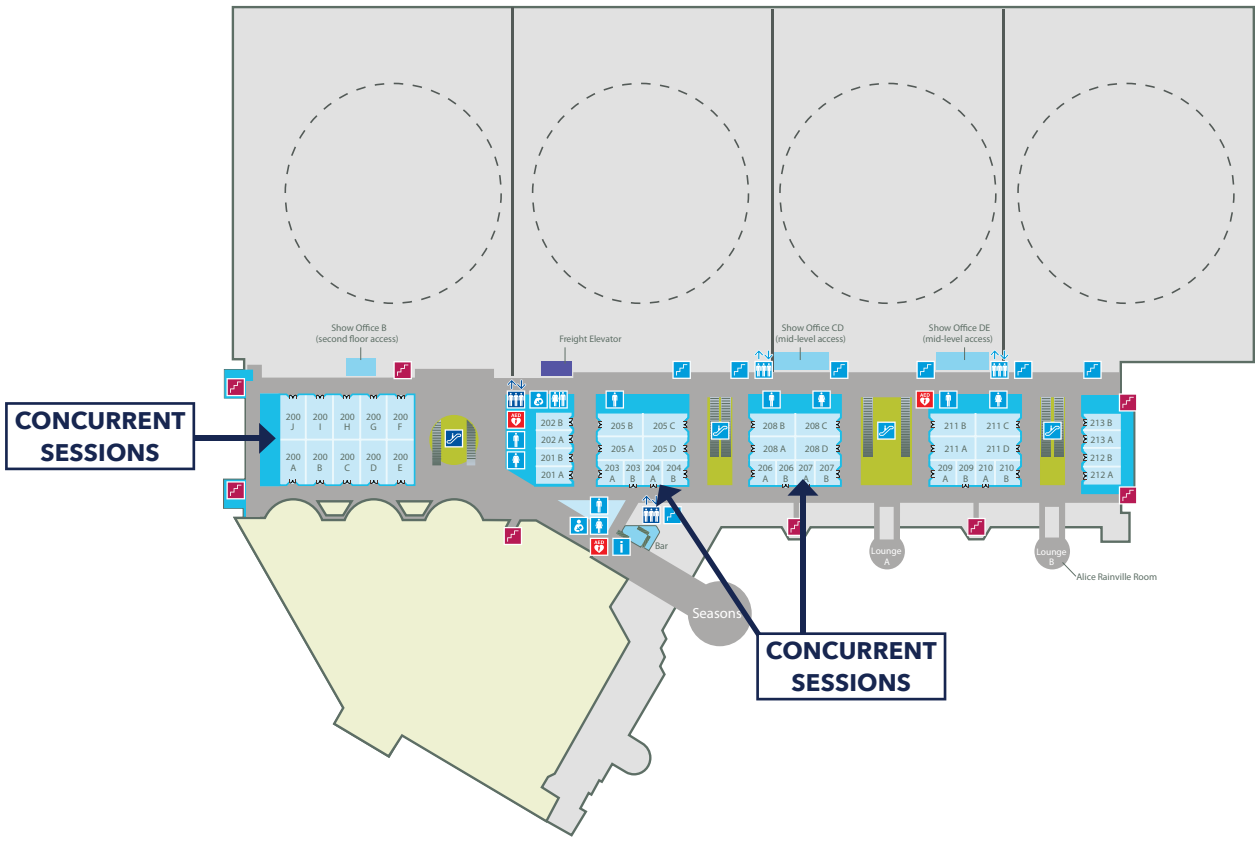
SECOND FLOOR



THIRD FLOOR

Minneapolis Convention Center | 1301 2nd Ave South, Minneapolis, MN 55403





Program At-A-Glance | Thursday | October 6, 2016

TRACK	8:00 am–9:30 am	1:00 pm–2:30 pm	3:15 pm–4:45 pm
BIOINFORMATICS, COMPUTATIONAL AND SYSTEMS BIOLOGY	**Analysis of Cell Signaling I** *Room 200A*	**Analysis of Cell Signaling II** *Room 200A* **Systems Approaches to Therapy, Therapeutics and Precision Medicine** *Room 200D*	**Metabolic Models** *Room 200D* **Omics Data and Analysis** *Room 200D*
BIOMATERIALS *Track sponsored by:* ACS Biomaterials	**Mechanics of Biomaterials** *Room 101E* **3D Printing and Advanced Biomaterial Manufacturing** *Room 200D*	**Biomaterial Scaffolds I** *Room 101E*	**Biomaterial Scaffolds II** *Room 101E*
BIOMECHANICS	**The Nucleus and Cytoskeleton in Mechanobiology** *Auditorium 1* **Cardiovascular Biomechanics I** *Auditorium 3* **Orthopedic Mechanobiology and Mechanotransduction** *Room 101C*	**Mechanobiology of Cardiac & Smooth Muscle** *Auditorium 1* **Cardiovascular Biomechanics II** *Auditorium 3* **Implant and Prosthetic Biomechanics** *Room 101C*	**Substrate Effects in Mechanobiology** *Auditorium 1* **Cardiovascular Biomechanics III** *Auditorium 3* **Human Performance/ Sports Biomechanics** *Room 101C* **Imaging Techniques in Biomechanics** *Room 200C*
BIOMEDICAL ENGINEERING EDUCATION	**Global Health Engineering 2.0: Building Educational Capacity in Africa** *Room 200G*		**Entrepreneurship and Innovation in Biomedical Engineering** *Room 200I*
BIOMEDICAL IMAGING & OPTICS	**Imaging Techniques in Tissue Engineering** *Room 200C*	**Imaging Techniques in Clinical Translation** *Room 200C*	**Imaging Techniques in Biomechanics** *Room 200C*
CANCER TECHNOLOGIES	**Emerging Technologies for Cancer Treatment** *Auditorium 2*	**Imaging Strategies and Molecular Profiling in Cancer** *Auditorium 2* **Engineered Models of Breast Cancer Metastatis and the Tumor Environment** *Room 101B*	**Cancer Immunoengineering** *Auditorium 2* **Precision Medicine and Biomarkers** *Room 101B*
CARDIOVASCULAR ENGINEERING	**Cardiovascular Biomechanics I** *Auditorium 3* **Hemodynamics** *Room 101D* **Cardiovascular Devices I** *Room 200E*	**Cardiovascular Biomechanics II** *Auditorium 3* **Mechanobiology of Cardiac & Smooth Muscle** *Auditorium 1* **Cardiovascular Devices II** *Room 200E*	**Cardiovascular Biomechanics III** *Auditorium 3* **Cardiovascular Tissue Engineering I** *Room 200E*
CELLULAR & MOLECULAR BIOENGINEERING	**The Nucleus and Cytoskeleton in Mechanobiology** *Auditorium 1* **Molecular and Cellular ImmunoEngineering** *Room 101A* **Micro/Nano Tools in Molecular Biology (Genomics, Proteomics)** *Room 101B*	**Mechanobiology of Cardiac & Smooth Muscle** *Auditorium 1* **Molecular and Cellular Engineering Functional Materials and Sensors** *Room 101A*	**Substrate Effects in Mechanobiology** *Auditorium 1* **Single Cell and Collective Migration** *Room 101A*
DEVICE TECHNOLOGIES AND BIOMEDICAL ROBOTICS	**Cardiovascular Devices I** *Room 200E* **Biosensors** *Room 200F*	**Cardiovascular Devices II** *Room 200E* **Affordable Health Devices and Frugal Innovation** *Room 200F*	
DRUG DELIVERY	**Nucleic Acid Delivery** *Room 200H*	**Drug Delivery in Tissue Engineering and Medicine** *Room 200H*	**Novel Materials and Self Assembly for Drug Delivery** *Room 200H*
NANO AND MICRO TECHNOLOGIES	**Micro/Nano Tools in Molecular Biology (Genomics, Proteomics)** *Room 101B* **Micro/Nano Tools in Neurosciences** *Room 200J*	**Micro/Nano Tools for Monitoring Inflammation** *Room 200G*	**Microscale Diagnostic Technologies** *Room 200F* **Microfluidics for the Diagnostic and Monitoring of Viral Infections** *Room 200G*

Program At-A-Glance | Thursday | October 6, 2016

TRACK	8:00 am–9:30 am	1:00 pm–2:30 pm	3:15 pm–4:45 pm
NEURAL ENGINEERING	**Micro/Nano Tools in Neurosciences** *Room 200J*	**Spinal Cord Tissue Engineering & Repair** *Room 200J*	**Peripheral Nerve Stimulation and Repair** *Room 200J*
ORTHOPEDIC AND REHABILITATION ENGINEERING	**Musculoskeletal Tissue Engineering I** *Room 102C* **Orthopedic Mechanobiology and Mechanotransduction** *Room 101C*	**Musculoskeletal Tissue Engineering II** *Room 102C* **Naturally-Derived and Extracellular Matrix Biomaterials and Tissue Engineering** *Room 102AB* **Implant and Prosthetic Biomechanics** *Room 101C* **Articular Cartilage and Joints** *Room 200 B*	**Intervertebral Disc and Spine** *Room 200B*
RESPIRATORY BIOENGINEERING	**Computational Modeling of the Respiratory System in Health and Disease** *Room 200I*	**Computational Mechanics of the Respiratory System** *Room 200I*	
STEM CELL ENGINEERING		**Directing Stem Cell Differentiation I** *Room 101D*	**Directing Stem Cell Differentiation II** *Room 101D* **Technologies for Stem Cell Engineering** *Room 200G*
TISSUE ENGINEERING	**Bioreactor Systems for Tissue Engineering** *Auditorium 3* **Musculoskeletal Tissue Engineering I** *Room 102C* **Imaging Techniques in Tissue Engineering** *Room 200C*	**Naturally-Derived and Extracellular Matrix Biomaterials and Tissue Engineering** *Room 102AB* **Musculoskeletal Tissue Engineering II** *Room 102C* **Drug Delivery in Tissue Engineering and Medicine** *Room 200H* **Spinal Cord Tissue Engineering & Repair** *Room 200J*	**Engineering Tissue Interfaces** *Room 102AB* **Engineering Replacement Tissues** *Room 102C* **Human Performance/ Sports Biomechanic** *Room 101C* **Cardiovascular Tissue Engineering I** *Room 200E*
TRANSLATIONAL BIOMEDICAL ENGINEERING	**Translation of Biomedical Products** *Room 200B*	**Imaging Techniques in Clinical Translation** *Room 200C*	
OTHER	**9:00 am–10:00 am** **INDUSTRY SESSIONS:** **12:00 noon–2:00 pm** **Intellectual Property: Patent Process** **Technology Transfer Pitches and Networking** *Room 201*	**1:00pm–2:30pm** **Meet the Expert: NIH Funding: Meet Program Directors, Reviewers and Awardees** *Room 204* **1:00pm–2:30pm** **International Symposium on Biomedical Engineering** *Room 208CD* **1:00pm–4:00pm** **Developing Best Practices for Graduate Training in Biomedical Innovation** *Room 102E* **2:15pm–5:00pm** **INDUSTRY SESSION: Special Industry Topics** *Room 201*	**3:15 pm–4:45 pm** **Engineering Low-Cost Solutions to Address Health Care Disparities** *Room 208CD*
STUDENT AND EARLY CAREER	**8:00 am–9:00 am** **Becoming a Biomedical Engineer... What you need to know and where do you fit in** *Room 205* **9:15 am–10:15 am** **BME Careers in Academia** *Room 205*	**1:30 pm–2:45pm** **BME Careers in Industry** *Room 205*	**2:45pm–4:15pm** **Rapid Resume Review-*Members Only*** *Room 208CD* **3:15 pm–4:30 pm** **BME Government and Alternative Careers** *Room 205*

Program At-A-Glance | Friday | October 7, 2016

TRACK	8:00 am-9:30 am	1:45 pm-3:15 pm	4:00 pm-5:30 pm
BIOINFORMATICS COMPUTATIONAL AND SYSTEMS BIOLOGY	**Theory and Practice of Synthetic Biology** *Room 101A* **Computational and Multiscale Modeling in Biomechanics I** *Room 200C*	**Single-Cell Measurements and Models** *Room 200D* **Computational and Multiscale Modeling in Biomechanics II** *Room 200C*	
BIOMATERIALS *Track sponsored by:* ACS Biomaterials	**Biomaterials for Immunoengineering I** *Room 102C* **Advanced Characterization and Imaging of Biomaterial Environments** *Room 101E*	**Biomaterials for Immunoengineering II** *Room 102C* **Natural and Bioinspired Materials I** *Room 101E* **Drug Delivering Biomaterials I** *Room 200I*	**Biomaterials for Immunoengineering III** *Room 102C* **Natural and Bioinspired Materials II** *Room 101E* **Drug Delivering Biomaterials II** *Room 200I* **Biomechanics of Biomaterials** *Auditorium 3*
BIOMECHANICS	**Testing, Modeling and Exploiting Mechanobiology** *Auditorium 1* **Concussion Biomechanics** *Auditorium 3* **Injury Biomechanics I** *Room 101C* **Computational and Multiscale Modeling in Biomechanics I** *Room 200C*	**Mechanotransduction** *Auditorium 1* **Traumatic Brain Injury Biomechanics & Repair** *Auditorium 3* **Injury Biomechanics II** *Room 101C* **Computational and Multiscale Modeling in Biomechanics II** *Room 200C* **Cancer Mechanobiology I** *Room 101B*	**Mechanobiology of the Vascular and Nervous Systems** *Auditorium 1* **Biomechanics of Biomaterials** *Auditorium 3* **Biomechanics in Cell and Tissue Engineering** *Room 101C* **Biomechanics of Rehabilitation/Injury** *Room 200C* **Cancer Mechanobiology II** *Room 101B*
BIOMEDICAL ENGINEERING EDUCATION		**Biomedical Design** *Room 200G*	
BIOMEDICAL IMAGING & OPTICS	**Molecular Imaging** *Room 200D*		
CANCER TECHNOLOGIES	**3D Microfluidic Cancer Models** *Auditorium 2* **Engineered Models of Glioma and the Tumor Microenvironment** *Room 101B*	**Microscale Cancer Cell Analysis** *Auditorium 2* **Cancer Mechanobiology I** *Room 101B*	**Heterogenous Cell-Cell Interactions in Cancer** *Auditorium 2* **Cancer Mechanobiology II** *Room 101B*
CARDIOVASCULAR ENGINEERING *Room 102AB*	**Cardiovascular Tissue Engineering II** *Room 102AB*	**Cardiovascular Tissue Engineering III** *Room 102AB* **Heart Valve Structure, Function and Disease I** *Room 200J*	**Cardiovascular Tissue Engineering IV** *Room 102AB* **Heart Valve Structure, Function and Disease II** *Room 200J*
CELLULAR & MOLECULAR BIOENGINEERING	**Testing, Modeling and Exploiting Mechanobiology** *Auditorium 1* **Theory and Practice of Synthetic Biology** *Room 101A*	**Mechanotransduction** *Auditorium 1* **Gene Delivery and Genome Bioengineering** *Room 101A* **CMBE Young Innovators I** *Room 200F*	**Mechanobiology of the Vascular and Nervous Systems** *Auditorium 1* **Adhesion to the Vascular Endothelium** *Room 101A* **CMBE Young Innovators II** *Room 200F*
DEVICE TECHNOLOGIES AND BIOMEDICAL ROBOTICS	**Wearable Sensors and Devices** *Room 200H*		
DRUG DELIVERY	**Topics in Drug Delivery I** *Room 200H* **Drug Delivery in Tissue Engineering and Medicine** *Room 200I*	**Topics in Drug Delivery II** *Room 200H*	**Delivery Systems for Proteins and Vaccines** *Room 200H*
NANO AND MICRO TECHNOLOGIES	**3D Microfluidic Cancer Models** *Auditorium 2* **Drug Screening Technologies Technologies** *Room 200F*	**Microscale Cancer Cell Analysis** *Auditorium 2* **Organ-on-Chip Models for Study of Disease and Drug Discovery I** *Room 101D*	**Heterogenous Cell-Cell Interactions in Cancer** *Auditorium 2*

Program At-A-Glance | Friday | October 7, 2016

TRACK	8:00 am–9:30 am	1:45 pm–3:15 pm	4:00 pm–5:30 pm
NEURAL ENGINEERING	**Concussion Biomechanics** *Auditorium 3*	**Traumatic Brain Injury Biomechanics & Repair** *Auditorium 3* **Neural Disease** *Room 200E*	**Neural Cell Model Systems** *Room 200E*
ORTHOPEDIC AND REHABILITATION ENGINEERING		**Bone** *Room 200B*	**Biomechanics of Rehabilitation/Injury** *Room 200C* **Skeletal Muscle, Ligaments and Tendons** *Room 200B*
RESPIRATORY BIOENGINEERING	**Experimental Respiratory Mechanobiology** *Room 200E*		
TISSUE ENGINEERING	**Cardiovascular Tissue Engineering II** *Room 102AB* **Printing and Patterning in Tissue Engineering** *Room 101D* **Drug Delivery in Tissue Engineering and Medicine** *Room 200I*	**Cardiovascular Tissue Engineering III** *Room 102AB* **Organ-on-Chip Models for Study of Disease and Drug Discovery I** *Room 101D*	**Cardiovascular Tissue Engineering IV** *Room 102AB* **Organ-on-Chip Models for Study of Disease and Drug Discovery II** *Room 101D* **Biomechanics in Cell and Tissue Engineering** *Room 101C*
TRANSLATIONAL BIOMEDICAL ENGINEERING	**Micro/Nano Tools in Medicine** *Room 200G*		
OTHER	**Meet the Expert: Collaborations for International Research** *Room 204* **Whitaker International Session** *Room 200J* **Joint AAA-BMES Symposium Genome Editing Strategies in Bioengineering** *Room 208AB* **INDUSTRY SESSIONS:** **8:00 am–9:00 am** **SBIR/STTR** **9:15 am–10:15 am** **Reimbursement** **12:00 noon–1:30 pm** **Healthcare Innovation with Physicians** *Room 201*	**Meet the Expert: Meet the Journal Editors** *Room 204* **2:00 pm–5:00 pm** **BMES-NSF Special Session on Research & Grant Writing** *Room 102DEF* **INDUSTRY SESSIONS:** **2:00 pm–3:00 pm** **Mobile/Digital Health** **3:15 pm–5:15 pm** **Investment Pitches and Partnering** *Room 201*	**Meet the Expert: Collaborations with Industry** *Room 204* **Educational Approaches to Best Prepare Students for Industry** *Room 200A* **3:15 pm–6:15 pm** **The 4th US-Korea Joint Workshop on Biomedical Engineering** *Room 208AB*
STUDENT AND EARLY CAREER	**8:30–9:30 am/9:30–10:30 am** **BMES Student Chapter Best Practices** • **Outstanding Chapter** • **Mentoring and Chapter Industry** *Room 208AB* **9:00 am–10:00 am** **Career Options for BME PhDs** *Room 205*	**1:45–3:15pm** **Undergraduate Student Design Competition** *Auditorium* **2:30pm–3:45pm** **BME Careers in Industry** *Room 205*	**4:15 pm–5:30 pm** **BME Entrepreneurs** *Room 205*

Program At-A-Glance | Saturday | October 8, 2016

TRACK	8:00 am–9:30 am	1:30 pm–3:00 pm	3:15 pm–4:45 pm
BIOINFORMATICS, COMPUTATIONAL AND SYSTEMS BIOLOGY	**Computational Modeling in Cardiovascular Systems I** *Room 101B*	**Computational Modeling in Cardiovascular Systems II** *Room 101B*	
BIOMATERIALS *Track sponsored by* ACS Biomaterials	**Biomaterials for Immunoengineering IV** *Room 102AB* **Hydrogel Biomaterials I** *Room 101E*	**Dynamic Biomaterials** *Room 102AB* **Hydrogel Biomaterials II** *Room 101E*	**Integration of Biomaterials with Chips and Devices** *Auditorium 3* **Hydrogel Biomaterials III** *Room 101E* **Biomaterials for Regenerative Medicine** *Room 102AB*
BIOMECHANICS		**Advances in Biomechanical Testing of Medical Devices** *Auditorium 3*	**Biofluids** *Room 200H*
BIOMEDICAL ENGINEERING EDUCATION			**Biomedical Curriculum** *Room 101D*
BIOMEDICAL IMAGING & OPTICS	**Applications of MRI and Focused Ultrasound** *Room 200F* **Optical Imaging & Microscopy** *Room 200D*	**Imaging in Cardiovascular Systems I** *Room 102C* **Ultrasound Imaging** *Room 200F* **MRI I** *Room 200D*	**Imaging in Cardiovascular Systems II** *Room 102C* **Nanotheranostics** *Room 200F* **MRI II** *Room 200D*
CANCER TECHNOLOGIES	**Cancer Drug Delivery** *Auditorium 2*	**Engineered Models of Cancer Metastasis and Treatment Response** *Auditorium 2* **Cancer Drug Delivery I** *Room 200G*	**Engineered Models of Breast Cancer and the Tumor Microenvironment** *Auditorium 2* **Cancer Drug Delivery II** *Room 200G*
CARDIOVASCULAR ENGINEERING	**Cardiac Electrophysiology** *Room 102C* **Computational Modeling in Cardiovascular Systems I** *Room 101B* **Angiogenesis** *Room 200J*	**Imaging in Cardiovascular Systems I** *Room 102C* **Computational Modeling in Cardiovascular Systems II** *Room 101B*	**Imaging in Cardiovascular Systems II** *Room 102C* **Thrombosis/Hemostasis** *Room 101B*
CELLULAR & MOLECULAR BIOENGINEERING	**Mechanobiology of Cell Adhesion I** *Auditorium 1* **Cancer Cell Motility and Migration** *Room 101A*	**Mechanobiology of Cell Adhesion II** *Auditorium 1*	**Stem Cell Programming** *Auditorium 1*

Program At-A-Glance | Saturday | October 8, 2016

TRACK	8:00 am–9:30 am	1:30 pm–3:00 pm	3:15 pm–4:45 pm
DEVICE TECHNOLOGIES AND BIOMEDICAL ROBOTICS		Medical Device Development and Computational Models *Room 101D*	
DRUG DELIVERY	Cancer Drug Delivery *Auditorium 2* Nano to Micro Devices in Drug Delivery *Room 200C*	Cancer Drug Delivery I *Room 200G* Targeted or Responsive Delivery Systems I *Room 200C*	Cancer Drug Delivery II *Room 200G* Targeted or Responsive Delivery Systems II *Room 200C*
NANO AND MICRO TECHNOLOGIES	Applications of Nanopores and Nanoparticles *Room 200E*	Advances in Pathogen Detection *Room 200E*	Advances in Micro/Nano Micro/Nano Manufacturing *Room 200E*
NEURAL ENGINEERING	Noninvasive Neuromodulation *Room 200H* Neural Progenitor and Stem Cell Engineering *Room 200I*	NeuroDevices/ Neuromodulation *Room 200H* Glial Cell Engineering *Room 200I*	Neural Invasive Devices/ Interfaces: Compatibility, Stimulation, Recording and Modeling *Room 200I*
STEM CELL ENGINEERING	Pluripotent Stem Cell Engineering *Room 200G* Neural Progenitor and Stem Cell Engineering *Room 200I*	Stem Cells in Tissue Engineering *Room 101C*	Stem Cell Programming *Auditorium 1*
TISSUE ENGINEERING	Clinical Translation of Engineered Tissues *Auditorium 3* Integration of Developmental Biology and Morphogenesis in Tissue Engineering *Room 101C*	Stem Cells in Tissue Engineering *Room 101C*	Inflammation and Immunemodulation *Room 101C*
TRANSLATIONAL BIOMEDICAL ENGINEERING	Clinical Translation of Engineered Tissues *Auditorium 3*		
UNDERGRADUATE	Undergraduate Research, Design & Leadership I *Room 200B*	Undergraduate Research, Design & Leadership II *Room 200B*	Undergraduate Research, Design & Leadership III *Room 200B*
OTHER	MEET THE EXPERT: Meet the Experts on Data-Sharing *Room 204*		

Schedule At-A-Glance

WEDNESDAY | OCTOBER 5, 2016		
12:00 noon – 7:00 pm	Registration	Exhibit Hall BC/CC
8:30 am – 4:30 pm	BMES Board of Directors Meeting	Room 101HI/CC
1:00 pm – 4:00pm	AIMBE Board of Directors Meeting *(affiliate event)*	Room 101F/CC
2:30 pm – 5:30pm	Biotechnology Company Tours *(advance registration required)*	Departs from CC
3:30 pm – 5:30 pm	Meet the Faculty Candidates	Exhibit Hall B/CC
4:00 pm – 5:00pm	AIMBE Academic Council *(affiliate event)*	Room 101F/CC
5:00 pm – 7:00pm	CMBE SIG Business Meeting	Room 101G/CC
5:30 pm – 7:00 pm	Welcome Reception	Hall B Foyer/CC
7:30 pm – 8:30 pm	Industry Committee Planning Meeting *(invitation only)*	Boardroom 3/MH 3rd Floor
6:30 pm – 10:30 pm	Council of Chairs Dinner & Meeting *(invitation only)*	Salon E/MH
8:00 pm – 9:00 pm	LGBT Dessert Social *(ticket purchase required)*	Symphony III/MH
THURSDAY | OCTOBER 6, 2016		
7:00 am – 6:00 pm	Registration	Exhibit Hall BC/CC
7:00 am – 8:00 am	Diversity Committee Meeting	Room 101G/CC
8:00 am – 9:30 am	**PLATFORM SESSIONS – THURS-1** *(19 concurrent sessions)*	Convention Center
8:00 am – 9:00 am	Becoming a Biomedical Engineer… What you need to know and where do you fit in	Room 205ABCD/CC
9:00 am – 10:00 am	**INDUSTRY SESSION:** Intellectual Property: Patent Process	Room 201/CC
9:15 am – 10:15 am	BME Careers in Academia	Room 205ABCD/CC
9:30 am – 10:30 am	Ethics Subcommittee Meeting	Room 101G/CC
9:30 am – 5:00 pm	Exhibit Hall Open	Exhibit Hall BC/CC
9:30 am – 5:00 pm	Career Zone	Exhibit Hall BC/CC
9:30 am – 5:00 pm	**POSTER SESSION**	Exhibit Hall BC/CC
9:30 am – 10:15 am	**POSTER VIEWING WITH AUTHORS** **& Refreshment Break**	Exhibit Hall BC/CC
10:15 am – 11:30 am	**PLENARY SESSION & STATE OF THE SOCIETY** The Wallace H. Coulter Award for Healthcare Innovation CEO of Medtronic, Omar Ishrak	Auditorium/CC
11:45 am – 12:45 pm	Celebration of Minorities in BME Luncheon *(ticket purchase required)*	Ballroom A/CC
11:45 am – 12:45 pm	Lunch on Your Own	
12:00 noon – 2:00 pm	**INDUSTRY SESSION:** Technology Transfer Pitches and Networking	Room 201/CC
1:00 pm – 2:30 pm	**PLATFORM SESSIONS – THURS-2** *(19 concurrent sessions)*	Convention Center
1:00 pm – 2:30 pm	International Symposium on Biomedical Engineering	Room 208CD/CC
1:00 pm – 4:00 pm	Developing Best Practices for Graduate Training in Biomedical Innovation	Room 102E/CC
1:00 pm – 3:00 pm	50th Anniversary Committee Meeting	Room 101G/CC
1:30 pm – 2:45 pm	BME Careers in Industry	Room 205ABCD/CC
2:15 pm – 5:00 pm	**INDUSTRY SESSION:** Special Industry Topics	Room 201/CC

CC = Convention Center • MH = Minneapolis Hilton

PLENARY SESSION	PLATFORM SESSION	POSTERS	SPECIAL SESSIONS
STUDENT/EARLY CAREER	EXHIBITS	SPECIAL EVENTS	COMMITTEE MEETINGS

Schedule At-A-Glance

THURSDAY | OCTOBER 6, 2016 *(continued)*		
2:30 pm – 3:15 pm	**POSTER VIEWING WITH AUTHORS & Refreshment Break**	Exhibit Hall BC/CC
2:45 pm – 4:15 pm	Rapid Resume Review *(BMES Members Only)*	Room 208AB/CC
3:00 pm – 5:00 pm	Coop/Intern and Industrial Relations Workshop *(Invitation Only)*	Room 102D/CC
3:15 pm – 4:30 pm	BME Government and Alternative Careers	Room 205ABCD/CC
3:15 pm – 4:45 pm	**PLATFORM SESSIONS – THURS-3** *(19 concurrent sessions)*	Convention Center
3:15 pm – 4:45 pm	Engineering Low-Cost Solutions to Address Health Care Disparities	Room 208CD/CC
4:30 pm – 5:15 pm	AEMB Annual Grand Meeting *(affiliate event)*	Room 200A/CC
5:00 pm – 6:00 pm	**PLENARY SESSION:** Pritzker Distinguished Lecture	Auditorium/CC
6:30 pm – 8:00 pm	AEMB Annual Reception *(affiliate event)*	Lounge A/CC
7:00 pm – 9:00 pm	ACS Biomaterials Science & Engineering Editorial Advisory Board Meeting *(affiliate event)*	Room 102F/CC
8:00 pm – 9:30 pm	University Receptions *(Invitations Extended by Hosts)*	Minneapolis Hilton
FRIDAY | OCTOBER 7, 2016		
7:00 am – 6:00 pm	Registration	Exhibit Hall/CC
7:00 am – 8:00 am	Education Committee Meeting	Room 101G/CC
8:00 am – 10:00 am	National Meetings Committee/2017 Annual Meeting Planning Committee	Room 101HI/CC
8:00 am – 9:00 am	International Affairs Subcommittee Meeting	Room 203A/CC
8:00 am – 9:30 am	**PLATFORM SESSIONS – FRI-1** *(18 concurrent sessions)*	Convention Center
8:00 am – 9:30 am	**WHITAKER SESSION**	Room 200J/CC
8:00 am – 9:30 am	AAA-BMES Symposium: Genome Editing Strategies in Bioengineering	Room 208AB/CC
8:00 am – 9:00 am	**INDUSTRY SESSION:** SBIR/STTR	Room 201/CC
8:30 am – 9:30 am	BMES Student Chapter– Outstanding Chapter Best Practices	Room 208CD/CC
9:00 am – 10:30 am	Career Options for BME PhDs	Room 205ABCD/CC
9:00 am – 10:00 am	AEMB Ethics Session Meeting *(affiliate event)*	Room 200A/CC
9:15 am – 10:15 am	**INDUSTRY SESSION:** Reimbursement	Room 201/CC
9:30 am – 10:30 am	BMES Student Chapter– Mentoring and Chapter–Industry Best Practices	Room 208CD/CC
9:30 am – 5:00 pm	Exhibit Hall Open	Convention Center
9:30 am – 5:00 pm	Career Zone	Exhibit Hall BC/CC
9:30 am – 5:00 pm	**POSTER SESSION**	Exhibit Hall BC/CC
9:30 am – 10:15 am	**POSTER VIEWING WITH AUTHORS & Refreshment Break**	Exhibit Hall BC/CC
10:15 am – 11:45 am	**PLENARY SESSION**– NIBIB Lecture | DEBUT Awards Ceremony	Auditorium/CC
12:00 noon – 1:30pm	Lunch on Your Own	
12:00 noon – 1:30 pm	**INDUSTRY SESSION:** Healthcare Innovations with Physicians	Room 201/CC
12:00 noon – 1:30pm	TAMU Luncheon–Excellence In Industry *(affiliate event)*	M100/CC

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PLENARY SESSION	PLATFORM SESSION	POSTERS	SPECIAL SESSIONS
STUDENT/EARLY CAREER	EXHIBITS	SPECIAL EVENTS	COMMITTEE MEETINGS

Schedule At-A-Glance

FRIDAY | OCTOBER 7, 2016 *(continued)*		
12:00 noon–1:30pm	Women in BME Luncheon *(ticket purchase required)*	Ballroom A/CC
1:45 pm – 3:15 pm	**PLATFORM SESSIONS – FRI-2** *(19 concurrent sessions)*	Convention Center
1:45 pm – 3:15 pm	BMES Undergraduate Student Design Competition	Auditorium/CC
2:00 pm – 3:00 pm	Medical Devices SIG Business Meeting	Room 101HI/CC
2:00 pm – 5:00 pm	BMES-NSF Special Grant Writing Session	Room 102DEF/CC
2:00 pm – 3:00 pm	**INDUSTRY SESSION:** Mobile/Digital Health	Room 201/CC
2:30 pm – 3:45 pm	BME Careers in Industry	Room 205ABCD/CC
3:15 pm – 4:00 pm	**POSTER VIEWING WITH AUTHORS & Refreshment Break**	Exhibit Hall BC/CC
3:15 pm – 6:15 pm	KOSOMBE - US-KOREA Joint Workshop on BME	Room 208AB/CC
3:15 pm – 5:15 pm	**INDUSTRY SESSION:** Investment Pitches & Partnering	Room 201/CC
3:30 pm – 4:30 pm	Membership Committee Meeting	Room 101G/CC
3:30 pm – 4:30 pm	Design Competition Judges Meeting	Room 203A/CC
4:00 pm – 5:30 pm	Educational Approaches to Best Prepare Students for Industry	Room 208CD/CC
4:00 pm – 5:30 pm	**PLATFORM SESSIONS – FRI-3** *(19 concurrent sessions)*	Convention Center
4:15 pm – 5:30 pm	BME Entrepreneurs	Room 205ABCD/CC
5:45 am – 6:30 pm	**PLENARY SESSION–** Extraordinary Challenges and the Need for Extraordinary Competencies-The Role of the Biomedical Engineer	Auditorium/CC
8:30 pm – 11:00 pm	**BMES DESSERT BASH**	Ballroom AB/CC
SATURDAY | OCTOBER 8, 2016		
7:00 am – 2:00 pm	Registration	Exhibit Hall/CC
8:00 am – 9:00 am	Council of Industry Chapter Presidents *(invitation only)*	Room 101F/CC
8:00 am – 9:30 am	**PLATFORM SESSIONS – SAT-1** *(18 concurrent sessions)*	Convention Center
8:00 am – 9:30 am	Undergraduate Research, Design & Leadership Orals #1	Room 200B/CC
9:00 am – 10:00 am	AEMB MINDS Workshop *(affiliate event)*	Room 200A/CC
9:30 am – 10:30 am	BMES Industry Advisory Board *(invitation only)*	Room 101F/CC
9:30 am – 1:30 pm	Exhibit Hall Open	Exhibit Hall/CC
9:30 am – 1:00 pm	**POSTER SESSION**	Exhibit Hall/CC
9:30 am – 10:15 am	**POSTER VIEWING WITH AUTHORS & Refreshment Break**	Exhibit Hall/CC
9:30 am – 10:30 am	Student Affairs Subcommittee Meeting	Room 203A/CC
10:30 am – 12:30 pm	**PLENARY SESSION**–Rita Schaffer Young Investigator Lecture & Diversity Award Winner	Auditorium/CC
12:30 pm – 1:30 pm	Lunch on Your Own	
1:00 pm – 3:30 pm	BMES Board of Directors Meeting	Room 101HI/CC
1:30 pm – 3:00 pm	**PLATFORM SESSIONS – SAT-2** *(17 concurrent sessions)*	Convention Center
1:30 pm – 3:00 pm	Undergraduate Research, Design & Leadership Orals #2	Room 200B/CC
3:15 pm – 4:45 pm	**PLATFORM SESSIONS – SAT-3** *(17 concurrent sessions)*	Convention Center
3:15 pm – 4:45 pm	Undergraduate Research, Design & Leadership Orals #3	Room 200B/CC

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PLENARY SESSION	PLATFORM SESSION	POSTERS	SPECIAL SESSIONS
STUDENT/EARLY CAREER	EXHIBITS	SPECIAL EVENTS	COMMITTEE MEETINGS

PHYSICAL REVIEW APPLIED

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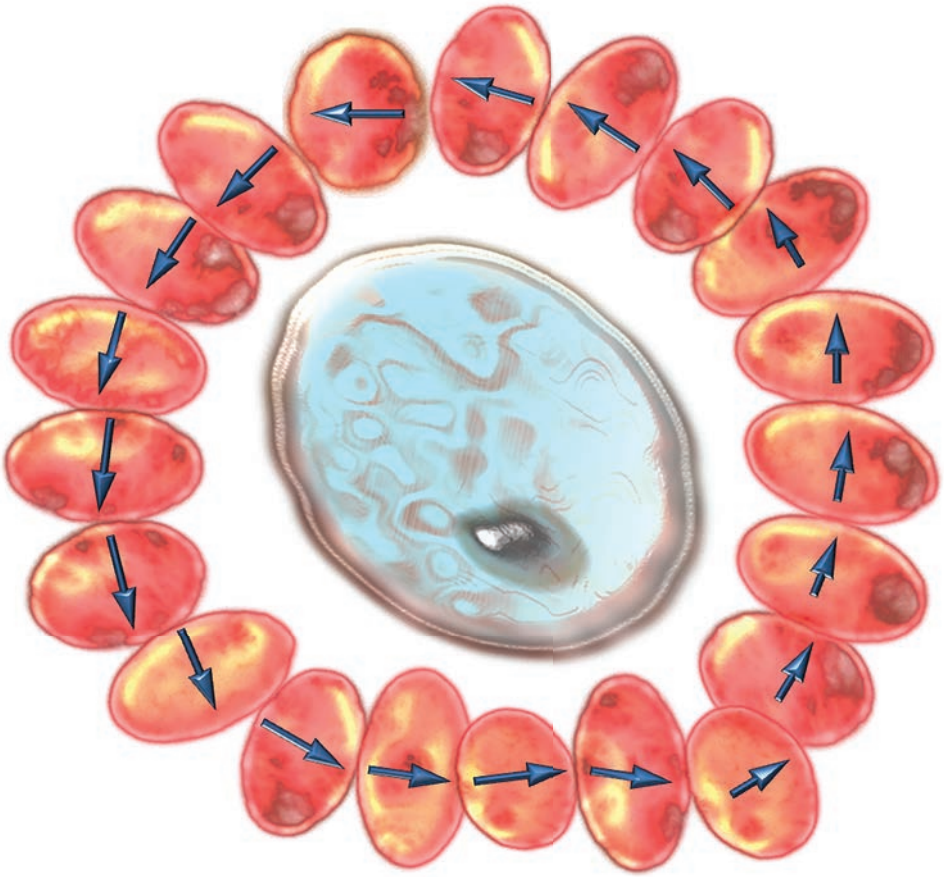

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