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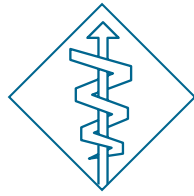
BIOMEDICAL ENGINEERING SOCIETY™
Advancing Human Health and Well Being™

2014 Annual Meeting
October 22–25, 2014

*Bioengineering Innovations to Catalyze
Affordable Health Care*

**Henry B. Gonzalez
Convention Center
San Antonio, Texas**

San
Antonio



BMES

BIOMEDICAL ENGINEERING SOCIETY
Advancing Human Health and Well Being

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Minneapolis, Minnesota

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Phoenix, Arizona

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October 16-19, 2019
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October 14-17, 2020
San Diego, California

October 6-9, 2021
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BIOENGINEERING

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2014 BMES ANNUAL MEETING *Mobile App*


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AUTHOR INDEX

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Copies also available at the registration desk.

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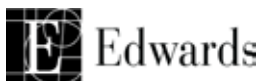
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Thank you to our other supporters:

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





Gilda A. Barabino, PhD

BMES President

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

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

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

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

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

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

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

Gilda A. Barabino, PhD
BMES President



John A. White, PhD

Annual Meeting Chair, BMES 2014 Annual Meeting

*USTAR Professor of Bioengineering
University of Utah*

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

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

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

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

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

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

Enjoy the meeting!

John A. White, PhD
Annual Meeting Chair



Susan Margulies, PhD

Program Chair, BMES 2014 Annual Meeting

George H. Stephenson Professor

Department of Bioengineering

University of Pennsylvania

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

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

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

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

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

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

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

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



Pritzker Distinguished Lecturer:

James J. Collins, PhD

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

Wyss Institute for Biologically Inspired Engineering, Harvard University

THURSDAY, OCTOBER 23, 2014

10:30AM

LILA COCKRELL THEATRE,

HENRY B. GONZALES CONVENTION CENTER

Life Redesigned: The Emergence of Synthetic Biology

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

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

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

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

Computer Modeling and Simulation for Medical Devices

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

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

SESSION CHAIR:

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

SPEAKERS:

Modeling and Simulation for Medical Devices: An FDA Perspective

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

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

Anthony Petrella, Colorado School of Mines

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

Ben Wolf, Medtronic, Endovascular Therapies

Ensuring Models and Simulations are Credibility for Regulatory Decision Making

Tina Morrison, FDA



NIH National Institute of Biomedical Imaging and Bioengineering Lecture:

David Kaplan, PhD

Stern Family Professor of Engineering

Professor and Chair, Department of Biomedical Engineering

Professor, Department of Chemical Engineering

Director, Bioengineering and Biotechnology Center, Tufts University

FRIDAY, OCTOBER 24, 2014

10:30AM

LILA COCKRELL THEATRE

HENRY B. GONZALES CONVENTION CENTER

Silk Biomaterials – The New Silk Road

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

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

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

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



Stephen Oesterle, MD

Senior Vice President for Medicine & Technology
Medtronic

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

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

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

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

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

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



BMES 2014 Rita Schaffer Memorial - Young Investigator Lecturer:

Kimberly M. Stroka, PhD

Postdoctoral Fellow in the Konstantopoulos Lab
Johns Hopkins University

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

New Paradigms for Cell Migration in Confined Microenvironments

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

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

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

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



Diversity Lecture:

Naomi Chesler, PhD

*Vice Chair of Biomedical Engineering
University of Wisconsin-Madison*

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

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

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

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

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

Mechanical Engineering from MIT and a PhD in Medical Engineering from the Harvard-MIT joint program in Health Sciences and Technology.

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

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

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

Frontiers in Medical Devices Conference Innovations in Modeling and Simulation

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

May 18-20, 2015
Washington DC

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

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

A Call for Abstracts is Open!

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

www.bmes.org/meddevicesabstracts

Keynote Speakers

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

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

Conference Tracks

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

Concept Development and Design Optimization
Art Erdman, University of Minnesota

Modeling for Robust Design
Thor Bezier, University of Auckland

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

Patient Specific Design
Matthew Debeule, FEops

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

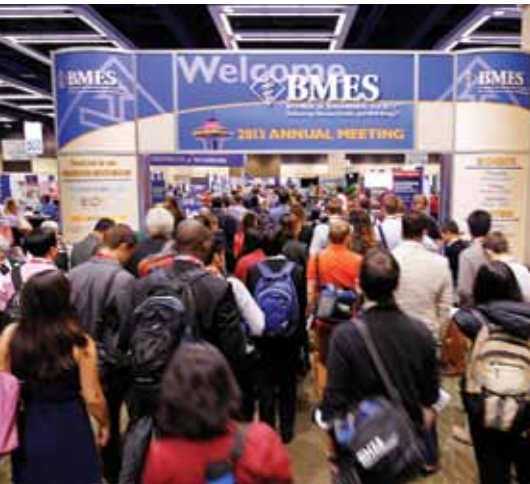
Integration of Modeling with Clinical Studies
Tarek Haddad, Medtronic, Inc.

Modeling and Device Commercialization
Charley Taylor, HeartFlow

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



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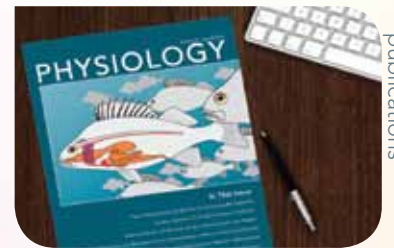
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The Boston University Department of Biomedical Engineering is one of the largest and oldest departments of its kind in the country. We attract exceptional students to our BS, MEng, MS and PhD degree programs, which are known for their highly quantitative approach. We have strengths in numerous research areas including biomechanics, neural engineering, biomedical optics, respiratory dynamics, tissue engineering, biomaterials and synthetic biology. We boast a wealth of research resources, and have strong ties with the BU School of Medicine, and other top medical research centers in the Boston area.

BOOTH # 228

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The Center for Biomedical Engineering at Brown University features an interdisciplinary approach in four complementary research areas: Neuro-engineering, biosensors/bioplatforms, mechanobiology, and tissue engineering/regenerative medicine. The program offers BS, MS, and PhD degrees and is distinguished by its research and strong collaborative connections between academic science/engineering, clinical medicine, and industry.

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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.

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309 Wickenden Building
10900 Euclid Avenue
Cleveland, OH 44106-7207
Phone: 216-368-4094
Email: bmedept@case.edu
Web: <http://bme.case.edu/>

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

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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 # 237

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DEPARTMENT OF BIOENGINEERING

301 Rhodes Research Center
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DEPARTMENT OF BIOMEDICAL ENGINEERING

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

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Cornell University

DEPARTMENT OF BIOMEDICAL ENGINEERING

101 Weill Hall
Ithaca, NY 14853
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Web: www.bme.cornell.edu

Biomedical Engineering at Cornell University focuses on interdisciplinary research to achieve a quantitative understanding of human biology at all spatial and temporal scales with the goal of improving human health. The Department has a close relationship with Weill Cornell Medical College and its associated hospitals in New York City, including an “Immersion Term” during which all Ph.D. students spend 7 weeks in a clinical experience at the Medical College. Cornell University is a comprehensive university with outstanding programs of teaching and research in all areas of human inquiry which has its main campus at Ithaca in the Finger Lakes Region of upstate New York. A new Engineering campus is opening in New York City located on a site less than 20 minutes from the Medical College which will catalyze further growth in the Department’s interactions with the Medical College and hospitals. The Biomedical Engineering Department has close collaborations with a wide variety of other departments in Ithaca, especially with those in the Colleges of Engineering, Veterinary Medicine, Agriculture and Life Sciences, Arts and Sciences, and Human Ecology

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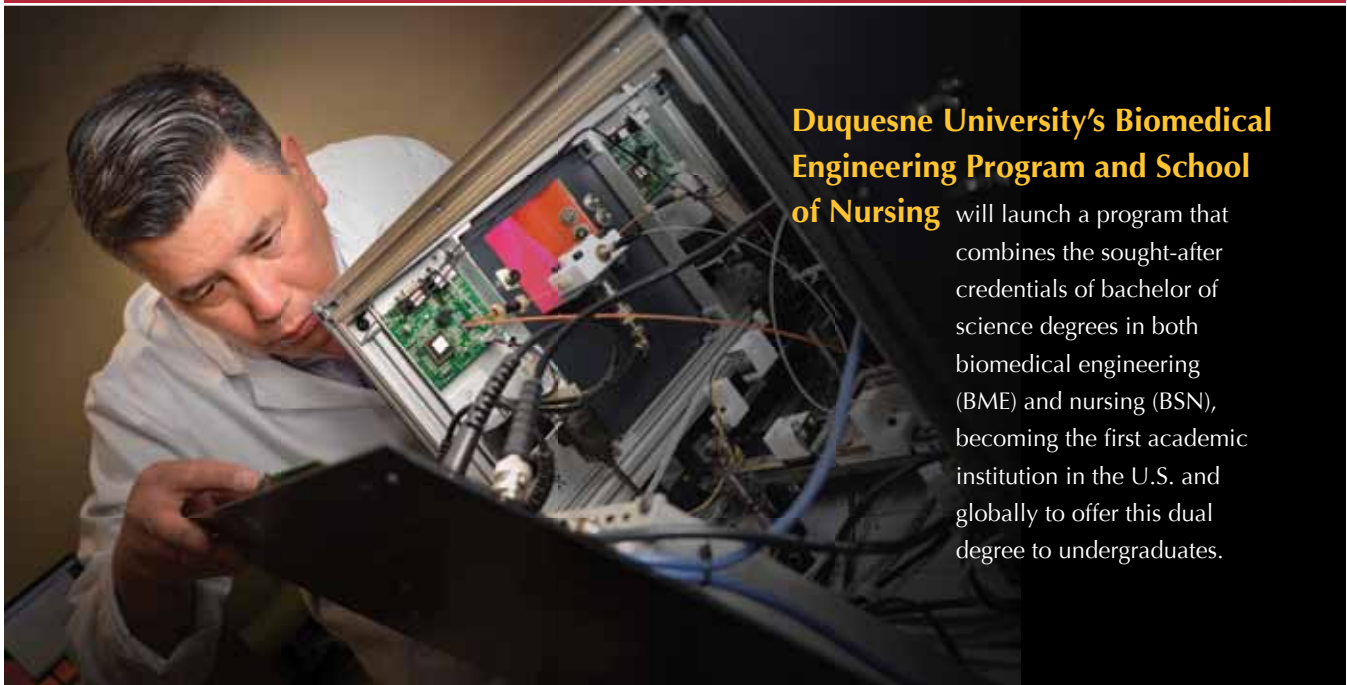
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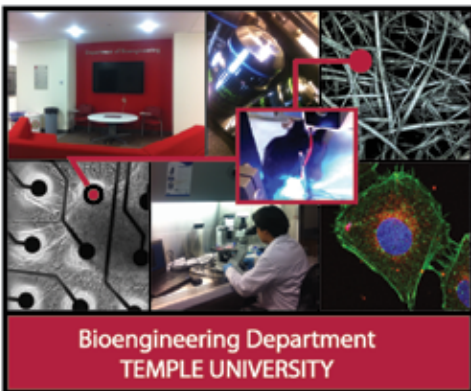
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The Department of Biomedical Engineering at The University of Akron offers two graduate degree programs: a master's degree in engineering with a biomedical specialization and a Ph.D. in engineering. These programs have an individualized curricular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

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

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Email: slperry@uark.edu
Web: www.engr.uark.edu

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

BOOTH # 636

University of California, Berkeley

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

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

BOOTH # 337

The University of California at Davis

DEPARTMENT OF BIOMEDICAL ENGINEERING

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

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

BOOTH # 302

University of California, Irvine

3120 Natural Sciences II

Irvine, CA 92697-2715

Phone: 949-824-9196

Email: csurp@uci.eduWeb: www.bme.uci.edu

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

BOOTH # 104

University of California, Riverside**DEPARTMENT OF BIOENGINEERING**

900 University Avenue

Riverside, CA 92521

Phone: 951-827-4303

Email: BIG@enr.ucr.eduWeb: www.bioeng.ucr.edu

The Department of Bioengineering, established in 2006, is the fastest growing department at the Bourns College of Engineering. The research vision is to build strength from expertise in biochemistry, biophysics, biology, and engineering to focus on critical themes that impact bioengineering. The mission of the Department of Bioengineering at the University of California, Riverside focuses on two interrelated themes: 1) advancing bioengineering research, and 2) preparing future leadership in bioengineering and related fields. Our unique interdisciplinary graduate program and ABET-accredited undergraduate program both combine building a solid fundamental foundation in biological science and engineering while simultaneously developing diverse communication skills for our students. Bioengineering Interdepartmental Graduate Program (BIG) provides additional training in analytical, computational and laboratory skills in the most advanced quantitative bioengineering research. The result is a rigorous but exceptionally interactive and welcoming educational training for Bioengineering students leading towards B.S., M.S. and Ph.D. degrees.

BOOTH # 536

University of Colorado Denver | Anschutz Medical Campus**DEPARTMENT OF BIOENGINEERING**

12700 E. 19th Avenue, Research 2 Building

Room 6018, MS 8607

Aurora, CO 80045

Phone: 303-724-5893

Email: bioengineering@ucdenver.eduWeb: www.ucdenver.edu/bioengineering

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

BOOTH # 626

University of Connecticut**BIOMEDICAL ENGINEERING**

260 Glenbrook Road, Unit 3247

Storrs, CT 06269

Phone: 860-486-0163

Email: lisa@enr.uconn.eduWeb: www.bme.uconn.edu

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

BOOTH # 235

University of Delaware**BIOMEDICAL ENGINEERING**

125 E. Delaware Avenue

Newark, DE 19716

Phone: 302-831-2120

Email: delliott@udel.eduWeb: www.bme.udel.edu

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

BOOTH # 209

University of Florida**DEPARTMENT OF BIOMEDICAL ENGINEERING**

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

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

BOOTH # 434

University of Houston**DEPARTMENT OF BIOMEDICAL ENGINEERING**

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

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

Biomedical Engineering at University of Memphis & University of Tennessee Health Science Center

**Degrees:**

UM/UT Joint Graduate Program

M.S. & Ph.D.

University of Memphis

B.S.

Emphasis Areas:

- Biomechanics
- Biosensors & Electrophysiology
- Biomaterials & Regenerative Medicine

www.uthsc.edu/bme or www.memphis.edu/bme



ENGINEERING AT ILLINOIS

DRIVE YOUR VISION

ENDOWED CHAIRS AND PROFESSORSHIPS IN BIOENGINEERING

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

GraingerInitiative.engineering.illinois.edu



BOOTH # 221

University of Illinois at Chicago

851 S. Morgan Street, Room 28

Chicago, IL 60607-7052

Phone: 312-996-5225

Email: jlin13@uic.eduWeb: www.bioe.uic.edu

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

BOOTH # 227

University of Illinois at Urbana-Champaign**DEPARTMENT OF BIOENGINEERING**

1304 W. Springfield Avenue

Room 1270 Digital Computer Laboratory

Urbana, IL 61801

Phone: 217-333-1867

Email: bioengineering@illinois.eduWeb: www.bioengineering.illinois.edu

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

BOOTH # 432

University of Iowa

1402 Seamans Center

Iowa City, IA 52242

Phone: 319-335-5632

E-mail: bme.engineering@uiowa.eduWeb: www.engineering.uiowa.edu/bme

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

M
BIOMEDICAL ENGINEERING
UNIVERSITY OF MICHIGAN
bme.umich.edu




Photo by Brandon B. ...

U-M BME provides 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.

U-M BME is a joint department between the top-ranked U-M College of Engineering and top-ranked U-M Medical School that fosters collaboration between engineers and physicians to accelerate discovery of healthcare technology.

With the support of the Wallace H. Coulter Translational Research Partnership Program, U-M BME embraces the translation of research into lifesaving technologies.

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 f facebook.com/umbme

M
MICHIGAN ENGINEERING
UNIVERSITY OF MICHIGAN

M
MEDICAL SCHOOL
UNIVERSITY OF MICHIGAN

EXHIBITS

BOOTH # 327

University of Kansas

BIOENGINEERING GRADUATE PROGRAM

1520 West 15th, Room 1, Eaton Hall

Lawrence, KS 66045

Phone: 785-864-5258

E-mail: bioe@ku.edu

Web: www.bio.engr.ku.edu

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

BOOTH # 223

University of Maryland

FISCHELL DEPARTMENT OF BIOENGINEERING

2330 Jeong H. Kim Building

College Park, MD 20742

Phone: 301-405-7426

Email: bioe-grad@umd.edu or bioe-undergrad@umd.edu

Web: <http://www.bioe.umd.edu>

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

PITT GRADUATE PROGRAM IN BIOENGINEERING

One of our distinctive strengths in interdisciplinary research is our relationship with Pitt's School of Medicine and Schools of the Health Sciences, as well as with the McGowan Institute for Regenerative Medicine. Bioengineering is also deeply embedded within clinical research at University of Pittsburgh Medical Center, one of the top ranked hospital networks in the country. Faculty have laboratories within clinical departments, which allow graduate students to apply engineering principles directly to patient care in bench-to-bedside settings.

Most importantly for our graduate students, Pitt is an urban campus in one of the most livable cities in the world. Its world-class research institutions, corporate headquarters, public amenities, healthcare, low cost of living and relative safety have earned Pittsburgh accolades from *Forbes*, *Kiplingers*, *National Geographic*, *The Economist*, and *US News & World Report*. Both the University and the City provide the perfect match for an outstanding graduate school environment.

PITT | SWANSON
ENGINEERING
B I O E N G I N E E R I N G

PLEASE VISIT
engineering.pitt.edu/bioengineering

for a detailed description of graduate program information including our admissions process and various research focus areas.

BOOTH #333

University of Memphis University of Tennessee Health Sciences Center

BIOMEDICAL ENGINEERING

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

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

BOOTH # 435

University of Miami

DEPARTMENT OF BIOMEDICAL ENGINEERING

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

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

BOOTH # 301

University of Michigan

DEPARTMENT OF BIOMEDICAL ENGINEERING

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

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

BOOTH # 511

University of Minnesota

DEPARTMENT OF BIOMEDICAL ENGINEERING

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

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



The Department of Bioengineering
at UT Arlington offers research
and scholarship opportunities in

- Tissue Engineering
- Medical Imaging
- Biomechanics

To learn more, click on
"Future Students" at
uta.edu/bioengineering



EXHIBITS

BOOTH # 135

University of North Carolina at Chapel Hill and NC State University

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

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

BOOTHS # 614 / 616

University of Pittsburgh

DEPARTMENT OF BIOENGINEERING

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

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



A Closely Knit Community

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

Learn more about us at: <http://www.bioen.utah.edu/>



BOOTH # 323

University of Rochester**DEPARTMENT OF BIOMEDICAL ENGINEERING**

204 Robert E. Georgen Hall
 Rochester, NY 14627
 Phone: 585-273-2353
 Email: judith.principe@rochester.edu
 Web: www.bme.rochester.edu

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

BOOTH # 515

University of Southern California (USC)**VITERBI SCHOOL OF ENGINEERING**

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

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

BOOTHS # 503 / 505

University of Tennessee - Knoxville

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

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

BOOTH # 217

University of Texas Arlington**BIOENGINEERING DEPARTMENT**

500 UTA Blvd., Suite 226
 Arlington, TX 76010
 Phone: 817-272-2249
 Email: cbradfield@uta.edu
 Web: www.uta.edu/bioengineering

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

W

Invent THE FUTURE OF MEDICINE
with us

University of Washington
 Department of Bioengineering
 Seattle, Washington
 DEPTS.WASHINGTON.EDU/BIOE

EXHIBITS

BOOTHS # 214 / 216

The University of Texas at Austin

DEPARTMENT OF BIOMEDICAL ENGINEERING

107 W. Dean Keeton, C0800

Austin, TX 78712

Phone: 512-475-8623

Email: sbixby@mail.utexas.edu

Web: www.bme.utexas.edu

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

BOOTHS # 532 / 534

University of Texas at San Antonio

One UTSA Circle, AET 1.102

San Antonio, TX 78249

Phone: 210-458-7084

Email: anson.ong@utsa.edu

Web: <http://engineering.utsa.edu/BME>

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

DISCOVER. INNOVATE. ACHIEVE.

Graduate students in WPI's Biomedical Engineering Department collaborate with scientists and engineers across disciplines, seeking breakthroughs in regenerative medicine, innovations in bioinstrumentation, and advances in healthcare.

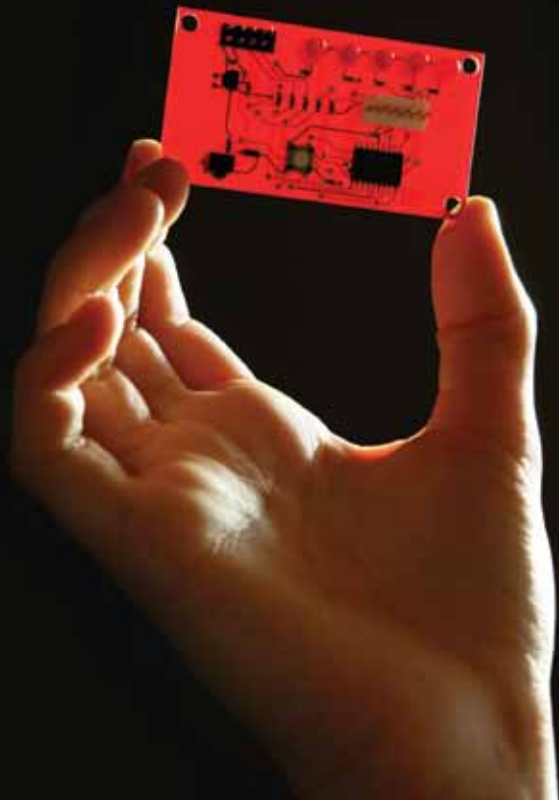
Graduates have gone on to rewarding careers at major medical and biomedical research centers across academia, government, and the medical device industry.

Visit WPI's table in the exhibit hall

wpi.edu/+gradbme



WPI



BOOTH # 437

University of Toronto**INSTITUTE OF BIOMATERIALS & BIOMEDICAL ENGINEERING**

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

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

BOOTH #523

University of Utah**DEPARTMENT OF BIOENGINEERING****SCIENTIFIC COMPUTING & IMAGING (SCI) INSTITUTE**

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

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

BOOTH # 109

University of Virginia**DEPARTMENT OF BIOMEDICAL ENGINEERING**

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

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

BOOTH # 303

University of Washington**DEPARTMENT OF BIOENGINEERING**

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

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

BOOTH # 108

Valtronic

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

BOOTH # 210

Vanderbilt University**DEPARTMENT OF BIOMEDICAL ENGINEERING**

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

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

BOOTH # 127

Virginia Commonwealth University

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

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

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

Virginia Tech-Wake Forest University

SCHOOL OF BIOMEDICAL ENGINEERING & SCIENCE

VT-WFU SBES:

317 Kelly Hall (MC0298)

Blacksburg, VA 24061

Phone: 540-231-8191

E-mail: headbiomed@vt.edu

Web: www.sbes.vt.edu

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

BOOTH # 321

Washington University in St. Louis

DEPARTMENT OF BIOMEDICAL ENGINEERING

One Brookings Drive, Box 1097

St. Louis, MO 63130

Phone: 314-935-6164

Email: bme@seas.wustl.edu

Web: <http://bme.wustl.edu/>

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

BOOTHS # 314 / 316

Wayne State University

818 W. Hancock

Detroit, MI 48201

Phone: 313-577-1345

Email: nmurthy@wayne.edu

Web: www.bme.wayne.edu

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

BOOTH # 215

Whitaker International Program

809 United Nations Plaza

New York, NY 10017

Phone: 212-984-5442

Email: saltaf@iie.org

Web: www.whitaker.org

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

BOOTH # 420

Worcester Polytechnic Institute

100 Institute Road

Worcester, MA 01609

Phone: 508-831-5301

Email: bme-web@wpi.edu

Web: www.wpi.edu/+gradbme

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

BOOTH # 234

Yale University

BIOMEDICAL ENGINEERING

55 Prospect Street

New Haven, CT 06511

Phone: 203-432-4262

Email: deanna.lomax@yale.edu

Web: www.seas.yale.edu/bme

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



S O M E T H I N G N E W

GENERAL INFORMATION & PRESENTER INFORMATION

Meeting Location

Henry B. Gonzales Convention Center

200 East Market Street
San Antonio, TX 78205
(210) 207-8500

Marriott Rivercenter | *co-headquarters*

101 Bowie Street
San Antonio, TX 78205
(210) 223-1000

Marriott Riverwalk | *co-headquarters*

889 East Market Street
San Antonio, TX 78205
(210) 224-4555

Registration

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

On-Site Registration Hours

Wednesday, October 22	11:00am – 7:00pm
Thursday, October 23	7:00am – 6:00pm
Friday, October 24	7:00am – 6:00pm
Saturday, October 25	7:00am – 2:00pm

Exhibits

Exhibit Hall A, Henry B. Gonzales Convention Center

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

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

BMES Presenter Information Platform Presentations

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

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

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

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

Poster Presentations

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

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

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

Speaker Ready Room

Registration Area, Exhibit Hall A, Henry B. Gonzales Convention Center

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

Wednesday, October 22	11:00am – 5:00pm
Thursday, October 23	7:00am – 5:00pm
Friday, October 24	7:00am – 5:00pm
Saturday, October 25	7:00am – 2:30pm

Program Highlights

Don't Miss These Events

WEDNESDAY, October 22

Meet the Faculty Candidate Forum

3:30pm - 5:30pm

West Registration Hall, Henry B. Gonzales Convention Center

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

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

WEDNESDAY, October 22

Welcome Reception

5:30pm - 7:00pm

Grotto, River Level, Henry B Gonzales Convention Center

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

THURSDAY, October 23

BMES State of the Society Address & Fellows Induction

10:30am

Lila Cockrell Theatre, Henry B. Gonzales Convention Center

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

Refreshment Breaks

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

Thursday afternoon refreshment break sponsored by



Friday afternoon refreshment break sponsored by



FRIDAY, October 24
BMES Bash at Buckhorn Saloon & Texas Rangers Museum

7:00pm - 10:00pm

318 E. Houston Street

San Antonio TX 78205

(210) 247-4000



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

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

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

THURSDAY, October 23

Celebration of Minorities in BME Luncheon*

12:30-1:45pm

Ballroom A, Henry B. Gonzales Convention Center

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

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

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



FRIDAY, October 24

Women in BME Luncheon*

12:15pm - 1:30pm

Ballroom A, Henry B. Gonzales Convention Center

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

Speakers:

"Innovations and the Road to Commercialization"

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

"Trading Tenure for Translation"

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

Additional Panelists:

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


Athanassios Sambanis, PhD, Program Director, Biomedical Engineering Chemical, Bioengineering, Environmental, and Transport Systems Division, *National Science Foundation*

Professor, School of Chemical & Biomolecular Engineering, *Georgia Institute of Technology*

Translation is within Your Reach

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

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

Women in BME Luncheon Sponsored by 

Additional Meetings

Wednesday, October 22

BMES Board of Directors Meeting

8:30am – 4:30pm

Convention Center, Room 102 AB

Organizer: Gilda Barabino

AIMBE Board of Directors Meeting

11:00am - 4:00pm

Convention Center, Room 003AB

Organizer: Milan Yager

AIMBE Council Meeting

3:00pm – 4:00pm

Convention Center, Room 003AB

Organizer: Milan Yager

Annals of Biomedical Engineering - Editorial Board

7:00pm - 10:00pm

Marriott Rivercenter, Conference Rooms 13/14

Organizer: Christina Dzikowski

Council of Chair Dinner & Meeting

6:15pm - 9:00pm

Marriott Rivercenter, Room

Organizer: John Troy

Thursday, October 23

BMES National Meetings Committee Meeting

7:00am - 8:00am

Convention Center, Room 003A

Organizer: Christine Schmidt

BMES Diversity Committee Meeting

7:00am - 8:00am

Convention Center, Room 003B

Organizer: Michele Ciapa

Cellular and Molecular Bioengineering – Editorial Board

12noon – 1:30pm

Marriott Rivercenter, Conference Rooms 13/14

Organizer: Christina Dzikowski

Medical Devices SIG Business Meeting

12:45pm – 1:45pm

Convention Center, Room 003A

Organizer: Leticia Marquez

BMES Membership Committee Meeting

1:30pm - 2:30pm

Convention Center, Room 003A

Organizer: Jennifer Edwards

Friday, October 24

2015 BMES Annual Meeting Committee Meeting

7:00am - 8:00am

Convention Center, Room 003A

Organizer: Steve George

ABioM SIG Business Meeting

7:00am - 8:00am

Convention Center, Room 102AB

Organizer: Kaiming Ye

BMES Education Committee

7:00am - 8:00am

Convention Center, Room 003B

Organizer: Michele Ciapa

CMBE SIG Business Meeting

12:00noon - 1:30pm

Convention Center, Room 003B

Organizer: Cheng Dong

BMES International Affairs Committee Meeting

1:30pm - 2:30pm

Convention Center, Room 003A

Organizer: Jennifer Edwards

BMES Industry Affairs Committee Meeting

4:00pm - 5:00pm

Convention Center, Room 003A

Organizer: Jennifer Edwards

Saturday, October 25

BMES Student Affairs Committee Meeting

12:30pm - 1:30pm

Convention Center, Room 003A

Organizer: Elizabeth DaSilva

BMES Board of Directors Meeting & New Board Orientation

1:00pm - 3:30pm

Convention Center, Room 102AB

Organizer: Rich Hart

HOSTED RECEPTIONS

Hosted Receptions

Marriott Rivercenter and Marriott Riverwalk

Thursday, October 23

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

Arizona State University

Travis Room,
Marriott Marriott Riverwalk

Biomedical Engineering Opportunities in India

Alamo F,
Marriott Riverwalk

Clemson University

Conference Room Rm 11,
Marriott Rivercenter

Cornell University

Alamo C, Marriott Riverwalk

Duke University

Conference Room Rm 12,
Marriott Rivercenter

Florida International University

Conference Room 15,
Marriott Rivercenter

Georgia Institute of Technology

Salon KL, Marriott Rivercenter

Johns Hopkins University

Salon C,
Marriott Rivercenter

Rensselaer Polytechnic Institute

Alamo D,
Marriott Riverwalk

Rice University

Salon D,
Marriott Rivercenter

University of Akron

Conference Room Rm 1,
Marriott Rivercenter

University of California Berkeley

Conference Room Rm 17,
Marriott Rivercenter

University of California Irvine

Alamo E,
Marriott Riverwalk

University of California Los Angeles

Conference Room Rm 7,
Marriott Rivercenter

University of California, San Diego

Conference Room Rm 18,
Marriott Rivercenter

University of Illinois at Chicago

Conference Room, Rm 2
Marriott Rivercenter

University of Illinois at Urbana-Champaign

Salon J,
Marriott Rivercenter

University of Pennsylvania

Conference Room Rm 13-14,
Marriott Rivercenter

University of Pittsburgh

Conference Room Rm 3-4,
Marriott Rivercenter

University of Rochester

Alamo B,
Marriott Riverwalk

University of Southern California

Alamo A,
Marriott Riverwalk

University of Texas Austin

Salon E,
Marriott Rivercenter

University of Texas at San Antonio

Atrium,
Marriott Rivercenter

University of Utah

Conference Room Rm 8,
Marriott Rivercenter

University of Virginia

Conference Room Rm 5,
Marriott Rivercenter

University of Washington

Salon I,
Marriott Rivercenter

University of Wisconsin Madison

Salon B,
Marriott Rivercenter

Vanderbilt University

Riverview,
Marriott Riverwalk

Whitaker International Reception

Conference Room 16,
Marriott Rivercenter

Save the dates!



CAREER | CONNECTIONS

2015 Biomedical Engineering Career Conferences



WBECC 2015

Western Biomedical Engineering Career Conference

UC San Diego - La Jolla, CA

Spring 2015

SEBECC 2015

Southeast Biomedical Engineering Career Conference

Durham Convention Center - Durham, NC

Friday, October 23, 2015

Attend the 2015 BME career conferences to:

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

For more information and updates:

www.bmes.org/careerevents/

terry@bmes.org

Or call: (301) 459-1999

Career Connections is a career development resource of:



CAREER AND PROFESSIONAL DEVELOPMENT SESSIONS

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

Thursday, October 23

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

9:00am - 10:30am

Convention Center, Room 103A

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

How to Get Your First Job

1:30pm - 2:45pm

Convention Center, Room 103A

Whether you are searching for your first job or you're a young professional eager for a change, this session will show you the RIGHT way to job search. Avoid the mistakes and excuses that sabotage your chance to WIN a job in today's competitive market. Are you sending out tons of résumés and getting no responses? Are you worried about interviewing? Fasten

your seatbelts for an instructional session from a career coach and ex-Microsoft hiring manager! You will leave this session with the skills you need to conduct your job search more effectively and land that job sooner.

sponsored by



Networking Effectively —Social Media & Face-to-Face

3:15pm - 4:30pm

Convention Center, Room 103A

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

Resume Review and Critique

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

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

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

Convention Center, Room 102AB

Mock Interview Demonstration

5:00pm - 6:15pm

Convention Center, Room 103A

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

Friday, October 24

BMES Student Chapter Outstanding Chapter Best Practices

8:30am – 9:30am

Convention Center, Room 103A

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

BMES Student Chapter—Outreach and Mentoring Best Practices

9:30am - 10:30am

Convention Center, Room 103A

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

Owning Your Career & Using Mentors

1:30pm - 2:30pm

Convention Center, Room 103A

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

STUDENT CHAPTER TABLES

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

Cornell University

LeTourneau University

Louisiana Tech University

Purdue University

San Jose State University

Stony Brook University

University of California, Davis

University of Illinois at Urbana-Champaign

University of North Carolina, Chapel Hill

University of Tennessee – Knoxville

University of Texas, Austin

University of Wisconsin – Madison

Vanderbilt University

Virginia Commonwealth University

Virginia Tech/Wake Forest University



Register Today!

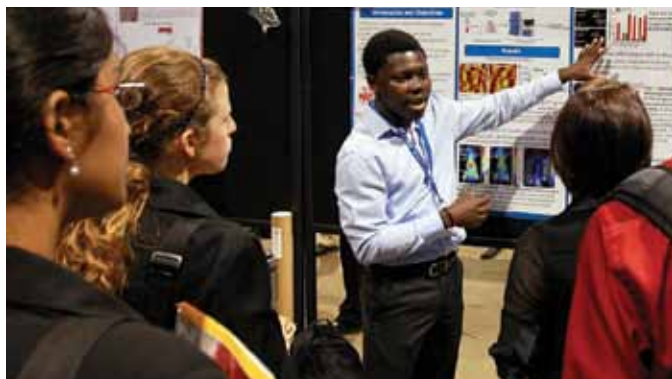
www.bmes.org/MBECCI4registration



CAREER | CONNECTIONS

Biomedical Engineering Society 2014 Midwest Biomedical Engineering Career Conference

Hosted by Wayne State College of Engineering



November 7, 2014

McGregor Conference Center
Detroit, MI

Visit the 2014 MBECC website
at www.bmes.org/MBECCI4

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

Career Connections is a
career development resource of:



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

Alpha Eta Mu Beta (AEMB) Programs

Alpha Eta Mu Beta Annual Grand Meeting

Thursday, October 23

4:00pm - 5:30pm

Convention Center, Room 002AB

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

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

Alpha Eta Mu Beta Reception

(Invitation Only)

Thursday, October 23

6:00pm - 8:00pm

The Annual AEMB reception will be held at The Republic of Texas Restaurant (429 E Commerce St San Antonio, TX 78205).

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

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

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

Friday, October 24

9:00am - 10:00am

Convention Center, Room 002AB

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

Tissue-biomaterials interactions have always been in the mind of researchers when focusing on developing or modifying biomaterials and tissue engineering constructs for optimal properties. These newly developed or modified materials are often evaluated in cell culture systems or in animal models. As a result, ethical issues related to biomaterials and tissue engineering research needs to be considered during their testing phase. Ethical concerns in pre-clinical

testing have always involved the types of tissues or cells used. Self-regulated oversights have been provided at institutions to ensure compliance of the US federal law and to oversee animal care and use within the institutions. As funding is also shifting from federal agencies to the biomedical industries, other potential ethical concerns have also emerged, including conflict of interest between the industry and the researchers. These conflicts are often managed by the investigator's institution. As such, it is imperative that researchers are aware of the moral and ethical concerns prior to embarking on their experimental designs.

Alpha Eta Mu Beta (AEMB), the National Biomedical Engineering Honor Society, is committed to promoting ethics in the field of biomedical engineering. This year, AEMB is honored to host Anson Joo L. Ong, Ph.D. is currently the USAA Distinguished Professor and Chairman for the Department of Biomedical Engineering at the University of Texas at San Antonio. He is also the Program Director for the Joint Graduate Program in Biomedical Engineering as well as an Adjunct Professor in the Department of Comprehensive Dentistry at the University of Texas Health Science Center at San Antonio. Aside from his current academic appointments, Dr. Ong is also the Associate Editor for the Journal of Biomedical Materials Research, Part B. He received his bachelor's degree from the University of Iowa in 1987, and his M.S. and Ph.D. from the University of Alabama at Birmingham in 1990 and 1994, respectively.

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

Understanding Why Congress Doesn't Fund Research

Friday, October 24

1:30pm - 3:00pm

Convention Center, Room 002AB

Session Chair: Teresa Murray, PhD

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

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

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

Whitaker International Program: Funding Opportunity for Young Biomedical Engineers

Friday, October 24

8:00am - 9:30am

Convention Center, Room 204A

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

1. Sabeen Altaf (Session Chair)

*Senior Program Manager, Science and Technology Programs
Institute of International Education*

2. Sandra Baker

Whitaker International Fellow, 2013-14

Host Institution: Institute of Bioengineering of Catalonia
Title: Development of a multi-photon microscopy system for measuring traction forces during in vivo angiogenesis

3. David Bradway

Whitaker International Scholar, 2012-13

Host Institution: Technical University of Denmark
Title: Cardiovascular velocity vector imaging: real-time processing and pre-clinical trials

4. Cassandra Harn

Whitaker International Fellow, 2012-13

Host Institution: Bionnovate Ireland
Title: An opportunity in innovation training in medical device development and how it has directed my future

5. Samantha Paulsen

Whitaker International Fellow, 2012-13

Host Institution: ETH Zurich
Title: Optimizing bioreactor and blood vessel geometries for improved mass transport using computational fluid dynamics

6. Justine Roberts

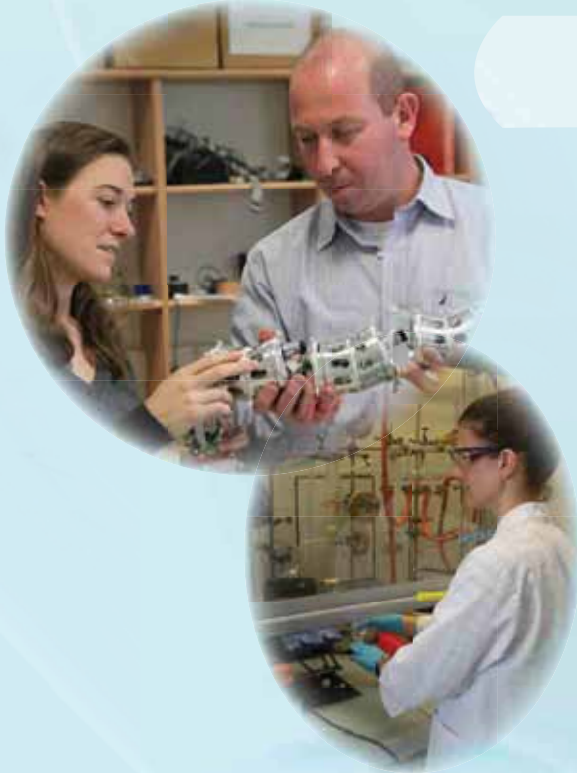
Whitaker International Scholar, 2013-14

Host Institution: University of New South Wales
Title: The design of bio-synthetic, heparin-poly (vinyl alcohol) hydrogels for wound healing applications



Whitaker International Program: Fellows, Scholars & Summer Programs

Grants For Biomedical Engineering Study or Research Abroad



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

Potential activities to pursue overseas include:

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

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

ACTIVITIES

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

Activities could include:

Type of Awards:

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

Phone: +212-984-5442

www.whitaker.org

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INTERNATIONAL
EDUCATION

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Cellular and Molecular Bioengineering

Congratulates the 2014 CMBE Young Innovators!

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

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

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

2014 Awards Recipients

One of the more important — and most enjoyable — tasks of the Society is to recognize contributions to the intellectual and professional development of the field of biomedical engineering. On behalf of the awards committee we would like to thank all the members who submitted nominations and provided letters of support and for the high quality of their nominees. Congratulations to the following award winners.

Robert A. Pritzker Distinguished Award Lecture

James Collins, PhD
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NIBIB Lecture

David Kaplan, PhD
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Rita Schaffer Young Investigator Award Lecture

Kimberly Stroka, PhD
Johns Hopkins University

Diversity Award Lecture

Naomi Chesler, PhD
University of Wisconsin-Madison

Annals of Biomedical Engineering (ABME) Awards

Most Downloaded Article

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

Brain Injury Prediction: Assessing the Combined Probability of Concussion Using Linear and Rotational Head Acceleration

Steven Rowson, Stefan Duma

Most Cited Article

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

Cationic Nanoparticles have Superior Transvascular Flux into Solid Tumors: Insights from a Mathematical Model

Triantafyllos Stylianopoulos, Konstantinos Soteriou, Dai Fukumura, Rakesh K. Jain



BMES Extended Abstracts: Design and Research Awards:

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BMES Student Chapter Awards

2014 Outstanding Achievement Award
BMES Student Chapter at San Jose State University

2014 Commendable Achievement Award
BMES Student Chapter at the Ohio State University

2014 Outreach Program Award
BMES Student Chapter at University of Pennsylvania

2014 Outstanding Mentoring Award
BMES Student Chapter at University of California, Davis

2013 Fleetest Feet Award
BMES Student Chapter - Virginia Tech/Wake Forest University
53 Students – 117,580 Miles

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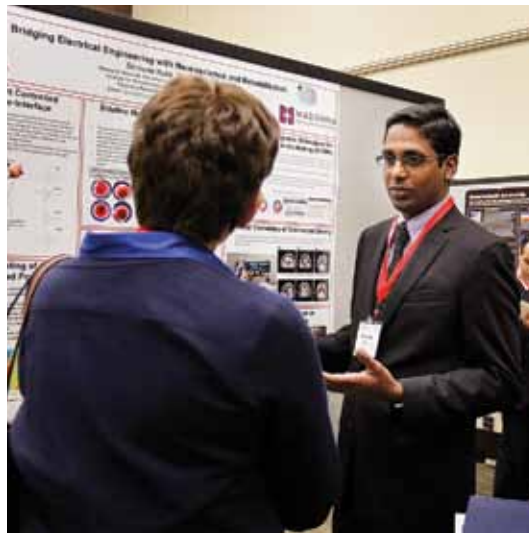
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BMES Fellow status is awarded to members who demonstrate exceptional achievements and experience in the field of biomedical engineering, and a consistent record of membership and participation in the Society.



PROGRAM



TODAY'S HIGHLIGHTS

PLATFORM SESSIONS Thurs-I 8:00am - 9:30am


See pages 71-77, HBGCC

EXHIBIT HALL OPEN 9:30am - 5:00pm
HBGCC, Exhibit Hall A**POSTER SESSION** 9:30am - 5:00pm
See pages 93-124, HBGCC, Exhibit Hall A
**Poster Viewing with Authors 9:30am - 10:30am
& Refreshment Break****PLENARY SESSION**
10:30am - 12:15pm
HBGCC, Lila Cockrell Theatre
**State of the Society
Fellows Presentation**
Gilda Barabino, PhD**Robert A. Pritzker**
Distinguished Lecture
**LIFE REDESIGNED: THE EMERGENCE
OF SYNTHETIC BIOLOGY**
James Collins, PhD**Celebration of Minorities** 12:30pm - 1:45pm
in BME LuncheonAdditional ticket purchase required
HBGCC, Ballroom A**PLATFORM SESSIONS Thurs-2** 2:00pm - 3:30pm
See pages 78-84, HBGCC**Poster Viewing with Authors 3:30pm - 4:30pm
& Refreshment Break**
HBGCC, Exhibit Hall A**PLATFORM SESSIONS Thurs-3** 4:30pm - 6:00pm
See pages 85-91, HBGCC**PLENARY SESSION** 6:15pm - 7:30pm
**Computational Modeling and
Simulation for Medical Devices**
HBGCC, Lila Cockrell Theatre**Hosted Receptions—Marriott Rivercenter
and Marriott Riverwalk**

See page 62 for list

THURSDAY, October 23, 2014**8:00 AM - 9:30 AM****PLATFORM SESSIONS – THURS - I****Track: Tissue Engineering, Cardiovascular
Engineering****OP-Thurs-I-I - Room 001A****Blood Vessel Tissue Engineering****Chairs:** Kent Leach, Peter McFetridge**8:00AM****Human Tissue-Engineered Blood Vessels for *In Vitro* Drug Response
Testing**C. FERNANDEZ¹, R. YEN¹, W. REICHERT¹, AND G. TRUSKEY¹¹Duke University, Durham, NC**8:15AM****Pericyte-Derived Matrix Alters Endothelial Cell Angiogenic Properties
and Inflammatory Function**P. SAVA¹, I. COOK¹, B. WALKER¹, AND A. GONZALEZ¹¹Yale University, New Haven, CT**8:30AM****Dynamically-Perfused Multi-Scale Vascular Network Created within
Thick Hydrogel using 3D Bio-Printing Technology**V. LEE¹, P. VINCENT², S-S. YOO³, AND G. DAI¹¹Rensselaer Polytechnic Institute, Troy, NY, ²Albany Medical College, Albany, NY, ³Brigham
and Women's Hospital, Harvard Medical School, Boston, MA**8:45AM****Fabrication of Highly Vasoreactive and Robust Tissue Engineered
Vascular Media Using Doxycycline Treatment: Implication for Vascular
Tissue Engineering**V. BAJPAI¹, P. MISTRIOTIS¹, Z. CHAMANZAR¹, R. CARPENTER¹, AND S. ANDREADIS¹¹SUNY Buffalo, Amherst, NY**9:00AM****Accelerating Cellular Spheroid Fusion Using Magnetic Forces to
Fabricate a Vascular Tissue**T. OLSEN¹, M. CASCO¹, D. SIMIONESCU¹, R. VISCONTI², AND F. ALEXIS¹¹Clemson University, Clemson, SC, ²Medical University of South Carolina, Charleston, SC**9:15AM****Acellular Small Diameter Vascular Graft Evaluated In a Pre-clinical
Animal Model**M. KOOBATIAN¹, R. SMITH¹, S. ROW¹, S. ANDREADIS¹, AND D. SWARTZ¹¹State University of New York at Buffalo, Amherst, NY**Track: Tissue Engineering, Stem Cell Engineering****OP-Thurs-I-2 - Room 001B****Microfabrication and 3D Printing for
Tissue Engineering****Chairs:** Adam Feinberg, Akhilesh Gaharwar**8:00AM****3D Printed Biological Machines Powered by Skeletal Muscle**C. CVETKOVIC¹, R. RAMAN¹, M. RICH¹, R. SWETENBURG², B. WILLIAMS¹, S. STICE², H.
KONG¹, T. SAIF¹, AND R. BASHIR¹¹University of Illinois at Urbana-Champaign, Urbana, IL, ²The University of Georgia, Athens, GAPLATFORM
SESSIONS

Th-1

8:15AM**Hierarchical Assembly for Guided Morphogenesis of Scaffold-free Tissues**K. STEVENS¹ AND S. BHATIA¹¹Massachusetts Institute of Technology, Cambridge, MA**8:30AM****Rapid Formation of Multicellular Spheroids with Controllable Microenvironment in Microfluidics-Generated Double Emulsion Droplets and Its Applications in Tissue Engineering**H. CHAN¹ AND K. LEONG¹¹Duke University, Durham, NC**8:45AM****3D Printing Facilitated Scaffold-free Tissue Unit Fabrication**Y. TAN¹, D. RICHARDS¹, AND Y. MEI^{1,2}¹Clemson University, Charleston, SC, ²Medical University of South Carolina, Charleston, SC**9:00AM****3D Printing of Complex Biological Scaffolds Using Freeform Reversible Embedding of Suspended Hydrogels (FRESH)**T. HINTON¹ AND A. FEINBERG¹¹Carnegie Mellon University, Pittsburgh, PA**9:15AM****Robotic Microcontact Printing (R- CP)**J. MCNULTY¹, T. KLANN¹, G. KNIGHT¹, M. SALICK¹, L-S. TURNG¹, AND R. ASHTON¹¹University of Wisconsin Madison, Madison, WI**Track: Biomaterials, Tissue Engineering****OP-Thurs-I-3 - Room 006A****Biomaterial Scaffolds I****Chairs:** Dan Simionescu, Jai Rudra**8:00AM** *Invited***Biomaterials Track Overview**R. CARRIER¹¹Northeastern University, Boston, MA**8:15AM****Osseointegration Capability of Direct Metal Laser Sintered Titanium Implants With Unique Surface Characterization: An *In Vitro* and *In Vivo* Evaluation**S. HYZY¹, D. COHEN¹, R. CLOHESSY¹, A. CHENG^{2,3,4}, B. BOYAN^{1,2}, AND Z. SCHWARTZ^{1,5}¹Virginia Commonwealth University, Richmond, VA, ²Georgia Institute of Technology, Atlanta, GA, ³Emory University, Atlanta, GA, ⁴Peking University, Beijing, China, ⁵University of Texas Health Science Center, San Antonio, TX**8:30AM****Effect of Capillary Action on Bone Regeneration in Micro-Channel Ceramic Scaffolds**Y. KIM¹, M-H. HONG², C. BAE³, Y. KIM⁴, K. KIM⁴, AND D. OH⁵¹Trinity School, New York, NY, ²Columbia University, New York, NY, ³Chonnam National University, Gwangju, Korea, Republic of, ⁴Kyung Hee University, Yongin, Korea, Republic of, ⁵Columbia University, New York, NY**8:45AM****Elastomeric and Mechanically Stiff Nanocomposites for Bone Tissue Engineering**P. KERATIVITAYANAN¹ AND A. GAHARWAR¹¹Texas A&M University, College Station, TX**9:00AM****Solid Freeform Fabrication of Biomaterials Scaffolds via Photopolymerization of High Internal Phase Emulsions**N. SEARS¹, J. ROBINSON¹, M. WHITELY¹, AND E. COSGRIFF-HERNANDEZ¹¹Texas A&M University, College Station, TX**9:15AM****Enabling Surgical Placement of Hydrogels Through Achieving Paste-Like Rheological Behavior Prior to Crosslinking**E. BECK¹, B. LOHMAN¹, S. KIEWEG¹, S. GEHRKE¹, C. BERKLAND¹, AND M. DETAMORE¹¹University of Kansas, Lawrence, KS**Track: Biomaterials****OP-Thurs-I-4 - Room 006B****Bioinspired and Self Assembling Biomaterials I****Chairs:** George Pins, Jordan Green**8:00AM****Suppression of Osteoarthritis via Molecular Engineering of an Aggrecan Mimetic**A. PANITCH¹, C. GOERGEN¹, G. BREUR¹, P. SNYDER¹, N. VAZQUEZ-PORTALATIN¹, AND S. SHARMA¹¹Purdue University, WEST LAFAYETTE, IN**8:30AM****Harnessing Cellular-Derived Forces to Control the Synthesis and Alignment of Novel ECM Materials**J. SCHELL¹, B. WILKS¹, X. CAO², V. SHENOY², AND J. MORGAN¹¹Brown University, Providence, RI, ²University of Pennsylvania, Philadelphia, PA**8:45AM****Glycosylated Peptide Nanofibers to Modulate Galectin Bioactivity**A. RESTUCCIA¹, Y. TIAN², J. COLLIER³, AND G. HUDALLA¹¹University of Florida, Gainesville, FL, ²Illinois Institute of Technology, Chicago, IL, ³University of Chicago, Chicago, IL**9:00AM****RNA Localization to Phospholipid Membranes with Nucleolipids**N. KAMAT¹ AND J. SZOSTAK¹¹Harvard University and Massachusetts General Hospital, Boston, MA**9:15AM****Injectable Oxidation-Responsive Fibrillar Assemblies are Processed by CD11c+ Populations in Skin**C. BRUBAKER¹, D. BONNER¹, E. PHELPS¹, AND J. HUBBELL¹¹Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland**Track: Drug Delivery, Nano to Micro Technologies****OP-Thurs-I-5 - Room 006C****Nano/Micro Drug Delivery****Chairs:** Craig Duvall, Jered Haun**8:00AM****Glucose-Responsive Insulin Delivery by Biomimetic Synthetic Vesicles**Z. GU¹, W. TAI¹, J. DI¹, R. MO¹, AND V. SUBRAMANIAN¹¹University of North Carolina at Chapel Hill and North Carolina State University, Raleigh, NC**8:15AM****Nanostructured Polycaprolactone Thin Films For Enhanced Ocular Drug Delivery**J. KIM¹, C. FOX², AND T. DESAI³¹UCB-UCSF Graduate Program in Bioengineering, San Francisco, CA, ²Pharmaceutical Sciences and Pharmacogenomics Graduate Program in UCSF, San Francisco, CA, ³Department of Bioengineering and Therapeutic Sciences in UCSF, San Francisco, CA**8:30AM****Nanostructured Mucoadhesive Microparticles for Their Enhanced Retention in Gastrointestinal Tract**C. PARK¹, B. HUH¹, M. PARK¹, S. LEE¹, H. HONG¹, AND Y. CHOY¹¹Seoul National University, Seoul, Korea, Republic of**P** = Poster Session**OP** = Oral Presentation = Reviewer Choice Award

8:45AM**A Dendrimer/Lipid Gene Delivery System for Ocular Gene Therapy**D. SUN¹, H. MAENO¹, A. MALAMAS¹, G. YU¹, T. MAEDA¹, A. MAEDA¹, K. PALCZEWSKI¹, AND Z-R. LU¹¹Case Western Reserve University, Cleveland, OH**9:00AM****Novel Electrospun Gelatin/insulin Formulation for Transbuccal Insulin Delivery**L. XU¹, N. SHEYBANI¹, S. REN¹, G. BOWLIN², W. YEUDALL¹, AND H. YANG¹¹Virginia Commonwealth University, Richmond, VA, ²University of Memphis, Memphis, TN**9:15AM****Transport Studies of Nanoscale Bacteria Enabled Autonomous Drug Delivery Systems (NanoBEADS) in an *In-vitro* Tumor Model**M. TRAORE¹ AND B. BEHKAM¹¹Virginia Tech, Blacksburg, VA**Track: Biomechanics, Cellular and Molecular Bioengineering****OP-Thurs-I-6 - Room 006D****Cell Biomechanics I****Chairs:** Elizabeth Loba, Christopher Lemmon**8:00AM****Nanotopography Modulated Nuclear Deformation**X. YU¹, A. BRUCE¹, R. MEZAN¹, L. WANG², P. FULAY¹, Y. ROJANASAKUL¹, AND Y. YANG¹¹West Virginia University, Morgantown, WV, ²The National Institute for Occupational Safety and Health, Morgantown, WV**8:15 AM****Platelet Mechanosensing on Collagen-Conjugated Substrates**M. KEE¹, Y. QIU¹, D. MYERS^{1,2}, R. TRAN¹, Y. SAKURAI^{1,2}, AND W. LAM^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**8:30AM****Vascular Smooth Muscle Cell Behavior on Patterned PDMS Substrates**R. CHEN¹ AND D. DEAN¹¹Clemson University, Clemson, SC**8:45AM****Impact of Membrane Cholesterol on Monocyte Biomechanics**A. SAHA¹ AND A. RAMASUBRAMANIAN¹¹University of Texas at San Antonio, San Antonio, TX**9:00AM****Membrane Deformation and Bioeffects in Single Cells Produced by High Strain-Rate Loading Associated with Tandem Bubble Interaction**F. YUAN¹, C. YANG¹, Y. ZHANG¹, G. SANKIN¹, AND P. ZHONG¹¹Duke University, Durham, NC**9:15AM****Dynamic Traction Forces of Spreading and Adherent Human Neutrophils**S. HENRY¹, C. CHEN², J. CROCKER¹, AND D. HAMMER¹¹University of Pennsylvania, Philadelphia, PA, ²Boston University, Boston, MA**Track: Cancer Technologies****OP-Thurs-I-7 - Room 007A****Cancer Mechanobiology****Chairs:** Michael King, Christopher Lemmon**8:00AM Invited****Advancing Convergence and Innovation in Cancer Research: National Cancer Institute Center for Strategic Scientific Initiatives (CSSI)**E. GREENSPAN¹, M. BERNY-LANG¹, AND J. LEE¹¹National Cancer Institute, NIH, Bethesda, MD**8:15 AM****Nuclear Limits to 3D Migration and Survival**D. DISCHER¹¹University of Pennsylvania, Philadelphia, PA**8:30AM****Matrix-Stiffness-Dependent Upregulation Of MT1-MMP Promotes An Invasive Epithelial Phenotype**S. CAREY¹, K. MARTIN¹, AND C. REINHART-KING¹¹Cornell University, Ithaca, NY**8:45AM****Loss of Giant Obscurins Alters Breast Epithelial Cell Mechanobiology**K. STROKA¹, M. SHRIVER², B. WONG¹, K. KONSTANTOPOULOS¹, AND A. KONTRIGIANNI-KONSTANTOPOULOS²¹Johns Hopkins University, Baltimore, MD, ²University of Maryland, Baltimore, Baltimore, MD**9:00AM****Extracellular Matrix Stiffness Protects Carcinoma Cells from Sorafenib via JNK Signaling**T. NGUYEN¹, M. SLEIMAN¹, T. MORIARTY¹, W. HERRICK¹, AND S. PEYTON¹¹University of Massachusetts Amherst, Amherst, MA**9:15AM****Contractility as a Biophysical Signature of Metastasis for Primary Human Colon Cancer Cells**M. ALI¹, K. TANGELLA², D. RAMKUMAR², AND T. SAIF³¹University of Illinois, Champaign, IL, ²Provena Covenant Medical Centre, Urbana, IL, ³University of Illinois at Urbana-Champaign, Urbana, IL**Track: Cardiovascular Engineering****OP-Thurs-I-8 - Room 007B****Hemodynamics and Vascular Mechanics I****Chairs:** Daniel Bluestein, Keith Neeves**8:00AM****Platelet Thrombin Generation Under Flow**W. YIN¹, K. BOND¹, V. NGO¹, AND D. RUBENSTEIN¹¹Stony Brook University, Stony Brook, NY**8:15 AM****Stress-induced Platelet Activation Potential in Abdominal Aortic Aneurysms**K. HANSEN¹, A. ARZANI¹, AND S. SHADDEN¹¹University of California, Berkeley, CA**8:30AM****Stiff Substrates Enhance Monocyte Recruitment from Flow**J. MACKAY¹ AND D. HAMMER¹¹University of Pennsylvania, Philadelphia, PA


8:45AM**Simvastatin Ameliorates Substrate Stiffness Dependent Endothelial Dysfunction**M. LAMPI¹, C. FABER¹, J. HUYNH¹, J. JONES¹, N. NISHIMURA¹, AND C. REINHART-KING¹
¹Cornell University, Ithaca, NY**9:00AM****Refrigerated Platelets Respond to Physiologic Inhibitors, Evidence That Cold-Induced Activation Is Unlikely to Result in Disseminated Intravascular Coagulation**K. REDDOCH¹, H. PIDCOKE², A. CAP², AND A. RAMASUBRAMANIAN¹
¹The University of Texas at San Antonio, San Antonio, TX, ²US Army Institute of Surgical Research, Fort Sam Houston, TX**9:15AM****Fibrin Generation and Transthorbus Pressure Gradients Regulate Thrombin Mediated Clot Growth**R. MUTHARD¹ AND S. DIAMOND¹
¹University of Pennsylvania, Philadelphia, PA**Track: Cellular and Molecular Bioengineering
OP-Thurs-I-9 - Room 007C****Cell Adhesion****Chairs:** Sriram Neelamegham, Eric Boder**8:00AM****When Affinity Is Not Enough: Strong Ideal Bonds with the Gate Mechanism**W. THOMAS¹, O. YAKOVENKO¹, AND K. JOHNSON¹
¹University of Washington, Seattle, WA**8:15AM****Kinetic Properties govern Mucin 16 (MUC16) and Podocalyxin (PODXL) adhesion to E- and L-selectins in Shear Flow**D. SHEA¹, K. STEBE², AND K. KONSTANTOPOULOS^{1,3,4,5}
¹Johns Hopkins University, Baltimore, MD, ²Department of Chemical and Biomolecular Engineering, University of Pennsylvania, Philadelphia, PA, ³Johns Hopkins Institute for NanoBioTechnology, Baltimore, MD, ⁴Johns Hopkins Physical Sciences-Oncology Center, Baltimore, MD, ⁵Johns Hopkins Center of Cancer Nanotechnology Excellence, Baltimore, MD**8:30AM****ST3Gal-4 is the Primary (2,3) Sialyltransferase Regulating the Biosynthesis of E-, P- and L-selectin Ligands in Human Leukocytes**S. NEELAMEGHAM¹, N. MONDAL¹, A. BUFFONE JR.², AND J. LAU²
¹State University of New York at Buffalo, Buffalo, NY, ²Roswell Park Cancer Institute, Buffalo, NY**8:45AM****Allosteric Regulation of Cadherin-mediated Intercellular Adhesion by Inside-out Signaling**D. LECKBAND¹, N. SHASHIKANTH¹, J. NEWHALL¹, Y. PETROVA², M. SPANO², AND B. GUMBINER²
¹University of Illinois, Urbana, IL, ²University of Virginia College of Medicine, Charlottesville, VA**9:00AM****Catch Bond In TCR-CD3 Interaction**C. GE¹ AND C. ZHU¹
¹Georgia Institute of Technology, Atlanta, GA**9:15AM****An ECM Fibronectin Matricryptic Site Contributes To Mechanosignaling In Endothelial Cells Under Flow**W. OKECH¹, D. HOCKING¹, AND I. SARELIUS¹
¹University of Rochester, Rochester, NY**Track: Cellular and Molecular Bioengineering,
Biomechanics****OP-Thurs-I-10 - Room 007D****Mechanotransduction I****Chairs:** Brenton Hoffman, Nic Leipzig**8:00AM** **α -Catenin Cytomechanics: Role in Cadherin-Dependent Adhesion and Mechanotransduction**J. WU¹, A. BARRY¹, H. TABDILI¹, I. MUHAMED¹, N. SHASHIKANTH¹, G. GOMEZ², A. YAP², C. GOTTARDI³, J. ROOIJ⁴, N. WANG¹, AND D. LECKBAND¹¹University of Illinois at Urbana-Champaign, Urbana, IL, ²University of Queensland, St. Lucia, Brisbane, Australia, ³Northwestern University, Chicago, IL, ⁴University Medical Center Utrecht, Utrecht, Netherlands**8:15 AM****Cyclic Anisotropic Strain Mediates TGF β Activation in a Time-Dependent Manner by Potentiating SMAD2 and RhoA**L. PAGNOZZI¹ AND J. BUTCHER¹
¹Cornell University, Ithaca, NY**8:30AM****Cellular Tension Regulates TGF β Signaling Through Discrete Spatial Organization Of TGF β Receptors**J. RYS¹, C. DUFORT², M. BAIRD³, M. DAVIDSON³, AND T. ALLISTON²
¹UC Berkeley - UCSF, San Francisco, CA, ²UCSF, San Francisco, CA, ³Florida State University, Tallahassee, FL**8:45AM****Tissue Mechanics in Glioma Aggression**Y. MIROSHNIKOVA¹, J. PHILLIPS¹, K. LOBO¹, H. LAKLAI¹, T. MCKNIGHT¹, AND V. WEAVER¹
¹UCSF, San Francisco, CA**9:00AM****Determining Force Sensitive Protein-Protein Interactions in Focal Adhesions**A. LACROIX¹ AND B. HOFFMAN¹
¹Duke University, Durham, NC**9:15AM****Rationally-Designed FRET-based Molecular Tension Sensors**A. LACROIX¹ AND B. HOFFMAN¹
¹Duke University, Durham, NC**Track: Nano to Micro Technologies,
Translational Biomedical Engineering****OP-Thurs-I-11 - Room 008A****BioMEMS I****Chairs:** James Tunnell, Catherine Klapperich**8:00AM Invited****Nano to Micro Technologies Track Overview**C. KLAPPERICH¹
¹Boston University, Boston, MA**8:15 AM Invited****High-throughput High-content Developmental Biology and Neurogenetics**H. LU¹
¹Georgia Institute of Technology, Atlanta, GA**8:45AM****A Microdevice for Simultaneous Applications of Topographic Cues and Cyclic Tensile Strains to Live Cells**Q. WANG¹, K. WEI¹, AND Y. ZHAO¹
¹Ohio State University, Columbus, OHP = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

9:00AM**An Ultrathin Flexible Carbon Nanotube Microelectrode Array for Neural Recording and Stimulation**W. YI¹, Z. FENG¹, C. ZHOU¹, J. CAVANAUGH¹, C. CHEN¹, AND M-C. CHENG¹¹Wayne State University, Detroit, MI**9:15AM****Nanomagnetic Actuation: Remote Control of Cell Signaling**J. DOBSON¹, A. MONSALVE¹, B. HU², AND A. EL HAJ²¹University of Florida, Gainesville, FL, ²Keele University, Stoke on Trent, United Kingdom**Track: Nano to Micro Technologies, Cellular and Molecular Bioengineering****OP-Thurs-I-12 - Room 008B****Microfluidic Platforms I****Chairs:** Xiaolong Luo, Edmond Young**8:00AM****Microfluidic Platforms Overview**

M. VAZQUEZ

*The City College of New York (CUNY), New York, NY***8:15 AM****A Chemotaxis-Based Microfluidic Sorting Platform**S. SUH¹, M. TRAORE¹, AND B. BEHKAM¹¹Virginia Tech, Blacksburg, VA**8:30AM****Spontaneous Neutrophil Migration Patterns in Burn Patients during Sepsis**C. JONES^{1,2,3}, M. MOORE¹, L. DIMISKO^{1,2}, A. ALEXANDER¹, A. IBRAHIM¹, B. HASSELL², R. TOMPKINS¹, S. FAGAN¹, AND D. IRIMIA^{1,2,3}¹Massachusetts General Hospital and Harvard Medical School, Boston, MA, ²BioMEMS Resource Center, Center for Engineering in Medicine and Surgical Services, Boston, MA, ³Shriners Hospital for Children, Boston, MA**8:45AM****Shear-free Microfluidic Platform for the Chemotaxis and Rapid Labeling of Cells**H. CHUNG¹, C. CHAN^{1,2}, T. KHIRE¹, G. MARSH¹, A. CLARK¹, R. WAUGH¹, AND J. MCGRATH¹¹University of Rochester, Rochester, NY, ²Simpore Inc., West Henrietta, NY**9:00AM****Nanowire Electrophysiology For Cell Sorting And Screening**A. BELL¹, D. VERGOSA¹, AND J. ROBINSON^{1,2}¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX**9:15AM****A Standing Surface Acoustic Wave (SSAW)-based Cell Co-culture Platform**S. LI¹, F. GUO¹, Y. CHEN¹, X. DING¹, P. LI¹, C. CAMERON¹, AND T. HUANG¹¹The Pennsylvania State University, University Park, PA**Track: Device Technologies and Biomedical Robotics, New Frontiers and Special Topics****OP-Thurs-I-13 - Room 201****Implantable Devices and Implantable Electronics****Chairs:** Rafael Davalos, Lemont Baker**8:00AM Invited****Overview of Development and Commercialization of Implantable Vagus Nerve Stimulation Systems**M. MORRIS¹¹Cyberonics, Inc., Houston, TX**8:30AM****Liquid Crystal Polymer (LCP)-based Device Packaging for Auditory and Visual Prostheses**S. KIM¹, J. KIM¹, AND J. JEONG¹¹Seoul National University, Seoul, Korea, Republic of**8:45AM****Compensating For Tissue Changes In Ultrasonic Transcutaneous Energy Transfer Systems**H. VIHVELIN¹, J. LEADBETTER¹, J. BROWN¹, AND R. ADAMSON¹¹Dalhousie University, Halifax, NS, Canada**9:00AM****Reconfigurable Analog-to-Digital Converter for Implantable Bioimpedance Monitoring**T. RANDALL¹, I. MAHBUB¹, F. QUAIYUM¹, AND S. ISLAM¹¹University of Tennessee, Knoxville, Knoxville, TN**9:15AM****Surface Plasmon Resonance Imaging of Materials that Reduce Staphylococcus aureus Contamination**P. ABADIAN¹ AND E. GOLUCH¹¹Northeastern University, Boston, MA**Track: Biomechanics, Neural Engineering****OP-Thurs-I-14 - Room 103B****Head Injury****Chairs:** Stefan Duma, Beth Winkelstein**8:00AM Invited****Biomechanics Track Overview**S. MARGUILES¹¹University of Pennsylvania, Philadelphia, PA**8:15 AM****Blast Induced Neurotrauma Leads To Changes In The Epigenome**Z. BAILEY¹, S. SAJJA¹, W. HUBBARD¹, E. EREIFEJ¹, AND P. VANDEVORD¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA**8:30AM****Brain Deformation, Structural Damage, and Biochemical Alterations in Mild Blast-Induced TBI in Rats**N. RACE^{1,2}, M. WALLS¹, S. VEGA-ALVAREZ¹, S. SONG¹, A. KIM¹, T. ZHANG¹, G. KUZIEL¹, Y. GU¹, B. ZIAIE¹, AND R. SHI¹¹Purdue University, West Lafayette, IN, ²Indiana University School of Medicine, Indianapolis, IN**8:45AM****Blast Injury Augments Pro-inflammatory Phenotype in Rat Hippocampus**M. WATERS¹, S. SAJJA², P. VANDEVORD¹, AND M. VAN DYKE¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA, ²Johns Hopkins School of Medicine, Baltimore, MD

9:00AM**TBSS Analysis of White Matter Changes related to Head Impacts in High School Football**N. BAHRAMI¹, E. DAVENPORT¹, C. WHITLOW¹, J. URBAN¹, Y. JUNG¹, M. ESPELAND¹, D. ROSENBAUM¹, C. VAUGHAN², G. GIOIA², A. POWERS¹, J. STITZEL¹, AND J. MALDJIAN¹¹Wake Forest University School of Medicine, Winston Salem, NC, ²Children's National Medical Center, Washington, DC**9:15AM****High Intensity Sound Wave Transduction from the Ear Canal to Middle Ear**R. GAN¹, D. NAKMALI¹, AND Z. YOKELL¹¹University of Oklahoma, Norman, OK**Track: Bioinformatics, Computational and Systems Biology****OP-Thurs-I-15 - Room 202A****Single Cell, Heterogeneity, Noise****Chairs:** Kyung Kim, Jun Wang**8:00AM** *Invited***Paracrine Signaling Reduces Cell-to-Cell Heterogeneity and Amplifies Macrophage Response to TLR4 Stimulation**Q. XUE¹, Y. LU¹, M. EISELE^{1,2}, N. KHAN¹, R. FAN¹, AND K. MILLER-JENSEN¹¹Yale University, New Haven, CT, ²University of Stuttgart, Stuttgart, Germany**8:30AM****Systematic Analysis of Drug-Induced Adaptive Response in Melanoma**M. FALLAHI-SICHANI¹, N. MOERKE¹, M. NIEPEL¹, T. ZHANG¹, N. GRAY¹, AND P. SORGER¹¹Harvard Medical School, Boston, MA**8:45AM****Nonlinear Biochemical Signal Processing via Noise Propagation**K. KIM¹, H. QIAN¹, AND H. SAURO¹¹University of Washington, Seattle, WA**9:00AM****Fluorescent *In-Situ* Sequencing of Single-Cells by Sequential Fish**A. COSKUN¹ AND L. CAI¹¹Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, CA**9:15AM****Single-Cell Analysis for Predicting Tumor Structure**J. WANG¹¹SUNY Albany, Albany, NY**Track: Orthopaedic and Rehabilitation Engineering, Biomechanics****OP-Thurs-I-16 - Room 202B****Skeletal Muscle Mechanics****Chairs:** Silvia Blemker**8:00AM** *Invited***Opportunities in Biomedical Engineering for Solving Clinical Problems Associated with Skeletal Muscle Health**S. BLEMKER¹¹University of Virginia, Charlottesville, VA**8:15 AM****Brachioradialis Muscle Volume and Pinch Force Following Tendon Transfer**W. MURRAY¹, K. SAUL², M. JOHANSON³, G. GOLD⁴, AND V. HENTZ⁴¹Northwestern University, Chicago, IL, ²North Carolina State University, Raleigh, NC, ³VA Palo Alto Health Care System, Palo Alto, CA, ⁴Stanford University, Palo Alto, CA**8:30AM****Muscle Progenitor Cell Regenerative Capacity in the Torn Rotator Cuff**G. MEYER¹, A. FARRIS², E. SATO³, J. LANE³, S. WARD³, AND A. ENGLER³¹Washington University in St. Louis, St. Louis, MO, ²The University of Kansas, Lawrence, KS, ³UCSD, La Jolla, CA**8:45AM****The Role of Dystrophins on Force Transmission in Skeletal Muscle**C. ZHANG¹ AND Y. GAO¹¹Cornell University, Ithaca, NY**9:00AM****Spatial Distribution and Clustering of Fatty Infiltration Following Rotator Cuff Tear in the Elderly**K. SAUL¹, A. SANTAGO², AND M. VIDT²¹North Carolina State University, Raleigh, NC, ²Wake Forest School of Medicine, Winston-Salem, NC**9:15AM****Eccentric Contractions in Gait Lead to Selective Muscle Degeneration in Duchenne Muscular Dystrophy**X. HU¹, S. PEIRCE¹, AND S. BLEMKER¹¹University of Virginia, Charlottesville, VA**Track: Biomedical Imaging and Optics, Translational Biomedical Engineering****OP-Thurs-I-17 - Room 203A****Applied Biomedical Imaging Techniques****Chairs:** Debadutyi (Rana) Ghosh, Vikram Kodibagkar**8:00AM****Photoacoustic Monitoring to Stratify Photodynamic Therapy Response in Glioblastoma**S. MALLIDI¹, K. WATANABE², D. TIMERMAN¹, AND T. HASAN¹¹Harvard Medical School, Boston, MA, ²Canon USA Inc, Boston, MA**8:15 AM****Chemical Imaging in Assessment of Diseases: Fourier Transform Infrared Imaging Accurately Determines Cardiac Transplant Rejection**S. TIWARI^{1,2}, V. REDDY³, J. RAMAN³, AND R. BHARGAVA^{1,2}¹University of Illinois at Urbana Champaign, Urbana, IL, ²Beckman Institute for Advanced Science and Technology, Urbana, IL, ³Rush University Medical Center, Chicago, IL**8:30AM****Laser Speckle Imaging To Detect Pulsatile Flow In The Teeth**C. REGAN¹, B. YANG¹, K. MAYZEL¹, P. WILDER-SMITH¹, AND B. CHOI¹¹University of California, Irvine, Irvine, CA**8:45AM*****In vivo* Ultrasound and Functional Photoacoustic Imaging of the Development of Birth Defects**C. BAYER¹, B. WLODARCZYK¹, G. LUKE¹, R. FINNELL¹, AND S. EMELIANOV¹¹The University of Texas at Austin, Austin, TX**9:00AM****Dual-Modality Approach with Rod-Shaped Viral Nanoparticles for Targeting and Treatment of Thrombosis**A. WEN¹, Y. WANG², K. JIANG¹, A. YANG¹, H. GAO², X. YU¹, D. SIMON², AND N. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH, ²Case Cardiovascular Center, Cleveland, OH

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

9:15AM**Targeted Gold Nanoparticles For Contrast-Enhanced Detection of Breast Microcalcifications**L. COLE¹, T. VARGO-GOGOLA², AND R. ROEDER¹¹University of Notre Dame, Notre Dame, IN, ²Indiana University School of Medicine - South Bend, South Bend, IN**Track: Biomedical Engineering Education (BME)
OP-Thurs-I-18 - Room 203B****Innovations in BME Education****Chairs:** Naomi Chesler, Conrad Zapanta**8:00AM****Integrating Improvisational Acting and Inventive Problem Solving in Biomedical Engineering**J. ANTAKI¹ AND J. ZELL²¹Carnegie Mellon University, Pittsburgh, PA, ²Steel City Improv, Pittsburgh, PA**8:15 AM****Incorporating Anatomical Modeling with 3D Printing into the Biomedical Curriculum**J. MACDONALD¹ AND S. SHARMA¹¹DeVry University, Chicago, IL**8:30AM****Ethics in Engineering Education**K. REYER¹, M. CANTWELL¹, P. LAM¹, R. RAFFERTY¹, AND K. BILLIAR¹¹Worcester Polytechnic Institute, Worcester, MA**8:45AM****Immediate Feedback on Computer Code Improves Problem Success**E. GREENWALD¹ AND J. SAUCERMAN¹¹University of Virginia, Charlottesville, VA**9:00AM****Unique Hospital and Patient-based Design Course Encompassing STEM Interactive Learning Activities**E. HARDY^{1,2,3}, W. NEWSTETTER², AND W. LAM^{1,2,3}¹Emory University, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA, ³Children's Healthcare of Atlanta, Atlanta, GA**9:15AM****"Boot Camp" Training In Cellular Bioengineering To Accelerate Research Immersion For REU Participants**D. SHREIBER¹, P. MOGHE¹, AND C. ROTH¹¹Rutgers, The State University of New Jersey, Piscataway, NJ**Track: Translational Biomedical Engineering,
Device Technologies and Biomedical Robotics
OP-Thurs-I-19 - Ballroom A****Biomedical Products and Devices****Chairs:** Mehdi Nikkhah, Robert Mauck**8:00AM** *Invited***Invention and Innovations with Aspirin: From Willow Bark to PolyAspirin**K. UHRICH¹¹Rutgers, The State University of New Jersey, Piscataway, NJ**8:30AM****Field Validation of a Mobile Phone Microscope as a Screening Tool for Oral Cancer in India**A. SKANDARAJAH¹, C. REBER¹, P. GURPUR², A. JENNIFER³, G. PALADINI⁴, M. KOLLEGAL², L. LADIC⁵, AND D. FLETCHER¹¹University of California, Berkeley, Berkeley, CA, ²Siemens, Bangalore, India, ³Christian Medical College, Vellore, India, ⁴Siemens, Princeton, NJ, ⁵Siemens, Tarrytown, NY**8:45AM****A Novel ROS Responsive Polymer Based Lab-on-a-Chip Sensor for Detection of Circulating Lipid Hydroperoxides**K. ARAN¹, J. PAREDES¹, A. ACHARYA¹, J. YAU¹, D. LIEPMANN¹, AND N. MURTHY¹¹University of California Berkeley, Berkeley, CA**9:00AM****On-demand Biofilm-removal Urinary Catheter**V. LEVERING¹, Q. WANG¹, P. SHIVAPOOJA¹, X. ZHAO¹, AND G. LÓPEZ¹¹Duke University, Durham, NC**9:15AM****Cold Platelets Demonstrate Superior Clotting Properties Compared To Standard-Of-Care At Room Temperature**P. NAIR¹, K. REDDOCH¹, C. NGUYEN¹, H. PIDCOKE², A. CAP², AND A. RAMASUBRAMANIAN¹¹University of Texas at San Antonio, San Antonio, TX, ²U.S Army, San Antonio, TX**Professional Integrity Workshop:
Best Practices for Publishing
Your Work (Authorship)***(Pre-Registration Required)***8:00am - 9:30am***Henry B. Gonzalez Convention Center, Room 102AB*

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

THURSDAY, October 23, 2014

2:00 PM - 3:30 PM

PLATFORM SESSIONS – THURS - 2

PLATFORM
SESSIONS

Th-2

Track: Tissue Engineering**OP-Thurs-2-1 - Room 001A****Tissue Engineering of Models for Study of Disease and Drug Discovery****Chairs:** Elizabeth Lobo, Roland Kaunas**2:00PM****Modeling Genetic Hypertrophic Cardiomyopathy *In Vitro* with Isogenic, Engineered Cardiac Micro-Tissues**N. HUEBSCH¹, M. MANDEGAR¹, P. LOSKILL², Z. MA², L. JUDGE¹, J. YOO¹, A. SHEEHAN¹, A. TRUONG¹, N. DEVISHAR², J. WANG², P. LIZARRAGA¹, P.-L. SO¹, K. HEALY², AND B. CONKLIN¹¹Gladstone Institute of Cardiovascular Disease, San Francisco, CA, ²University of California, Berkeley, Berkeley, CA**2:15PM****Molecular and Functional Roles of Cardiac Fibroblasts in Pressure-overload Induced Heart Failure**Y. LI¹, H. ASFOUR¹, L. MAO¹, H. ROCKMAN¹, AND N. BURSAC¹¹Duke University, Durham, NC**2:30PM****A Retinoic Acid-Enhanced Human Blood-Brain Barrier Coculture Model from Scalable Cell Sources**E. LIPPMANN¹, A. AL AHMAD¹, S. AZARIN¹, S. PALECEK¹, AND E. SHUSTA¹¹University of Wisconsin, Madison, WI**2:45PM****Bioengineered Livers as a Model to Study Cancer Metastasis**E. MORAN^{1,2}, B. GASTON¹, P. BAPTISTA¹, J. SPARKS³, D. RUDERMAN⁴, S. MUMENTHALER⁴, P. MACKLIN⁴, AND S. SOKER^{1,2}¹Wake Forest Institute for Regenerative Medicine, Winston Salem, NC, ²Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC, ³Miami University, Oxford, NC, ⁴University of Southern California, Los Angeles, CA**3:00PM****An Osteochondral Microphysiological System To Study The Pathogenesis Of Osteoarthritis And The Effect Of Hormonal Exposure**R. GOTTARDI^{1,2}, L. HANG¹, T. LOZITO¹, P. ALEXANDER¹, K. CLARK¹, E. SEFTON³, T. WOODRUFF³, AND R. TUAN¹¹University of Pittsburgh, Pittsburgh, PA, ²Ri.MED Foundation, Palermo, Italy, ³Northwestern University, Chicago, IL**3:15PM****Long Term *In Vitro* Culture of Mature White Adipose Tissue**R. ABBOTT¹, R. WANG¹, K. BURKE¹, AND D. KAPLAN¹¹Tufts University, Medford, MA**Track: Tissue Engineering, Biomaterials****OP-Thurs-2-2 - Room 001B****Scaffolds and Surfaces for Tissue Engineering I****Chairs:** Meng Deng, Craig Duvall**2:00PM****Microcryogels As Injectable 3-D Cellular Microniches For Site-directed And Augmented Cell Therapy**Y. DU¹, W. LIU¹, AND Y. LI¹¹Tsinghua University, Beijing, China, People's Republic of**2:15PM****Hydrogel-based, Microstructural Building Blocks for Fabricating Scaffolds that Support Organized Tissues Formation in 3D**L.-H. HAN¹, X. TONG¹, AND F. YANG^{1,2}¹Stanford University School of Medicine, Stanford, CA, ²Stanford University, Stanford, CA**2:30PM****Generating an Off-the-Shelf *In Vivo* Cell Capture System on a Decellularized Biomaterial using Modified Antibodies for Venous Valve Replacement**D. ANDERSON¹, J. GLYNN¹, D. PAVCNIK¹, AND M. HINDS¹¹Oregon Health & Science University, Portland, OR**2:45PM****Gold Nanoparticle-Collagen Templates Enhance Stability and Cell Infiltration in an *In Vivo* Study**S. GRANT¹, J. ZHU², AND D. GRANT¹¹University of Missouri, Columbia, MO, ²EternoGen, LLC, Columbia, MO**3:00PM****PEGDA Microencapsulated Insulin-Secreting Cells Accelerate Wound Closure**A. AIJAZ¹, R. FAULKNER¹, F. BERTHIAUME¹, AND R. OLABISI¹¹Rutgers, The State University of New Jersey, New Brunswick, NJ**3:15PM****Capture of VEGFR-expressing Stem Cells under Flow**R. SMITH JR.¹, M. KOOBATIAN¹, D. SWARTZ¹, AND S. ANDREADIS^{1,2}¹State University of New York, University at Buffalo, Buffalo, NY, ²Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY**Track: Biomaterials****OP-Thurs-2-3 - Room 006A****Therapeutic and Theranostic Biomaterials I****Chairs:** Elizabeth Lobo, Smitha Rao**2:00PM****A Novel Thermoresponsive Polydiolcitrate for Transcatheter Arterial Embolization Therapy**J. YANG¹, S.-K. LEE², M. NIEKRASZ², A. CHANG², B. SHAH², AND G. AMEER^{1,3}¹Northwestern University, Evanston, IL, ²University of Chicago, Chicago, IL, ³Feinberg School of Medicine, Chicago, IL**2:30PM****Silver Nanoparticle-Embedded Polymersome Nanocarriers for the Treatment of Antibiotic-Resistant Infections**B. GEILICH¹ AND T. WEBSTER¹¹Northeastern University, Boston, MA

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


2:45PM**Polyanhydride Nanoparticle Delivery Platform Enables Enhanced Killing of Filarial Worms**A. BINNEBOSE¹, R. MARTIN¹, S. HAUGHNEY¹, B. NARASIMHAN¹, AND B. BELLAIRE¹¹Iowa State University, Ames, IA**3:00PM****Dialysis-like Treatment of Sepsis Through Cleansing Pathogens from the Blood Stream using Functionalized Polysulfone Hollow Fibers**T. DIDAR¹, A. WATTERS¹, D. LESLIE¹, J. KANG¹, M. CARTWRIGHT¹, A. GRAVELINE¹, A. WATERHOUSE¹, M. SUPER¹, AND D. INGBER¹¹Wyss Institute at Harvard University, Boston, MA**3:15PM****Tunable Staged Release Of Therapeutics From Layer-By-Layer Coating With Clay Interlayer Barrier**J. MIN^{1,2}, R. BRAATZ¹, AND P. HAMMOND^{1,2}¹MIT, Cambridge, MA, ²Koch Institute of Integrative Cancer Research, Cambridge, MA**Track: Biomaterials, Cellular and Molecular Bioengineering****OP-Thurs-2-4 - Room 006B****Biomaterials for Controlling Cell Environment I****Chairs:** Mariah Hahn, Blanka Sharma**2:00PM****Magneto-Active Dynamic Screening for Drug Discovery**A. LISELLA¹, A. EL HAJ¹, AND J. DOBSON²¹Keele University, Stoke on Trent, United Kingdom, ²University of Florida, Gainesville, FL**2:15PM****A Mechanistic Investigation Of How A Decorin Mimic Controls Intimal Hyperplasia**R. SCOTT¹ AND A. PANITCH¹¹Purdue University, West Lafayette, IN**2:30PM****Spatiotemporal Control of Stem Cell Fate via Photoreversible Protein Patterning of Hydrogels**C. DEFOREST^{1,2} AND D. TIRRELL²¹University of Washington, Seattle, WA, ²California Institute of Technology, Pasadena, CA**2:45PM****3D Spatially Organized PEG-based Hydrogels as an Aortic Valve Co-culture Model to Study Valve Disease**D. PUPERI¹, L. BALAOING¹, J. WEST², AND J. GRANDE-ALLEN¹¹Rice University, Houston, TX, ²Duke University, Durham, NC**3:00PM****Spatiotemporal Delivery of Growth Factors to Hepatocytes via Polyelectrolyte Multilayers**C. LIN¹, K. BALLINGER¹, M. KIPPER¹, AND S. KHETANI¹¹Colorado State University, Fort Collins, CO**3:15PM****Modulating Sub-cellular Processing of Single Wall Carbon Nanotubes by Controlling Dispersing Agent**B. HOLT¹, K. DAHL¹, AND M. ISLAM¹¹Carnegie Mellon University, Pittsburgh, PA**Track: Drug Delivery, Tissue Engineering**
OP-Thurs-2-5 - Room 006C**Drug Delivery in Tissue Engineering I****Chairs:** Anjelica Gonzalez, Rhima Coleman**2:00PM****Ultra-Thin Polymer Coatings for Sustained Localized RNA Interference to Improve Diabetic Wound Healing**S. CASTLEBERRY¹, B. ALMQUIST¹, AND P. HAMMOND¹¹Massachusetts Institute of Technology, Cambridge, MA**2:15PM****Controlled Release Through Physical Collagen Modification mediated by Collagen Mimetic Peptides**M. URELLLO¹, M. SULLIVAN¹, AND K. KLIICK¹¹University of Delaware, Newark, DE**2:30PM****Controlled Release of TGF β Receptor II Inhibitor to Control Cardiac Fibrosis**Z. FAN¹, M. FU¹, Z. LI¹, X. LI¹, Y. XU¹, AND J. GUAN¹¹The Ohio State University, Columbus, OH**2:45PM****Growth Factors Engineered for Super-affinity to the Extracellular Matrix Enhance Tissue Healing**M. MARTINO¹, P. BRIQUEZ², E. GUC², F. TORTELLI², W. KILARSKI², S. METZGER², J. RICE³, G. KUHN⁴, R. MULLER⁴, M. SWARTZ², AND J. HUBBELL²¹Osaka University, Osaka, Japan, ²EPFL, Lausanne, Switzerland, ³Tennessee Tech University, Cookeville, TN, ⁴ETHZ, Zurich, Switzerland**3:00PM****Sustained Release and Bioactivity of Antibiotics from Keratin Hydrogels In Vitro and in a Porcine Wound Model**D. ROY^{1,2}, R. HALL³, L. BURNETT², S. TOMBLYN², R. CHRISTY¹, AND J. SAUL³¹U.S. Army Institute for Surgical Research, Fort Sam Houston, TX, ²KeraNetics, LLC, Winston-Salem, NC, ³Miami University, Oxford, OH**3:15PM****Local Delivery of Aspirin-Triggered Resolvin D1 for Inflammation Modulation in Regenerative Medicine**C. POWELL¹ AND E. BOTCHWEY¹¹Georgia Institute of Technology, Atlanta, GA**Track: Biomechanics, Cellular and Molecular Bioengineering****OP-Thurs-2-6 - Room 006D****Cell Biomechanics II****Chairs:** Deborah Leckband, Jiro Nagatomi**2:00PM****Cyclic Stress-Relaxation Paradigm Causes Cell Stiffening**H. BABAHOSSEINI¹, J. STROBL¹, AND M. AGAH¹¹Virginia Tech, Blacksburg, VA**2:15PM****Mechanosensing of Shear Stress Requires VE-cadherin Tyrosine 658**D. CONWAY¹ AND M. SCHWARTZ²¹Virginia Commonwealth University, Richmond, VA, ²Yale University, New Haven, VA**2:30PM****Progesterone Alters the Mechanobiology of Primary Human Cervical Fibroblasts**V. SHUKLA¹, M. SCHICKEL¹, D. KNISS¹, AND S. GHADIALI¹¹The Ohio State University, Columbus, OH

2:45PM**Activation of IGFI-RUNX2 Pathway Reveals Changes in Cellular Phenotype in Non-Syndromic Forms of Craniosynostosis.**Z. AL-REKABI^{1,2}, A. LEONARD¹, S. PARK², J. GUSTAFSON², C. CLARKE², M. CUNNINGHAM^{1,2}, AND N. SNIADOCKI¹¹University of Washington, Seattle, WA, ²Seattle Children's Research Institute, Seattle, WA**3:00PM****Heterogeneity of Infarct Collagen Orientation Emerges In Silico Based on Long-range Cell Interaction**W. RICHARDSON¹, A. ROUILLARD², AND J. HOLMES¹¹University of Virginia, Charlottesville, VA, ²Icahn School of Medicine at Mount Sinai, New York, NY**3:15PM****Mechanical Origins of Axial Rotation in Chick Embryos**Z. CHEN¹, Q. GUO², E. DAI¹, N. FORSCH¹, AND L. TABER¹¹Washington University in St. Louis, St. Louis, MO, ²Fuzhou University, Fuzhou, China, People's Republic of**Track: Cancer Technologies****OP-Thurs-2-7 - Room 007A****Tumor Microenvironment I****Chairs:** Konstantinos Konstantopoulos, Vassilios Sikavitsas**2:00PM** *Invited***The NCI's Provocative Questions Initiative: Program Overview and Evaluation Efforts**M. BERNY-LANG¹, J. LEE¹, AND E. GREENSPAN¹¹National Cancer Institute, NIH, Bethesda, MD**2:15PM****Suicide Gene-Engineered Stromal Cells Reveal a Dynamic Regulation of Cancer Metastasis**K. SHEN¹, S. LUK¹, J. ELMAN¹, R. MURRAY¹, M. YARMUSH^{1,2}, AND B. PAREKKADAN^{1,3}¹Harvard Medical School and Massachusetts General Hospital, Boston, MA, ²Rutgers University, Piscataway, NJ, ³Harvard Stem Cell Institute, Cambridge, MA**2:30PM****Macrophage-released TNF α and TGF β Synergistically Enhance Cancer Cell Migration Directedness via the Induction of MMP-1 in Cancer Cells**R. LI¹ AND R. KAMM¹¹Massachusetts Institute of Technology, Cambridge, MA**2:45PM****A 3D Microphysiological System of Tumor Tissue for Realistic Therapeutic Modeling**A. SOBRINO GREGORIO¹, D. PHAN¹, S. GEORGE², AND C. HUGHES^{1,2}¹University of California, Irvine, Irvine, CA, ²The Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA**3:00PM****Speed Matters: Cadherin-11 Expressing Cancer Cells Hijack Fibroblasts for High-speed Invasion**Z. GU^{1,2}, E. TONKOVA², Y-H. HSU³, S. ALEXANDER³, Z. HAN³, M-C. HUNG³, P. FRIEDL³, K. KONSTANTOPOULOS¹, AND M. BRENNER²¹Johns Hopkins University, Baltimore, MD, ²Harvard Medical School, Boston, MA, ³The University of Texas MD Anderson Cancer Center, Houston, TX**3:15PM****Matrix Stiffening Primes Increased Permeability in Tumor Vasculature in Response to Pro-Tumorigenic Extracellular Cues**D. LAVALLEY¹, B. MASON¹, J. HUYNH¹, AND C. REINHART-KING¹¹Cornell University, Ithaca, NY**Track: Cardiovascular Engineering****OP-Thurs-2-8 - Room 007B****Hemodynamics and Vascular Mechanics II****Chairs:** Shu Liu, B. Rita Alevriadou**2:00PM****Flow Alters Genome-wide DNA Methylation, Regulating Endothelial Ggene Expression and Atherosclerosis**J. DUNN¹, H. QIU¹, S. KIM¹, D. JJINGO², R. HOFFMAN¹, C. KIM¹, I. JANG¹, D. SON¹, D. KIM¹, C. PAN², Y. FAN², K. JORDAN², AND H. JO¹¹Georgia Institute of Technology & Emory University, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA**2:15PM****Atypical Mechanosensitive MicroRNA-712 Derived From Pre-ribosomal RNA Induces Endothelial Inflammation and Atherosclerosis**S. KUMAR¹, D. SON¹, W. TAKABE¹, C-W. NI¹, C. KIM¹, I. JANG¹, N. ALBERTS-GRILL¹, AND H. JO²¹Emory University, Atlanta, GA, ²Georgia Tech and Emory University, Atlanta, GA**2:30PM****Association Between RV-PA Functional Phenotype and NT-proBNP in Pediatric Pulmonary Hypertension**V. KHEYFETS^{1,2}, J. DUNNING^{1,2}, U. TRUONG², D. IVY², K. HUNTER^{1,2}, AND R. SHANDAS^{1,2}¹University of Colorado Denver, Aurora, CO, ²Children's Hospital Colorado, Aurora, CO**2:45PM****Effects of Age on the Mechanical Properties and Structural Characteristics of the Human Femoropopliteal Arteries**A. KAMENSKIY¹, I. PIPINOS¹, N. PHILLIPS¹, Y. DZENIS², AND J. MACTAGGART¹¹University of Nebraska Medical Center, Omaha, NE, ²University of Nebraska-Lincoln, Lincoln, NE**3:00PM****Artery Remodeling under Axial Twist in Three Day Organ Culture**G. WANG^{1,2}, A. VOORHEES¹, Y. XIAO¹, Z-L. JIANG², AND H-C. HAN^{1,2}¹University of Texas at San Antonio, San Antonio, TX, ²Shanghai Jiaotong University, Shanghai, China, People's Republic of**3:15PM****Structural Remodeling of the Bovine Aorta During Pregnancy**S. WELLS¹, A. PROSTERMAN¹, A. MACKENZIE¹, AND C. VAN IDERSTINE¹¹Dalhousie University, Halifax, NS, Canada**Track: Cellular and Molecular Bioengineering -****OP-Thurs-2-9 - Room 007C****Cell Adhesion and the Extracellular Matrix Interactions****Chairs:** Michael Smith, Jennifer Munson**2:00PM****A High-Throughput Array to Assess Dynamic, Intracellular Signaling Responses to Biomaterial-Mediated Adhesive and Mechanical Cues**S. SEIDLITS¹, B. PEÑALVER BERNABÉ², S. SHIN², L. BROADBELT², AND L. SHEA²¹University of California Los Angeles, Los Angeles, CA, ²Northwestern University, Evanston, IL**2:15PM****Altered Biological Properties Result from Bond Breakage within Mechanically Stressed Fibronectin Fibers**B. HUBBARD¹, J. BUCZEK-THOMAS¹, M. NUGENT², AND M. SMITH¹¹Boston University, Boston, MA, ²University of Massachusetts, Lowell, Lowell, MA

2:30PM**Local ECM Alignment Directs Initial Cell Spreading To Promote Cell Migration In 3D**S. CAREY¹, Z. GOLDBLATT¹, AND C. REINHART-KING¹¹Cornell University, Ithaca, NY**2:45PM****Analysis of the Cytoskeleton and Mechanics of Migrating Cells in Engineered 3D Extracellular Matrix**C. CHOI^{1,2}, B. TRAPPMANN^{1,2}, S. ALIMPERTI^{1,2}, D-H. NGUYEN³, S. STAPLETON³, AND C. CHEN^{1,2}¹Boston University, Boston, MA, ²Wyss Institute for Biologically Inspired Engineering at Harvard University, Boston, MA, ³University of Pennsylvania, Philadelphia, PA**3:00PM****Fibronectin Mechanics and Signaling in Epithelial to Mesenchymal Transition**L. GRIGGS¹, M. ZHAO¹, R. MALIK¹, L. ELMORE¹, AND C. LEMMON¹¹Virginia Commonwealth University, Richmond, VA**3:15PM****Focal Adhesion Complex Activity is Important for the Maintenance of Chondrogenic Phenotypes**H. SHIN¹, M. LEE¹, J. CHOUNG¹, AND J. SHIN¹¹KAIST, Daejeon, Korea, Republic of**Track: Cellular and Molecular Bioengineering, Biomechanics****OP-Thurs-2-10 - Room 007D****Mechanotransduction II****Chairs:** Alesha Castillo, Nathan Sniadecki**2:00PM****Primary Cilia Under Ultrasound**G. BUDHIRAJA¹ AND A. SUBRAMANIAN¹¹University of Nebraska, Lincoln, NE**2:15PM****Molecular Targeting and Localized Mechanochemical Stimulation of ErbB Receptors with Fe-Au Nanorods**D. KILINC¹, A. LESNIAK¹, S. RASHDAN², D. GANDHI¹, A. BLASIAK¹, P. FANNIN³, A. VON KRIEGSHEIM¹, W. KOLCH¹, AND G. LEE¹¹University College Dublin, Dublin, Ireland, ²University of Bahrain, Manama, Bahrain, ³Trinity College Dublin, Dublin, Ireland**2:30PM****Sideways Microscopy for Viewing Nuclear Deformation**K. BEICKER¹, M. FALVO¹, E. O'BRIEN III¹, AND R. SUPERFINE¹¹University of North Carolina at Chapel Hill, Chapel Hill, NC**2:45PM****Endothelial Cell Aging Elevates Traction Forces and Permeability**T. CHEUNG¹, J. YAN¹, J. HUANG¹, F. YUAN¹, AND G. TRUSKEY¹¹Duke University, Durham, NC**3:00PM****Investigation of T Cell Mechanosensing Using Microfabricated Elastomer Pillars**W. JIN¹, K. BASHOUR¹, AND L. KAM¹¹Columbia University, New York, NY**3:15PM****The Effects Of Intermittent And Incrementally Increasing Strain Amplitude Cyclic Stretching On Collagen Production In Fibrin-Based Engineered Cardiovascular Tissues**J. SCHMIDT¹ AND R. TRANQUILLO¹¹University of Minnesota, Minneapolis, MN**Track: Nano to Micro Technologies****OP-Thurs-2-11 - Room 008A****BioMEMS II****Chairs:** Rafael Davalos, Erkin Seker**2:00PM****Track Etched Magnetic Micropores to Efficiently Sort Rare Pathogens from Large Volume, Unprocessed Clinical and Environmental Samples**M. MULUNEH¹, W. SHANG¹, AND D. ISSADORE¹¹University of Pennsylvania, Philadelphia, PA**2:15PM****Multiplexed Free-standing Nanowire Transistor Bioprobe for Intracellular Recording: A General Fabrication Strategy**Q. QING¹, L. XU², Z. JIANG², AND L. MAI³¹Arizona State University, Tempe, AZ, ²Harvard University, Cambridge, MA, ³Wuhan University of Technology, Wuhan, China, People's Republic of**2:30PM****A Microdevice For Studying Intercellular Electromechanical Transduction In Adult Cardiac Myocytes**X. ZHANG¹ AND Y. ZHAO¹¹Ohio State University, Columbus, OH**2:45PM****Measuring the Growth Rate of Cancerous Human Breast Cells**E. CORBIN¹ AND R. BASHIR¹¹University of Illinois Urbana-Champaign, Urbana, IL**3:00PM****Microfluidic Blood Sorting For Improved Blood Quality Over Prolonged Storage**S. HUANG¹, H. HOU¹, T. KANIAS², J. SERTORIO², H. CHEN³, M. GLADWIN², AND J. HAN¹¹MIT, Cambridge, MA, ²University of Pittsburgh, Pittsburgh, PA, ³Harvard School of Public Health, Boston, MA**3:15PM****A Cell-based Fluid Shear Sensor**S. VARMA¹ AND J. VOLDMAN¹¹Massachusetts Institute of Technology, Cambridge, MA**Track: Nano to Micro Technologies, Cellular and Molecular Bioengineering****OP-Thurs-2-12 - Room 008B****Microfluidic Platforms II****Chairs:** John Slater, Jungkyu (Jay) Kim**2:00PM****Vortex-assist Electroporation for Combinatorial Drug Screenings**D. VICKERS¹ AND S. HUR¹¹Rowland Institute at Harvard University, Cambridge, MA**2:15PM****Aqueous Two-Phase System-Mediated Antibody Micropatterning for Multiplex Protein Biomarker Detection**J. FRAMPTON^{1,2}, J. WHITE², A. SIMON², M. TSUEI², S. PACZESNY³, AND S. TAKAYAMA²¹Dalhousie University, Halifax, NS, Canada, ²University of Michigan, Ann Arbor, MI, ³Indiana University, Indianapolis, IN**2:30PM****A Microfluidic Virus Capture and Sensing Device for HIV Viral Load Measurements**G. DAMHORST¹, J. KOOIMAN¹, R. CHAVES¹, M. SOBIERAJ¹, T. GHONGE¹, AND R. BASHIR¹¹University of Illinois at Urbana-Champaign, Urbana, IL

2:45PM**KS-Detect: A Solar-Powered Smartphone-Based System for Diagnosing Kaposi's Sarcoma in Resource-Limited Settings**L. JIANG¹, A. GARDNER¹, Z. LU¹, G. AKAR², E. CESARMAN², AND D. ERICKSON¹¹Cornell University, Ithaca, NY, ²Weill Cornell Medical College, New York, NY**3:00PM****Cell Affinity Chromatography And Electrical Measurements To Detect Cancer Cells In Microfluidics**M. ISLAM¹, M. BELLAH¹, Y-T. KIM¹, AND S. IQBAL¹¹University of Texas at Arlington, Arlington, TX**3:15PM****Microfluidic Protein Encapsulation in Monodisperse Drug-based Polymer Microspheres**W. YU¹, M. ZHENG¹, J. ZAHN¹, AND K. UHRICH¹¹Rutgers University, Piscataway, NJ**Track: Device Technologies and Biomedical Robotics, Cardiovascular Engineering****OP-Thurs-2-13 - Room 201****Cardiovascular Devices: Intelligent Design Using Computations and Experiments****Chairs:** Keefe Manning, James Antaki**2:00PM****The Long and Strange Trip from Bench to Bedside: Lessons Learned from the Pediaflow Magnetically Levitated Rotodynamic Blood Pump**J. ANTAKI¹¹Carnegie Mellon University, Pittsburgh, PA**2:30PM****Cardiovascular Devices: From the Bench and Computer to the Bedside/Bassinets**A. YOGANATHAN¹¹Georgia Institute of Technology, Atlanta, GA**2:45PM****Cardiovascular Devices: From the Bench and Computer to the Bedside/Bassinets**A. YOGANATHAN¹¹Georgia Institute of Technology, Atlanta, GA**3:00PM****Design Methodology for Blood Pumps**K. MANNING^{1,2}, C. SIEDLECKI^{1,2}, S. DEUTSCH¹, AND G. ROSENBERG^{1,2}¹The Pennsylvania State University, University Park, PA, ²Penn State Hershey Medical Center, Hershey, PA**3:15PM****CFD-Based Multi-Objective Modeling of Artificial Lung Devices**J. ZHANG¹, Z. CHEN¹, B. GRIFFITH¹, AND Z. WU¹¹University of Maryland School of Medicine, Baltimore, MD**Track: Biomechanics, Orthopaedic and Rehabilitation Engineering****OP-Thurs-2-14 - Room 103B****Spine Biomechanics****Chairs:** John Cotton, Teja Guda**2:00PM****Biomechanical Effects of Age-related Changes in Cartilaginous Endplates Morphology on Lumbar Discs**M. HUSSAIN¹ AND C. DEGEER¹¹Logan University, Chesterfield, MO**2:15PM****Characterization of Cortical Bone Thickness Changes in the Thoracic Skeleton with Age and Gender**S. LYNCH¹, A. WEAVER¹, AND J. STITZEL¹¹Virginia Tech - Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC**2:30PM****Laxity Of The Lumbar Spine**N. BATTAGLIA¹, M. MAHFOUZ^{1,2}, R. KOMISTEK^{1,2}, AND C. CARR¹¹University of Tennessee, Knoxville, TN, ²Institute of Biomedical Engineering, Knoxville, TN**2:45PM****A Finite Element Model of In Vivo Lumbar Facet Capsular Ligament Motion Based on Fluoroscopic Data from Healthy Subjects**A. CLAESON¹ AND V. BAROCAS¹¹University of Minnesota, Minneapolis, MN**3:00PM****Effect Of Implant Design And Material On Subsidence Following Dynamic Loading of Intervertebral Devices**A. VALDEVIT¹, P. ULLRICH², M. GALLAGHER³, AND J. SCHNEIDER³¹Stevens Institute of Technology, Hoboken, NJ, ²NeuroSpine Center of Wisconsin, Appleton, WI, ³Titan Spine, LLC, Mequon, WI**3:15PM****Machine Learning Predicts Degenerative Pathology**N. BATTAGLIA¹, M. MAHFOUZ^{1,2}, R. KOMISTEK^{1,2}, AND C. CARR¹¹University of Tennessee, Knoxville, TN, ²Institute of Biomedical Engineering, Knoxville, TN**Track: Bioinformatics, Computational and Systems Biology****OP-Thurs-2-15 - Room 202A****Multiscale Modeling****Chairs:** Stacey Finley, Heather Hayenga**3:00PM Invited****Agent Based Model for Predicting Angiogenic Sprout Frequency and Location in 3D Culture**J. WALPOLE¹, J. CHAPPELL², J. CLUCERU², F. MAC GABHANN³, V. BAUTCH², AND S. PEIRCE¹¹University of Virginia, Charlottesville, VA, ²University of North Carolina Chapel Hill, Chapel Hill, NC, ³Johns Hopkins University, Baltimore, MD**2:30PM****A Whole-body PKPD Model for Multimodal Reversal of Cardiotoxicity by Intravenous Lipid Dispersions**B. AKPA¹¹University of Illinois at Chicago, Chicago, IL**2:45PM****Multiscale Model of Lung Inflammation**R. PIDAPARTI¹, R. HEISE², R. COOPER², T. ROLLE², AND A. REYNOLDS²¹University of Georgia, Athens, GA, ²Virginia Commonwealth University, Richmond, VAPLATFORM
SESSIONS

Th-2

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

3:00PM**Modeling Blood Flow Control in the Kidney**A. FORD VERSYPT¹, J. ARCIERO², L. ELLWEIN³, E. MAKRIDES⁴, AND A. LAYTON⁵¹Oklahoma State University, Stillwater, OK, ²Indiana University-Purdue University Indianapolis, Indianapolis, IN, ³Virginia Commonwealth University, Richmond, VA, ⁴Brown University, Providence, RI, ⁵Duke University, Durham, NC**3:15PM****Comprehensive Computational Analysis of Tissue Remodeling in the Rat Brain After Traumatic Injury**K. GRAMA¹, M. MEGJHANI¹, Y. LU¹, B. ROYSAM¹, J. REDELL², P. DASH², AND D. MARIC³¹University of Houston, Houston, TX, ²University of Texas Health Science Center at Houston, Houston, TX, ³National Institute of Neurological Disorders and Stroke, Bethesda, MD**Track: Orthopaedic and Rehabilitation Engineering, Biomedical Imaging and Optics**
OP-Thurs-2-16 - Room 202B**Musculoskeletal Imaging****Chairs:** Andrew Anderson, Jeff Weiss**3:00PM** *Invited***3D Dual Echo Steady State (DESS) MRI Accurately Quantifies Acetabular Cartilage Thickness**C. ABRAHAM¹, N. BANGERTER², L. MCGAVIN¹, C. PETERS¹, A. DREW¹, C. HANRAHAN¹, AND A. ANDERSON¹¹University of Utah, Salt Lake City, UT, ²Brigham Young University, Provo, UT**2:15PM****Impaired Muscular Loading During Post-natal Growth Leads to Altered Structure of the Developing Murine Hip**C. FORD¹, S. THOMOPOULOS¹, AND M. KILLIAN¹¹Washington University, St Louis, MO**2:30PM****Near Infrared Optical Imaging of Bone Cell Activity and Skeletal Drug Delivery**K. KOZLOFF¹¹University of Michigan, Ann Arbor, MI**2:45PM****Can Extended Field-of-View Ultrasound Imaging Be Used to Measure Differences in Upper Extremity Fascicle Lengths?**C. NELSON^{1,2}, J. DEWALD¹, AND W. MURRAY^{1,2,3}¹Northwestern University, Chicago, IL, ²Rehabilitation Institute of Chicago, Chicago, IL, ³Edward Hines, Jr. VA Hospital, Hines, IL**3:00PM****Use of Portable Ultrasound to Measure Dynamic Motion of Cervical Spine *Ex-Vivo* and *In-Vivo***M. ZHENG^{1,2}, A. MASOUDI², D. BUCKLAND^{2,3}, T. SZABO¹, AND B. SNYDER^{2,4}¹Boston University, Boston, MA, ²Beth Israel Deaconess Medical Center, Boston, MA, ³Massachusetts Institute of Technology, Cambridge, MA, ⁴Boston Children's Hospital, Boston, MA**3:15PM****Contrast-enhanced Characterization of Intervertebral Disc Degeneration using Equilibrium Partitioning of an Ionic Contrast Agent Micro Computed Tomography (EPIC)- μ CT**T. MAERZ¹, K. KRISTOF¹, M. NEWTON¹, O. MOTOVYLYAK¹, J. FISCHGRUND¹, D. PAKR¹, AND K. BAKER¹¹William Beaumont Hospital, Royal Oak, MI**Track: Biomedical Imaging and Optics**
OP-Thurs-2-17 - Room 203A**Molecular Probes I****Chairs:** Aaron Mohs, Efstathios Karathanasis**2:00PM****Stabilized Paramagnetic Porousliposomes**Z. CHENG¹, C. ASPINWALL², AND A. TSOURKAS¹¹University of Pennsylvania, Philadelphia, PA, ²University of Arizona, Tucson, AZ**2:15PM****Genetically Encoded MRI Sensor of ATP**G. SUN¹, A. MUKHERJEE², X. ZHANG², D. SCHAFFER¹, AND M. SHAPIRO²¹University of California, Berkeley, Berkeley, CA, ²California Institute of Technology, Pasadena, CA**2:30PM****Single-Molecule Tracking Using Different Fluorescent Labels**C. LIU¹, Y-L. LIU¹, E. PERILLO¹, Q. ZHUANG¹, AND H-C. YEH¹¹University of Texas at Austin, Austin, TX**2:45PM****Development of ROS Ratiometric Optical Nanoprobes for *In Vivo* Imaging of Wound Inflammation**J. ZHOU¹, H. WENG¹, A. NAIR¹, W. HU², AND L. TANG¹¹University of Texas at Arlington, Arlington, TX, ²Progenitec, Arlington, TX**3:00PM****An Activatable Nanoparticle Probe for Molecular Imaging of Protease Activity by Dual Energy CT**J. ASHTON¹, C. BADEA², AND J. WEST¹¹Duke University, Durham, NC, ²Duke University Medical Center, Durham, NC**3:15PM****An EDB Fibronectin Specific Peptide Probe for Molecular Imaging of Cancer EMT**Z. HAN¹, M. GUJRATI¹, Z. ZHOU¹, X. SHI¹, AND Z. LU¹¹Case Western Reserve University, Cleveland, OH**Track: Biomedical Engineering Education (BME)**
OP-Thurs-2-18 - Room 203B**Teaching in a Flipped Classroom****Chairs:** Matthew Glucksberg, Donald Gaver**2:00PM****Integration of Video Demonstrations into an Undergraduate Tissue Culture Laboratory Course**A. SATERBAK¹, B. GHOSN¹, AND M. WETTERGREEN¹¹Rice University, Houston, TX**2:15PM****Implementation and Assessment of Flipped Classroom Paradigm in Biomedical Engineering Course**J-M. MAAREK¹, A. AYIOTIS¹, AND G. RAGUSA¹¹University of Southern California, Los Angeles, CA**2:30PM****Expected and Unexpected Barriers to Learning in a Flipped Biotransport Course**S. WILLIAMS-DUNCAN¹ AND B. HELMKE¹¹University of Virginia, Charlottesville, VA**2:45PM****Efficacy of Simple, Flipped Classroom Techniques in Biomedical Engineering Education: Comparative Analysis of Traditional and Flipped Biofluid Mechanics Course**J. LIPPMANN¹¹University at Buffalo, State University of New York, Buffalo, NY

SPECIAL SESSION**2:00 PM – 6:00 PM**

Room 004

BMES-NSF Special Session on Research in Biomedical Engineering and Grant Writing*(Pre-Registration Required)*

BMES and the National Science Foundation (NSF) will convene a special session focusing on innovative research in biomedical engineering and grant writing. The session will bring together NSF Bioengineering and Engineering Healthcare grantees, young investigators, junior and senior faculty, post-doctoral fellows and graduate students for idea exchange and networking related to conducting and funding cutting-edge research in BME. The session will showcase NSF funded research and researchers, foster collaboration and idea exchange, familiarize participants with NSF funding mechanisms, and provide strategies for preparing competitive grant proposals, in particular, NSF CAREER grant applications. The research areas where the NSF Biomedical Engineering Program supports fundamental and transformative research will also be discussed. Participants at all levels will gain an increased awareness of NSF funded research, a better understanding of NSF funding opportunities and how to prepare successful grant applications, and a chance to establish new relationships leading to future collaborations. This material is based upon work supported by the National Science Foundation under Grant No. CBET – 1444074.

**SPECIAL SESSION****2:00 PM – 3:30 PM**

Room 204A

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

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

PANELISTS:

ED DAMIANO (BOSTON UNIVERSITY)

“A Bionic Pancreas for Type I Diabetes Management”

Inspired by his son's diabetes, Dr. Damiano has developed the world's first fully autonomous bi-hormonal bionic pancreas, which is currently in clinical trials. Damiano hopes to complete clinical trials by the end of 2016 and submit the device for FDA approval by 2017.

MAURIS N DE SILVA (NAVAL MEDICAL RESEARCH UNIT SAN ANTONIO)

“Novel Strategies for Prevention of Infections Post Cranioplasty”

Dr. DeSilva's research focuses on novel prophylactic strategies for postoperative infections following cranioplasty to treat traumatic head injuries such as those seen in the recent conflicts in Iraq and Afghanistan.

CATHERINE KLAPPERICH (BOSTON UNIVERSITY)

“Low Cost Diagnostics for Cancer and Infectious Disease”

Dr. Klapperich has developed several technologies for minimally instrumented diagnostics. Her technology is the basis for a new startup company Micro Analysis Integration (Los Angeles, CA).

CHRISTINE SCHMIDT (UNIVERSITY OF FLORIDA)

“Regenerating Nerve Tissue and Managing Scar Tissue in Wound Healing”

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

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THURSDAY, October 23, 2014

4:30 PM - 6:00 PM

PLATFORM SESSIONS - THURS - 3

Track: Tissue Engineering, Biomaterials
OP-Thurs-3-1 - Room 001A**Hepatic, Pancreatic, Digestive and Renal Tissue Engineering****Chairs:** Salman Khetani, Sundararajan Madihally**4:30PM**

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

S. KIZILEL¹, T. BAL¹, AND G. CINAY¹¹KOC University, Istanbul, Turkey**4:45PM**

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

I. KO¹, M. ABOLBASHARI¹, J. HULING¹, J. ZAMBON¹, C. KIM¹, G. ORLANDO¹, M. MORADI¹, T. ABOUSHWAREB¹, J. JACKSON¹, A. ATALA¹, AND J. YOO¹¹Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC**5:00PM**

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

S. BALE¹, I. GOLBERG¹, R. JINDAL¹, W. MCCARTY¹, M. LUITJE¹, M. HEGDE¹, A. BHUSHAN¹, O. USTA¹, AND M. YARMUSH¹¹Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School and Shriners Burns Hospital, Boston, MA**5:15PM**

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

A. BHUSHAN^{1,2}, M. HEGDE^{1,2}, R. JINDAL^{1,2}, S. BALE^{1,2}, W. MCCARTY^{1,2}, I. GOLDBERG¹, B. USTA^{1,2}, AND M. YARMUSH^{1,2}¹Massachusetts General Hospital, Boston, MA, ²Harvard Medical School, Boston, MA**5:30PM**

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

A. BHUSHAN^{1,2}, R. JINDAL^{1,2}, L. PRODANOV^{1,2}, S. BALE^{1,2}, M. HEGDE^{1,2}, W. MCCARTY^{1,2}, I. GOLDBERG¹, B. USTA^{1,2}, AND M. YARMUSH^{1,2}¹Massachusetts General Hospital, Boston, MA, ²Harvard Medical School, Boston, MA**5:45PM**

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

H. BEARAT¹, S. HIGBEE², AND J. WEST¹¹Duke University, Durham, NC, ²Rice University, Houston, TX**Track: Tissue Engineering, Biomaterials**
OP-Thurs-3-2 - Room 001B**Scaffolds and Surfaces for Tissue Engineering II****Chairs:** Joseph Freeman, Edward Botchwey**4:30PM**

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

Q. JALLERAT¹ AND A. FEINBERG¹¹Carnegie Mellon University, Pittsburgh, PA**4:45PM**

Towards Controlling Chondrogenesis using Novel Thermo-Sensitive Hydrogels

O. BARUTI¹, L. BONASSAR², AND J. MENDENHALL¹¹Morehouse College, Atlanta, GA, ²Cornell University, Ithaca, NY**5:00PM**Development of a Hyaluronic Acid-Laminin Hydrogel to Increase Neural Stem Cell Response to SDF-1 α C. ADDINGTON¹, C. MILLAR-HASKELL¹, J. HEFFERNAN¹, R. SIRIANNI², AND S. STABENFELDT¹¹Arizona State University, Tempe, AZ, ²St. Joseph's Hospital and Medical Center, Phoenix, AZ**5:15PM**

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

J. MARTINI¹, M. GUPTA¹, J. PAGE¹, F. YU¹, J. DAVIDSON¹, S. GUELCHER¹, AND C. DUVAL¹¹Vanderbilt University, Nashville, TN**5:30PM**Fabrication Of Poly(ϵ -caprolactone) Scaffolds With Nanofibrous Chitosan NetworksX. JING^{1,2}, T. CORDIE^{1,3}, M. SALICK^{1,4}, AND L-S. TURNG^{1,2}¹Wisconsin Institutes for Discovery, University of Wisconsin, Madison, WI, ²Department of Mechanical Engineering, University of Wisconsin, Madison, WI, ³Department of Biomedical Engineering, University of Wisconsin, Madison, WI, ⁴Department of Engineering Physics, University of Wisconsin, Madison, WI**5:45PM**

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

Y. HIRANO¹, A. HATTORI¹, A. TERADA¹, AND S. FUJII²¹Kansai University, Suita, Japan, ²Osaka Institute of Technology, Osaka, Japan**Track: Biomaterials****OP-Thurs-3-3 - Room 006A****Therapeutic and Theranostic Biomaterials II****Chairs:** Srivatsan Kidambi, Aaron Baker**4:30PM**

Engineering a Multipurpose "Virus Trap and Safety Net" Microbicide

S. ANIAGYEI¹ AND J. STEINBACH¹¹University of Louisville, Louisville, KY**5:00PM**

Syndesomes-Based Therapeutic for Enhanced Wound Healing in Diabetic Mice

S. DAS¹, G. SINGH¹, M. MARTINEZ¹, A. DUNN¹, AND A. BAKER¹¹University of Texas, Austin, Austin, TX**5:15PM**

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

E. MICHAEL¹, N. ABEYRATHNA¹, K. BIRTHARE¹, Y. LIAO¹, AND C. BASHUR¹¹Florida Institute of Technology, Melbourne, FL**5:30PM**

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

H. SHAH¹, J. PARK¹, B. INSKEEP¹, T. NGOBILI¹, K. BURG¹, AND B. BOOTH¹¹Clemson University, Clemson, SC

5:45PM**Multifunctional Unimolecular Micelles Loaded With the Anti-cancer Drug Aminoflavone for Triple Negative Breast Cancer Therapy**G. CHEN¹, A. BRINKMAN^{2,3}, N. SHERER², W. XU^{2,3}, AND S. GONG^{1,4}¹Materials Science Program and Wisconsin Institute for Discovery, University of Wisconsin-Madison, Madison, WI, ²McArdle Laboratory for Cancer Research, University of Wisconsin-Madison, Madison, WI, ³Molecular and Environmental Toxicology Center, University of Wisconsin-Madison, Madison, WI, ⁴Department of Biomedical Engineering, University of Wisconsin-Madison, Madison, WI**Track: Biomaterials, Cellular and Molecular Bioengineering****OP-Thurs-3-4 - Room 006B****Biomaterials for Controlling Cell Environment II****Chairs:** Janet Zoldan, Meng Deng**4:30PM****Interplay of Material Stiffness and Protein Tethering in Mechanically Based Differentiation**A. ENGLER^{1,2}¹UC San Diego, La Jolla, CA, ²Sanford Consortium for Regenerative Medicine, La Jolla, CA**4:45PM****Dynamic Modulation Of Myofibroblast/Osteoblast Differentiation And Biomechanical Remodeling By Valve Interstitial Cells By Initial Tissue Stiffness**B. DUAN¹, Z. YIN², L. HOCKADAY¹, R. MAGIN², AND J. BUTCHER¹¹Cornell University, Ithaca, NY, ²University of Illinois at Chicago, Chicago, IL**5:00PM****Physical Stabilization for the Viable Preservation of Whole Blood**K. WONG¹, R. SANDLIN¹, T. CAREY¹, A. KHANKHEL¹, A. SHANK¹, J. WALSH¹, D. IRIMIA¹, S. MAHESWARAN¹, D. HABER¹, S. STOTT¹, AND M. TONER¹¹Massachusetts General Hospital, Harvard Medical School, Charlestown, MA**5:15PM****Characterization of Mechanical/Chemical Properties of Calcium Responsive Composite Hydrogels and Assessment of Astrocytic Response**C. MCKAY¹, C. JOHNSON¹, R. POMRENKE¹, N. SCHAUB¹, E. DESIMONE¹, J. MCLANE¹, L. LIGON¹, AND R. GILBERT¹¹Rensselaer Polytechnic Institute, Troy, NY**5:30PM****Engineered Fibrillar Microenvironments for the Study of Mesenchymal Stem Cell Mechanosensing**B. BAKER¹, B. TRAPPMANN¹, A. NAIR², I. KIM², J. BURDICK², V. SHENOY², AND C. CHEN¹¹Boston University, Boston, MA, ²University of Pennsylvania, Philadelphia, PA**5:45PM****Dynamic Photo-Tunable Hydrogels for Temporal Control of Stiffness**R. STOWERS¹ AND L. SUGGS¹¹University of Texas at Austin, Austin, TX**Track: Drug Delivery, Tissue Engineering****OP-Thurs-3-5 - Room 006C****Drug Delivery in Tissue Engineering II****Chairs:** Piyush Koria, Joel D Bumgardner**4:30PM****Modeling Local Drug Delivery Near Orthopaedic Implants**M. GIERS¹, R. MCLEMORE², A. MCLAREN², AND M. CAPLAN¹¹Arizona State University, Tempe, AZ, ²Banner Good Samaritan Medical Center, Phoenix, AZ**4:45PM****Ultrasonic and Physical Characterizations of Acoustically Responsive Scaffolds**A. MONCION¹, K. ARLOTTA¹, O. KRIPFGANS¹, P. CARSON¹, J. FOWLKES¹, AND M. FABIILLI¹¹University of Michigan, Ann Arbor, MI**5:00PM****Synthesis of Cell Penetrating Peptides (CPPs) for Drug Delivery Applications**G-W. JIN¹, F. GHASEMI TAHRIR¹, W. MA¹, G. CIDONIO¹, AND W. SUH¹¹Temple University, Philadelphia, PA**5:15PM****Growth Factor Delivery Through Synthetic Fibrin-Mimetic Matrix Promotes Wound Healing**P. BRIQUEZ¹, M. MARTINO², AND J. HUBBELL¹¹Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland, ²Osaka University, Osaka, Japan**5:30PM****Long Term Doxycycline Release to Prevent Infection and MMP Mediated Cellular Invasion in Implantable Biomaterials.**E. RIVERA-DELGADO¹ AND H. VON RECUM¹¹Case Western Reserve University, Cleveland, OH**5:45PM****Delivery of siRNA from Fibrin Hydrogels for mRNA Knockdown of the BMP-2 Antagonist Noggin**C. KOWALCZEWSKI^{1,2} AND J. SAUL¹¹Miami University, Oxford, OH, ²Virginia Tech-Wake Forest University, Winston-Salem, NC**Track: Biomechanics, Cardiovascular Engineering****OP-Thurs-3-6 - Room 006D****Heart Valve Biomechanics****Chairs:** Jiro Nagatomi, Yi Hong**4:30PM****Quantification and Simulation of the Mechanical Roles of Collagen and Elastin in Mitral Valve Leaflets**W. ZHANG¹, C. CARRUTHERS², J. LIAO³, AND M. SACKS¹¹University of Texas at Austin, Austin, TX, ²Medtronic, Pittsburgh, PA, ³Mississippi State University, Starkville, MS**4:45PM****Biomechanical Analysis of Transcatheter Valve Migration in Patient-Specific Models**M. BIANCHI¹, T. CLAIBORNE¹, G. MAROM¹, R. GHOSH¹, D. BLUESTEIN², M. POON³, M. MUSANI⁴, E. FELDMANN⁴, L. GRUBERG⁴, H. FERNANDEZ⁴, AND J. TAYLOR JR.⁴¹Stony Brook University, Stony Brook, NY, ²Stony Brook University, Stony Brook, NY, ³Stony Brook Medicine, Stony Brook, NY, ⁴Stony Brook Medicine, Stony Brook, NY

5:00PM**Bending Properties Of Porcine Mitral, Tricuspid, Aortic, And Pulmonary Valve Leaflets**B. BRAZILE¹, B. WANG¹, G. WANG¹, R. BERTUCCI¹, R. PRABHU¹, S. PATNAIK¹, J. BUTLER¹, A. CLAUDE¹, E. BRINKMAN-FERGUSON¹, L. WILLIAMS¹, AND J. LIAO¹¹Mississippi State University, Mississippi State, MS**5:15PM****An Inverse Modeling-Based Diagnostic Tool for Heart Valves Leaflets Biomechanical Properties**A. AGGARWAL¹ AND M. SACKS¹¹University of Texas at Austin, Austin, TX**5:30PM****Image-based Immersed Boundary/Finite Element Model of the Human Mitral Valve**X. MA¹, H. GAO¹, N. QI², C. BERRY¹, B. GRIFFITH^{3,4}, AND X. LUO¹¹University of Glasgow, Glasgow, United Kingdom, ²University of Glasgow, Glasgow, United Kingdom, ³University of North Carolina at Chapel Hill, Chapel Hill, NC, ⁴University of North Carolina School of Medicine, Chapel Hill, NC**5:45PM****Turbulent Eddy Properties from CFD and Hemolysis Re-examined**M. OZTURK¹, E. O'REAR III¹, AND D. PAPAVALASSIOU¹¹University of Oklahoma, Norman, OK**Track: Cancer Technologies****OP-Thurs-3-7 - Room 007A****Tumor Microenvironment II****Chairs:** Adrian Shieh, Michelle Berny-Lang**4:30PM****Combining Peripheral Vaccination with Microenvironment Immunomodulation: A Two-Pronged Approach for Cancer Immunotherapy**P. PRADHAN¹, J. LELEUX¹, J. LIU¹, H. QIN², L. KWAK², AND K. ROY¹¹Georgia Institute of Technology, Atlanta, GA, ²M. D. Anderson Cancer Center, Houston, TX**4:45PM****Contact Inhibition of Locomotion in a Fibrillar-like Microenvironment**D. MILANO¹ AND A. ASTHAGIRI¹¹Northeastern University, Boston, MA**5:00PM****3D Glioma Platform for Therapy-Resistant Cell Targeting Using High Frequency Electric Fields**J. IVEY¹, M. SANO², I. NAKANO³, R. DAVALOS¹, AND S. VERBRIDGE¹¹Virginia Tech, Blacksburg, VA, ²Stanford University School of Medicine, Stanford, CA, ³Ohio State University, Columbus, OH**5:15PM****Integrin Expression and Phenotype Predict Breast Cancer Metastasis**L. BARNEY¹, E. DANDLEY², L. JANSEN¹, AND S. PEYTON¹¹University of Massachusetts, Amherst, Amherst, MA, ²North Carolina State University, Raleigh, NC**5:30PM****Malignant Melanoma Cells Assemble a Tumor Biofilm That Promotes Survival and Resistance in Response to Drug Treatment**A. AFASIZHEVA¹, Y. KOTOBUKI¹, H. TILLMAN¹, W. VIEIRA¹, K-L. FUNG¹, E. CHEN², AND K. TANNER¹¹National Cancer Institute, Bethesda, MD, ²Columbia University, Stony Brook, NY**5:45PM****Bioreactor-derived Fluid Flow Promotes Epithelial-to-Mesenchymal Transition in Breast Cancer Cells**K. FUH¹, B. KOOISTRA¹, R. SHEPHERD¹, AND K. RINKER¹¹University of Calgary, Calgary, AB, Canada**Track: Cardiovascular Engineering, Biomechanics
OP-Thurs-3-8 - Room 007B****Cardiovascular Flow Modeling in Health and Disease****Chairs:** Robert Peattie, Wei Yin**4:30PM****CFD Analysis of Cerebral Sidewall Aneurysm Hemodynamics**J. LINDSAY¹, P. NAIR¹, H. BABIKER¹, J. RYAN¹, AND D. FRAKES¹¹Arizona State University, Tempe, AZ**4:45PM****Computational Analysis of Low-Porosity Stent Effects on Idealized Sidewall Aneurysms**D. DEJEU¹, P. NAIR¹, H. BABIKER¹, J. RYAN¹, AND D. FRAKES¹¹Arizona State University, Tempe, AZ**5:00PM****High Resolution Immersed Boundary-finite Element Models of the Native and Prosthetic Aortic Root**V. FLAMINI¹, A. DEANDA², AND B. GRIFFITH³¹New York University Polytechnic School of Engineering, Brooklyn, NY, ²New York University School of Medicine, New York, NY, ³University of North Carolina at Chapel Hill, Chapel Hill, NC**5:15PM****Aortic Blood Flow Simulations in Turner Syndrome Patient and Age-matched Control**W. STODDARD¹, G. MYLAVARAPU¹, E. GUTMARK¹, AND I. GUTMARK-LITTLE²¹University of Cincinnati, Cincinnati, OH, ²Cincinnati Children's Hospital Medical Center, Cincinnati, OH**5:30PM****Determining the Influence of Aneurysm Geometry and Location on Flow through a Carotid Bifurcation**E. PALLARES¹, S. KUDERNATSCH¹, S. NIDADAVOLU², AND D. PETERSON¹¹University of Connecticut Health Center, Farmington, CT, ²CD-adapco, Melville, NY**5:45PM****A Unified Computational Tool for Patient-Specific Hemodynamics --- from radiological images to *in vivo* flow structure in human arteries**H. YU¹, Z. WANG², C. ZHANG³, N. CHEN¹, A. SAWCHUK⁴, Y. ZHAO², Y. CHENG³, AND M. DALSSING⁴¹Indiana University-Purdue University Indianapolis, Indianapolis, IN, ²Kent State University, Kent, OH, ³Wuhan University, Wuhan, China, People's Republic of, ⁴School of Medicine, Indiana University, Indianapolis, IN**Track: Cellular and Molecular Bioengineering -
OP-Thurs-3-9 - Room 007C****Cell Interactions with the Extracellular Matrix****Chairs:** Mehdi Nikkhah, Adrian Shieh**4:30PM****Hydrogels with Tunable Stress Relaxation Properties to Regulate Stem Cell Fate**O. CHAUDHURI¹, L. GU², D. KLUMBERS², M. DARNELL², S. BENCHERIF², J. WEAVER², N. HUEBSCH³, AND D. MOONEY²¹Stanford University, Stanford, CA, ²Harvard University, Cambridge, MA, ³UCSF Gladstone Institute, San Francisco, CA**4:45PM****Orthogonal patterning of matrix stiffness and ligand density for high-throughput stem cell mechanobiology**A. RAPE¹, M. ZIBINSKY¹, N. MURTHY¹, AND S. KUMAR¹¹University of California, Berkeley, Berkeley, CA

5:00PM**Relationship Between Basement Membrane Development and Sarcomerogenesis on Single Cardiomyocyte**H. YANG¹, T. BORG², AND B. GAO¹¹Clemson University, Clemson, SC, ²Medical University of South Carolina, Charleston, SC**5:15PM****Platelets Use Glycoprotein Ib-IX-V Complex to Squeeze Tight onto VWF**S. FEGHHI¹, A. MUNDAY², W. TOOLEY¹, S. RAJSEKAR¹, J. LOPEZ^{1,2}, AND N. SNIADOCKI¹¹University of Washington, Seattle, WA, ²Puget Sound Blood Center, Seattle, WA**5:30PM****Mechanical Signaling in Keratinocyte Colony Formation**H. ZARKOUB¹, J. SELBY¹, S. PONNALURI¹, K. MESSINGHAM¹, J. FAIRLEY¹, AND E. SANDER¹¹University of Iowa, Iowa City, IA**5:45PM****Mechanical Analysis of Rat Trabecular Meshwork**J. HUANG¹, L. CAMRAS¹, AND F. YUAN¹¹Duke University, Durham, NC**Track: Cellular and Molecular Bioengineering, Bioinformatics, Computational and Systems Biology****OP-Thurs-3-10 - Room 007D****Engineering Cells and Pathways via Synthetic and Systems Biology****Chairs:** Karmella Haynes, Feilim Mac Gabhann**4:30PM****Epigenetic Engineering of Human Cells with DNA-packing Actuators and Sensors**K. HAYNES¹, C. HOM¹, B. DAMADZADEH¹, AND D. BARCLAY¹¹Arizona State University, Tempe, AZ**4:45PM****Targeting HBV DNA With CRISPR/Cas Leads to cccDNA Destruction in Infected Cells**V. RAMANAN¹, D. COX¹, A. SHLOMAI², R. SCHWARTZ¹, C. RICE², F. ZHANG^{1,3}, AND S. BHATIA^{1,4,5}¹Massachusetts Institute of Technology, Cambridge, MA, ²The Rockefeller University, New York, NY, ³Broad Institute, Cambridge, MA, ⁴Brigham and Women's Hospital, Boston, MA, ⁵Howard Hughes Medical Institute, Cambridge, MA**5:00PM****Synthetic Chromatin-Based Transcriptional Logic, Spatial Genomic Regulation, And Memory**A. KEUNG¹, C. BASHOR¹, S. KIRIAKOV², J. COLLINS^{1,3}, AND A. KHALIL²¹Boston University/HHMI, Boston, MA, ²Boston University, Boston, MA, ³Wyss Institute for Biologically Inspired Design, Boston, MA**5:15PM****Protocells as a Platform for Bottom-up Synthetic Biology**J. SUN¹, J. TOWNSON², Y-S. LIN², B. KAEHR³, C. BRINKER², Y. WANG⁴, AND E. JAKOBSSON¹¹University of Illinois at Urbana Champaign, Urbana, IL, ²University of New Mexico, Albuquerque, NM, ³Sandia National Lab, Albuquerque, NM, ⁴University of California San Diego, La Jolla, CA**5:30PM****Novel Divalent Aptamer Assembly For Controlled VEGF Receptor Activation**V. RAMASWAMY¹, A. MONSALVE¹, B. DOLLINGER¹, J. DOBSON¹, AND J. ALLEN¹¹University of Florida, Gainesville, FL**5:45PM****Quantifying the Dynamics and Spatial Organization of TGF β receptors with Single Particle Tracking Photoactivated Localization Microscopy**C. DUFORT¹, J. RYS², M. BAIRD², M. DAVIDSON³, AND T. ALLISTON¹¹UCSF, San Francisco, CA, ²UC Berkeley - UCSF, San Francisco, CA, ³Florida State University, Tallahassee, FL**Track: Nano to Micro Technologies, Translational Biomedical Engineering**
OP-Thurs-3-11 - Room 008A**Paper Fluidics****Chairs:** Jungkyu (Jay) Kim, Daniel Ratner**4:30PM****Simultaneously Concentrating And Detecting Biomarkers On Paper**R. CHIU¹, E. JUE¹, A. YIP¹, A. BERG¹, S. WANG¹, A. KIVNICK¹, P. NGUYEN¹, AND D. KAMEI¹¹UCLA, Los Angeles, CA**5:00PM****Paper-based Assay for Point-of-care Quantification of HbS Content in Blood of Sickle Cell Disease Patients**N. PIETY¹, X. YANG¹, B. DINU², A. GEORGE², AND S. SHEVKOPLYAS¹¹University of Houston, Houston, TX, ²Baylor College of Medicine, Houston, TX**5:15PM****Paper-Based Diagnostic for Influenza A Detection**C. HOLSTEIN¹, S. BENNETT¹, E-M. STRAUCH¹, A. CHEVALIER¹, E. FU², D. BAKER¹, AND P. YAGER¹¹University of Washington, Seattle, WA, ²Oregon State University, Corvallis, OR**5:30PM****Purification and Concentration of Nucleic Acids in Porous Membranes for Point-of-Care Applications**S. BYRNES¹, J. BISHOP¹, L. LAFLEUR¹, J. BUSER¹, B. LI², C. OLSEN², B. LUTZ¹, AND P. YAGER¹¹University of Washington, Seattle, WA, ²GE Global Research Center, Niskayuna, NY**5:45PM****Bacterial Cell Filtration, Amplification, and Detection in Paper Matrices for Molecular Diagnostics at the Point of Care**J. LINNES¹, C. ELLENSON¹, AND C. KLAPPERICH¹¹Boston University, Boston, MA**Track: Nano to Micro Technologies, Cellular and Molecular Bioengineering**
OP-Thurs-3-12 - Room 008B**Microfluidic Platforms III****Chairs:** Anand Ramasubramanian, Leo Wan**4:30PM****Influence of Microfluidic Geometry on Micro-droplet formation**S. GULATI¹, W. GOOD¹, K. VIJAYAKUMAR², W. TAMAYO¹, X. NIU³, J. EDEL², AND A. DEMELLO⁴¹University of the Pacific, Stockton, CA, ²Imperial College London, London, United Kingdom, ³University of Southampton, Southampton, United Kingdom, ⁴ETH Zürich, Zürich, Switzerland**4:45PM****MECs: Microfluidic "Building Blocks" for Custom Bioinstruments**D. HILL¹, L. ANDERSON¹, C. HILL¹, AND W. GROVER¹¹University of California, Riverside, Riverside, CA

5:00PM**Inertial Focusing in Curved Channels: Towards Precision Biofluid Processing**J. MARTEL¹ AND M. TONER¹¹Massachusetts General Hospital, Charlestown, MA**5:15PM****Using Nanoporous Silicon Nitride Membranes as Electro-osmotic Pumps and Nanofluidic Transistors**K. SMITH¹ AND J. MCGRATH¹¹University of Rochester, Rochester, NY**5:30PM****On-chip Fingerprinting Surface Enhanced Raman Scattering (SERS) Spectra Of Living Cells Via Ag@ZnO Nanocomplex Fabricated By Optothermal Effect**Y. XIE¹ AND T. HUANG¹¹The Pennsylvania State University, University Park, PA**5:45PM****Flexible Microfluidic Device with Microporous Walls for Perfusion Cell Culture**C. CHAN¹, V. GORAL², M. DEROSA², T. HUANG¹, AND P. YUEN²¹Pennsylvania State University, University Park, PA, ²Corning Incorporated, Corning, NY**Track: Device Technologies and Biomedical Robotics****OP-Thurs-3-13 - Room 201****Medical Device Technologies****Chairs:** Kevin Soucy, Chander Sadasivan**4:30PM****Laser Stenting of Injectable Biodegradable Elastomers for Cardiovascular Disease**J. YANG¹, M. ALBAGHDADI², M. KIBBE², AND G. AMEER^{1,2,3}¹Northwestern University, Evanston, IL, ²Northwestern University, Chicago, IL, ³Feinberg School of Medicine, Chicago, IL**4:45PM****Inferior Vena Cava Strut Perforation Leads to Further Strut Perforation**J. DOWELL¹, J. CASTLE¹, M. SCHICKEL², G. GUY¹, X. YANG¹, AND S. GHADIALI^{1,2}¹Wexner Medical Center, The Ohio State University, Columbus, OH, ²The Ohio State University, Columbus, OH**5:00PM****Physiological Assessment and Recharging for a Fetal Pacemaker**A. VEST¹ AND G. E. LOEB¹¹University of Southern California, Los Angeles, CA**5:15PM****Toxin Clearance In A Compact Hemodialysis Device Enabled By Ultrathin Nanomembranes**D. JOHNSON¹ AND J. MCGRATH¹¹University of Rochester, Rochester, NY**5:30PM****Membrane Separation As Novel Solution For CO₂ Removal in Anesthesia Circuits**F. WILFART¹, D. ROACH¹, J. HAELESSIG¹, AND M. SCHMIDT¹¹Dalhousie University, Halifax, NS, Canada**5:45PM****Effects of a Biventricular, Non-Blood Contacting Transmural Cardiac Assist Device on Aortic Pressure and Pulmonary Artery Pressure in an Acute Failure Model**E. HORD¹, C. BOLCH², E. TUZUN³, AND J. CRISCIONE¹¹Texas A&M University, College Station, TX, ²Corlnnova, Inc., College Station, TX, ³Texas A&M Institute for Preclinical Studies, College Station, TX**Track: Biomechanics****OP-Thurs-3-14 - Room 103B****Methods for Assessing Injury and Injury Risk****Chairs:** Joel Stitzel, Andrew Kemper**4:30PM****Head Injury Risk In Oblique Frontal Motor Vehicle Crashes**R. CHEN¹ AND H. GABLER¹¹Virginia Tech, Blacksburg, VA**4:45PM****Assessment of Angular Rate Sensors to Measure Rotational Head Acceleration during Impact Testing**S. ROWSON¹, R. DANIEL¹, B. COBB¹, AND S. DUMA¹¹Virginia Tech, Blacksburg, VA**5:00PM****Methods for Studying Brain Motion During Head Impact in a Gottingen Minipig Model**A. HERMUNDSTAD¹, E. FIEVISOHN¹, P. VANDEVORD¹, C. UNTAROIU¹, AND W. HARDY¹¹Virginia Polytechnic and State University, Blacksburg, VA**5:15PM****Rotational Moment Of Inertia Improves Predictions Of Axonal Injury**L. ATLAN¹, S. SULLIVAN¹, AND S. MARGULIES¹¹University of Pennsylvania, Philadelphia, PA**5:30PM****Injury Risk Curves for Specific Injuries and Body Regions in Frontal Motor Vehicle Crashes**A. WEAVER¹, K. SWETT², J. TALTON², R. BARNARD², S. SCHOELL¹, AND J. STITZEL¹¹Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC, ²Wake Forest University School of Medicine, Winston-Salem, NC**5:45PM****Simulation of Pressure Wave Transmission in Human Ear with Viscoelastic Tympanic Membrane Model**T. HAWA¹ AND R. GAN¹¹The University of Oklahoma, Norman, OK**Track: Bioinformatics, Computational and Systems Biology****OP-Thurs-3-15 - Room 202A****Cell Regulatory Circuits****Chairs:** Amy Brock, Princess Imoukhuede**4:30PM Invited****A Spatiotemporal microRNA Circuit Controlling Cancer Stem Cell Division**X. SHEN¹ AND P. BU¹¹Cornell University, Ithaca, NY**5:00PM****Gene Regulatory Networks in Mesendoderm Differentiation of Human Embryonic Stem Cells**R. CARPENEDO^{1,2} AND W. STANFORD^{2,3}¹Ottawa Hospital Research Institute, Ottawa, ON, Canada, ²University of Ottawa, Ottawa, ON, Canada, ³Ottawa Hospital Research Institute, Ottawa, Canada**5:15PM****A Dynamic Regulatory Circuit in Single Breast Epithelial Cells and Basal-like Premalignancies**C-C. WANG¹, S. BAJIKAR¹, L. JAMAL^{1,2}, K. ATKINS¹, AND K. JANES¹¹University of Virginia, Charlottesville, VA, ²UC San Diego, La Jolla, CA

5:30PM**A Logic-Based Model of Cardiac Fibroblast Signaling Predicts Switch-Like Behavior**A. ZEIGLER¹, W. RICHARDSON¹, J. HOLMES¹, AND J. SAUCERMAN¹¹University of Virginia, Charlottesville, VA**5:45PM****Mechanistic Insights into Early Endoderm Differentiation of Human Embryonic Stem Cells using Systems Level Analysis of Signaling Interactions**S. MATHEW¹, S. SUNDARARAJ¹, H. MAMIYA¹, AND I. BANERJEE^{1,2}¹University of Pittsburgh, Pittsburgh, PA, ²McGowan Institute for Regenerative Medicine, Pittsburgh, PA**Track: Orthopaedic and Rehabilitation Engineering, Tissue Engineering
OP-Thurs-3-16 - Room 202B****Structure-Function Relationships in Musculoskeletal Tissues****Chairs:** Dawn Elliott, Virginia Ferguson**4:30PM Invited****Multiscale Mechanical Testing of Intact and Notched Tendon to Quantify Shear Load Transfer Between Collagen Fibrils**S. SZCZESNY¹ AND D. ELLIOTT²¹University of Pennsylvania, Philadelphia, PA, ²University of Delaware, Newark, DE**4:45PM****Relating Tribological Function of Cartilage to Properties and Structure**D. BURRIS¹ AND A. MOORE¹¹University of Delaware, Newark, DE**5:00PM****Elastin Dominates Extracellular Matrix Mechanics in Ligament**H. HENNINGER¹, W. VALDEZ¹, S. SCOTT¹, AND J. WEISS¹¹University of Utah, Salt Lake City, UT**5:15PM****Reverse Engineering of the Osteochondral Interface**V. FERGUSON¹, B. HARLEY², AND S. BRYANT¹¹University of Colorado at Boulder, Boulder, CO, ²University of Illinois at Urbana-Champaign, Urbana Champaign, IL**5:30PM****Elastin Deficiency Corresponds to Dose-Dependent Reduction in Tendon Mechanics**M. ESPINOSA¹, Q. WU¹, I. STOILOV¹, R. MECHAM¹, AND S. LAKE¹¹Washington University in St. Louis, St. Louis, MO**5:45PM****Strain Transfer from Tissue to Cells in Meniscus is Dependent on Maturity and Microstructure**W. HAN¹, S.-J. HEO¹, T. DRISCOLL¹, L. SMITH¹, R. DUNCAN², R. MAUCK¹, AND D. ELLIOTT²¹University of Pennsylvania, Philadelphia, PA, ²University of Delaware, Newark, DE**Track: Biomedical Imaging and Optics****OP-Thurs-3-17 - Room 203A****Molecular Probes II****Chairs:** Zhiliang Cheng, Amber Doiron**4:30PM****Hyaluronic Acid Derived Nanoparticles with Activatable Fluorescence for Image-Guided Tumor Surgery**A. MOHS^{1,2,3}, T. HILL¹, S. KELKAR¹, F. MARINI^{2,3}, AND E. LEVINE³¹Wake Forest - Virginia Tech School of Biomedical Engineering and Sciences, Winston-Salem, NC, ²Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC,³Comprehensive Cancer Center of Wake Forest University, Winston-Salem, NC**4:45PM****Magneto-Acoustic Micro-platform for Gene Delivery and Image-Based Prediction of Therapeutic Response**B. CHERTOK¹¹University of Michigan, Ann Arbor, MI**5:00PM****Sortase-Tag Expressed Protein Ligation (STEPL): Combining Protein Purification and Site-Specific Bioconjugation Into a Single Step**R. WARDEN-ROTHMAN¹ AND A. TSOURKAS¹¹University of Pennsylvania, Philadelphia, PA**5:15PM****Synthesis of Various MnF₂ Nanostructures with Single-Band Red Emission**Z. BAI¹ AND N. HASHEMI¹¹Iowa State University, Ames, IA**5:30PM****Treatment of Cancer Micrometastasis Using a Chain-like Nanoparticle**P. PEIRIS¹, A. ABRAMOWSKI¹, R. TOY¹, L. BAUER¹, E. DOOLITTLE¹, W. SCHIEMANN¹, K. GHAGHADA², M. GRISWOLD¹, AND E. KARATHANASIS¹¹Case Western Reserve University, Cleveland, OH, ²Texas Children's Hospital, Houston, TX**5:45PM****Gold Core Polyphosphazene Nanospheres as Biodegradable Contrast Agents for Computed Tomography**R. CHEHELTANI¹, P. CHHOUR¹, M. AKHTER¹, R. EZZIBDEH¹, C. BLUNDELL¹, P. NAHA¹, V. FERRARI¹, H. ALLCOCK², AND D. CORMODE¹¹University of Pennsylvania, Philadelphia, PA, ²Pennsylvania State University, University Park, PA**Track: Biomechanics, Orthopaedic and Rehabilitation Engineering****OP-Thurs-3-18 - Room 204A****Orthopaedic Biomechanics****Chairs:** Sriram Balasubramanian, Spencer Lake**4:30 PM - 4:45 PM****Statistical Shape Modeling of Cortical Bone Thickness in Patients with Femoroacetabular Impingement**P. ATKINS¹, P. MUKHERJEE¹, S. SINGLA¹, S. ELHABIAN¹, M. HARRIS¹, J. WEISS¹, R. WHITAKER¹, AND A. ANDERSON¹¹University of Utah, Salt Lake City, UT**4:45PM****Nano-mechanical Variation of Orthogonal Directions in Normal and Osteoporotic Cortical Bone**K. GROVER¹, M. HU¹, L. LIN¹, AND Y. QIN¹¹Stony Brook University, Stony Brook, NY

5:00PM**Determine Proteoglycan Content of Articular Cartilage Using Indentation Test and a Nonlinear Inhomogeneous Triphasic Model**X. CHEN¹, B. ZIMMERMAN¹, L. RUGGIERO¹, AND X. LU¹¹University of Delaware, Newark, DE**5:15PM****Point-of-Failure Prediction in a High-Energy Femoral Neck Fracture Model**G. FEUER¹, R. PIVEC¹, S. HOSSAIN¹, S. SAHA¹, AND C. PAULINO¹¹SUNY Downstate, Brooklyn, NY**5:30PM****Bone Fragment Motion with Lag and Locking Volar Plate Fixation of Distal Radius Fractures**A. EBERHARDT¹, C. WISE¹, T. MARSHALL¹, J. SCHWERTZ¹, AND N. CHAUDHARI¹¹University of Alabama at Birmingham, Birmingham, AL**5:45PM****Biomechanical Comparison of Two Schatzker Type II Tibial Split Depression Repairs**P. BROWN¹, M. DAVIS¹, J. YANIK², M. LANGFITT³, S. SAUNDERS³, E. CARROLL³, AND J. STITZEL¹¹WFU-VT School of Biomedical Engineering and Sciences, Winston Salem, NC, ²Wake Forest University School of Medicine, Winston Salem, NC, ³Wake Forest Baptist Medical Center, Winston Salem, NC**Track: Biomedical Engineering Education (BME)****OP-Thurs-3-19 - Room 203B****Effective Use of Technology in the BME Classroom****Chairs:** Ann Saterbak, Damir Khismatullin

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

SPEAKERS:

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

CATHY WICKS, Texas Instrument

NAOMI CHESLER, PhD, University of Wisconsin-Madison

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

4:00 PM – 7:30 PM

Convention Center, Ballroom A

Korea-US Joint Workshop in Biomedical Engineering

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

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

HANJOONG JO, Georgia Tech and Emory University, Atlanta, GA, USA

4:05PM**Dynamic Nanocarriers for Biologic Drug Delivery**

PATRICK S. STAYTON, University of Washington, Seattle, WA, USA

4:20PM**Tissue Regeneration and Drug Delivery using in situ forming Hydrogels**

KI DONG PARK, Ajou University, Suwon, Gyeonggi-do, Korea

4:35PM**Big Image Data Analytics to Predict Stem Cell Fate**

MICHAEL CHO, University of Illinois in Chicago, Chicago, IL, USA

4:50PM**Prohealing Multifunctional Endothelium Mimicking Nanomatrix**

HO-WOOK JUN, University of Alabama, Birmingham, AL, USA

5:00PM**Nano-Engineering of 3D Complex Tissues with Controllable Architecture and Function**

DEOK-HO KIM, University of Washington, Seattle, WA, USA

5:10-6:00PM POSTER SESSION**6:00-7:10 INVITED ORAL SESSION 2****Chairs:** Luke Lee (UC Berkeley, Berkeley, CA, USA)

Minho Kim (Kent State Univ. Kent, OH)

6:00PM**Microfluidic Assays for Cells, Tissues, and Artificial Organs**

JE-KYUN PARK KAIST, Daejeon, Chungcheongnam-do, Korea

6:15PM**Microsystems for Shaping and Sensing Cell**

ALEXANDER REVZIN, UC Davis, Davis, CA, USA

6:30PM**Activatable Nanoprobes For Molecular Imaging**

ICK CHAN KWON KIST, Seoul, Korea

6:45PM**Synthetic Virology: Reprogramming Viruses Into Controllable Nanodevices**

JUNGHAE SUH, Rice University, Houston, TX, USA

7:00PM**Shape Memory External Supports For Vascular Grafting**

HAK-JOON SUNG, Vanderbilt University, Nashville, TN, USA

7:10-7:30PM**Closing Remarks & Announcements**

KWIWON CHOI, KIST, Seoul, Korea

THURSDAY

REFRESHMENT BREAKS

REFRESHMENT BREAKS

REFRESHMENT BREAKS

BIOINFORMATICS

MULTI SCALE MODELS

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BIO MECHANICS

MUSCULOSKELETAL INJURY

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MECHANICS

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TISSUE ENGINEERING

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REGENERATION AND REHAB

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DELIVERY

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BME

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EDUCATION

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IMAGING

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EMERGING TECHNOLOGIES, APPROACHES

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AND MATERIALS

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THURSDAY, October 23, 2014

9:30 AM - 5:00 PM

POSTER SESSIONS – THURS

Device and Sensors:
P-Th-1 to P-Th-124

Tissue Engineering: Regeneration and Rehabilitation:
P-Th-125 to P-Th-167

Musculoskeletal Injury and Mechanics:
P-Th-168 to P-Th-231

Multiscale Models and Biomechanics:
P-Th-232 to P-Th-269

Bioinformatics:
P-Th-270 to P-Th-296 and P-Th-476 to P-Th-480

Cancer:
P-Th-301 to P-Th-334

Drug Delivery:
P-Th-335 to P-Th-388

Tissue Engineering:
P-Th-391 to P-Th-407

Cellular and Molecular Function:
P-Th-409 to P-Th-470

Emerging Technologies, Approaches and Materials:
P-Th-501 to P-Th-620

Imaging:
P-Th-621 to P-Th-662

BME Education:
P-Th-663 to P-Th-692

Track: Bioinformatics, Computational and Systems Biology

Algorithms for Computational and Systems Biology

Chairs: Michael Fenn, Kristen Naegle

P-Th-281

RVD2: A Variant Detection Model For Heterogeneous Next-generation Sequencing Data

Y. HE¹ AND P. FLAHERTY¹

¹Worcester Polytechnic Institute, Worcester, MA

P-Th-282

The Use of Kernel PCA For The Channelization Of The Hotelling Model Observer

G. WEN^{1,2} AND M. MARKEY^{1,2}

¹The University of Texas at Austin, Austin, TX, ²The University of Texas MD Anderson Cancer Center, Houston, TX

P-Th-283

Nonlinear Model Development and Optimization of Glucose Affinity Sensors

L. REIS¹ AND E. GUILBEAU¹

¹Louisiana Tech University, Ruston, LA

P-Th-284

Computational Saliency Maps of Medical Images to Predict Radiologists' Gaze Fixations

F. PECEN¹, G. WEN^{1,2}, T. GANAPATHI¹, D. VINING², T. HAYGOOD², AND M. MARKEY^{1,2}

¹University of Texas at Austin, Austin, TX, ²University of Texas MD Anderson Cancer Center, Houston, TX

P-Th-285

A Neural Network based Human Platelet Calcium Calculator trained by Pairwise Agonist Scanning

M. LEE¹ AND S. DIAMOND¹

¹University of Pennsylvania, Philadelphia, PA

P-Th-286

Identifying MRI Markers On Newly Diagnosed Glioblastoma Multiforme To Distinguish Patients With Long And Short Term Survival

J. PATEL¹, P. PRASANNA¹, P. TIWARI¹, AND A. MADABHUSHI¹

¹Case Western Reserve University, Cleveland, OH

Track: Bioinformatics, Computational and Systems Biology

Dynamics of Biological Systems

Chairs: Chun-Chao Wang, Janet Barzilla

P-Th-287

Belief Propagation in Genotype-Phenotype Networks

J. MOHARIL¹, P. MAY¹, D. GAILE¹, AND R. HAGEMAN BLAIR¹

¹State University of New York-University at Buffalo, Buffalo, NY

P-Th-288

Characterizing Collagen Network Mechanics And Cell-Mediated Remodeling Using An Agent-Based Model

J. REINHARDT¹ AND K. GOOCH¹

¹The Ohio State University, Columbus, OH

P-Th-289

Spatial Organization in Molecularly-Tethered Lipid Bilayers

S. ABEL¹

¹University of Tennessee, Knoxville, TN

P-Th-290

Key Features of the Gut Microbiome Revealed by Topological and Dynamic Network Analysis

M. BIGGS¹, S. STEINWAY², J. PAPIN¹, AND R. ALBERT³

¹University of Virginia, Charlottesville, VA, ²Pennsylvania State College of Medicine, Hershey, PA, ³Pennsylvania State University, University Park, PA

P-Th-291

A Model for Metabolism in Ischemic Cardiomyocytes

A. MCDUGAL¹, D. SOSNOVIK², AND C. DEWEY¹

¹Massachusetts Institute of Technology, Cambridge, MA, ²Massachusetts General Hospital, Boston, MA

P-Th-292**Mechanistic Characterization of the Thioredoxin System in the Removal of Hydrogen Peroxide**V. PANNALA¹ AND R. DASH¹¹Medical College of Wisconsin, Milwaukee, WI**P-Th-293****Cathepsin Cannibalism Reduces Collagen And Elastin Degradation In Matrix Remodeling**M. FERRALL¹ AND M. PLATT¹¹Georgia Institute of Technology and Emory University, Atlanta, GA**P-Th-294****Nucleotide and Phosphate Regulation of Mitochondrial Oxidative Phosphorylation**J. BAZIL¹, F. VAN DEN BERGH¹, D. BEARD¹, R. WISEMAN², AND K. VINNAKOTA¹¹University of Michigan, Ann Arbor, MI, ²Michigan State University, East Lansing, MI**P-Th-295****Strategic Priming with Several Antigens Yields Multiple Memory Paradigms**C. ZIRALDO¹, C. GONG¹, D. KIRSCHNER¹, AND J. LINDERMAN¹¹University of Michigan, Ann Arbor, MI**P-Th-296****Comparison of New Agent-Based Model to a Classical Discrete Model of Angiogenesis**M. KELLY-GOSS¹, B. CORLISS¹, C. PELLAND¹, AND S. PEIRCE-COTTLER¹¹University of Virginia, Charlottesville, VA**Track: Bioinformatics, Computational and Systems Biology****Multiscale Modeling****Chairs:** Shayn Peirce, Ashlee Ford Versypt**P-Th-270****Mathematical Model of Protein Delivery Within the Urinary Bladder**S. SMITH¹, S. RAVINDRANATHAN¹, K. NGUYEN¹, AND D. ZAHAROFF¹¹University of Arkansas, Fayetteville, AR**P-Th-271****The Influence of Glycosaminoglycan Distribution in Collagen on Its Mechanical Property**Y. BI¹, P. PATRA¹, AND X. XIONG¹¹University of Bridgeport, Bridgeport, CT**P-Th-272****Mathematical Modeling and Experimental Validation of Cancer Cell Migration in a Three-Dimensional Tumor Matrix**S. BOUKHRIS¹ AND Y. FENG¹¹The University of Texas at San Antonio, San Antonio, TX**P-Th-273****Mixture Theory Data Reduction for Cerebral Blood Flow Predictions**I. GOULD¹ AND A. LINNINGER¹¹University of Illinois at Chicago, Chicago, IL**P-Th-274****A Multiscale Adhesive Dynamics Model to Study the Interaction of Neutrophils with the Endothelium**A. ROCHELEAU¹, R. SUMAGIN², AND M. KING¹¹Cornell University, Ithaca, NY, ²Emory University, Atlanta, GA**P-Th-275****Development of a Simplified and Computationally Efficient Human Body Finite Element Model**D. SCHWARTZ^{1,2}, D. MORENO^{1,2}, J. STITZEL^{1,2}, AND S. GAYZIK^{1,2}¹Wake Forest School of Medicine, Winston Salem, NC, ²Virginia Tech – Wake Forest University Center for Injury Biomechanics, Winston Salem, NC**P-Th-276****An *In Silico* Multi-Compartment Model of VEGF165 and VEGFR1/2 in Peripheral Arterial Disease**G. CHEN¹, L-H. CHU¹, B. ANNEX², AND A. POPEL¹¹Johns Hopkins University, Baltimore, MD, ²University of Virginia, Charlottesville, VA**P-Th-277****Characterization and Comparative Analysis of the Kinetics of Cardiac Cytosolic and Mitochondrial Malate Dehydrogenase Isoforms**S. DASIKA¹, K. VINNAKOTA¹, AND D. BEARD¹¹University of Michigan, Ann Arbor, MI**P-Th-278****Simulation of Dependence of Radiative Energy Transport on Tissue Optical Properties**S. MILLER¹ AND K. MITRA¹¹Florida Institute of Technology, Melbourne, FL**P-Th-279****Influence of Transport in the Glomerular Mesangium**S. HUNT¹, Y. SEGAL¹, K. DORFMAN¹, AND V. BAROCAS¹¹University of Minnesota, Minneapolis, MN**P-Th-280****Evaluating the Consistency of Cardiomyocyte Self-assembly**N. DREW¹, D. BALDO¹, AND A. GROSBERG¹¹University of California, Irvine, Irvine, CA**Track: Bioinformatics, Computational and Systems Biology****Signaling Systems Analysis****Chairs:** Kathryn Miller-Jensen, Jeff Saucerman**P-Th-476****Regulation of Store-Operated Calcium Entry in Endothelial Flow-Induced Nitric Oxide Production**T. MUZOREWA¹, D. JARON¹, D. BUERK¹, AND K. BARBEE¹¹Drexel University, Philadelphia, PA**P-Th-477****Feedback From IGF2BP2 to HIF1 α Determines Glioblastoma Progression**K. LIN¹, A. LIAO¹, AND A. QUTUB¹¹Rice University, Houston, TX**P-Th-478****Intracellular T Cell Signaling: Experimental And Computational Tools For A Frequency Response Analysis Approach**A. KNISS¹, L. CHINGOZHA², H. LU^{1,2}, AND M. KEMP¹¹Georgia Institute of Technology and Emory University, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA**P-Th-479****Spatial Differentiation Patterns Evaluated Via Rules Governing Intercellular Communication**C. GLEN^{1,2}, T. C. MCDEVITT^{1,2}, AND M. L. KEMP^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA

P-Th-480**Quantitative Modeling of the Alternative Pathway of the Complement System Activation**D. MORIKIS¹, R. GORHAM¹, AND N. ZEWDE¹¹University of California, Riverside, Riverside, CA**Track: Bioinformatics, Computational and Systems Biology, New Frontiers and Special Topics****Systems Approaches to Therapy and Therapeutics****Chairs:** Cheemeng Tan, Mohammad Fallahi-Sichani**P-Th-569****In silico Development of Complement System Biomarkers**R. GORHAM JR.¹ AND D. MORIKIS¹¹University of California, Riverside, Riverside, CA**P-Th-570****High Bacterial Burden And Sub-optimal Antibiotic Concentrations Result In Failed TB Treatment**E. PIENAAR¹, N. CILFONE¹, P. LIN², V. DARTOIS³, J. MATTILA⁴, R. BUTLER⁵, J. FLYNN⁴, D. KIRSCHNER¹, AND J. LINDERMAN¹¹University of Michigan, Ann Arbor, MI, ²University of Pittsburgh Medical Center, Pittsburgh, PA, ³The State University of New Jersey, Newark, NJ, ⁴University of Pittsburgh, Pittsburgh, PA, ⁵Adventist University of Health Sciences, Orlando, FL**P-Th-571****PADPIN: Protein-Protein Interaction Networks of Angiogenesis, Arteriogenesis, and Inflammation in Peripheral Arterial Disease**L-H. CHU¹, B. ANNEX², J. BADER¹, AND A. POPEL¹¹Johns Hopkins University, Baltimore, MD, ²University of Virginia, Charlottesville, VA**P-Th-572****Psychometric Analysis of Alzheimer's Disease Assessment Scale N.Verma^{1,2} and M. Markey^{1,3}**¹The University of Texas at Austin, Austin, TX, ²NeuroTexas Institute, St. David's HealthCare, Austin, TX, ³The University of Texas MD Anderson Cancer Center, Houston, TX**P-Th-573****A Mechanistic Model of Chimeric Antigen Receptor (CAR) T Cell Activation**J. ROHRS¹, P. WANG¹, AND S. FINLEY¹¹University of Southern California, Los Angeles, CA**P-Th-574****Quantitative Analysis of Hemodynamics in a Novel Standardized Geometry Reveals Inconsistencies between Newtonian and Non-Newtonian Constitutive Models**J. WEDDELL¹, J. KWACK¹, A. MASUD¹, AND P. IMOUKHUEDE¹¹University of Illinois at Urbana-Champaign, Urbana, IL**P-Th-575****Cytoskeletal Fingerprinting of Human Stem Cell Populations to Reduce Heterogeneity**A. PAUL¹, K. DANIELSON¹, AND M. CHO¹¹University of Illinois at Chicago, Chicago, IL**Track: Bioinformatics, Computational and Systems Biology, Cellular and Molecular Bioengineering****Understanding Molecular Functions from Systems and Computational Approaches****Chairs:** Kevin Janes, Jason Papin**P-Th-409****Integrated Network Analysis of CD133+ Colon Cancer Stem Cell**K-Y. CHEN¹, X. LIU¹, P. BU¹, C-S. LIN¹, N. RAKHILIN¹, J. LOCASALE¹, AND X. SHEN¹¹Cornell University, Ithaca, NY**P-Th-410****Principal Component Analysis of the Regulation of Osteoclastogenesis by Salubrinal and Guanabenz**A. CHEN¹, K. HAMAMURA², N. TANJUNG², AND H. YOKOTA²¹Purdue University, West Lafayette, IN, ²Indiana University Purdue University Indianapolis, Indianapolis, IN**P-Th-411****Mechanistic Insights into Major Human Muscular Diseases**S. GUPTA¹, S-M. KIM¹, Y. WANG¹, A. DINASARAPU², AND S. SUBRAMANIAM¹¹University of California, San Diego, La Jolla, CA, ²University of Florida, Gainesville, FL**P-Th-412****Meta-analysis for Identifying Gene Expression Patterns in Head and Neck Cancer**C. KADDI¹, S. MISHRA¹, AND M. WANG¹¹Georgia Institute of Technology, Atlanta, GA**P-Th-413****System Characterization of microRNAs in the Mouse Model of Peripheral Arterial Disease**C. CHEN¹, L-H. CHU¹, B. ANNEX², AND A. POPEL¹¹Johns Hopkins University, Baltimore, MD, ²University of Virginia, Charlottesville, VA**P-Th-414****Reverse Engineering of Genome-Scale Biological Networks in MCF-7 Breast Cancer Cell Line**R. THIAGARAJAN¹, D. WU², J. BAZIL¹, S. KRON², AND D. BEARD¹¹University of Michigan Medical School, Ann Arbor, MI, ²The University of Chicago, Chicago, Illinois, Chicago, IL**P-Th-415****Identification and Characterization of the Monoclonal Antibodies Comprising the Serological Response to Seasonal Influenza Vaccines**J. LEE¹, D. BOUTZ¹, C. VOLLMERS², B. DEKOSKY¹, A. HORTON¹, G. IPPOLITO¹, E. MARCOTTE¹, S. QUAKE², AND G. GEORGIU¹¹University of Texas at Austin, Austin, TX, ²Stanford University, Stanford, CA**P-Th-416****Genital Tract Inflammation Perturbs Mucosal Integrity Proteins: Implications for HIV Susceptibility**K. ARNOLD¹, A. BURGNER^{2,3}, K. BERSIE², L. DUNPHY¹, K. SHAHABI⁴, J. KWATAMPORA⁵, J. KIMANI^{2,5}, R. KAUL⁴, D. LAUFFENBURGER¹, AND L. MCKINNON⁶¹Massachusetts Institute of Technology, Cambridge, MA, ²University of Manitoba, Winnipeg, MB, Canada, ³National Microbiology Lab, Winnipeg, MB, Canada, ⁴University of Toronto, Toronto, ON, Canada, ⁵University of Nairobi, Nairobi, Kenya, ⁶Centre for the AIDS Programme of Research in South Africa, Durban, South Africa**P-Th-417****Linking Magnetic Relaxation to Protein Folding**P. LIU¹, R. KULWINI¹, AND R. LEE¹¹University of Chicago, Chicago, IL

Track: Biomaterials**Intelligent/Multifunctional Biomaterials****Chairs:** Meng Deng, Wei Li**P-Th-585** 

Characterization of a Multi-functional Hydrogel Tissue Adhesive Containing Chitosan

L. SANDERS¹, K. WEBB¹, T. MEFFORD¹, AND J. NAGATOMI¹¹Clemson University, Clemson, SC**P-Th-586**

Collecting of Circulating Tumor Cells with Biocompatible/thermo-responsive PMEA analogous surfaces

T. ORUI¹, K. SATO¹, T. HOSHIBA¹, AND M. TANAKA¹¹Yamagata University, Yonezawa, Japan**P-Th-587**

Recombinant Spider Silks for Delivery of Therapeutic Nucleic Acids

O. TOKAREVA^{1,2}, D. GLETTIG¹, R. ABBOTT¹, AND D. KAPLAN¹¹Tufts University, Medford, MA, ²Massachusetts Institute of Technology, Cambridge, MA**P-Th-588**

Shape-Controlled Synthesis of Degradable Polymeric Microfibers

Z. BAI¹, F. SHARIFI¹, AND N. HASHEMI¹¹Iowa State University, Ames, IA**P-Th-589**

Characterization Of Poly-Dimethylsiloxane As a Non-hermetic Micropackaging Material For Chronic Implantable Microsystems

D. SUN¹, L. SHEM¹, P. WANG¹, C. ZORMAN¹, P. FENG¹, AND W. KO¹¹Case Western Reserve University, Cleveland, OH**P-Th-590**

Self-Cleaning, Mechanically Robust Membranes for Implanted Glucose Biosensors

A. MEANS¹, R. FEI¹, J. GEORGE¹, J. PARK¹, A. ABRAHAM¹, G. COTE¹, AND M. GRUNLAN¹¹Texas A&M University, College Station, TX**P-Th-591**

Click-Chemistry Based Molecularly Responsive Hydrogel as Biodegradable Scaffolds for 3D Cell Culture

R. NAVARRO¹, K. BEAVEN¹, J. MCKENZIE¹, R. HALL¹, K. KNUTSON¹, AND T. BETANCOURT¹¹Texas State University, San Marcos, TX**Track: Biomaterials, Nano to Micro Technologies****Micro and Nanostructured Materials****Chairs:** Meng Deng, Wei Li**P-Th-592**

Dependence of Nanostructures on Surface Energy for the Enhanced Differentiation and Maturation of Osteoblastic Lineage Cells on Micro-rough Titanium Surfaces

E. LOTZ¹, R. OLIVARES-NAVARRETE¹, S. HYZY¹, S. BERNER², Z. SCHWARTZ^{1,3}, AND B. BOYAN^{1,4}¹Virginia Commonwealth University, Richmond, VA, ²Institut Straumann AG, Basel, Switzerland, ³University of Texas Health Science Center at San Antonio, San Antonio, TX, ⁴Georgia Institute of Technology, Atlanta, GA**P-Th-593**

Microfabricated Nanoporous Gold Coatings Promote Cortical Cell Type-Dependent Surface Attachment

C. CHAPMAN¹, H. CHEN¹, M. STAMOU¹, M. BIENER², P. LEIN¹, AND E. SEKER¹¹University of California, Davis, Davis, CA, ²Lawrence Livermore National Laboratory, Livermore, CA**P-Th-594**

Biological Nanowires: Silver-mediated Base Pairing for Conductivity-enhanced DNA/ single Ion Intercalation Chains in (microbial) DNA

E. TOOMEY¹, S. VECCHIONI², M. CAPECE³, N. LE¹, A. RAY³, A. GREENBERG³, G. WESSEL¹, AND L. ROTHSCHILD⁴¹Brown University, Providence, RI, ²Columbia University, New York, NY, ³Stanford University, Stanford, CA, ⁴NASA Ames Research Center, Mountain View, CA**P-Th-595**

Bio-inspired Hybrid Nanosack for Pancreatic Islet Transplantation in the Omentum

P. HWANG¹, D.-J. LIM¹, A. TAMBRALLI¹, S. GILBERT¹, L. TIAN¹, A. SHALEV¹, AND H.-W. JUN¹¹University of Alabama at Birmingham, Birmingham, AL**P-Th-596**Antibacterial Effect and Osteogenetic Properties of TiO₂ nanotubes Incorporated with ZnOW. LIU^{1,2}, P. SU³, S. CHEN⁴, Z. ZHANG⁴, H. LIU³, AND T. WEBSTER¹¹Northeastern University, Boston, MA, ²Capital Medical University, Beijing, China, People's Republic of, ³Beijing University of Technology, BEIJING, China, People's Republic of, ⁴Capital Medical University, BEIJING, China, People's Republic of**P-Th-597**

Impact of Hirschsprung's Disease on the Barrier Properties of Colonic Mucus

T. CARLSON¹, H. YILDIZ¹, A. GOLDSTEIN², AND R. CARRIER¹¹Northeastern University, Boston, MA, ²Massachusetts General Hospital, Boston, MA**P-Th-598**

Nanoparticle-Protein Separations with Nanoporous Silicon Nitride Membranes

J. WINANS¹, J.-P. DESORMEAUX², S. WAYSON¹, T. GABORSKI³, T. KHIRE¹, C. STRIEMER², AND J. MCGRATH¹¹University of Rochester, Rochester, NY, ²SiMPore, West Henrietta, NY, ³Rochester Institute of Technology, Rochester, NY**P-Th-599**

Overcoming CARPA while Stopping Internal Bleeding with Hemostatic Nanoparticles

D. HICKMAN¹, A. SHOFFSTALL¹, R. GROYNOM¹, E. SHOFFSTALL¹, AND E. LAVIK¹¹Case Western Reserve University, Cleveland, OH**P-Th-600**

Towards Safer Nanomaterials: Investigating Endothelial Cell Mechanical Properties and Barrier Function

Y. LIU¹¹Binghamton University, Binghamton, NY**P-Th-601**


Metal Binding Properties of Adeno-associated Virus with Hexahistidine Capsid Functionalization

J. ZHAO¹, C. DEMPSEY¹, A. NIXON¹, AND J. SUH¹¹Rice University, Houston, TX**P-Th-602**

Three-dimensional All-carbon Scaffolds for Stem Cell Maintenance

G. LALWANI¹, A. GOPALAN¹, M. D'AGATI¹, M. RAO¹, J. SCHNELLER¹, AND B. SITHARAMAN¹¹Stony Brook University, Stony Brook, NY**P-Th-603**

Selenium Nanoparticle Coatings for Alteration in Cancer Cell Activity

M. STOLZOFF¹ AND T. WEBSTER¹¹Northeastern University, Boston, MAP = Poster Session
OP = Oral Presentation
 = Reviewer Choice Award

P-Th-604**Fabrication of Novel In Situ Crosslinked Carbon Nanomaterial Thin Films for Biomedical Applications**S. PATEL¹, G. LALWANI¹, AND B. SITHARAMAN¹¹Stony Brook University, Stony Brook, NY**P-Th-605****Considerations for Solvent Retention in Electrospun Fibers**N. SCHAUB¹, E. FRANZE¹, AND R. GILBERT¹¹Rensselaer Polytechnic Institute, Troy, NY**P-Th-606****Facile Fabrication and Hydrophilic/hydrophobic Patterning of an Electrospun poly(methyl methacrylate) Cellular Filter**L. LEE¹, C. NGUYEN¹, A. SHARMA¹, B. TAUSSIG¹, S. RAO¹, V. LIN¹, AND J-C. CHIAO¹¹UT Arlington, Arlington, TX**P-Th-607****Mechanically Stable And Smart Titania Nanotubes On Ti-V Bone Implant Alloys**S. PATEL¹ AND T. SHOKUHAR^{1,2}¹Michigan Technological University, Houghton, MI, ²University of Illinois at Chicago, Chicago, IL**Track: Biomaterials, Translational Biomedical Engineering****Therapeutic and Theranostic Biomaterials****Chairs:** Hitesh Handa, Michael Fenn**P-Th-576****An Amnion-based Barrier Membrane For Guided Bone Regeneration In Dental Implant Application**W. LI¹, B. WANG², G. MA¹, B. BRAZILE³, AND J. LIAO³¹Dalian Medical University, Liaoning, China, People's Republic of, ²Northwestern University, Chicago, IL, ³Mississippi State University, Mississippi State, MS**P-Th-577****Improved Serum Stability of Collagen Mimetic Peptides Through Structure Modification**D. SMITH¹, L. BENNINK¹, AND S. YU¹¹University of Utah, Salt Lake City, UT**P-Th-578****Bioabsorbable Bone Plates Enabled with Local, Sustained Delivery of Alendronate**M. PARK¹, W. HUR², M. KIM¹, S. CHOI¹, S. LEE¹, C. PARK¹, H. MIN¹, T. CHOI¹, AND Y. CHOY¹¹Seoul National University, Seoul, Korea, Republic of, ²Seoul National University Hospital, Seoul, Korea, Republic of**P-Th-579****Hematological Effects of Graphene Nanoribbons**J. FANG¹, S. CHOWDHURY¹, AND B. SITHARAMAN¹¹SUNY Stony Brook University, Stony Brook, NY**P-Th-580****Transepithelial Transport of PAMAM Dendrimers Across Isolated Intestinal Tissue**D. HUBBARD¹, H. GHANDEHARI¹, AND D. BRAYDEN²¹University of Utah, Salt Lake City, UT, ²University College Dublin, Dublin, Ireland**P-Th-581****Passivation of pNIPAM Nanogels through Surface Hydrolysis Mediated PEGylation**A. BLANCHARD¹, J. PETERS², S. VERGHESE², AND N. PEPPAS²¹University of Texas at Austin, Rockwall, TX, ²University of Texas at Austin, Austin, TX**P-Th-582****Iron Oxide Nanoflakes for Hyperthermia and Magnetic Resonance Imaging**A. CERVADORO^{1,2}, M. CHO¹, J. KEY¹, C. COOPER³, C. STIGLIANO¹, S. ARYAL¹, A. BRAZDEKIS⁴, J. LEARY², AND P. DECUZZI¹¹Houston Methodist Research Institute, Houston, TX, ²Politecnico di Torino, Torino, Italy, ³Purdue University, West Lafayette, NJ, ⁴University of Houston, Houston, TX**P-Th-583****Effect of Magnesium and Other Alloying Elements on Endothelial Cells**N. ZHAO¹, J. MA¹, AND D. ZHU¹¹North Carolina A&T State University, Greensboro, NC**P-Th-584****Influence of Ionizing Radiation on Medical Device Materials**S. COOKE¹, D. MELEASON², S. MANGE², S. MYERS², AND A. WHITTINGTON¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA, ²Lewis Gale Medical Center, Salem, VA**Track: Biomaterials****Biomaterials – Other****Chairs:** Vassilios Sikacitsas, Daniel Alge**P-Th-608****Cell Selection through the Attachment on PMEA Analogs with Different Intermediate Water Contents**T. HOSHIBA¹, K. SATO¹, AND M. TANAKA¹¹Yamagata University, Yonezawa, Japan**P-Th-609****Development of an In Vitro Model for Single Species and Mixed Fungal-Bacterial Biofilms on Titanium Dental Implants**D. MONTELONGO¹, A. SRINIVASAN¹, A. RAMASUBRAMANIAN¹, AND J. LOPEZ-RIBOT¹¹The University of Texas at San Antonio, San Antonio, TX**P-Th-610****Improving Properties of In Situ Forming PLGA Implants via Poly(β -amino ester) and Hydroxyapatite Additives**P. FISHER¹, T. MILBRANDT¹, Z. HILT¹, AND D. PULEO¹¹University of Kentucky, Lexington, KY**P-Th-611****Evaluation and Control of Alginate Microbead Stability for Islet Encapsulation**V. IBARRA¹, A. APPEL¹, S. SOMO¹, M-H. CHENG², S-W. KAO², M. ANASTASIO³, A. GARSON³, E. OPARA⁴, AND E. BREY¹¹Illinois Institute of Technology, Chicago, IL, ²Chang Gung Memorial Hospital, Linkou, Taiwan, ³Washington University, St. Louis, MO, ⁴Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC**P-Th-612****Maintenance of Liver Function via Hepatocyte Morphology Regulation on Blood-compatible Polymers**T. OTAKI¹, T. HOSHIBA¹, AND M. TANAKA¹¹Yamagata University, Yonezawa, Japan**P-Th-613****Increased Cellular Neurogenesis on Graphene Substrate**J. LEE¹, A. LIPATOV¹, L. HA¹, A. SINITSKII¹, AND J. LIM¹¹University of Nebraska-Lincoln, Lincoln, NE**P-Th-614****Adhesion and Proliferation of Stem Cells on Polymers with Different Intermediate Water Contents**E. NEMOTO¹, T. HOSHIBA¹, K. SATO¹, AND M. TANAKA¹¹Yamagata University, Yonezawa, Japan

P-Th-615**Enhancement of Citrate-Based Biodegradable Elastomer through the Application of Click Chemistry**B. JAHANSHAH¹, J. GUO¹, AND J. YANG¹¹Pennsylvania State University, state college, PA**P-Th-616****LKB1 and MO25 Demonstrate Significant Interaction with Myofibrillar Protein**M. LOPEZ-PIER¹, J. KONHILAS¹, AND S. BEHUNIN¹¹University of Arizona, Tucson, AZ**Track: Biomechanics, Orthopaedic and Rehabilitation Engineering****Clinical, Rehabilitation and Sports Biomechanics****Chairs:** Katherine Steele, Noah Rosenblatt**P-Th-190****Study of the Urethral Support Function in Women with a Computational Modeling Approach**Y. PENG¹ AND Y. ZHANG¹¹University of Houston, Houston, TX**P-Th-191****Gait Analysis For Early Fall Prediction**L. PETKU¹, A. ALSAMARAE¹, AND M. NASIR¹¹Lawrence Technological University, Southfield, MI**P-Th-192****Fragile X-Associated Tremor/Ataxia Syndrome - A Case Study**J. LEE¹, R. IMAMURA¹, N. MERRIER², AND S. SHIMADA²¹CSU Sacramento, Sacramento, CA, ²Biomechanical Consultants of CA, Davis, CA**P-Th-193****Sensitivity of Lumbopelvic Rhythm to Risk Factors of Low Back Pain**M. VAZIRIAN¹, A. AGARWAL¹, B. KOCH¹, R. TROMP¹, AND B. BAZRGARI¹¹University of Kentucky, Lexington, KY**P-Th-194****Gender Differences In How Older Adults Regulate Angular Momentum During Stair Descent**K. SINGHAL¹, J. KIM², J. CASEBOLT², S. LEE², K-H. HAN², AND Y-H. KWON²¹University of North Texas Health Science Center, Fort Worth, TX, ²Texas Woman's University, Denton, TX**P-Th-195****Effect of Sagittal Imbalance and Compensatory Mechanisms on Postural Stability in Spinal Deformity Patients**M. PALIWAL¹, N. GROSLAND¹, AND S. MENDOZA¹¹University of Iowa, Iowa City, IA**P-Th-196** **Effects of Visual Feedback Distortion on Gait Speed**S-J. KIM¹, M. OGILVIE¹, N. SHIMABUKURO¹, AND T. STEWART¹¹California Baptist University, Riverside, CA**P-Th-197****Lateral Trunk Position Can Increase Risk of Elbow Injury in Collegiate Baseball Pitchers**M. SOLOMITO¹, E. GARIBAY¹, J. WOODS¹, S. OUNPUU¹, AND C. NISSEN¹¹Connecticut Children's Medical Center, Farmington, CT**P-Th-198****Biomechanical Evaluation of Knee Movements During Skilled and Unskilled Golf Swing**A. CHOI¹, H. KIM¹, AND J. MUN²¹The University of Texas Health Science Center at Houston, Houston, TX, ²Sungkyunkwan University, Suwon, Korea, Republic of**P-Th-199****Subject Ability To Accurately Characterize G's In Relation To Activities Of Daily Living**W. LEE¹, S. PERUMAL¹, B. PATEL¹, AND K. KONNAIYAN¹¹University of South Florida, Tampa, FL**P-Th-200****Quantitative Analysis of Dummy Headform Shape for Impact Testing with Football Helmets**B. COBB¹, A. MACALISTER¹, T. YOUNG¹, A. KEMPER¹, S. ROWSON¹, AND S. DUMA¹¹Virginia Tech-Wake Forest University, Blacksburg, VA**P-Th-201****Regulation of Horizontal Reaction Forces Across Clubs During the Golf Swing**T. PETERSON¹, P. REQUEJO^{1,2}, H. FLASHNER¹, AND J. MCNITT-GRAY¹¹University of Southern California, Los Angeles, CA, ²Rancho Los Amigos National Rehabilitation Center, Downey, CA**P-Th-202****Stress And Strain Analysis on L4-L5 Lumbar Spine While Performing Sit-Ups.**A. SYED¹, R. MOHAMMED¹, B. MOHAMMED¹, W. MOHAMMED¹, AND Y. AL-SMADI¹¹Texas A&M University-Kingsville, Kingsville, TX**P-Th-203****Pneumatic Muscle Actuator Use in Leg Extension Exercise**E. DILLER¹, B. RINEHART¹, J. ALLEN¹, T. MERRELL¹, D. REYNOLDS¹, AND C. PHILLIPS¹¹Wright State University, Dayton, OH**P-Th-204****Hip Biomechanics of Ballet Dancers in Closing First, Third and Fifth Position**A. LOPEZ¹, S. CAREY¹, AND M. MORRIS¹¹University of South Florida, Tampa, FL**P-Th-205****Hockey Skating Kinematics and the Effect of Skate Design**R. TIDMAN¹, L. LAMBERT², D. CRUIKSHANK^{2,3}, AND B. SILVER-THORN¹¹Marquette University, Milwaukee, WI, ²DC Hybrid Skating, Milwaukee, WI, ³Easton Hockey, Van Nuys, CA**P-Th-206****Human Motion Analysis While Climbing Cliff**S. JULAKANTI¹, A. MOHAMMED¹, S. MOHAMMED¹, AND Y. M. AL-SMADI¹¹Texas A&M University, Kingsville, TX**P-Th-207****Inverse Dynamic and Kinetic Analysis of Seated Leg Curl Exercise**V. NEKKANTI¹, P. MURUGESU¹, R. MAMIDI¹, R. TONDAPU¹, D. PATEL¹, AND Y. M. AL-SMADI¹¹Texas A&M University Kingsville, Kingsville, TX**P-Th-208****Dynamic and Kinetic Analysis of a Human Body During Push-Ups**D. JOY¹, R. PATEL¹, H. SHEKHAWAT¹, B. AYODELE¹, P. MURUGESU¹, D. PATEL¹, AND Y. M. AL-SMADI¹¹Texas A&M University Kingsville, Kingsville, TX**P-Th-209****Musculoskeletal Simulation of Archery**A. REDDY¹, N. KILANI¹, A. SHAH¹, AND Y. M. AL-SMADI¹¹Texas A&M University- Kingsville, Kingsville, TX

P-Th-210**Age-Related Lower-Extremity Muscle Fatigue During A Moderate-Intensity Cycling Exercise**K. STRATTON¹, K. MOMENI¹, AND P. FAGHRI¹¹University of Connecticut, Storrs, CT**P-Th-211****Comparison of Neuromuscular Activity during the Lateral Step Task in Younger and Older Adults**T. BEJARANO¹, A. THOTA¹, D. BRUNT¹, AND R. JUNG¹¹Florida International University, Miami, FL**Track: Biomechanics****Injury Biomechanics****Chairs:** Jennifer Currey, Yahia Al-Smadi**P-Th-212****A Computational Method for Analyzing Military Boot Designs at Blast Conditions**R. BERTUCCI¹, R. PRABHU¹, S. CLARK¹, M. HORSTEMEYER¹, J. LIAO¹, AND L. WILLIAMS¹¹Mississippi State University, Starkville, MS**P-Th-213****Comparison Of Head Impact Accelerations Based On Ground Cover Of Playgrounds**G. DANCHIK¹, C. DIDOMENICO¹, AND E. KENNEDY¹¹Bucknell University, Lewisburg, PA**P-Th-214****Sub-rupture Trauma of Blast Overpressure**J. HERNANDEZ¹¹UTSA, Houston, TX**P-Th-215****Intracranial Deformation Sensor for Blast-Induced Traumatic Brain Injury**S. SONG¹, A. KIM¹, T. ZHANG¹, N. RACE^{1,2}, Y. GU¹, R. SHI¹, AND B. ZIAIE¹¹Purdue University, West Lafayette, IN, ²Indiana University School of Medicine, Indianapolis, IN**P-Th-216****Evaluation of Human Body and Anthropomorphic Test Device (ATD) Injury Responses to Underbody Blast (UBB) Events**C. WEAVER¹, K. DANELSON¹, AND J. STITZEL¹¹Wake Forest University, Winston-Salem, NC**P-Th-217****Injury Simulation *In Vivo* in Diabetic Foot**H. RANU¹¹American Orthopaedic Biomechanics Research Institute, Atlanta, GA**P-Th-218****Quantitative Analysis of Biomechanical Data with Random Measurement Error**B. COBB¹, S. ROWSON¹, AND S. DUMA¹¹Virginia Tech-Wake Forest University, Blacksburg, VA**P-Th-219****Quantification of Toy Sword Kinematics with Male and Female Pediatric Volunteers**S. BEEMAN¹, S. ROWSON¹, AND S. DUMA¹¹Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Blacksburg, VA**P-Th-220****Stress Rate and Strain Rate Dependency in Porcine Lung Parenchyma**C. MAHAFFEY¹, B. WEED¹, S. PATNAIK¹, J. LIAO¹, R. PRABHU¹, AND L. WILLIAMS¹¹Mississippi State University, Starkville, MS**P-Th-221****A Computational Model of the Porcine Eye**R. WATSON^{1,2}, W. GRAY¹, R. GLICKMAN^{1,3}, B. LUND⁴, W. SPONSEL^{1,5}, AND M. REILLY¹¹UTSA, San Antonio, TX, ²BRC, San Antonio, TX, ³UTHSCSA, San Antonio, TX, ⁴USAISR, San Antonio, TX, ⁵UIW, San Antonio, TX**P-Th-222****Lateral Impact and Injury Tolerance of the Lumbar Spine**N. MERRIER¹ AND S. SHIMADA¹¹Biomechanical Consultants of California, Davis, CA**P-Th-223****Probability of Fall Due To Trip Hazard Via Computer Simulations**H. CHITTAM¹, K. DAS¹, B. PAVAN¹, AND W. LEE¹¹University of South Florida, Tampa, FL**P-Th-224****Fundamental Limitation of Conventional Helmets in Mitigating Injury**K. LAKSARI¹, H. SHI¹, L. WU¹, E. ORTEGA², AND D. CAMARILLO¹¹Stanford University, Stanford, CA, ²East Side College preparatory school, Stanford, CA**P-Th-225****Influence of Age and Gender on Lateral Cervical Impact Response and Injury Tolerance**N. MERRIER¹ AND S. SHIMADA¹¹Biomechanical Consultants of California, Davis, CA**P-Th-226****Identification of Trauma-Related Biomarkers Following Torsional Indirect Traumatic Optic Neuropathy (TITON)**B. ASEMOTA¹, R. GLICKMAN^{1,2}, AND M. REILLY¹¹University of Texas San Antonio, San Antonio, TX, ²University of Texas Health Science Center at San Antonio, San Antonio, TX**P-Th-227****Blast Induced Traumatic Brain Injury: Detection Through Immunocytochemistry and MALDI**K. JONES¹, B. LUND², R. GLICKMAN³, W. SPONSEL⁴, W. GRAY⁵, AND M. REILLY⁶¹University of Texas at San Antonio, San Antonio, TX, ²USAISR Ft. Sam Houston, San Antonio, TX, ³Ophthalmology, University of Texas Health Science Center at San Antonio, San Antonio, TX, ⁴Biomedical Engineering University of Texas at San Antonio; Visual Science, Rosenberg School of Optometry, University of the Incarnate Word; WESMD Professional Associates; Primary Investigator with the Australian Research Council Centre of Excellence in Vision Science (ACEVS), San Antonio, TX, ⁵Geological Sciences, University of Texas at San Antonio, San Antonio, TX, ⁶Biomedical Engineering, University of Texas at San Antonio, San Antonio, TX**P-Th-228****Response of Isolated Whole Human Lungs in Compression: Effect of Loading Rate**A. KEMPER¹, A. SANTAGO¹, J. STITZEL¹, J. SPARKS¹, AND S. DUMA¹¹Virginia Tech - Wake Forest University, School of Biomedical Engineering and Sciences, Blacksburg, VA**P-Th-229****The Effect of Acoustic Pollution on Marine Mammals**S. CLARK^{1,2}, R. BERTUCCI^{1,2}, J. LIAO^{1,2}, R. PRABHU^{1,2}, AND L. WILLIAMS^{1,2}¹Mississippi State University, Starkville, MS, ²Center for Advanced Vehicular Systems, Starkville, MS**P-Th-230****Determination of Empirical Relations Between Shock Tube Geometry and Pressure Profiles**A. ROBBINS¹, P. ANUMOLU¹, R. VAN LOON², AND M. MORENO¹¹Texas A&M University, College Station, TX, ²Swansea University, Swansea, United Kingdom**P-Th-231****Minimum Time to Collision at Braking from the 100-Car Naturalistic Driving Study**J. MONTGOMERY¹, K. KUSANO¹, AND H. GABLER¹¹Virginia Tech, Blacksburg, VA

Track: Biomechanics**Multiscale Modeling in Biomechanics****Chairs:** Rebecca Heise, Stuart Campbell**P-Th-258****Analysis of Toe-In Gait Modification for Patients with Knee Osteoarthritis**
T. SCHLOTMAN¹, P. SHULL², AND J. REINBOLT¹¹The University of Tennessee, Knoxville, TN, ²Shanghai Jiao Tong University, Shanghai, China, Shanghai, China, People's Republic of**P-Th-259****Viscoelasticity of Tau Proteins Leads to Strain Rate-Dependent Breaking of Microtubules during Axonal Stretch Injury: Predictions from a Mathematical Model**H. AHMADZADEH¹, D. SMITH¹, AND V. SHENOY¹¹University of Pennsylvania, Philadelphia, PA**P-Th-260****Multi-Scale Finite Element Modeling of Human Tympanic Membrane in Normal and Diseased Ears**S. JIANG¹, X. WANG¹, AND R. GAN¹¹University of Oklahoma, Norman, OK**P-Th-261****A Multiscale Framework for Simulation of Hemodynamics in a Patient-Specific Coronary Artery Bypass Graft Surgery**A. B. RAMACHANDRA¹, A. KAHN¹, AND A. MARSDEN¹¹UCSD, La Jolla, CA**P-Th-262****Development of Age and Sex-Specific Thorax Finite Element Models**S. SCHOELL¹, A. WEAVER¹, AND J. STITZEL¹¹Virginia Tech- Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC**P-Th-263****Use of Simplified Vehicle Finite Element Models to Assess Occupant Injury in Crash Reconstructions**J. GAEWSKY^{1,2}, C. WEAVER^{1,2}, A. WEAVER^{1,2}, K. DANELSON^{1,2}, AND J. STITZEL^{1,2}¹Virginia Tech - Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC,²Wake Forest School of Medicine, Winston-Salem, NC**P-Th-264****Microstructure-Sensitive Investigation of Age-Related Changes in Pediatric Long Bone**D. CHRISTE¹, S. REDDY², A. KONTOS¹, AND S. BALASUBRAMANIAN²¹Drexel University, Philadelphia, PA, ²Drexel University, School of Biomedical Engineering and Health Systems, Philadelphia, PA**P-Th-265****Building Three-Dimensional Statistical Shape Models of Human Liver**Y-C. LU¹ AND C. UNTAROIU¹¹Virginia Tech and Wake Forest University, Blacksburg, VA**P-Th-266****Development Of An Atlas-Based Finite Element Head Model**L. MILLER¹, J. URBAN¹, E. LILLIE¹, AND J. STITZEL¹¹Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC**P-Th-267****A Multiscale Approach For The Simultaneous Analysis Of Continuum And Micro-FE Models**J. JOHNSON¹ AND K. TROY¹¹Worcester Polytechnic Institute, Worcester, MA**P-Th-268****POPC Phospholipid Bilayer Failure Under Strip Biaxial Stretching Using Molecular Dynamics**M. MURPHY¹, M. HORSTEMEYER¹, S. GWALTNEY¹, J. LIAO¹, L. WILLIAMS¹, AND R. PRABHU¹¹Mississippi State University, Mississippi State, MS**P-Th-269****Volume Decrease of Schlemm's Canal in an FEA Model of Elevated IOP in the Human Eye**R. WILKES¹ AND M. REILLY¹¹University of Texas at San Antonio, San Antonio, TX**Track: Biomechanics, Orthopaedic and Rehabilitation Engineering****Musculoskeletal Biomechanics****Chairs:** Rita Issa**P-Th-168****Response of Trabecular Bone to Elevated Loading Frequencies**H. SIDOTI¹, A. RITTER¹, AND A. VALDEVIT¹¹Stevens Institute of Technology, Hoboken, NJ**P-Th-169****Characterization of a Multi-Strain Profile for Cellular Mechanotransduction Studies**J. KING¹, K. SHAH¹, P. SETHU², AND M. SAUNDERS¹¹The University of Akron, Akron, OH, ²The University of Alabama at Birmingham, Birmingham, AL**P-Th-170****Loading And Zoledronic Acid Protect Against Disuse-Induced Bone Strength Loss In The Femoral Neck**J. BREZICHA¹, R. BOUDREAU¹, S. LENFEST¹, A. NARAYANAN², S. BLOOMFIELD¹, AND H. HOGAN¹¹Texas A&M University, College Station, TX, ²Texas A&M Health Science Center, College Station, TX**P-Th-171****Development and Characterization of a Pure Uniaxial Microloading Device for Biologic Testing**J. KING¹, D. HAYES¹, J. MCPHERSON¹, S. YORK¹, AND M. SAUNDERS¹¹The University of Akron, Akron, OH**P-Th-172****Assessment of Total Shoulder Arthroplasty Glenoid Stability During Simulated Rocking Horse Motion**S. HELMS¹, G. COLBATH², J. GAGLIANO³, R. HAWKINS², L. PIETRYKOWSKI¹, A. BARRETT¹, B. PRZESTRZELSKI¹, AND J. DESJARDINS¹¹Clemson University, Clemson, SC, ²Steadman Hawkins, Greenville, SC, ³Steadman Hawkins, Denver, CO**P-Th-173****Laserectomy of the Human Spinal Disc to Relieve Low-back Pain - A Technique**H. RANU¹¹American Orthopaedic Biomechanics Research Institute, Atlanta, GA**P-Th-174****Cadaveric Thumb-tip Forces Produced by Extrinsic and Intrinsic Muscles are More Sensitive to Joint Angles than Muscle Moment Arms and Bone Lengths**
J. TOWLES¹ AND V. HENTZ²¹University of Wisconsin-Madison, Madison, WI, ²Stanford University, Redwood City, CA

P-Th-175**Osteocytes' Response to Mechanical Loading Supports Breast Cancer Cell Growth and Migration**Y-H. MA¹ AND L. YOU¹¹University of Toronto, Toronto, ON, Canada**P-Th-176****Bisphosphonate Treatment During Initial Unloading Protects Against Bone Loss for Second Unloading**S. LENFEST¹, J. BREZICHA¹, R. BOUDREAU¹, C. SCHAEFER¹, S. BLOOMFIELD¹, M. ALLEN², AND H. HOGAN¹¹Texas A&M University, College Station, TX, ²Indiana University School of Medicine, Indianapolis, IN**P-Th-177****Tribology of IL-1 Stimulated Cartilage Explants: Restoration of Chondroprotection by rhPRG4**K. LARSON¹, K. ELSAID², B. FLEMING¹, T. SCHMIDT³, AND G. JAY¹¹Brown University, Providence, RI, ²MCPS University, Boston, MA, ³University of Calgary, Calgary, AB, Canada**P-Th-178****Development and Validation of Finite Element Model of a 16-Year Old Osteo-Ligamentous Thoracic Spine**P. HADAGALI¹ AND S. BALASUBRAMANIAN¹¹Drexel University, Philadelphia, PA**P-Th-179****Mechanical Characterization of Gough Island Mice Femora**D. GERBER¹, C. HABEN¹, C. VINYARD², AND M. SAUNDERS¹¹University of Akron, Akron, OH, ²Northeast Ohio Medical University, Rootstown, OH**P-Th-180****Comparing Cartilage T2 Relaxation Times and Joint Contact Pressures of Normal and Injured Wrists**I. CHAPPELL¹, P. LEE², T. MCIFFF², E. TOBY², AND K. FISCHER^{1,2}¹University of Kansas, Lawrence, KS, ²University of Kansas Medical Center, Kansas City, KS**P-Th-181****The Biomechanical Effect of Stabilizing Material for Dynamic Compression Plate on Human Cadaveric Humerous**V. NGUYEN¹ AND H. VO¹¹Mercer University, Macon, GA**P-Th-182****Determination of the Mechanical Properties of the Porcine Temporomandibular Joint Disc in Unconfined Compression at Slow Strain Rate**R. MORTIMER¹, J. LOWE¹, AND A. ALMARZA¹¹University of Pittsburgh, Pittsburgh, PA**P-Th-183****Mapping Biomechanical Properties of Mice Articular Surfaces Using Indentation: Preliminary Results**J-F. LAVOIE^{1,2}, S. SIM^{3,4}, A. MOREAU^{2,5}, C-É. AUBIN^{5,6}, E. QUENNEVILLE⁷, M. GARON⁷, AND M. BUSHMANN³¹CHU Ste-Justine/Université de Montreal, Montreal, QC, Canada, ²Université de Montreal, Montreal, QC, Canada, ³Polytechnique Montreal, Montreal, QC, Canada, Montreal, QC, Canada, ⁴Biomomentum, Laval, QC, Canada, ⁵CHU Ste-Justine Research Center, Montreal, QC, Canada, ⁶Polytechnique Montreal, Montreal, QC, Canada, ⁷Biomomentum Inc, Laval, QC, Canada**P-Th-184****Computational Modeling of Wound Healing Based on Continuum Mixture Theory**

M. Rahman I, J. Zhou, A. Nordquist I, and Y. Feng I

¹UNIVERSITY OF TEXAS, SAN ANTONIO, TX, ²UNIVERSITY OF TEXAS, AUSTIN, TX**P-Th-185****An Experimental and Theoretical Model of Simplified Childbirth**A. BAUMER¹, A. LEHN¹, J. GROTBORG², AND M. LEFTWICH¹¹The George Washington University, Washington, DC, ²University of Michigan, Ann Arbor, MI**P-Th-186****Mathematical Rendering of Trabecular Bone: Orientation Distribution of Trabeculae**A. MORSHED¹, J. WANG², X. GUO², AND X. WANG¹¹University of Texas at San Antonio, San Antonio, TX, ²Columbia University, New York City, NY**P-Th-187****Effect of Osteoactivin on the Mechanical Properties of Mouse Bone**D. HAYES¹, K. NOVAK², F. SAFADI², AND M. SAUNDERS¹¹University of Akron, Akron, OH, ²Northeast Ohio Medical University, Rootstown, OH**P-Th-188****Biomechanical Effects Of Angled Screw Placement On The Fixation Stability Of Long Bone Shaft Fractures**B. NGUYEN¹ AND H. VO¹¹Mercer University, Macon, GA**P-Th-189****Mathematical Analysis Of The Fatigue Failure Of An Intramedullary Rod Distal Locking Screw**D. BAILEY¹, J. KADLOWEC¹, AND D. BRENNAN²¹Rowan University, Glassboro, NJ, ²Rowan University, Rowan University, NJ**Track: Biomedical Engineering Education (BME)****Biomedical Engineering Education****Chairs:** John Desjardins, Craig Goergen**P-Th-663****A New Model For Introductory Biomedical Engineering Education Emphasizing Clinical Innovation**S. SRIDHAR¹, M. DOSHI¹, S. SRIDHAR², A. NGUYEN¹, N. PENDYALA¹, N. JAMALI¹, AND V. PIZZICONI¹¹Arizona State University, Tempe, AZ, ²University of Arizona College of Medicine - Phoenix, Phoenix, AZ**P-Th-664****Service Learning Projects to Engage Students in Biomedical Engineering at a School which Does Not Offer a Biomedical Engineering Degree**J. REY¹, O. LEDEZMA¹, D. WON¹, J. CASTANEDA¹, A. NABILSI¹, E. ORELLANA¹, AND M. MO¹¹California State University Los Angeles, Los Angeles, CA**P-Th-665****A Comprehensive Meta-analysis of Skeletal Muscle Architecture Performed by Undergraduate BME Course**C. PELLAND¹, B. 42801, M. 42801, K. VIRGILIO¹, J. MILLER¹, J. GOETSCHUIS¹, L. SLATER¹, G. NORTE¹, A. STERN¹, AND S. BLEMKER¹¹University of Virginia, Charlottesville, VA**P-Th-666****Multiphysics Simulation of the Krogh Tissue Cylinder System for Undergraduate Education**D. CASTAÑEDA¹ AND B. HAWKINS¹¹San Jose State University, San Jose, CA**P-Th-667****Creating a World Class Institute for Biomedical Engineering and Nano-Biomedicine in Saudi Arabia**H. RANU¹, A. ALMEJRAD¹, AND K. AL-IBRAHIM¹¹University of Hail, Hail, Saudi Arabia

P-Th-668

Establishment of an Interdisciplinary Biomedical Engineering Programme In Nigeria: Preliminary Observations From The University Of Lagos

A. OSUNTOKI¹, O. OLAWALE¹, E. AJIBOLA¹, C. ESEZOBOR¹, AND S. NWANERI¹

¹University of Lagos, Lagos, Nigeria

P-Th-669

A Tutoring Program for First Semester BME Students

D. GAITAN-LEON¹, P. NAVAS¹, AND J. BRICENO¹

¹Universidad de los Andes, Bogota, Colombia

P-Th-670

A Model for a Successful Collaborative Capstone Design Course

M. ODEN¹, E. RICHARDSON¹, G. WOODS¹, A. DICK¹, AND M. O'MALLEY¹

¹Rice University, Houston, TX

P-Th-671

Best Practices in Teaching Entrepreneurship to Bioengineers: An Evaluation of Two New Overseas Medical Entrepreneurship Fellowship Programs Based in Ireland and Denmark

G. SMITH¹

¹Arizona School of Dentistry and Oral Health, Mesa, AZ

P-Th-672

Preliminary Experience in Flipping Biothermodynamics

J. PATZER II¹, R. CLARK¹, AND M. BESTERFIELD-SACRE¹

¹University of Pittsburgh, Pittsburgh, PA

P-Th-673

Inquiry-Based Education of Fluid Mechanics Principles Using Hemodynamics

A. ROCHELEAU¹, C. WILSON², S. ARCHER¹, AND M. KING¹

¹Cornell University, Ithaca, NY, ²Southside High School, Elmira, NY

P-Th-674

The DEN (Design and Entrepreneurship Network): A Multi-disciplinary Program to Develop and Apply Entrepreneurship Experiences for BME Students

B. PRZESTRZELSKI¹ AND J. DESJARDINS¹

¹Clemson University, Clemson, SC

P-Th-675

Using Discussion Boards to Improve Student Professionalism and Field Knowledge

M. POOL¹, C. PEAK², J. HALE², AND A. SIEVING²

¹University of Illinois at Urbana-Champaign, Urbana, IL, ²Purdue University, West Lafayette, IN

P-Th-676

Design and Development of a Laser-CT: A Medical Imaging Training System

J. FANG¹, M. LUPP¹, AND W. ZHAO¹

¹University of Miami, Coral Gables, FL

P-Th-677

Using iBooks and iTunesU for a Sophomore-Level Class: Numerical Simulations in BME

R. HART¹

¹The Ohio State University, Columbus, OH

P-Th-678

How Broad Should Biomedical Engineering Educational Programs Be?

P. JOHANSEN¹

¹Aarhus University, Aarhus N., Denmark

P-Th-679

Effects of Audience Response Systems on Student Attendance and Participation

C. GOERGEN¹

¹Purdue University, West Lafayette, IN

P-Th-680

Using Social Media to Communicate Science to the Public: A Case Study of Science Sunday

R. BOWLES^{1,2}

¹Duke University, Durham, NC, ²ScienceSunday, Durham, NC

P-Th-681

Inquiry Based Additive Manufacturing: Bridging the Gap Between Advanced Techniques and the Classroom

J. JONES¹, E. SHARPSTEEN², C. SCHAFFER¹, AND N. NISHIMURA¹

¹Cornell University, Ithaca, NY, ²Onondaga High School, Onondaga, NY

P-Th-682

A Novel Online/Onsite Lab Course in Biomedical Engineering Practice and Innovation

E. LOGSDON¹, A. MAYBHATE¹, AND E. HAASE¹

¹Johns Hopkins University, Baltimore, MD

P-Th-683 

The DREAM in Teaching Computational Molecular Systems Biology

K. NAEGLE¹

¹Washington University in St Louis, St Louis, MO

P-Th-684

CANCELLED BY AUTHOR

P-Th-685

Developing a Transmedia Archival Exhibit for Artificial Hearts: Genuine Stories

A. CHANG¹, M. HAN¹, E. STATHAM¹, S. IGO², AND J. GRANDE-ALLEN¹

¹Rice University, Houston, TX, ²Houston Methodist DeBakey Heart & Vascular Institute, Houston, TX

P-Th-686

A BME based Inquiry Module: Gelatin and Chemical bonding for Healing a Wounded Soldier

S. IYER¹, J. SAROKA², S. ARCHER¹, AND Y. GAO¹

¹Cornell University, Ithaca, NY, ²Lansing High School, Lansing, NY

P-Th-687

Effective Engagement of Inquiry Based Learning in the K-12 Science Classroom: An Ex Ovo Chick Culture for the Study of Ethanol on Embryonic Development

C. GREGG¹, J. BROWNE², S. ARCHER¹, AND J. BUTCHER¹

¹Cornell University, Ithaca, NY, ²Binghamton City School District, Binghamton, NY

P-Th-688

Breast Tissue Engineering Module for Girl Scout STEM Career Enrichment Event

S. Rowlinson I, W. Bridges I, and K. Burg I

¹Clemson University, Clemson, SC

P-Th-689

Designing a K-12 Outreach Activity: Newton's Laws of Motion

V. ALPHONSE¹, S. BEEMAN¹, AND S. DUMA¹

¹Virginia Tech - Wake Forest University Center for Injury Biomechanics, Blacksburg, VA

P-Th-690

Introducing Biomedical Engineering to a K-8 Audience using a Scalable, Hands-On Biomaterial Testing and Design Module

T. DORSEY¹

¹Rensselaer Polytechnic Institute, Troy, NY

P-Th-691 **Research-Intensive Community to Create a Large-Scale, Low-Cost Undergraduate Research Program**R. DONGAONKAR¹, R. STEWART¹, AND C. QUICK¹¹Michael E. DeBakey Institute, Texas A&M University, College Station, TX**P-Th-692****Early Virtual Design Experience Enhances Relevance of Courses in BME Curriculum**M. CAPLAN¹, D. FRAKES¹, J. LA BELLE¹, AND V. PIZZICONI¹¹Arizona State University, Tempe, AZ**Track: Biomedical Imaging and Optics, Device Technologies and Biomedical Robotics****Diagnostic Devices and Biosensors****Chairs:** Elizabeth Vargis**P-Th-70****Optical Skin Perfusion Monitor for Correction of Circulating Indocyanine Green Concentration Measured with a Skin Probe**Y-H. PENG¹ AND J-M. MAAREK¹¹University of Southern California, Los Angeles, CA**P-Th-71****Enhanced Interferometric Detection of Individual Nanorods for Multiplexed Sensitive Molecular Assays**D. SEVENLER¹, G. DAABOUL¹, R. ADATO¹, AND S. UNLU¹¹Boston University, Boston, MA**P-Th-72****A Colorimetric Quantification Method For Immunochromatographic Assays**J. PARK¹¹Kyungil University, Gyeongsan-si, Korea, Republic of**P-Th-73****Rapid, Single-step, Droplet-based Bacterial Assay on a Nanofibrous Substrate**A. NICOLINI¹, C. FRONCZEK¹, AND J-Y. YOON¹¹The University of Arizona, Tucson, AZ**P-Th-74****Optical Detection of Clot Contractile Forces**N. TAPARIA¹, L. TING¹, A. SMITH¹, AND N. SNIADOCKI¹¹University of Washington, Seattle, WA**P-Th-75****Chemical Signal Amplification for Paper-Based Assays for Influenza A Detection**K. ABE¹ AND P. YAGER¹¹University of Washington, Seattle, WA**P-Th-76****Multi-branched Gold Nanoparticles For The Detection Of EGFR On The Surface Of Esophageal Epithelial Cells Using Surface Enhanced Raman Scattering**J. JOHNSTON¹, E. TAYLOR¹, R. GILBERT¹, AND T. WEBSTER¹¹Northeastern University, Boston, MA**P-Th-77****Visual Detection of Akt-mTOR-HIF-1 Signaling Pathway in Living Cell Using the Hairpin DNA Modified Gold Nanoparticle Beacon**S. LI¹ AND Y. GU¹¹China Pharmaceutical University, Nanjing, China, People's Republic of**P-Th-78****Novel Device to Diagnose Otitis Media Using Spectroscopy and Digital Imaging**K. LONGO¹, D. PETERSON, PHD, MS¹, AND T. VALDEZ, MD²¹University of Connecticut Health Center, Farmington, CT, ²Connecticut Children's Medical Center, Hartford, CT**P-Th-79****Reduced Field Curvature with Curved Sample Chamber in Wide Field-of-View Fluorescence Imaging for Point-of-Care CD4 Test**M. SHOURAV¹, M. KIM¹, AND J. KIM¹¹Kookmin University, Seoul, Korea, Republic of**Track: Biomedical Imaging and Optics****Imaging Applications****Chairs:** Walter O'Dell**P-Th-621** **Identifying PET/MRI Parameters for Early Treatment Response in Renal Cell Carcinoma**J. ANTUNES¹, S. VISWANATH², A. SHER², N. AVRIL², AND A. MADABHUSHI¹¹Case Western Reserve University, Cleveland, OH, ²Case Western Reserve University, CLEVELAND, OH**P-Th-622** **Hyperspectral Imaging of Cardiac Ablation Lesions**D. GIL¹, L. SWIFT¹, R. MAZHARI¹, AND N. SARVAZYAN¹¹The George Washington University, Washington, DC**P-Th-623****Automatic Quantification of Endothelial Nitric Oxide Levels in a Microvessel with and without Tumor Cell Adhesion**J. WEI¹, L. ZHANG¹, AND B. FU¹¹The City College of the City University of New York, New York, NY**P-Th-624****Measurement of Cardiomyocyte Contractility Parameters in Biomimetic Microenvironment Using Image Registration**J. TEO¹, N. ALWAHAB¹, AND N. CHRISTOFOROU¹¹Khalifa University, Abu Dhabi, United Arab Emirates**P-Th-625****A Multimodal Noninvasive Medical Imaging Phantom Material: Mechanical and Imaging Properties**B. BELMONT¹, W. LI¹, AND A. SHIH¹¹University of Michigan, Ann Arbor, MI**P-Th-626****A Multi-Modality Imaging Approach to Generate a CAD Dataset of the 5th Percentile Female for Modeling Applications**M. DAVIS¹, J. STITZEL¹, AND F. GAYZIK¹¹Wake Forest University - Virginia Tech Center for Injury Biomechanics, Winston Salem, NC**P-Th-627****Numerical FSI Simulations of Acoustic Radiation Force Impulse on Human Aortas with Atherosclerotic Plaque**H. LI¹, K. LIN¹, AND D. SHAHMIRZADI¹¹Stevens Institute of Technology, Hoboken, NJ**P-Th-628****Optical Spectroscopy and Narrowband Imaging for Improved Identification of the Parathyroid Glands**L. HIGGINS¹, T. DAVIDOV², AND M. PIERCE¹¹Rutgers, The State University of New Jersey, Piscataway, NJ, ²Robert Wood Johnson University Hospital, New Brunswick, NJ

P-Th-629

Studying Thermo-Mechanical Effects of Pulsed Laser Irradiation on Tissues

M. GANGULY¹ AND K. MITRA¹¹Florida Institute of Technology, Melbourne, FL**Track: Biomedical Imaging and Optics****Image Processing and Analysis****Chairs:** Tilo Winkler**P-Th-630**

Image Processing Algorithm for Automated Grading of Vitreous Haze

C. PASSAGLIA¹, E. STEVENSON¹, E. GREENBERG¹, D. RICHARDS¹, AND B. MADOW¹¹University of South Florida, Tampa, FL**P-Th-631**

Prediction Model Using Clinical and MRI-based Features for Pelvic Organ Prolapse Diagnosis

S. ONAL¹, S. LAI-YUEN², P. BAO², A. WEITZENFELD², AND S. HART²¹Southern Illinois University – Edwardsville, Edwardsville, IL, ²University of South Florida, Tampa, FL**P-Th-632**

Filtered Back-Projection With A Precise Weighting Function For Photoacoustic Image Reconstruction

H. HUANG¹, G. BUSTAMANTE¹, R. PETERSON¹, AND J. YE¹¹University of Texas at San Antonio, San Antonio, TX**P-Th-633**

Automatic Initialization of 2D/3D Medical Image Registration Using A Hybrid Classifier

J. WU¹, E. ABDEL FATAH¹, AND M. MAHFOUZ¹¹The University of Tennessee, Knoxville, TN**P-Th-634**

Organ-Wide Multiscale Vessel filtering for Cerebral Vasculature Modeling

C-Y. HSU¹, B. SCHNELLER¹, AND A. LINNINGER¹¹University of Illinois at Chicago, Chicago, IL**P-Th-635**

The Use of Stochastic Resonance to Improve Detectability in CT Images

N. ZWEIFEL¹, R. STRAHLE¹, S. SCHEIDEGGER¹, R. FUCHSLIN¹, AND S. RHODES²¹Zurich University of Applied Sciences, Winterthur, Switzerland, ²Grand Valley State University, Grand Rapids, MI**P-Th-636**

Automation of Microcapsule Evaluation and Characterization for Use in Islet Transplantation

R. KRISHNAN¹, M. ALEXANDER¹, K. CHAN¹, A. WOLCOTT¹, C. FOSTER III¹, AND J. LAKEY¹¹University of California Irvine, Orange, CA**P-Th-637**

Guidewire Enhancement Using a Multi-stage Order Statistic Filter in Digital X-ray Fluoroscopy

Y. JIANG¹¹University of Central Oklahoma, Edmond, OK**P-Th-638**

Electron Microscopy Image Restoration and Resolution Improvement using an Example-based Super-Resolution Algorithm

S. HASHEMI AMROABADI¹, S. KHAYYER², A. QUACH², H. FAROOQ², A. BARGRIZ FARSHI², AND S. BEHESHTI²¹University of Toronto, Toronto, ON, Canada, ²Ryerson University, Toronto, ON, Canada**P-Th-639**

Laser Diffraction Imaging of Bacteria

K. KONNAIYAN¹, A. LAM¹, D. COVERT¹, AND A. SEBUKA¹¹University of South Florida, Tampa, FL**P-Th-640**

Quantifying Biological Functions Using Fluorescent Dyes in 3D Spheroids

E. LEARY¹ AND J. MORGAN¹¹Brown University, Providence, RI**P-Th-641**

Automated Quantification of Caudal Vein Plexus in Zebrafish to Study Vascular Disruptors

C. HANS¹, C. MCCOLLUM¹, M. BONDESSON¹, J-A. GUSTAFSSON¹, S. SHAH¹, AND F. MERCHANT¹¹University of Houston, Houston, TX**P-Th-642**

Surface Data of the Human Body Acquired Using Long Range Three Dimensional Laser Scanners

D. SCHWARTZ^{1,2}, N. HRISTOV³, AND F. GAYZIK^{1,2}¹Wake Forest University School of Medicine, Winston-Salem, NC, ²Virginia Tech - Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC, ³Center for Design Innovation, Winston-Salem, NC**Track: Biomedical Imaging and Optics****Magnetic Resonance Imaging****Chairs:** Stephen LeConte**P-Th-643**

Enhanced Delivery and Imaging of Neurotherapeutics via US, MRI, SPECT and Acoustically Activated Nanoparticles

M. VALDEZ¹, E. YOSHIMARU¹, S. YUAN¹, A. HALAWANI¹, P. INGRAM¹, T. MATSUNAGA¹, R. WITTE¹, L. FURENLID¹, AND T. TROUARD¹¹University of Arizona, Tucson, AZ**P-Th-644**

Nephrotoxicity Assessment of A Novel Graphene-Based Magnetic Resonance Imaging Contrast Agent in Chronic Renal Failure Rodent Models

S. LEE¹, J. TOUSSAINT¹, S. KANAKIA¹, S. CHOWDHURY¹, W. MOORE¹, K. SHROYER¹, AND B. SITHARAMAN¹¹Stony Brook University, Stony Brook, NY**P-Th-645**

Array Coil for Carbon-13 MRS at 7 Tesla

J. RISPOLI¹, I. DIMITROV^{2,3}, S. CHESHKOV², S. OGIER¹, C. MALLOY², S. WRIGHT¹, AND M. MCDOUGALL¹¹Texas A&M University, College Station, TX, ²University of Texas Southwestern Medical Center, Dallas, TX, ³Philips Medical Systems, Cleveland, OH**P-Th-646**

Temporal SNR of Myocardial ASL does not Increase with Improved Spatial Consistency of Background Suppression

T. JAO¹, H. DO¹, AND K. NAYAK¹¹University of Southern California, Los Angeles, CA**P-Th-647**Adapting ¹H Receivers for Multi-Nuclear MRS by Frequency TranslationS. OGIER¹, N. HOLLINGSWORTH¹, J. RISPOLI¹, M. MCDOUGALL¹, AND S. WRIGHT¹¹Texas A&M University, College Station, TX**P-Th-648**

Mathematical Modeling of Multiply Connected Structures for Elastographic Imaging

B. SCHWARTZ¹, Z. YIN¹, AND R. MAGIN¹¹University of Illinois at Chicago, Chicago, IL**P-Th-649**

Preparation of Cationic Macrocyclic Ligand for MR Imaging of Cartilage

K. NWE¹¹University of Pennsylvania, Philadelphia, PA

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM, 3:30PM - 4:30PM

P-Th-650

Nanomanufacturing of Targeted Rod- and Spherical Shaped Viral Nanoparticle MRI Contrast Agents for *In Vivo* Detection of Atherosclerotic Plaques in Mice

M. BRUCKMAN¹, L. RANDOLPH¹, A. VANMETER¹, K. JIANG¹, E. SIMPSON², L. LUYT², X. YU¹, AND N. STEINMETZ¹

¹Case Western Reserve University, Cleveland, OH, ²The university of western ontario, London, ON, Canada

P-Th-651

Improving Low-SNR Perfusion and Inflammation MRI with a Constrained Model-Based Reconstruction

S. FIELDEN¹, L. ZHAO¹, M. WINTERMARK¹, A. KLIBANOV¹, B. FRENCH¹, F. EPSTEIN¹, AND C. MEYER¹

¹University of Virginia, Charlottesville, VA

P-Th-652

Design of Interpolymer Complex-Superparamagnetic Iron Oxide Nanoparticles (IPC-SPIOs) with Potential for MR Molecular Imaging

E. YOO¹

¹Binghamton University (SUNY), Binghamton, NY

P-Th-653

Classifying Head-Impact Related Changes in Brain Connectivity after a Single Season of High School Football: A Support Vector Machine Recursive Feature Elimination Approach

F. MOKHTARI¹, E. DAVENPORT¹, J. URBAN¹, C. WHITLOW¹, S. NATARAJAN², J. STITZEL¹, AND J. MALDJIAN¹

¹Wake Forest University, Winston Salem, NC, ²Indiana University, Bloomington, IN

P-Th-654

Optimization of Oxygen Extraction Fraction in MRI Human Brain Using Augmented Lagrangian Joint Estimation

N. BAHRAMI¹, M. JOHNSTON¹, AND Y. JUNG²

¹Wake Forest University, Winston Salem, NC, ²Wake Forest University School of Medicine, Winston Salem, NC

Track: Biomedical Imaging and Optics**Molecular Probes**

Chairs: Beata Chertok

P-Th-655

Two Photon Excitation Spectra of Proteolytic Beacons - A Preliminary Study

D. HASKETT¹, U. UTZINGER¹, D. MCGRATH¹, O. MCINTYRE², AND J. VANDE GEEST¹

¹University of Arizona, Tucson, AZ, ²Vanderbilt University, Nashville, TN

P-Th-656

Development of Fibrin-Targeting Paramagnetic Nanoparticles for Brain Injury Applications

K. RUMBO¹, V. BHARADWAJ¹, V. KODIBAGKAR¹, AND S. STABENFELDT¹

¹Arizona State University, Tempe, AZ

P-Th-657

Investigating the Response of the Family of NIR aza-BODIPY-based Fluorescent Dyes to Microenvironmental Changes

B. SAREMI^{1,2}, M. WEI^{1,2}, V. BANDI³, Y. LIU^{1,2}, B. CHENG^{1,2}, F. D'SOUZA³, K. NGUYEN^{1,2}, Y. HONG^{1,2}, AND B. YUAN^{1,2}

¹University of Texas at Arlington, Arlington, TX, ²The University of Texas Southwestern Medical Center at Dallas, Dallas, TX, ³University of North Texas, Denton, TX

P-Th-658

NIR Lead Sulfide Quantum Dots Targeted to Vascular Endothelial Growth Factor Receptor 2 for Colorectal Cancer Imaging

J. CARBARY¹, J. BARTON¹, AND U. UTZINGER¹

¹University of Arizona, Tucson, AZ

P-Th-659

Fast Imaging of Cancer Receptor Expression using Zwitterionic Tracers

X. XU¹, R. PATIL¹, H. CHOI², AND K. TICHAUER¹

¹Illinois Institute of Technology, Chicago, IL, ²Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA

P-Th-660

Prussian Blue Nanoparticles For Multimodal Imaging Of Pediatric Brain Tumors

M. DUMONT¹, S. YADAVILLI¹, R. SZE^{1,2}, J. NAZARIAN^{1,2}, AND R. FERNANDES^{1,2}

¹Children's National Health System, Washington, DC, ²George Washington University, Washington, DC

P-Th-661

Discoidal Polymeric Nanoconstructs For Multimodal Cancer Imaging

J. KEY¹, A. PALANGE¹, S. ARYAL¹, C. STIGLIANO¹, AND P. DECUZZI¹

¹Houston Methodist Research Institute, Houston, TX

P-Th-662

Progressive Tumor Accumulation of Positron Emitting Magnetic Nanoconstructs

S. ARYAL¹, J. KEY¹, C. STIGLIANO¹, D. LEE¹, AND P. DECUZZI¹

¹Houston Methodist Research Institute, Houston, TX

Track: Cancer Technologies**Engineering of Cancer**

Chairs: Amit Pathak, Srivatsan Kidambi

P-Th-301

Extracellular Mechanical Cues Drive Vinculin Mediated PI3-kinase Signaling to Enhance Cell Invasion in 3D

M. RUBASHKIN¹, L. CASSEREAU¹, R. BAINER¹, C. DUFORT¹, Y. YUI¹, G. OU¹, M. PASZEK^{1,2}, M. DAVIDSON³, Y-Y. CHEN¹, AND V. WEAVER¹

¹University of California - San Francisco, San Francisco, CA, ²Cornell University, Ithaca, NY, ³Florida State University, Tallahassee, FL

P-Th-302

3D Printing Biomimetic Bone Model for *In Vitro* Study of Breast Cancer Bone Invasion

W. ZHU¹ AND L. ZHANG¹

¹The George Washington University, Washington, DC

P-Th-303

Differential Response to Matrix Rigidity Correlates with Aggressive Phenotype of Breast Cancer Cells

J. LI¹, Y. WU¹, M. AL-AMEEN¹, AND G. GHOSH²

¹University of Michigan Dearborn, Dearborn, MI, ²University of Michigan, Dearborn, Dearborn, MI

P-Th-304

Adding a Temperature-dependent Time Delay Improves the Accuracy of Arrhenius Models of Cell Death

J. PEARCE¹

¹Univ. of Texas at Austin, Austin, TX

P-Th-305

Elucidating Brain Tumor-Niche Interactions In 3D Using Biomimetic Hydrogels

C. WANG¹, X. TONG¹, AND F. YANG¹

¹Stanford University, Stanford, CA

P-Th-306

Engineered High-throughput Cellular Models of Prostate Cancer Resistance, Dormancy and Relapse using Novel Antibiotic Hydrogels

T. GRANDHI¹, T. POTTA², J. FAUST¹, AND K. REGE¹

¹Arizona State University, Tempe, AZ, ²Marlyn Nutraceuticals, Tempe, AZ

P-Th-307**Hydrogel-based Multicellular Cancer Spheroid Models for Drug Screening Applications**S. ZUSTIAK¹, A. ASHRAF¹, A. BRANYI², AND Y. KIM²¹Saint Louis University, St Louis, MO, ²University of Alabama, Tuscaloosa, AL**P-Th-308****Cell Spheroids As Microscopic Models for Macroscopic Problems**M. JOYCE¹ AND A. BROCK¹¹The University of Texas at Austin, Austin, TX**P-Th-309****Superior Methods To Examine Bone Tumor And Host Tissue Interactions Using Micro-Gravity Bioreactors**A. TONDON¹, C. HAASE¹, R. REESE¹, C. DODSON¹, C. GREGORY², AND R. KAUNAS¹¹Texas A&M University, College station, TX, ²Institute for Regenerative Medicine, Texas A&M Health Science Center, Temple, TX**P-Th-310****A Murine Model for Breast Microcalcifications in Radiographically Dense Mammary Tissue**L. COLE¹, T. VARGO-GOGOLA², AND R. ROEDER¹¹University of Notre Dame, Notre Dame, IN, ²Indiana University School of Medicine - South Bend, South Bend, IN**P-Th-311****Three-dimensional Microfluidic Co-culture Model of the Bone Marrow Microenvironment for the Study of Acute Lymphoblastic Leukemia**A. BRUCE¹, R. EVANS¹, R. MEZAN¹, K. MARTIN¹, L. GIBSON¹, AND Y. YANG¹¹West Virginia University, Morgantown, WV**P-Th-312****Effect of Methylcellulose on Breast Cancer Cellular Spheroid Biomechanics**J. RODRIGUEZ-DEVORA¹, A. DESAI¹, N. NOSOUDI¹, AND D. DEAN¹¹Clemson University, Clemson, SC**P-Th-313****Extracellular Matrix Stiffness Differentially Regulates Cell Population Dynamics And Drug Response of Myeloid Leukemias**J-W. SHIN¹ AND D. MOONEY¹¹Harvard University, Cambridge, MA**P-Th-314****A 3D *in vitro* Tumor Spheroid Model to Study Spatial Variation of Protein Expression in Cancers**S. RAO¹, P. KARANDE¹, AND P. UNDERHILL¹¹Rensselaer Polytechnic Institute, Troy, NY**P-Th-315****Melanoma Induces Endothelial Junction Disruption By Co-opting Endothelial Cell Contractility**V. ARAGON SANABRIA¹, S. POHLER¹, E. GOMEZ¹, AND C. DONG¹¹The Pennsylvania State University, University Park, PA**P-Th-316** **Tissue-Engineered Models of Tumor-Vascular Interactions**P. DELNERO¹, S. VERBRIDGE², Y. ZHENG³, B. KWEE¹, A. STROOCK¹, AND C. FISCHBACH¹¹Cornell University, Ithaca, NY, ²Virginia Tech-Wake Forest University, Blacksburg, VA, ³University of Washington, Seattle, WA**P-Th-317****A High Throughput Platform for Assaying Cancer Cell Adhesion under Physiologic Flow**A. SHEARER¹, V. LE¹, C. SPRUELL¹, S. NANDI¹, M. CREIXELL¹, AND A. BAKER¹¹University of Texas at Austin, Austin, TX**Track: Cancer Technologies, New Frontiers and Special Topics****Nanotechnologies for Cancer****Chairs:** Rohan Fernandes, Beata Chertok**P-Th-318****A Nanoparticle-Based Combination Chemotherapy Delivery System for Enhanced Tumor Killing by Dynamic Rewiring of Signaling Pathways**S. MORTON¹, M. LEE¹, Z. DENG¹, E. DREADEN¹, E. SIOUVE¹, K. SHOPSOWITZ¹, N. SHAH¹, M. YAFFE¹, AND P. HAMMOND¹¹MIT, Cambridge, MA**P-Th-319****Characterization of Novel Chitosan/Polyelectrolyte Nanoparticles**M. MERTZ¹, B. KOPPOLU¹, AND D. ZAHAROFF¹¹University of Arkansas- Fayetteville, Fayetteville, AR**P-Th-320****Drugging Metastatic and Locally-Disseminated Solid Tumors Using RNAi Combination Chemotherapy**E. DREADEN¹, Y. KONG¹, M. YAFFE¹, AND P. HAMMOND¹¹MIT - Koch Institute for Integrative Cancer Research, Cambridge, MA**P-Th-321****Efficacy Of Active Targeting Nanodevice For Anticancer Drug Delivery To Breast Cancer Cells**A. SATSANGI^{1,2}, S. ROY¹, R. SATSANGI³, R. VADLAMUDI¹, AND J. ONG²¹University of Texas Health Science Center at San Antonio, San Antonio, TX, ²University of Texas at San Antonio, San Antonio, TX, ³RANN Research Corporation, San Antonio, TX**P-Th-322****Gold Nanoparticle Mediated Antigen and Adjuvant Delivery for Cancer Immunotherapy**J. MATTOS ALMEIDA¹, A. LIN¹, E. FIGUEROA¹, A. FOSTER², AND R. DREZEK¹¹Rice University, Houston, TX, ²Bellicum Pharmaceuticals, Houston, TX**P-Th-323****Improving Efficiency and Reliability of Nanoparticle Amplification for Molecular Cancer Diagnostics**M. RAHIM¹, R. KOTA¹, AND J. HAUN¹¹University of California Irvine, Irvine, CA**P-Th-324** **Superparamagnetic Iron Oxide Nanoparticle Actuation Decreases Astrocyte Viability**N. SCHAUB¹, D. RENDE¹, Y. YUAN¹, R. GILBERT¹, AND D-A. BORCA-TASCIUC¹¹Rensselaer Polytechnic Institute, Troy, NY**P-Th-325****Polymeric Micelle as a Drug and Gene Delivery Carrier for Spinal Cord Tumor**S-J. GWAK¹, J. NICE¹, B. GREEN¹, AND J. LEE¹¹Department of Bioengineering, Clemson University, Clemson, SC**P-Th-326****The Effect of Surface Functionalization and Temperature on Nanoparticle Penetration into Tumor Spheroids**A. NAGESETTI¹, D. ESTUMANO², H. ORLANDE², M. COLAÇO², G. DULIKRAVICH¹, AND A. MCGORON¹¹Florida International University, Miami, FL, ²Federal University of Rio de Janeiro, Rio de Janeiro, Brazil**P-Th-327****Folate-targeted MMP-cleavable Nanobeacons: Toward Imaging Delivery in Solid Tumors**I. MCFADDEN¹, J. DUAN¹, B. FINGLETON¹, T. GIORGIO¹, AND J. MCINTYRE¹¹Vanderbilt University, Nashville, TN

P-Th-328**Isolation of Circulating Tumor Cells Using Electrospun Nanofibers Integrated Lab-on-a-Disc**C.-J. KIM¹, V. SUNKARA¹, J. PARK¹, AND Y.-K. CHO¹¹Ulsan National Institute of Science and Technology, Ulsan, Korea, Republic of**P-Th-329****Conductive Polymer-Based Nanostructures for Photothermal Ablation of Cancer: Synthesis and In Vitro Evaluation**T. CANTU¹, K. WALSH¹, V. PATTANI², J. TUNNELL², J. IRVIN¹, AND T. BETANCOURT¹¹Texas State University, San Marcos, TX, ²The University of Texas at Austin, Austin, TX**P-Th-330****Optimizing Nanoparticle Transport in Tumour Extracellular Matrix: Towards Patient Specific Targeting**C. SARSONS¹, K. TEREFE¹, E. SYKES², Q. DAI², J. CHEN², J. ROCHELEAU², D. HWANG², D. CRAMB¹, G. ZHENG², W. CHAN², AND K. RINKER¹¹University of Calgary, Calgary, AB, Canada, ²University of Toronto, Toronto, ON, Canada**P-Th-331****[60]Fullerenes Combined With Radiofrequency Exposure Cause Cell Death in HCC Through Apoptosis**P. GEHLOT^{1,2}, Y. MACKEYEV², AND S. CURLEY²¹University of Michigan, Michigan, MI, ²MD Anderson Cancer Center, Houston, TX**P-Th-332****Novel Magnetic Calcium Phosphate Nanoparticles for Cancer Treatment**X. CHENG¹ AND J. SALCIDO^{1,2}¹Southwest Research Institute, San Antonio, TX, ²University of Texas at San Antonio, San Antonio, TX**P-Th-333****Electrospun Fibers as a Platform for T Cell Expansion.**S. DE LEO¹, D. BOGDANOWICZ¹, P. CHUANG¹, A. DANG¹, H. LU¹, AND L. KAM¹¹Columbia University, New York, NY**P-Th-334****Nanoparticle Charge Influences Serum Protein Adsorption, Circulation Time, and Biodistribution**A. BOHORQUEZ¹, K. COURT², L. SANTIAGO², M. LATORRE², E. MORA³, E. JUAN², M. TORRES-LUGO², AND C. RINALDI¹¹University of Florida, Gainesville, FL, ²University of Puerto Rico, Mayaguez, Mayaguez, PR, ³University of Puerto Rico Comprehensive Cancer Center, San Juan, PR**Track: Cardiovascular Engineering****Cardiac Electrophysiology and Mechanics****Chairs:** Charles Taylor, Milica Radisic**P-Th-232****Assessment of Ventricular Function in Zebrafish Heart Regeneration by Interfacing Surface Electrical Conduction with Intracardiac Hemodynamics**N. JEN¹, J. LEE¹, H. CAO¹, B. KIM², K. SHUNG², AND T. HSIAI¹¹UCLA, Los Angeles, CA, ²USC, Los Angeles, CA**P-Th-233****Optically Mapping the Effects of Light-Activated Norepinephrine Release from Cardiac Sympathetic Neurons**A. WENGROWSKI¹, X. WANG¹, S. TAPA¹, D. MENDELOWITZ¹, AND M. KAY¹¹The George Washington University, Washington, DC**P-Th-234****Experimental Investigation On Spatial Dynamics Of Bifurcation To Alternans In Paced Rabbit Hearts**K. KULKARNI¹, R. VISWESWARAN¹, S. TAN¹, X. ZHAO², AND E. TOLKACHEVA¹¹University of Minnesota, Minneapolis, MN, ²University of Tennessee, Knoxville, TN**P-Th-235****Wireless Recording of Arterial Pulses**W. SHI¹, C. NGUYEN¹, AND J.-C. CHIAO¹¹University of Texas at Arlington, Arlington, TX**P-Th-236****Border-collision Bifurcation of Calcium Cycling Dynamics in Cardiac Myocytes**X. ZHAO¹ AND E. TOLKACHEVA²¹University of Tennessee, Knoxville, TN, ²University of Minnesota, Minneapolis, MN**P-Th-237****Optical Mapping of Beating Heart**H. ZHANG¹, K. IJIMA¹, P. ESTEP¹, L. RAJU¹, G. WALCOTT¹, AND J. ROGERS¹¹University of Alabama at Birmingham, Birmingham, AL**P-Th-238****Quantitative Analysis of Electrophysiological Ventricular Heart Failure Cell Model in ID Tissue**M. ELSHRIF¹, E. CHERRY¹, AND P. SHI¹¹Rochester Institute of Technology (RIT), Rochester, NY**P-Th-239****The Long and Short of It**A. GREER-SHORT¹ AND S. POELZING¹¹Virginia Tech Carilion Research Institute, Roanoke, VA**P-Th-240****Non-Invasive Image-Based Assessment of Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes**C. HEYLMAN¹, R. DATTA¹, Y. KUROKAWA¹, D. TRAN¹, B. CONKLIN², E. GRATTON¹, AND S. GEORGE¹¹University of California, Irvine, Irvine, CA, ²Gladstone Institutes, San Francisco, CA**P-Th-241****Classification of Atrial Fibrillation and Sinus Rhythm with a Gaussian Mixture Model**T. LYE¹, V. IYER², AND C. HENDON¹¹Columbia University, New York, NY, ²Columbia University Medical Center, New York, NY**P-Th-242****The Emission Isosbestic Point of Di-4-ANEPPS as a Function of Excitation Wavelength in Myocardium**H. ZHANG¹, J. POWELL¹, R. DENSMORE¹, G. WALCOTT¹, AND J. ROGERS¹¹University of Alabama at Birmingham, Birmingham, AL**P-Th-243****Non-invasive Holter Monitor Suit for Recording Electrocardiograms in Conscious, Unanesthetized, Behaving Mice**J. MARMERSTEIN¹, K. HOLZEM¹, AND I. EFIMOV¹¹Washington University in St. Louis, St. Louis, MO**P-Th-244****Visible Light Absorbance Spectroscopy of Excised Perfused Hearts Reveals Increased Myocardial and Mitochondrial Oxygenation with Perfluorocarbon Perfusate**R. JAIMES III¹, S. KUZMIAK-GLANCY¹, R. COVIAN², A. WENGROWSKI¹, B. GLANCY², R. BALABAN², AND M. KAY¹¹The George Washington University, Washington, DC, ²National Institutes of Health, Bethesda, MD**P-Th-245****Effects of Acellular Microheterogeneities on Macroscopic Impulse Conduction in Regimes of Normal and Reduced Excitability**H. ASFOUR¹, S. VERMA¹, C. HENRIQUEZ^{2,3}, AND N. BURSAC¹¹Duke University, Durham, NC, ²Duke University, Durham, NC, ³Duke University, Durham, NC

P-Th-246**Efficient Modeling of Three-Dimensional Cardiac Bidomain with Model Order Reduction**D. VU¹ AND K. NG¹¹New Mexico State University, Las Cruces, NM**P-Th-247****The Mechanism of Reentry in an Inhomogeneous Sheet of Ventricular Myocardium**S. KANDEL¹ AND B. ROTH¹¹Oakland University, Rochester, MI**P-Th-248****Linking Between Cardiac trabeculation Development and Wall Shear Stress with 4-Dimensional Single Plane Illumination Microscopy**J. LEE¹, P. FEI¹, H. XU², C-M. HO¹, J. KUO², N. CHI³, AND T. HSIAI¹¹University of California, Los Angeles, Los Angeles, CA, ²University of Southern California, Los Angeles, CA, ³University of California, San Diego, La Jolla, CA**P-Th-249****Metabolic Model of Right Ventricular Dysfunction under High Afterload and Hypoxia**M. LEE¹, B. FALIKS², C. SCIPIONE², K. KOCH², A. VO³, AND K. COOK⁴¹Mackay Memorial Hospital, HsinChu branch, Hsinchu City, Taiwan, ²University of Michigan, Ann Arbor, MI, ³Northwestern University, Chicago, IL, ⁴Carnegie Mellon University, Pittsburgh, PA**P-Th-250****Synchronization of Mechanically Coupled Cardiomyocytes on Thin Films**B. WILLIAMS¹ AND T. SAIF¹¹University of Illinois at Urbana-Champaign, Urbana, IL**P-Th-251****Validation of Finite Element Models of Cardiac Structure and Kinematics via CINE, Displacement-Encoded, and Diffusion MRI.**A. GOMEZ¹, C. WELSH¹, S. MERCHANT¹, AND E. HSU¹¹University of Utah, Salt Lake City, UT**P-Th-252****Effects Of Engineered SDF-1a On Infarcted Myocardium Under Dynamic Loading Conditions**A. TRUBELJA¹, B. FREEDMAN¹, J. MACARTHUR, JR¹, M. HAST¹, J. SARVER², J. COHEN¹, W. HIESINGER¹, P. ATLURI¹, AND Y. WOO³¹University of Pennsylvania Perelman School of Medicine, Philadelphia, PA, ²Drexel University, Philadelphia, PA, ³Stanford University School of Medicine, Stanford, CA**P-Th-253****Quantification of Left Ventricular Pressure and Contractility as a Means to Assess Bisphenol A Cardiac Toxicity**D. BROOKS¹, M. KAY¹, AND N. POSNACK¹¹George Washington University, Washington, DC**P-Th-254****Sarcomere-length Variations During *In-vitro* Sarcomerogenesis**Z. WANG¹, H. YANG¹, T. BORG², AND B. GAO¹¹Clemson University, Clemson, SC, ²Medical University of South Carolina, Charleston, SC**P-Th-255****New Concept for Measuring the Forces in Mitral Valve Annuloplasty Rings**S. NIELSEN SKOV^{1,2}, D. MATHILDE RØPCKE¹, A. W. SIEFERT³, C. ILKJÆR¹, M. JUAN TJØRNILD¹, A. YOGANATHAN³, H. NYGAARD¹, S. LYAGER NIELSEN¹, AND M. JENSEN³¹Department of Cardiothoracic and Vascular Surgery, Aarhus University Hospital, Aarhus, Denmark, ²Department of Engineering, Faculty of Science and Technology, Aarhus University, Aarhus, Denmark, ³Department of Biomedical Engineering, Georgia Institute of Technology and Emory University, Atlanta, GA**P-Th-256****Modulation of Mechanical Response of Micropatterned Cardiomyocytes Using Atomic Force Microscopy**N. NAGARAJAN¹, V. VYAS¹, Y. KUTES¹, B. HUEY¹, AND P. ZORLUTUNA¹¹University of Connecticut, Storrs, CT**P-Th-257****Stress Production in Locally Organized, Globally Disorganized Cardiac Tissues**M. KNIGHT¹ AND A. GROSBERG¹¹University of California, Irvine, Irvine, CA**Track: Cellular and Molecular Bioengineering****Cell Adhesion and Motility****Chairs:** Leo Wan, Kapil Pant**P-Th-418****The Effect of Exogenous Zinc Concentration on the Migration of Osteoblast-like and Osteosarcoma Cells**D. RAMMELKAMP¹, K. DORST¹, E. FARQUHAR^{2,3}, M. CHANCE^{2,3}, AND Y. MENG¹¹Stony Brook University, Stony Brook, NY, ²Case Western Reserve University, Cleveland, OH, ³National Synchrotron Light Source, Upton, NY**P-Th-419****Molecular Model of Actin-Myosin Energy Landscapes Based on Non-Linear Cross-Bridge Stiffness**S. MIJALOVICH¹, M. PRODANOVIC^{1,2}, M. SVICEVIC³, R. GILBERT¹, AND B. STOJANOVIC³¹Northeastern University, Boston, MA, ²Illinois Institute of Technology, Chicago, IL, ³University of Kragujevac, Kragujevac, Yugoslavia**P-Th-420****Uncovering Cell-type Specific Plasticity in Contact Guidance Efficiency**J. WANG¹, J. PETEFISH¹, A. HILLIER¹, AND I. SCHNEIDER¹¹Iowa State University, Ames, IA**P-Th-421****Dynein Arm Mutations Modify the Effects of Increased Viscous Forces on the Flagellar Waveform**K. WILSON¹, O. GONZALEZ¹, S. DUTCHER¹, AND P. BAYLY¹¹Washington University in St. Louis, St. Louis, MO**P-Th-422****A Perinuclear Actin Cap Mediates Tight Coupling Between Nucleus and Cell Migration**D-H. KIM^{1,2} AND D. WIRTZ^{1,2}¹Johns Hopkins Physical Sciences – Oncology Center, Baltimore, MD, ²Johns Hopkins University, Baltimore, MD**P-Th-423****Investigation of the Role of ECM Mimicking Biophysical Cues and Biochemical Cues on Single Cell Migration**A. KIM¹, M. TRAORE¹, E. SMITH¹, A. MYERS¹, A. NAIN¹, AND B. BEHKAM¹¹Virginia Tech, Blacksburg, VA**P-Th-424****Tubulin Modification Regulates The Motility Of Axonemal Dynein**J. ALPER^{1,2}, F. DECKER², B. AGANA^{1,2,3}, AND J. HOWARD^{1,2}¹Yale University, New Haven, CT, ²Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany, ³Missouri State University, Springfield, MO**P-Th-425****Superparamagnetic Iron Oxide Nanoparticle-labeled Cells for Magnetically Directed Cell Motility**D. SOTTO¹, C. JREIGE¹, AND G. BAO¹¹Georgia Institute of Technology, Atlanta, GA**P-Th-426****Signal Enhancing Effect of Serum on the Spontaneous Activity of Chick Forebrain Neuron Culture on a Microelectrode Array**X. YANG¹, S. KUANG¹, AND B. GAO¹¹Clemson University, Clemson, SC

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM, 3:30PM - 4:30PM

P-Th-427**How Actomyosin Contraction Contributes to Cancer Cell Migration in Full Confinement - A Poroelasticity-based Model**J. WRIGHT¹ AND C-J. CHUONG¹¹University of Texas at Arlington, Arlington, TX**P-Th-428****Microtubules Stabilize Cell Polarity By Mediating The Localization Of Rear Signals**J. ZHANG¹, W-H. GUO¹, AND Y-L. WANG¹¹Carnegie Mellon University, Pittsburgh, PA**P-Th-429****Chemotactic Migration of Clustered Central Nervous System Progenitor Cells**S. MCCUTCHEON¹, J. UCHENNA², M. VAZQUEZ¹, AND S. REDENTI²¹The City College of New York, New York, NY, ²Lehman College, New York, NY**P-Th-430****The Organ-Specific Migratory Response of Prostate Cancer**L. LEE¹, S. BEAN¹, S. LOH¹, S. RAO¹, V. LIN¹, AND J-C. CHIAO¹¹UT Arlington, Arlington, TX**P-Th-431** **Role of Neutrophils in the On-set of Systemic Vaso-occlusion in the Blood of Sickle Cell Disease Patients**M. JIMENEZ¹ AND P. SUNDD¹¹University of Pittsburgh, Pittsburgh, PA**P-Th-432****H₂O₂-Upregulated RAGE on A β -Induced Oxidative Pathway and Membrane Phase Changes in bEnd.3 Cells**C. EST¹, H. WANG¹, AND J. LEE¹¹University of Missouri-Columbia, Columbia, MO**P-Th-433****Activation of CD11c Primes Foamy Monocytes for Recruitment on VCAM-1 Under Shear**G. FOSTER¹, H. WU², AND S. SIMON¹¹University of California Davis, Davis, CA, ²Baylor College of Medicine, Houston, TX**P-Th-434****The Role Of The Glycocalyx In Leukocyte Adhesion To Endothelial Cells *In Vitro***K. MCDONALD¹, S. COOPER², AND R. LEASK¹¹McGill University, Montreal, QC, Canada, ²McGill University, Montreal, Canada**P-Th-435****A Strategy for Human Tissue Self-Organization that is Robust to Heterogeneous and Changing Cell-Cell Interactions**A. CERCHIARI¹, J. GARBE², M. TODHUNTER³, N. JEE³, K. BROADERS³, M. THOMSON³, M. LABARGE², T. DESAI³, AND Z. GARTNER³¹UC Berkeley - UCSF, San Francisco, CA, ²Lawrence Berkeley National Laboratory, Berkeley, CA, ³UCSF, San Francisco, CA**P-Th-436****Assessing Inhibitory Capability of Zosteriac Acid and Sodium Benzoate on Mouse and Human Fibroblast Cell Attachment and Proliferation**D. PARAJULI¹ AND B-M. ZHANG NEWBY¹¹The University of Akron, Akron, OH**P-Th-437****Bioinspired Microfluidic Assay for *In Vitro* Modeling of Leukocyte-Endothelium Interactions**G. LAMBERTI¹, B. PRABHAKARPANDIAN², C. GARSON², A. SMITH², K. PANT², B. WANG³, AND M. KIANI¹¹Temple University, Philadelphia, PA, ²CFD Research Corporation, Huntsville, AL, ³Widener University, Philadelphia, PA**P-Th-438****Investigating Electrotaxis of the Non-Transformed MCF-10A Mammary Epithelial Cell Line**M. LALLI¹ AND A. ASTHAGIRI¹¹Northeastern University, Boston, MA**Track: Cellular and Molecular Bioengineering****Mechanotransduction****Chairs:** Taby Ahsan, Lauren Black III**P-Th-439****Non-Invasive Measurement of Interstitial Fluid Pressure In Microscale Gels and Tissues**O. OZSUN¹, R. THOMPSON¹, J. TIEN¹, AND K. EKINCI¹¹Boston University, Boston, MA**P-Th-440****Effects Of Substrate Stiffness On Direct Reprogramming From Fibroblasts To Neurons**S. WONG^{1,2}, J. SOTO^{1,2}, J. CHU¹, AND S. LI^{1,2}¹University of California, Berkeley, Berkeley, CA, ²University of California, San Francisco, San Francisco, CA**P-Th-441** **Crosstalk of Physiological Mechanical Cues in Endothelial Cell Signaling**D. ZHOU¹, F. BORDELEAU¹, J. KOHN¹, A. ZHOU¹, B. MASON¹, M. MITCHELL¹, M. KING¹, AND C. REINHART-KING¹¹Cornell University, Ithaca, NY**P-Th-442****Patterned Mechanical Stiffening of PEG Hydrogels by NIR laser**Y. CHOI^{1,2}, K. HRIBAR², M. ONDECK², A. ENGLER², AND S. CHEN²¹University of Sydney, St Leonards, Australia, ²University of California, San Diego, La Jolla, CA**P-Th-443****Emerging Determinants of Cytosolic Calcium Homeostasis in the Sheared Endothelium**C. SCHEITLIN^{1,2}, J. JULIAN^{1,2}, AND R. ALEVRIADOU^{1,2}¹The Ohio State University, Columbus, OH, ²Davis Heart & Lung Research Institute, Columbus, OH**P-Th-444****TLR4 is Involved in Mechanosensin**M. PREVITERA^{1,2} AND A. SENGUPTA¹¹New Jersey Neuroscience Institute at JFK Medical Center, Edison, NJ, ²Seton Hall University, Edison, NJ**P-Th-445****Matrix Rigidity Mediates Myofibroblast Activation by Controlling MRTF-A Signaling**J. O'CONNOR¹ AND E. GOMEZ¹¹The Pennsylvania State University, University Park, PA**P-Th-446****Metastatic Cancer Mechanical Tropsim Is Controlled By Cytoskeletal Tension**D. MCGRAIL¹, Q. KIEU¹, J. IANDOLI¹, AND M. DAWSON¹¹Georgia Institute of Technology, Atlanta, GA**P-Th-447****A Prestress Dependent Mechanotransduction Connecting Adhesive Receptors**I. MUHAMED¹, J. WU¹, X. KONG¹, N. WANG¹, AND D. LECKBAND¹¹University of Illinois Urbana Champaign, urbana, ILPOSTER
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P-Th-448**Syndecan-1 Mediates Endothelial Shear Mechanotransduction Response and Inflammatory Phenotype**P. VOJVODIC¹, E. WILLIAMS¹, R. LIU¹, D. MIN¹, AND A. BAKER¹¹The University of Texas at Austin, Austin, TX**P-Th-449****Determining the Relationship Between Protein Deformation and Protein Dynamics in Focal Adhesions**K. ROTHENBERG¹ AND B. HOFFMAN¹¹Duke University, Durham, NC**P-Th-450****Antiplatelet Drug Efficacy Under Dynamic Device-Related Shear Conditions**J. SHERIFF¹, P. TRAN², L. VALERIO³, R. GHOSH¹, W. BRENGLE², E. ZHANG¹, M. HUTCHINSON², D. BLUESTEIN¹, AND M. SLEPIAN^{2,4,5}¹Biomedical Engineering, Stony Brook University, Stony Brook, NY, ²Biomedical Engineering, University of Arizona, Tucson, AZ, ³Bioengineering, Politecnico di Milano, Milan, Italy, ⁴Sarver Heart Center, University of Arizona, Tucson, AZ, ⁵Stony Brook University, Stony Brook, NY**P-Th-451****Force Generation During Primary Human Macrophage Migration on Compliant Surfaces**L. HIND¹, M. DEMBO², AND D. HAMMER¹¹University of Pennsylvania, Philadelphia, PA, ²Boston University, Boston, MA**P-Th-452****Fluid Flow Affects Vascular Endothelial Cell Drug Response**L. TAMEZ¹, R. SHEPHERD¹, K. FUH¹, S. BARANZINI², R. MOORE¹, AND K. RINKER¹¹University of Calgary, Calgary, AB, Canada, ²University of California San Francisco, San Francisco, CA**P-Th-453****Enhancement of Glycocalyx Mediated Endothelial Mechanotransduction Using Drug-Loaded Nanoparticles**H. HOMAYONI¹, M. CHENG¹, R. KUMAR², S. SRIDHAR², T. WEBSTER¹, AND E. EBONG¹¹Department of Chemical Engineering, Northeastern University, Boston, MA, ²Department of Physics, Northeastern University, Boston, MA**P-Th-454****POR1 Geometry Sensing of Nanofiber Diameter Regulates Rac1 Activity and Osteoblast Differentiation**A. HIGGINS¹ AND J. BROWN¹¹The Pennsylvania State University, University Park, PA**P-Th-455****"Effects of Clinically Relevant Mechanical Forces on Vascular Smooth Muscle Cells Under Hyperglycemia: An *In Vitro* Dynamic Disease Model"**V. CHAWLA¹, A. SIMIONESCU¹, E. LANGAN III², AND M. LABERGE¹¹Clemson University, Clemson, SC, ²Greenville Health System (GHS), Greenville, SC**P-Th-456****Imaging Cellular and Molecular Stretch in an *in vivo* Cellular Tube Using Filamin::stFRET.**J. BOUFFARD¹, A. ASTHAGIRI¹, AND E. CRAM¹¹Northeastern University, Boston, MA**P-Th-457****Accelerations at Sonic Frequencies Mimic Thyroid Epithelial Cells Response to TSH**A. WAGNER¹, I. TITZE^{1,2}, AND E. SANDER¹¹University of Iowa, Iowa city, IA, ²University of Utah, Salt Lake City, UT**P-Th-458****A Role for ER Stress in the Modulation of VCAM-1 Expression by Shear Stress and Dietary Lipoproteins**K. BAILEY¹, Y. WANG¹, G. FOSTER¹, S. SIMON¹, AND A. PASSERINI¹¹University of California, Davis, Davis, CA**Track: Cellular and Molecular Bioengineering****Cellular and Molecular Bioengineering - Other****Chairs:** Julie Phillippi, Anand Ramasubramanian**P-Th-459****Pancreatic β cell function and Mass in Pubertal Hyperinsulinemia**J. FAUST¹, I. MALENICA¹, M. DOSHI¹, R. STEPANEK¹, J. BROWER¹, K. SWEAZEA¹, M. CAPLAN¹, AND R. HERMAN¹¹Arizona State University, Tempe, AZ**P-Th-460****High Spatio-temporal ERK Activity in Response to Mechano-chemical Stimuli in Rat Mesenchymal Stem Cells**A. DHARMARAJAN¹, M. FLOREN², AND W. TAN²¹University of Colorado at Boulder, Louisville, CO, ²University of Colorado at Boulder, Boulder, CO**P-Th-461****On-Chip Multi-Frequency Current Mode Lock-in Amplifier for Impedance Sensing**N. MCFARLANE¹ AND J. GU¹¹University of Tennessee, Knoxville, TN**P-Th-462****Kupffer Cell Mediated Cardiovascular Disease Development**D. RUBENSTEIN¹ AND W. YIN¹¹Stony Brook University, Stony Brook, NY**P-Th-463****Dictyostelium Phenylalanine Hydroxylase Is Activated by Its Substrate Phenylalanine**H. KIM¹, Y. PARK², Y. KIM³, Y. YANG³, Y. KANG¹, S. PARK¹, J. SHIN¹, Y. KIM¹, AND J.-W. SHIN^{1,3,4}¹Department of biomedical engineering, Inje university, Gimhae-si, Korea, Republic of, ²Department of biological sciences, Inje university, Gimhae-si, Korea, Republic of, ³Department of health science and technology, Inje university, Gimhae-si, Korea, Republic of, ⁴Cardiovascular and Metabolic Disease Center /Institute of Aged Life Redesign/UHRC, Inje University, Gimhae-si, Korea, Republic of**P-Th-464****Proliferative Signals in Gradients of Soluble Growth Factors**E. GONG¹ AND A. ASTHAGIRI¹¹Northeastern University, Boston, MA**P-Th-465****Microfluidic Assay of Hemophilic Blood Clotting: Distinct Deficits in Platelet and Fibrin Deposition at Low Factor levels**T. COLACE¹, P. FOGARTY¹, K. PANCKERI¹, R. LI¹, AND S. DIAMOND¹¹University of Pennsylvania, Philadelphia, PA**P-Th-466****A Rapid UV/Vis Spectroscopy Method for Detecting Protein-Centered Radicals using DMPO**B. HOLLINS¹¹Louisiana Tech University, Ruston, LA**P-Th-467****Loss of Endothelial Surface Glycocalyx in Early Sepsis**J. FAN¹, W. YEN¹, M. ZENG¹, J. CHEN², B. RATLIFF², J. TARBELL¹, M. GOLIGORSKY², AND B. FU¹¹The City College of the City University of New York, New York, NY, ²New York Medical College, Valhalla, NY**P-Th-468****Phospholipase A2 in A β clearance by microglia**L. DONG¹, C. EST¹, K. HENDERSON¹, AND J. LEE¹¹University of Missouri-Columbia, Columbia, MO

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM, 3:30PM - 4:30PM

P-Th-469**Fibronectin Decreases Fibroblast Migration After Electrical Stimulation**S. SNYDER¹ AND R. WILLITS¹¹University of Akron, Akron, OH**P-Th-470****Increased Sphingomyelinase Activity in Sickled Red Blood Cells during Sickle Cell Disease**Y. ZHANG¹, A. AWOJODU¹, AND A. LANE¹¹Georgia Institute of Technology, Atlanta, GA**Track: Device Technologies and Biomedical Robotics, Translational Biomedical Engineering****Biomedical Sensors & Actuators****Chairs:** Samir Iqbal, Tony Akl**P-Th-40****The Design and Implementation of a 4 DOF Robotic Manipulator for Automated Venipuncture**M. BALTER¹ AND A. CHEN¹¹Rutgers University, Piscataway, NJ**P-Th-41****Acoustic Manipulation of Protein Microcrystals for X-ray Crystallography**F. GUO¹, J. FRENCH², P. LI¹, Z. MAO¹, N. YENNAWAR¹, AND T. HUANG¹¹Penn state university, state college, PA, ²Stony Brook University, Stony Brook, NY**P-Th-42****Measurement of Blast Reflected & Incident Overpressures with the Blast Gauge™ System**G. LEE¹, U. DA SILVA², M. OSTERTAG³, M. KENYON³, K. ALLPRESS⁴, G. KATSELIS⁴, D. BORKHOLDER^{3,5}, AND G. KAMIMORI¹¹Walter Reed Army Institute of Research, Silver Spring, MD, ²Naval Medical Research Center, Silver Spring, MD, ³BlackBox Biometrics, Inc., Rochester, NY, ⁴Defence Science and Technology Organisation, Edinburgh, Australia, ⁵Rochester Institute of Technology, Rochester, NY**P-Th-43****On Site Thermoelectric Cooling Device for Therapeutic Applications**W. HEJL¹, J. LEE¹, N. BABARIA¹, S. KOSHNEVIS¹, AND K. DILLER¹¹University of Texas at Austin, Austin, TX**P-Th-44****Reducing Motion Artifact From Driver's PPG Using On-line Empirical Mode Decomposition**K. LEE¹, C. PARK¹, H. KIM², S. KIM², AND B. LEE¹¹Gwangju Institute of Science and Technology, Gwangju, Korea, Republic of, ²Hyundai Motor Group, Hwaseong, Korea, Republic of**P-Th-45****A Novel Wearable Cardioverter-Defibrillator for Increased Patient Compliance**S. SUBRAMANIAN¹, P. KANG¹, C-M. SO¹, M. CHEN¹, T. LAM¹, C. ROMANCZYK¹, Q. SALDITCH¹, AND A. PREMKUMAR¹¹Johns Hopkins University, Baltimore, MD**P-Th-46****An Auditory Feedback Study on the Object Localization and Tracking System**N. MANTE¹, G. MEDIONI¹, A. TANGUAY¹, AND J. WEILAND¹¹University of Southern California, Los Angeles, CA**P-Th-47****Conducting Polymer PEDOT Nanofibers for Sensitive Detection of Glucose**G. YANG¹, K. KAMPSTRA¹, AND M. ABIDIAN¹¹Pennsylvania State University, State College, PA**P-Th-48****Development of A Rapid and Label-free Affinity Sensor for On-site Biomolecular Detection**H. CUI¹, C. CHENG¹, Q. YUAN¹, J. WU¹, AND S. EDA¹¹University of Tennessee, Knoxville, TN**P-Th-49****Bioimpedance Analysis Detects Lower Leg Muscle Atrophy in Patients with Charcot-Marie-Tooth Disease**J. WOODS¹, M. SOLOMITO¹, AND E. GARIBAY¹¹Connecticut Children's Medical Center, Farmington, CT**P-Th-50****Monitoring Phospholipase A2 Activity Using Gd-encapsulated Phospholipid Liposomes**Z. CHENG¹ AND A. TSOURKAS¹¹University of Pennsylvania, Philadelphia, PA**P-Th-51****An Organic Light-Emitting Diode for Oxygen Sensing Based on Phosphorescence Lifetime**Y. ANDO¹, Y. YANAGISAWA¹, AND K. TSUKADA¹¹Keio University, Yokohama, Japan**P-Th-52****Fluorescence Quenching by Varying Sized Gold Nanorods for Multiplexed Plasmonic Biochip**Y. WANG¹ AND L. TANG¹¹University of Texas at San Antonio, San Antonio, TX**P-Th-53****Study Interactions Of FvToxI With Synthetic Peptides Using A Label-free Biosensor And Molecular Simulations**B. ZHANG¹, B. WANG², A. MORALES¹, J. TAMEZ-VELA¹, J. SCUDDER¹, M. BHATTACHARYYA², AND J. YE¹¹University of Texas at San Antonio, San Antonio, TX, ²Iowa State University, Ames, IA**P-Th-54****Readout Circuitry for Monitoring Temperature Variations in Biological Fluids**F. QUAIYUM¹, L. TAYLOR¹, S. PULLANO², I. MAHBUB¹, A. FIORILLO¹, C. BRITTON¹, AND S. KAMRUL ISLAM¹¹University of Tennessee Knoxville, Knoxville, TN, ²University Magna Graecia of Catanzaro, Catanzaro, Italy**P-Th-55****Ratiometric Nanocapsule Sensors Fabricated From Sacrificial CaCO₃ Nanoparticles**A. BISWAS¹, A. NAGARAJA¹, AND M. MCSHANE¹¹Texas A&M University, College Station, TX**P-Th-56****A Reconfigurable Bio-Impedance Sensing Platform With Array-Based Detection Algorithm for 3D Tissue Characterization and Delineation**C. KIM¹, C. ZHU¹, J. ZHANG², AND H. WANG¹¹Georgia Institute of Technology, Atlanta, GA, ²University of Kentucky, Lexington, KY**P-Th-57****Paper-based Biosensor for Colorimetric Detection of PSA Biomarker**A. DREW¹ AND H. KWON¹ ANDREWS

University, Berrien Springs, MI

P-Th-58**A SERS Sensing System based on Encapsulation of Gold Nanoparticles in Microporous Alginate Hydrogels**Y-H. YOU¹, A. LIU¹, J. ROBERTS¹, AND M. MCSHANE¹¹Texas A&M University, College Station, TX**P-Th-59****Differential Immuno-Capture Assay to Electrically Enumerate Blood Cells**U. HASSAN¹, G. DAMHORST¹, T. GHONGE¹, O. SONOIKI¹, L. ORLANDI², B. REDDY¹, AND R. BASHIR¹¹University of Illinois at Urbana Champaign, Urbana, IL, ²University Laboratory High School, Urbana, ILPOSTER
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P-Th-60**Surface Engineering for Aptamer-Based Chemical Sensors**R. HARWELL¹, G. BARKER¹, H. MARKS¹, G. COTÉ¹, G. JACKSON², AND M. PISHKO¹¹Texas A&M University, College Station, TX, ²Base Pair Biotechnologies, Pearland, TX**P-Th-61** **A Study of Nano-scale Coatings on Planar Gold Microelectrodes for Bioimpedance Measurements**V. SRINIVASARAGHAVAN¹, J. STROBL¹, D. WANG¹, J. HEFLIN¹, AND M. AGAH¹¹Virginia Tech, Blacksburg, VA**P-Th-62****A Photodiode-Integrated Microfluidic Bioreactor for Real-Time pH Monitor of Organs-on-Chip**Y. ZHANG^{1,2,3}, N. SHAMS^{1,2,3}, M. DOKMECI^{1,2,3}, AND A. KHADEMHOSEINI^{1,2,4}¹Harvard Medical School, Cambridge, MA, ²Brigham and Women's Hospital, Boston, MA,³Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA, ⁴Wyss Institute for Biologically Inspired Engineering, Boston, MA**P-Th-63****In Vitro and In Vivo Evaluation of Copolymer Hydrogels as Enzyme-based Luminescence Glucose Sensors**R. UNRUH¹, S. NICHOLS², N. WISNIEWSKI², AND M. MCSHANE¹¹Texas A&M University, College Station, TX, ²PROFUSA, Inc., South San Francisco, CA**P-Th-65****Enhanced Electrical Label-Free Detection of Pathogens Through Isothermal DNA Amplification Using True Dual-Gated ISFETs**C. DUARTE-GUEVARA¹, F.-L. LAI², C. CHENG², B. REDDY¹, E. SALM¹, V. SWAMINATHAN¹, Y.-S. LIU², AND R. BASHIR¹¹UIUC, Urbana, IL, ²TSMC, Hsinchu, Taiwan**P-Th-66****Development of Fructose Dehydrogenase-Ferrocene Redox Polymer Films for Biosensor and Biofuel Cell Applications**J. CHEN¹, D. BAMPER¹, D. GLATZHOFFER¹, AND D. SCHMIDTKE¹¹University of Oklahoma, Norman, OK**P-Th-67****Microelectronic Point-Of-Care Diagnostics For Early Phase Rickettsial Infections**W. ZHANG¹, K. PATEL¹, K. MACALUSO², AND A. RADADIA¹¹Louisiana Tech University, Ruston, LA, ²Louisiana State University, Baton Rouge, LA**P-Th-68****Specific Surface Termination of Nano-textured ZnO for Label-free Electrochemical Bio-sensing**R. MUNJE¹, S. MUTHUKUMAR¹, M. JACOBS¹, B. QUADRI¹, AND S. PRASAD¹¹University of Texas at Dallas, Richardson, TX**P-Th-69****Graphene-Based Biofet for Real-time Sensing**A. RADADIA¹ AND B. HOU¹¹Louisiana Tech University, Ruston, LA**Track: Device Technologies and Biomedical Robotics, Cardiovascular Engineering****Cardiovascular Devices, Implantable Devices and Implantable Technologies****Chairs:** Dominic Nathan, Mehmet Kaya**P-Th-1****A Thin Film Pressure Transducer for Intravascular Blood Pressure Sensing**P. STARR^{1,2}, K. BARTELS^{2,3}, M. AGRAWAL², AND S. BAILEY^{1,2}¹University of Texas Health Science Center at San Antonio, San Antonio, TX, ²University of Texas at San Antonio, San Antonio, TX, ³Southwest Research Institute, San Antonio, TX**P-Th-2****Design and Characterization of an Endovascular Mechanical Thrombectomy Device**J. SZAFRON¹, A. MUSCHENBORN¹, AND D. MAITLAND¹¹Texas A&M University, College Station, TX**P-Th-3****Design and Characterization of a Resistively Heated Shape Memory Polymer Micro-Release Device**L. NASH¹, M. WIERZBICKI¹, AND D. MAITLAND¹¹Texas A&M University, College Station, TX**P-Th-4** **Thermal Evaluation of Bipolar Radiofrequency Ablation for Treatment of Resistant Hypertension**L. HOBBS¹, L. SHAW KLEIN², W. GRANDE², AND G. GDOWSKI¹¹University of Rochester, Rochester, NY, ²Micropen Technologies, Honeoye Falls, NY**P-Th-5****Simulation of Cooling Preservation Systems for Human Hearts Destined for Transplantation**A. ABDOLI¹, G. DULIKRAVICH¹, C. BAJAJ², D. STOWE³, AND M. JAHANIA⁴¹Florida International University, Miami, FL, ²University of Texas at Austin, Austin, TX,³Medical College of Wisconsin, Milwaukee, WI, ⁴Wayne State University, Detroit, MI**P-Th-6****Impact of Bifurcation Stenting on Endothelial Shear Stress**H. CHEN¹, I. MOUSSA², C. DAVIDSON³, AND G. KASSAB⁴¹Indiana Univ. Purdue Univ., Indianapolis, IN, ²University of Texas Health Science Center, San Antonio, TX, ³Northwestern University, Chicago, IL, ⁴IUPUI, Indianapolis, IN**P-Th-7****Finite Element Analysis Of A Double Opposed PLLA Helical Stent Expansion And Arterial Wall Interaction**T. WELCH¹, S. VEERAMREDDY¹, J. WANG¹, A. NUGENT¹, AND J. FORBESS¹¹UT Southwestern Medical Center of Dallas, Dallas, TX**P-Th-8****Long-Term Implant Evaluation of Non-hermetic Micropackage Technology**P. WANG¹, S. MAJERUS¹, J. ANDERSON¹, M. DAMASER², C. ZORMAN¹, AND W. KO¹¹Case Western Reserve University, Cleveland, OH, ²Advanced Platform Technology Center, Louis Stokes Cleveland VA Medical Center, Cleveland, OH**P-Th-9****A Multilayer PDMS Microchannel Scaffold for Efficient IHC Analysis and Neural Interfacing**E. IBARRA¹, B. KIM¹, B. GARZA¹, R. LUNA¹, AND Y. CHOI¹¹University of Texas – Pan American, Edinburg, TX**P-Th-10****A Polymer-based Depth-type Neural Probe with Four Sided Contacts**S. SHIN¹, S. LEE¹, J. JEONG¹, S. AHN¹, J. KIM¹, K. EOM¹, J. PARK¹, C. KOH², H.-C. SHIN², AND S. KIM¹¹Seoul National University, Seoul, Korea, Republic of, ²Hallym University, Gangwon, Korea, Republic of**P-Th-11****Ultrasonic Dry Coupling Through Tissue**J. NORMAN¹, J. LEADBETTER¹, H. VIHVELIN¹, J. BROWN¹, AND R. ADAMSON¹¹Dalhousie University, Halifax, NS, Canada**P-Th-12****A Low Power Implantable Glucose Monitoring System**I. MAHBUB¹, T. RANDALL¹, F. QUAIYUM¹, AND S. ISLAM¹¹University of Tennessee, Knoxville, TN**P-Th-13****Biofabrication of Implantable Microfabricated Biotransducers for Dual Sensing of Glucose and Lactate**A. GUISEPPI-ELIE^{1,2}, O. KARUNWI^{1,2}, F. ALAM^{1,2}, AND M. GAILLARD^{1,2}¹Clemson University, Clemson, SC, ²Center for Bioelectronics, Biosensors and Biochips (C²B), Anderson, SC

P-Th-14**Reversible and Photo-Activated Artificial Iris**F. SHAREEF¹, S. SUN¹, M. KOTECHA¹, D. AZAR¹, AND M. CHO¹¹University of Illinois at Chicago, Chicago, IL**P-Th-15****Parylene-based EC-MEMS Patency Sensor for Detection of Hydrocephalus Shunt Obstruction**B. KIM¹, C. LEE¹, L. YU¹, AND E. MENG¹¹University of Southern California, Los Angeles, CA**P-Th-16****Implementation of a Primitive Neural Stimulator with Simulated Post-Synaptic and Action Potentials**A. PARODI¹ AND J-W. CHOI¹¹Louisiana State University, Baton Rouge, LA**Track: Device Technologies and Biomedical Robotics****Medical Device Development and Computational Models****Chairs:** Rafael Davalos, Sergey Shevkopyas**P-Th-17****Preclinical Development and Mechanical Testing of a Load Transfer Implant (LTI) for Knee Joint Arthroplasty**C. BERGERSON¹, Z. PAULSON¹, C. DAVIS¹, L. SONOQUI¹, J. HUNT², AND M. MORENO¹¹Texas A&M University, College Station, TX, ²Web, Frisco, TX**P-Th-18****Finite Element Analysis of Bore-Cone Taper Junctions in Modular Total Knee Replacements**J. HERNANDEZ¹, K. SNETHEN¹, AND M. HARMAN¹¹Clemson University, Clemson, SC**P-Th-19****Preventing Pedicle Probe Injuries During Spinal Fusion Surgeries**A. ANNADANAM¹, R. GADDIPATI¹, L. HERRERA¹, B. ISAACS¹, E. XIE¹, C. ANDREWS¹, A. MALLA¹, AND E. SCHWARZ¹¹Johns Hopkins, Baltimore, MD**P-Th-20****Lift Walker: Developing an Inexpensive and Lightweight Stand-Assist Device**T. RIST¹, C. BATEMAN¹, J. BARRETTA¹, J. FLORES¹, J. GALLOWAY¹, M. KASSNER¹, J. BUMGARDNER¹, H. LIN¹, T. TAN¹, AND R. MULVANY²¹The University of Memphis, Memphis, TN, ²The University of Tennessee Health Science Center, Memphis, TN**P-Th-21****A Design of a Multi-degree Freedom Patient Platform for IGRT**F. ZHANG¹, L. SUN¹, S. KUANG¹, S. YU¹, AND Y. FENG¹¹Soochow University, Suzhou, China, People's Republic of**P-Th-22****Hand Held Force Magnifier for Microsurgery**M. LUO¹, R. LEE¹, C. WONG¹, R. KLATZKY², AND G. STETTEN^{1,2}¹University of Pittsburgh, Pittsburgh, PA, ²Carnegie Mellon University, Pittsburgh, PA**P-Th-23****Venipuncture with Vibrated Needle Yields Lower and Less Variable Corticosterone Levels in Rats**R. CLEMENT¹, Z. KRIEGER¹, E. UNGER², S. CAVIGELLI³, R. SHEEHAN¹, R. BAGWELL¹, AND M. MULVIHILL¹¹Actuated Medical, Inc., Bellefonte, PA, ²Lebanon Valley College, Annville, PA, ³Pennsylvania State University, University Park, PA**P-Th-24****The Development Of A Dynamic Adaptive Driving Simulator**S. TUDOR¹, S. CAREY¹, AND R. DUBEY¹¹University of South Florida, Tampa, FL**P-Th-25****Micro Magnetic Resonance Relaxometry for Label-free, Rapid Malaria Diagnosis**W. PENG¹, C. NG¹, T. KONG¹, L. CHEN¹, T. LOH², P. PREISER^{1,3}, AND J. HAN^{1,4}¹Singapore-Massachusetts Institute of Technology Alliance For Research And Technology (SMART), Singapore, Singapore, ²National University of Hospital, Singapore, Singapore, ³Nanyang Technological University, Singapore, Singapore, ⁴Massachusetts Institute of Technology, Cambridge, MA**P-Th-26****Computational Model of Light Propagation in Skin and Subcutaneous Blood Vessels for Vein Imaging Devices**R. POLSKI¹ AND H. KWON¹¹Andrews University, Berrien Springs, MI**P-Th-27****Model And Method Of Extravasation Detection**J. KANTOR¹, M. LASCH², AND Y. FENG¹¹University of Texas at San Antonio, San Antonio, TX, ²University of Texas at San Antonio, Schertz, TX**P-Th-28****Analyzing Lysed Whole Blood via "Microfluidic Drifting" Based Flow Cytometry Chip"**A. NAWAZ¹, R. NISSLY¹, P. LI¹, L. WANG², Y. SHARIFF³, AND T. HUANG¹¹Pennsylvania State University, State College, PA, ²Ascent Bio-Nano Technologies, State College, PA, ³Taibah University, Madina, Saudi Arabia, Madina, Saudi Arabia**P-Th-29****Standing Surface Acoustic Wave (SSAW) Based Multi-parametric Microflow Cytometer**Y. CHEN¹, S. LI¹, P. LI¹, A. NAWAZ¹, L. WANG², Y. SHARIFF³, AND T. HUANG¹¹Penn state university, State College, PA, ²Ascent BioNano Inc., State College, PA, ³Taibah University, Madina, Saudi Arabia**P-Th-30****A Wireless Sensor for Wound Strain Monitoring Using Laser Patterning on a Commercial Dressing**R. RAHIMI¹, M. OCHOA¹, AND B. ZIAIE¹¹Purdue University, West Lafayette, IN**P-Th-31****Investigation of Wall Effects for Particle Viscometer**A. BOTTING¹, A. PLUMBER¹, G. BUSTAMANTE¹, AND J. YE¹¹University of Texas at San Antonio, San Antonio, TX**P-Th-32****Interdigitated Electrode To Treat Micro-Metastases By High-Frequency Irreversible Electroporation**D. SWEENEY¹, E. LATOUCHE², P. ROBERTS², E. SCHMELZ², AND R. DAVALOS¹¹Virginia Tech-Wake Forest University, Blacksburg, VA, ²Virginia Tech, Blacksburg, VA**P-Th-33****Mossbauer Studies of Rechargeable Na-ion Batteries for Medical Applications.**H-Y. HAH¹¹University of Tennessee Space Institute, Tullahoma, TN**P-Th-34****Designing a Low-Cost Otoscope for Developing Countries Using a Non-traditional Power Source**S. ROBB¹, D. WELLS¹, J. LEIPHEIMER¹, D. CESARIO¹, N. STONE¹, AND B. CAMPBELL¹¹Robert Morris University, Moon Township, PA

P-Th-35**Design and Construction of a Blood Glucose Meter for Use in Nigeria**A. ZUBAIR¹, E. EBEBE-DINNIE¹, AND A. COKER¹¹University of Ibadan, Ibadan, Nigeria**P-Th-36****Design and Construction of a Portable Low Cost Electrical Safety Analyzer for Biomedical Devices**A. ZUBAIR¹, O. IBE¹, AND A. COKER¹¹University of Ibadan, Ibadan, Nigeria**P-Th-37****Device for Aid in Neonatal and Infant Resuscitation**M. HEMANI¹, B. GU¹, B. KIM¹, T. LAM¹, AND A. CRUZ¹¹Johns Hopkins University, Baltimore, MD**P-Th-38****Development Of A Predictive Maintenance GUI For Medical Linear Accelerators**C. NGUYEN^{1,2}, C. ABLE², A. BAYDUSH², AND M. MUNLEY^{1,2}¹Virginia Tech - Wake Forest School of Biomedical Engineering and Sciences, Winston Salem, NC, ²Wake Forest School of Medicine, Winston Salem, NC**P-Th-39****ECG Signal Transmission Through GSM Voice Channel**S. DEGHANOJAMAHALLEH¹, B. PLISKOW¹, AND M. KAYA¹¹Florida Institute of Technology, Melbourne, FL**Track: Drug Delivery, New Frontiers and Special Topics****Responsive and Targeted Drug Delivery****Chairs:** Jeffrey Capadona, Jill Steinbach**P-Th-335****pH-Responsive P(IA-co-NVP) Hydrogels for the Oral Delivery of High Isoelectric Point Proteins**M. KOETTING¹, A. ZHANG¹, AND N. PEPPAS¹¹The University of Texas at Austin, Austin, TX**P-Th-336****Tumor-Targeted Magnetic Nanoparticles for Thermo-Controlled Drug Release**J. CAMINERO¹ AND M. DOMENECH¹¹University of Puerto Rico at Mayaguez, Mayaguez, PR, Puerto Rico**P-Th-337****Controlled Release of Lipoplexes using Acoustic Droplet Vaporization**M. PILON¹, C. WILSON¹, D. JONES¹, R. FRANCESCHI¹, AND M. FABILLI¹¹University of Michigan, Ann Arbor, MI**P-Th-338****pH-Responsive Polymeric Particulate Systems for Micronutrients Fortification of Salt**X. XU¹, R. LANGER¹, AND A. JAKLENEC¹¹Massachusetts Institute of Technology, Cambridge, MA**P-Th-339****Development of pH-Responsive Hydrogel Carriers for Oral Vaccine Delivery**L. SHARPE¹, Y. KHAIRANDISH¹, AND N. PEPPAS¹¹The University of Texas at Austin, Austin, TX**P-Th-340****Anti-Cancer Drug Delivery With DNA Nano-Ball**W. SUN^{1,2}, R. MO^{1,2}, AND Z. GU^{1,2}¹The University of North Carolina at Chapel Hill, Chapel Hill, NC, ²North Carolina State University, Raleigh, NC**P-Th-341****Optimization of pH-Responsive Hydrogels for Delivery of HMW Proteins**S. HORAVA¹ AND N. PEPPAS¹¹The University of Texas at Austin, Austin, TX**P-Th-342****Ultrasound-triggered Disruption and Self-healing of Reversibly-crosslinked Hydrogels for Drug Delivery and Enhanced Chemotherapy**N. HUEBSCH^{1,2}, C. KEARNEY^{1,2}, X. ZHAO^{1,2}, J. KIM^{1,2}, C. CEZAR^{1,2}, Z. SUO¹, AND D. MOONEY^{1,2}¹Harvard University, Cambridge, MA, ²Wyss Institute for Biologically Inspired Engineering, Cambridge, MA**P-Th-343****Temperature-sensitive Nanoparticles for Lung Cancer Treatment**J. MENON^{1,2}, K. VU¹, D. NGUYEN^{1,2}, AND K. NGUYEN^{1,2}¹University of Texas at Arlington, Arlington, TX, ²University of Texas Southwestern Medical Center at Dallas, Dallas, TX**P-Th-344****Modeling the Effect of Oleic Acid Absorption on Bioavailable Griseofulvin Concentration**Y. YEAP¹ AND R. CARRIER¹¹Northeastern University, Boston, MA**P-Th-345****MMPs-responsive Release of siRNA from 4-arm PEG-siRNA Conjugate**H. KIM¹ AND H. YOO¹¹Kangwon National University, Chuncheon, Korea, Republic of**P-Th-346****Single Molecule Mechanics of Peptide-condensed DNA: Dynamic Regulation by pH and Zn²⁺**A. LEE¹, A. KARCI¹, R. AKMAN¹, T. ZHENG¹, S. KWON¹, S-T. CHOU¹, S. SUCAYAN¹, L. TRICOLI¹, J. HUSTEDT¹, J. KAHN¹, A. MIXSON², AND J. SEOG¹¹University of Maryland, College Park, MD, ²University of Maryland School of Medicine, Baltimore, MD**P-Th-347****Ultrasound-Triggered Noninvasive Regulation of Blood Glucose Levels Using Microgels Integrated with Insulin Nanocapsules**J. DI¹, Y. JING², AND Z. GU¹¹University of North Carolina at Chapel Hill | North Carolina State University, Raleigh, NC, ²North Carolina State University, Raleigh, NC**P-Th-348****Development of Multi-Functional Core-Shell NPs for Targeted Lung Cancer Dual Therapy**J. MENON¹, A. KURIAKOSE¹, E. HERNANDEZ², L. GANDEE², S. ZHANG², M. TAKAHASHI², Z. ZHANG², D. SAHA², AND K. NGUYEN¹¹University of Texas at Arlington, Arlington, TX, ²University of Texas Southwestern Medical Center, Dallas, TX**P-Th-349****Developing a Targeted Oral Drug Carrier Using a Layer-by-Layer Chitosan and Alginate Enteric Coating**G. MOSLEY¹, S. CHENG¹, K. CHEN¹, AND D. KAMEI¹¹UCLA, Los Angeles, CA**P-Th-350****Modeling Release Behaviors Of Stimuli-Responsive Polyelectrolyte Multilayer Films**J. MIN^{1,2}, R. BRAATZ¹, AND P. HAMMOND^{1,2}¹MIT, Cambridge, MA, ²Koch Institute of Integrative Cancer Research, Cambridge, MA

P-Th-351**Development of “Smart” Particles Based on DNA-Crosslinked Hydrogels for Drug Delivery**R. DANSO¹, K. ABDELRAHMAN¹, AND T. BETANCOURT¹¹Texas State University, San Marcos, TX**P-Th-352****Iron Oxide Nanoparticles-Embedded Polymeric Microgels for Magnetic Responsive Drug Delivery**B. SUNG¹, H. YAN¹, S. SHAFFER¹, C. KIM¹, AND M-H. KIM¹¹Kent State University, Kent, OH**P-Th-353****Enhanced Colorectal Drug Delivery Using Hypotonic Enema Formulations**K. MAISEL¹, T. MOENCH², C. HENDRIX¹, R. CONE¹, L. ENSIGN¹, AND J. HANES¹¹Johns Hopkins University, Baltimore, MD, ²ReProtect Inc., Baltimore, MD**P-Th-354****Development of a Material Platform for Hypoxia-Targeted Gene Delivery**J. MADRIGAL¹, S. REZVANI¹, A. KOUBEISSI², K. BOUHADIR², AND E. SILVA¹¹University of California Davis, Davis, CA, ²American University of Beirut, Beirut, Lebanon**P-Th-355****Determining the Specificity of a Multivalent Polymeric Antigen-Specific Immunotherapy for Multiple Sclerosis**B. HARTWELL¹, J. SESTAK¹, B. SULLIVAN¹, D. MOORE¹, H. SHINOGLE¹, T. SIAHAAN¹, AND C. BERKLAND¹¹University of Kansas, Lawrence, KS**P-Th-356****Genipin Releasing Suture Coatings For Reducing The Occurrence Of Suture Pull-Out Through Damaged Connective Tissue**S. SUNDARARAJ¹, P. SLUSAREWICZ¹, AND T. HEDMAN^{1,2}¹Orthopeutics L.P., Lexington, KY, ²University of Kentucky, Lexington, KY**P-Th-357****Targeting Metastatic Prostate Cancer Using Engineered Ligands**K. MAYLE¹, R. CHIU¹, S. WANG¹, K. DERN¹, A. WU¹, A. MASON², AND D. KAMEI¹¹University of California Los Angeles, Los Angeles, CA, ²University of Vermont, Burlington, VT**P-Th-358****Targeted Liposomes Containing Superoxide Dismutase and Fasudil Reduces Chronic Symptoms in PAH Rats**N. GUPTA¹, C. WOODS², E. NOZIK-GRAYCK², AND F. AHSAN¹¹Texas Tech University Health Sciences Center, Amarillo, TX, ²University of Colorado Denver, Aurora, CO**P-Th-359****Nanoparticle-mediated Therapies for Pediatric Brain Diseases**E. NANCE¹, F. ZHANG¹, M. MISHRA¹, S. PRAMODH-KAMB HAMPATI¹, K. RANGARAMANUJAM¹, AND S. KANNAN¹¹Johns Hopkins University, Baltimore, MD**P-Th-360****EGF-Conjugated Dendrimers For Local, Sustained And Targeted Delivery Of Chemotherapeutic Drugs For Treatment Of Breast Cancer**N. OLIVA-JORGE¹, E. EDELMAN^{1,2}, AND N. ARTZI^{1,2}¹MIT, Cambridge, MA, ²Brigham and Women's Hospital, Harvard Medical School, Boston, MA**P-Th-361****Evaluating Effects Of Convection And Diffusion On A Gadolinium Tracer In Convection-Enhanced Delivery**J. FOO¹, C. SCHAFFER¹, AND W. OLBRIGHT¹¹Cornell University, Ithaca, NY**P-Th-362****Biophysical simulation of targeted nanoparticle adhesion dynamics to optimize delivery**M. WANG¹ AND J. HAUN¹¹UC Irvine, Irvine, CA**P-Th-363****A Smart Capsule with GI Tract Location Specific Payload Release**W. YU¹, R. RAHIMI¹, M. OCHOA¹, AND B. ZIAIE¹¹Purdue University, West Lafayette, IN**P-Th-364****Functionalized Particle Adhesion Depends on Bifurcation Angle**G. LAMBERTI¹, A. SMITH², M. KIANI¹, B. PRABHAKARPANDIAN², AND K. PANT²¹Temple University, Philadelphia, PA, ²CFD Research Corporation, Huntsville, AL**P-Th-365****Liposome-Conjugated Monoclonal Antibody Liability to Ultraviolet Sterilization Introduced by Lysyl Residue Derivatization**M. KLEGERMAN¹, E. GOLUNSKI¹, AND D. MCPHERSON¹¹University of Texas Health Science Center - Houston, Houston, TX**P-Th-366****Characterization of the *In Vitro* Interactions of a Liver Cancer-Specific Aptamer**M. SUTTON¹, E. BARNES¹, S. MITCHELL¹, T. BETANCOURT¹, AND S. WEIGUM¹¹Texas State University, San Marcos, TX**P-Th-367****Magnetic Field-enhanced Cell Uptake of Doxorubicin-loaded Magnetic Nanoparticles for Tumor Treatment**I. VENUGOPAL¹, S. PERNAL¹, H. ENGELHARD², AND A. LINNINGER¹¹University of Illinois at Chicago, Chicago, IL, ²University of Illinois College of Medicine at Chicago, Chicago, IL**P-Th-368****Electrokinetically Assisted Targeted Drug Delivery System For *In-vitro* Drug-cell Interaction Studies**R. TARUVAI KALYANA KUMAR¹, A. WANGZHOU¹, D. KINNAMON¹, AND S. PRASAD¹¹University of Texas at Dallas, Richardson, TX**P-Th-369****Controlled Dual Release of Dexamethasone Sodium Phosphate and Dexamethasone from Electrospun Membranes for Prevention of Peritoneal Adhesion**C. MA¹, C. XIONG², AND X. LIU¹¹Baylor College of Dentistry, Dallas, TX, ²University of Chinese Academy of Sciences, Chengdu, China, People's Republic of**Track: Nano to Micro Technologies, Biomaterials****BioMEMS, Tissue and Organs on a Chip, Cell Behavior in Micro/Nano Devices, Paperfluidics****Chairs:** Maribel Vazquez, Lance Kam**P-Th-530****Use of Physiologically-Based *in vitro* Models of the Gastrointestinal Tract to Study TiO₂ and SiO₂ Nanoparticle Interactions with Mineral Absorption**Z. GUO¹, E. TAKO², AND G. MAHLER³¹Binghamton University, Binghamton, NY, ²Plant, Soil and Nutrition Laborator, Agricultural Research Services, U.S. Department of Agriculture, Ithaca, NY, Ithaca, NY, ³Binghamton University, Binghamton, NY

P-Th-531**Development of a Perfusable 3D Tumor Platform to Study Nanoparticle Transport**M. DEWITT¹, R. NEWSOME², A. PEKKANEN¹, AND N. RYLANDER^{1,2}¹Virginia Tech-Wake Forest, Blacksburg, VA, ²Virginia Tech, Blacksburg, VA**P-Th-532****3D Microfluidic Device to Study the Neurotrophic Effect of Mesenchymal Stem Cells for Enhanced Human Neural Stem Cell Differentiation**K. YANG¹, H-J. PARK¹, J. KIM¹, S. HAN², S. CHUNG², AND S-W. CHO¹¹Department of Biotechnology, Yonsei University, Seoul, Korea, Republic of, ²School of Mechanical Engineering, Korea University, Seoul, Korea, Republic of**P-Th-533****Development of a Novel, Physiologically and Anatomically Realistic *in vitro* Pediatric Blood Brain Barrier on a Chip**S. DEOSARKAR¹, B. AUGELI¹, P. PANDIAN², B. KRYNSKA¹, AND M. KIANI¹¹Temple University, Philadelphia, PA, ²CFD Research Corporation, Huntsville, AL**P-Th-534****Gelatin Electrospun Nanofibrous Composite for use in Organ-on-a-chip Microfluidics**A. NICOLINI¹ AND J-Y. YOON¹¹The University of Arizona, Tucson, AZ**P-Th-535****A Novel *In Vitro* Blood Brain Barrier Platform for Preliminary Drug Studies**C. HOVELL¹, G. BARABINO², L. TAITE¹, AND Y. KIM¹¹Georgia Institute of Technology, Atlanta, GA, ²City College of New York, New York, NY**P-Th-536** **Biomimetic Modifications to Microfluidic Silk Spinning**D. LI¹, D. BACKMAN¹, M. JACOBSEN¹, N. RIM¹, D. KAPLAN², AND J. WONG¹¹Boston University, Boston, MA, ²Tufts University, Medford, MA**P-Th-537** **Three-Compartment Microfluidic Device For Generating Heterogeneous Shear Stress Pattern**X. ZHANG¹ AND Y. ZHAO¹¹Ohio State University, Columbus, OH**P-Th-538****BioMEMS Device Intergrated With CNxCNT Membrane For Blood Plasma Extraction**Y-T. YEH¹, N. PEREA-LOPEZ¹, M. TERRONES¹, AND S. ZHENG¹¹The Pennsylvania State University, University Park, PA**P-Th-539****Development of a Cell-Based Model of the Ocular Fundus within a Microfluidic Device**H. KAJI¹, S. ITO¹, K. NAGAMINE¹, M. NISHIZAWA¹, N. NAGAI¹, AND T. ABE¹¹Tohoku University, Sendai, Japan**P-Th-540****Human Induced Pluripotent Stem Cell Derived 3D Cardiac Tissue Model for Drug Screening**A. MATHUR¹, P. LOSKILL¹, K. SHAO¹, S. HONG¹, N. MARKS¹, L. LEE¹, B. CONKLIN², AND K. HEALY¹¹University of California, Berkeley, Berkeley, CA, ²University of California, San Francisco, San Francisco, CA**P-Th-541****Study of Renal Function in a Kidney-on-a-chip with Curved Geometry**S. YU¹, Y. KIM¹, J. PARK¹, W. LEE-KWON¹, Y-K. CHO¹ AND J. KIM¹¹Ulsan National Institute of Science and Technology, Ulsan, Korea, Republic of**P-Th-542****An Arrayed Microfluidic Hanging Drop System for EB Formation and Culture**H-W. WU¹ AND H. CHIA-HSIEN¹¹National Health Research Institutes, Miaoli County, Taiwan**P-Th-543****The Effect of Fluid Perfusion on Human Umbilical Vein Endothelial Cell Tube Formation**C. CHAN¹, V. GORAL², P. YUEN², AND T. HUANG¹¹Pennsylvania State University, University Park, PA, ²Corning Incorporated, Corning, NY**P-Th-544****A Microfluidic Device to Model Active and Passive Transport Functions of the Human Kidney**C. SAKOLISH¹, J. COHEN¹, M. REISS¹, AND G. MAHLER¹¹Binghamton University, Binghamton, NY**P-Th-545****Do Substrate Cleaning Methods Affect Cellular Response?**B. KIRKLAND¹, K. HAFNER¹, M. KENNEDY¹, AND D. DEAN¹¹Clemson University, Clemson, SC**P-Th-546****Microstructured Multi-Well Plate for Three-Dimensional Packed Cell Seeding and Culture**V. GORAL¹, S. AU², R. FARIS¹, AND P. YUEN¹¹Corning Incorporated, Corning, NY, ²Massachusetts General Hospital, Charlestown, MA**P-Th-547****Detection of Neural Responses Using The *In Vitro* Chip-Based Human Investigational Platform (iCHIP)**H. ENRIGHT¹, E. MUKERJEE¹, N. FISCHER¹, S. FELIX¹, W. MCNERNEY¹, J. OSBURN¹, F. QIAN¹, A. CHANG¹, S. BAKER¹, E. WHEELER¹, K. KULP¹, J. ZHANG², G. PAGE², P. MILLER², A. GHETTI², AND S. PANNU¹¹Lawrence Livermore National Lab, Livermore, CA, ²Anabios, Inc, San Diego, CA**P-Th-548****Engineering Microchip Modules for Monitoring Vascular Permeability**Y. SEI¹ AND Y. KIM¹¹Georgia Institute of Technology, Atlanta, GA**P-Th-549****Monolithic Droplet Generator and Microarray for Screening Islet Beta Cells**Z. ZHAO¹, R. LIU¹, D. HU¹, AND J. LO¹¹University of Michigan-Dearborn, dearborn, MI**P-Th-550****Microengineered Biomimetic Liver Sinusoids-on-a-Chip for Drug Toxicity Studies**Y. KIM¹ AND Y-K. CHO¹¹Ulsan National Institute of Science and Technology, Ulsan, Korea, Republic of**P-Th-551****Quantitative Analysis of CCL19-induced Chemotaxis of Human Dendritic Cells in 3D Microenvironment**H. HWANG¹, C. SHIN¹, J. PARK¹, Y. DO¹, AND Y-K. CHO¹¹Ulsan National Institute of Science and Technology, Ulsan, Korea, Republic of**P-Th-552****Metabolism-Induced Toxicity Screening on a Micropillar/Microwell Chip Platform Using THLE-2 Cells Expressing Combinations of Drug Metabolizing Enzymes**S. KWON¹, D. LEE², B. KU², D. CLARK³, J. DORDICK¹, AND M-Y. LEE⁴¹Rensselaer Polytechnic Institute, Troy, NY, ²Samsung Electro-Mechanics Co, Suwon, Korea, Republic of, ³University of California at Berkeley, Berkeley, CA, ⁴Cleveland State University, Cleveland, OH**P-Th-553****A Microfluidic System to Study the Effects of Mechanically Loaded Osteocytes on Osteoclastogenesis and Recruitment**K. MIDDLETON¹ AND L. YOU¹¹University of Toronto, Toronto, ON, Canada

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

P-Th-554**Chemotactic Gradients to Induce Photoreceptor Transplantation**S. MISHRA¹, J. UNACHUKWU², S. REDENTI², AND M. VAZQUEZ¹¹City College of New York, New York, NY, ²The Graduate School and University Center, City University of New York, New York, NY**P-Th-555****Modeling Spiral Oxygen Gradient for Simultaneous Hypoxic Stimulation and Cell Respiration Monitoring**M. ZHOU¹, K. MILLIMAN¹, Z. ZHAO¹, M. WANG¹, J. LO¹, AND N. CHAKRABORTY¹¹The University of Michigan-Dearborn, Dearborn, MI**P-Th-556****Microvasculature Mimetic Device to Model Physiological Barrier Properties in Sepsis**T. KHIRE¹, L. SALAS ESTRADA¹, R. WAUGH¹, AND J. MCGRATH¹¹University of Rochester, Rochester, NY**P-Th-557****Single Cell, High Efficiency Analysis of Rare T cell Response using a Magnetic Sieving Device**J. LEE¹, M. DUSTIN², AND L. KAM¹¹Columbia University, New York, NY, ²The University of Oxford, Oxford, United Kingdom**P-Th-558****A Microfluidic Oxygen Landscape Device Demonstrates Modulation of Hypoxic Signaling via Crosstalk between Normoxic and Hypoxic Endothelial Cells**M. REXIUS¹, D. EDDINGTON¹, AND J. REHMAN¹¹University of Illinois at Chicago, Chicago, IL**P-Th-559****Unidirectional Electrical Pulses For Cell Alignment In A Closed Microfluidic Chamber**D. LOUFAKIS¹, Z. CAO¹, S. MA¹, D. MITTELMAN^{1,2}, AND C. LU¹¹Virginia Tech, Blacksburg, VA, ²Virginia Bioinformatics Institute, Blacksburg, VA**P-Th-560****Rapid Bacteria Capture In Capillary-driven Microfluidic Device**A. OLANREWAJU¹ AND D. JUNCKER¹¹McGill University, Montreal, QC, Canada**P-Th-561****CANCELLED BY AUTHOR****P-Th-562****Optimizing the Aspect Ratio of PLGA Nano-grooves for Controlling Cell Division Axis and Migration**Y-H. SU^{1,2}, P-C. CHIANG¹, L-J. CHENG^{1,3}, C-H. LEE^{1,4}, N. SWAMI², AND C-F. CHOU¹¹Academia Sinica, Taipei, Taiwan, ²University of Virginia, Charlottesville, VA, ³Oregon State University, Corvallis, OR, ⁴National Yang-Ming University, Taipei, Taiwan**P-Th-563****Single Wall Carbon Nanotube Interactions with F-actin**B. HOLT¹, M. ISLAM¹, AND K. DAHL¹¹Carnegie Mellon University, Pittsburgh, PA**P-Th-564****Investigation of the Format-dependent Spatial Distribution of Binding in a Malaria Antigen Assay; Implications for Higher-sensitivity Detection**T. LIANG¹, G. FRIDLEY¹, P. YAGER¹, AND E. FU^{1,2}¹University of Washington, Seattle, WA, ²Oregon State University, Corvallis, OR**P-Th-565****Nonplanar Three-Dimensional Paper Microfluidic Circuits Constructed with Patterned Adhesive**B. KALISH¹ AND H. TSUTSUI¹¹University of California, Riverside, Riverside, CA**P-Th-566****Concentrating a Urinary Tuberculosis Biomarker by Heated Evaporation on a Paper Microfluidic Device**S. WONG¹, M. CABODI¹, AND C. KLAPPERICH¹¹Boston University, Boston, MA**P-Th-567****Predicting Wicking in Wax-bound Paper Microfluidic Channels**C. CASTRO¹, C. ROSILLO¹, AND H. TSUTSUI¹¹University of California, Riverside, Riverside, CA**P-Th-568****Modeling Drug Clearance and Drug-Drug Interactions in Long-Term Engineered Human Liver Cultures**C. LIN¹, J. SHI², A. MOORE², AND S. KHETANI¹¹Colorado State University, Fort Collins, CO, ²Hepregen Corporation, Medford, MA**Track: Neural Engineering, Device Technologies and Biomedical Robotics****Neural Engineering I: BCI, Devices, and Rehab****Chairs:** Lisa Flanagan, Jaydip Desai**P-Th-80****Non-invasive Brain-Computer Interface for Prosthetic Control**T. CALLAHAN¹, A. RITTER¹, AND T. SIGLER¹¹Stevens Institute of Technology, Hoboken, NJ**P-Th-81****Chronic CNS Recording Studies in an Aged Rat Model**M. CHRISTENSEN¹, N. NOLTA¹, AND P. TRESKO¹¹University of Utah, Salt Lake City, UT**P-Th-82****Investigation of the Neuroinflammatory Response to Antioxidant-Releasing Mechanically-Compliant Implants**J. NGUYEN^{1,2}, K. BUCHANAN^{1,2}, M. JORF³, E. FOSTER³, C. WEDER³, AND J. CAPADONA^{1,2}¹Case Western Reserve University, Cleveland, OH, ²Louis Stokes Cleveland VA Medical Center, Cleveland, OH, ³University of Fribourg, Marly, Switzerland**P-Th-83****Detection of Early Alzheimers Disease Using Nonlinear State Space Reconstruction of EEG**J. MCBRIDE¹, X. ZHAO¹, N. MUNRO², G. JICHA³, F. SCHMITT³, R. KRYSIO³, C. SMITH³, AND Y. JIANG³¹University of Tennessee, Knoxville, TN, ²Oak Ridge National Laboratory, Oak Ridge, TN, ³University of Kentucky, Lexington, KY**P-Th-84****Exploring Differences in Concentration Levels While Playing Games**A. COPEMAN¹ AND B. CAMPBELL¹¹Robert Morris University, Moon Township, PA**P-Th-85****Open Vs. Closed Loop EEG-Based Control Using Binaural Stimulation**C. BEAUCHENE¹ AND A. LEONESSA¹¹Virginia Tech, Blacksburg, VA**P-Th-86****Peripheral Sensory Feedback to Improve Gait with a Feline Hindlimb Prosthesis**H. PARK¹, B. PRILUTSKY¹, AND S. DEWEERTH¹¹Georgia Institute of Technology, Atlanta, GA

P-Th-87**Stability and Sub-chronic Biocompatibility of Carbon Nanotube Fiber Microelectrodes**

F. VITALE¹, S. SUMMERSON¹, B. AAZHANG¹, C. KEMERE¹, AND M. PASQUALI¹
¹Rice University, Houston, TX

P-Th-88**neuroPG: Open Source Software For Optical Pattern Generation And Data Acquisition**

B. AVANTS¹, D. MURPHY¹, J. ROBINSON¹, AND J. DAPELLO²
¹Rice University, Houston, TX, ²Hampshire College, Amherst, MA

P-Th-89**A Study on NMDA Dose-Response Effect on Chick Forebrain Neuron Culture on an MEA**

X. YANG¹, S. KUANG¹, AND B. GAO¹
¹Clemson University, Clemson, SC

P-Th-90**Development of Electrical Switch System for Desynchronizing Abnormal Neural Activity**

D. KIM¹, H. JUNG¹, AND Y. NAM¹
¹KAIST, Daejeon, Korea, Republic of

P-Th-91**Novel Micropatterns on a Microelectrode Array Using Agarose Hydrogel for Neural Network Design**

N. HONG¹, S. JOO¹, AND Y. NAM¹
¹KAIST, Daejeon, Korea, Republic of

P-Th-92**Fabrication and Evaluation of Brain Drug Delivery Microdevices**

J. SY¹, K. SPENCER¹, R. LANGER¹, AND M. CIMA¹
¹Massachusetts Institute of Technology, Cambridge, MA

P-Th-93**Reinforcement of Platinum Black Structure Through Polydopamine Incorporation**

R. KIM¹ AND Y. NAM¹
¹KAIST, Daejeon, Korea, Republic of

P-Th-94**Simply Fabricated Protruding Microelectrode Array using Liquid Crystal Polymer (LCP)**

J. JEONG¹, C. KIM¹, S. AHN¹, G. KIM¹, T. GWON¹, J. SEO¹, AND S. KIM¹
¹Seoul National University, Seoul, Korea, Republic of

P-Th-95**Improving the Performance of Intracortical Microelectrodes via Structural Modifications and Biochemical Intervention Strategies**

H. LEE¹, J. GAIRE¹, M. MCDERMOTT¹, J. ZHANG¹, K. OTTO¹, AND K. OTTO¹
¹Purdue University, West Lafayette, IN

P-Th-97**A Quantitative Tool For Identifying The Epileptogenic Zone Using Network Connectivity Analysis**

J. GURISKO¹, R. BOSSEMEYER¹, S. RHODES¹, P. FISHBACK², AND K. ELISEVICH³
¹Grand Valley State University, Grand Rapids, MI, ²Grand Valley State University, Allendale, MI, ³Spectrum Health System, Grand Rapids, MI

P-Th-98**Nonlinear Identification of Functional Spike-Timing-Dependent Plasticity from Simulated Spiking Activity**

B. ROBINSON¹, D. SONG¹, AND T. BERGER¹
¹University of Southern California, Los Angeles, CA

P-Th-99**Understanding Synchrony in Networks of Neurons that are Noise-Dominated**

J. BAUER¹, F. FERNANDEZ¹, AND J. WHITE¹
¹University of Utah, Salt Lake City, UT

P-Th-100**Mental Activation of a Light Bulb Using Inexpensive Neural Interface Technology**

J. LEIPHEIMER¹, D. CESARIO¹, L. ZEARING¹, AND B. CAMPBELL¹
¹Robert Morris University, Moon Township, PA

P-Th-101**Nonlinear Method to Assess Autonomic Function in Diabetic patients Type 2**

A. KAMAL¹
¹Tennessee Tech University, Cookeville, TN

P-Th-102**Learned Stimulus Response in Experimental and Simulated Neural Networks**

K. O'NEILL¹, G. MATTSON¹, T. SHINBROT¹, AND B. FIRESTEIN¹
¹Rutgers University, Piscataway, NJ

P-Th-103**Modelling Gait Syndrome in Huntington's disease: the Genetic Algorithm Approach**

O. AJIBOLA¹, F. OGUNWOLU¹, O. IBIDAPO-OBE¹, V. OLUNLOYO¹, AND A. OSUNTOKI¹
¹University of Lagos, Lagos, Nigeria

P-Th-104**Effect Of Transcranial Direct Current Stimulation On Behavior Impairments Following Neonatal HIE Stroke**

C. ANDERSON¹, T. DEMARSE¹, P. CARNEY¹, M. WEISS¹, AND M. DOUGLAS-ESCOBAR¹
¹University of Florida, Gainesville, FL

P-Th-105**Novel Supination Assessment Task In A Rat Model Of Ischemic Stroke**

E. MEYERS¹, A. SINDHURAKAR², S. HAYS¹, A. SLOAN¹, M. KILGARD¹, J. CARMEL², AND R. RENNAKER¹
¹University of Texas at Dallas, Richardson, TX, ²Burke-Cornell Medical Research Institute, White Plains, NY

P-Th-106**EMG Measurement of Middle Ear Muscle Reflex in Chinchillas**

Z. YOKELL¹, D. NAKMALI¹, S. JIANG¹, X. GUAN¹, AND R. GAN¹
¹University of Oklahoma, Norman, OK

P-Th-107**Characterization Of Neuropathic Pain In Amputation Neuroma Model**

R. GRANJA-VAZQUEZ¹, B. JOHNSTON¹, M. LE², S. TRINH², AND M. ROMERO-ORTEGA¹
¹UT Arlington & UT Southwestern Medical Center, Arlington, TX, ²UT Arlington, Arlington, TX

P-Th-108**A Novel Substrate for In Vitro Optogenetics Experiments**

A. HAMMACK¹, A. AVENDANO-BOLIVAR¹, H. JIA¹, AND B. GNADE¹
¹University of Texas at Dallas, Richardson, TX

P-Th-109**Electrostimulation with Subnanosecond Pulses**

S. XIAO¹, A. PAKHOMOV¹, I. SEMENOV¹, D. KANG¹, S. POLISETTY¹, AND K. SCHOENBACH¹
¹Frank Reidy Research Center for Bioelectrics, Old Dominion University, Norfolk, VA

P-Th-110**Development Of An Implantable System For Controlling Rat Eye Pressure**

S. BELLO¹, C. PASSAGLIA¹, X. TANG¹, AND S. MALAVADE¹
¹University of South Florida, Tampa, FL

P-Th-111**Transcranial Direct Current Stimulation to Enhance Motor Learning in Healthy Subjects**

P. OLDANI¹, C. HOGAN¹, S. SHARMA¹, S. MICHALOVIC¹, AND R. OHRBACH¹
¹University at Buffalo, Buffalo, NY

P-Th-112

Low Stress Sleep Deprivation Using Vibration Table Method

F. DECUIR¹¹Louisiana Tech University, Ruston, LA**P-Th-113**

High-throughput Mapping of Brain-wide Activities In Awake and Drug-responsive Vertebrates

X. LIN¹, S. WANG¹, X. YU¹, AND P. SHI¹¹City University of Hong Kong, Kowloon, Hong Kong**Track: New Frontiers and Special Topics, Translational Biomedical Engineering****Global Health****Chairs:** TBD**P-Th-501**

Normalizing Smart Phone Detection of Fluorescence for Global Health

V. BARKER¹, M. LIPOWICZ¹, C. SMITH¹, A. MOSKOWITZ¹, C. VAN BUSSUM¹, AND A. GARCIA¹¹Arizona State University, Tempe, AZ**P-Th-502**

Assessing the Feasibility of Local Production of Medical Devices in Sub-Saharan Africa

J. ABBAS¹, M. POLUTA², A. SABET SARVESTANI³, AND A. VELAZQUEZ-BERUMEN⁴¹Arizona State University, Tempe, AZ, ²University of Cape Town, Rondebosch, South Africa, ³University of Michigan, Ann Arbor, MI, ⁴World Health Organization, Geneva, Switzerland**P-Th-503**

Defining Head-Tilt Position for Neonatal and Infant Resuscitation

M. HEMANI¹, B. GU¹, B. KIM¹, A. CRUZ¹, T. LAM¹, AND U. BHALALA²¹Johns Hopkins University, Baltimore, MD, ²Johns Hopkins Hospital, Baltimore, MD**P-Th-504**

Magnetic Bead-Based Enhancement of Rapid Diagnostic Tests

N. ADAMS¹, K. DAVIS¹, D. WRIGHT¹, AND F. HASELTON¹¹Vanderbilt University, Nashville, TN**P-Th-505**

Paper-Based Diagnostic Accelerates Phase Separation of a Micellar Aqueous Two-Phase System

D. PEREIRA¹, R. CHIU¹, A. THACH¹, AND D. KAMEI¹¹UCLA, Los Angeles, CA**P-Th-506**

Uterine Contraction Monitoring: Improving Labor Management in Low Resource Settings

M. LAMBERTI¹, M. BABB¹, AND J. HUNT¹¹Johns Hopkins University, Baltimore, MD**P-Th-507**

Understanding the Design Constraints of the Tanzanian Health Care System

J. KOHN¹, M. MCCORRY¹, AND L. BONASSAR¹¹Cornell University, Ithaca, NY**P-Th-508**

Independent Dielectrophoretic Monitoring of Clostridium difficile Strains on a Microfluidic Device

Y-H. SU¹, C. WARREN¹, R. GUERRANT¹, AND N. SWAMI¹¹University of Virginia, Charlottesville, VA**P-Th-509**

Polymer-coated Gold Nanoprobes For The Concentration And Detection Of Protein Biomarkers For Resource-poor Settings

R. CHIU¹, P. NGUYEN¹, J. WANG¹, E. JUE¹, A. THACH¹, B. WU¹, AND D. KAMEI¹¹University of California, Los Angeles, Los Angeles, CA**P-Th-510**

Three Dimensions of Measurements for Global Health Diagnostics

M. SCRIPT¹¹Inspire Living, Inc., Fairfax Station, VA**P-Th-511**

3D Printed Fluorometer For Global Health

M. LIPOWICZ¹ AND A. GARCIA¹¹Arizona State University, Tempe, AZ**P-Th-512**

Paper-based Diagnostic Devices for Measuring the Level of Organophosphate Poisoning in Human Serum of Patients

K-H. CHEN¹, S-T. FAN¹, T-H. YEN², Y-F. HUANG¹, AND C-M. CHENG¹¹National Tsing Hua University, Hsinchu, Taiwan, ²Chang Gung University and School of Medicine, Taoyuan, Taiwan**Track: New Frontiers and Special Topics, Biomaterials****Smart Materials/Emerging Tech****Chairs:** James Abbas, Anand Ramasubramanian**P-Th-513**

MG63 Morphology and Behavior on Shape-Memory Polymer for Osteoblast Differentiation

E. HEWETT¹, K. SMITH¹, K. GALL¹, Z. SCHWARTZ^{2,4}, AND B. BOYAN^{1,3}¹Georgia Institute of Technology, Atlanta, GA, ²MedShape Solutions, Inc., Atlanta, GA, ³Virginia Commonwealth University, Richmond, VA, ⁴University of Texas Health Science Center, San Antonio, TX**P-Th-514**Engineering *In Vitro* Models to Elucidate the Effect of Microcavitation in AstrocytesS. SUN¹, D. KANG², S. XIAO², AND M. CHO¹¹University of Illinois at Chicago, Chicago, IL, ²Old Dominion University, Norfolk, VA**P-Th-515**A Compact Acoustic Tweezers System for Cell Trapping and *In Vivo* ApplicationsY. LI¹, K. LEE¹, B. ZHU², Y. LI¹, AND K. SHUNG¹¹NIH Ultrasonic Transducer Resource Center and Department of Biomedical Engineering, University of Southern California, Los Angeles, CA, ²School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China, People's Republic of**P-Th-516**

A Novel and Highly Efficient Method for Intracellular Delivery and Accumulation of Trehalose

A. ABAZARI¹, L. MEIMETIS¹, D. MOORE², S. HAND², R. WEISSLEDER¹, AND M. TONER¹¹Massachusetts General Hospital - Harvard Medical School, Boston, MA, ²Louisiana State University, Baton Rouge, LA**P-Th-517**

nBioChip (nano-Biofilm Chip) - A Platform for Ultra-high-throughput Drug Discovery of Antimicrobial Drugs Against Polymicrobial Biofilms

A. SRINIVASAN^{1,2}, K. LEUNG³, J. LOPEZ-RIBOT^{1,2}, AND A. RAMASUBRAMANIAN^{1,2}¹The University of Texas at San Antonio, San Antonio, TX, ²South Texas Center for Emerging Infectious Diseases, San Antonio, TX, ³US Army Institute of Surgical Research, FortSam Houston, TX**P-Th-518**

CFD-Guided Experimental Investigation of Corneal Biomechanics in Microgravity

D. SATHYANARAYAN¹, N. DO², G. GIRISH², J. GREWAL², R. KOWALCHUK¹, N. QUINTERO², G. TRUSKEY¹, S. GANGADHARAN², B. DIKICI², AND E. DIVO²¹Duke University, Durham, NC, ²Embry-Riddle Aeronautical University, Daytona Beach, FL

P-Th-519**The Role of Skin Dendritic Cells in Nanoparticle Transport in SKH-1 Hairless Mice**S. JATANA¹ AND L. DELOUISE¹¹University of Rochester, Rochester, NY**P-Th-520****Lignocellulosic-based Analytical Devices**C-M. KUAN¹ AND C-M. CHENG¹¹NanoEngineering and MicroSystems, Hsinchu, Taiwan**P-Th-521****Neurostimulation of the Cholinergic Anti-Inflammatory Pathway Reduces Endoscopy Score in Rat Colitis**Y. LEVINE¹, K. BLACK^{1,2}, AND M. FALTYS¹¹SetPoint Medical Corporation, Valencia, CA, ²Ra Pharmaceuticals, Cambridge, MA**P-Th-522****Creating a Geometrically Distinct Human Body FEM Using Radial Basis Function Interpolation**N. VAVALLE^{1,2}, S. SCHOELL^{1,2}, A. WEAVER^{1,2}, J. STITZEL^{1,2}, AND F. GAYZIK^{1,2}¹Wake Forest School of Medicine, Winston-Salem, NC, ²Wake Forest Center for Injury Biomechanics, Winston-Salem, NC**P-Th-523****Biohybrid Soft Robotics Flagellum Enables Free Swimming**B. WILLIAMS¹, J. RAJAGOPALAN², AND T. SAIF¹¹University of Illinois at Urbana-Champaign, Urbana, IL, ²Arizona State University, Tempe, AZ**P-Th-524****Coordination of Ventilatory Mechanisms in the Madagascar Hissing Cockroach and Potential Bio-Inspired Microfluidic Systems**J. GARRETT¹ AND J. SOCHA¹¹Virginia Tech, Blacksburg, VA**P-Th-525****What Happens When Pupae Pump? Internal Effects of Abdominal Pumping in the Beetle *Zophobas morio***M. KENNY¹, H. PENDAR¹, AND J. SOCHA¹¹Virginia Tech, Blacksburg, VA**P-Th-526****Development and Characterization of Antibodies to Nanoparticles to Enhance their Detection in Human Skin**S. RAVICHANDRAN¹, M. SULLIVAN¹, AND L. DELOUISE¹¹University of Rochester, Rochester, NY**P-Th-527****Little Joey - Development of a Personalized Toy to Improve Cognitive, Sensory, and Motor Skills in a Neurologically Disabled Child**N. AHMED¹, J. SELLMAN¹, L. BRAY¹, AND N. PEIXOTO¹¹George Mason University, Fairfax, VA**P-Th-528****3D Printed Glass for the Correction of Eye Defects**S. PERUMAL¹¹University of South Florida, Tampa, FL**P-Th-529****A Battery-less Pressure Driven Smart Pill for Oral to Systemic Protein Delivery**K. ARAN¹, J. PAREDES¹, K. LEE¹, A. ACHARYA¹, D. LIEPMANN¹, AND N. MURTHY¹¹University of California, Berkeley, CA**Track: Orthopaedic and Rehabilitation Engineering, Biomechanics****Biomechanics and Rehabilitation of the Upper Limb****Chairs:** Wendy Murray, Katherine Saul**P-Th-156****Gestural Navigation of Virtual Exercise Environments for People with Mobility Impairments**S. POOL¹, L. MALONE², J. RIMMER¹, AND A. EBERHARDT¹¹University of Alabama at Birmingham, Birmingham, AL, ²Lakeshore Foundation, Birmingham, AL**P-Th-157****Robotics Based Human Body Model for Improvement of Upper Extremity Prostheses**D. MENYCHTAS¹, D. LURA², S. CAREY¹, AND R. DUBEY¹¹University of South Florida, Tampa, FL, ²Florida Gulf Coast University, Fort Meyers, FL**P-Th-158****Development of Prosthetic Fingertips for Improved Touch Screen Interactions**J. HEASLEY¹, A. AZANAW¹, K. SLIS¹, D. KISKA¹, AND B. CAMPBELL¹¹Robert Morris University, Moon, PA**P-Th-159****Functional Task Analysis for Human-Machine Performance Limits**R. PATTERSON¹, J. STANFORD², C. YOUNG¹, D. POPA², AND N. BUGNARIU¹¹University of North Texas Health Science Center, Fort Worth, TX, ²University of Texas at Arlington, Arlington, TX**P-Th-160****Mathematical simulation of multi-insertion site tendon transfer surgery for lateral pinch throughout thumb flexion-extension plane**S. O'LEARY¹, N. SALYAPONGSE¹, D. THELEN¹, AND J. TOWLES¹¹University of Wisconsin-Madison, Madison, WI**P-Th-161****Target Postures for Maximum Voluntary Contraction of Extrinsic Thumb Muscles During Intramuscular EMG**M. DE BRUIN^{1,2}, S. WOHLMAN², AND W. MURRAY^{1,2}¹Rehabilitation Institute of Chicago, Chicago, IL, ²Northwestern University, Chicago, IL**P-Th-162****Elbow Stiffness at High Torque Levels**D. LUDVIG^{1,2}, H. LEE¹, AND E. PERREAULT^{1,2}¹Rehabilitation Institute of Chicago, Chicago, IL, ²Northwestern University, Chicago, IL**P-Th-163****Biomechanical Simulation Of Pinch Forces From Experimental Muscle Activations**S. WOHLMAN¹ AND W. MURRAY¹¹Northwestern University, Chicago, IL**P-Th-164****Design of a 3-D Printed Exoskeleton Glove to Passively Move a Paralyzed Hand**E. AUSTIN, JR.¹, Y-H. SHIN¹, W. WANG¹, AND J-W. CHOI¹¹Louisiana State University, Baton Rouge, LA**P-Th-165****Design and Development of a 3D Printed Dexterous Prosthetic Hand**P. MURUGESU¹ AND Y. M. AL-SMADI¹¹Texas A&M University Kingsville, TX

P-Th-166**Modeling Influence of Whole Body Vibration on Upper Extremity Neuromuscular Performance During Space Vehicle Launch**T. DELEON-NWAHA¹ AND D. PETERSON¹¹University of Connecticut Health Center, Farmington, CT**P-Th-167****Preventing Hand-Arm Vibration Injuries by Selecting Gloves Based on Tool-Specific Vibrations**T. ASAKI¹, S. KUDERNATSCH¹, AND D. PETERSON¹¹University of Connecticut Health Center, Farmington, CT**Track: Orthopaedic and Rehabilitation Engineering, Cellular and Molecular Bioengineering****Mechanobiology, Tissue Engineering and Regenerative Medicine, Musculoskeletal Pain****Chairs:** Lijie Grace Zhang, Kyle Allen**P-Th-125****Tunable Low Intensity Pulsed Ultrasound for Improving Stem Cell Functions in 3D Printed Scaffolds**C. O'BRIEN¹, M. ALIABOUZAR¹, K. SARKAR¹, AND L. ZHANG¹¹The George Washington University, Washington, DC**P-Th-126****Comparing Cyclic Tensile Properties of Native and Decellularized Porcine Knee Meniscus**E. LAKES¹, M. DIAZ¹, P. MCFETRIDGE¹, AND K. ALLEN¹¹University of Florida, Gainesville, FL**P-Th-127****Multi-approach Assessments of BMSCs Transplantation After Nerve Crush Injury**S. LIU¹, H. CAI¹, A. HOKE¹, AND X. JIA^{1,2}¹Johns Hopkins University School of Medicine, Baltimore, MD, ²University of Maryland School of Medicine, Baltimore, MD**P-Th-128****Anisotropy Promotes Myogenic Differentiation Via Integrins**M. MCCLURE^{1,2}, R. OLIVARES-NAVARRETE², Z. SCHWARTZ², AND B. BOYAN²¹Hunter Holmes Veterans Affairs Medical Center, Richmond, VA, ²Virginia Commonwealth University, Richmond, VA**P-Th-129****Does Collagen Crosslinking in Ageing and Diabetes Modulate Overload Damage to Tendon Collagen?**A. BROWN¹, S. VERES^{1,2}, AND J. LEE¹¹Dalhousie University, Halifax, NS, Canada, ²Saint Mary's University, Halifax, NS, Canada**P-Th-130****Use of a Novel Behavioral Device to Measure Orofacial Mechanical Allodynia in Rats**E. ROHRS¹, K. KAPERNAROS¹, A. JENKINS¹, J. NEUBERT¹, AND K. ALLEN¹¹University of Florida, Gainesville, FL**P-Th-131****Low-intensity Vibration Amplifies Beneficial Effects of Sleeve Gastrectomy on Bone Marrow Niche**A. YANG¹, G. PAGNOTTI¹, V. PATEL¹, M. ALTIERI², A. PRYOR², D. TELEM², M. CHAN¹, AND C. RUBIN¹¹Stony Brook University, Stony Brook, NY, ²Stony Brook University School of Medicine, Stony Brook, NY**P-Th-132****The Effect of IL-1 Beta on Axonal Growth Potential Induced by Interplay Between Annulus Fibrosus and DRG Neurons**H. KIM¹, T. CASPAR¹, S. SHAH², AND A. HSIEH^{1,3}¹University of Maryland, College Park, MD, ²University of California-San Diego, La Jolla, CA, ³University of Maryland, Baltimore, MD**P-Th-133****Effects of Membrane Cholesterol Enrichment on Osteoblast Responsiveness to Hydrodynamic Pressures**K. LOUGH¹ AND H. SHIN¹¹University of Kentucky, Lexington, KY**P-Th-134****Mechanical Stimulation of a Healing Fracture in Mice Using An External Fixator**J. CURREY¹, M. MANCUSO¹, AND S. KALIKOFF¹¹Union College, Schenectady, NY**Track: Orthopaedic and Rehabilitation Engineering, Biomechanics****Musculoskeletal Imaging****Chairs:** Wendy Murray, Katherine Saul**P-Th-617****Regional Characterization of Effective Joint Space & Hip-joint Capsule Volume from Magnetic Resonance Imaging**P. MENON¹, P. ALBAL¹, B. MOSIER², L. MAYNARD², AND J. CHRISTOFORRETTI²¹Sun Yat-sen University - Carnegie Mellon University Joint Institute of Engineering, Pittsburgh, PA, ²Allegheny Health Network, Pittsburgh, PA**P-Th-618****The Effect of Skin Motion on Dynamic Musculoskeletal Ultrasound**D. LIPPS¹, S. LEE¹, B. WANG¹, AND E. PERREAULT¹¹Northwestern University, Chicago, IL**P-Th-619****Contrast Enhanced Computed Tomographic Analysis of the Biochemical and Biomechanical Properties of Human Articular Cartilage: Cationic vs. Anionic Contrast**R. STEWART^{1,2}, B. COOPER¹, B. LAKIN^{1,2}, J. FREEDMAN^{1,2}, M. GRINSTAFF¹, AND B. SNYDER²¹Boston University, Boston, MA, ²Beth Israel Deaconess Medical Center, Boston, MA**P-Th-620****Accuracy and Feasibility of Dual Fluoroscopy: In-Vivo Kinematics of Tibiotalar and Subtalar Joints**K. ROACH¹, B. WANG¹, A. KAPRON¹, N. FIORENTINO¹, M. SINGER¹, C. SALTZMAN¹, AND A. ANDERSON¹¹University of Utah, Salt Lake City, UT**Track: Orthopaedic and Rehabilitation Engineering, Device Technologies and Biomedical Robotics****Technology, Computer Interfaces and Wearable Devices****Chairs:** James Rains, Yahia Al-Smadi**P-Th-114****Automatic Parameter Generation for Therapeutic Games Using Patient Assessment and Performance Data**N. SUNNY¹ AND J. FARRIS¹¹Grand Valley State University, Grand Rapids, MI

P-Th-115**EOG Based Human-Computer Interface for the Operation of a Text-To-Speech App on Android Devices**J. LARA¹, V. CONTRERAS¹, A. HEREDIA², AND R. AMBROSIO¹¹Universidad Autónoma de Ciudad Juárez (UACJ), IIT, Ciudad Juárez, Mexico, ²Universidad Popular Autónoma del Estado de Puebla (UPAEP), Puebla, Mexico**P-Th-116****Utilization of Video Recording to Analyze Cognitive and Physical Facets of Children with Autism**W. GOODWIN¹, J. THAKORE¹, J. MCMAHON¹, A. N'GOAN¹, AND D. SHAHMIRZADI¹¹Stevens Institute of Technology, Hoboken, NJ**P-Th-117****A Wearable Navigator For The Visually Impaired And Blind Population**H. HE¹ AND J. TAN¹¹The University of Tennessee, Knoxville, TN**P-Th-118****Novel Eye-Tracking System for Control of Motorized Wheelchairs**J. WARD¹ AND M. MCCARTHY²¹Tulane University, Lake Charles, LA, ²Tulane University, Commerce Township, LA**P-Th-119****Blink Controlled Brain Computer Interface Using EEG**O. YETKIN¹, C. MONT¹, K. WALLACE¹, AND M. ROMERO¹¹University of Texas at Arlington, Arlington, TX**P-Th-120****Motor Rehabilitation Care for Children with Cerebral Palsy Using Telemedicine.**P. RODRIGUEZ¹, E. HERNANDEZ¹, S. MONTES¹, AND K. BUSTAMANTE¹¹ITESM Chihuahua, Chihuahua, Mexico**P-Th-121****Translational Research in the Development of Gait Rehabilitation Trainer**M. LEE¹, W. SONG¹, S. SAGONG¹, J. SEO¹, AND S. EUN¹¹National Rehabilitation Center, Seoul, Korea, Republic of**P-Th-122****Novel Design of an Anterior Cruciate Ligament (ACL) Injury Prevention Brace**D. GREENSHIELDS¹, R. PORTER¹, J. KILLEWALD¹, AND E. MEYER¹¹Lawrence Technological University, Southfield, MI**P-Th-123****Variable Resistance Rehabilitative Knee Brace**S. DREYER¹, D. O'NEILL¹, U. ACAR¹, K. IZAK¹, A. PATEL¹, AND S. PILLER¹¹University of Illinois at Chicago, Chicago, IL**P-Th-124****MEMS Flexible Strain Sensors for Arthritis Diagnosis**K. SHINDE¹, J. JULIUS¹, S. RAO¹, AND J-C. CHIAO¹¹UT Arlington, Arlington, TX**Track: Tissue Engineering****Hepatic, Pancreatic, Digestive and Renal Tissue Engineering****Chairs:** Gregory Underhill, Srivatsan Kidambi**P-Th-391****Evaluation of Oxygen Demand in Three Dimensional Culture of Pancreatic beta-cells**J. MCREYNOLDS¹, X. LI², J. GUAN², AND S. JIN^{1,3}¹University of Arkansas, Fayetteville, AR, ²The Ohio State University, Columbus, OH, ³Current: SUNY at Binghamton, Binghamton, NY**P-Th-392****Organotypic 3D Liver Models for Investigating Drug Toxicity**S. ORBACH¹, M. CASSIN¹, AND P. RAJAGOPALAN¹¹Virginia Tech, Blacksburg, VA**P-Th-393****Designing an Inflamed and Fibrotic Microenvironment to Investigate Changes in Liver Sinusoidal Endothelial Function**A. FORD¹ AND P. RAJAGOPALAN¹¹Virginia Tech, Blacksburg, VA**P-Th-394****Effect of Decellularized Liver Matrix Proteins on Porcine Hepatocytes *in Vitro***R. CORONADO^{1,2,3}, J. ONG¹, R. CHRISTY², W. WASHBURN², AND G. HALFF²¹University of Texas at San Antonio, San Antonio, TX, ²University of Texas Health Science Center at San Antonio, San Antonio, TX, ³US Army Institute of Surgical Research, JBSA Fort Sam Houston, TX**P-Th-395****Novel Integrated *In Vitro* Gastrointestinal and Hepatic Models for Investigating Drug Toxicity**R. LESS¹ AND P. RAJAGOPALAN¹¹Virginia Tech, Blacksburg, VA**P-Th-396****Analysis Of Perfusion-Enhanced Diffusion, Shear Damage And Metabolic Function In Spheroid-Seeded And Suspension-Seeded Hepatocyte Scaffolds**D. ALZEBDEH¹ AND H. MATTHEW¹¹Wayne State University, Detroit, MI**P-Th-397****Decellularized Liver Matrix Coating and Hydrogel for Culture and Transplantation of Hepatocytes**J. LEE¹, K. LEE¹, J. SHIN¹, AND S-W. CHO¹¹Yonsei University, Seoul, Korea, Republic of**P-Th-398****Is Hanging Monoculture of Primary Hepatocytes Better?**Y. KANG¹, J. LAMONTAGNE¹, Y. CAI¹, M. BOUCHARD¹, AND H. NOH¹¹Drexel University, Philadelphia, PA**Track: Tissue Engineering****Neural, Epithelial and Adipose Tissue Engineering****Chairs:** Sarah Stabenfeldt, John Frampton**P-Th-401****Neurotrophic Factor Gradient Delivery to Direct Schwann Cell Migration**K. KRICK¹, Y-J. HUANG², R. MARTIN², P. SEARSON², A. KHADEMOSSEINI², A. HOKE¹, AND H-Q. MAO²¹Johns Hopkins School of Medicine, Baltimore, MD, ²Johns Hopkins University, Baltimore, MD, ³Harvard-MIT, Cambridge, MA**P-Th-402****Inducing Inner Ear Hair Cell Development by Seeding Reprogrammed Human Wharton's Jelly Cells on Decellularized Cochlea****P-Th-403****FGF-Immobilized Multifunctional Microspheres for the Delivery of Neural Stem Cells**N. SKOP¹, F. CALDERONA¹, C. GANDHI¹, S. LEVISON¹, AND C. CHO²¹Rutgers University, Newark, NJ, ²New Jersey Institute of Technology, Newark, NJ**P-Th-404****Development of an *In Vitro* 3D Neuroinflammation Model**H. CHO¹ AND Y. LEE¹¹Virginia Tech, Blacksburg, VA

P-Th-405**Nanochannel-Based Electrotransfection of Skin Cells In Situ**D. GALLEGO-PEREZ¹, S. GHATAK¹, D. PAL¹, N. AHMED¹, V. MALKOC¹, X. ZHAO¹, J. MA¹, X. WANG¹, S. GNYAWALI¹, S. KHANNA¹, C. RINK¹, J. OTERO¹, L. LEE¹, AND C. SEN¹¹The Ohio State University, Columbus, OH**P-Th-406****Coordinated Cellular Interplay in 3D Reorganization of Human Parotid Salivary Gland Cells**D. WU¹, S. PRADHAN-BHATT², D. HARRINGTON¹, R. WITT³, AND M. FARACH-CARSON¹¹Rice University, Houston, TX, ²University of Delaware, Newark, DE, ³Thomas Jefferson University, Philadelphia, PA**P-Th-407****The Effect of Enzymatic Pretreatment on Adipose Tissue Graft Viability**Y. CAO¹, S. SEAMAN¹, S. TANNAN¹, K. LIN¹, AND S. PEIRCE¹¹University of Virginia, Charlottesville, VA**Track: Tissue Engineering, Orthopaedic and Rehabilitation Engineering****Skeletomuscular Tissue Engineering****Chairs:** Sangamesh Kumbar, John Fisher**P-Th-135****Characterization of Polysaccharide Based Micro-Nano Structured Scaffolds for Osteoinductivity**A. ARAVAMUDHAN^{1,2}, D. RAMOS¹, M. HARMON¹, AND S. KUMBAR¹¹Institute For Regenerative Engineering, Farmington, CT, ²University of Connecticut, Farmington-Storrs, CT**P-Th-136****Assessing the Osteogenic Differentiation of Human Mesenchymal Stem Cells Co-Cultured with Human Vein Endothelial Cells on a Peptide Amphiphile Nanomatrix**D. PATEL¹, L. DENG¹, J. VINES¹, AND H-W. JUN¹¹University of Alabama at Birmingham, Birmingham, AL**P-Th-137****The Development and Characterization of a Pre-Vascularized Biomimetic Cortical Bone Scaffold**B. TAYLOR¹ AND J. FREEMAN¹¹Rutgers, the State University of New Jersey, Piscataway, NJ**P-Th-138****Dual Differentiation of Mesenchymal Stem Cells Can Be Obtained by Scaffold Characteristics**H. PARK¹, S. PARK², Y. KANG², J. SHIN², S. GU¹, Y-R. WU², AND J-W. SHIN^{1,2,3}¹Department of Health Science and Technology, Inje University, Gimhae-si, Korea, Republic of, ²Department of Biomedical Engineering, Inje University, Gimhae-si, Korea, Republic of, ³Cardiovascular and Metabolic Disease Center/Institute of Aged Life Redesign/UHRC, Gimhae-si, Korea, Republic of**P-Th-139****Chondroinductive Microsphere Based Scaffolds With Decellularized Cartilage For Cartilage Tissue Engineering**A. SUTHERLAND¹, V. GUPTA¹, AND M. DETAMORE¹¹University of Kansas, Lawrence, KS**P-Th-140****Topographical Cues on Biomimetic Electrospun Scaffolds for Bone Tissue Engineering**S. CAMERON¹, S. AYAD¹, B. VENDRA¹, D. MASON¹, I. KHATRI¹, AND R. OLIVARES-NAVARRETE¹¹Virginia Commonwealth University, Richmond, VA**P-Th-141****MgO Nanoparticles Enhance Osteoblast Functions on Hydroxyapatite Nanocomposites for Antibacterial Orthopedic Tissue Engineering Applications**D. HICKEY¹, B. ERCAN¹, L. SUN¹, AND T. WEBSTER¹¹Northeastern University, Boston, MA**P-Th-142****Tissue Engineered Cartilage Interaction in Healthy and Diseased Environment Using Hydroxyapatite Nanoparticles**R. DUA¹, C. SIYAMBALAPITTYA¹, A. AGARWAL¹, AND S. RAMASWAMY¹¹Florida International University, Miami, FL**P-Th-143****Utilizing Engineered Microporosity to Support Recellularization and Prepare a Porcine Derived Temporomandibular Joint Disc Scaffold for Tissue Engineering**A. MATUSKA¹ AND P. MCFETRIDGE¹¹University of Florida, Gainesville, FL**P-Th-144****In Vitro Evaluation of the Endochondral Bone Formation on PCL Ceramic Composites**S. SCHUSSLER¹¹New Jersey Institute of Technology, Newark, NJ**P-Th-145****Enhancing Bone Regeneration with Composite Microspheres that Reflect the Osteogenic Niche**C. HAASE¹, C. DODSON¹, C. GREGORY², AND R. KAUNAS¹¹Texas A&M University, College Station, TX, ²Institute for Regenerative Medicine Texas A&M Health Science Center, Temple, TX**P-Th-146****Modeling the Effects of Matrix Stiffness on Cartilage Formation in 3D Hydrogels**D. ZHU¹, A. BUGANZA TEPOLE¹, E. KUHL¹, AND F. YANG¹¹Stanford University, Stanford, CA**P-Th-147****Effects of Proteoglycan Removal on Decellularization of Articular Cartilage**C. BAUTISTA¹, H. PARK¹, AND B. BILGEN^{2,3}¹Brown University, Providence, RI, ²Providence VA Medical Center, Providence, RI, ³The Warren Alpert Medical School of Brown University & Rhode Island Hospital, Providence, RI**P-Th-148****Vascularized Bone Grafts: Scaffold Design and Characterization**C. PIARD¹ AND J. FISHER¹¹University of Maryland, College Park, MD**P-Th-149****Patterns of IHP Can Effectively Control Osteogenesis of hMSCs Rather than Osteogenic Media**Y. KANG¹, S. PARK¹, J. SHIN¹, S. GU², H. PARK², H. BAN¹, AND J-W. SHIN^{1,2,3}¹Department of Biomedical Engineering, Inje University, Gimhae-si, Korea, Republic of, ²Department of Health Science and Technology, Inje University, Gimhae-si, Korea, Republic of, ³Cardiovascular and Metabolic Disease Center /Institute of Aged Life Redesign/UHRC, Inje University, Gimhae-si, Korea, Republic of**P-Th-150****Engineered Bone Tissue Through Short-term Administration of an Osteogenic Small Molecule**E. CARBONE¹, H. KAN¹, C. LAURENCIN¹, AND W. LO¹¹UConn Health Center, Farmington, CT**P-Th-151****Tendon Differentiation Using Human Recombinant Insulin**D. RAMOS^{1,2}, C. LAURENCIN^{1,2}, AND S. KUMBAR^{1,2}¹Institute For Regenerative Engineering, Farmington, CT, ²University of Connecticut, Farmington-Storrs, CT**P-Th-152****Multilayered Electrospun Silk Scaffolds Capable Of Eluting Platelet-Rich Plasma For Ligament Engineering**P. SOMASUNDARAM¹ AND S. SELL¹¹Saint Louis University, St. Louis, MO**P-Th-153****The Fabrication of Dense, Porous and Aligned Collagen Scaffolds using Novel 2D Plastic Compression and Porogen Based Techniques**S. REESE¹, J. ZITNAY², D. ROJAS-LEON¹, AND J. WEISS¹¹University of Utah, Salt Lake City, UT, ²University of Minnesota, Minneapolis, MN

P-Th-154**Human Skeletal Muscle Bundle Model and Perfusion System**B. DAVIS¹, J. SANTOSO¹, AND G. TRUSKEY¹¹Duke University, Durham, NC**P-Th-155****Development of Spatially Patterned Extracellular Matrix Cues to Direct the Differentiation and Alignment of Human Skeletal Muscle Tissue**R. DUFFY¹, L. FRIEDMAN¹, AND A. FEINBERG¹¹Carnegie Mellon University, Pittsburgh, PA**Track: Tissue Engineering****Tissue Engineering of Models for Study of Disease and Drug Discovery****Chairs:** Agneta Simionescu, Scott Verbridge**P-Th-370** **Analysis of Non-Enzymatic Collagen Crosslinks in Engineered Cell-Secreted Extracellular Matrices**D. MITRA¹, H. FATAKAWALA¹, L. MARCU¹, AND J. LEACH¹¹University of California, Davis, CA**P-Th-371****Tissue Engineering an *In Vitro* Model of Fibrosis in Skeletal Muscle**A. MARINKOVIC^{1,2}, C. NEVILLE¹, O. MWIZERWA¹, K. VIVANCO³, I. POMERANTSEVA¹, J. KOHN², J. VACANTI², AND C. SUNDBACK¹¹Massachusetts General Hospital, Boston, MA, ²New Jersey Center for Biomaterials, Piscataway, NJ, ³Massachusetts Institute of Technology, Cambridge, MA**P-Th-372****Improving Anastomosis Between Microfluidic Channels And Perfused Capillary Networks In Cultured 3D Human Microtissues.**D. PHAN^{1,2}, X. WANG^{1,2}, A. LEE¹, S. GEORGE^{1,2}, AND C. HUGHES^{1,2}¹University of California, Irvine, Irvine, CA, ²The Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA**P-Th-373****The Inhibitory Effects of Fibrosis on Muscle Regeneration in a Self-Assembled Tissue Engineered Model of Skeletal Muscle**J. KRIEGER¹, J. RANKENBERG¹, B-W. PARK², J. FORTE², M. ROLLE², R. PAGE², AND C. MALCUIT¹¹Kent State University, Kent, OH, ²Worcester Polytechnic Institute, Worcester, MA**P-Th-374****Investigating the Influence of Intercellular Signaling on Angiogenesis**M. GADDE¹, M. RYLANDER¹, AND¹Virginia Polytechnic Institute and State University, Blacksburg, VA**P-Th-375****Controlling Ferrofluid Permeability Across the *in vitro* Blood-Brain Barrier Model via Different Coatings**D. SHI¹, L. SUN¹, G. MI¹, S. BHATTACHARYA², S. NAYAR², AND T. WEBSTER¹¹Northeastern University, Boston, MA, ²CSIR-National Metallurgical Laboratory, Jamshedpur, India**P-Th-376****Improving Liver Functions of Hepatic Cell Lines *in vitro* by Co-Culture with Stromal Support Cells**K. BALLINGER¹, A. BAILEY¹, AND S. KHETANI¹¹Colorado State University, Fort Collins, CO**P-Th-377****Exploring Chronic Drug Dosing in Engineered Human Liver Cultures Using Global Expression Profiling**D. BERGER¹, M. MCVAY², AND S. KHETANI¹¹Colorado State University, Fort Collins, CO, ²Hepregen Corporation, Medford, MA**P-Th-378****Long-Term Engineered Cultures of Primary Mouse Hepatocytes for Genotype-Phenotype Studies**B. WARE¹, V. SOLDATOW², D. BERGER¹, E. LECLUYSE², AND S. KHETANI¹¹Colorado State University, Fort Collins, CO, ²The Hamner Institutes for Health Sciences, Research Triangle Park, NC**P-Th-379****Mimicking Chronic Hypo- and Hyper-glycemia in Engineered Cultures of Human Hepatocytes**M. DAVIDSON¹, K. BALLINGER¹, AND S. KHETANI¹¹Colorado State University, Fort Collins, CO**P-Th-380****Tissue Engineering Models for the Study of Diabetic Cardiomyopathy**L. MCCALLUM¹, J. SCHULTE¹, AND A. SIMIONESCU¹¹Clemson University, Clemson, SC**P-Th-381****Magnetic Nanoshuttle for the Rapid Assembly of Functional Multicellular Cardiac Aggregates**M. HOGAN¹, G. SOUZA², AND R. BIRLA¹¹University of Houston, Houston, TX, ²Nano²D Biosciences, Houston, TX**P-Th-382****Investigation Of Circadian Rhythms Perturbation by Metabolic Stimulation in Peripheral Tissues through Microfluidic Technology**O. GAGLIANO^{1,2}¹University of Padova, Padova, Italy, ²Venetian Institute of Molecular Medicine, Padova, Italy**P-Th-383****Development of An Integrated Bronchio-Alveolar Organ Construct for Understanding Pulmonary Drug Toxicity**J-H. HUANG¹, P. NATH¹, A. AREFIN², J. HARRIS¹, AND R. IYER¹¹Los Alamos National Laboratory, Los Alamos, NM, ²University of New Mexico, Albuquerque, NM**P-Th-384****3D Tumor Microtissue for Drug Discovery**E. ATEFI¹, S. LEMMO¹, D. FYFFE¹, AND H. TAVANA¹¹The University of Akron, Akron, OH**P-Th-385****An *in-vitro* Biomimetic, Fluid-Dynamic 3D Model of the Human Intestine for Evaluating Oral Drug Delivery**E. SCHLESINGER¹, A. CERCHIARI¹, J. KIM¹, AND T. DESAI²¹UC Berkeley - UCSF, San Francisco, CA, ²University of California, San Francisco, San Francisco, CA**P-Th-386****Porous Poly Urethane Microspheres as a 3-D Culture Model for *In Vitro* Drug Screening**J. MENON¹, A. KURIAKOSE¹, K. POKHREL¹, A. SHARMA¹, Y. HONG¹, AND K. NGUYEN¹¹University of Texas at Arlington, University of Southwestern Medical Center at Dallas, Arlington, TX**P-Th-387****Ex Vivo Tissue Test Systems: Novel Layered Scaffold Design Offers Unique Analysis**S. ROWLINSON¹, K. KWIST¹, AND K. BURG¹¹Clemson University, Clemson, SC**P-Th-388****Acoustic Characterization of a Novel Scaffold-Based System for Investigations on Sonoporation**A. ALEID¹, A. ALASSAF¹, O. WILSON, JR.¹, AND V. FRENKEL¹¹The Catholic University of America, Washington, DC

TODAY'S HIGHLIGHT

PLATFORM SESSIONS Fri- I

8:00am - 9:30am

See pages 125-131, HBGCC

EXHIBIT HALL OPEN

9:30am - 5:00pm

WSCC, Exhibit Hall A

POSTER SESSION Fri

9:30am - 5:00pm

See pages 1429-173, WSCC, Exhibit Hall A

Poster Viewing with Authors 9:30am - 10:30am
& Refreshment BreakPLENARY
SESSION

10:30am - 12:00noon

HBGCC,
Lila Cockrell TheatreNIH NIBIB Lecture
David Kaplan, PhD

WOMEN IN BME Luncheon 12:15pm - 1:30pm

HBGCC, Ballroom A

Additional ticket purchase required

PLATFORM SESSIONS Fri-2 1:45pm - 2:45pm

See pages 132-136, HBGCC

PLATFORM SESSION Fri-3 3:00pm - 4:00pm

See pages 137-140, HBGCC

Poster Viewing with Authors 4:00pm - 5:00pm
& Refreshment Break

HBGCC, Exhibit Hall A

PLENARY
SESSION

5:15pm - 6:15pm

HBGCC, Lila Cockrell Theatre

Stephen Oesterle, MD



BMES BASH

7:00pm - 10:00pm

Buckhorn Saloon
& Texas Ranger Museum

FRIDAY, October 24, 2014

8:00 AM - 9:30 AM

PLATFORM SESSIONS - FRI - I

Track: Tissue Engineering, Neural Engineering
OP-Fri- I - I - Room 001A

Neural Tissue Engineering

Chairs: Stuart Tobet, Deanna Thompson

8:00AM

Engineering Personalized Neural Tissue by Combining Induced Pluripotent Stem Cells with Fibrin Scaffolds

A. MONTGOMERY¹, A. WONG¹, N. GABERS¹, AND S. WILLERTH¹¹University of Victoria, Victoria, BC, Canada

8:30AM

Rapid 3D Assays for Combinatorial Screening of Biomaterials

C. BERTUCCI¹, S. RAMAMOORTHY¹, P. KARANDE¹, AND D. THOMPSON¹¹Rensselaer Polytechnic Institute, Troy, NY

8:45AM

Ocular Tissue Engineering with Fetal Brain Derived Extracellular Matrix Bioscaffolds

C. MEDBERRY¹, V. REDDY¹, A. FAUST¹, F. MEHDI¹, AND M. STEKETEE¹¹University of Pittsburgh, Pittsburgh, PA

9:00AM

A 3D Electrospun Fiber and Hydrogel Composite Scaffold for Brain Regeneration

C. JOHNSON¹, C. RIVET¹, K. ZHOU², R. GILBERT¹, D. FINKELSTEIN³, AND J. FORSYTHE²¹Rensselaer Polytechnic Institute, Troy, NY, ²Monash University, Melbourne, Australia, ³University of Melbourne, Melbourne, Australia

9:15AM

Hydrophilic Surface Modification of Electrospun Fibers for Nerve Guidance

N. SCHAUB¹, C. LE BEUX², J. MAIO¹, R. LINHARDT¹, J. ALAUZUN², D. LAURENCIN², AND R. GILBERT¹¹Rensselaer Polytechnic Institute, Troy, NY, ²Institut Charles Gerhardt de Montpellier, Montpellier, France

Track: Neural Engineering

OP-Fri- I - 2 - Room 001B

CNS injury: SCI, TBI and Concussion

Chairs: Mark Van Dyke, Randolph Ashton

8:00AM

Sustained *In Vivo* Dual Drug Delivery of Anti-Inhibitory Molecules for Spinal Cord Injury TreatmentT. WILEMS¹, C. INGRAM¹, AND S. SAKIYAMA-ELBERT¹¹Washington University in St. Louis, St. Louis, MO

8:15AM

Digitally Controlling the Biomechanics of Fluid Percussion Injury

M. LONG^{1,2}, N. PELOSO¹, AND B. PFISTER¹¹New Jersey Institute of Technology, Newark, NJ, ²Rutgers Biomedical and Health Sciences, Newark, NJ

8:30AM

Local and Sustained Delivery of BDNF Mediates Spinal Learning after Injury

Z. KHAING¹, J. PARK², J. GRAU³, K. LEE³, A. NIEMERSKI³, AND C. SCHMIDT²¹University of Florida, Gainesville, FL, ²University of Florida, Gainesville, GA, ³Texas A&M, College Station, TXPLATFORM
SESSIONS

Fri-1

8:45AM

Local Delivery of Minocycline from Injectable Hydrogel Loaded with Self-Assembled Complexes Effectively Promotes Neuroprotection after Contusive Spinal Cord Injury

Z. WANG¹, K. WOFFORD¹, Z. ZHANG¹, AND Y. ZHONG¹

¹Drexel University, Philadelphia, PA

9:00AM

Evaluation of Nanocarrier Delivery and a Novel Anti-inflammatory Drug for Spinal Cord Injury

T. SAXENA¹, K. LOOMIS¹, B. PAI¹, L. KARUMBIAIAH¹, E. GAUPP¹, K. PATIL¹, R. PATKAR¹, AND R. BELLAMKONDA¹

¹Georgia Institute of Technology, Atlanta, GA

9:15AM

Transient Hypoxia in a Model of Distraction Spinal Cord Injury Results in a Reduction of Ventral Motor Neuron Size

J. SEIFERT^{1,2}, J. BELL^{1,2}, D. SUCATO³, AND M. ROMERO^{1,2}

¹UT Arlington, Arlington, TX, ²UT Southwestern, Dallas, TX, ³Texas Scottish Rite Hospital for Children, Dallas, TX

Track: Biomaterials, Cellular and Molecular Bioengineering

OP-Fri-I-3 - Room 006A

Intelligent/Multifunctional Biomaterials

Chairs: Melissa Grunlan, Craig Duvall

8:00AM

Biomimetic, Monocyte-targeting Supramolecular Micellar Assemblies for Atherosclerosis Theranostics

E. CHUNG¹, L. MLINAR², K. NORD¹, M. SUGIMOTO¹, E. WONDER¹, C. ZHANG¹, C-H. KUO¹, J. ANDRADE¹, Y. FANG¹, L. HUANG¹, F. ALENGHAT¹, AND M. TIRRELL¹

¹University of Chicago, Chicago, IL, ²University of California, Berkeley, Berkeley, CA

8:15AM

Non-Invasive Deep Tissue Imaging of Polymer Degradation Using X-Ray

T. OLSEN¹, D. WHITEHEAD¹, B. VAN HORN², AND F. ALEXIS¹

¹Clemson University, Clemson, SC, ²College of Charleston, Charleston, SC

8:30AM

Molecularly Responsive Biomaterials Based on DNA-Crosslinked Hydrogels: Assembly and Applications

T. BETANCOURT¹, R. NAVARRO¹, R. DANSO¹, K. BEAVEN¹, R. HALL¹, K. KNUTSON¹, AND K. ABDELRAHMAN¹

¹Texas State University, San Marcos, TX

8:45AM

Thiol-ene Networks As Hydrolytically Stable, Ultra-soft Neural Prosthetic Substrates

R. REIT¹, D. SIMON¹, B. LUND¹, T. WARE¹, AND W. VOIT¹

¹University of Texas at Dallas, Richardson, TX

9:00AM

Magnetic Mesoporous Hollow Carbon Microspheres for Rapid Capture of Low-concentration Peptides

G. CHENG¹, M-D. ZHOU¹, AND S-Y. ZHENG¹

¹Penn State University, State College, PA

9:15AM

Electrochemically Modulated Nitric Oxide (NO) Releasing Biomedical Devices via Copper(II)-Tri(2-pyridylmethyl)amine Mediated Reduction of Nitrite

H. REN¹, J. WU¹, C. XI¹, N. LEHNERT¹, T. MAJOR¹, R. BARTLETT¹, AND M. MEYERHOFF¹

¹University of Michigan, Ann Arbor, MI

Track: Cardiovascular Engineering

OP-Fri-I-4 - Room 006B

Cardiac Electrophysiology and Mechanics

Chairs: Adam Engler, Jeffrey Jacot

8:00AM

Ephaptic Coupling and Its Complex Role in Maintaining Cardiac Conduction

S. GEORGE¹, K. SCIUTO², J. LIN³, M. SALAMA², J. KEENER², R. GOURDIE^{1,4}, AND S. POELZING^{1,4}

¹Virginia Polytechnic Institute and State University, Blacksburg, VA, ²University of Utah, Salt Lake City, UT, ³California Polytechnic State University, San Luis Obispo, CA, ⁴Virginia Tech Carilion Research Institute, Roanoke, VA

8:15AM

Cell Size and Shape as Determinants of Ion Channel Distribution and Function

S. SENGUPTA¹, B. HOFFMAN¹, AND N. BURSAC¹

¹Duke University, Durham, NC

8:30AM

Recellularized Cardiac Tissue Slices Produce Aligned Cells and Anisotropic Conduction

A. BLAZESKI¹, G. KOSTECKI¹, AND L. TUNG¹

¹Johns Hopkins University, Baltimore, MD

8:45AM

Cycle Length Restitution and Spontaneous Action Potential Dynamics in Sinoatrial Node Disease

P. GLYNN¹, B. ONAL¹, AND T. HUND¹

¹The Ohio State University, Columbus, OH

9:00AM

Control of Cardiac Alternans using Boundary Pacing and Mechanical Perturbations Control

A. HAZIM¹, S. DUBLJEVIC¹, AND Y. BELHAMADIA¹

¹University of Alberta, Edmonton, AB, Canada

9:15AM

Effect of Substrate Stiffness on Cardiac Fibroblasts Isolated from Volume-Overload Induced Heart Failure

R. CHILDERS¹, P. LUCCHESI², AND K. GOOCH¹

¹The Ohio State University, Columbus, OH, ²Research Institute of Nationwide Children's Hospital, Columbus, OH

Track: Drug Delivery

OP-Fri-I-5 - Room 006C

Nucleic Acid Delivery

Chairs: Debra Auguste, Blanka Sharma

8:00AM *Invited*

DNA and RNA Release Surfaces for Systemic and Localized Delivery Applications

P. HAMMOND¹

¹Massachusetts Institute of Technology, Cambridge, MA

8:30AM

Antibody-conjugated Nanoparticle Platform for Targeted Delivery of siRNA to HER2+ Breast Cancer

W. NGAMCHERDTRAKUL¹, J. MORRY¹, S. GU¹, D. CASTRO^{1,2}, T. SANGVANICH¹, S. GOODYEAR¹, Z. HU¹, J. GRAY¹, AND W. YANTASEE^{1,2}

¹Oregon Health and Science University, Portland, OR, ²PDX Pharmaceuticals, LLC, Lake Oswego, OR

8:45AM**Silencing of Tumor Necrosis Factor Receptor-I in Human Lung Microvascular Endothelial Cells Using Particle Platforms for siRNA Delivery**J. SAKAMOTO¹, L. BAI¹, D. CHAN¹, S. SHAMSUDEEN¹, AND R. SERDA²¹Houston Methodist, Houston, TX, ²Baylor College of Medicine, Houston, TX**9:00AM****Engineering Exosomes for DNA Delivery**T. LAMICHHANE¹, R. RAIKER¹, AND S. JAY¹¹University of Maryland, College Park, MD**9:15AM****Nasal Delivery of MicroRNA-486 via Surfactant Protein-C Targeted Lipoplexes in Lung Cancer Treatment**Y. WU^{1,2}, A. GAUGHAN³, J. MA², S. NANA-SINKAM², L. LEE², AND I. DAVIS³¹State University of New York at Buffalo, Buffalo, NY, ²The Ohio State University, Columbus, OH, ³The Ohio State University, Columbus, OH**Track: Translational Biomedical Engineering, Nano to Micro Technologies****OP-Fri-1-6 - Room 006D****Bio-nanomedicine in Healthcare****Chairs:** Kent Leach, Manu Platt**8:00AM** *Invited***Translating Promising Academic Medical Concepts to Products: Consider Success Criteria Beforehand**A. COURY¹¹Northeastern University, Boston, MA**8:30AM****Platform Anti-NF- κ B Nanotechnology for Virally Driven Adult T-Cell Leukemia/Lymphoma**H. PAN¹, K. HOU¹, D. RAUCH¹, J. HARDING¹, L. RATNER¹, AND S. WICKLINE¹¹Washington University School of Medicine, St Louis, MO**8:45AM****Intravenously Administered Nanoparticles Improve Cognitive Outcomes Following Blast Trauma**W. HUBBARD¹, M. LASHOF-SULLIVAN², C. HALL¹, E. LAVIK², AND P. VANDEVORD^{1,3}¹Virginia Polytechnic Institute and State University, Blacksburg, VA, ²Case Western Reserve University, Cleveland, OH, ³Salem VA Medical Center, Research & Development Service, Salem, VA**9:00AM****Inhibition of Various Bacterial Growth on Selenium Nanoparticle Coated Paper Towels**Q. WANG¹ AND T. WEBSTER¹¹NORTHEASTERN UNIVERSITY, BOSTON, MA**9:15AM****TheraBlob for Ultrasound-mediated Ablation Therapy**S. MISRA^{1,2}, M. YE^{1,2}, P. RAY², AND D. PAN^{1,2,3}¹University of Illinois at Urbana-Champaign, Urbana, IL, ²Carle Foundation Hospital, Urbana, IL, ³Beckman Institute, Urbana, IL**Track: Cancer Technologies****OP-Fri-1-7 - Room 007A****Engineered Models of Cancer I****Chairs:** Nastaran Kuhn, Esther Gomez**8:00AM****An Agent-Based Model Based On Breast Cancer Receptor Heterogeneity**K-A. NORTON¹, N. PANDEY¹, AND A. POPEL¹¹Johns Hopkins University, Baltimore, MD**8:15AM****Development of a Versatile Platform to Analyze Glioma Specimens**S. PEDRON¹, M. SCHROEDER², J. SARKARIA², AND B. HARLEY¹¹University of Illinois at Urbana-Champaign, Urbana, IL, ²Mayo Clinic, Rochester, MN**8:30AM****Multiplex Fluorescence Lifetime Imaging of Kinase activity in Live Cells with Peptide Biosensors**N. DAMAYANTI¹, L. PARKER¹, AND J. IRUDAYARAJ¹¹Purdue University, West Lafayette, IN**8:45AM****Genome Edited Cell Models to Investigate Epigenetic Fluctuation and Cancer Initiation**I. XHANGOLLI¹, J. CHEN¹, Y. WU¹, Y. MARUVKA², F. MICHOR², AND R. FAN¹¹Yale University, New Haven, CT, ²Dana Farber Cancer Institute, Boston, MA**9:00AM****Physical Intimacy of Breast Cancer Cells and Mesenchymal Stem Cells Regulates Drug Resistance Pathways**A. DAVEREY¹, A. DRAIN¹, K. BROWN¹, AND S. KIDAMBI¹¹University of Nebraska-Lincoln, Lincoln, NE**9:15AM****3D Bone Marrow Mimics to Study Stem Cell-Mediated Breast Cancer Spread**L. JANSEN¹, L. BARNEY¹, T. MCCARTHY¹, AND S. PEYTON¹¹University of Massachusetts Amherst, Amherst, MA**Track: Cardiovascular Engineering, Device Technologies and Biomedical Robotics****OP-Fri-1-8 - Room 007B****Cardiovascular Assist Devices****Chairs:** Marc Horner, Danny Bluestein**8:00AM****Physiological Characterization of the Total Artificial Heart**J. CROSBY¹, K. DECOOK¹, P. TRAN¹, R. SMITH¹, D. BURKHOF², AND M. SLEPIAN¹¹The University of Arizona, Tucson, AZ, ²Columbia University, New York, NY**8:15AM****Numerical Model of Full Cardiac Cycle Hemodynamics in Syncardia Total Artificial Heart**G. MAROM¹, W-C. CHIU¹, S. PRABHAKAR², M. HORNER³, M. SLEPIAN^{1,4}, AND D. BLUESTEIN¹¹Stony Brook University, Stony Brook, NY, ²Ansys Fluent India Pvt. Ltd, Pune, India, ³Ansys, Inc., Evanston, IL, ⁴University of Arizona, Tucson, AZ**8:30AM****Demonstration of Low Frequency Speed Modulation of Miniature Rotary Blood Pumps in a Large Animal Model**K. SOUCY¹, G. GIRIDHARAN¹, M. SOBIESKI¹, M. SLAUGHTER¹, AND S. KOENIG¹¹University of Louisville, Louisville, KY

8:45AM**High Speed Flow Visualization Reveals Thrombogenic Pathlines in Axial Flow Blood Pump**F. YANG¹ AND J. ANTAKI¹¹Carnegie Mellon University, Pittsburgh, PA**9:00AM****Reduced Platelet Aggregation Following High Shear Exposure**A. HOUZELLE¹, C. LEWIS¹, T. SNYDER², AND D. SCHMIDTKE¹¹University of Oklahoma, Norman, OK, ²Integrus, Oklahoma City, OK**9:15AM****Investigating VWF Degradation as a Result of Integrated Shear Stress Patterns**S. YANG¹ AND V. TURITTO¹¹Illinois Institute of Technology, Chicago, IL**Track: Cellular and Molecular Bioengineering****OP-Fri-I-9 - Room 007C****Molecular and Cell Engineering I****Chairs:** Nic Leipzig, Eric Boder**8:00AM****Molecular Mechanism of Suppressed Cell Spreading in Tumor Repopulating Cells**F. CHOWDHURY¹, N. WANG¹, AND T. HA¹¹University of Illinois at Urbana-Champaign, Urbana, IL**8:15AM****Flu X-Hemagglutinin with Ablated Immunodominant Epitopes Protects Mice Against Lethal H5N1 Challenge**S. BOCK¹, A. LU¹, R. DELA CRUZ¹, J. JENSON¹, J. MARCOS¹, D. BARNARD², AND B. TARBET²¹University of Utah, Salt Lake City, UT, ²Utah State University, Logan, UT**8:30AM****Engineering Immune Cell Function Using a Vector-Free Microfluidic Delivery Platform**A. SHAREI^{1,2,3}, R. TRIFONOVA¹, S. JHUNJHUNWALA³, S. MAO³, G. HARTOULAROS³, A. EYERMAN³, P. BASTO³, J. LIEBERMAN¹, D. IRVINE³, D. ANDERSON³, U. VON ANDRIAN¹, R. LANGER³, AND K. JENSEN³¹Harvard Medical School, Boston, MA, ²Ragon Institute, Cambridge, MA, ³Massachusetts Institute of Technology, Cambridge, MA**8:45AM****Engineering T Lymphocytes with Protein Nanogels for Cancer Immunotherapy**L. TANG¹, Y. ZHENG¹, AND D. IRVINE^{1,2}¹MIT, Cambridge, MA, ²Howard Hughes Medical Institute, Chevy Chase, MD**9:00AM****Increasing CRISPR Specificity For Therapeutic Applications**C. LEE¹, Y. LIN¹, M. PREININGER², R. COTTLE¹, T. CRADICK¹, AND G. BAO¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**9:15AM****Enhancing Biomolecular Screening By Combining Yeast Surface Display and Noncanonical Amino Acids**J. VAN DEVENTER¹, R. KELLY¹, D. LE¹, J. ZHAO¹, AND K. WITTRUP¹¹Massachusetts Institute of Technology, Cambridge, MA**Track: Orthopaedic and Rehabilitation Engineering****OP-Fri-I-10 - Room 007D****Pain****Chairs:** Lori Setton, Beth Winkelstein**8:00AM****Optogenetic Methods to Stimulate and Inhibit Pain in Mice**S. IYER¹, K. MONTGOMERY¹, AND S. DELP¹¹Stanford University, Stanford, CA**8:15AM****Luminescent IVIS Imaging of NF- κ B Activity as a Biomarker of Inflammation Driven Pain**R. BOWLES¹ AND L. SETTON¹¹Duke University, Durham, NC**8:30AM****Experimental Disc Herniation Radiculopathy Requires Intraneural Macrophage Infiltration and can be Blocked by Strategies Limiting Macrophage Function**M. SHAMJI^{1,2}, Y. TU³, AND M. SALTER³¹University of Toronto, Toronto, ON, Canada, ²Toronto Western Hospital, Toronto, ON, Canada, ³Hospital for Sick Children, Toronto, ON, Canada**8:45AM****Neuronal Activity in the CNS Modulates Persistent Pain: Mechanisms & Therapeutic Potential**B. WINKELSTEIN¹, N. CROSBY¹, P. SYRE¹, K. NICHOLSON¹, AND C. WEISSHAAR¹¹University of Pennsylvania, Philadelphia, PA**9:00AM****Reducing Pain and Improving Function in Patellofemoral Pain Syndrome through Offaxis Training**L-Q. ZHANG¹ AND L. TSAI¹¹Northwestern University, Chicago, IL**9:15AM****Advancing Gait Analysis Techniques for the Assessment of Pain and Disability in Rodent Preclinical Models of Joint Disease**K. ALLEN¹, H. KLOEFKORN¹, AND B. JACOBS¹¹University of Florida, Gainesville, FL**Track: Nano to Micro Technologies****OP-Fri-I-11 - Room 008A****Nanobiointerfaces****Chairs:** Akhilesh Gaharwar, Adam Hall**8:00AM****Evaluation of High-efficiency Optoelectronic Nanowires in Rabbits**M. KHRAICHE¹, L. CHEN¹, Y. JING¹, W. FREEMAN¹, AND G. SILVA¹¹University of San Diego California, La Jolla, CA**8:30AM****Probing Astrocytes with Carbon Nanotubes and Assessing the Role of Glial Fibrillary Acidic Protein in their Effects on Astrocytic Morphology and Proliferation**M. GOTTIPATI¹, E. BEKYAROVA², M. BRENNER¹, R. HADDON², AND V. PAPPURU¹¹University of Alabama, Birmingham, AL, ²University of California, Riverside, CA**8:45AM****Detecting Single Molecule Dynamics Using a ZMW/Microfluidic Hybrid Chip**Y. ZHAO¹, D. CHEN¹, S. BENKOVIC¹, AND T. HUANG¹¹Pennsylvania State University, State College, PA

9:00AM**Heat-Shrunken Hierarchical Silica Nanomembrane for Solid Phase DNA Extraction**Y. ZHANG¹, Y. ZHANG¹, K. LIU², AND T-H. WANG^{1,3,4,5}¹Department of Biomedical Engineering, Johns Hopkins University School of Medicine, Baltimore, MD, ²Circulomics Inc., Baltimore, MD, ³Department of Mechanical Engineering, Johns Hopkins University, Baltimore, MD, ⁴Sidney Kimmel Comprehensive Cancer Center, Johns Hopkins University, Baltimore, MD, ⁵Johns Hopkins Institute for NanoBioTechnology, Johns Hopkins University, Baltimore, MD**9:15AM****Probing Single-Bacterium Level Charge Transport in Microbial Fuel Cells**X. JIANG¹, J. HU², J. BIFFINGER³, L. FITZGERALD³, E. PETERSEN⁴, C. JACKAN¹, A. LIEBER¹, B. RINGEISEN³, AND C. LIEBER¹¹Harvard University, Cambridge, MA, ²Institute of Chemistry, Chinese Academy of Sciences, Beijing, China, People's Republic of, ³US Naval Research Laboratory, Washington, DC, ⁴Nova Research, Inc., Alexandria, VA**Track: Tissue Engineering, Biomaterials****OP-Fri-I-12 - Room 008B****Bone and Cartilage Tissue Engineering I****Chairs:** Fan Yang, Rene Olivares-Navarrete**8:00AM****Composite Tissue-Engineered Scaffolds for Cervical Disc Replacement in a Pre-Clinical Canine Model**J. MOJICA-SANTIAGO¹, P. GRUNERT, MD², Y. MORIGUCHI, MD, PHD², R. HARTL, MD², AND L. BONASSAR, PHD¹¹Cornell University, Ithaca, NY, ²Weill Cornell Medical College, New York, NY**8:15AM****Small Peptide Isolated from Enamel Extracellular Matrix Induces Osteoblastic Differentiation in Mesenchymal Stem Cells**R. OLIVARES-NAVARRETE¹, S. HYZY¹, K. VESPER², Z. SCHWARTZ¹, AND B. BOYAN¹¹Virginia Commonwealth University, Richmond, VA, ²Georgia Regents University, Augusta, GA**8:30AM****Diabetic Bone Regeneration Enhanced by Biodegradable Drug-Based Polymer and its Mechanisms**W. YU¹, K. WADA², M. MATTOS², D. GRAVES², AND K. UHRICH¹¹Rutgers University, Piscataway, NJ, ²University of Pennsylvania, Philadelphia, PA**8:45AM****Lysophosphatidic Acid Presentation From Engineered Fibrin Gels for Cell-Based Bone Formation**B. BINDER¹, M. WILKINSON¹, AND J. LEACH¹¹University of California, Davis, Davis, CA**9:00AM****Inhibiting Inflammatory Signals Improves Stem Cell-based Bone Regeneration**M. MARTINO¹, K. MARUYAMA¹, R. MULLER², AND S. AKIRA¹¹Osaka University, Osaka, Japan, ²ETHZ, Zurich, Switzerland**9:15AM****Citrate-Based Biphasic Scaffolds For The Repair Of Large Segmental Bone Defects**R. TRAN¹, Y. GUO², D. XIE², D. NGUYEN¹, X. BAI², AND J. YANG¹¹The Pennsylvania State University, University Park, PA, ²Southern Medical University, Guangzhou, China, People's Republic of**Track: Device Technologies and Biomedical Robotics, New Frontiers and Special Topics****OP-Fri-I-13 - Room 201****Wearable Technology****Chairs:** Youngjae Chun, John Hanks**8:00AM****Test Platform Accelerates Design of Fitness Bands, Smart Watches, and Wearable Devices**J. HANKS¹¹Texas A&M University, College Station, TX**8:30AM****Spectral Analyses as a Measure of Limb Coordination**E. WADE¹ AND J. CHEN¹¹University of Tennessee, Knoxville, TN**8:45AM****Design and Validation of a Smart Knee Fixture for Measuring Knee Balancing**C. BELL¹, P. MEERE¹, I. BORUKHOV¹, AND P. WALKER¹¹NYU Hospital for Joint Diseases, New York, NY**9:00AM****Helmet Device for Optimized Mechanical Optical Clearing Enhancement of Near-Infrared Spectroscopy**C. IDELSON¹, P. REPISKY², S. LACONTE^{2,3,4}, B. KING-CASAS^{2,3,4}, AND C. RYLANDER^{1,2}¹University of Texas, Austin, TX, ²Virginia Tech, Blacksburg, VA, ³Virginia Tech Carilion School of Medicine, Roanoke, VA, ⁴Virginia Tech Carilion Research Institute, Roanoke, VA**9:15AM****Wearable Biomechanical Sensor System for Vibration Exposure and Grip Force Measurements**S. KUDERNATSCH¹, T. ASAKI¹, AND D. PETERSON¹¹University of Connecticut Health Center, Farmington, CT**Track: Biomechanics, Biomaterials****OP-Fri-I-14 - Room 103B****Mechanics of Biomaterials****Chairs:** Natalie Artzi, Wei Tan**8:00AM****Morphological and Mechanical Behavior of Fibrin Clots in Healthy, Diabetic, and Sickle Cell Anemia Disease States**N. FAN¹, M. PLATT¹, AND R. AVERETT¹¹Georgia Institute of Technology, Atlanta, GA**8:15AM****Theoretical Analysis and Finite Element Implementation of a Transversely Isotropic Material Model for Soft Tissue with Two Anisotropic Invariants**Y. FENG¹, R. OKAMOTO², G. GENIN², L. TABER², AND P. BAYLY²¹Soochow University, Suzhou, China, People's Republic of, ²Washington University in Saint Louis, Saint Louis, MO**8:30AM****Stress-Relaxation Behavior of a Novel Alginate/Polyacrylamide Hydrogel Material with Tunable Properties**M. FITZGERALD¹, J. BERBERICH¹, AND J. SPARKS¹¹Miami University, Oxford, OH

8:45AM**Response of Isolated Bioprosthetic Heart Valve Biomaterials to In-Vivo Stress**K. FEAVER¹, W. ZHANG¹, H. TAM², M. LEE³, J. MCGARVEY³, C. AOKI³, S. TAKEBAYASHI³, N. KONDO³, R. GORMAN³, J. GORMAN III³, N. VYAVAHARE², AND M. SACKS¹¹University of Texas at Austin, Austin, TX, ²Clemson University, Clemson, SC, ³University of Pennsylvania, Philadelphia, PA**9:00AM****Biaxial Analysis of Synthetic Scaffolds for Hernia Repair Demonstrates Variability in Mechanical Anisotropy, Non-linearity, and Hysteresis**C. DEEKEN¹, D. THOMPSON¹, R. CASTILE¹, AND S. LAKE¹¹Washington University in St. Louis, St. Louis, MO**9:15AM****Synchrotron X-Ray Scattering Reveals a Pivotal Role of Water in the Ultrastructural Mechanics of Bone**J. SAMUEL¹ AND X. WANG¹¹University of Texas at San Antonio, San Antonio, TXPLATFORM
SESSIONS

Fri-1

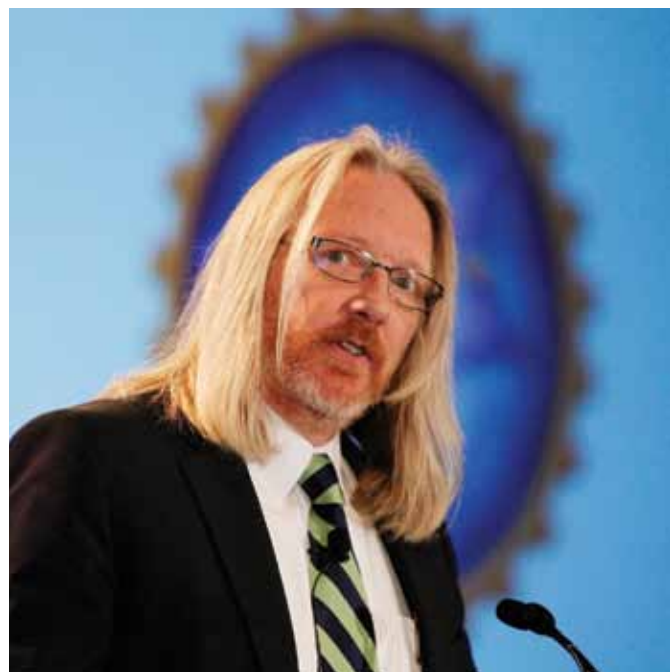
Track: Bioinformatics, Computational and Systems Biology**OP-Fri-I-15 - Room 202A****Signaling Systems Analysis****Chairs:** Benjamin Cosgrove, Scott Diamond**8:00AM** *Invited***Systems Biology: High-throughput, Multiscale and Patient Specific**S. DIAMOND¹¹University of Pennsylvania, Philadelphia, PA**8:30AM****AKAP7 γ Amplifies but Decelerates Localized PKA Signaling Kinetics**E. GREENWALD¹, M. GILDART², J. SAUCERMAN³, AND K. DODGE-KAFKA³¹University of Virginia, Charlottesville, VA, ²University of Saint Joseph, West Hartford, CT, ³University of Connecticut Health Center, Farmington, CT**8:45AM****The AXL Receptor is a Sensor of Ligand Spatial Heterogeneity**A. MEYER¹, C. RILEY¹, F. GERTLER¹, AND D. LAUFFENBURGER¹¹Massachusetts Institute of Technology, Cambridge, MA**9:00AM****Growth-differentiation Factor II (GDFII) as a Therapeutic Target in Basal-like Breast Cancers**S. BAJIKAR¹ AND K. JANES¹¹University of Virginia, Charlottesville, VA**9:15AM****Systems Analysis of Cytokine Profiles Identifies Key Cellular Contributors to HIV Immune Response**K. ARNOLD¹, G. SZETO¹, G. ALTER², D. IRVINE^{1,2}, AND D. LAUFFENBURGER¹¹Massachusetts Institute of Technology, Cambridge, MA, ²Ragon Institute of MGH, MIT and Harvard, Cambridge, MA**Track: Biomedical Imaging and Optics**
OP-Fri-I-16 - Room 202B**Magnetic Resonance Imaging I****Chairs:** Bruce Damon, Timothy Duong**8:00AM****Imaging Renal Perfusion in Acute Kidney Injury at 3T Using 19F/1H MRI of Perfluorocarbon Nanoparticles**M. GOETTE¹, J. CHEN¹, C. VEMURI¹, J. ALLEN¹, S. CARUTHERS^{1,2}, G. LANZA¹, AND S. WICKLINE¹¹Washington University in St. Louis, St. Louis, MO, ²Philips Healthcare, Cleveland, OH**8:15AM****Magnetic Resonance Imaging of Cardiac Activation in Heart Failure Patients with Left Bundle Branch Block**D. AUGER¹, S. CUI¹, X. CHEN¹, K. BILCHICK¹, AND F. EPSTEIN¹¹University of Virginia, Charlottesville, VA**8:30AM****Chronic Toxicity of Dextran Functionalized Graphene Nanoparticles and Their Potential as Highly Efficacious Blood Pool Contrast Agent for Magnetic Resonance Imaging**S. KANAKIA¹, D. MINH HOANG², J. TOUSSAINT¹, S. MULLICK CHOWDHURY¹, S. LEE¹, K. SHROYER¹, W. MOORE¹, Y. ZAIM WADHGIRI², AND B. SITHARAMAN¹¹Stony Brook University, Stony Brook, NY, ²NYU School of Medicine, New York, NY**8:45AM****Monitoring Bone Repair in a Mouse Calvarial Defect Model Using Magnetic Resonance Imaging**V. KHALILZAD-SHARGHI¹, K. WARTELLA¹, M. KELSO², H. XU¹, AND S. OTHMAN¹¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska Medical Center, Omaha, NE**9:00AM****Imaging Metastasis Using a Targeted Nanoparticle and MRI**E. DOOLITTLE¹, P. PEIRIS¹, A. ABRAMOWSKI¹, R. TOY¹, AND E. KARATHANASIS¹¹Case Western Reserve University, Cleveland, OH**Track: Biomedical Imaging and Optics, Device Technologies and Biomedical Robotics****OP-Fri-I-17 - Room 203A****Diagnostic Devices and Biosensors I****Chairs:** Jing Yong Ye, Mehmet Kaya**8:00AM****In Vivo Imaging of Wound Infection Using a Bacteria-targeting Optical Nanoprobe**E. TANG¹, A. NAIR¹, D. BAKER¹, W. HU², L. TANG¹, AND J. ZHOU¹¹University of Texas at Arlington, Arlington, TX, ²Progenitex Inc., Arlington, TX**8:15AM****Noninvasive Frequency Domain Tissue Collagen Detection**R. LIU¹, Z. ZHAO¹, M. ZHOU¹, A. ARGENTO¹, Q. FANG², AND J. LO¹¹University of Michigan at Dearborn, Dearborn, MI, ²McMaster University, Hamilton, Canada**8:30AM****Photoacoustic Spectroscopic Determination of Met-Hb Concentration Ratio Using an Open-Microcavity Photonic Crystal Ultrasound Sensor**R. PETERSON¹, J. LING², C. WHITNEY¹, AND J. YE¹¹The University of Texas at San Antonio, San Antonio, TX, ²Southwest Research Institute, San Antonio, TX**8:45AM****NutriPhone: Vitamin D Testing on Your Smartphone**S. LEE¹, S. MEHTA¹, AND D. ERICKSON¹¹Cornell University, Ithaca, NYP = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

9:00AM**Fiber-Coupled Microcavity Probe for Label-Free Biosensing: A Demonstration with DNA Hybridization**N. LEARTPRAPUN¹, E. TOOMEY¹, AND J. XU¹¹Brown University, Providence, RI**9:15AM****Handheld Spatial Frequency Domain Imaging System for Skin Imaging**B. YANG¹, J. LESICKO¹, M. SACKS¹, AND J. TUNNELL¹¹University of Texas at Austin, Austin, TX**Track: Biomechanics, Cellular and Molecular Bioengineering****OP-Fri-1-18 - Room 203B****Cell-Cell Interactions and Intercellular Forces****Chairs:** Roland Kaunas, Leo Wan**8:00AM****Visualizing Mechanotransduction at Intercellular Junctions.**D. LECKBAND¹, T. KIM¹, J. SUN¹, I. MUHAMMED¹, AND Y. WANG²¹University of Illinois at Urbana, Urbana, IL, ²UC San Diego, La Jolla, CA**8:15AM****Protrusive Activity-dependent Inter-cellular Forces Determine Cell-cell Contact Stability**V. MARUTHAMUTHU^{1,2} AND M. GARDEL²¹Old Dominion University, Norfolk, VA, ²University of Chicago, Chicago, IL**8:30AM****Intercellular Stresses Guide Endothelial Cell Polarization Under Laminar Fluid Shear Stress**R. STEWARD JR.¹, D. TAMBÉ¹, AND J. FREDBERG¹¹Harvard University, Boston, MA**8:45AM****Cell-induced Nanoscale Displacements Reveal Localized, Autonomous Forces Exerted By Fibroblasts**S. KNOLL¹ AND T. SAIF¹¹University of Illinois at Urbana-Champaign, Urbana, IL**9:00AM****Suspended Fused-Fiber Nanonets as Force Sensors**A. NAIN¹¹VIRGINIA TECH, BLACKSBURG, VA**9:15AM****Finite Element Simulation of Valvular Interstitial Cells under Atomic Force Microscopy and Microindentation Experiments**Y. SAKAMOTO¹ AND M. SACKS¹¹The University of Texas at Austin, Austin, TX**SPECIAL SESSION****8:00 AM – 9:30 AM**

Convention Center, Room 204A

Whitaker International Program: Funding Opportunity for Young Biomedical Engineers

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

PLATFORM
SESSIONS**Fri-1**

FRIDAY, October 24, 2014

1:45 PM - 2:45 PM

PLATFORM SESSIONS – FRI - 2

Track: Tissue Engineering, Stem Cell Engineering

OP-Fri-2-1 - Room 001A

Epithelial and Adipose Tissue Engineering

Chairs: George Pins, Piyush Koria

1:45PMThe Ups and Downs of 3D Skin Models: Engineering the Keratinocyte Microniche *in vitro*A. CLEMENT¹, T. MOUTINHO¹, J. MOLIGNANO¹, AND G. PINS¹¹Worcester Polytechnic Institute, Worcester, MA**2:00PM**

Elastin like Peptides (ELPs) Modulate Cellular Behavior through interaction with Cell Surface Glycosaminoglycans

Y. YUAN¹ AND P. KORJA¹¹University of South Florida, Tampa, FL**2:15PM***In Vitro* Engineering of Functional Salivary Gland Cells Using Silk Fibroin ScaffoldsH. WANG¹, B-X. ZHANG^{1,2}, L. ALAN¹, D. DEAN¹, M. PILIA³, A. ONG³, X-D. CHEN¹, AND C-K. YEH^{1,2}¹UT Health Science Center at San Antonio, San Antonio, TX, ²GRECC & Research Service, South Texas Veterans Health Care System, San Antonio, TX, ³University of Texas at San Antonio, San Antonio, TX**2:30PM**

Phenotypic Characterization of Adipose Derived Stem Cells Differentiated Toward Urothelial Lineage

J. TURNER¹, T. MATT¹, AND J. NAGATOMI¹¹Clemson University, Clemson, SC**Track: Neural Engineering, Device Technologies and Biomedical Robotics**

OP-Fri-2-2 - Room 001B

Peripheral Neural Interfaces: Stimulation & Recording

Chairs: Pamela VandeVord, Shyam Aravamudham

1:45PM

Partial Restoration of Sensorimotor Function After Hand Amputation Using Multiple Electrode Arrays

S. WENDELKEN¹, D. PAGE¹, T. DAVIS¹, H. WARK¹, D. WARREN¹, R. NORMANN¹, D. HUTCHINSON¹, B. GREGER², AND G. CLARK¹¹University of Utah, Salt Lake City, UT, ²Arizona State University, Tempe, AZ**2:00PM**

Reestablishment of the blood nerve barrier in Regenerative Multielectrode Interfaces

A. KANNEGANTI¹, G. BENDALE¹, J. L. SEIFERT¹, V. DESAI¹, AND M. ROMERO-ORTEGA¹¹Univ. Of Texas at Arlington, Arlington, TX**2:15PM**

A Stretchable Microneedle Electrode Array for Electrical Muscle Stimulation

G. GUVANASEN¹, A. CHEEK¹, R. AGUILAR², C. SHAFOR², S. RAJARAMAN², T. NICHOLS¹, AND S. DEWEERTH^{1,3}¹Georgia Institute of Technology, Atlanta, GA, ²Axion BioSystems, Atlanta, GA, ³Emory University, Atlanta, GA**2:30PM**

Osseointegrated Prosthesis Mount with High-Channel-Count Peripheral Neural Interface Capability

D. KLUGER¹, G. CLARK¹, D. WARREN¹, D. HUTCHINSON¹, AND K. BACHUS¹¹University of Utah, Salt Lake City, UT**Track: Biomaterials, Tissue Engineering**

OP-Fri-2-3 - Room 006A

Biomaterial Scaffolds II

Chairs: Jai Rudra, Mark Van Dyke

1:45PM*In Vivo* Assessment of Tissue Engineered Myocardial Patch for the Repair of Full-thickness RVOT SurgeryS. POK¹ AND J. JACOT¹¹Rice University, Houston, TX**2:00PM**

Characterization of Sequential Collagen-Poly(ethylene glycol) Diacrylate Interpenetrating Networks for Vascular Tissue Engineering

D. MUNOZ-PINTO¹, A. JIMENEZ-VERGARA¹, T. GHARAT¹, AND M. HAHN¹¹Rensselaer Polytechnic Institute, Troy, NY**2:15PM**

Enabling Surgical Placement of Hydrogels Through Achieving Paste-Like Rheological Behavior Prior to Crosslinking

E. BECK¹, B. LOHMAN¹, S. KIEWEG¹, S. GEHRKE¹, C. BERKLAND¹, AND M. DETAMORE¹¹UNIVERSITY OF KANSAS, LAWRENCE, KS**2:30PM**

Thermoresponsive Nanonets for Improving Wound Healing in Diabetes

Y. ZHU¹, R. HOSHI¹, AND G. AMEER¹¹Northwestern University, Evanston, IL**Track: Biomedical Engineering Education (BME)**

OP-Fri-2-4 - Room 006B

Design in BME Education

Chairs: Colin Drummond, Joe Tranquillo

1:45PM

A Program in Clinical Needs Finding, Medical Device Innovation and Design

G. TRUSKEY¹ AND B. BARNES¹¹Duke University, Durham, NC**2:00PM**

Retrospective Analysis of Factors Impacting Senior Design Project Translation

A. SIEVING¹, M. POOL², A. BRIGHTMAN¹, AND A. RUNDELL¹¹Purdue University, West Lafayette, IN, ²University of Illinois at Urbana-Champaign, Urbana, IL**2:15PM**

The Teaching Dead

J. LA BELLE¹ AND S. MAXWELL¹¹Arizona State University, Tempe, AZPLATFORM
SESSIONS

Fri-2

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

2:30PM**Development of Design-Oriented BME Degree Programs In Nigeria**M. GLUCKSBERG¹, A. COKER², A. OSUNTOKI³, T. DOUGLAS⁴, AND R. MURPHY⁵¹Northwestern University, Evanston, IL, ²University of Ibadan, Ibadan, Nigeria, ³University of Lagos, Lagos, Nigeria, ⁴University of Cape Town, Cape Town, South Africa, ⁵Northwestern University, Chicago, IL**Track: Drug Delivery****OP-Fri-2-5 - Room 006C****Novel Materials and Self Assembly****Chairs:** Robert Peattie, Mario Fabilli**1:45PM****Controlled Delivery of HB-EGF Accelerates Healing of Diabetic Wounds**N. JOHNSON^{1,2} AND Y. WANG^{1,2}¹University of Pittsburgh, Pittsburgh, PA, ²McGowan Institute for Regenerative Medicine, Pittsburgh, PA**2:00PM****Exploring the Synthesis, Self-Assembly, and Delivery of Concatameric siRNA-Polymer Nanoparticles**K. SHOPSOWITZ¹, S. MORTON¹, E. DREADEN¹, AND P. HAMMOND¹¹MIT, Cambridge, MA**2:15PM****Gap Junction Liposomes for Direct Therapeutic Delivery to the Cellular Cytoplasm**A. GADOK¹, D. BUSCH¹, AND J. STACHOWIAK¹¹University of Texas at Austin, Austin, TX**2:30PM****Controlling the Single Wall Carbon Nanotube Dispersing Agent for Bioactive Molecule Delivery**B. HOLT¹, P. BOYER¹, K. DAHL¹, AND M. ISLAM¹¹Carnegie Mellon University, Pittsburgh, PA**Track: New Frontiers and Special Topics, Translational Biomedical Engineering****OP-Fri-2-6 - Room 006D****Bioelectronics****Chairs:** Ranu Jung, Tejal Desai**1:45PM****How Are We Galvanising The Interdisciplinary Research Community Into Developing High Precision Medicines That Target Peripheral Nerves?**K. FAMM¹¹GSK, LONDON, UNITED KINGDOM**2:00PM****Stimulation Design for the First Human Study of an Implanted Neurostimulator in Rheumatoid Arthritis**Y. LEVINE¹, A. CARAVACA¹, M. FALTYS¹, AND R. ZITNIK¹¹SetPoint Medical Corporation, Valencia, CA**2:15PM****Control of Ankle Movement by Stimulating with Longitudinal Intrafascicular Electrodes**A. THOTA¹, R. SIU¹, S. GANESWARATHAS², L. LYKHOLT², J. ABBAS³, AND R. JUNG¹¹Florida International University, Miami, FL, ²Aalborg University, Aalborg, Denmark, ³Arizona State University, Tempe, AZ**2:30PM****Spatial Distribution of Light-Sensitive Cells Determines Effectiveness of Optogenetics-Based Termination of Atrial Arrhythmias**P. BOYLE¹ AND N. TRAYANOVA¹¹Johns Hopkins University, Baltimore, MD**Track: Cancer Technologies****OP-Fri-2-7 - Room 007A****Engineered Models of Cancer II****Chairs:** Shelly Peyton, Jennifer Munson**1:45PM****Tumor Metastasis At High Spatiotemporal Resolution: Examining Role Of Wnt Signalling In Colon Cancer**V. SHIRURE¹, M. WATERMAN¹, AND S. GEORGE¹¹University of California, Irvine, Irvine, CA**2:00PM****Investigation of Paracrine Signaling in the Ovarian Cancer Microenvironment using a Novel Culture System**M. CARROLL¹, L. STOPFER¹, A. DESOTELL¹, O. VELAZQUEZ¹, AND P. KREEGER¹¹University of Wisconsin, Madison, WI**2:15PM****Taxol Resistance Exacerbates Ovarian Cancer Progression By Altering Adhesion Kinetics And Strength**D. MCGRAIL¹, M. QI¹, K. PATEL¹, N. KHAMBHATI¹, AND M. DAWSON¹¹Georgia Institute of Technology, Atlanta, GA**2:30PM****Breast Cancer Cells Alter Nuclear Envelope Composition To Aid Migration Through Narrow Constrictions**R. GILBERT¹, C. DENAIS¹, M. KRAUSE², K. WOLF², AND J. LAMMERDING¹¹Cornell University, Ithaca, NY, ²Radboud University Nijmegen Medical Center, Nijmegen, Netherlands**Track: Cardiovascular Engineering, Biomedical Imaging and Optics****OP-Fri-2-8 - Room 007B****Cardiovascular Flow Imaging and Modeling in Health and Disease****Chairs:** W Robert Taylor, Hsiai Tzung**1:45PM****MRI-based Computational Modeling of Blood Flow and Nanomedicine Deposition in Patients with Peripheral Arterial Disease**S. HOSSAIN¹, J. ZHANG², X. FU², G. BRUNNER³, J. SINGH⁴, T. HUGHES⁵, D. SHAH⁴, AND P. DECUZZI⁴¹Texas Heart Institute, Houston, TX, ²Carnegie Mellon University, Pittsburgh, PA, ³Baylor College of Medicine, Houston, TX, ⁴Houston Methodist Research Institute, Houston, TX, ⁵The University of Texas at Austin, Austin, TX**2:00PM****Changing Vorticity in the Main Pulmonary Artery is Associated With RV-PA Decoupling in Pulmonary Hypertension**V. KHEYFETS¹, J. SMYSER², A. HONEYMAN², J. BROWNING³, J. HERTZBERG³, J. SCHROEDER², B. FENSTER², AND R. SHANDAS¹¹University of Colorado Denver, Aurora, CO, ²National Jewish Health, Denver, CO, ³University of Colorado Boulder, Boulder, CO

2:15PM**Right Ventricular Diastolic Dysfunction and Vorticity In The Right Human Heart**J. HERTZBERG¹, J. BROWNING¹, B. FENSTER^{2,3}, AND J. SCHROEDER^{2,3}¹University of Colorado Boulder, Boulder, CO, ²National Jewish Health, Denver, CO,³University of Colorado Denver School of Medicine, Aurora, CO**2:30PM****Investigation of Spatio-Temporal Coupling Applied to Computational Models of Virtual Surgery**A. RANDES^{1,2}, E. DRAEGER¹, AND F. MICHOR²¹Lawrence Livermore National Laboratory, Livermore, CA, ²Dana-Farber Cancer Institute, Boston, MA**Track: Cellular and Molecular Bioengineering
OP-Fri-2-9 - Room 007C****Molecular and Cell Engineering II****Chairs:** Evan Scott**1:45PM****PKA Controlled Regulation of SK Channel Expression Detected by Force Nanoscopy**K. ABIRAMAN¹, A. TZINGOUNIS¹, AND G. LYKOTRAFITIS¹¹University of Connecticut, Storrs, CT**2:00PM****Real-Time Imaging of Histone H3 Lysine 9 Tri-Methylation in Living Cells**Q. PENG^{1,2}, Y. WANG², AND Y. WANG¹¹University of California, San Diego, La Jolla, CA, ²Chongqing University, Chongqing, China, People's Republic of**2:15PM****Engineering an Integrin-Based, Chimeric Protein for Ligand-Regulated Binding**J. PRICE¹, N. CARBERRY¹, C. BARNES¹, L. PEPPER², AND E. BODER¹¹University of Tennessee, Knoxville, TN, ²Whitehead Institute for Biomedical Research, Cambridge, MA**2:30PM****Helix Insertion Drives Membrane Bending by Enabling Protein-Protein Crowding**W. SNEAD¹, N. MOMIN¹, AND J. STACHOWIAK¹¹The University of Texas at Austin, Austin, TX**Track: Orthopaedic and Rehabilitation Engineering****OP-Fri-2-10 - Room 007D****Rehabilitation Engineering: Prosthetics and Wearable Devices****Chairs:** Eric Perreault, David Lipps**1:45PM****Generalizability of Control for a Powered Knee and Ankle Prosthesis on Level and Inclined Surfaces at User-Modulated Walking Speeds**N. FEY^{1,2}, A. SIMON^{1,2}, AND L. HARGROVE^{1,2}¹Rehabilitation Institute of Chicago, Chicago, IL, ²Northwestern University, Chicago, IL**2:00PM****Structure Design and Algorithm Strategy for Exoskeleton Powered Knee Devices**C. CHEN¹, J. KOEHLER¹, V. YALDO¹, Z. FENG¹, C. ZHOU¹, J. CAVANAUGH¹, AND W. CHEN²¹Wayne State University, Detroit, MI, ²Wayne State University, Grosse Pointe, MI**2:15PM****Interface Strength of a Percutaneous Prosthetic Attachment Implant**G. NOBLE¹, A. LITSKY¹, M. ALLEN¹, N. FITZPATRICK², AND R. HART¹¹The Ohio State University, Columbus, OH, ²Fitzpatrick Referrals, Surrey, United Kingdom**2:30PM****Validation Of PVS Impression Molds For Profilometric Analysis Of Modular Joint Replacement Tapers**K. SCHWARTZMAN¹, P. PANIGRAHI¹, AND M. HARMAN¹¹Clemson University, Clemson, SC**Track: Nano to Micro Technologies, New Frontiers and Special Topics****OP-Fri-2-11 - Room 008A****Diagnostics****Chairs:** Tzahi Cohen-Karni, Lilie Grace Zhang**1:45PM****Enhancing Diagnostic Assays via Stimuli-Responsive Reagents**J. LAI¹, S. SRINIVASAN¹, I. ANDREWS¹, B. NEHILLA², B. LUTZ¹, T. SCHULTE², AND P. STAYTON¹¹University of Washington, Seattle, WA, ²Nexgenia Inc., Redmond, WA**2:15PM****Disease Detection by Ultrasensitive Quantification of Microdosed Synthetic Urinary Biomarkers**A. WARREN¹, S. GAYLORD², K. NGAN², M. MILUTINOVIC², G. KWONG¹, S. BHATIA¹, AND D. WALT²¹Massachusetts Institute of Technology, Cambridge, MA, ²Tufts University, Medford, MA**2:30PM****A Highly Sensitive Microsphere-Based Assay for Early Detection of Type I diabetes**S. BALE¹, G. PRICE¹, M. CASALI¹, N. SAEIDI¹, A. BHUSHAN¹, AND M. YARMUSH¹¹Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School and Shriners Burns Hospital, Boston, MA**Track: Tissue Engineering, Biomaterials****OP-Fri-2-12 - Room 008B****Bone and Cartilage Tissue Engineering II****Chairs:** Kathryn Uhrich, Syam Nukavrapu**1:45PM****Enhanced Cartilage Formation *In Vivo* via Harnessing the Interplay Between Chondrocytes and Stem Cells**J. LAI¹, L. DEVEZA¹, S. YU¹, S. JEEAWOODY¹, R. SMITH², W. MALONEY², AND F. YANG^{1,2}¹Stanford University, Stanford, CA, ²Stanford School of Medicine, Stanford, CA**2:00PM****Patient-Specific Auricular Cartilage Constructs Using High-Density Collagen for Ear Reconstruction**B. COHEN¹, R. HOOPER², J. PUETZER¹, R. NORDBERG¹, A. GOLAS², O. ASANBE², K. HERNANDEZ², J. SPECTOR², AND L. BONASSAR¹¹Cornell University, Ithaca, NY, ²Weill Cornell Medical College, New York, NY

2:15PM**Mimicking Cartilage Tissue Zonal Organization by Engineering Hydrogels with Gradient Niche Cues**D. ZHU¹, X. TONG¹, J. LAI¹, AND F. YANG¹¹Stanford University, Stanford, CA**2:30PM****Human Mesenchymal Stem Cell Spheroids in Fibrin Hydrogels Exhibit Improved Cell Survival and Potential for Bone Healing**K. MURPHY¹ AND J. LEACH¹¹University of California, Davis, CA**Track: Device Technologies and Biomedical Robotics****OP-Fri-2-13 - Room 201****Verification and Validation of Computational Models of Medical Devices****Chairs:** Marc Horner, Dawn Bardot**1:45PM INVITED****Modeling Hemodynamics in Patient Specific Intracranial Aneurysms**D. DRAGOMIR-DAESCU¹, S. HODIS¹, AND D. KALLMES¹¹Mayo Clinic, Rochester, MN**2:15PM****Computational Fluid Dynamics Modeling Of The FDA Nozzle Using The V&V 20 Standard**G. D'SOUZA¹, P. HARIHARAN², R. MALINAUSKAS², R. BANERJEE¹, AND M. HORNER³¹University of Cincinnati, Cincinnati, OH, ²Food and Drug Administration, Silver Spring, MD, ³ANSYS Inc., Evanston, IL**2:30PM****Identifying Uncertainties in Models and Experiments for Model Verification and Validation**D. RIHA¹¹Southwest Research Institute, San Antonio, TX**Track: Biomechanics****OP-Fri-2-14 - Room 103B****Impact and Injury Biomechanics****Chairs:** F. Scott Gayzik, Ruth Ochia**1:45PM****Astrocytic Thrombospondin-4 May Mediate Painful Facet Capsule Injury: Insights from *In Vivo* and *In Vitro* Studies**N. CROSBY¹ AND B. WINKELSTEIN¹¹University of Pennsylvania, Philadelphia, PA**2:00PM****Morphological Changes in the Adult Skull with Age and Sex**J. URBAN^{1,2}, A. WEAVER^{1,2}, E. LILLIE^{1,2}, J. MALDJIAN², C. WHITLOW^{2,3}, AND J. STITZEL^{1,2}¹Virginia Tech - Wake Forest University, Winston Salem, NC, ²Wake Forest School of Medicine, Winston Salem, NC, ³Translational Science Institute, Wake Forest University, Winston Salem, NC**2:15PM****Discrete Plasticity in Collagen Fibrils: Surprisingly Common in Unusual Places**S. VERES^{1,2}, B. SCOTT³, S. WELLS³, AND J. LEE³¹Saint Mary's University, Halifax, NS, Canada, ²Dalhousie University, Halifax, Canada, ³Dalhousie University, Halifax, NS, Canada**2:30PM****Modeling Stretching and Tearing of Human Liver using Finite Element Optimization and Cohesive Zone Modeling Techniques**C. UNTAROIU¹ AND Y-C. LU¹¹Virginia Tech, Blacksburg, VA**Track: Bioinformatics, Computational and Systems Biology****OP-Fri-2-15 - Room 202A****Systems Proteomics: Measurement and Computation****Chairs:** Sriram Neelamegham, Christopher Barnes**1:45PM****A Computational Platform to Analyze High Throughput Tandem Mass Spectrometry Based Glycoproteomics Experiments**S. NEELAMEGHAM¹, C. LO¹, J. QU¹, AND G. LIU¹¹State University of New York at Buffalo, Buffalo, NY**2:00PM****Identification of Novel Direct Kinase-Substrate Associations with Peptide Phosphorylation and Mass Spectrometry**C. BARNES¹, A. MAIOLICA¹, S. WANKA², T. SCHMIDLIN¹, C. VON MERING², AND R. AEBERSOLD¹¹ETH Zurich, Zurich, Switzerland, ²University of Zurich, Zurich, Switzerland**2:15PM****The Activation State Of The Breast Cancer Kinome: Characterization Of Subtypes And Identification Of Key Regulatory Kinases**K. COLLINS¹, T. STUHLMILLER¹, T. PHAM¹, S. ANGUS¹, J. DUNCAN¹, M. WHITTLE¹, L. GRAVES¹, G. JOHNSON^{1,2}, AND S. GOMEZ¹¹University of North Carolina at Chapel Hill, Chapel Hill, NC, ²Lineberger Comprehensive Cancer Center, Chapel Hill, NC**2:30PM****Improved Clustering of Molecular Measurements Using Ensemble Approaches**K. NAEGLÉ¹¹Washington University in St Louis, St Louis, MO**Track: Biomedical Imaging and Optics****OP-Fri-2-16 - Room 202B****Magnetic Resonance Imaging II****Chairs:** Mary McDougall, Omid Veisheh**1:45PM****Mapping Multiscale Myoarchitecture *In Vivo* With Generalized Q-Space MRI**E. TAYLOR¹ AND R. GILBERT¹¹Northeastern University, Boston, MA**2:00PM****Biomimetic Neural Fiber MRI Phantom Exhibits Anomalous Diffusion**A. YE¹, P. HUBBARD CRISTINACCE², F-L. ZHOU², Z. YIN¹, G. PARKER², AND R. MAGIN¹¹University of Illinois at Chicago, Chicago, IL, ²University of Manchester, Manchester, United Kingdom**2:15PM****Developing Support Vector Machine Classification Of Associative Memory For Real-Time fMRI**H. DESHPANDE^{1,2}, A. EKLUND², J. LISINSKI², C. MUELLER², B. KING-CASAS^{1,2}, AND S. LACONTE^{1,2}¹Virginia Tech, Blacksburg, VA, ²Virginia Tech Carilion Research Institute, Roanoke, VA

2:30PM

Frequent Cognitive Activity for Non-demented Elderly Adults is Associated with Higher Brain Microstructural Integrity

C. BARTH¹, R. WILSON², A. CAPUANO², S. ZHANG², D. BENNETT², AND K. ARFANAKIS^{1,2}
¹Illinois Institute of Technology, Chicago, IL, ²Rush University, Chicago, IL

Track: Biomedical Imaging and Optics, Device Technologies and Biomedical Robotics

OP-Fri-2-17 - Room 203A

Diagnostic Devices and Biosensors II

Chairs: Mahsa Ranji, Bilal Malik

1:45PM

Quantitative Mercury Sensing and Spatiotemporal Mapping Using a Smartphone

Q. WEI¹, R. NAGI¹, K. SADEGHI¹, S. FENG¹, D. TSENG¹, AND A. OZCAN¹
¹University of California, Los Angeles, Los Angeles, CA

2:00PM

Skin Cancer Detection with Diffuse Reflectance Spectroscopy

R. HENNESSY¹, S. MAITY¹, S. LIM², J. TUNNELL¹, AND M. MARKEY^{1,3}
¹The University of Texas at Austin, Austin, TX, ²University Health Network, Toronto, ON, Canada, ³The University of Texas MD Anderson Cancer Center, Houston, TX

2:15PM

Characterizing Perimeter Gated Single Photon Avalanche Diodes for Bioluminescence Applications

M. HABIB¹ AND N. MCFARLANE¹
¹University of Tennessee, Knoxville, TN

2:30PM

Shrink Wrap Multi-scale Silica Structures Used to Enhance Fluorescence Detection for DNA Microarrays

H. SHARMA¹, J. WOOD¹, S. LIN¹, R. CORN¹, AND M. KHINE¹
¹University of California, Irvine, Irvine, CA

Track: Respiratory Bioengineering, Biomechanics

OP-Fri-2-18 - Room 203B

Computational Modeling of the Respiratory System

Chairs: Sarah Vigmostad, Tilo Winkler

1:45PM

An Agent-Based Network Model of Pulmonary Fibrosis Development

T. WELLMAN¹, J. BATES², G. DAVIS², AND B. SUKI¹
¹Boston University, Boston, MA, ²University of Vermont, Burlington, VT

2:00PM

Airway-Parenchymal Interactions During Heterogeneous Bronchoconstriction

T. WINKLER¹ AND R. HARRIS¹
¹Massachusetts General Hospital and Harvard Medical School, Boston, MA

2:15PM

Comparison of Homogeneity and Efficiency of Surfactant Delivery into the Lung

M. FILOCHE¹ AND J. GROTEBERG^{2,3}
¹Ecole Polytechnique, Palaiseau, France, ²University of Michigan, Ann Arbor, MI, ³INSERM, Créteil, France

2:30PM

A Fully Resolved Glottal Flow Simulation In a Patient-specific Geometry of the Human Larynx

M. FARAHANI¹, J. MOUSEL¹, S. VIGMOSTAD¹, AND F. ALIPOUR¹
¹The University of Iowa, Iowa City, IA

SPECIAL SESSION

2:00 PM – 4:00PM

Convention Center, Room 204A

Diversity, Health Disparities and Affordable Healthcare

Chairs: Gilda Barabino, Cato Laurencin

This session will be offered to better inform the broader BME community about health disparities and inequities and the role biomedical engineers can play in combating them. The session will provide a context for examining health disparities in translational research and will discuss historical examples of differential medical treatment and civil rights infringements based on race and ethnicity. Emphasis will be placed on achieving enhanced and affordable healthcare through engineering technologies.

Moderator: Gilda Barabino, PhD, The City College of New York

FRIDAY, October 24, 2014**3:00 PM - 4:00 PM****PLATFORM SESSIONS – FRI - 3****Track: Stem Cell Engineering, Cellular and Molecular Bioengineering****OP-Fri-3-1 - Room 001A****Engineering Stem Cell Environments****Chairs:** Tara Deans, Leo Wan**3:00PM****Incorporating Instructive Cues Within a Biomaterial to Engineer Hematopoietic Stem Cell Bioactivity**B. MAHADIK¹, S. PEDRON¹, L. SKERTICH¹, AND B. HARLEY^{1,2}¹University of Illinois at Urbana-Champaign, Urbana, IL, ²Institute for Genomic Biology, Urbana, IL**3:15PM****Development Of A Controlled Oxygen Delivery System To Increase Adipose Stem Cell Survival**D. SANTIESTEBAN¹, A. HANNAH¹, L. SUGGS¹, AND S. EMELIANOV¹¹UT Austin, Austin, TX**3:30PM****Native Tissue-Specific ECMs Exhibit Distinct Mechanical Properties Affecting the Fate of hMSCs**M. MARINKOVIC¹, T. BLOCK¹, R. RAKIAN¹, D. DEAN¹, M. REILLY¹ AND X-D. CHEN¹¹University of Texas Health Science Center at San Antonio, San Antonio, TX**3:45PM****Controlled Cell-Cell Interactions Enhance Functional Maturation of iPSC-Derived Human Hepatocytes**D. BERGER¹, B. WARE¹, M. DAVIDSON¹, AND S. KHETANI¹¹Colorado State University, Fort Collins, CO**Track: Neural Engineering****OP-Fri-3-2 - Room 001B****Neural Control and Modeling****Chairs:** Katherine Steele, Eric Perreault**3:00PM****Stroke Reduces Neuromotor Control Bandwidth at the Elbow: A Pilot Study**M. BENGTON¹, L. MROTEK^{1,2}, T. STOECKMANN¹, C. GHEZ³, AND R. SCHEIDT^{1,4}¹Marquette University, Milwaukee, WI, ²University of Wisconsin Oshkosh, Oshkosh, WI, ³Columbia University, New York, NY, ⁴Northwestern University, Evanston, IL**3:15PM****Weak Electric Field Effects From Sham Transcranial Magnetic Stimulation on EEG Dynamics**J. MUELLER¹, A. OPITZ^{2,3}, W. LEGON², A. BARBOUR², W. BICKEL², W. PAULUS³, AND W. TYLER^{1,2}¹Virginia Tech, Blacksburg, VA, ²Virginia Tech Carilion Research Institute, Roanoke, VA, ³Georg-August-University, Göttingen, Germany**3:30PM****Autaptic Connections Shift Network Excitability and Bursting**L. WILES¹, D. BASSETT¹, AND D. MEANEY¹¹University of Pennsylvania, Philadelphia, PA**3:45PM****Linear Decoders of Retinal Spike-trains Yield Ideal-Observer Performance for Broad Classes of Visual Tasks**A. IYER¹ AND N. GRZYWACZ¹¹University of Southern California, Los Angeles, CA**Track: Biomaterials****OP-Fri-3-3 - Room 006A****Bioinspired and Self Assembling Biomaterials II****Chairs:** Michael Yu, Gargi Ghosh**3:00PM****Thromboresistant Collagen-mimetic Hydrogels as Coatings for Cardiovascular Devices**V. GUIZA-ARGUELLO¹, S. BECERRA-BAYONA¹, S. MALMUT¹, B. RUSSELL², M. H??K², E. COSGRIFF-HERNANDEZ³, AND M. HAHN¹¹Rensselaer Polytechnic Institute, Troy, NY, ²Texas A&M Health Science Center, Houston, TX, ³Texas A&M University, College Station, TX**3:15PM****The Design of Antimicrobial and Wound Healing Detachable Thin Films**M. CASSIN¹, D. SUSANTI¹, B. MUKHOPADHYAY¹, AND P. RAJAGOPALAN¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA**3:30PM****Virus-inspired Self-assembling Peptide Nanoparticle Vaccines**C. CHESSON¹, R. APPAVU¹, AND J. RUDRA¹¹Department of Pharmacology and Toxicology, Sealy Center for Vaccine Development, University of Texas Medical Branch, Galveston, TX**3:45PM****Collagen Mimetic Peptide Conjugated Nanoparticles For Targeting Denatured Collagens**B-H. SAN¹, Y. LI¹, AND M. YU¹¹University of Utah, Salt Lake, UT**Track: Neural Engineering****OP-Fri-3-4 - Room 006B****Neural Engineering: Controlling Cell Behavior****Chairs:** Erin Lavik, J-C Chiao**3:00PM****Hemostatic Nanoparticles: New Approaches for CNS Injuries**E. LAVIK¹¹Case Western Reserve University, Cleveland, OH**3:15PM****Conducting Polymer Films with Various Biomolecules for Cellular Adhesion and Growth**S. PARK¹, G. YANG¹, D. NOCERA¹, M. ABIDIAN¹, AND S. MAJD¹¹Pennsylvania State University, University Park, PA**3:30PM****Remote Regulation Of Neural Activity With Localized Release From Photo-sensitive Microgels**W. LI¹, R. LUO², L. YAN³, A. JADHAV¹, X. CHEN³, C-H. CHEN², AND P. SHI¹¹City University of Hong Kong, Kowloon, Hong Kong, ²National University of Singapore, Singapore, Singapore, ³Cityu University of Hong Kong, Kowloon, Hong Kong**3:45PM****Quercetin And Derivatives Reduce Nuclear Factor- κ B Activation Associated With Alzheimer's Disease**K. PATE¹, M. ROGERS¹, J. CLEGG¹, AND M. MOSS¹¹University of South Carolina, Columbia, SC

Track: Drug Delivery**OP-Fri-3-5 - Room 006C****Multifunctional Drug Delivery****Chairs:** Lola Eniola-Adefeso, YongTae Kim**3:00PM****In Vivo Delivery of Transcription Factors by Multifunctional Oligonucleotides Suppress Liver Failure**M. RAFI¹, K. LEE¹, X. FENG¹, R. TANG¹, N. LINGAMPALLI¹, AND N. MURTHY¹¹University of California Berkeley, Berkeley, CA**3:15PM****Bioengineered Nanoporous Silicon with Leukocyte Membrane Promotes Endothelial Adhesion**M. EVANGELOPOULOS¹, R. PALOMBA¹, C. CORBO¹, A. PARODI¹, S. ACCIARDO¹, AND E. TASCIOTTI¹¹Houston Methodist Research Institute, Houston, TX**3:30PM****Light-activated Collapse of Sub-micron Gold Nanoplate/Polymer Shell Composite Particles for Drug Delivery Applications**M. O'TOOLE¹, K. JAMES¹, D. PATEL², AND R. KEYNTON¹¹University of Louisville, Louisville, KY, ²Energy Delivery Solutions, Jeffersonville, IN**3:45PM****Controlled Delivery of an Anticonvulsant Drug Pregabalin Through Visible-Light-Cured pH Responsive Composite Hydrogels**S. KIZILEL¹, O. CEVIK¹, AND D. GIDONI¹¹KOC University, Istanbul, TurkeyPLATFORM
SESSIONS

Fri-3

Track: Translational Biomedical Engineering, Stem Cell Engineering**OP-Fri-3-6 - Room 006D****Translational Therapeutics for Regenerative Medicine****Chairs:** Robert Mauck, Mark Van Dyke**3:00PM****Injection of Matrilin-3/Nanotube Matrix for Treatment of Growth Plate Cartilage Injury in Vivo**Y. CHEN¹, P. MCCLURE¹, S. MCALLISTER¹, T. ALBRIGHT¹, H. YU¹, L. ERIC¹, D. MOORE¹, H. FENNIRI², M. EHRLICH¹, AND Q. CHEN¹¹Brown University, Providence, RI, ²Northeastern University, Boston, MA**3:15PM****The Story of Hepregen Corporation: Bringing Engineered Liver Devices to the Marketplace**S. KHETANI¹¹Colorado State University, Fort Collins, CO**3:30PM****Glypisodes: A Novel Construct for Enhancing of Growth Factor Activity for Therapeutic Angiogenesis**A. MONTEFORTE¹, B. LAM¹, A. DUNN¹, AND A. BAKER¹¹University of Texas at Austin, Austin, TX**3:45PM****Exogenous Nitric Oxide Production Using Dielectric Barrier Discharge Plasma for Enhanced Osteoblasts Activity**M. ELSAADANY¹, G. SUBRAMANIAN¹, H. AYAN¹, AND E. YILDIRIM-AYAN^{1,2}¹University of Toledo, Toledo, OH, ²University of Toledo Medical Center, Toledo, OH**Track: Cancer Technologies, Biomedical Imaging and Optics****OP-Fri-3-7 - Room 007A****Imaging Strategies in Cancer****Chairs:** Javier Jo, Vikram Kodibagkar**3:00PM****Down to 200 Cancer Cells Detected in Tumor-Draining Lymph Nodes by Dual-Tracer Fluorescence Imaging**K. TICHAUER¹, K. SAMKOE², J. GUNN², S. KANICK², P. HOOPES², R. BARTH², P. KAUFMAN², T. HASAN³, AND B. POGUE²¹Illinois Institute of Technology, Chicago, IL, ²Dartmouth College, Hanover, NH,³Massachusetts General Hospital, Boston, MA**3:15PM****Multicolor Three-Dimensional Tracking of Single Epidermal Growth Factor Receptors**Y-L. LIU¹, E. PERILLO¹, C. LIU¹, Y-A. CHEN¹, M-C. HUNG^{2,3,4}, A. DUNN¹, AND H-C. YEH¹¹Department of Biomedical Engineering, University of Texas at Austin, Austin, TX,²Department of Molecular and Cellular Oncology, The University of Texas M.D. Anderson Cancer Center, Houston, TX, ³Graduate School of Biomedical Sciences at Houston, TheUniversity of Texas, Houston, TX, ⁴Center for Molecular Medicine and Graduate Institute of

Cancer Biology, China Medical University, Taichung, Taiwan

3:30PM**Image-guided Photodynamic Therapy and Irinotecan Chemotherapy Combination for Pancreatic Cancer Treatment**S. MALLIDI¹, H-C. HUANG¹, C-T. CHIANG¹, Z. MAI¹, I. RIZVI¹, AND T. HASAN¹¹Harvard Medical School, Boston, MA**3:45PM****Design of Biofunctionalized Rare-Earth Albumin Nanocomposites for Tumor Microlesion Detection and Tracking**M. ZEVON¹, V. GANAPATHY¹, P. KIM¹, D. NACZYNSKI², M-C. TAN³, R. RIMAN¹, C. ROTH¹, AND P. MOGHE¹¹Rutgers University, Piscataway, NJ, ²Stanford University, Stanford, CA, ³Singapore University of Technology and Design, Singapore, Singapore**Track: Cardiovascular Engineering****OP-Fri-3-8 - Room 007B****Structure-function Relationship in the Cardiovascular System****Chairs:** Manu Platt, Michael Davis**3:00PM****An In Vitro Study of the Effect of the Craya-Curtet Number on Contrast Injections during Angiography**A. PAGANO¹, C. SADASIVAN¹, D. FIORELLA¹, H. WOO¹, AND B. LIEBER¹¹Stony Brook University, Stony Brook, NY**3:15PM****Quantifying Myocardial Structure and Function Following Infarction Through Multiphoton Microscopy**K. QUINN¹, K. SULLIVAN¹, Z. BALLARD¹, I. GEORGAKOUDI¹, AND L. BLACK^{1,2}¹Tufts University, Medford, MA, ²Tufts University School of Medicine, Boston, MA**3:30PM****Myoarchitectural Differences Between the Right and Left Ventricles of the Mouse Heart Determined by Generalized Q-space (GQ) MRI**E. TAYLOR¹, S. MIJALOVICH¹, A. ABRISHAMCHI¹, M. HOFFMAN¹, AND R. GILBERT¹¹Northeastern University, Boston, MAP = Poster Session
OP = Oral Presentation

3:45PM**The Influence of Input Variables on Size Outcome in the Rabbit Elastase-Induced Aneurysm Model**

R. DHOLAKIA¹, C. SADASIVAN¹, L. PEELING¹, D. FIORELLA¹, H. WOO¹, AND B. LIEBER¹
¹Stony Brook University, Stony Brook, NY

Track: Cellular and Molecular Bioengineering
OP-Fri-3-9 - Room 007C
Cell Motility

Chairs: William Guilford, Cynthia Reinhart-King

3:00PM**Equations of Inter-doublet Separation during Flagella Motion Explain Propagation of Dynein Activity**

P. BAYL¹ AND K. WILSON¹

¹Washington University in Saint Louis, Saint Louis, MO

3:15PM**The Motile System Of A Parasite Measured In Live Cells At The Level Of Single Molecules**

R. STADLER¹, L. WHITE¹, K. HU², B. HELMKE¹, AND W. GUILFORD¹

¹University of Virginia, Charlottesville, VA, ²Indiana University, Bloomington, IN

3:30PM**Dimensionality and Contact Guidance Affect Tumor Cell Migration and Decision Making**

C. PAUL^{1,2,3}, M. MAHONEY¹, AND K. KONSTANTOPOULOS^{1,2,3,4}

¹Johns Hopkins University, Baltimore, MD, ²Institute for NanoBioTechnology, Baltimore, MD, ³Physical Science-Oncology Center, Baltimore, MD, ⁴Center of Cancer Nanotechnology Excellence, Baltimore, MD

3:45PM**Filling the Gap: Relative Role of Proliferation versus Migration in Response to Injury of Vascular Endothelial and Smooth Muscle Cells**

K. AMMANN¹, K. DECOOK¹, P. TRAN¹, AND M. SLEPIAN¹

¹University of Arizona, Tucson, AZ

Track: Orthopaedic and Rehabilitation
Engineering, Biomechanics
OP-Fri-3-10 - Room 007D
Translational Research Relevant to
Common Orthopaedic Injuries

Chairs: F. Scott Gayzik, Grace O'Connell

3:00PM**Epimuscular Fat in the Human Rotator Cuff is a Novel Brown Fat Depot Influenced by Cuff State**

G. MEYER¹, M. GIBBONS², E. SATO², J. LANE², S. WARD², AND A. ENGLER²

¹Washington University in St. Louis, St. Louis, MO, ²UCSD, La Jolla, CA

3:15PM**The Effect of Size and Location of Tears in the Supraspinatus Tendon on Potential Tear Propagation**

S. DAMLE¹, J. THUNES¹, S. PAL¹, R. MILLER¹, R. DEBSKI¹, AND S. MAITI¹

¹University of Pittsburgh, Pittsburgh, PA

3:30PM**Surgical Design and Graft-Tunnel Interaction: An Analytical examination of ACL reconstruction**

S. SALEHGHAFARI¹ AND Y. DHAHER¹

¹Northwestern University, Chicago, IL

3:45PM**Knee Biomechanics of Adolescent Athletes Returning to Sports Following ACL Reconstruction**

E. GARIBAY¹, M. MILEWSKI¹, S. OUNPUU¹, J. WOODS¹, N. GIAMPETRUZZI¹, AND D. SUPRENANT¹

¹Connecticut Children's Medical Center, Farmington, CT

Track: Nano to Micro Technologies
OP-Fri-3-11 - Room 008A
Nanoparticles and Theranostics

Chairs: Carlos Rinaldi, Hyun Joon Kong

3:00PM**Facile Method for the Site-Specific, Covalent Attachment of Full-Length IgG onto Nanoparticles**

J. HUI¹ AND A. TSOURKAS¹

¹University of Pennsylvania, Philadelphia, PA

3:15PM**New Design Strategies for Multicolor NanoCluster Beacons**

J. OBLIOSCA¹, M. BABIN¹, C. LIU¹, Y-L. LIU¹, R. BATSON¹, AND H-C. YEH¹

¹University of Texas at Austin, Austin, TX

3:30PM**A New Methodology for Preparation of Uniformly Sized Cell Membrane Mimicking Vesicles**

Y. KANG¹, H. WOSTEIN¹, AND S. MAJD¹

¹Pennsylvania State University, University Park, PA

3:45PM**A Multifunctional Nanoplatfor for the Enhancement and Prediction of Therapeutic Response to External Beam Radiation Therapy**

A. AL ZAKI¹, C. MCQUADE¹, G. KAO¹, J. DORSEY¹, AND A. TSOURKAS¹

¹University of Pennsylvania, Philadelphia, PA

Track: Tissue Engineering, Biomaterials
OP-Fri-3-12 - Room 008B
Scaffolds and Surfaces for Tissue
Engineering III

Chairs: Taby Ahsan, Sheila Grant

3:00PM**Mechanical Properties Of Decellularized Lung Extracellular Matrix Tissue Scaffold Electospun With PLLA**

B. BLAKENEY¹, G. SCHREYACK¹, R. POULIOT¹, AND R. HEISE¹

¹Virginia Commonwealth University, Richmond, VA

3:15PM**Electrochemically Compacted Collagen Matrices for Corneal Repair**

R. IYER¹ AND V. KISHORE¹

¹Florida Institute of Technology, Melbourne, FL

3:30PM**Bundled Gel Fibers Fabricated with a Combination of Microfluidic Device and Phase-Separated Polymer Solution**

Y. MATSUNAGA¹ AND Y-J. KIM¹

¹The University of Tokyo, Tokyo, Japan

3:45PM

Tailoring Silk Fibroin Degradation using Embedded Proteolytic Enzymes

J. COBURN¹, B. MARELLI¹, F. OMENETTO¹, AND D. KAPLAN¹¹Tufts University, Medford, MA**Track: Device Technologies and Biomedical Robotics****OP-Fri-3-13 - Room 201****Biomedical Robotics****Chairs:** Arthur Ritter, Jaydip Desai**3:00PM**

Design of a Compact Manipulator with Six Degrees-of-Freedom for Flexible Access Surgery

C. BRYSON¹, A. OREKHOV¹, AND D. RUCKER¹¹University of Tennessee, Knoxville, TN**3:15PM**

3D Printed Optogenetic Skeletal Muscle-Powered Biological Machines

R. RAMAN¹, C. CVETKOVIC¹, B. WILLIAMS¹, S. UZEL², R. PLATT², R. KAMM², M. SAIF¹, AND R. BASHIR¹¹University of Illinois at Urbana-Champaign, Champaign, IL, ²Massachusetts Institute of Technology, Cambridge, MA**3:30PM**

Haptic Robot and Human Ppsychophysical Studies: A Complementary Framework to Decode Haptic Perception

Z. SU¹ AND G. LOEB^{1,2}¹University of Southern California, Los Angeles, CA, ²Syntouch LLC, Los Angeles, CA**3:45PM**

Portable Robot for Autonomous Venipuncture using 3D Near Infrared and Ultrasound Guidance

A. CHEN¹, M. BALTER¹, AND T. MAGUIRE¹¹Rutgers University, Piscataway, NJ**Track: Biomechanics****OP-Fri-3-14 - Room 103B****Countermeasures for Bone Loss and Injury****Chairs:** Russell Main, Oran Kennedy**3:00PM**

Early Axial Compressive Loading Delays Mineralization and Remodeling of a Tibial Cortical Defect in Mice

R. CARRERA¹, D. WAGNER², B. GEORGE³, P. LEUCHT³, D. HUNTER³, J. HELMS³, G. BEAUPRE², AND A. CASTILLO^{2,3}¹Stanford University, Palo Alto, CA, ²VAPAHCS, Palo Alto, CA, ³Stanford University School of Medicine, Palo Alto, CA**3:15PM**

Photoacoustic Stimulation Enhances Bone Fracture Healing in Rats

Y. TALUKDAR¹, J. RASHKOW¹, S. PATEL¹, G. LALWANI¹, AND B. SITHARAMAN¹¹Stony Brook University, Stony Brook, NY**3:30PM**

Both Bone Quality and Quantity of Obese Mice are Enhanced by Low Intensity Vibrations

B. NGUYEN¹, M. CHAN¹, L. LIN¹, Y-X. QIN¹, AND C. RUBIN¹¹Stony Brook University, Stony Brook, NY**3:45PM**

Trabecular Bone Response to Elevated Loading Frequencies

R. CHUNG¹, M. NIEMIERA¹, A. RITTER¹, T. ERRICO², AND A. VALDEVIT^{1,2}¹Stevens Institute of Technology, Hoboken, NJ, ²NYU Langone Medical Center, New York, NY**Track: Bioinformatics, Computational and Systems Biology****OP-Fri-3-15 - Room 202A****Prokaryotic Systems Biology****Chairs:** Ranjan Srivastava, Cheemeng Tan**3:00PM**

Comparative Systems Analysis Of Persistent Cystic Fibrosis Pathogens

J. BARTELL¹, J. THØGERSEN², J. THYKÆR², K. NIELSEN², S. MOLIN², L. JELLSBAK², AND J. PAPIN¹¹University of Virginia, Charlottesville, VA, ²Technical University of Denmark, Lyngby, Denmark**3:15PM**

In Silico Analysis of Bacillus Anthracis Predicts Link Between Quorum Sensing Circuit And Iron Metabolism

E. BAUTISTA¹ AND R. SRIVASTAVA¹¹University of Connecticut, Storrs, CT**3:30PM**

Systems Analysis of Pseudomonas aeruginosa to Identify Drug Targets and Virulence Factor Dependencies

J. BARTELL¹, A. BLAZIER¹, P. YEN¹, J. THØGERSEN², P. JENSEN³, AND J. PAPIN¹¹University of Virginia, Charlottesville, VA, ²Technical University of Denmark, Lyngby, Denmark, ³Boston College, Chestnut Hill, MA**3:45PM**

Phenotypic Signatures Arising from Unbalanced Bacterial Growth

C. TAN¹, R. SMITH², M-C. TSAI³, R. SCHWARTZ³, AND L. YOU⁴¹University of California Davis, Davis, CA, ²Nova Southwestern, Fort Lauderdale, FL, ³Carnegie Mellon University, Pittsburgh, PA, ⁴Duke University, Durham, NC

FRIDAY

REFRESHMENT BREAKS

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REFRESHMENT BREAKS

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POSTERS

REFRESHMENT BREAKS

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POSTERS

FRIDAY, October 24, 2014

9:30 AM - 5:00 PM

POSTER SESSIONS

Biomaterials, Microenvironments
and Controlling Cell Behavior:

P-Fri-1 to P-Fri-208

Translation, Tissue Engineering
and Synthetic Biology:

P-Fri-211 to P-Fri-290

Neural Engineering:

P-Fri-301 to P-Fri-328

Imaging:

P-Fri-329 to P-Fri-365

Cardiovascular Bioengineering:

P-Fri-366 to P-Fri-409

Drug Delivery:

P-Fri-410 to P-Fri-473

Cardiopulmonary and Orthopaedic
Biomechanics:

P-Fri-501 to P-Fri-645

Nano and Micro Technology:

P-Fri-651 to P-Fri-701

P-Fri-30

Assessing the Biological Activity of an Ester-modified, Self-assembling RGD Peptide as the Basis for Highly Degradable, Cell-instructive Hydrogel Biomaterials

K. ECKES¹, C. LARAMY¹, M. RUEHLE¹, AND L. SUGGS¹¹The University of Texas at Austin, Austin, TX

P-Fri-31

Bioinspired Tannin Complexes for Redox Responsive Biomaterials

H. CHENG¹, C. DRINNAN¹, M. MACPHERSON¹, AND O. FISHER¹¹Temple University, Philadelphia, PA

P-Fri-32

Novel Free Form Fabrication Using a Modified, Thermo-reversible, Type-I Collagen

K. DRZEWIECKI¹, W. KO¹, A. CHAVKIN¹, D. GIORDANO¹, AND D. SHREIBER¹¹Rutgers University, Piscataway, NJ

P-Fri-33

Self-assembly of Individual Cyclic Peptide Nanotubes (ICPNs) for *In Vivo* SensingL. SUN¹, Y. WANG¹, Y. HUANG¹, AND M. ZHANG¹¹The Ohio State University, Columbus, OH

P-Fri-34

The Effect of L-Arginine on Platelet Adhesion using Bovine Whole Blood on a Novel Biointerface: d-LbL

R. PORTER¹, J. ADANGAI¹, AND M. WATSON¹¹LeTourneau University, Longview, TX

P-Fri-35

Hydrogen Peroxide Generation and Cytotoxicity of Hydrogel-bound Mussel Inspired Adhesives

H. MENG¹ AND B. LEE¹¹Michigan Technological University, Houghton, MI

P-Fri-36

Targeted Delivery of SV40 Virus-Like Particles for Vaccine Vehicles

M-C. HSIEH¹ AND M. PISHKO¹¹Texas A&M University, College Station, TX

Track: Biomaterials

Bioinspired and Self Assembling
Biomaterials

Chairs: Meng Deng, Wei Li

P-Fri-27

Mechanical Flows Govern the Architecture of Actin Bundle Structures

S. JO¹ AND H. LEE¹¹Yonsei University, Seoul, Korea, Republic of

P-Fri-28

Polydopamine-coated Implantable Metallic Seed for Migration Prevention

W. LEE¹, H. LEE¹, M. PARK¹, C. PARK¹, J. PARK¹, S-J. YE², AND Y. CHOY³¹Seoul National University, Seoul, Korea, Republic of, ²Seoul National University Hospital, Seoul, Korea, Republic of, ³Seoul National University College of Medicine, Seoul, Korea, Republic of

P-Fri-29

Bio-inspired Functional Collagen-Cellulose Hydrogel Nanocomposites as a Potential Scaffold in Cardiovascular Tissue Engineering

P. POOYAN¹, R. TANNENBAUM¹, AND H. GARMESTANI¹¹Georgia Institute of Technology, Atlanta, GA

Track: Biomaterials

Biomaterial Scaffolds

Chairs: Vassilios Sikacitsas, Daniel Alge

P-Fri-89

Increasing Scaffold Attenuation with Hydroxyapatite Enhances an Ultrasound-induced Gene Switch

R. PHANSE¹, M. FABIILLI¹, A. MONCION¹, J. FOWLKES¹, AND R. FRANCESCHI¹¹University of Michigan, Ann Arbor, MI

P-Fri-90

Porated PDMS_{star}-PEG Hydrogels for Osteochondral Tissue EngineeringR. SEHNERT¹, E. GACASAN¹, B. BASAGAOLU¹, B. BAILEY¹, AND M. GRUNLAN¹¹Texas A&M University, College Station, TX

P-Fri-91

Electrospinning Silk With Selenium Nanoparticles For Antibacterial Skin Applications

S. CHUNG¹, M. STOLZOFF¹, B. ERCAN¹, AND T. WEBSTER¹¹Northeastern University, Boston, MA

P-Fri-92

Development of Gel Injectable Matrix for Treatment of Muscle Degeneration

K. WILSON¹ AND J. WOLCHOK¹¹University of Arkansas, Fayetteville, ARP = Poster Session
OP = Oral Presentation
★ = Reviewer Choice Award

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM, 4:00PM - 5:00PM

P-Fri-93**In Vitro Investigation of a Novel Genipin-Nanoparticle-Collagen Template**Z. BEACH¹, J. BRADLEY¹, D. GRANT¹, AND S. GRANT¹¹UNIVERSITY OF MISSOURI, COLUMBIA, MO**P-Fri-94****Characterization of a Nanomaterial-Tissue Patch for Vascular and Cardiac Reconstruction**A. OSTDIEK¹, R. GOPALDAS², AND S. GRANT¹¹University of Missouri, Columbia, MO, ²Prairie Cardiovascular, Springfield, IL**P-Fri-95****Self-Fitting Shape Memory Polymer Scaffolds For Bone Defect Repair**L. NAIL¹, D. ZHANG¹, K. PETERSON¹, O. GEORGE¹, J. REINHARD¹, H. GLIDEWELL¹, AND M. GRUNLAN¹¹Texas A&M University, College Station, TX**P-Fri-96****Characterizing the Cellular Response of Electrospun Manuka Honey-eluting Scaffolds**B. MINDEN-BIRKENMAIER¹, E. GROWNEY KALAF¹, R. FLORES¹, B. JANOWIAK¹, AND S. SELL²¹Saint Louis University, St. Louis, MO, ²Saint Louis University, St. Louis, MO**P-Fri-97****Characterization Of Pullulan As A Novel Material For Peripheral Nerve Conduits**J. SIMMONS¹, Z. SNOW¹, M. GRINTER¹, AND P. VANDEVORD¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA**P-Fri-98****Degradable and Semi-Interpenetrating Hydrogels from PEG and Collagen for Tissue Scaffolds**C. PEAK¹, S. NAGAR¹, R. WATTS¹, AND G. SCHMIDT¹¹Purdue University, West Lafayette, IN**P-Fri-99****Stimulating Cell Recruitment on Fibrin Microthreads to Enhance Skeletal Muscle Regeneration**J. GRASMAN¹, R. PAGE¹, T. DOMINKO¹, AND G. PINS¹¹Worcester Polytechnic Institute, Worcester, MA**P-Fri-100****Scaffold HA/TCP Coated by Gelatin: In Vitro Test**L. RODRIGUES^{1,2}, C. ZAVAGLIA^{2,3}, AND C. LOMBELLO¹¹Federal University of ABC, Santo Andre, Brazil, ²INCT-Biofabris, Campinas, Brazil,³Mechanical Engineering - State University of Campinas, Campinas, Brazil**P-Fri-101****Functional Lymphatics That Drain Collagen-Based Scaffolds**R. THOMPSON¹, B. COISMAN¹, AND J. TIEN¹¹Boston University, Boston, MA**P-Fri-102****Directing Bone Formation Using Nacre Proteins Patterned on Poly(ethylene glycol) Substrates**K. WHITE¹, C. FRANCO², J. WEST³, AND R. OLABISI¹¹Rutgers University, Piscataway, NJ, ²Twister Biotech, Houston, TX, ³Duke University, Durham, NC**P-Fri-103****Raw Material-Directed Differentiation Of Rat Bone Marrow Stromal Cells In Microsphere Based Gradient Scaffolds**V. GUPTA¹ AND M. DETAMORE¹¹University of Kansas, Lawrence, KS**P-Fri-104****Fabrication of Biodegradable hydroxyapatite-PLGA-collagen Biomaterial for Bone Regeneration**D. BHUIYAN¹, J. MIDDLETON¹, R. TANNENBAUM², AND T. WICK¹¹University of Alabama at Birmingham, Birmingham, AL, ²Stony Brook University, Stony Brook, NY**P-Fri-105****Electrospinning of Arabinoside as a Novel Nanofiber Scaffold**D. ADUBA, JR.¹, W. YEUDALL¹, AND H. YANG¹¹Virginia Commonwealth University, Richmond, VA**P-Fri-106****Cytotoxicity of Boron Nitride Reinforced Polymeric Scaffolds.**B. FARSHID¹, G. LALWANI¹, AND B. SITHARAMAN¹¹Stony Brook University, Stony Brook, NY**P-Fri-107****Response of Hydroxyapatite and Tricalcium Phosphate Bone Scaffolds to Elevated Loading Frequencies**C. MAGLARAS¹, A. RITTER¹, D. KALYON¹, A. ERGUN-BUTROS¹, AND A. VALDEVIT¹¹Stevens Institute of Technology, Hoboken, NJ**P-Fri-108****Development of PLLA Hollow Fiber Scaffold by Electrospinning for Cartilage Regeneration**K. MINAMIMOTO¹, Y. MORITA¹, T. KATAYAMA¹, AND E. NAKAMACHI¹¹Doshisha University, Kyotanabe, Japan**P-Fri-109****Gelatin Foam Production: In Vitro Test**L. RODRIGUES^{1,2}, D. FERRARAZ¹, M. NASCIMENTO¹, AND C. LOMBELLO¹¹Federal University of ABC - UFABC, Santo Andre, Brazil, ²INCT-BioFabris, Campinas, Brazil**Track: Biomaterials****Biomaterials Design****Chairs:** Hitesh Handa, Michael Fenn**P-Fri-13****Stiffness Enhancement of Ultra-flexible Implantable Microsensor Array with Biodegradable Materials**C. NGUYEN¹, L. LEE¹, S. RAO¹, AND J-C. CHIAO¹¹University of Texas at Arlington, Arlington, TX**P-Fri-14****Biodegradable Sponge Fabrication For Use In Negative Pressure Wound Therapy**H. WARNER^{1,2}, R. WANG^{1,2}, J. JORDAN², M. MORYKWA^{1,2}, L. ARGENTA², AND W. WAGNER^{1,2}¹Wake Forest University-Virginia Tech, Winston-Salem, NC, ²Wake Forest Baptist Hospital, Winston-Salem, NC**P-Fri-15****Water Structure in Hydrated Poly(2-methoxyethyl acrylate) Analogues Possessing Blood Compatibility**K. SATO¹, S. KOBAYASHI¹, T. HOSHIBA¹, S. WATAHIKI¹, M. OIKAWA¹, AND M. TANAKA¹¹Yamagata University, Yonezawa, Japan**P-Fri-16****The Role of Substrate Materials in Controlled Culture of Endothelial Cells**W. WOSIK¹, S. DAS¹, Z. ZUO¹, AND F. MERCHANT¹¹University of Houston, Houston, TX**P-Fri-17****Iron Oxide and Selenium Nanoparticles Combined with Methotrexate to Inhibit Bone Cancer Growth**E. ALPASLAN¹ AND T. WEBSTER¹¹Northeastern University, Boston, MA**P-Fri-18****Reduction Induced Biodegradable Polyurethane Elastomers for Biomedical Applications**C. XU^{1,2} AND Y. HONG^{1,2}¹University of Texas at Arlington, Arlington, TX, ²The University of Texas Southwestern Medical Center at Dallas, Dallas, TX

P-Fri-19**Enhanced Protein Resistance of Silicones Containing PEG-silane Amphiphiles as Surface Modifying Additives**M. RUFIN¹, J. GRUETZNER¹, M. HURLEY¹, M. HAWKINS¹, E. RAYMOND¹, J. RAYMOND¹, AND M. GRUNLAN¹¹Texas A&M University, College Station, TX**P-Fri-20****Electrosprayed Polyethylene Glycol Hydrogel Microspheres for Platelet Rich Plasma Delivery in Knee Osteoarthritis**E. JAIN¹, K. SCOTT¹, S. SHETH¹, S. ZUSTIAK¹, AND S. SELL¹¹Saint Louis University, St. Louis, MO**P-Fri-21****Spun Silk-Fibronectin Protein Alloy Fibers for Improved Cellular Adhesion**M. JACOBSEN¹, D. LI¹, N. RIM¹, N. HALL¹, M. SMITH¹, AND J. WONG¹¹Boston University, Boston, MA**P-Fri-22****Polycaprolactone Nanofibrous Materials as an Efficient Dry Eye Test Strip**K. PATEL¹, V. KANDALA², A. APHALE², AND P. PATRA²¹University of Bridgeport, bridgeport, CT, ²University of Bridgeport, Bridgeport, CT**P-Fri-23****Manipulation of Hydrogel Structure Using the Mechanical Flow Induced by Surface Acoustic Wave**B. KANG¹, S. JO¹, Y. JEON¹, AND H. LEE¹¹Yonsei University, Seoul, Korea, Republic of**P-Fri-24****Influence of Gallium Incorporation on Wettability of Glass Polyalkenoate Cements**A. ALHALAWANI¹, D. CURRAN¹, AND M. TOWLER¹¹Ryerson University, Toronto, ON, Canada**P-Fri-25****Site-Specific and Enzyme-Mediated Modular Construction of Protein Complexes**N. BHOKISHAM¹, Y. LIU¹, H. PAKHCHANIAN¹, G. PAYNE¹, AND W. BENTLEY¹¹University of Maryland, College Park, MD**P-Fri-26****Quantification of Stresses in Hydrogels using Photoelasticity**G. FEUER¹, M. PENDOLA¹, AND S. SAHA¹¹SUNY Downstate, Brooklyn, NY**Track: Biomaterials****Biomaterials for Controlling Cell Environment****Chairs:** Hitesh Handa, Michael Fenn**P-Fri-136****Encoding PEG Hydrogel Mechanics through Peptide Sequence to Regulate Endothelial Cell Morphogenesis**R. SCHWELLER¹ AND J. WEST¹¹Duke University, Durham, NC**P-Fri-137****Dual-crosslinked Hydrogel Microwell System for Formation and Culture of Multicellular Human Mesenchymal Stem Cell Spheroids**O. JEON¹, D. WOLFSON¹, AND E. ALSBERG¹¹Case Western Reserve University, Cleveland, OH**P-Fri-138****Patterning Cellular Microenvironments with a Hybrid Photopatterned Enzymatic Reaction (HyPER) Cell-compatible Platform**D. GRIFFIN¹, N. DARLING¹, AND T. SEGURA¹¹UC Los Angeles, Los Angeles, CA**P-Fri-139****Osseo-integration and Biofilm Formation on Different Ti-surfaces in a Post-operative Infection Model**N. GHIMIRE¹, B. FOSS¹, Y. SUN², AND Y. DENG¹¹The University of South Dakota, Sioux Falls, SD, ²The University of Massachusetts, Lowell, MA**P-Fri-140****Assessing the Osteoinductivity of Engineered Biomimetic Periosteum on Cortical Bone Allografts**R. ROMERO¹, L. CHUBB¹, E. ASBURY¹, A. PENNYBAKER¹, J. TRAVERS¹, N. EHRHART¹, AND M. KIPPER¹¹Colorado State University, Fort Collins, CO**P-Fri-141****Development of an *in vitro* Bladder Cancer Tissue Mimic and the Response to Cisplatin Treatment**B. BALHOUSE¹, A. PEKKANEN¹, M. RYLANDER¹, AND P. VLACHOS²¹Virginia Tech, Blacksburg, VA, ²Purdue University, West Lafayette, IN**P-Fri-142****Designing a Dynamically Tunable Photoresponsive Hydrogel for Studying Mechanotransduction**W. ZHONG¹, C. PETCHPRAYOON¹, S. LI¹, AND G. MARRIOTT¹¹University of California, Berkeley, Berkeley, CA**P-Fri-143****Poly-L-Arginine Based Materials As Instructive Substrates for Fibroblasts Synthesis of Collagen**K. BRATLIE¹¹Iowa State University, Ames, IA**P-Fri-144****Strain-Based Detachment of Intact Tissue Modules from Shape-changing Hydrogel**O. AKINTEWE¹, S. DUPONT¹, M. CROSS¹, K. ELINENI¹, R. TOOMEY¹, AND N. GALLANT¹¹University of South Florida, Tampa, FL**P-Fri-145****Conformal Nanopatterning of Extracellular Matrix Proteins onto Topographically Complex Surfaces**Q. JALLERAT¹, Y. SUN^{1,2}, J. SZYMANSKI¹, AND A. FEINBERG¹¹Carnegie Mellon University, Pittsburgh, PA, ²Beihang University, Beijing, China, People's Republic of**P-Fri-146****Influence of Sparse Electrospun Fibers on the Differentiation of Mesenchymal Stem Cells in Collagen Gels**P. THAYER¹, E. TONG¹, D. PLESSL¹, L. DAHLGREN¹, AND A. GOLDSTEIN¹¹Virginia Tech, Blacksburg, VA**P-Fri-147****A Mechanistic Study of Collective Fibroblast Migration**P. SHARMA¹, A. KIM¹, C. NG¹, B. BEHKAM¹, AND A. NAIN¹¹Virginia Tech, Blacksburg, VA**P-Fri-148****Rational And Combinatorial Biomaterial Screening Platform For Development Of Optimal Tissue Specific Biomaterials**S. RAMAMOORTHY¹, R. JACOBSON¹, J. MALCOVITCH¹, C. BERTUCCI¹, G. SAUNDERS¹, D. THOMPSON¹, AND P. KARANDE¹¹Rensselaer Polytechnic Institute, Troy, NY

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM, 4:00PM - 5:00PM

P-Fri-149**Reducing Axon Retraction Events With Patterned Biomaterial Cues**M. WROBEL¹ AND H. SUNDARARAGHAVAN¹¹Wayne State University, Detroit, MI**P-Fri-150****Electroconductive Hyaluronic Acid Hydrogel for Neuronal Differentiation of Human Neural Stem Cells**J. SHIN¹, E. CHOP², K. YANG¹, C. SONG², AND S-W. CHO¹¹Yonsei University, Seoul, Korea, Republic of, ²Sungkyunkwan University, Suwon, Korea, Republic of**P-Fri-151****Photo-Patterning Gelatin Hydrogels Using Caged Collagen Mimetic Peptides**Y. LI¹, J. KESSLER¹, AND S. YU¹¹University of Utah, Salt Lake City, UT**P-Fri-152****Carboxymethylcellulose Hydrogels Support CNS-derived Tumor Cell Chemotactic Migration**T. SINGH¹, C. KOTHAPALLI², D. VARMA¹, S. NICOLL¹, AND M. VAZQUEZ¹¹City College of New York-CUNY, New York, NY, ²Cleveland State University, Cleveland, OH**P-Fri-153****Orthopedic Implant Coating for Improved Osseointegration and Reduced Biofilm Formation**L. ACTIS¹, A. SRINIVASAN¹, A. RAMASUBRAMANIAN¹, AND J. ONG¹¹University of Texas at San Antonio, San Antonio, TX**P-Fri-154****Engineered Hydrogel System for Bone Regeneration Through Endochondral Ossification**P. MIKAEL¹ AND S. NUKAVARAPU²¹University of Connecticut, Farmington, CT, ²University of Connecticut Health, Farmington, CT**P-Fri-155****Enhancing Neurite Outgrowth By Electrical Stimulation Through Conductive Nanofibers**E. STEEL¹ AND H. SUNDARARAGHAVAN¹¹Wayne State University, Detroit, MI**P-Fri-156****Fabrication of MgSiO₃ Thin Film by RF Magnetron Sputtering Method to Accelerate Bone Formation**S. NAKASAKI¹, Y. MORITA¹, T. KATAYAMA¹, AND E. NAKAMACHI¹¹Doshisha University, Kyotanabe, Japan**P-Fri-157****Synthesis of a thermoreversible hydrogel for passaging adherent cells in three-dimensional culture**J. HEFFERNAN^{1,2}, D. OVERSTREET¹, S. SRINIVASAN², B. VERNON², AND R. SIRIANNI^{1,2}¹Barrow Neurological Institute, Phoenix, AZ, ²Arizona State University, Tempe, AZ**P-Fri-158****Fibroblast and Macrophage Cell Viability on Polyelectrolyte Complex**S. MISTRY¹, K. DESAI¹, R. SCHLOSS¹, AND N. LANGRANA¹¹Rutgers University, Piscataway, NJ**P-Fri-159****Biofilm Accumulation on Medical Device Materials With Varied Surface Roughness**A. MACALUSO¹, A. CRITES¹, AND M. HARMAN¹¹Clemson University, Clemson, SC**P-Fri-160****The Study of Platelet Adhesions using Bovine Whole Blood versus Platelet Rich Plasma Comparing Percent Surface Aggregate Coverage**G. WILLIAMSON¹, A. BUJANA¹, M. RUSH¹, AND M. WATSON¹¹LeTourneau University, Longview, TX**Track: Biomaterials****Biomaterials for Immunoengineering****Chairs:** Vassilios Sikacitsas, Daniel Alge**P-Fri-37****Bacterial Outer Membrane Vesicle Vaccines Carrying Arah2 Confer Prophylactic Protection Against Peanut Allergy**T. LEUNG¹, J. ROSENTHAL¹, K. MINETA¹, M. DELISA¹, AND D. PUTNAM¹¹Cornell University, Ithaca, NY**P-Fri-38****Microneedle-Based Immune Monitoring Platform Samples Cells and Interstitial Fluid from Tissue In Situ**A. MANDAL¹, J. VAN¹, D. IRVINE^{1,2,3,4}, AND P. HAMMOND^{1,5}¹Massachusetts Institute of Technology, Cambridge, MA, ²Koch Institute for Integrative Cancer Research, Cambridge, MA, ³Ragon Institute of MGH, MIT, and Harvard, Cambridge, MA, ⁴Howard Hughes Medical Institute, Chevy Chase, MD, ⁵Koch Inst. for Integrative Cancer Research, Cambridge, MA**P-Fri-39****Cellular Mechanisms of Tolerance Involved in a Microparticle Vaccine for Type I Diabetes**J. STEWART¹, J. LEWIS¹, AND B. KESELOWSKY¹¹University of Florida, Gainesville, FL**P-Fri-40****Preventing Fibrosis of Hydrogels Implanted in Mice Using Immunomodulatory Agents**S. JHUNJHUNWALA¹, D. LAVIN¹, S. ARESTA-DASILVA¹, A. SANTIAGO-LOPEZ¹, R. LANGER¹, AND D. ANDERSON¹¹MIT, Cambridge, MA**P-Fri-41****Regulation of Macrophage Inflammatory Response by Immunomodulatory Poly(ethylene glycol) Hydrogels**Y-T. CHEN¹, J. SCHLOSSER¹, Y. KIM¹, AND W. LIU¹¹University of California, Irvine, Irvine, CA**P-Fri-42****Reprogramming Macrophages by Engineering Polymer Surface Properties**K. BRATLIE¹¹Iowa State University, Ames, IA**P-Fri-43****Young Porcine Islets Encapsulated in Alginate Microcapsules can maintain Prolonged Euglycemia after Transplantation into Diabetic Athymic Nude Mice**R. KRISHNAN¹, B. BUDER¹, M. ALEXANDER¹, C. FOSTER III¹, AND J. LAKEY¹¹University of California Irvine, Orange, CA**P-Fri-44****Electrospun Microfiber Nanotopography Alters Macrophage Polarization**N. SCHAUB¹, E. HARMON², M. LENNARTZ², AND R. GILBERT¹¹Rensselaer Polytechnic Institute, Troy, NY, ²Albany Medical College, Albany, NY**P-Fri-45****Macrophage Response to Titanium Surface Characteristics**K. HOTCHKISS¹, Z. SCHWARTZ¹, S. HYZY¹, B. BOYAN¹, AND R. OLIVARES-NAVARRETE¹¹Virginia Commonwealth University, Richmond, VA**P-Fri-46****Assessment And Control Of Anti-Microbial And Anti-Inflammatory Response Of Macrophages to Different Surface Nanomodifications**G. BHARDWAJ¹ AND T. WEBSTER¹¹Northeastern University, Boston, MA

P-Fri-47**Antigen-Specific Immune Response of a PLGA Microparticle-Based DNA Vaccine against Ureaplasma**Q. WANG¹, L. WEISMAN^{1,2}, A. LEEMING^{1,2}, AND M. HEFFERNAN¹¹Baylor College of Medicine, Houston, TX, ²Texas Children's Hospital, Houston, TX**P-Fri-48****Endotoxin Contamination In Chitosan And Its Effect On Immune Response**S. RAVINDRANATHAN¹, S. SMITH¹, B. KOPPOLU¹, S. KURTZ¹, AND D. ZAHAROFF¹¹University of Arkansas, Fayetteville, Fayetteville, AR**Track: Biomechanics, Cardiovascular Engineering****Cardiovascular Biomechanics****Chairs:** Aaron Baker, Jun Liao**P-Fri-596** **Effect of Annuloplasty Ring Size: Patient-Specific Finite Element Evaluation**A. CHOI¹, Y. RIM¹, D. MCPHERSON¹, AND H. KIM¹¹The University of Texas Health Science Center at Houston, Houston, TX**P-Fri-597** **Hemodynamic Shear Stress And Biochemical Regulation Of Cathepsin K Activity In Sickle Cell Disease**S. ANBAZHAKAN¹, P. KEEGAN¹, AND M. PLATT¹¹Georgia Institute of Technology, Atlanta, GA**P-Fri-598****Numerical Modeling of Magnetic Micropump for Biogenic Bulk Transport in a Biomimetic Microchannel**E. IGE¹, A. DARE¹, AND A. COKER¹¹University of Ibadan, Ibadan, Nigeria**P-Fri-599****Measurement of Endothelial Permeability Under Chronic Applied Shear Stress in a Bioreactor**S. GRAY¹, P. WEINBERG¹, D. OVERBY¹, AND A. RANDI¹¹Imperial College London, London, United Kingdom**P-Fri-600****Experimental Validation of an Algorithm for the Zero Pressure Geometry Derivation of Blood Vessels**G. VIMALATHARMAIYAH¹, S. CHANDRA¹, J. RODRIGUEZ², AND E. FINOL¹¹UNIVERSITY OF TEXAS AT SAN ANTONIO, SAN ANTONIO, TX, ²UNIVERSIDAD DE ZARAGOZA, ZARAGOZA, SPAIN**P-Fri-601****On the Biomechanical Behavior of the Layers of the Mitral Valve Anterior Leaflet**S. AYOUB¹ AND M. SACKS¹¹The University of Texas at Austin, Austin, TX**P-Fri-602****Active Stresses In The Porcine Common Carotid Artery**B. ZHOU¹, T. SHAZLY¹, G. BROWER^{2,3}, H. DOVIAK^{2,3}, AND F. SPINALE²¹University of South Carolina, Columbia, SC, ²University of South Carolina School of Medicine, Columbia, SC, ³WJB DORN Veteran Affairs Medical Center, Columbia, SC**P-Fri-603****Effects of Arterial Wall Local Softening on Pulse Wave Propagations and Velocities**I. INGA¹ AND D. SHAHMIRZADI¹¹Stevens Institute of Technology, Hoboken, NJ**P-Fri-604****Experimental Validation of CFD Simulations of a Patient-Specific Pulmonary Vascular Model Using Stereoscopic Particle Image Velocimetry**M. LEROUX¹, V. KHEYFETS¹, AND E. FINOL¹¹University of Texas at San Antonio, San Antonio, TX**P-Fri-605****Changes in Cardiac Tissue Properties Relative to the Applications of Radiofrequency or Cryo Ablative Therapies**S. QUALLICH¹, K. KRIEGE¹, AND P. IAIZZO¹¹University of Minnesota, Minneapolis, MN**P-Fri-606****Structural Constitutive Model For Smooth Muscle Contraction**T. TAN¹ AND R. DE VITA¹¹Virginia Tech, Blacksburg, VA**P-Fri-607****Development of User Interactive Toolkit for Modeling Patient Specific Geometries without Volumetric Mesh**L. SHRESTHA¹, V. MAGNOTTA¹, N. GROSLAND¹, D. CALCETERRA¹, AND S. VIGMOSTAD¹¹The University of Iowa, Iowa City, IA**P-Fri-608****Artery Buckling Analysis using A Four-Fiber Wall Model**Q. LIU¹, M. MOTTAAHEDI¹, AND H-C. HAN¹¹University of Texas at San Antonio, San Antonio, TX**P-Fri-609****Finite Element Analysis of the Mechanics of Neovessels with Intraplaque Hemorrhage in Carotid Atherosclerosis**J. LU¹ AND A. QIAO¹¹Beijing University of Technology, Beijing, China, People's Republic of**P-Fri-610****Prior Distribution of Material Parameters for a Computational Model of the Abdominal Aorta**S. Seyedsalehi¹, L. Zhang¹, J. Choi¹, and S. Baek¹¹MICHIGAN STATE UNIVERSITY, EAST LANSING, MI**P-Fri-611****Fluid Structure Interaction Human Left Ventricular Modelling Using an Immersed Boundary-Finite Element Method**H. GAO¹, D. CARRICK¹, C. BERRY¹, B. GRIFFITH^{2,3}, AND X. LUO¹¹University of Glasgow, Glasgow, United Kingdom, ²University of North Carolina at Chapel Hill, Chapel Hill, NC, ³University of North Carolina School of Medicine, Chapel Hill, NC**P-Fri-612****Microfluidic Stiffness-Dependent Separation of Aged Erythrocytes for Improved Blood Storage and Purification**R. BYLER^{1,2}, K. PATEL², L. HALL², A. ZHEN², AND T. SULCHEK²¹Yale University, New Haven, CT, ²Georgia Institute of Technology, Atlanta, GA**P-Fri-613** **Computational Evaluation of Restoration of Mitral Valve Function Following Quadrangular Leaflet Resection and Ring Annuloplasty**Y. RIM¹, A. CHOI¹, D. MCPHERSON¹, AND H. KIM¹¹The University of Texas Health Science Center at Houston, Houston, TX

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM, 4:00PM - 5:00PM

Track: Biomechanics, Cellular and Molecular Bioengineering

Cell Biomechanics

P-Fri-614

Mechanical Biomarkers of Embryo Viability

L. ZARNESCU¹, J. HAN¹, B. BEHR¹, R. REJO PERA¹, AND D. CAMARILLO¹¹Stanford University, Stanford, CA

P-Fri-615

Depletion of Linker Histone H1 Increases Cellular and Nuclear Young's Moduli

T. BONGIORNO¹, T. MCDEVITT^{1,2}, Y. FAN¹, AND T. SULCHEK^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA

P-Fri-616

Intrinsically Disordered Proteins Drive Membrane Curvature of Clathrin Coated Vesicles

D. BUSCH¹, J. HOUSER¹, S. JAFRI¹, J. JOSE¹, AND J. STACHOWIAK¹¹University of Texas at Austin, Austin, TX

P-Fri-617

The Effect Of Soluble Factors Released By Mechanically Stimulated Osteocytes On the Mineralization Capacity Of Osteoblasts

J. MCPHERSON¹, S. YORK¹, A. SEWELL¹, AND M. SAUNDERS¹¹University of Akron, Akron, OH

P-Fri-618

Acoustic Radiation Force Based Clot Stiffness Assessment Is Highly Sensitive to Platelet Number and Activation

C. WANG¹, M. PEREZ¹, B. HELMKE¹, F. VIOLA¹, AND M. LAWRENCE¹¹University of Virginia, Charlottesville, VA

P-Fri-619

How Single Stress Fiber Mechanics Depend on Length and Adhesive Spacing

E. KASSIANIDOU¹ AND S. KUMAR²¹UC Berkeley -UCSF Joint Program in Bioengineering, Berkeley, CA, ²University of California, Berkeley, CA

P-Fri-620

The Cell as a Pump: Cytoskeletal Contractions Drive Intercellular Fluid Flow

S. ZEHNDER¹, A. DUNN¹, J. URUEÑA¹, W. SAWYER¹, AND T. ANGELINI¹¹UNIVERSITY OF FLORIDA, GAINESVILLE, FL

P-Fri-621

Characterizing Dendritic Cell Motility on PDMS Surfaces

A. CHEVALIER¹ AND D. HAMMER¹¹University of Pennsylvania, Philadelphia, PA

P-Fri-622

Understanding Cell Viability and Mechanics of Actin Filament Response of NIH/3T3 Fibroblasts Under Biaxial Stretch

H. GHAZIZADEH¹, S. RAVARI², A. HUNG¹, D. LAJEUNESSE², AND S. ARAVAMUDHAN¹¹NORTH CAROLINA A&T STATE UNIVERSITY, GREENSBORO, NC, ²UNIVERSITY OF NORTH CAROLINA AT GREENSBORO, GREENSBORO, NC

P-Fri-623

Designing Next Generation Stem Cell Mechanics Studies for Prospective Guidance of Lineage Commitment

H. CHANG¹, M. SONG², AND M. KNOTHE TATE³¹Case Western Reserve University, Cleveland, OH, ²University of Pennsylvania, Philadelphia, PA, ³University of New South Wales, UNSW Sydney, Australia

P-Fri-624

Finite Element Modeling of 3D Cell Migration through a Fibrous Matrix

R. ZIELINSKI¹ AND S. GHADIALI^{1,2}¹The Ohio State University, Columbus, OH, ²The Dorothy M. Davis Heart & Lung Research Institute, Columbus, OH

P-Fri-625

Mechanical Properties of Erythrocytes

S. BUSTAMANTE LOPEZ¹, S. RITTER¹, AND K. MEISSNER¹¹Texas A&M, College Station, TX

P-Fri-626

Effect of Substrate Stiffness on Force Generation by Airway Smooth Muscle Cells

H. PARAMESWARAN¹, S. POLIO¹, E. CANOVIC¹, B. HARVEY¹, B. SUKI¹, M. SMITH¹, AND K. LUTCHEN¹¹Boston University, Boston, MA

P-Fri-627

Osteocyte Viability Changes In Response To Microdamage

S. YORK¹, J. KING¹, A. PIETROS¹, B-M. ZHANG NEWBY¹, P. SETHU², AND M. SAUNDERS¹¹University of Akron, Akron, OH, ²University of Alabama Birmingham, Birmingham, AL

P-Fri-628

Mechanics of Epithelial to Mesenchymal Transition in Cancer and Non-Cancer Models

L. VOLAKIS¹, D. KNISS², AND S. GHADIALI²¹The Ohio State University, Columbus, OH, ²The Wexner Medical Center at The Ohio State University, Columbus, OH

P-Fri-629

Rest Periods May Increase Mechanically Stimulated MSC's Promotion of Osteoblast Proliferation

B. YU¹, G. LEE², A. YANG², M. CHAN², AND C. RUBIN²¹Stony Brook University, Tarrytown, NY, ²Stony Brook University, Stony Brook, NY

P-Fri-630

Contribution of Different Collagen IV Isoforms to Glomerular Basement Membrane Mechanics

L. GYONEVA¹, Y. SEGAL¹, K. DORFMAN¹, AND V. BAROCAS¹¹University of Minnesota - Twin Cities, Minneapolis, MN

P-Fri-631

Measurement Of Cell Traction Force With A Thin PDMS Cantilever

M. Holley¹, E. Song¹, A. Moll¹, D. Hayes¹, W. Monroe¹, J-W. Choi¹, and K. Park¹¹Louisiana State University, Baton Rouge, LA

P-Fri-632

F-Actin Arrangement as an Indicator of Stiffness in Undifferentiated Mesenchymal Stem Cells

J. KAZLOW^{1,2}, T. BONGIORNO¹, AND T. SULCHEK¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA

P-Fri-633

Shear Stimulated Differentiation of Bone Marrow Derived hMSCs Towards the Chondrocytic Lineage

A. ADENIRAN-CATLETT¹ AND S. MURTHY¹¹Northeastern University, Boston, MA

P-Fri-634

Resistive-Pulse Differentiation of Metastatic and Non-metastatic Tumor Cells with Solid-state Micropores

W. ALI¹, A. ILYAS¹, Y-T. KIM¹, AND S. IQBAL¹¹University of Texas at Arlington, Arlington, TX

P-Fri-635

Characterization Of A Microloading Platform For *In Vitro* Mechanotransduction Studies

S. YORK¹ AND M. SAUNDERS¹¹University of Akron, Akron, OH

P-Fri-636

Quantification Of Gap Junction Communication And Sclerostin Expression In Microdamaged Osteocytes

S. YORK¹, P. SETHU², AND M. SAUNDERS¹¹University of Akron, Akron, OH, ²University of Alabama Birmingham, Birmingham, AL

P-Fri-637**Computational Model of Fluid Flow During Cyclic Mechanical Loading of Cultured Cells**

J. LEE¹, Q. SMITH¹, AND A. BAKER¹
¹University of Texas at Austin, Austin, TX

P-Fri-638**Bio-mechanical Characteristics of Normal and Cancerous Cells - A Computational Study**

T. BRADY¹ AND V. UNNIKISHAN¹
¹The University of Alabama, Tuscaloosa, AL

P-Fri-639**A Microfluidic Device for Investigation of Cellular Migration and Invasion in Response to Chemical and Physical Stimuli**

S. BEAN¹, L. LEE¹, S. RAO¹, V. LIN¹, AND J-C. CHIAO¹
¹UT Arlington, Arlington, TX

P-Fri-640**Probing Microalgal Response Using Atomic Force Microscopy**

K. WARREN¹, J. MPAGAZEHE¹, C. HIGGS III¹, AND P. LEDUC¹
¹Carnegie Mellon University, Pittsburgh, PA

P-Fri-641**Migratory Behavior of Breast Cancer Cells in Conditioned Medium from Human Osteosarcoma Cells**

S. LOH¹, L. LEE¹, S. BEAN¹, S. RAO¹, V. LIN¹, AND J-C. CHIAO¹
¹UT Arlington, Arlington, TX

P-Fri-642**Biomechanical Characterization of Algal Motility in Response to Medium Viscosity**

K. CLARK¹, D. FIJALKA¹, J. JOHNSON¹, M. MASHBURN¹, S. KARPOWICZ¹, AND G. XU¹
¹University of Central Oklahoma, Edmond, OK

P-Fri-643**Squishy DNA Nanoparticles**

S. COOK¹, K. CURTIS², S. BEHARIE², E. DIMITRIADIS³, F. HORKAY², AND P. CHANDRAN²
¹Case Western Reserve University, Cleveland, OH, ²Howard University, Washington, DC, DC, ³National Institutes of Health, Bethesda, MD

P-Fri-644**Model of Oxidative Stress in the Aging Lens**

C. GUTIERREZ CANDANO¹
¹UTSA, San Antonio, TX

P-Fri-645**Nanomechanics of Human Adipose Stem Cells in Micromass during Chondrogenesis**

C. QUISENBERRY¹, A. NAZEMPOUR¹, B. VAN WIE¹, AND N. ABU-LAIL¹
¹Washington State University, Pullman, WA

Track: Biomechanics, Biomaterials**Mechanics of Biomaterials**

Chairs: Vittoria Flamini, Jason Gleghorn

P-Fr-1**Shear Properties of PNIPAAm-g-CS Hydrogels**

T. MAURIELLO¹, S. GOSSERT¹, G. FEIL¹, A. VERNENGO¹, AND J. KADLOWEC¹
¹Rowan University, Glassboro, NJ

P-Fr-2**Development and Characterization of Tissue-mimicking Anisotropic Gel for MR Elastography**

C. WALKER¹, M. MAHONEY¹, M. MATHISON¹, S. RAVEN¹, J. SCHMIDT¹, R. OKAMOTO¹, AND P. BAYLY¹
¹Washington University in Saint Louis, Saint Louis, MO

P-Fr-3**Probing Mechanical Tension in Human Fibroblast Collagen Lattices**

L. TINNIN¹, C. ANDERSON¹, M. VAUGHAN¹, AND G. XU¹
¹University of Central Oklahoma, Edmond, OK

P-Fr-4**Effect of Amyloid Beta on Mechanical Properties and Structure of Extracellular Matrix**

Y. JEON¹, S. JO¹, B. KANG¹, AND H. LEE¹
¹Yonsei University, Seoul, Korea, Republic of

P-Fr-5**Numerical Analysis of Vortex Entrapment of Particles with Respect to Bacterial Adhesion on Implants**

H. BASAGAOLU¹, J. CARROLA¹, C. FREITAS¹, B. BASAGAOLU², AND M. DESILVA³
¹Southwest Research Institute, San Antonio, TX, ²Texas A&M University, College Station, TX, ³Navy Medical Research Unit, Fort Sam Houston, TX

P-Fr-6**Pull-off Stress Evaluation of Commercially Available Wound-Treatment Polymers**

R. THORNTON¹, V. KHEYFETS², AND E. FINOL¹
¹University of Texas at San Antonio, San Antonio, TX, ²University of Colorado Denver, Denver, CO

P-Fr-7**Long Range Force Transmission Enabled by Formation of Aligned Fibers in Collagen Matrices**

V. SHENOY¹, H. WANG¹, A. NAIR¹, AND R. WELLS¹
¹University of Pennsylvania, Philadelphia, PA

P-Fr-8**Removal of Proteoglycans from Bone Matrix Significantly Reduce its In Situ Toughness**

H. XU¹, A. SHELDRAKE¹, J. JIANG², AND X. WANG¹
¹University of Texas at San Antonio, San Antonio, TX, ²University of Texas Health Science Center at San Antonio, San Antonio, TX

P-Fr-9**Dynamic Drying Mechanics of Human Stratum Corneum and the Effects of Moisturization**

X. LIU¹ AND G. GERMAN¹
¹Binghamton University, Binghamton, NY

P-Fr-10**Comparison Of Microstructural, Biomechanical and Suture Retention Strength Of Ovine Vaginal Patches Obtained From Three Types Of Decellularization Protocols.**

S. PATNAIK¹, J. BUTLER¹, B. BRAZILE¹, B. WEED¹, V. DANDOLU², D. CHRISTIANSEN¹, P. RYAN¹, AND J. LIAO¹
¹Mississippi State University, Mississippi State, MS, ²University of Nevada School of Medicine, Las Vegas, NV

P-Fr-11**Quantifying The Effects of Decellularization on Liver Perfusion Dynamics**

K. NISHII¹, E. MORAN², G. REESE¹, AND J. SPARKS¹
¹Miami University, Oxford, OH, ²VT-WFU School of Biomedical Engineering and Sciences, Winston Salem, NC

P-Fr-12**Modeling Strain Distributions in Uniaxially Mechanically Loaded Acellular ECM-based Scaffolds**

B. SEIFER¹ AND C. WAGNER¹
¹The College of New Jersey, Ewing, NJ

Track: Biomedical Imaging and Optics**Novel Approaches to Biomedical Imaging****Chairs:** Craig Goergen**P-Fri-329** Single Molecule Tracking *In Vivo* Using Spatiotemporally Multiplexed Two-Photon MicroscopyK. HUYNH¹, E. PERILLO¹, Y-L. LIU¹, H-C. YEH¹, AND A. DUNN¹¹The University of Texas at Austin, Austin, TX**P-Fri-330**

Complex Voltage Measurements With Active Electrodes In Electrical Impedance Tomography

M. MELLENTHIN¹, E. DARIÓ LEÓN BUENO DE CAMARGO², F. SILVA DE MOURA², T. BATISTA RATTIS SANTOS², J. MUELLER¹, AND R. GONZALEZ LIMA²¹Colorado State University, Fort Collins, CO, ²Universidade de São Paulo, São Paulo, Brazil**P-Fri-331**Gold Nanoparticles as Exogenous Soft Tissue Contrast for Live *In Vivo* MicroCT Imaging of Avian MorphogenesisC. GREGG¹, H. ZHAO¹, AND J. BUTCHER¹¹Cornell University, Ithaca, NY**P-Fri-332**

Nanoporous Magnesium Fluoride Substrates for Raman-Compatible Cell Culture

G. MADEJSKI¹ AND J. MCGRATH¹¹University of Rochester, Rochester, NY**P-Fri-333**

Near-Infrared Switchable Fluorescent Nano-capsules for Temperature Sensing and USF Imaging

M. WEI^{1,2}, B. CHENG^{1,2}, V. BANDI^{2,3}, Y. LIU^{1,2}, F. D'SOUZA³, K. NGUYEN^{1,2}, Y. HONG^{1,2}, AND B. YUAN^{1,2}¹University of Texas at Arlington, Arlington, TX, ²The University of Texas Southwestern Medical Center at Dallas, Dallas, TX, ³University of North Texas, Denton, TX**P-Fri-334**Quantification of TiO₂ Nanoparticle Uptake by Single Cells and Distribution Across a Population by Synchrotron X-ray FluorescenceJ. RASHKOW¹, S. PATEL¹, R. TAPPERO², AND B. SITHARAMAN¹¹Stony Brook University, Stony Brook, NY, ²National Synchrotron Light Source, Upton, NY**P-Fri-335**

Fluorescent Based Fiber Optics Imaging On Electrospun Scaffold

E. SAPOZNIK^{1,2}, G. NIU², P. LU³, Y. ZHOU², T. CRISWELL², F. MARINI², Y. XU³, AND S. SOKER^{1,2}¹Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Winston Salem, NC, ²Wake Forest Institute for Regenerative Medicine, Winston Salem, NC, ³Virginia Tech, Blacksburg, VA**P-Fri-336**

3D Surface Imaging of the Human Female Torso in Upright to Supine Positions

G. REECE¹, F. MERCHANT², H. KHATAM^{1,3}, K. RAVI-CHANDRA³, J. WESTON¹, M. FINGERET¹, C. LANE⁴, K. DUNCAN⁴, AND M. MARKEY^{1,3}¹The University of Texas MD Anderson Cancer Center, Houston, TX, ²University of Houston, Houston, TX, ³The University of Texas at Austin, Austin, TX, ⁴dMD, LLC, Atlanta, GA**P-Fri-337**Deeper Two-Photon Microscopy Imaging through Brain Tissue using S₂ State of Chl α in Spinach LeafL. SHI¹, A. RODRIGUEZ-CONTRERAS¹, AND R. ALFANO¹¹City College of New York, New York, NY**Track: Biomedical Imaging and Optics****Optical Imaging and Microscopy****Chairs:** Kaushik Parthasarathi**P-Fri-338**

Near-Infrared Spectroscopic Photoacoustic Microscopy using a Pulsed Multi-Color Source based on Stimulated Raman Scattering

B. WILKINSON¹, T. SHEEHAN¹, AND T. BUMA¹¹Union College, Schenectady, NY**P-Fri-339**

Spectroscopic Photoacoustic Microscopy with a Multi-Color Pulsed Laser using a Multimode Optical Fiber

T. SHEEHAN¹, B. WILKINSON¹, AND T. BUMA¹¹Union College, Schenectady, NY**P-Fri-340**

Well Resolved Two-Phase Optical Clearing by Hyperosmotic Agents: Application for High Resolution Deep Brain Imaging

L. OCHOA¹, A. KHOLODNYKH¹, L. VERGARA¹, G. VARGAS¹, AND M. MOTAMED¹¹University of Texas Medical Branch, Galveston, TX**P-Fri-341**

Tracking Cerebrospinal Fluid Flow in Murine Lateral Ventricles

A. MAGOLD^{1,2}, J. TEO³, AND M. SWARTZ¹¹Swiss Federal Institute of Technology, Lausanne, Switzerland, ²The Weizmann Institute of Science, Rehovot, Israel, ³Khalifa University of Science, Abu Dhabi, United Arab Emirates**P-Fri-342**

Simultaneous Imaging of Oxygen Tension and Blood Flow During Stroke Using a Digital Micromirror Device

C. SULLENDER¹, A. MARK¹, AND A. DUNN¹¹The University of Texas at Austin, Austin, TX**P-Fri-343**

Using Bayesian Analysis to Improve Flow Velocity Measurement Precision in Optical Coherence Tomography

K. ZHOU¹, B. HUANG¹, AND M. CHOMA¹¹Yale University, New Haven, CT**P-Fri-344**Three-photon Excitation Spectra of Fluorescent Dyes for *In Vivo* ImagingD. MILLER¹, F. CIANCHETTI¹, AND A. DUNN¹¹The University of Texas at Austin, Austin, TX**Track: Biomedical Imaging and Optics****Ultrasound****Chairs:** Mario Fabilli**P-Fri-345** 

Relationship between Secondary Radiation Force, Targeted Adhesion, and Microbubbles Acoustic Response in Large Blood Vessels

S. WANG¹, C. WANG¹, F. MAULDIN JR¹, AND J. HOSSACK¹¹University of Virginia, Charlottesville, VA**P-Fri-346**

Ultrasound Imaging of Microfluidic-Produced Microbubbles Directly Injected Into A Mouse Via A Tail Vein Catheter

A. DIXON¹, A. DHANALIWALA¹, D. LIN¹, A. KLIVANOV¹, AND J. HOSSACK¹¹University of Virginia, Charlottesville, VA**P-Fri-347**

High-frequency Side-looking Phased Array for Colorectal Ultrasound Imaging

N. CABRERA-MUNOZ¹, H. KIM¹, J. WILLIAMS¹, AND K. SHUNG¹¹University of Southern California, Los Angeles, CA

P-Fri-348**A Single-Element Ultrasound Viscoelastography System for Point-of-Care Edema Quantification**J. PITRE¹, L. KOZOIL^{1,2}, G. KRUGER¹, W. WEITZEL^{1,2}, AND J. BULL¹¹University of Michigan, Ann Arbor, MI, ²VA Medical Center, Ann Arbor, MI**P-Fri-349****High Frequency Optoacoustic Sensor Based on a Microsphere Resonator**K. HAMMER¹ AND T. BUMA¹¹Union College, Schenectady, NY**P-Fri-350****Optically Activated Ultrasound Contrast Agents for Diagnostic Imaging**A. HANNAH¹ AND S. EMELIANOV¹¹UNIVERSITY OF TEXAS AT AUSTIN, AUSTIN, TX**P-Fri-351****High Frequency Ultrasound Array in Biopsy Needle for Breast Cancer Imaging**T. CUMMINS¹, H. CHOI¹, P. ELIAHOO¹, H. KIM¹, M. YAMASHITA¹, L. LARSEN¹, J. LANG¹, S. SENER¹, J. VALLONE¹, S. MARTIN¹, AND K. SHUNG¹¹University of Southern California, Los Angeles, CA**P-Fri-352****Low-Frequency Radial Imaging Array for Ultrasound-Navigated Spinal Fusion Surgery**A. MANBACHI¹, H. GINSBERG^{1,2}, AND R. COBBOLD¹¹University of Toronto, Toronto, ON, Canada, ²St. Michael's Hospital, Toronto, ON, Canada**P-Fri-353****Automatic Real-Time Reconstruction of 3D Patient Specific Bones from RF Ultrasound Data**M. MAHFOUZ¹, E. ABDEL FATAH¹, AND G. TO¹¹University of Tennessee, Knoxville, TN**P-Fri-354****Synergy Between High-intensity Focused Ultrasound and Ethanol Injection in Thyroid Cancer Ablation *In Vitro* and *In Vivo***H. MURAD¹, N. HOANG¹, K. TSUMAGARI¹, E. KANDIL¹, AND D. KHISMATULLIN¹¹Tulane University, New Orleans, LA**P-Fri-355****Development and Characterization of Tissue-Mimicking Gelatin Phantoms for use with MRgFUS**A. FARRER¹, H. ODÉEN¹, J. DE BEVER¹, B. COATS¹, D. CHRISTENSEN¹, AND A. PAYNE¹¹University of Utah, Salt Lake City, UT**Track: Biomedical Imaging and Optics****X-ray, CT and Nuclear Medicine****Chairs:** Ted Trouard**P-Fri-356****Interior Micro-CT for Radiation Dose Reduction**H. GONG¹ AND G. CAO¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA**P-Fri-357****Hippocampus Layers Imaging of Mouse by Phase Contrast X-Ray CT**T-T. LWIN¹, A. YONEYAMA², R. SHIRAI¹, M. TAGUCHI¹, S. ESASHI¹, T. MATSUSHIMA¹, H. MARUYAMA¹, K. HYODO³, AND T. TAKEDA¹¹Kitasato University, Sagami-hara, Japan, ²Hitachi Ltd, Saitama, Japan, ³High Energy Accelerator Research Organization, Tsukuba, Japan**P-Fri-358****3D White Matter Imaging of Rat Obtained by Phase-Contrast X-Ray CT**T. TAKEDA¹, T-T. LWIN¹, A. YONEYAMA², J. WU¹, R. SHIRAI¹, M. TAGUCHI¹, S. ESASHI¹, T. MATSUSHIMA³, H. MARUYAMA¹, AND K. HYODO⁴¹Kitasato University, Sagami-hara, Japan, ²Hitachi Ltd, Saitama, Japan, ³Kitasato University, Sagami-hara, Japan, ⁴Accelerator Research Organization, Tsukuba, Japan**P-Fri-359****Structural Change of Rat's Spleen by Phase-Contrast X-Ray CT**S. ESASHI¹, A. YONEYAMA², T-T. LWIN¹, M. TAGUCHI¹, T. MATSUSHIMA¹, H. MARUYAMA¹, K. HYODO³, AND T. TAKEDA¹¹Kitasato University, Sagami-hara, Japan, ²Hitachi Ltd, Saitama, Japan, ³High Energy Accelerator Research Organization, Tsukuba, Japan**P-Fri-360****Freeze-Thaw Kidney Imaging by Phase-contrast X-ray CT**M. TAGUCHI¹, A. YONEYAMA², S. TAKEYA³, T-T. LWIN¹, S. ESASHI¹, H. MARUYAMA¹, K. HYODO⁴, AND T. TAKEDA¹¹Kitasato University, Sagami-hara, Japan, ²Hitachi Ltd, Saitama, Japan, ³National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan, ⁴High Energy Accelerator Research Organization, Tsukuba, Japan**P-Fri-361****An Optimized Thresholding Reconstruction Approach for the Lp (0<p<1) Regularization Problem**C. MIAO¹ AND H. YU¹¹Wake Forest University, Winston-Salem, NC**P-Fri-362****Exploring the Spatial Resolution Limits of Positron Emission Tomography Imaging**A. VARSHNEY^{1,2}, T. CAO^{1,2}, AND P. VASKA^{1,2}¹SUNY - Stony Brook University, Stony Brook, NY, ²Brookhaven National Laboratory, Upton, NY**P-Fri-363****Arterial vs Venous Input Function: Full Quantification of IIC-ABP using Positron Emission Tomography**S. ROSSANO¹ AND C. DELORENZO¹¹Stony Brook University, Stony Brook, NY**P-Fri-364** **An Image Processing Protocol for Assessing Longitudinal Growth of Coil Embolized Cerebral Aneurysms and their Corresponding Coil Masses**A. HOPPE¹, D. HASAN¹, AND M. RAGHAVAN¹¹University of Iowa, Iowa City, IA**P-Fri-365****Functional Connectivity Mapping Across The Rodent Cerebral Cortex: Method And Implementation For Animal Autoradiographic Imaging**Y-H. PENG¹, D. HOLSCHNEIDER¹, Y. GUO¹, Z. WANG¹, AND J-M. MAAREK¹¹University of Southern California, Los Angeles, CA**Track: Cancer Technologies, Nano to Micro Technologies****Microtechnologies for Cancer****Chairs:** Kapil Pant, Aram Chung**P-Fri-176** **A Microfluidic Device for Dissociating Tumor Tissue into Single Cells**X. QIU¹, J. DE JESUS¹, M. PENNELL¹, M. TROIANI¹, AND J. HAUN¹¹University of California, Irvine, Irvine, CA**P-Fri-177****A Microfluidic Platform to Evaluate the Role of Vessel Permeability in Tumor Cell Extravasation**L. BLAHA¹, C. ZHANG¹, R. ALANI², M. CABODI¹, AND J. WONG¹¹Boston University, Boston, MA, ²Boston University School of Medicine, Boston, MA

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM, 4:00PM - 5:00PM

P-Fri-178**Tagless Discrimination And Detection Of Cancer Cells Using Solid-State Micropores**A. ILYAS¹, W. ALI¹, J-T. HSIEH², Y. LOTAN², Y-T. KIM¹, AND S. IQBAL¹¹UNIVERSITY OF TEXAS AT ARLINGTON, ARLINGTON, TX, ²UNIVERSITY OF TEXAS SOUTHWESTERN MEDICAL CENTER AT DALLAS, DALLAS, TX**P-Fri-179****Double-Filter Based Enrichment of Circulating Tumor Cells Increases Efficiency and Purity of Captured CTCs**A. SANATI NEZHAD¹, J. HERNANDEZ-CASTRO¹, K. TURNER¹, AND D. JUNCKER¹¹McGill University, Montreal, QC, Canada**P-Fri-180****A Microfluidic Device to Analyze Vascular Dynamics in a Heterogeneous Brain Tumor Microenvironment**M. COX¹ AND S. VERBRIDGE¹¹Virginia Tech, Blacksburg, VA**P-Fri-181****A Microchip Platform for Interrogating Tumor-Immune Cell Communication at the Single-Cell**M. ELITAS¹, K. BROWER², Y. LU¹, J. CHEN¹, AND R. FAN¹¹Yale Univ., New Haven, CT, ²Isoplexis Inc, New Haven, CT**P-Fri-182****Development of a Microfluidic Device to Study the Role of Mechanobiology on Endothelial to Mesenchymal Transformation**S. MINA¹, W. WANG¹, Q. CAO¹, B. MURRAY¹, P. HUANG¹, AND G. MAHLER¹¹Binghamton University, Binghamton, NY**P-Fri-183****A poly(dimethyl siloxane) Microfluidic Device for *in situ* Imaging of Cellular Migration and Invasion in Response to Chemical Signaling**L. LEE¹, S. RAO¹, V. LIN¹, AND J-C. CHIAO¹¹UT Arlington, Arlington, TX**P-Fri-184****High Throughput 3D Cell Migration Assay to Elucidate the Underlying Mechanisms of Metastasis**M-E. BRETT¹ AND D. WOOD¹¹University of Minnesota, Minneapolis, MN**P-Fri-185****Measuring Oxygenation In Intuitive Tumor Tissue Model Using a Gold Microelectrode Array**A. BUBIE¹ AND M. GRATZL²¹Case Western Reserve University, Cleveland Heights, OH, ²Case Western Reserve University, Cleveland, OH**P-Fri-186****Label-Free Viable-Enrichment of Circulating Tumor Cells From Clinical Blood Samples with the FMSA Device**R. HAROUAKA¹, M. ZHOU¹, Y-T. YEH¹, W. KHAN¹, AND S. ZHENG¹¹The Pennsylvania State University, University Park, PA**P-Fri-187****Live Imaging of Microfiltration to Optimize the Purity of Isolated Circulating Tumor Cells**K. TURNER^{1,2}, A. SANATI NEZHAD^{1,2}, J. ALEJANDRO HERNANDEZ-CASTRO^{1,2}, AND D. JUNCKER^{1,2}¹McGill University, Montreal, QC, Canada, ²Genome Quebec Innovation Centre, Montreal, QC, Canada**P-Fri-188****Automated, High Throughput 3D Culture Microtechnology for Anticancer Drug Testing**S. LEMMO¹ AND H. TAVANA¹¹University of Akron, Akron, OH**P-Fri-189****Circulating Pancreatic Cells for Risk Stratification of Patients with Precancerous Pancreatic Cyst Lesions**F. THEGE¹, T. LANNIN¹, T. SAHA², K. DAS³, A. RHIM², AND B. KIRBY^{1,4}¹Cornell University, Ithaca, NY, ²University of Michigan School of Medicine, Ann Arbor, MI, ³Massachusetts General Hospital & Harvard Medical School, Boston, MA, ⁴Weill Cornell Medical College, New York, NY**P-Fri-190****Novel Tunable Functionalized Surface for the Isolation of Tumor Associated Cells**A. ANSARI¹ AND P. IMOUKHUEDE¹¹University of Illinois at Urbana-Champaign, Urbana, IL**Track: Cancer Technologies****Personalized Medicine, Imaging, and Immunoengineering Strategies in Cancer****Chairs:** Catherine Whittington, Gregory Hudalla**P-Fri-191****Novel Immunosensor: Dual Ionophore Concept Based on an Ion Selective Electrode**X. LI¹, C. BERKMAN¹, J. GERUNTHO¹, B. VAN WIE (PI)¹, AND D. KIDWELL²¹Washington State University, Pullman, WA, ²Naval Research Laboratory, SW, DC**P-Fri-192****Decreased T2 Relaxation and Increased Calcification In Articular Cartilage Following Modelled Therapeutic Irradiation At Long-Term Followup**I. HUTCHINSON¹, J. OLSON¹, A. LINDBURG¹, B. COLLINS², T. SMITH¹, M. MUNLEY¹, K. WHEELER¹, AND J. WILLEY¹¹Wake Forest Baptist Health, Winston Salem, NC, ²North Carolina A&T State University, Greensboro, NC**P-Fri-193****A Gold Nanoparticle Contrast Agent for Lung Cancer CT Imaging Using Novel EGFR-Specific VHH Domains**J. ASHTON¹, E. GOTTLIN², E. PATZ², J. WEST¹, AND C. BADEA²¹Duke University, Durham, NC, ²Duke University Medical Center, Durham, NC**P-Fri-194****Development of Shape Coded Hydrogel Micro-particles for Simultaneous Detection of Multiple Biomolecules**M. AL-AMEEN¹, J. LI¹, AND G. GHOSH¹¹University of Michigan Dearborn, Dearborn, MI**P-Fri-195****Study of Synergistic cryo-thermal Treatment Modality Against Metastatic Breast Cancer Through Induction of Long-lasting Immune Responses**P. LIU¹, J. LIU¹, AND L. XU¹¹School of Biomedical Engineering, Shanghai Jiao Tong University, Shanghai, China, People's Republic of**P-Fri-196****Exploring Biomarkers for Point of Care Bladder Cancer Detection**C. WALKER¹, S. SMITH¹, AND D. ZAHAROFF¹¹University of Arkansas, Fayetteville, Fayetteville, AR**P-Fri-197****In Vivo Capture and Label-free Detection of Early Metastatic Cells**J. YI¹, S. AZARIN¹, L. SHEA¹, AND V. BACKMAN¹¹Northwestern University, Evanston, IL**P-Fri-198****Circulating microRNAs Detection in Patients with Hepatocellular Carcinoma by Tethered Lipoplex Nanoparticles (TLN)**X. WANG¹, Z. YANG¹, J. MA¹, K. KWAK¹, R. SULLIVAN¹, C. SCHMIDT¹, AND J. LEE¹¹The Ohio State University, Columbus, OH

P-Fri-199**Tri Partite Motif E3 Ubiquitin Ligase Family Proteins Role in Cancer Mechanics**L. VOLAKIS¹, J. ALLOUSH¹, N. WEISLEDER², AND S. GHADIALI²¹The Ohio State University, Columbus, OH, ²The Wexner Medical Center at The Ohio State University, Columbus, OH**P-Fri-200****Monitoring Protein Synthesis in Live Multiple Myeloma Cells**C. TU¹, Z. SMILANSKY², N. RAJE^{3,4}, AND J. ZOLDAN¹¹University of Texas at Austin, Austin, TX, ²Anima Cell Metrology, Bernardsville, NJ, ³Massachusetts General Hospital, Boston, MA, ⁴Harvard Medical School, Boston, MA**P-Fri-201****Individual CAR⁺ T cells Recycle Effector Functions by Conjugating to Multiple Tumor Cells**N. VARADARAJAN¹, I. LIADI¹, H. SINGH², N. REY-VILLAMIZAR¹, G. ROMAIN¹, B. ROYSAM¹, AND L. COOPER²¹University of Houston, Houston, TX, ²UT MD Anderson Cancer Center, Houston, TX**P-Fri-202****Hyaluronic Acid Derived Fluorescent Imaging Agents with Tunable NIR Emission**S. KELKAR^{1,2}, T. HILL^{1,2}, AND A. MOHS^{1,2,3}¹Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC, ²Wake Forest - Virginia Tech School of Biomedical Engineering and Sciences, Winston-Salem, NC, ³Comprehensive Cancer Center of Wake Forest University, Winston-Salem, NC**P-Fri-203****Analysis of Single Cell Progenies of MDA-MB-231 Cells Reveals Prognostic Gene Signature for Breast Cancer Patients**P-H. WU¹, D. GILKES¹, J. PHILIPS¹, M-H. LEE¹, AND D. WIRTZ¹¹Johns Hopkins University, Baltimore, MD**P-Fri-204****Irreversible Electroporation: Prostate and Pancreatic Cancer Cell Death Threshold Characterization**A. ROLONG¹, K. PROKOP¹, P. GARCIA¹, C. ARENA¹, AND R. DAVALOS¹¹Virginia Tech, Blacksburg, VA**P-Fri-205****Development of Novel Phase Change Electrodes with Metal Foams for Irreversible Electroporation Therapy**K. NITHYANANDAM¹ AND R. MAHAJAN¹¹Virginia Tech, Blacksburg, VA**P-Fri-206****Improved Early Detection Of Ovarian Cancer Using Microfluidic Capture Of Circulating Tumor Cells**M. GODLA¹, I. CARDLE¹, D. GUPTA², AND B. KIRBY¹¹Cornell University, Ithaca, NY, ²Weill Cornell Medical College, New York, NY**P-Fri-208****Enhanced Imaging of Breast Cancer Through Nanodiamonds**L. MOORE^{1,2}, T. TOWSEND¹, T. MEADE^{1,2}, AND D. HO^{3,4}¹Northwestern University, Evanston, IL, ²Northwestern University, Chicago, IL, ³UCLA School of Dentistry, Los Angeles, CA, ⁴UCLA, Los Angeles, CA**Track: Cancer Technologies****Tumor Microenvironment****Chairs:** Edmond Young, Scott Verbridge**P-Fri-161****BRCA1 Repair Complexes in Hereditary Breast Cancer**C. WINTON^{1,2}, B. GILMORE², A. DEMMERT³, AND D. KELLY^{1,2}¹Virginia Tech, Blacksburg, VA, ²Virginia Tech Carilion Research Institute, Roanoke, VA, ³Virginia Tech, Roanoke, VA**P-Fri-162****Substratum Compliance Regulates Tetraploidy in Breast Cancer Cells**A. SIMI¹, D. RADISKY², AND C. NELSON¹¹Princeton University, Princeton, NJ, ²Mayo Clinic Cancer Center, Jacksonville, FL**P-Fri-163****Tumor Activation Alters the Mechano-responsiveness, Capillary Formation, and Drug Sensitivity of Endothelial Cells in Synthetic Matrices**Y. WU¹, B. GUO¹, AND G. GHOSH²¹University of Michigan Dearborn, Dearborn, MI, ²University of Michigan, Dearborn, Dearborn, MI**P-Fri-164****How Normal Breast Epithelial Cells Induce a Highly Protrusive and Invasive Phenotype in Breast Carcinoma Cells**M. LEE¹, P-H. WU¹, AND D. WIRTZ¹¹JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD**P-Fri-165****Malignant Breast Tumor Cell Adhesion and Transmigration through Organ-specific Microvascular Endothelium**J. FAN¹ AND B. FU¹¹The City College of the City University of New York, New York, NY**P-Fri-166****Cancer Cell Migration in Response to Soluble Chemical Gradient and Micropatterned Surface Cues**R. NATIVIDAD¹ AND A. ASTHAGIRI¹¹NORTHEASTERN UNIVERSITY, BOSTON, MA**P-Fri-167****Effects of Glucose Concentration on Fibrillogenesis in Breast Epithelial Cells**B. MARTINEZ¹, L. GRIGGS¹, M. ZHAO², L. ELMORE², AND C. LEMMON¹¹Virginia Commonwealth University, Richmond, VA, ²Virginia Commonwealth University Health System, Richmond, VA**P-Fri-168**

CANCELLED BY AUTHOR

P-Fri-169**The Role of Adhesive Interactions with Osteoblasts for Ex Vivo Maintenance of Patient Multiple Myeloma Cells**W. ZHANG¹, J. ZILBERBERG², Y. GU¹, Q. SUN¹, P. TOLIAS¹, AND W. LEE¹¹Stevens Institute of Technology, Hoboken, NJ, ²Hackensack University Medical Center, Hackensack, NJ**P-Fri-171****MAP Kinase Drug Therapies Differentially Effect Melanoma Adhesion and the ECM During Metastasis**B. BLEHM¹, Y. KOTOBUKI¹, A. AFASIZHEVA¹, W. VIEIRA¹, AND K. TANNER¹¹National Institutes of Health, Bethesda, MD**P-Fri-172****Fibroblast Mediated Matrix Remodeling and Cancer Metastasis**V. SHUKLA¹, M. SCHICKEL¹, Z. FELICIANO-MUNIZ¹, AND S. GHADIALI^{1,2}¹The Ohio State University, Columbus, OH, ²Wexner Medical Center at The Ohio State University, Columbus, OH**P-Fri-173****Obesity-Associated Inflammation And Its Effect On Adipose Stromal Cells**N. SPRINGER¹, B. SEO¹, AND C. FISCHBACH¹¹Cornell University, Ithaca, NY**P-Fri-174****Investigating Breast Cancer Cell Behavior Using Tissue Engineering Scaffolds**K. GUIRO¹ AND T. ARINZEH¹¹New Jersey Institute of Technology, Newark, NJ

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM, 4:00PM - 5:00PM

P-Fri-175**Endothelial Cell Invasion Dependency on Extracellular Matrix Microstructure and Geometry**Y. HOSSEINI¹, S. VERBRIDGE¹, AND M. AGAH¹¹Virginia Tech, Blacksburg, VA**Track: Cardiovascular Engineering****Angiogenesis, Microvasculature and Lymphatics****Chairs:** Hyunjoon Kong, Keith Neeves**P-Fri-397****Investigating the Role of Sphingosine-1-Phosphate and Hypoxia on Mature and Progenitor Endothelial Cells**P. WILLIAMS¹ AND E. SILVA¹¹University of California, Davis, Davis, CA**P-Fri-398****Large Scale Microscopy Reveals New Mechanisms of Angiogenesis**U. UTZINGER¹, B. BAGGETT¹, J. WEISS², AND J. HOYING³¹University of Arizona, Tucson, AZ, ²University of Utah, Utah, UT, ³University of Louisville, Louisville, KY**P-Fri-399****Porous Microparticles for Cell Delivery in Tissue Regeneration**A. KURIAKOSE¹, J. MENON¹, AND K. NGUYEN¹¹University of Texas at Arlington, Arlington, TX**P-Fri-400****Urethane Doped Polyester (UPE) Based Nanoparticle Scaffolds for the Treatment of Peripheral Arterial Disease**D. THAKORE¹, P. PUNNAKITIKASHEM¹, R. TRAN², J. YANG², AND K. NGUYEN¹¹The University of Texas at Arlington, Arlington, TX, ²The Pennsylvania State University, University Park, PA**P-Fri-401****Peristaltic Flow in the Glymphatic System**J. GROTBORG¹ AND V. SURESH²¹University of Michigan, Ann Arbor, MI, ²University of Auckland, Auckland, New Zealand**P-Fri-402****A Novel Approach to Study Contraction-Induced Relaxation in Lymphatic Vessels**A. ROSALES¹, F. YU¹, Y. THAKKER¹, T. LAM¹, T. HOOD¹, C. QUICK¹, AND R. DONGAONKAR¹¹Michael E. DeBakey Institute, Texas A&M University, College Station, TX**P-Fri-403****Filariasis Millifluidic Platform for Minimizing Blood Volume During Mosquito Feeding**T. SPENCER¹, A. MOORHEAD², AND B. DIXON¹¹Georgia Institute of Technology, Atlanta, GA, ²UGA College of Veterinary Medicine, Athens, GA**P-Fri-404****Characterizing the Simultaneous Effects of Shear Stress and Transmural Pressure on Lymphatic Pumping**H. PARISEAU¹, D. DANG¹, J. WHITE¹, C. QUICK¹, AND R. DONGAONKAR¹¹Michael E. DeBakey Institute, Texas A&M University, College Station, TX**P-Fri-405****Calcium Oscillations and Waves in Vascular Cells: Mechanisms of Initiation and Modulation**J. PARIKH¹, A. KAPELA¹, AND N. TSOUKIAS¹¹Florida International University, Miami, FL**P-Fri-406****Non-invasive Assessment of an Engineered Endothelium via Iron Oxide Nanoparticles and Magnetic Resonance Imaging**B. JIANG¹, D. KATS¹, T. MEADE¹, AND G. AMEER¹¹Northwestern University, Evanston, IL**P-Fri-407****Mechanisms of Flow-dependent Endothelial COX-2 and PGI₂ Expression**S. RUSSELL-PULERI¹, E. EBONG², AND J. TARBELL¹¹City College of New York, New York, NY, ²Northeastern University, Boston, MA**P-Fri-408****Microvascular Degeneration Predicted from Reduced Pulsatility**S. AHMED¹, T. BIMAL¹, P. NGUYEN¹, E. TUZUN¹, S. COQUIS-KNEZEK¹, AND C. QUICK¹¹Michael E. DeBakey Institute, Texas A&M University, College Station, TX**P-Fri-409****Endothelial Cells are Influenced by Simvastatin Therapy when Exposed to Static and Laminar Flow Conditions**M. DICK^{1,2}, J.-C. TARDIF², AND R. LEASK^{1,2}¹McGill University, Montreal, QC, Canada, ²Montreal Heart Institute, Montreal, QC, Canada**Track: Cardiovascular Engineering, Tissue Engineering****Cardiovascular Regeneration and Functional Restoration****Chairs:** Milica Radisic, Jun Liao**P-Fri-366****A Thermo-Responsive, Self-Adhesive Injectable Scaffold for iPSC-Derived Cardiomyocyte Delivery**X. WANG¹, L. ZHONG¹, Y. CHUN¹, C. LIM¹, C. HONG¹, S. MALTAIS¹, AND H.-J. SUNG¹¹Vanderbilt University, Nashville, TN**P-Fri-367****Mitochondrial Transfer From a Stem Cell to a Cardiomyocyte via Tunneling Nanotube**H. YANG¹, R. RUNYAN², T. BORG³, R. MARKWALD³, AND B. GAO¹¹Clemson University, Clemson, SC, ²University of Arizona, Tucson, AZ, ³Medical University of South Carolina, Charleston, SC**P-Fri-368****Engineered Cell Therapy with Embryonic Stem Cell-derived Cardiomyocytes Encapsulated in Injectable Nanomatrix Gel Enhanced Engraftment and Promoted Cardiac Repair in Experimental Myocardial Infarction**K. BAN¹, H.-J. PARK^{1,2}, S. KIM¹, A. ANDUKURI¹, H.-W. JUN³, AND Y.-S. YOON¹¹Emory University, Atlanta, GA, ²The Catholic University, Seoul, Korea, Republic of, ³University of Alabama, Birmingham, AL**P-Fri-369****Wireless Electrical Signal Recording for Neonatal Mouse Model of Heart Regeneration**T. BEEBE¹, Y. ZHAO², H. CAO³, H. ZHANG⁴, X. ZHANG², H. CHANG⁴, C.-L. LIEN⁵, Y.-C. TAI², AND T. HSIAI^{1,3}¹UCLA School of Engineering & Applied Sciences, Los Angeles, CA, ²California Institute of Technology, Pasadena, CA, ³UCLA School of Medicine, Los Angeles, CA, ⁴Northwestern Polytechnical University, Xi'an, China, People's Republic of, ⁵Children's Hospital Los Angeles, Los Angeles, CA**P-Fri-370****Differentiation of Human Progenitor Cells on Decellularized Cardiac Tissue**R. THIBAUT¹, E. CHAU¹, A. GORDON², A. GOBIN¹, M. RESENDE¹, R. SCHWARTZ¹, AND D. TAYLOR¹¹Texas Heart Institute, Houston, TX, ²Rice University, Houston, TX

P-Fri-371**An Injectable Hydrogel with bFGF Release to Augment Cardiosphere-derived Cell Survive and Angiogenesis Under Ischemic Conditions**X. LI¹, Z. FAN¹, M. FU¹, Y. XU¹, AND J. GUAN¹¹Ohio State University, Columbus, OH**P-Fri-372****Investigation of Drug-Induced Congenital Heart Defects Using Human Pluripotent Stem Cell Derived Cardiomyocytes**C. RIGDON¹, P. KERSCHER¹, AND E. LIPKE¹¹Auburn University, Auburn University, AL**P-Fri-373****Preclinical Performance of the PediaFlow® Pediatric VAD - A Potential Breakthrough Clinical Device**S. OLIA^{1,2}, V. SHANKARRAMAN², T. MAUL^{1,2,3}, E. KOCYILDIRIM², S. SNYDER⁴, J. VERKAIK⁴, D. PADEN⁴, W. WAGNER^{1,2}, J. ANTAKI^{2,5}, M. KAMENEVA^{1,2}, P. WEARDEN^{2,3}, AND H. BOROVIETZ^{1,2}¹University of Pittsburgh Department of Bioengineering, Pittsburgh, PA, ²McGowan Institute for Regenerative Medicine, Pittsburgh, PA, ³Children's Hospital of Pittsburgh, Pittsburgh, PA, ⁴Launchpoint Technologies, Goleta, CA, ⁵Carnegie Mellon University Department of Biomedical Engineering, Pittsburgh, PA**P-Fri-374****Total Artificial Heart and Mock Circulation System: A Training Tool for Ventricular Assist Devices**K. DECOOK¹, J. GAMBOA¹, P. TRAN¹, R. SMITH¹, D. BURKHOF², AND M. SLEPIAN¹¹University of Arizona, Tucson, AZ, ²Columbia University, New York, NY**P-Fri-375****Prohealing Multifunctional Endothelium Nanomatrix Coated Stents**G. ALEXANDER¹, A. ANDUKURI¹, Y-D. SOHN², Y-S. YOON², B. BROTT¹, P. ANDERSON¹, AND H-W. JUN¹¹University of Alabama at Birmingham, Birmingham, AL, ²Emory University, Atlanta, GA**P-Fri-376****Cardiovascular Assist Device Shear Stresses Induce Pro-thrombotic Microparticle Formation**A. MEYER¹, R. KAMUCHEKA¹, P. NAIR², K. REDDOCH^{2,3}, R. MONTGOMERY³, B. PARIDA³, A. CAP³, N. MACKMAN⁴, AND A. RAMASUBRAMANIAN²¹UT Health Science Center, San Antonio, TX, ²UT San Antonio, San Antonio, TX, ³U.S. Army Institute of Surgical Research, San Antonio, TX, ⁴University of North Carolina, Chapel Hill, NC**P-Fri-377****Potential Thrombogenic Impacts of the Radial Orientations of Inflow and Outflow Cannulae with Respect to the HeartMate II VAD**W-C. CHIU¹, S. EINAV¹, A. MCLARTY¹, M. SLEPIAN^{1,2}, AND D. BLUESTEIN¹¹Stony Brook University, Stony Brook, NY, ²University of Arizona, Tucson, AZ**P-Fri-378****Reynolds Stress Assessment in the LVAD-Assisted Heart using High-Speed PIV**M. RAZAZ ZADEH¹, A. FALAHATPISHEH², A. KHERADVAR², AND K. MAY-NEWMAN¹¹San Diego State University, San Diego, CA, ²University of California, Irvine, Irvine, CA**P-Fri-379****Effect of Environmental Dynamics on Bioresorbable Vascular Scaffold Performance**J. FERDOUS¹, V. KOLACHALAMA², N. FATEMATUZZAHAN¹, AND T. SHAZLY¹¹University of South Carolina, Columbia, SC, ²Charles Stark Draper Laboratory, Cambridge, MA**P-Fri-380****Comparison of Blood Damage Indices in a Heart Assist Device Using CFD with Different Flow Models**M. HECK¹, T. SNYDER², D. PAPAVALIIOU¹, E. O'REAR¹, AND D. SCHMIDTKE¹¹University of Oklahoma, Norman, OK, ²VADovations, Inc., Norman, OK**P-Fri-381****3D Printed Heart Models and Their Potential in Heart Surgery**K. DAS¹ AND H. CHITTAM¹¹University of South Florida, Tampa, FL**P-Fri-382****Efficiency of Protease-Activatable Viruses for Cardiovascular Disease Tuned via Incorporation of Wild-type Capsid Subunits**M. HO¹, M. LAM¹, M. YAMAGAMI¹, AND J. SUH¹¹Rice University, Houston, TX**Track: Cardiovascular Engineering****Heart Valves and Stents****Chairs:** Aaron Baker, Craig Goergen**P-Fri-383****Effects Of Short-term Exposure of Estrogen On Smooth Muscle Cells Proliferation**J. BETALA¹, J. LEE¹, E. LANGAN², AND M. LABERGE¹¹Clemson University, Clemson, SC, ²Greenville hospital system, Greenville, SC**P-Fri-384****Hydroxyapatite Nanoparticles Enhance Osteoblastic Differentiation of Valvular Interstitial Cells in 3D Culture**J. RICHARDS¹, J. RUSS¹, L. ESTROFF¹, AND J. BUTCHER¹¹Cornell University, Ithaca, NY**P-Fri-385****Nutrient Transport During Engineered Heart Valve Tissue Exposure to Steady Flow**M. SALINAS¹, V. UNNIKRISHNAN², AND S. RAMASWAMY¹¹Florida International University, Miami, FL, ²The University of Alabama, Tuscaloosa, AL**P-Fri-386****Aortic Valve Endothelial to Mesenchymal Transformation is Induced by Altered Extracellular Matrix Composition**S. DAHAL¹ AND G. MAHLER¹¹Binghamton University, Binghamton, NY**P-Fri-387****Porcine Pericardium As A Biomaterial For Bioprosthetic Venous Valves**L. MAGANINI¹ AND N. VYAVAHARE¹¹Clemson University, Clemson, SC**P-Fri-388****Valve Interstitial Cell Remodeling Under Abnormal Mechanical Stress Is Mediated By 5HT and FGF2 Signaling**N. LAM¹, J. CARRADINI¹, S. SHARMA², AND K. BALACHANDRAN¹¹University of Arkansas, Fayetteville, AR, ²University of Arkansas for Medical Sciences, Little Rock, AR**P-Fri-389****Coaxially Electrospun Biohybrid Nanofibrous Scaffolds for Vascular Regeneration**N. NAGIAH¹ AND W. TAN¹¹University of Colorado, Boulder, CO**P-Fri-390****Properties of Graphene-Silicone Prosthetic Heart Valves**M. LORDEUS¹, A. ESTRADA¹, D. STEWART¹, R. DUA¹, C. ZHANG¹, A. AGARWAL², AND S. RAMASWAMY¹¹Florida International University, Miami, FL, ²Indian Institute of Technology, New Delhi, India**P-Fri-391****Novel Magnesium-based Stent Biomaterials with Anticorrosion and Drug-eluting Coatings**J. MA¹, N. ZHAO¹, AND D. ZHU¹¹North Carolina A&T State University, Greensboro, NC

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM, 4:00PM - 5:00PM

P-Fri-392

Effective Gene Delivery to Heart Valve Cells Using Adeno-associated Virus
F. WONG¹, M. HO¹, J. SUH¹, AND J. GRANDE-ALLEN¹

¹Rice University, Houston, TX

P-Fri-393

Pharmacokinetic Evaluation of Non-Stent Drug Delivery: An *In Vitro* System For Rapid Evaluation

M. ATIGH¹ AND S. YAZDANI¹

¹University of South Alabama, Mobile, AL

P-Fri-394

Tricuspid Valve Leaflet Force on the Annulus after Clover Repair

A. BASU¹ AND Z. HE¹

¹Texas Tech University, Lubbock, TX

P-Fri-395

Fabrication Of Human Serum Albumin Nanofilm For Enhanced Hemocompatibility And Vascular Smooth Muscle Cell Response

A. KHANNA¹, I. LUZINOV¹, F. VATANSEVER¹, E. LANGAN III², AND M. LABERGE¹

¹Clemson University, Clemson, SC, ²Greenville Health System, Greenville, SC

P-Fri-396

Design of an Echocardiographic Benchtop Testing Phantom Replicating Tricuspid Regurgitation (TR)

H. O' GRADY¹, M. GILMORE², AND P. DELASSUS¹

¹Galway Mayo Institute of Technology (GMIT), Galway, Ireland, ²TECH Cardio Ltd., Galway, Ireland

Track: Cardiovascular Engineering, Biomechanics

Hemodynamics, Vascular Mechanics and Flow Modelling

Chairs: Eno Ebong, Danial Shahmirzadi

P-Fri-557

Evaluation of the Time Course of Aortic Aneurysm Residual Stress in Apolipoprotein E-deficient Mice

R. PEATTIE¹, C. KAHN², Y. ZHANG¹, J. GALPER¹, AND L. DORFMANN²

¹Tufts Medical Center, Boston, MA, ²Tufts University, Medford, MA

P-Fri-558

Maximum Circumference Detects Nonhomogeneous Sac Expansion In Abdominal Aortic Aneurysm

R. S. NOMOTO¹, M. IAFRATI², L. DORFMANN², AND R. PEATTIE²

¹Tufts University, Boston, MA, ²Tufts Medical Center, Boston, MA, ³Tufts University, Medford, MA

P-Fri-559

Feasibility of Pulsatile Flow in *Ex Vivo* Lung Perfusion

K. ZOELLER¹, E. SCHUMER¹, P. LINSKY¹, M. SOBIESKI II¹, G. MONREAL¹, K. SOUCY¹, G. GIRIDHARAN¹, S. KOENIG¹, M. SLAUGHTER¹, AND V. VAN BERKEL¹

¹University of Louisville, Louisville, KY

P-Fri-560

Integrating Biomechanics and Mechanobiology to Predict Cardiac Contractility in a Closed-Loop System

C. NWOKOCHA¹, J. SCHUELER¹, M. VILLARREAL¹, D. WESTRA¹, T. DUONG¹, C. QUICK¹, AND R. STEWART¹

¹Michael E. DeBakey Institute, Texas A&M University, College Station, TX

P-Fri-561

Cardiovascular Mechanical Properties Affect Regression of the Ductus Arteriosus

H. AHMED¹, F. HISE¹, U. CHIKHLIYA¹, C. QUICK¹, AND R. STEWART¹

¹Michael E. DeBakey Institute, Texas A&M University, College Station, TX

P-Fri-562

Regulation of Vascular Tone via Localized Calcium Signaling in Myoendothelial Projections

J. PARIKH¹, A. KAPELA¹, AND N. TSOUKIAS¹

¹Florida International University, Miami, FL

P-Fri-563

Dynamic Models of Cerebral Hemodynamics used for Diagnosis of Alzheimer's Disease

Y. KANG¹, D. SHIN¹, J. CLAASSEN², R. ZHANG³, AND V. MARMARELIS¹

¹University of Southern California, Los Angeles, CA, ²Radboud University, Nijmegen Medical Center, Nijmegen, Netherlands, ³University of Texas, Southwestern Medical Center, Dallas, TX

P-Fri-564

Assumed Pressure Pulse Augmentation Can Originate from the Heart

P. THERIOT¹, G. OSA¹, T. DUNN¹, S. WALLOOPPILLAI¹, M. MOHUDDIN¹, AND C. QUICK¹

¹Michael E. DeBakey Institute, Texas A&M University, College Station, TX

P-Fri-565

Survival Analysis for Estimating Abdominal Aortic Aneurysm Rupture

M. THIRUGNANASAMBANDAM¹ AND E. FINOL¹

¹University of Texas at San Antonio, San Antonio, TX

P-Fri-566

Increasing Differential Sensitivity to Preload and Afterload of LVADs Operated in Pulsatile Mode

M. MCDOWALL¹, A. WORKMAN¹, H. ADELEKE¹, O. SARWAR¹, S. COQUIS-KNEZEK¹, AND C. QUICK¹

¹Michael E. DeBakey Institute, Texas A&M University, College Station, TX

P-Fri-567

Effects Of Hemodynamic Factors On Hemolysis In Shear Flows

Q. NGUYEN¹, E. O' REAR¹, D. SCHMIDTKE¹, D. PAPAVALIOLIOU¹, AND T. SNYDER²

¹The University of Oklahoma, Norman, OK, ²Advanced Cardiac Care, INTEGRIS Baptist Medical Center, Oklahoma city, Oklahoma, OK

P-Fri-568

Design and Calibration of Transducers for Aortic Root Force Measurement

T. BECHSGAARD^{1,2}, S. LAUGENSEN², J. HONGE², H. NYGAARD², S. NIELSEN², AND P. JOHANSEN^{1,2}

¹Aarhus University, Aarhus N, Denmark, ²Aarhus University Hospital, Aarhus N, Denmark

P-Fri-569

Elevated Arterial Wall Permeability May Cause Vulnerable Plaque Formation In Mice

Z. MOHRI¹, E. ROWLAND², L. CLARKE², A. DE LUCA², V. PEIFFER², S. SHERWIN², R. KRAMS², AND P. WEINBERG²

¹Imperial College London, London, United Kingdom, ²Imperial College London, London, United Kingdom

P-Fri-570

Renal Blood Flow Distribution Assayed by Indicator-Dilution Method and Morphometric Model Analysis.

J. BUKOWY¹, L. EVANS¹, A. COWLEY¹, AND D. BEARD²

¹Medical College of Wisconsin, Milwaukee, WI, ²University of Michigan, Ann Arbor, MI

P-Fri-571

The Structural Determinants of Hemostatic Thrombi

J. WELSH¹, T. STALKER¹, L. BRASS¹, AND S. DIAMOND¹

¹University of Pennsylvania, Philadelphia, PA

P-Fri-572

A Quantitative Test of the Efficient Transport Network Hypothesis in the Cerebral Vasculature

D. KUDLIK¹ AND P. DREW¹

¹Pennsylvania State University, University Park, PA

P-Fri-573

Modeling Compensatory Mechanisms to Maintain Homeostasis During Moderate Blood Loss

M. WU¹, Y. TONG¹, K. DUPREE¹, T. STILES¹, AND C. QUICK¹

¹Michael E. DeBakey Institute, Texas A&M University, College Station, TX

P-Fri-574**A Novel Approach to Modeling Acute Normovolemic Hemodilution**B. PLISKOW¹ AND M. KAYA¹¹Florida Institute of Technology, Melbourne, FL**P-Fri-575****Simple Analytical Model to Predict Critical Hemodynamic Parameters in Fontan Patients**O. OKOSE¹, M. SHIMAZAKI¹, J. NGUYEN¹, K. MCFADDEN¹, M. MOHUIDDIN¹, AND C. QUICK¹¹Michael E. DeBakey Institute, Texas A&M University, College Station, TX**P-Fri-576****Novel Approach to Optimize both Simplicity and Accuracy when Simplifying Complex Algebraic Models**C. MASON¹, W. WILDER¹, A. WILKERSON¹, A. GARCIA¹, M. MOHUIDDIN¹, R. STEWART¹, AND C. QUICK¹¹Michael E. DeBakey Institute, Texas A&M University, College Station, TX**P-Fri-577****Mechanical Determinants of Acceptable Blood Volume Ranges in Heart Failure Patients**A. MORFIN¹, F. DALAL¹, S. KAMP¹, A. ARMSTRONG¹, M. RICHTER¹, T. STILES¹, AND C. QUICK¹¹Michael E. DeBakey Institute, Texas A&M University, College Station, TX**P-Fri-578****Patient-specific Computational Fluid Dynamic Modelling of Pulmonary Artery Stenosis**M. DONG¹, E. KUNG¹, J. FEINSTEIN², AND A. MARSDEN¹¹University of California, San Diego, La Jolla, CA, ²Stanford University, Stanford, CA**P-Fri-579****Patient Specific Models of Aortic Dissection**V. FLAMINI¹, S. GALLOT LAVALLEE^{1,2}, S. MADDALO³, A. DEANDA³, AND B. GRIFFITH^{3,4}¹New York University, Brooklyn, NY, ²La Sapienza, Universita; di Roma, Rome, Italy, ³New York University, New York, NY, ⁴University of North Carolina, Chapel Hill, Chapel Hill, NC**P-Fri-580****The Effect of Vascular Curvature on Blood Flow and Oxygen Transport in Arterio-Venous Fistulae**L. GRECHY¹, F. IORI¹, R. CORBETT¹, W. GEDROYC², N. DUNCAN¹, C. CARO¹, AND P. VINCENT¹¹Imperial College London, London, United Kingdom, ²St Mary Hospital, London, United Kingdom**P-Fri-581****Stiffening Right Ventricle Helps Relieving Respiratory Failure After Acute Kidney Injury (AKI)**Z. MENG¹, H. CRAWFORD¹, L. TUFTS¹, C. HAHN¹, S. JOHNSON¹, AND B. POSKEVICH¹¹Michael E. DeBakey Institute, Texas A&M University, College Station, TX**P-Fri-582****Regulation of ATP and ROS Production by Stretch Fluctuations in Vascular Smooth Muscle Cells**E. BARTOLAK-SUKI¹ AND B. SUKI¹¹Boston University, Boston, MA**P-Fri-583****Mechanisms of Phenotypic Change of Vascular Smooth Muscle Cells to Osteoblast Like Cells in Vascular Calcification**P. NAHAR¹, N. GOHAD¹, AND N. VYVAHARE¹¹Clemson University, Clemson, SC**P-Fri-584****Force Derived Appplanation Tonometry for High and Low Deflections In a Phantom Vessel**G. DRZEWIECKI¹, G. SATHISH KRISHNA¹, AND H. KATTA¹¹Rutgers University, Piscataway, NJ**P-Fri-585****Effect of Sleep Apnea Event Duration on Concomitant Rise in Blood Pressure and Cerebral Blood Flow**S. MANCHIKATLA¹, R. ALEX¹, D. WATENPAUGH^{2,3}, R. ZHANG⁴, E. ALTUWAIJRI¹, AND K. BEHBEHANI¹¹UT Arlington, Arlington, TX, ²Sleep Consultants, Ft. Worth, TX, ³Sleep Consultants, Fort Worth, TX, ⁴UT Southwestern Medical Center Dallas, Dallas, TX**P-Fri-586****Melding Experimental Protocol and Mathematical Representation in the Fürth-Ornstein-Taylor Equation**E. ECKSTEIN¹, M. LEGGAS², B. MA³, J. LAVINE⁴, AND J. GOLDSTEIN¹¹University of Memphis, Memphis, TN, ²University of Kentucky, Lexington, KY, ³University of Vermont, Burlington, VT, ⁴Bunker Hill Community College, Charlestown, MA**Track: Cellular and Molecular Bioengineering****Immunoengineering and Extracellular Matrix Interactions****Chairs:** Kent Leach, Hanjoong Jo**P-Fri-49****Design and Selection of an MBP-Specific T-Cell Receptor in order to Abrogate Autoreactive Immune Attack in Multiple Sclerosis**E. LEONARD¹, K. ENTZMINGER¹, J. FOGARTY¹, B. ROY¹, AND J. MAYNARD¹¹University of Texas at Austin, Austin, TX**P-Fri-50****High Fc Density Particles Result in Binary Complement Activation but Tunable Macrophage Phagocytosis**T. SULCHEK¹, P. PACHECO¹, C. PANTOJA¹, A. MYLARAPU¹, AND D. WHITE²¹Georgia Tech, Atlanta, GA, ²USDA, Ames, GA**P-Fri-51****Accurate and Quantitative Immune Repertoire Sequencing using Unique Molecular Identifiers**N. JIANG¹, D. WU¹, M. QU¹, AND B. WENDEL¹¹THE UNIVERSITY OF TEXAS AT AUSTIN, AUSTIN, TX**P-Fri-52****Sinusoidal Wavy Surfaces for Curvature-guided Migration of T Lymphocytes**K. SONG¹, S. PARK¹, D. KIM¹, AND J. DOH¹¹POSTECH, Pohang, Korea, Republic of**P-Fri-53****Substrate Stiffness Promotes Endothelial Senescence**J. FU¹, T. CHEUNG¹, AND G. TRUSKEY¹¹Duke University, Durham, NC**P-Fri-54****Single-cell Force Spectroscopy as a Technique to Quantify Erythrocyte Cytoadhesion and Biochemical Modulation**J. MACIASZEK^{1,2}, K. PARTOLA¹, B. ANDEMARIAM³, AND G. LYKOTRAFITIS¹¹University of Connecticut, Storrs, CT, ²St. Jude Children's Research Hospital, Memphis, TN, ³University of Connecticut Health Center, Farmington, CT**P-Fri-55****Dynamic Micropatterning of Cells on Nanostructured Surfaces Using a Cell-friendly Photoresist**S. KWEON¹, K. SONG¹, J. CHOI¹, AND J. DOH¹¹POSTECH, pohang, Korea, Republic of**P-Fri-56****Connexin43 Mimetic Peptides for use in Breast Reconstructive Scar Reduction**K. DEGEN¹, M. RHETT², M. YOST², K. MOYER³, AND R. GOURDIE^{1,4}¹Virginia Tech, Blacksburg, VA, ²Medical University of South Carolina, Charleston, SC, ³Carilion Clinic, Roanoke, VA, ⁴Virginia Tech Carilion Research Institute, Roanoke, VA

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM, 4:00PM - 5:00PM

P-Fri-57**The Induction of EMT In Correlation With The Secretion of LTBP-1 In Mammary Epithelial Cells**R. MALIK¹, L. GRIGGS¹, AND C. LEMMON¹¹Virginia Commonwealth University, Richmond, VA**P-Fri-58****Embolism Coil Geometry Modulates Cell-Matrix Interactions**B. EARNEST¹, E. NAGEL¹, A. EVANS¹, AND B. HELMKE¹¹University of Virginia, Charlottesville, VA**P-Fri-59****PMEDSAH is a Polyzwitterionic, Non-fouling Material that Supports Pluripotent Cell Growth**T. AYDIN¹, L. VILLA¹, R. KUMAR¹, J. LAHANN¹, AND P. KREBSBACH¹¹University of Michigan, Ann Arbor, MI**P-Fri-60****Sphingolipid Dysregulation Initiates Myeloid Cell Activation in Sickle Cell Disease**A. LANE¹, A. AWOJODOU¹, Y. ZHANG¹, AND E. BOTCHWEY¹¹Georgia Institute of Technology, Atlanta, GA**P-Fri-61****Exogenous Delivery of Indoleamine 2,3 Dioxygenase for the Induction of Tolerance**E. BRACHO-SANCHEZ¹, J. LEWIS¹, AND B. KESELOWSKY¹¹University of Florida, Gainesville, FL**P-Fri-62****A Microwell System for Detection of Cytokines Secreted by Single Adherent Macrophages**F. MCWHORTER¹ AND W. LIU¹¹University of California, Irvine, Irvine, CA**Track: Cellular and Molecular Bioengineering, Bioinformatics, Computational and Systems Biology****Molecular Bioengineering, Systems and Synthetic Biology****Chairs:** B. Rita Alevriadou, Stacey Finley**P-Fri-272****A Small Molecule-Peptide Hybrid Screening Technique Using Selenocysteine Phage Display**J. BEECH¹, H. FIGLER¹, J. LINDEN², C. NOREN³, L. SALEH³, AND K. KELLY¹¹University of Virginia, Charlottesville, VA, ²La Jolla Institute, La Jolla, CA, ³New England Biolabs, Ipswich, MA**P-Fri-273****Scaffold Residues of Monobody-Maltose Binding Protein 74 (MBP74) are Critical for Binding with its Ligand**D. SHEA¹, L.-L. CHEUNG^{1,2,3}, N. NICHOLS¹, A. DATE¹, M. OSTERMEIER^{1,2}, AND K. KONSTANTOPOULOS^{1,2,3,4}¹Department of Chemical and Biomolecular Engineering, The Johns Hopkins University, Baltimore, MD, ²Johns Hopkins Institute for NanoBioTechnology, Baltimore, MD, ³Johns Hopkins Physical Sciences-Oncology Center, Baltimore, MD, ⁴Johns Hopkins Center of Cancer Nanotechnology Excellence, Baltimore, MD**P-Fri-274****Characterization Of Autocatalytic Activation Of Influenza Hemagglutinin**M. VALVERDE¹, M. BALTZ², J. PRICE³, J. LEE³, AND E. BODER¹¹University of Tennessee, Knoxville, TN, ²Cornell University, Ithaca, NY, ³University of Delaware, Newark, DE, ⁴MedImmune, Inc., Gaithersburg, MD**P-Fri-275****Green and Black Tea Polyphenols Mechanistically Inhibit Amyloid- β Aggregation in Alzheimer's Disease**S. CHASTAIN¹, K. PATE¹, AND M. MOSS¹¹University of South Carolina, Columbia, SC**P-Fri-276****RNA Enzymes as Potential Tools for Artificial Gene Regulation**R. POU DYAL¹, M. CALLAWAY¹, AND D. BURKE¹¹University of Missouri, Columbia, MO**P-Fri-277****Quantitative Profiling of Angiogenic Receptors on Human Dermal Fibroblasts**S. CHEN¹ AND P. IMOUKHUEDE¹¹University of Illinois at Urbana-Champaign, Champaign, IL**P-Fri-278****Intracellular Delivery of Macromolecules Using Ultrahigh Frequency Ultrasound**S. YOON¹, M. KIM¹, N. CABRERA-MUNOZ¹, H. KIM¹, AND K. SHUNG¹¹University of Southern California, Los Angeles, CA**P-Fri-279****Engineering Quorum-sensing Crosstalk to Generate Complex Responses of Synthetic Gene Networks**F. WU¹, D. MENN¹, AND X. WANG¹¹Arizona State University, Tempe, AZ**P-Fri-280****Tuning Molecular Self-Assembly by Leveraging Synthetic Biology to Optimize Biomedical Materials**R. ZHANG¹ AND W. RUDER¹¹Virginia Tech, Blacksburg, VA**P-Fri-281****Spatial Segregation of Synthetic Biological Circuit Output using Droplet-based Microfluidics**S.-H. PAEK¹ AND W. RUDER¹¹Virginia Tech, Blacksburg, VA**P-Fri-282****Aglycosylated Antibody Engineering for Novel Effector Functions**T. KANG¹, S. JUNG², W. KELTON¹, AND G. GEORGIU¹¹The University of Texas at Austin, Austin, TX, ²Kookmin University, Seoul, Korea, Republic of**P-Fri-283****Creation of CTX-M-14/CTX-M-15 Gene Fusions to Localize CTX-M-15 Associated Upregulation Element**A. VARMAN¹ AND C. GEYER²¹Duchesne Academy, Omaha, NE, ²Creighton University, Omaha, NE**P-Fri-284****Resveratrol And Its Derivatives' As Potential Inhibitors Of A β Peptides Aggregation**Y. WANG¹ AND M. MOSS¹¹University of South Carolina, Columbia, SC**P-Fri-285****Pathophysiological Mechanisms of Autism and Identification of Therapeutic Targets**M. HWANG¹, H. CHO¹, AND Y. LEE¹¹Virginia Tech, Blacksburg, VA**P-Fri-286****Modeling the Effects of a Microfluidic Environment on GFP Expression in Reporter Bacteria**C. AUSTIN¹, W. STOY¹, P. SU², M. HARBER¹, P. BARDILL¹, B. HAMMER¹, AND C. FOREST¹¹Georgia Institute of Technology, Atlanta, GA, ²University of California, Berkeley, CA

P-Fri-287**An Optogenetic System for Spatiotemporal Regulation of Viral Gene Delivery Vectors**E. GOMEZ¹, K. GERHARDT¹, J. JUDD¹, J. TABOR¹, AND J. SUH¹¹Rice University, Houston, TX**P-Fri-288****Engineering Diagnostic and Therapeutic Proteins Targeting the MSLN-MUC16 Tumor Biomarker Interface**S. MOORE¹, F. BASSIR¹, K. GEORGE¹, AND A. SIROIS¹¹Smith College, Northampton, MA**P-Fri-289****Knockdown of NHEJ-Related Genes Increases Rate of Homologous Recombination for Genome Editing**C. KRUEGER¹, T. CRADICK¹, AND G. BAO¹¹Georgia Institute of Technology, Atlanta, GA**P-Fri-290****Engineered Aglycosylated IgG Variants with Enhanced Anti-tumor Activity via Complement Dependent Cytotoxicity (CDC) without Antibody Dependent Cell Cytotoxicity (ADCC).**C-H. LEE¹, J. LEE¹, T. KANG¹, AND G. GEORGIU¹¹University of Texas at Austin, Austin, TX**Track: Drug Delivery****Drug Delivery****Chairs:** Jianjun Guan, Jennifer Kang-Mieler**P-Fri-441****Developing an Albumin Binding Peptide Derivative of Anticancer Therapeutics**Y-R. AHN¹¹Duke University, Durham, NC**P-Fri-442****Early Black Cranberry Proanthocyanidins Inhibit Melanoma Cell Growth and Proliferation**N. MACEDO¹, T. FERREIRA¹, C. NETO¹, AND S. BHOWMICK¹¹UMass Dartmouth, Dartmouth, MA**P-Fri-443****Early Development of Gold-Lipidic Nanocomposites for the Detection and Treatment of Prostate Cancer**C. DOBSON¹, C. PICKERING¹, M. EGGERT¹, A. DAVID¹, P. PANIZZI¹, AND R. ARNOLD¹¹Auburn University, Auburn, AL**P-Fri-444****Development of a Nanoparticle Formulation of Orlistat: Solubility, Stability, and Cytotoxicity**T. HILL^{1,2}, F. WHEELER³, S. KELKAR^{1,2}, S. KRIDEL³, AND A. MOHS^{1,2,3}¹Wake Forest-Virginia Tech School of Biomedical Engineering and Sciences, Winston Salem, NC, ²Wake Forest Institute for Regenerative Medicine, Winston Salem, NC, ³Comprehensive Cancer Center of Wake Forest University, Winston Salem, NC**P-Fri-445****Reducing Cell Survival in Metastatic Breast Cancer Using Curcumin-Loaded Silk Fibroin Nanoparticles**D. MISHRA¹, T. IYYANKI¹, AND A. MATHUR¹¹M.D. Anderson Cancer Center, Houston, TX**P-Fri-446****Temperature- and pH-responsive Photoluminescent Nanoparticles for Lung Cancer Treatment**J. MENON^{1,2}, D. NGUYEN^{1,2}, M. WEI^{1,2}, B. YUAN^{1,2}, J. YANG³, AND K. NGUYEN^{1,2}¹University of Texas at Arlington, Arlington, TX, ²University of Texas Southwestern Medical Center, Dallas, TX, ³Pennsylvania State University, University Park, PA**P-Fri-447****Tamoxifen-Coated Selenium Nanoparticles for Breast Cancer Treatment**M. STOLZOFF¹, A. D'ANTONIO¹, AND T. WEBSTER¹¹Northeastern University, Boston, MA**P-Fri-448****Crosslinking Albumin To Alter Curcumin Release From Spray Dried Particles**I. JAIN¹, M. KELECY¹, M. O'TOOLE¹, R. KEYNTON¹, A. GOBIN², AND P. SOUCY¹¹University of Louisville, Louisville, KY, ²Texas Heart Institute, Houston, TX**P-Fri-449****Synthesis of Dendrimer-Camptothecin Nanoconjugates via Click Chemistry**O. ZOLOTARSKAYA¹, H. YANG¹, L. XU¹, AND K. VALERIE¹¹Virginia Commonwealth University, Richmond, VA**P-Fri-450****A Theoretical Model on the Acoustic Vaporization of Dual Phase Microdroplets**D. LI¹, M. FABIILLI¹, J. FOWLKES¹, P. CARSON¹, AND J. BULL¹¹University of Michigan, Ann Arbor, MI**P-Fri-451** **The Combinatorial Effect of Multiple MicroRNA Delivery on Glioblastoma Multiforme**Y. YIN¹, D. RASSIAS¹, A. BELIVEAU¹, AND A. JAIN¹¹Worcester Polytechnic Institute, Worcester, MA**P-Fri-452****Multifunctional Polymeric Nanoconstructs for Magnetic Resonance Imaging and Combinatorial Treatment of Brain Tumors**C. STIGLIANO¹, M. CHO¹, M. RAMIREZ¹, S. ARYAL¹, AND P. DECUZZI¹¹Houston Methodist Research Institute, Houston, TX**P-Fri-453****Curcumin Loaded Polymeric Nanoparticles For The Prevention Of Metastatic Disease**A. PALANGE^{1,2}, D. DI MASCOLO^{1,2}, AND P. DECUZZI¹¹Houston Methodist Research Institute, Houston, TX, ²University of Magna Graecia, Catanzaro, Italy**P-Fri-454****Development of pH Sensitive Micelles for Drug Delivery to Advanced Prostate Cancer**O. AYDIN¹, I. YOUSSEF^{1,2}, Y. DURMAZ¹, G. TIRUCHINAPALLY¹, AND M. ELSAYED¹¹University of Michigan, Ann Arbor, MI, ²Mansoura University, Mansoura, Egypt**P-Fri-455****Mild Hypothermia Enhances Transport of Liposomal Gemcitabine and Improves *In vivo* Therapeutic Response Mild Hyperthermia Enhances Transport of Liposomal Gemcitabine and Improves *In Vivo* Therapeutic Response**D. KIRUI¹, C. CELIA², R. MOLINARO¹, H. SHEN¹, M. FERRARI¹, AND D. KIRUI¹¹Houston Methodist Research Institute, Houston, TX, ²University of Chieti, Chieti, Italy**P-Fri-456**

CANCELLED BY AUTHOR

P-Fri-457**Nanoformulations of PARP Inhibitors for the Treatment of Cancer**P. BALDWIN¹, S. TANGUTOORI¹, J. SHELKE¹, AND S. SRIDHAR¹¹Northeastern University, Boston, MA**P-Fri-458****Localized Tumor Delivery of Radiosensitizers and Chemotherapeutics Using INCeRT Implants**J. BELZ¹, R. KUMAR¹, S. MARKOVIC¹, Y. SUN¹, M. NIEDRE¹, M. MAKRIGIORGOS², R. CORMACK², AND S. SRIDHAR¹¹Northeastern University, Boston, MA, ²Dana Farber Cancer Institute, Brigham and Women's Hospital, Harvard Medical School, Boston, MA

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM, 4:00PM - 5:00PM

P-Fri-459**Injectable Gelatin Derivative Hydrogels with Sustained VEGF Release for Induced Angiogenesis**Z. LI¹, S. LI², AND X. LIU¹¹Department of Biomedical Sciences, Texas A&M University Baylor College of Dentistry, Dallas, TX, ²Department of Plastic and Aesthetic Surgery, Southwest Hospital, Third Military Medical University, Chongqing, China, People's Republic of**P-Fri-460****Drug-delivery Surgical Suture for Reduction of Scar Formation.**S. CHOI¹, B. KIM², M. PARK¹, C. PARK¹, S. LEE¹, C. HEO³, AND Y. CHOY^{1,2,4}¹Interdisciplinary Program in Bioengineering, College of Engineering, Seoul National University, Seoul, Korea, Republic of, ²Department of Biomedical Engineering, Seoul National University, Seoul, Korea, Republic of, ³Department of Plastic Surgery and Reconstructive Surgery, Seoul National University College of Medicine, Seoul, Korea, Republic of, ⁴Institute of Medical & Biological Engineering, Medical Research Center, Seoul National University, Seoul, Korea, Republic of**P-Fri-461****Enhancing Macrophage Recruitment by Controlling Scaffold Pore size**Y-H. KIM¹ AND Y. TABATA¹¹Institution of Frontier Medical Science, Kyoto University, Kyoto, Japan**P-Fri-462****Multi-layered Polymeric Microparticles For Sustained Drug Delivery**J. CASTILLO¹, L. GAVIRIA¹, T. GUDA¹, AND J. ONG¹¹University of Texas at San Antonio, San Antonio, TX**P-Fri-463****Solvent-free Fabrication of polyHIPE Microspheres for Controlled Release of Growth Factors**M. WHITELY¹, R. MOGLIA¹, M. BROOKS¹, J. ROBINSON¹, M. PISHKO¹, AND E. COSGRIFF-HERNANDEZ¹¹Texas A&M University, College Station, TX**P-Fri-464****Development of Nanodelivery System for Sustained Release of Bioactive Anti-NogoA**I. YAZDI¹, N. TAGHIPOUR¹, A. MUNOZ¹, T. BOONE¹, AND E. TASCOTTI¹¹Houston Methodist Research Institute, Houston, TX**P-Fri-465****Biocompatibility Study of Drug Delivery Sutures in an Ovine Model for Cardiovascular Engineering Applications**D. LAVIN¹, L. ZHANG¹, R. QUINN², S. HILBERT², A. BERT², C. MCFALL², J. BUSTAMANTE², K. MERRIGAN², S. NEIGHBORS², C. THANOS¹, E. MATHIOWITZ¹, AND R. HOPKINS²¹Brown University, Providence, RI, ²The Children's Mercy Hospital, Kansas City, MO**P-Fri-466****Combined Magnetic Nanoparticle-Based microRNA and Hyperthermia Therapy to Enhance the Treatment of Cancer**P. YIN¹, B. SHAH¹, AND K-B. LEE¹¹Rutgers University, Piscataway, NJ**P-Fri-467****Bioresorbable Multi-Drug Delivery Conduit to Promote Peripheral Nerve Regeneration**S. HO¹, K-M. LIN¹, H. SANT¹, J. SHEA¹, J. AGARWAL¹, AND B. GALE¹¹University of Utah, Salt Lake City, UT**P-Fri-468****Drug Delivery via Magnetic Nanoparticles: Pioneering Treatment of Osteosarcoma**T. SZASZ¹, A. KOVACH¹, S. BULLA¹, J. LIAO¹, L. WILLIAMS¹, C. BULLA¹, AND R. PRABHU¹¹Mississippi State University, Mississippi State, MS**P-Fri-469****Tunable Molecular Release With Micropatterned Nanoporous Gold Thin Films**O. KURTULUS¹, P. DAGGUMATI², AND E. SEKER²¹Department of Chemical Engineering and Materials Science, University of California Davis, Davis, CA, ²Department of Electrical and Computer Engineering, University of California Davis, Davis, CA**P-Fri-470****NanoPorous Polycaprolactone Thin Films for Zero-order Protein Release**E. SCHLESINGER¹ AND T. DESAI²¹UC Berkeley - UCSF, San Francisco, CA, ²University of California, San Francisco, San Francisco, CA**P-Fri-471****Encapsulation of Halloysite Clay Nanotubes with Drug Impregnated Nanolayers**D. MILLS¹ AND R. GRIMES¹¹Louisiana Tech University, Ruston, LA**P-Fri-472****Light-Mediated Multi-Step Release From Liposomes**J. PARK¹, R. STOWERS¹, AND L. SUGGS¹¹University of Texas at Austin, Austin, TX**P-Fri-473****Cross-linked Lipid Particles for Delivery of Antiretroviral Combinations to Inhibit HIV Infection**W. LYKINS¹, R. RAMANATHAN¹, Y. JIANG¹, AND K. WOODROW¹¹University of Washington, Seattle, WA**Track: Drug Delivery, Biomaterials****Self Assembly and Nucleic Acid Drug Delivery****Chairs:** Rachael Sirianni, Bahareh Behkam**P-Fri-410****Self-Assembling Drug Delivery Vehicles Direct Angiogenesis and Immune Signals**V. KUMAR¹, B. WANG¹, I-C. LI¹, A. JALAN¹, S. SHI¹, AND J. HARTGERING¹¹Rice University, Houston, TX**P-Fri-411****Layer-by-layer Self Assembly Through α Helical Polypeptides for Responsive Drug Delivery**A. GORMLEY¹, R. CHANDRAWATI¹, D. AIL², AND M. STEVENS¹¹Imperial College London, London, United Kingdom, ²Linköping University, Linköping, Sweden**P-Fri-412****Morphologies of DNA Condensed with Functionalized Gold Nanoparticles**E. SALGADO¹, G. YESILBAG², V. ROTELLO², R. BRIBER¹, AND J. SEOG¹¹University of Maryland, College Park, MD, ²University of Massachusetts, Amherst, MA**P-Fri-413****Nanoengineered Amphiphilic Particles from Poly(glycerol sebacate)-co-Poly(ethylene glycol) for Drug Delivery Applications**P. DESAI¹, A. VENKATARAMANAN¹, J. CARROW¹, M. JAISWAL¹, A. SINGH², AND A. GAHARWAR¹¹TEXAS A&M UNIVERSITY, COLLEGE STATION, TX, ²CORNELL UNIVERSITY, ITHACA, NY**P-Fri-414****Treatment Of Lysosomal Storage Disease With Therapeutic Polymersomes**E. PEARCE¹, J. LARSEN¹, M. BYRNE¹, AND D. MARTIN¹¹Auburn University, Auburn, AL**P-Fri-415****Lipid-polymeric Particles with a Patchy Surface**C. SALVADOR-MORALES¹¹George Mason University, Fairfax, VA**P-Fri-416****Incorporation and Simultaneous, Controlled Release Of Multiple, Diverse Comfort Molecules From A Single Daily Disposable Silicone Hydrogel Contact Lens**C. WHITE¹, C. BARTEL¹, AND M. BYRNE¹¹Auburn University, Auburn, AL

P-Fri-417**Optimizing Poly(beta-amino ester) Polyplexes for Enhanced Cellular Uptake and Particle Stability**J. KIM¹, P. MASTORAKOS², H. PARK², J. SUK², J. HANES², AND J. GREEN¹¹School of Medicine, Johns Hopkins University, Baltimore, MD, ²Center for Nanomedicine at the Wilmer Eye Institute, Johns Hopkins University, Baltimore, MD**P-Fri-418****Identifying Factors for Effective Control of DNA Nanoparticle Shape While Retaining *In Vivo* Efficacy**J-M. WILLIFORD¹, Y. REN¹, M. ARCHANG¹, AND H-Q. MAO¹¹Johns Hopkins University, Baltimore, MD**P-Fri-419****Continuous-Flow Low-Voltage Microfluidic Electroporation for Gene Delivery**N. BHATTACHARJEE¹, L. HOROWITZ¹, AND A. FOLCH¹¹University of Washington, Seattle, WA**P-Fri-420****Enzymatically Degradable Microgels for the Oral Delivery of siRNA**J. KNIFE¹, F. CHEN¹, AND N. PEPPAS¹¹The University of Texas at Austin, Austin, TX**P-Fri-421****Reactive Oxygen Species-responsive Polyplex Micelles as a PEG-detachable Platform for Plasmid DNA Delivery**M. GUPTA¹, S. LEE¹, S. CROWDER¹, X. WANG¹, C. NELSON¹, C. DUVAL¹, AND H-J. SUNG¹¹Vanderbilt University, Nashville, TN**P-Fri-422****Synthesis and Characterization of N-(2-hydroxy)-3-Chloride Derivatives of Aminoglycoside Polymer for Potential Application in Gene Delivery**B. MIRYALA¹, Y. FENG¹, A. OMER¹, AND K. REGE¹¹Arizona State University, Tempe, AZ**P-Fri-423****Biodegradable DNA Nanoparticles for Efficient *in vivo* Gene Delivery**P. MASTORAKOS¹, A. DA SILVA², C. ZHANG¹, J. CHISHOLM¹, S. BERRY¹, W. CHOI¹, H. PARK¹, M. MORALES², J. HANES¹, AND J. SUK¹¹Center for Nanomedicine at the Wilmer Eye Institute, Johns Hopkins University, Baltimore, MD, ²Carlos Chagas Filho Institute of Biophysics, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil**P-Fri-424****Dendritic Cell Subsets Interact with CpG-carrying Pathogen Mimicking Particles in a Phenotype Specific Manner**J. LELEUX^{1,2}, P. PRADHAN¹, AND K. ROY^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**P-Fri-425****Polyethyleneimine Coated Gold Nanoparticles For Efficient And Selective Gene Delivery**B. SHRESTHA¹ AND L. TANG¹¹University of Texas at San Antonio, San Antonio, TX**P-Fri-426****Gold Nanoparticle Enhanced DNA and RNA Mediated Therapeutics**S. HUANG¹, Y. ZU¹, AND S. WANG¹¹Louisiana Tech University, Ruston, LA**P-Fri-427****Targeted Intracellular Delivery of siRNA Via Polybasic Nanogels**J. PAWLISH¹, L. KOJECHEU¹, M. TABLER¹, J. GOLODNER¹, B. GONZALES¹, K. PASZEK¹, D. SINGH¹, C. MARCINKIEWICZ¹, AND O. FISHER¹¹TEMPLE UNIVERSITY, PHILADELPHIA, PA**P-Fri-428****Direct Tethering of Small Interfering RNA (siRNA) to Biodegradable Hydrogels for Its Controlled Delivery to Cells**M. NGUYEN¹, A. GILEWSKI¹, M. LEVY², AND E. ALSBERG¹¹Case Western Reserve University, Cleveland, OH, ²Albert Einstein College of Medicine, Bronx, NY**P-Fri-429****Real-time Visualization of PEI Polymer Dynamics During pH Buffering**K. CURTIS¹, T. ABDUS-SHAKUR¹, AND P. CHANDRAN¹¹Howard University, Washington, DC, DC**P-Fri-430****A Factorial Design For Therapeutic Agent Delivery For Pediatric Tracheomalacia**A. GOODFRIEND¹, T. WELCH¹, K. NGUYEN², A. NUGENT¹, AND J. FORBESS¹¹University of Texas Southwestern Medical Center at Dallas, Dallas, TX, ²University of Texas Arlington, Arlington, TX**P-Fri-431****Fabrication of PLGA Microparticles for Improved HPV Vaccine Delivery**E. CESEWSKI¹, K. HIGGINS¹, E. MCMAHON¹, R. BROWN¹, J. FIX¹, D. FREUDENBERGER¹, V. NIBA¹, H. PARK¹, G. PERDOMO¹, A. SEO¹, A. SRIVASTAVA¹, C. TSUI¹, A. WHITEMAN¹, AND R. ZUBAJLO¹¹University of Maryland, College Park, MD**P-Fri-432****Modeling of Gel Flow and Drug Transport in the Vaginal Mucosa for Better Microbicide Gel Design**Y. GAO¹, A. YUAN¹, AND D. KATZ^{1,2}¹Duke University, Durham, NC, ²Duke University Medical Center, Durham, NC**P-Fri-433****Development of Surface-Modified pH-Responsive Hydrogels for the Oral Delivery of Growth Hormone**S. STEICHEN¹, E. FISCHER¹, S. YARBOROUGH¹, C. O'CONNOR¹, AND N. PEPPAS^{1,2}¹The University of Texas at Austin, Austin, TX, ²The University of Texas at Austin, Austin, TX**P-Fri-434****Adjuvant Conjugated Nano-particles for Vaccine Delivery: A Robust Method for Immune Response**K. BRINK¹¹Texas A&M University, College Station, TX**P-Fri-435****Alginate Based Hydrogels for Controlled-release of Zoster Acid and Sodium Benzoate**Q. WANG¹ AND B-M. ZHANG NEWBY¹¹The University of Akron, Akron, OH**P-Fri-436****Poly(acrylic acid)-Poly(ethylene glycol) Microgels for Protein Delivery**J. RIOS¹, G. LU¹, N. SEO¹, T. LAMBERT¹, AND D. PUTNAM¹¹Cornell University, Ithaca, NY**P-Fri-437****Cell-Based Microarrays: A Platform to Facilitate Patient-Specific Therapy**M. CARSTENS¹, A. ACHARYA², J. LEWIS¹, E. HUANG³, AND B. KESELOWSKY¹¹University of Florida, Gainesville, FL, ²University of California, Berkeley, Berkeley, CA, ³Cleveland Clinic, Cleveland, OH**P-Fri-438****Development of Continuous Flow Microspotter for High-Throughput Drug Screening and Cytotoxicity Evaluation**J. ARELLANO¹, J. GAMMON¹, J. YANG¹, B. GALE¹, AND M. JANAT-AMSBURY¹¹University of Utah, Salt Lake City, UT**P-Fri-439****Microglia Migration and Interactions with Dendrimer in Brain in the Presence of Neuroinflammation**F. ZHANG^{1,2}, E. NANCE¹, Y. ALNASSER¹, R. KANNAN¹, AND S. KANNAN¹¹Johns Hopkins University School of Medicine, Baltimore, MD, ²Johns Hopkins University, Baltimore, MD

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM, 4:00PM - 5:00PM

P-Fri-440
MOVED TO P-TH-359

Track: Nano to Micro Technologies, Device Technologies and Biomedical Robotics

Nanotechnology, Microfluidic Platforms, Theranostics

Chairs: Maribel Vazquez, Jeff Zahn

P-Fri-651
Vertically Aligned Carbon Nanofiber Biosensor Platform

K. MAMUN¹, F. TULIP¹, N. MCFARLANE¹, AND S. ISLAM¹
¹University of Tennessee, Knoxville, TN

P-Fri-652
Spectral Shifting of Bare and PEGylated Plasmonic Nanoparticles in Biological Environments

A. CHEN¹, M. JACKSON¹, Y. HU², A. LIN¹, J. YOUNG¹, R. LANGSNER¹, AND R. DREZEK¹
¹Rice University, Houston, TX, ²Salk Institute for Biological Studies, La Jolla, CA

P-Fri-653
Interaction of Flagellin with Single-walled Carbon Nanotubes

I. MACWAN¹, Z. ZHAO¹, O. SOBH², AND P. PATRA¹
¹University of Bridgeport, Bridgeport, CT, ²University of Pennsylvania, Philadelphia, PA

P-Fri-654
Nanoparticle Surface Charge Impacts Vesicle Motion in Cortical Neurons

C. GODZICH¹, D. DI CARLO¹, AND A. KUNZE¹
¹University of California Los Angeles, Los Angeles, CA

P-Fri-655
Digital Microfluidic Platform for Cell Spheroid-Based Migration/Invasion Assays

B. BENDER¹, A. AIJIAN¹, AND R. GARRELL¹
¹University of California, Los Angeles, Los Angeles, CA

P-Fri-656
Preparation of a Nano-patterned Polymer Replica for Reducing Catheter Associated Inflammation and Infection

L. LIU¹, B. ERCAN¹, S. NI², L. SUN¹, AND T. WEBSTER¹
¹Northeastern University, Boston, MA, ²Donghua University, Shanghai, China, People's Republic of

P-Fri-657
Macrophage Phenotypic Response to Silica Nanoparticles

H. HERD^{1,2}, K. BARTLETT^{1,2}, J. GUSTAFSON^{1,2}, AND H. GHANDEHARI^{1,2}
¹University of Utah, Salt Lake City, UT, ²Utah Center for Nanomedicine, Salt Lake City, UT

P-Fri-658
Highly Controlled Janus Nanoparticle Synthesis for Cancer Therapy

E. CAMPBELL¹, J. TANG¹, Y. XIA¹, AND T. SULCHEK¹
¹Georgia Institute of Technology, Atlanta, GA

P-Fri-659
Controlled Gold Nanorod Assembly with Well-defined Surface Plasmon Pattern on Substrates

Z. MEI¹ AND L. TANG¹
¹University of Texas at San Antonio, San Antonio, TX

P-Fri-660
Cell-Free Protein Synthesis in Miniaturized Devices and their Effects on the Synthesis Yield

K. JACKSON¹ AND Z. FAN¹
¹University of Florida, Gainesville, FL

P-Fri-661
An Automated, Pump-less Microfluidic Device for Image-Cytometry Measurements of Oral Lesions

T. ABRAM¹ AND J. MCDEVITT¹
¹Rice University, Houston, TX

P-Fri-662
Reusable Polyurethane Negative Mold for Micropost Fabrication

N. TAPARIA¹, R. AARON¹, S. TAVAKOLI¹, A. KARCHIN¹, AND N. SNIADOCKI¹
¹UNIVERSITY OF WASHINGTON, SEATTLE, WA

P-Fri-663
3D-Printed Microvalves and Micropumps

A. AU¹ AND A. FOLCH¹
¹University of Washington, Seattle, WA

P-Fri-664
3D Printed Microfluidic Oxygen Mixer

G. MAULEON¹, L. VILLAFANA¹, AND D. EDDINGTON¹
¹University of Illinois at Chicago, Chicago, IL

P-Fri-665
3D Printed Microfluidic Devices for Oxygen Control in Cell Culture

M. BRENNAN¹ AND D. EDDINGTON¹
¹University of Illinois at Chicago, Chicago, IL

P-Fri-666
Numerical And Experimental Investigation Of Sharp-edge-based Acoustofluidic Mixers

N. NAMA¹, P-H. HUANG¹, T. JUN HUANG¹, AND F. COSTANZO¹
¹The Pennsylvania State University, University Park, State College, PA

P-Fri-667
Fast and Effective Mixing of High Viscosity Liquids via Acoustofluidic Bubble Cavitations

A. OZCELIK¹, Y. XIE¹, A. NAWAZ¹, AND T. HUANG¹
¹The Pennsylvania State University, University Park, PA

P-Fri-668
Controllable Generation of Chemical Gradient via Acoustically Oscillated Sharp Edges

P-H. HUANG¹, C. CHAN¹, N. NAMA¹, Y. CHEN¹, Y. XIE¹, AND T. HUANG¹
¹The Pennsylvania State University, University Park, PA

P-Fri-669
Droplet Generation and Trapping for High-throughput Bioassays

D. HU¹, Z. ZHAO¹, G. GHOSH¹, AND J. LO¹
¹University of Michigan-Dearborn, Dearborn, MI

P-Fri-670
A Programmable Acoustofluidic Pump

P-H. HUANG¹, N. NAMA¹, Z. MAO¹, Y. CHEN¹, Y. XIE¹, AND T. HUANG¹
¹The Pennsylvania State University, University Park, PA

P-Fri-671
Single Cell Capturing and Long-Term Culture Using a Microfluidic Dual-Well Device


C-H. LIN^{1,2}, Y-H. HSIAO^{1,3}, H-C. CHANG^{1,2}, C-K. HE^{1,2}, I-M. CHIU^{1,2}, AND C-H. HSU^{1,2,3}
¹National Health Research Institute, Miaoli County, Taiwan, ²National Chung Hsing University, Taichung, Taiwan, ³National Tsing Hua University, Hsinchu, Taiwan

P-Fri-672
Compact, Low-power Micropump via Electrolysis and Catalytic Recombination towards Integrated Microfluidic Systems

A. MICHAELIAN¹, C. TRUONG¹, AND U. KIM¹
¹Santa Clara University, Santa Clara, CA

POSTER
SESSION
Fri

P-Fri-673**High-throughput Enrichment of Particles from mm/s Fluid Flow Based on AC Electrokinetics**Q. YUAN¹, C. CHENG¹, H. CUI¹, AND J. WU¹¹The University of Tennessee-Knoxville, Knoxville, TN**P-Fri-674****Diffusion-based Microfluidic PCR for "One-pot" Analysis of Cells**C. LU¹, S. MA¹, D. LOUFAKIS¹, Z. CAO¹, Y. CHANG¹, AND L. ACHENIE¹¹Virginia Tech, Blacksburg, VA**P-Fri-675****Microfluidic Generation of Cell-Like Liposomes**D. VALLEJO¹ AND A. LEE¹¹University of California, Irvine, Irvine, CA**P-Fri-676****Mathematical Simulations of Heat Transfer and Fluid Dynamics in a Microfluidic Calorimeter with Integrated Thin-film Thermopiles**G. NESTOROVA¹, N. CREWS¹, AND E. GUILBEAU¹¹Louisiana Tech University, Ruston, LA**P-Fri-677****Microfluidic Generation of Stiffness-tunable Polyacrylamide Substrate for Studying Mechanical Regulation of Cell Culture Substrate on Cancer Cells**H. YI-HSING^{1,2}, C. CHIHCHEN², AND H. CHIA-HSIEN^{1,3}¹National Health Research Institutes, Miaoli County, Taiwan, ²National Tsing Hua University, Hsinchu, Taiwan, ³National Tsing Hua University, Hsin chu, Taiwan**P-Fri-678****Immobilization of Oxalylidihydrazide on Poly(Dimethylsiloxane)**S. STONE¹ AND B. HOLLINS¹¹Louisiana Tech University, Ruston, LA**P-Fri-679****A Portable Microfluidic Capillary Electrophoresis Platform for Detecting Organochloride Contaminants in Drinking Water**J. LEE¹, E. JENSEN², H. MEHRABANI², H. JIAO², AND J. KIM¹¹Texas Tech University, Lubbock, TX, ²HJ Science & Technology, Inc., Berkeley, CA**P-Fri-680****Integrating 2D and 3D Microelectrodes in Plastic Microfluidic Devices Allowing Spatial and Temporal Control of Electric Fields for Detection or Stimulation.**J. PAREDES^{1,2}, K. FINK^{3,4}, M. CHOOLJIAN^{3,4}, AND D. LIEPMANN^{3,4,5}¹CEIT and Tecnun (University of Navarra), Donostia-San Sebastián, Spain, ²CIC microGUNE, Arrasate-Mondragon, Spain, ³University of California, Berkeley, Berkeley, CA, ⁴UC Berkeley - UC San Francisco Graduate Program in Bioengineering, Berkeley, CA, ⁵Berkeley Sensors and Actuators Center, Berkeley, CA**P-Fri-681****Trapping of Submicron Beads using 3D Embedded-electrode Insulator-based Dielectrophoresis (3D-E^{TT} DEP)**D. NAKIDDE¹ AND M. AGAH¹¹Virginia Tech, Blacksburg, VA**P-Fri-682****Microfluidic Viscoelastic Hemostatic Assay for Coagulation Diagnostics**R. JUDITH¹, J. FISHER², R. SPERO², B. OBERHARDT^{1,3}, M. FALVO¹, R. TAYLOR¹, AND R. SUPERFINE¹¹University of North Carolina at Chapel Hill, Chapel Hill, NC, ²Rheomics Inc., Chapel Hill, NC, ³North Carolina State University, Raleigh, NC**P-Fri-683****Single Cell Mechanophenotyping and Mechanotransduction using a Microfluidic Micropipette Array**L. Lee¹, V. Murray¹, J. Heuraux¹, and A. Liu¹¹University of Michigan, Ann Arbor, MI**P-Fri-684****Fabrication and Investigation of a Miniaturized Nanochannel Drug Delivery System**R. HOOD¹, S. FERRATI¹, AND A. GRATTONI¹¹The Houston Methodist Research Institute, Houston, TX**P-Fri-685****A Self-Contained Multi-Step Immunoassay for Point-of-Care Applications**I. NANAYAKKARA¹, J. KARIMI¹, AND A. LEE¹¹University of California, Irvine, Irvine, CA**P-Fri-686****Multiplexed Electronic Protein Analysis: A Comprehensive Design Space**S. EMAMINEJAD¹, R. DUTTON¹, R. DAVIS¹, AND M. JAVANMARD¹¹Stanford University, Stanford, CA**P-Fri-687****Micro and Millifluidic Platforms for Scalable Production of Multifunctional Nanoparticles**S. KIM¹, M. TOTH¹, G. BAO¹, D. GIDDENS¹, AND Y. KIM¹¹Georgia Institute of Technology, Atlanta, GA**P-Fri-688****Facile Construction of Magnetic Enzyme Nanosystem as a Dual-platform for Fapid Tryptic Digestion**G. CHENG¹ AND S-Y. ZHENG¹¹Penn State University, State College, PA**P-Fri-690****Bioelectrical Impedance Measurements to Detect Changes in Tight Junction Expression at Cell Junctions**R. KRAYA¹ AND P. SEARSON^{1,2}¹Institute for Nanobiotechnology, Baltimore, MD, ²Johns Hopkins University, Baltimore, MD**P-Fri-691****Selective Detection and Quantification of Modified DNA With Solid-State Nanopores**O. ZAHID¹, A. CARLSEN¹, J. RUZICKA², E. TAYLOR², AND A. HALL¹¹Wake Forest University School of Medicine, Winston-Salem, NC, ²University of North Carolina Greensboro, Greensboro, NC**P-Fri-692****Label Free, Multiplexed Plasmonic Gold Nanorod Biochip**Y. WANG¹ AND L. TANG¹¹University of Texas at San Antonio, San Antonio, TX**P-Fri-693****Microfluidic Organ-on-a-Chip: Bi-directional Fluidic Flow Enhances Multi-cell-type, Three-dimensional Human Primary Liver Cell Culture**M. ESCH¹, J-M. PROT¹, P. MILLER¹, D. APPLIGATE², AND M. SHULER¹¹Cornell University, Ithaca, NY, ²RegeneMed, San Diego, CA**P-Fri-694****Treatment of Vascular Calcification with Elastin-Targeted Theranostic Nanoparticles**K. BENNETT¹ AND C. SIMPSON¹¹Mississippi State University, Mississippi State, MS**P-Fri-695****Evaluating Antibody Conjugated Magnetic Microspheres for the Depletion of Interleukin-1 Beta for Osteoarthritis Treatment**A. MONSALVE¹, B. KOZISSNIK¹, A. GARRAUD¹, E. YARMOLA¹, K. ALLEN¹, AND J. DOBSON¹¹University of Florida, Gainesville, FL**P-Fri-696****Molecular Targeting and Imaging Using Virus-Based Nanoparticle-Antibody Conjugates**J. WHITNEY¹, M. MCBURNEY¹, D. THOMPSON², P. DAWSON², AND N. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH, ²The Scripps Research Institute, La Jolla, CA

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

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM, 4:00PM - 5:00PM

P-Fri-697**Clinically Relevant Carbon Nanotube Dispersions for Microwave Hyperthermia**S. XIE¹, F. GAO², S. PATEL¹, J. BOOSKE², S. HAGNESS², AND B. SITHARAMAN¹
¹Stony Brook University, Stony Brook, NY, ²University of Wisconsin-Madison, Madison, WI**P-Fri-698****Bioengineering Silicon Quantum dot Theranostics using a Network analysis of Metabolomic and Proteomic Data in Cardiac Ischemia**F. EROGBOGBO¹ AND P. GLADDING²
¹San Jose State University (SJSU), San Jose, CA, ²North Shore Hospital, Auckland, New Zealand**P-Fri-699****Dendritic Wedge-Based Display of Polyarginine Peptides on Semiconductor Quantum Dots Mediates Differential Cellular Binding and Internalization**J. BREGER^{1,2}, K. SUSUMU¹, M. MUTTENHALER³, J. DELEHANTY¹, P. DAWSON³, AND I. MEDINTZ¹
¹U.S. Naval Research Laboratory, Washington, DC, ²American Society for Engineering Education, Washington, DC, ³The Scripps Research Institute, La Jolla, CA**P-Fri-700****Pump-Free Membrane-Controlled Perfusion Microfluidic Platform**V. GORAL¹, E. TRAN¹, AND P. YUEN¹
¹Corning Incorporated, Corning, NY**P-Fri-701****Design of a Custom Multiwell Platform for the Simple and Rapid Preparation of Polyacrylamide Stiffness Assay**N. AHMED¹, H. STEVENSON¹, A. KARADAGHY¹, AND S. ZUSTIAK¹
¹Saint Louis University, St Louis, MO**Track: Neural Engineering, Device Technologies and Biomedical Robotics****Neural Engineering II: Glia, PNS Interfaces, and CNS Injury****Chairs:** Teresa Murray, Jennifer Kang-Mieler**P-Fri-301****Static Stretch Affects Neural Stem Cell Differentiation Along the Oligodendrocyte Lineage**J. ARULMOLI¹, M. PATHAK¹, L. MCDONNELL¹, AND L. FLANAGAN¹
¹University of California, Irvine, Irvine, CA**P-Fri-302****Application of Optical Clearing Methods to Tissue-Engineered Neural Microtissues**M. BOUTIN¹ AND D. HOFFMAN-KIM¹
¹Brown University, Providence, RI**P-Fri-303****Spinal Cord Injury Treatments Tested *In Vivo* Integrating Neural Stem Cell Delivery and Lineage Specification via Immobilized Growth Factors**H. LI¹, T. HAM¹, A. WILKINSON¹, A. KOENIG¹, AND N. LEIPZIG¹
¹University of Akron, Akron, OH**P-Fri-304****Effects of Shear and Electric Stimulation on the Migrating Behavior of Microglia**S. AHN¹, S. SONG¹, E. PARK¹, M. SON¹, J-S. PARK¹, AND J. SHIN¹
¹KAIST, Daejeon, Korea, Republic of**P-Fri-305****Directed Chemotaxis Of Retinal Progenitor Cells In 3D Hydrogels For Rational Cell Delivery Vehicles**A. KOPPEL^{1,2,3}, M. OUDIN³, P. BARANOV², M. MILLER³, F. GERTLER³, M. YOUNG², D. LAUFFENBURGER³, AND R. CARRIER¹
¹Northeastern University, Boston, MA, ²Schepens Eye Research Institute & Harvard Medical School, Boston, MA, ³Massachusetts Institute of Technology, Cambridge, MA**P-Fri-306****Enhanced Astrocyte GLT-1 Mediated Glutamate Uptake and Migration Induced by Fibronectin-coated Poly-L-lactic Acid Fibers**J. ZUIDEMA¹, M. HYZINSKI-GARCIA², K. VAN VLASSELAER¹, N. ZACCOR¹, G. PLOPPER¹, A. MONGIN², AND R. GILBERT¹
¹Rensselaer Polytechnic Institute, Troy, NY, ²Albany Medical College, Albany, NY**P-Fri-307****Increased Neurogenesis in Close Proximity to Flow-Stimulated Endothelial Cells**C. DUMONT¹, G. DAI¹, AND D. THOMPSON¹
¹Rensselaer Polytechnic Institute, Troy, NY**P-Fri-308****Enhanced Myelination by Focal Electrical Stimulation in Microfluidic Platform**H. LEE¹, I. YANG^{1,2}, AND N. THAKOR^{1,2}
¹National University of Singapore, Singapore, Singapore, ²Johns Hopkins University, School of Medicine, Baltimore, MD**P-Fri-309****3D Printing of Nanostructured Nerve Guidance Scaffolds with Graphene Nanoplatelets**C. O'BRIEN¹ AND L. ZHANG¹
¹The George Washington University, Washington, DC**P-Fri-310****Astrocyte Aligning Using Laminin Micropattern on Cell Adhesive Substrate**S. JOO¹, J. KIM², E. LEE², N. HONG¹, W. SUN², AND Y. NAM¹
¹KAIST, Daejeon, Korea, Republic of, ²Brain Korea 21, Korea University College of Medicine, Seoul, Korea, Republic of**P-Fri-311****Short Term Electrical Stimulation to Promote Nerve Repair and Functional Recovery of Sciatic Nerve Injuries**W. ZHOU¹, C. CALVEY², K. SLOAN-STAKLEFF², P. SENDELBACH-SLOAN², W. LANZINGER², AND R. WILLITS¹
¹University of Akron, Akron, OH, ²Akron General Medical Center, Akron, OH**P-Fri-312****A Multi-Branch Nerve Scaffold With Embedded Microwires In Neural Interfacing Applications**B. KIM¹, E. IBARRA¹, B. GARZA¹, R. LUNA¹, AND Y. CHOI¹
¹University of Texas – Pan American, Edinburg, TX**P-Fri-313****Electrical Stimulation of Single Somatic Nerve Fascicles are Sufficient to Reduce Hypertension**A. KANNAGANTI¹, S. FATEMI¹, C. NOTHNAGLE², M. WIJESUNDARA², M. MIZUNO³, S. SMITH³, Y-T. KIM¹, AND M. ROMERO-ORTEGA¹
¹Univ. Of Texas at Arlington, Arlington, TX, ²Univ. Of Texas at Arlington Research Institute, Fort Worth, TX, ³Univ. of Texas Southwestern Medical Center, Dallas, TX**P-Fri-314****Neurophysiologic Evaluations of Nano Graphene Multi-Electrode Array for Neural Interfaces**C. CHEN¹, W. YI¹, Z. FENG¹, C. ZHOU¹, J. CAVANAUGH¹, AND M. CHENG¹
¹Wayne State University, Detroit, MI**P-Fri-315****Thin Film Wireless Electrodes Used To Deliver Therapeutic Stimulation**P. GAMBLE¹, M. STEPHEN¹, M. MACÉWAN¹, AND W. RAY¹
¹Washington University in St Louis, St Louis, MO

P-Fri-316**The Role of Oxidative Stress in Axonal Pathology**R. DASTGHEYB¹, G. GALLO², AND K. BARBEE¹¹Drexel University, Philadelphia, PA, ²Temple University, Philadelphia, PA**P-Fri-317****Local Delivery of Paclitaxel from Aligned Electrospun Poly(lactic-acid) Microfibers Promotes Neurite Extension *In Vitro***J. ROMAN¹, A. HURTADO¹, AND H-Q. MAO¹¹Johns Hopkins University, Baltimore, MD**P-Fri-318****Directing NPC Differentiation with Natural Biomaterials: Implications for Spinal Cord Repair**S. GEISLER¹, A. SABIN², O. GOODEN², R. BESSER², AND C. SCHMIDT²¹The University of Texas, Gainesville, FL, ²University of Florida, Gainesville, FL**P-Fri-319****Compromised Axonal Functionality After Neurodegeneration and/or Traumatic Brain Injury.**P. MAIA¹ AND N. KUTZ¹¹University of Washington, Seattle, WA**P-Fri-320****Transcriptomics and Metabolomics of Surgically-induced Cervical Syringomyelia**A. WILKINSON¹, M. FARRAG¹, S. HAFT², P. JOSHI¹, H. HUANG¹, L. SHRIVER¹, AND N. LEIPZIG¹¹University of Akron, Akron, OH, ²Claremont McKenna College, Claremont, CA**P-Fri-321****Delivery of Paramagnetic Nanoparticles after Traumatic Brain Injury in Mice**V. BHARADWAJ¹, K. RUMBO¹, V. KODIBAGKAR¹, AND S. STABENFELDT¹¹Arizona State University, Tempe, AZ**P-Fri-322****Semi-Interpenetrating Alginate/Laminin Hydrogels to Study Mechanism for Neural Remodeling Following Traumatic Brain Injury**N. STURDIVANT¹, A. HAILEYESUS¹, J. CARRADINI¹, AND K. BALACHANDRAN¹¹University of Arkansas, Fayetteville, AR**P-Fri-323****Pairing Vagus Nerve Stimulation With Rehabilitative Training Enhances Functional Recovery After Traumatic Brain Injury**D. PRUITT^{1,2}, A. SCHMID^{1,2}, C. CHOUA^{1,2}, L. KIM^{1,2}, C. ABE^{1,2}, J. TRIEU^{1,2}, M. KILGARD^{1,2}, AND R. RENNAKER^{1,2}¹The University of Texas at Dallas, Richardson, TX, ²Texas Biomedical Device Center, Richardson, TX**P-Fri-324****Incidence and Risk of Concussive Injury in Vehicle Crashes**H. GABLER¹¹VIRGINIA TECH, BLACKSBURG, VA**P-Fri-325****Stretch Induced Effects on Callosal Pathway Flavoprotein Autofluorescence**A. FAN¹, K. STEBBINGS¹, D. LLANO¹, AND T. SAIF¹¹University of Illinois at Urbana-Champaign, Urbana, IL**P-Fri-326****Traumatic Brain Injury Resulted in Increased Aquaporin-4 Expression - Relevance to Post-Injury Edema?**N. STURDIVANT¹, A. HAILEYESUS¹, J. CARRADINI¹, AND K. BALACHANDRAN¹¹University of Arkansas, Fayetteville, AR**P-Fri-327****Wide Field-of-view, Dual-region Multiphoton Imaging Across Extended Cortical Networks**J. STIRMAN^{1,2}, I. SMITH¹, M. KUDENOV³, AND S. SMITH^{1,2,4}¹Neuroscience Center, University of North Carolina, Chapel Hill, NC, ²Carolina Institute for Developmental Disabilities, Chapel Hill, NC, ³Department of Electrical and Computer Engineering, North Carolina State University, Raleigh, NC, ⁴Department of Cell Biology and Physiology, University of North Carolina, Chapel Hill, NC**P-Fri-328****Carbon Nanotube/Polyethylene Glycol Hydrogel Composite as an *in vitro* Model for Neural Tissue Engineering**K. SHAH¹, D. VASILEVA¹, AND S. ZUSTIAK¹¹Saint Louis University, St Louis, MO**Track: Orthopaedic and Rehabilitation Engineering, Biomechanics****Articular Cartilage and Joints****Chairs:** Spencer Lake, Meng Deng**P-Fri-545*****In-Vitro* Modeling of Osteoarthritis with a Silk Scaffold and Mechanical Compression**S. BERRY¹, L. HAYWARD¹, AND D. KAPLAN¹¹Tufts University, Medford, MA**P-Fri-546****Testing Efficacy of Pain Management Therapies in a Rodent Model of Post-Traumatic Knee Osteoarthritis**H. KLOEFKORN¹, B. JACOBS¹, AND K. ALLEN¹¹University of Florida, Gainesville, FL**P-Fri-547****Enhanced Stem Cell Functions on Cold Atmospheric Plasma Treated Nanocomposite Cartilage Scaffolds**W. ZHU¹, M. KEIDAR¹, AND L. ZHANG¹¹The George Washington University, Washington, DC**P-Fri-548****Designing a Probe for the Magnetic Collection of Molecular Biomarkers in Joints for Early Detection of Osteoarthritis**Y. SHAH¹, C. VELEZ CUERVO¹, E. YARMOLA¹, D. ARNOLD¹, J. DOBSON¹, AND K. ALLEN¹¹University of Florida, Gainesville, FL**P-Fri-549****Improve the Efficiency of Articular Cartilage Indentation Test by Principal Component Analysis**X. CHEN¹, B. ZIMMERMAN¹, AND X. LU¹¹University of Delaware, Newark, DE**P-Fri-550****Low Intensity Vibration Enhances Cartilage Thickness in Young Obese Mice without Compromising Bone.**V. BHANDAL¹, T. PAMON¹, M. CHAN¹, AND C. RUBIN¹¹Stony Brook University, Stony Brook, NY**P-Fri-551****Wear in Total Knee Replacements with Oxidized Zirconium Femoral Components Explanted Postmortem**M. BLAND¹, K. AUSTRIACO¹, A. EBERHARDT¹, AND J. LEMONS¹¹University of Alabama at Birmingham, Birmingham, AL**P-Fri-552****Degradation-dependent Alterations in Articular Cartilage Lubricating Mechanisms**E. BONNEVIE¹, D. GALESSO², C. SECCHIERI², AND L. BONASSAR¹¹Cornell University, Ithaca, NY, ²Fidia Farmaceutici, Padua, Italy

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM, 4:00PM - 5:00PM

P-Fri-553**Calcium Phosphate Clay Nanoparticle Bone Cements with Enhanced Mechanical Properties**U. JAMMALAMADAKA¹, K. TAPPA², S. KARNIK¹, AND D. MILLS¹¹Louisiana Tech University, Ruston, LA, ²Louisiana Tech University, Ruston, Afghanistan**P-Fri-554****The Effect of Delayed Mechanical Stimulation in an *in vitro* Microfracture Model**M. PARK¹, M. CHATTERJEE¹, B. ZIMMERMAN¹, L. SNYDER-MACKLER¹, AND X. LU¹¹University of Delaware, Newark, DE**P-Fri-555****Alterations of Articular Cartilage Surfaces after Mechanical Insult**E. BONNEVIE¹, M. DELCO¹, P. ALEXANDER², R. TUAN², L. FORTIER¹, AND L. BONASSAR¹¹Cornell University, Ithaca, NY, ²University of Pittsburgh, Pittsburgh, PA**P-Fri-556****In Vivo Characterization of Silk Fibroin Microparticles for Intra-Articular Drug Delivery**T. MWANGI¹, R. BOWLES¹, D. TAINTER², R. BELL², D. KAPLAN³, AND L. SETTON^{1,2}¹Duke University, Durham, NC, ²Duke University Medical Center, Durham, NC, ³Tufts University, Medford, MA**Track: Orthopaedic and Rehabilitation Engineering****Bone****Chairs:** John Cotton, Joel Bumgardner**P-Fri-533****Experimental Investigation of Bone Drilling Performance**E. MACDONALD¹, S. RUSSEL¹, AND S. SCHMID¹¹University of Notre Dame, Notre Dame, IN**P-Fri-534****Cellulose-based Scaffolds for Enhanced Bone Formation by Human Adipose-derived Stem Cells**H.-J. PARK¹, K. YANG¹, A.-N. CHO¹, S. YU², S. IM², AND S.-W. CHO¹¹Department of Biotechnology, Yonsei University, Seoul, Korea, Republic of, ²Department of Chemical and Biomolecular Engineering, KAIST, Daejeon, Korea, Republic of**P-Fri-535****Anti-Infective Calcium Phosphate Bone Cement**K. TAPPA¹, U. JAMMALAMADAKA², S. KARNIK², AND D. MILLS²¹Louisiana Tech University, Ruston, Afghanistan, ²Louisiana Tech University, Ruston, LA**P-Fri-536****In-Vivo Biocompatibility and Toxicity of Single Walled Carbon Nanotube Composites for Bone Tissue Engineering**A. GUPTA¹, T. LIBERATI¹, S. VERHULST¹, B. MAIN^{1,2}, M. ROBERTS¹, A. POTTY¹, AND S. EL-AMIN^{1,3}¹Southern Illinois University School of Medicine, Springfield, IL, ²University of Illinois at Springfield, Springfield, IL, ³Southern Illinois University, School of Medicine, Springfield, IL**P-Fri-537****Biomechanical Investigation of Extracorporeal Irradiation Therapy in Malignant Bone Tumours**S. CHAUHAN¹, K. MANOJ², S. RASTOGI², S. KHAN², AND A. PRASAD¹¹Indian Institute of Technology Delhi, New Delhi, India, ²All India Institute of Medical Sciences, New Delhi, India, New Delhi, India**P-Fri-538****Mitigating Effect Of Dynamic Hydraulic Flow Stimulation On Bone Loss In Functional Disuse Model**T. CHU¹, M. HU¹, AND Y.-X. QIN¹¹Stony Brook University, Stony Brook, NY**P-Fri-539****Biasing MSC Differentiation into an Osteoblastogenic Fate Using LIV Leads to Higher Bone Count and Quality**T. SAMPHEL¹, D. FRECHETTE², E. CHAN², AND C. RUBIN²¹Stony Brook University, woodsides, NY, ²Stony Brook University, Stony Brook, NY**P-Fri-540****Electrical and Dielectric Properties of Bone and Its Constituents with Frequency**H. RANU¹ AND D. RAI²¹American Orthopaedic Biomechanics Research Institute, Atlanta, GA, ²Shobit University, Meerut, India**P-Fri-541****Intracranial Analysis of Non-Sutural Osteoblast Mechanobiology in the Developing Mammal Skull**H. WEISS-BILKA¹, S.-Y. LIU², AND M. RAVOSA¹¹University of Notre Dame, Notre Dame, IN, ²Indiana University School of Dentistry, Indianapolis, IN**P-Fri-542****Morphological Analysis of Changes in the Thoracic Skeleton with Sex and Age**A. WEAVER¹, S. SCHOELL¹, C. NGUYEN², AND J. STITZEL¹¹Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC, ²Wake Forest University, Winston-Salem, NC**P-Fri-543****A Controlled Delivery Method to Localize Stem Cells**S. LESLIE¹, D. COHEN¹, J. SEDLACZEK², E. PINSKER³, Z. SCHWARTZ¹, AND B. BOYAN¹¹Virginia Commonwealth University, Richmond, VA, ²Otto-von-Guericke University, Magdeburg, Germany, ³Georgia Institute of Technology, Atlanta, GA**P-Fri-544****Fracture Healing in a Mouse Model of Saether-Chatzen Syndrome**S. HYZY¹, G. REDDY¹, R. OLIVARES-NAVARRETE¹, Z. SCHWARTZ^{1,2,3}, AND B. BOYAN^{1,2}¹Virginia Commonwealth University, Richmond, VA, ²Georgia Institute of Technology, Atlanta, GA, ³University of Texas Health Science Center at San Antonio, San Antonio, TX**Track: Respiratory Bioengineering, Biomechanics****Computational Modeling of the Respiratory System****Chairs:** Donald Gaver**P-Fri-522****Computational Modeling of the Alveolar-Scale Deformation during Pulmonary Fibrosis**L. CAGGIANO¹, M. SCHICKEL¹, AND S. GHADIALI¹¹The Ohio State University, Columbus, OH**P-Fri-524****Investigation Into the Enhancement of Surfactant Transport and Sorption in a Model of Airway Reopening**J. PILLERT¹, H. FUJIOKA¹, D. HALPERN², AND D. GAVER¹¹Tulane University, New Orleans, LA, ²University of Alabama, Tuscaloosa, AL**P-Fri-525****A Computational Model of Epithelial Cell Monolayer Disruption in the Lung**B. MA¹ AND J. BATES¹¹University of Vermont, Burlington, VT**P-Fri-526****Mechanistic Computational Model of Lung Tissue Bioenergetics and the Effect of Acute Lung Injury**X. ZHANG¹, R. DASH², A. CLOUGH¹, E. JACOBS³, AND S. AUDI¹¹Marquette University, Milwaukee, WI, ²Medical College of Wisconsin, Milwaukee, WI, ³Zablocki VA Medical Center, Milwaukee, WIPOSTER
SESSION
Fri

P-Fri-527

Computational Simulation of Eustachian Tube Sonotubometry Test

J. TORRES-RODRIGUEZ¹ AND S. GHADIALI¹¹The Ohio State University, Columbus, OH**P-Fri-528**

A Scaling Model of the Lung Parenchyma in Aging

B. SUKI¹¹Boston University, Boston, MA**P-Fri-529**

Agent-Based Models For Studying Stem Cell Dynamics On Decellularized Lung Scaffolds

J. POTHEM¹, V. RAJENDRAN², D. WAGNER¹, D. WEISS¹, AND J. BATES¹¹University of Vermont College of Medicine, Burlington, VT, ²Essex High School, Essex Junction, VT**P-Fri-530**

Real-Time Numerical Simulation of Ozone Transport and Uptake in an Anatomically-Accurate Model of the Respiratory Tract

S. MOTEVALIAN¹, J. ULTMAN¹, AND A. BORHAN¹¹The Pennsylvania State University, University Park, PA**P-Fri-531**

Numerical Simulation of Airflow in a CT-based Human Airway Model With Physiologically Appropriate Boundary Conditions

R. GRUETZEMACHER^{1,2}, A. ARABSHAHI^{1,2}, AND K. SREENIVAS^{1,2}¹The University of Tennessee, Chattanooga, Chattanooga, TN, ²SimCenter: National Center for Computational Engineering, Chattanooga, TN**P-Fri-532**

Dynamic Multi-scale Model of the Lung

J. RYANS¹, H. FUJIOKA¹, D. HALPERN², AND D. GAVER III¹¹Tulane University, New Orleans, LA, ²University of Alabama, Tuscaloosa, AL**P-Fri-505**

Intramuscular Sarcomere Length Variability in Ageing Healthy Mouse Diaphragm Muscle

K. MARTIN¹, C. HENRY¹, S. PEIRCE-COTTLER¹, AND S. BLEMKER¹¹University of Virginia, Charlottesville, VA**P-Fri-506**

Modeling the Mucociliary Clearance in Bronchial Bifurcations

M. MANOLIDIS¹, B. LOUIS², D. ISABEY², J. GROETBERG^{2,3}, AND M. FILOCHE^{1,2}¹Ecole Polytechnique, Palaiseau, France, ²INSERM, Créteil, France, ³University of Michigan, Ann Arbor, MI**P-Fri-507**

Spatial Organization of Constriction Pattern Contributes to Apparent Airway Hyperresponsiveness And Intersubject Variability in Response to Challenge and Dilatation

S. AMIN¹ AND B. SUKI²¹Boston University, Boston, MA, ²Boston University, BOSTON, MA**P-Fri-508**

Mechanical Properties and Gelation Kinetics of Lung ECM Hydrogels Tailored for Regenerative Medicine

R. POULIOT¹, R. TAKAHASHI¹, M. MALIK¹, AND R. HEISE¹¹Virginia Commonwealth University, Richmond, VA**P-Fri-509**

Small Charged Compound Lowers Surface Tension In Alveoli Flooded With Albumin Solution

A. KHARGE¹ AND C. PERLMAN¹¹Stevens Institute of Technology, Hoboken, NJ**P-Fri-510**

A Composite Cost Function for Quantifying Ventilator-induced Lung Injury

J. BATES¹ AND B. SMITH¹¹University of Vermont, Burlington, VTPOSTER
SESSION
Fri**Track: Respiratory Bioengineering,
Biomechanics****Respiratory Transport and Mechanics I****Chairs:** Jason Bates**P-Fri-501**

Mechanics of the Pulmonary Airway System in Healthy Subjects and Patients during Forced Expiration Maneuver

A. PRADEL¹, K. BLANC¹, P. GILFRICHE², T. SIMILOWSKI¹, C. STRAUS¹, AND M. FILOCHE^{3,4}¹Université Pierre et Marie Curie, Paris, France, ²Ecole des Mines-ParisTech, Paris, France, ³Ecole Polytechnique, Palaiseau, France, ⁴INSERM, Créteil, France**P-Fri-502**

Adhesive Properties of Ultra-Low Volume Mucus Samples during Otitis Media

N. HIGUITA-CASTRO¹, J. MALIK¹, J. SWARTS², AND S. GHADIALI¹¹The Ohio State University, Columbus, OH, ²University of Pittsburgh, Pittsburgh, PA**P-Fri-503**

Effect of Long-term Alcohol Exposure on Mucociliary Clearance through 3D High Speed Imaging and Dynamic Modeling

Z. CHEN^{1,2}, Y. WANG¹, X. JIA¹, AND M. ZHANG¹¹The Ohio State University, Columbus, OH, ²The University of Tennessee, Knoxville, TN**P-Fri-504**

Modeling Lung Morphometry Using a Hybrid Power Law Method

B. HENRY¹, Z. DAI¹, AND T. ROYSTON¹¹University of Illinois at Chicago, Chicago, IL**Track: Respiratory Bioengineering,
Biomechanics****Respiratory Transport and Mechanics II****Chairs:** Bela Suki**P-Fri-511**

Effect of Airway Size on Magnitude of Bronchodilatory and Bronchoprotective Responses to Breathing

B. HARVEY¹, H. PETERSON¹, H. PARAMESWARAN¹, A. ZOLLINGER¹, AND K. LUTCHEN¹¹Boston University, Boston, MA**P-Fri-512**


Plasma Proteins Required For Exogenous Surfactant To Lessen Ventilation Injury

Y. WU¹ AND C. PERLMAN¹¹Stevens Institute of Technology, Hoboken, NJ**P-Fri-513**

Visualization of Dynamic Pulmonary Surfactant Transport during Simulated Airway Reopening

E. YAMAGUCHI¹, M. DEARDEN¹, L. NOLAN¹, AND D. GAVER¹¹Tulane University, New Orleans, LA**P-Fri-514**

Neulizable Decellularized Lung Matrix Solution for Hyperoxia-induced Acute Lung Injury

J. WU¹, Q. DING¹, A. DUTTA¹, R. IYER², P. RAVIKUMAR², L. WU², C. HSIA², AND Y. HONG¹¹University of Texas at Arlington, Arlington, TX, ²University of Texas Southwestern Medical Center, Dallas, TX**P** = Poster Session
OP = Oral Presentation
 = Reviewer Choice Award

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM, 4:00PM - 5:00PM

P-Fri-515**Distribution of Advective Ventilation in a Three-Dimensional Canine Lung Model**J. HERRMANN¹, M. TAWHAI², AND D. KACZKA³¹Boston University, Boston, MA, ²University of Auckland, Auckland, New Zealand,³University of Iowa, Iowa City, IA**P-Fri-516****An Analytical Theory of Oxygen Transport in the Human Placenta**A. SEROV¹, C. SALAFIA², D. GREBENKOV¹, AND M. FILOCHE¹¹Ecole Polytechnique - CNRS, Palaiseau Cedex, France, ²Placenta Analytics LLC, Larchmont, NY**P-Fri-517****Estimation of Soft Tissue Elasticity surrounding Upper Airway from MR Imaging and Tube Law Method**D. SUBRAMANIAM¹, G. MYLAVARAPU¹, R. FLECK², S. SHOTT², R. AMIN², AND E. GUTMARK¹¹University of Cincinnati, Cincinnati, OH, ²Cincinnati Children's Hospital Medical Center, Cincinnati, OH**P-Fri-518****Aerosolized miR-146a Delivery and Expression in a Mouse Model**C. BOBBA¹, K. NELSON¹, B. WHITSON¹, X. ZHAO¹, AND S. GHADIALI¹¹The Ohio State University, Columbus, OH**P-Fri-519****Modulation of Lung Vascular Stiffening by Lipoxin Attenuates LPS-induced Lung Inflammation**A. MELITON¹, M. ALLEN¹, K. BIRUKOV¹, M. GARDEL¹, M. GARDEL¹, AND A. BIRUKOVA¹¹University of Chicago, Chicago, IL**P-Fri-520****Quantifying Effects of Upper Airway Shunt on Peripheral Heterogeneity: A Computational Model Study**S. BHATAWADEKAR¹, D. LEARY¹, AND G. MAKSYM¹¹Dalhousie University, Halifax, NS, Canada**P-Fri-521****Effect of Lung Tissue Density on ¹⁸F-FDG Kinetics Parameters**T. WELLMAN¹ AND M. VIDAL MELO²¹Boston University, Boston, MA, ²Massachusetts General Hospital, Boston, MA**Track: Stem Cell Engineering****Mechanobiology and Stem Cell Translation****Chairs:** Thomas Gaborski, Janet Zoldan**P-Fri-231****Distribution of Mitochondria in Human Mesenchymal Stem Cells during Endothelial Differentiation**J. SHIN¹, S. PARK¹, Y. KANG¹, S. GU², H. PARK², H. KIM¹, AND J-W. SHIN^{1,2,3}¹Department of Biomedical Engineering, Inje University, Gimhae, Korea, Republic of,²Department of Health Science and Technology, Inje University, Gimhae, Korea, Republic of,³Cardiovascular and Metabolic Disease Center/Institute of Aged Life Redesign/UHRC, Inje University, Gimhae, Korea, Republic of**P-Fri-232****Texture Analysis of Nucleus during Differentiation of hMSCs into Osteoblasts in Early Phase**S. PARK¹, J. SHIN¹, Y. KANG¹, Y. KIM¹, H. PARK², S. GU², AND J-W. SHIN^{1,2,3}¹Department of Biomedical Engineering, Inje University, Gimhae-si, Korea, Republic of,²Department of Health Science and Technology, Inje University, Gimhae-si, Korea, Republic of,³Cardiovascular and Metabolic Disease Center /Institute of Aged Life Redesign/UHRC, Inje University, Gimhae-si, Korea, Republic of**P-Fri-233****Mesenchymal Stromal Cell Influence on Pulmonary Metastasis After Removal of Primary Osteosarcoma**M. AANSTOOS¹, D. REGAN¹, R. ROSE¹, L. CHUBB¹, AND N. EHRHART¹¹Colorado State University, Fort Collins, CO**P-Fri-234****Human Pluripotent Stem Cell Derived Cardiac Tissues for Drug Development and Disease Modeling**A. CARLSON¹, I. SHADRIN¹, AND N. BURSAC¹¹Duke University, Durham, NC**P-Fri-235****Mechanosensors of Fluid Shear Induced MSC Migration**B. RIEHL¹, J. LEE¹, L. HA¹, AND J. LIM¹¹University of Nebraska-Lincoln, Lincoln, NE**P-Fri-236****Optical Flow Paired With Machine Learning for Increased Detection of Drug-Induced Cardiotoxicity in Human Induced Pluripotent Stem Cell Derived Cardiomyocytes**E. LEE¹, Y. KUROKAWA¹, S. GEORGE¹, AND M. KHINE¹¹University of California, Irvine, Irvine, CA**P-Fri-237****Role of the Stretch-activated Ion Channel Piezo 1 in Mechanosensitive Lineage Choice**M. PATHAK¹, J. NOURSE¹, T. TRAN¹, J. ARULMOLI¹, J. HWE¹, E. BERNARDIS², L. FLANAGAN¹, AND F. TOMBOLA¹¹UC Irvine, Irvine, CA, ²Children's Hospital of Philadelphia, Philadelphia, PA**P-Fri-238****Controlling Lineage Specific Differentiation Potential of Pluripotent Stem Cells by Engineering Colony Morphology**M. MALDONADO¹, K. LOW¹, L. WONG¹, G. ICO¹, T. FUJIMOTO¹, R. LUU¹, AND J. NAM¹¹University of California, Riverside, Riverside, CA**P-Fri-239****Influence of Agitation Rate and Aggregate Size on Human Pluripotent Stem Cells in Dynamic Suspension**D. NAMPE¹, R. JOSHI¹, C. BEAUDETTE¹, C. LIEW¹, AND H. TSUTSUI¹¹University of California, Riverside, Riverside, CA**P-Fri-240****Characterization of Human Mesenchymal Stem Cell Populations From Old Donors**T. BLOCK¹, M. MARINKOVIC¹, R. RAKIAN¹, D. DEAN¹, AND X-D. CHEN¹¹University of Texas Health Science Center at San Antonio, San Antonio, TX**P-Fri-241****Endothelial Differentiation of Adipose-derived Stem Cells in Comparison with Whartons jelly-derived Mesenchymal Stem Cells**M. GUREL¹ AND P. MCFETRIGDE¹¹University of Florida, Gainesville, FL**P-Fri-242****HT-MBOSS: A High-Throughput System for Studying Cellular Mechanobiology**J. LEE¹, E. YOON¹, J. JANSSON¹, A. BAKER¹, AND M. WONG¹¹University of Texas at Austin, Austin, TX

Track: Stem Cell Engineering, Biomaterials**Stem Cell Environments and Differentiation**

Chairs: Thomas Gaborski, Janet Zoldan

P-Fri-110**Promoting Ligamentogenic Differentiation of Mesenchymal Stem Cells in Controlled Microenvironments**

M. REHMANN¹ AND A. KLOXIN¹

¹University of Delaware, Newark, DE

P-Fri-111**Determining the Physiochemical Cues Directing Endothelial Specification During Differentiation**

Q. SMITH¹ AND S. GERECHE¹

¹Johns Hopkins University, Baltimore, MD

P-Fri-112**Arrayed Microenvironments for Probing Liver Progenitor Cell Fate Decisions**

K. KAYLAN¹, V. ERMILOVA¹, AND G. UNDERHILL¹

¹University of Illinois at Urbana-Champaign, Urbana, IL

P-Fri-113**Engineering the Cellular Lipidome to Direct Mesenchymal Stem Cell Differentiation**

K. LEVENTAL¹, E. STOCKENBOJER², AND I. LEVENTAL¹

¹University of Texas Health Science Center at Houston, Houston, TX, ²Rice University, Houston, TX

P-Fri-114**Expression of Extracellular Matrix and Cell-adhesion Molecules in Chondrogenesis of Human MSCs**

A. NAZEMPOUR¹, C. R. QUISENBERRY¹, N. ABU-LAIL¹, AND B. J VAN WIE¹

¹Voiland School of Chemical Engineering and Bioengineering, Washington State University, PULLMAN, WA

P-Fri-115**Incorporation of Retinoic Acid Releasing Microspheres into Aggregates of Pluripotent Stem Cells for Inducing Neuronal Differentiation**

J. GOMEZ¹, J. EDGAR¹, N. MOHTARAM¹, A. MONTGOMERY¹, AND S. WILLERTH¹

¹University of Victoria, Victoria, BC, Canada

P-Fri-116**Deterministic HOX Patterning in Human Pluripotent Stem Cell-derived Posterior Neuroectoderm**

E. LIPPMANN¹, C. WILLIAMS¹, M. ESTEVEZ-SILVA¹, J. COON¹, AND R. ASHTON¹

¹University of Wisconsin, Madison, WI

P-Fri-117**Prediction of Drug-Induced Liver Injury in Engineered Cultures of iPSC-Derived Human Hepatocytes**

B. WARE¹, D. BERGER¹, AND S. KHETANI¹

¹Colorado State University, Fort Collins, CO

P-Fri-118**Microfluidic Co-cultures to Study Stem Cell Fate Selection During Liver Injury**

A. HAQUE¹, P. GHEIBI¹, Y. GAO¹, AND A. REVZIN¹

¹University of California, Davis, Davis, CA

P-Fri-119 **Distinct Regulation Of Arterial Venous Differentiation By Ephrinb2/Ephb4 Hydrogels**

T. DORSEY¹ AND G. DAI¹

¹Rensselaer Polytechnic Institute, Troy, NY

P-Fri-120

CANCELLED BY AUTHOR

P-Fri-121**The Effect of Alginate Capsule Composition on Pancreatic Differentiation of Human Embryonic Stem Cells**

T. RICHARDSON¹, J. CANDIELLO¹, P. KUMTA¹, AND I. BANERJEE¹

¹University of Pittsburgh, Pittsburgh, PA

P-Fri-122**Controlled Cell Transdifferentiation by Nanochannel Electroporation**

D. GALLEGOS-PEREZ¹, S. GHATAK¹, J. MA¹, C. CZEISLER¹, P. GYGLI¹, T. SHERWOOD¹, V. MALKOC¹, L. CHANG¹, X. WANG¹, C. ASKWITH¹, S. KHANNA¹, C. RINK¹, S. GNYAWALI¹, C. SEN¹, J. OTERO¹, AND L. LEE¹

¹The Ohio State University, Columbus, OH

P-Fri-123**Optimization of Alternating Electric Current to Achieve Osteodifferentiation of Adult Human Mesenchymal Stem Cells**

M. WECHSLER¹, B. HERMANN¹, AND R. BIZIOS¹

¹The University of Texas at San Antonio, San Antonio, TX

P-Fri-124**Directed Differentiation of Stem Cells by 3D Extracellular Matrix Composites**

J. JUNG¹, M. BACHE-WIIG¹, AND B. OGLE¹

¹University of Minnesota - Twin Cities, Minneapolis, MN

P-Fri-125**Re-engineering The 3D Pancreatic Niche: Co-culture of Endothelial Cells with Human Embryonic Stem Cells-derived Pancreatic Progenitor Cells in Decellularized Pancreas**

S-K. GOH¹, S. BERTERA², S. BARNER¹, AND I. BANERJEE^{1,3}

¹University of Pittsburgh, Pittsburgh, PA, ²Children's Hospital of Pittsburgh, Pittsburgh, PA, ³McGowan Institute of Regenerative Medicine, Pittsburgh, PA

P-Fri-126**Micro-engineered ECM Array as a Platform for Deciphering Cell-ECM Interaction During Stem Cell Differentiation**

S-K. GOH¹, S. BERTERA², W. HALFTER¹, AND I. BANERJEE^{1,3}

¹University of Pittsburgh, Pittsburgh, PA, ²Children's Hospital of Pittsburgh, Pittsburgh, PA, ³McGowan Institute of Regenerative Medicine, Pittsburgh, PA

P-Fri-127**In vitro Vascular Arterial Differentiation of Embryonic Stem Cells through Neurophilin-1**

D. KIM¹ AND G. DAI¹

¹Rensselaer Polytechnic Institute, Troy, NY

P-Fri-128**A Kinase Inhibitor Screen Identifies Small-molecule Modulators During Human Pluripotent Stem Cell-derived Cardiac Progenitors into Cardiomyocytes**

H. SONG¹, M. RADISIC², AND P. ZANDSTRA²

¹University of Toronto, Toronto, ON, Canada, ²University of Toronto, Toronto, Canada

P-Fri-129**Cadherin-11 Directs Mesenchymal Stem Cell Differentiation and Regulates Extracellular Matrix Production and Mechanical Properties of Myogenic Tissues *in-vivo* and *in vitro***

S. ROW¹, S. ALIMPERTI¹, M. KOOBATIAN¹, Y. LIU¹, T. GEORGE², S. AGARWAL², AND S. ANDREADIS¹

¹State University of New York at Buffalo, Amherst, NY, ²Baylor College of Medicine, Houston, TX


P-Fri-130**Directed Differentiation of Mesenchymal Stem Cells on Cross-linked Gelatin Scaffolds by Mechanical and Architectural Cues**

K. MCANDREWS¹, F. KIM¹, T. LAM¹, D. MCGRAIL¹, AND M. DAWSON¹

¹Georgia Institute of Technology, Atlanta, GA

P = Poster Session

OP = Oral Presentation

 = Reviewer Choice Award

P-Fri-131**A Multifactorial Approach Focusing On Induced Cardiomyocyte Transdifferentiation**N. CHRISTOFOROU^{1,2}, S. CHAKRABORTY¹, A. ADLER¹, AND K. LEONG¹¹Duke University, Durham, NC, ²Khalifa University of Science Technology and Research, Abu Dhabi, United Arab Emirates**P-Fri-132****Single-Cell Approaches to Assess Hematopoietic Stem Cell Response to Matrix Cues**J. CHOI¹, Y. ILIN¹, Y. ZHUO¹, B. CUNNINGHAM¹, M. KRAFT¹, AND B. HARLEY¹¹University of Illinois at Urbana-Champaign, Urbana, IL**P-Fri-133****Protein Laden Soft Matrices as High-Throughput Platforms to Engineer Stem Cell Microenvironments**M. FLOREN¹, S. BRYANT¹, AND W. TAN¹¹University of Colorado, Boulder, CO**P-Fri-134****Hematopoietic Stem and Progenitor Cells Provide a Local Source of Neutrophils Necessary to Resolve Infected Wounds**P. FALAHEE¹, D. DAHMUBED¹, AND S. SIMON¹¹University of California at Davis, Davis, CA**P-Fri-135**

CANCELLED BY AUTHOR

Track: Tissue Engineering, Stem Cell Engineering**Scaffolds and Surfaces for Tissue Engineering****Chairs:** Justin Brown, Lijie Grace Zhang**P-Fri-63****Electrospun Nanostructured Chitosan/PVA Loaded with Growth Factors for Wound Healing**M. WANG¹ AND T. WEBSTER^{1,2}¹The northeastern university, Boston, MA, ²King Abdulaziz University, Jeddah, Saudi Arabia**P-Fri-64****Optimally Processed Porcine Adipose Tissue as a Soft Tissue Engineering Scaffold**K. ROEHM¹ AND S. MADIHALY¹¹Oklahoma State University, Stillwater, OK**P-Fri-65****Antibacterial Properties of Collagen Hydrogels with Tunable Mechanical Properties**R. EGERTER¹, C. ANGPRASEUTH¹, M. JIMENEZ¹, C. KEELER¹, C. STANNARD¹, AND E. ORWIN¹¹Harvey Mudd College, Claremont, CA**P-Fri-66****Poly(ethylene) Glycol Diacrylate Scaffold Mimics Elasticity of Native Bruch's Membrane for Retinal Tissue Engineering**C. WHITE¹ AND R. OLABISI¹¹Rutgers, The State University of New Jersey, Piscataway, NJ**P-Fri-67****The Effects of Hydroxyapatite Size and Hydrostatic Pressure on Osteogenesis of MSCs *in vitro***S. GU¹, Y. KANG², S. PARK², J. SHIN², Y. WU², AND J-W. SHIN^{1,2,3}¹Department of Health Science and Technology, Inje University, Gimhae-si, Korea, Republic of, ²Department of Biomedical Engineering, Inje University, Gimhae-si, Korea, Republic of, ³Cardiovascular and Metabolic Disease Center/Institute of Aged Life Redesign/UHRC, Gimhae-si, Korea, Republic of**P-Fri-68****Electrospinning of Dendrimers as a New Bio-Engineered Scaffold**D. ADUBA, JR.¹, J. OVERLIN¹, C. FRIERSON¹, G. BOWLIN², AND H. YANG¹¹Virginia Commonwealth University, Richmond, VA, ²University of Memphis, Memphis, TN**P-Fri-69****Incorporation of Intervertebral Disc Cells into Candidate Materials for Nucleus Pulposus Regeneration**E. GROWNEY KALAF¹, K. FELTZ¹, N. TEMOFEEV¹, J. BLEDSOE¹, AND S. SELL¹¹Saint Louis University, St. Louis, MO**P-Fri-70****Effects of Pore Size on Mechanical Properties and MSC Behavior in Bioglass Composite Scaffolds**C. VISSERS¹ AND J. LEACH¹¹University of California, Davis, Davis, CA**P-Fri-71****Compressed Gelatin-Honey Sponges as Membrane Barriers for Bone Grafting Applications**I. RODRIGUEZ¹, B. BURGER², AND G. BOWLIN¹¹The University of Memphis, Memphis, TN, ²Dulles Institute for Oral/Maxillofacial Surgery, Sterling, VA**P-Fri-72****Fabricating Highly Aligned Collagen Sponges From Self-Assembled, Fibrillar Collagen Gels**C. LOWE¹, I. REUCROFT¹, AND D. SHREIBER¹¹Rutgers University, Piscataway, NJ**P-Fri-73****Synthesis and Evaluation of Barnacles β Strand Peptide Having Cell Attachment Activity**K. TAKASE¹, Y. HIRANO¹, AND K. KAMINO²¹Kansai University, Suita, Japan, ²NITE, Chiba, Japan**P-Fri-74****3D Printed Bone Scaffolds with Microvascular Network and Nano Hydroxyapatite for Improved hMSC Functions**B. HOLMES¹ AND L. ZHANG¹¹The George Washington University, Washington, DC**P-Fri-75****Delivery of Growth Factor via Two Electrospinning Techniques**L. PLACE¹, M. SEYKI², J. TAUSSIG², AND M. KIPPER²¹Colorado State, Fort Collins, CO, ²Colorado State University, Fort Collins, CO**P-Fri-76****Endothelialization of Novel Magnesium-Rare Earth Alloys with Fluoride and Collagen Coating**N. ZHAO¹, B. WORKMAN¹, J. MA¹, AND D. ZHU¹¹North Carolina A&T State University, Greensboro, NC**P-Fri-77****A Pressure-sensitive Adhesive Derived from Sundew Plants for Wound Healing**Y. HUANG¹, Y. WANG¹, L. SUN¹, AND M. ZHANG¹¹The Ohio State University, Columbus, OH**P-Fri-78****Characterization of Native Wharton's Jelly: A Natural Tissue Engineering Construct**S. SAHA¹, M. WILKERSON¹, F. VITALE², D. TSENTALOVICH², S. KIRAN¹, M. PASQUALI², C. S. COX JR.¹, AND F. TRIOLO¹¹UTHealth – The University of Texas Health Science Center at Houston, Houston, TX, ²Rice University, Houston, TX**P-Fri-79****PEGylated Fibrin Biomaterials for Cardiomyocyte Cultivation**A. ALLEN¹, L. GEUSS¹, L. SUGGS¹, AND J. ZOLDAN¹¹University of Texas at Austin, Austin, TX

P-Fri-80**Chitosan-Hyaluronic Acid Scaffolds As A Mimic Of Glioblastoma Microenvironment Extracellular Matrix**K. WANG¹, S. FLORCZYK¹, F. KIEVIT¹, AND M. ZHANG¹¹University of Washington, Seattle, WA**P-Fri-81****Hydrogel Polymer Libraries for Developing Induced Pluripotent Stem Cell Derived Cardiac Patches**A. JOAQUIN¹, N. PEPPAS¹, AND J. ZOLDAN¹¹University of Texas at Austin, Austin, TX**P-Fri-82****Early *in-vitro* and *in-vivo* Characterization of Small Submucosa and Hyaluronic Acid 3D Scaffolds**D. TABIMA¹, V. TALER¹, A. SABOGAL¹, J. NAVARRO¹, D. NARVAEZ¹, H. GROOT¹, AND R. LOPEZ¹¹Universidad de los Andes, Bogota, Colombia**P-Fri-83****A Preliminary Evaluation of Electrospun Polycaprolactone Scaffolds Embedded with Bioglass Beads for Dermal Repair**R. FLORES¹, A. MOHAMMADKHAH², D. DAY², AND S. SELL¹¹Saint Louis University, St Louis, MO, ²Missouri Science & Technology, Rolla, MO**P-Fri-84****Bi-Axially Aligned Nanofibers for Soft Tissue Regeneration**B. BANK¹ AND J. BROWN¹¹The Pennsylvania State University, University Park, PA**P-Fri-85****Fibrous HA Scaffolds With Active NGF Delivery For Directed Neurite Growth**T. WHITEHEAD¹ AND H. SUNDARARAGHAVAN¹¹Wayne State University, Detroit, MI**P-Fri-86****A Three-Dimensional Model of Vascularized Human Tumor Colon Spheroids in a Human Colon-Extracted Extracellular Matrix**M. ROMERO LOPEZ¹ AND C. HUGHES¹¹University of California Irvine, Irvine, CA**P-Fri-87****Cell Proliferation and Infiltration in Electrospun non-Synthetic Biopolymer-Based Scaffolds**D. ARDILA¹, E. TAMIMI¹, A. ACUÑA¹, T. DOETSCHMAN¹, AND J. VANDE GEEST¹¹The University of Arizona, Tucson, AZ**P-Fri-88****Cell-derived Matrices as Biomimetic Substrates for Cardiomyoblast Differentiation**M. SUHAERI^{1,2}, M. HWANG¹, I. KIM¹, S. VAN^{1,2}, AND K. PARK^{1,2}¹Korea Institute of Science and Technology, Seoul, Korea, Republic of, ²University of Science and Technology, Daejeon, Korea, Republic of**Track: Tissue Engineering****Bioreactors for Tissue Engineering****Chairs:** Anuradha (Anu) Subramanian, Teja Guda**P-Fri-255****Development Of A Graft For Skeletal Muscle Regeneration Using Bioreactor Technology**B. POLLOT^{1,2}, C. RATHBONE², AND T. GUDA^{1,2}¹University of Texas at San Antonio, San Antonio, TX, ²U.S. Army Institute of Surgical Research, Ft. Sam Houston, TX**P-Fri-256****Simulated Microgravity Can Alter Cell Viability, Density, and Transport in 3D Microtissues**E. EVANS¹, Y-T. DINGLE¹, AND D. HOFFMAN-KIM¹¹Brown University, Providence, RI**P-Fri-257****Theoretical Modeling and Experimental Verification of an Ultrasound Assisted Bioreactor**T. LOUW¹, H. VILJOEN², AND A. SUBRAMANIAN²¹University of Cape Town, Cape Town, South Africa, ²University of Nebraska, Lincoln, NE**P-Fri-258****Bioreactor Technologies and Testing of Stem Cell-Seeded Scaffolds for Tissue Engineered Heart Valves**L. SIERAD^{1,2}, E. SHAW¹, A. KENNAMER¹, R. ODUM¹, M. HARPA², O. COTOI², T. PRED², L. HARCEAGA², R. DEAC², V. RAICEA², H. SUCIU², K. BRANZANIUC², I. EGYED², Z. PAVAI², A. SZANTO², A. SIMIONESCU^{1,2}, AND D. SIMIONESCU^{1,2}¹Clemson University, Clemson, SC, ²Targu Mures University of Medicine and Pharmacy, Targu Mures, Romania**P-Fri-259****Quantification of Mechanically Induced Orientation of Collagen Fibers in Tissue Engineered Cartilage**E. KAHN¹, R. STEFANI², M. KELLEY¹, A. MEI¹, AND B. BILGEN^{2,3}¹Brown University, Providence, RI, ²The Warren Alpert Medical School of Brown University and Rhode Island Hospital, Providence, RI, ³Providence VA Medical Center, Providence, RI**P-Fri-260****Effects of Phonation-Relevant Vibration on Macrophage Phagocytosis**A. ZERDOUM¹, B. BACHMAN¹, AND X. JIA¹¹University of Delaware, Newark, DE**P-Fri-261****Identifying the Localized Shear Forces on Cultured Preosteoblasts in 3D Flow Perfusion Cultures and Elucidating Their Metabolic State**V. SIKAVITSAS¹, C. WILLIAMS¹, R. VORONOV², AND D. PAPAVALASSIOU¹¹University of Oklahoma, Norman, OK, ²New Jersey Institute of Technology, Newark, NJ**P-Fri-262****H-Bioreactor Design, Viability Analysis, And Characterization Of Strain On Corneal Keratocytes**T. BECKMAN¹, R. ROLEY¹, AND E. ORWIN¹¹Harvey Mudd College, Claremont, CA

Track: Tissue Engineering**Blood Vessel Tissue Engineering****Chairs:** Wei Tan, Hsiai Tzung**P-Fri-263****Self-assembly of Endothelial Cells and Smooth Muscle Cells in Bio-printed 3D Fluidic Vascular Tissue**V. LEE¹, P. VINCENT², S-S. YOO³, AND G. DAI¹¹Rensselaer Polytechnic Institute, Troy, NY, ²Albany Medical College, Albany, NY, ³Brigham and Women's Hospital, Harvard Medical School, Boston, MA**P-Fri-264****Fabrication of Perfused Culture System for Functional Microvasculature Models**Y. YUKAWA¹, B. KIM¹, AND Y. MATSUNAGA¹¹Institute of Industrial Science, The university of Tokyo, Meguro-ku, Tokyo, Japan**P-Fri-265****Large-scale Functional Endothelialized Microvessels in a Gel-free Microfluidic Network**Y. XIAO¹, M. XU², X. ZI¹, X. LI³, G. ZHENG², J. FU³, S. HALENE¹, R. FAN¹, L. NIKLASON¹, AND J. ZHOU¹¹Yale University, New Haven, CT, ²Fudan University, Shanghai, China, People's Republic of, ³University of Michigan, Ann Arbor, Ann Arbor, MI**P-Fri-266****Reliable Soft Thermo-responsive Substrates for Patterned Cell-Sheet Engineering**S. SHAH¹, D. BACKMAN¹, B. LESAVAGE¹, AND J. WONG¹¹Boston University, Boston, MA**P-Fri-267****A Novel Bio-hybrid Functionally Graded Small Diameter Vascular Graft**H. PATEL¹, V. THOMAS¹, S. POGWIZD¹, R. SINGH², AND Y. VOHRA¹¹University of Alabama at Birmingham, Birmingham, AL, ²Vivo Biosciences, Birmingham, AL**P-Fri-268****Adipose Derived Stem Cells for a Vascular Graft**J. ARRIZABALAGA¹ AND M. NOLLERT¹¹University of Oklahoma, Norman, OK**P-Fri-269****Development of a Bioengineered Cardiac Assist Device**M. MOHAMED¹, M. HOGAN¹, N. PATEL¹, Z-W. TAO¹, AND R. BIRLA¹¹University of Houston, Houston, TX**P-Fri-270****Development of Collagen Type IV Immobilized Electrospun PLLA Nanofibers Using Gamma-ray Irradiation for Enhanced Endothelialization**H. YUNHOE^{1,2}, L. YU BIN^{1,2}, L. JANG-SOO^{1,2}, K. EUNMI^{1,2}, AND S. HEUNGSOO^{1,2}¹Hanyang University, Seoul, Korea, Republic of, ²BK21 Plus Future Biopharmaceutical Human Resources Training and Research Team, Seoul, Korea, Republic of**P-Fri-271****Increased Elastin Matrix Production In PEG-diacrylate Hydrogels For Vascular Tissue Engineering**D. HOLMAN¹, N. NOSOUDI¹, H-J. LEE¹, K. WEBB¹, AND N. VYVAHARE¹¹Clemson University, Clemson, SC**Track: Tissue Engineering, Cardiovascular Engineering****Cardiac Muscle and Valve Tissue Engineering****Chairs:** Jeffrey Jacot, Dan Simionescu**P-Fri-587****Modeling the Enhancement of Extracellular Matrix Quantity and Quality in Large-Deformation Mechanically-Conditioned Heart Valve Tissue Engineering**J. SOARES¹ AND M. SACKS¹¹University of Texas at Austin, Austin, TX**P-Fri-588****Porcine Pericardium Fixation Studies For Aortic Heart Valves In Pediatrics**T. WELCH¹, J. WANG¹, K. GULESERIAN¹, V. SEBASTIAN¹, AND J. FORBESS¹¹UT Southwestern Medical Center of Dallas, Dallas, TX**P-Fri-589****Development of a Tissue Engineered Mitral Valve**C. DEBORDE¹, J. LIAO², D. SIMIONESCU¹, AND A. SIMIONESCU¹¹Clemson University, Clemson, SC, ²Mississippi State University, Mississippi State, MS**P-Fri-590****Design of a Hypoxic Incubator for the Study of Calcific Aortic Valve Disease**M. SAPP¹, G. FATORA¹, AND K. GRANDE-ALLEN¹¹Rice University, Houston, TX**P-Fri-591** **Electrical Pacing Of 3D iPSC-Derived Cardiomyocytes In A Microfluidic Device**S. LAM¹, M. SIMON¹, D. TRAN¹, L. ALONZO¹, N. FLOHN¹, A. LEE¹, AND S. GEORGE¹¹University of California, Irvine, Irvine, CA**P-Fri-592****Engineered Cardiac Tissues Utilizing Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes**J. WENDEL¹ AND R. TRANQUILLO¹¹University of Minnesota, Minneapolis, MN**P-Fri-593****Human Pediatric Cardiac Progenitor Cells Formed Structures with High Alignment in 3D Culture**Y. GAO¹ AND J. JACOT^{1,2}¹Rice University, Houston, TX, ²Texas Children's Hospital, Houston, TX**P-Fri-594****Fabrication and Formation of Multi-Strip, Optogenetic Cardiac Muscles**V. CHAN¹, D. NEAL¹, AND H. ASADA¹¹Massachusetts Institute of Technology, Cambridge, MA**P-Fri-595****Human Mesenchymal Stem Cell Seeding of Porcine Small Intestinal Submucosal Extracellular Matrix**J. CHANG¹, X. LIN², T. PETRIE², C. SONDERGAARD², AND L. GRIFFITHS¹¹University of California-Davis, Davis, CA, ²University of California-Davis, Sacramento, CA

Track: Tissue Engineering, Stem Cell Engineering

Tissue Microfabrication and Stem Cells

Chairs: Min-Ho Kim, Ying Mei

P-Fri-243

Construction of 3D Engineered Tissue by Magnetically-Assisted Cell Assembly

L. YU BIN^{1,2}, L. JOONG-YUP^{1,2}, T. AHMAD^{1,2}, B. SEONGWOO^{1,2}, AND S. HEUNGSOO^{1,2}

¹Hanyang University, Seoul, Korea, Republic of, ²BK²¹ Plus Future Biopharmaceutical Human Resources Training and Research Team, Seoul, Korea, Republic of

P-Fri-244

A Single Mask, Single Etch Process for Fabricating 3-D Geometries in Collagen I Hydrogel

Y. HOSSEINI¹, S. VERBRIDGE¹, AND M. AGAH¹

¹Virginia Tech, Blacksburg, VA

P-Fri-245

Projection Micro-Stereolithography Apparatus for High Resolution Patterning of Cells in 3D: Applications in Tissue Engineering of Vasculature

R. RAMAN¹, B. BHADURI¹, A. SHKUMATOV¹, K. BAEK¹, M. MIR², H. KONG¹, G. POPESCU¹, AND R. BASHIR¹

¹University of Illinois at Urbana-Champaign, Champaign, IL, ²University of California, Berkeley, Berkeley, CA

P-Fri-246

3D Printing of Hydrogel Scaffolds with Tailored Composition and Stiffness

K. HOMAN¹, A. JAGIELSKA², R. HAWTHORNE¹, T. BUSBEE¹, K. VAN VLIET², AND J. LEWIS¹

¹Harvard University, Cambridge, MA, ²MIT, Cambridge, MA

P-Fri-247

Engineering Alginate Microfibers with Spatially Defined Fibronectin Functional Sites for Skeletal Muscle Tissue Engineering

J. SZYMANSKI¹, P. PATIL¹, AND A. FEINBERG¹

¹Carnegie Mellon University, Pittsburgh, PA

P-Fri-248

Investigating Endothelial Remodeling in Tissue-Engineered Microvessels via RNA-seq

J. ZHOU¹, M. XU^{1,2}, X. ZI¹, Y. XIAO¹, G. ZHENG², L. NIKLASON¹, AND R. FAN^{1,3}

¹Yale University, New Haven, CT, ²Fudan University, Shanghai, China, People's Republic of, ³Yale Comprehensive Cancer Center, New Haven, CT

P-Fri-249

Exploiting Angiogenic Properties of Dedifferentiated Fat Cells

M. SHAH¹, M. CHAPMAN², R. GEORGE², V. NARAYAN³, AND G. ZHANG¹

¹University of Akron, Akron, OH, ²Summa Health System, Akron, OH, ³The Austen BiolInnovation Institute in Akron, Akron, OH

P-Fri-250

Enhanced Stem Cell Growth on Smart Polyurethane Scaffolds

N. CASTRO¹, K. HEARON², AND L. ZHANG¹

¹The George Washington University, Washington, DC, ²Massachusetts Institute of Technology, Cambridge, MA

P-Fri-251

Growth Factor Release from Mesenchymal Stem Cells Encapsulated in PEGDA Microspheres

P. KRZYSZCZYK¹ AND R. OLABISI¹

¹Rutgers, The State University of New Jersey, Piscataway, NJ

P-Fri-252

Effect of MSC and Fibrochondrocyte 3D Co-Culture on Matrix Secretion and Cell Phenotype

M. MCCORRY¹, J. PUETZER¹, AND L. BONASSAR¹

¹Cornell University, Ithaca, NY

P-Fri-253

Mechanical Stimulation Of PEGDA Encapsulated Mesenchymal Stem Cells Into Adipocytes

S. MEHTA¹ AND R. OLABISI¹

¹Rutgers University, New Brunswick, NJ

P-Fri-254

Potential Effects of Mechanical Stimulation on The Reprogramming Somatic Cells into iPS Cells

Y. KIM¹, Y. KANG¹, S. PARK¹, J. SHIN¹, S. GU², H. PARK¹, AND J-W. SHIN^{1,2,3}

¹Department of Biomedical Engineering, Inje University, Gimhae-si, Korea, Republic of, ²Department of Health Science and Technology, Gimhae-si, Korea, Republic of, ³Cardiovascular and Metabolic Disease Center /Institute of Aged Life Redesign/UHRC, Gimhae-si, Korea, Republic of

Track: Translational Biomedical Engineering, Device Technologies and Biomedical Robotics

Translational Biomedical Engineering I

Chairs: Mehdi Nikkhah, Mark Van Dyke

P-Fri-211

Amplification-free Multiplexed Detection of miRNA Biomarkers in Single Cancer Cells

N. WANG¹, Y. WU¹, Y. LU¹, S. CHAPIN², P. DOYLE², AND R. FAN^{1,3}

¹Yale University, New Haven, CT, ²MIT, Cambridge, MA, ³Yale Comprehensive Cancer Center, New Haven, CT

P-Fri-212

Targeted Delivery Of Anti-miR-712 By VCAMI-Binding Au Nanospheres For Atherosclerosis Therapy

R. SIMMONS¹, T. SUN¹, C. KIM¹, X. ZHAO¹, Y. XIA¹, AND H. JO¹

¹Georgia Institute of Technology & Emory University, Atlanta, GA

P-Fri-213

Rapid, Single Bacterial Detection From Blood using Microencapsulated Sensors

D-K. KANG¹, M. ALI¹, B. FAN¹, K. ZHANG¹, I. ALTAMORE¹, M. DIGMAN¹, E. GRATTON¹, E. PETERSON¹, AND W. ZHAO¹

¹University of California-Irvine, Irvine, CA

P-Fri-214

In Vivo Validation of Fluorescent Dye to Detect Ano-genital Injury in Women

Y. CAO¹, C. HENRY¹, A. BRUCE¹, S. PEIRCE¹, AND K. LAUGHON¹

¹Univ. of Virginia, Charlottesville, VA

P-Fri-215

Bioactive Hydrogel Coatings for Improvised Titanium Implants

S. KARNIK¹, Y. LUO¹, U. JAMMALAMADAKA¹, K. TAPPA², AND D. MILLS¹

¹Louisiana Tech University, Ruston, LA, ²Louisiana Tech University, Ruston, Afghanistan

P-Fri-216

Development of Silk-Elastinlike Protein Polymers as Liquid-To-Solid Embolic Agents

A. POURSAID¹, R. PRICE¹, A. TIEDE¹, E. OLSON¹, E. HUO¹, H. GHANDEHARI¹, AND J. CAPPELLO¹

¹University of Utah, Salt Lake City, UT

POSTER VIEWING WITH AUTHORS & REFRESHMENT BREAK | 9:30AM - 10:30AM, 4:00PM - 5:00PM

P-Fri-217**The Effect of Laser Adjuvant on the Efficacy of a Prophylactic Transcutaneous Influenza Vaccine**E. ELENES¹, R. JADI¹, J. DEVENTHIRAN¹, H. SOORYANARAIN¹, S. ELANKUMARAN¹, AND C. RYLANDER¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA**P-Fri-218****Development of a Hepatocyte Bioreactor Utilizing Perfusion through Aligned Nanofiber Networks**

A. Gill I, F. Popovic I, C. Brouse I, J. Moore I, T. Raisch I, B. Koons I, and A. Nain I

¹Virginia Tech, Blacksburg, VA**P-Fri-219****Silk Microneedle Delivery and Stabilization of Enteric Disease Vaccines**W. RAJA¹, S. LEE², H. KIM², B. XU², B. PANILAITIS¹, S. TZIPORI², AND D. KAPLAN¹¹Tufts University, Medford, MA, ²Tufts University, North Grafton, MA**P-Fri-220****Microtopographies Inhibit Human Lens Epithelial Cell Migration in Posterior Capsule Opacification Model**C. KIRSCHNER¹, M. DRINKER¹, K. CUEVAS^{2,3}, A. BRENNAN^{1,4}, AND S. REDDY¹¹Sharklet Technologies, Inc., Aurora, CO, ²Rocky Mountain Ophthalmology, Golden, CO, ³Insight Innovations, LLC, Golden, CO, ⁴University of Florida, Gainesville, FL**Track: Translational Biomedical Engineering, Device Technologies and Biomedical Robotics****Translational Biomedical Engineering II****Chairs:** Manu Platt, Mehdi Nikkhah**P-Fri-221****Soy Scaffolds Improve Healing of Full Thickness Skin Excision Wounds in Rat and Pig Models**Y-E. HAR-EL¹, J. GERSTENHABER¹, S. BAHARLOU¹, T. LO¹, R. BRODSKY¹, R. HUNEKE², AND P. LELKES¹¹Temple University, Philadelphia, PA, ²Drexel University College of Medicine, Philadelphia, PA**P-Fri-222****The Analysis of Explanted Organ Perfusion to Determine Optimal Perfusion Temperature**T. O'BRIEN¹, T. DILLER¹, AND J. ROBERTSON¹¹Virginia Tech, Blacksburg, VA**P-Fri-223****Successful Isolation of Human islets using a Collagenase free Osmotic Shock Method**J. MCQUILLING^{1,2}, S. SITTADJODY², J. STEINMAN², G. ORLANDO², A. FARNEY², AND E. OPARA^{1,2}¹Virginia Tech-Wake Forest School of Biomedical Engineering & Sciences (SBES), Winston-Salem, NC, ²Wake Forest School of Medicine, Winston-Salem, NC**P-Fri-224****Combined MicroRNA/Anti-MicroRNA Therapy and Molecular Beacons Based Prognosis of Mouse Hepatocellular Carcinoma (HCC) using Target Lipoplex Nanoparticles**X. WANG¹, Z. YANG¹, R. LEE¹, S. JACOB¹, K. GHOSHAL¹, AND J. LEE¹¹the Ohio State University, columbus, OH**P-Fri-225****Layer-by-layer Nanoparticles for Co-delivery of Chemodrugs and RNAi for Treating Aggressive Types of Cancers**J. DENG¹, S. MORTON¹, E. DREADEN¹, AND P. HAMMOND¹¹MIT, Cambridge, MA**P-Fri-226****Multipotent Progenitor and Endothelial Cell Interactions Promote Angiogenesis and Osteogenesis**H. HOFER¹, P. ALEXANDER¹, AND R. TUAN¹¹University of Pittsburgh, Pittsburgh, PA**P-Fri-227****A Novel Cell-Based Assay for MMP Inhibitor Screening**P. KRISANARUNGSON¹, A. WALKER¹, AND J. WOLCHOK¹¹University of Arkansas, Fayetteville, AR**P-Fri-228****PolyGraphene Muco-adhesive Medi-Patches for Anti-Stem like Cell Therapy via STAT-3 Inhibition**S. MISRA^{1,2} AND D. PAN^{1,2}¹University of Illinois at Urbana-Champaign, Urbana, IL, ²Carle Foundation Hospital, Urbana, IL**P-Fri-229****Pathology Evaluation and Analysis of Cardiac Leads**H. SMITH¹, S. JESSEN¹, T. LANCON¹, M. O'BRIEN¹, L. SUAREZ¹, M. WILCOX¹, M. MILLER², B. WEEKS¹, AND F. CLUBB, JR.¹¹Texas A&M University, College Station, TX, ²Texas A&M Institute for Preclinical Studies, College Station, TX**P-Fri-230****Minimally Invasive Irreversible Electroporation For Pancreatic Cancer Treatment**L. REESE¹, J. MCGUIRE¹, G. MISHRA², C. WILLIAMS¹, R. DAVALOS¹, AND L. BICKFORD¹¹Virginia Tech, Blacksburg, VA, ²Wake Forest Medical Center, Winston Salem, NC

TODAY'S HIGHLIGHT

PLATFORM SESSION Sat I 8:00am - 9:30am

See pages 174-181, HBGCC

EXHIBIT HALL OPEN 9:30am - 1:30p

HBGCC, Exhibit Hall A

POSTER SESSION SAT 9:30pm - 1:00pm

See pages 195-210 HBGCC, Exhibit Hall A

**Poster Viewing with Authors
& Refreshment Break** 9:30am - 10:30am**PLENARY SESSION**

10:30am - 12:30pm

HBGCC, Lila Cockrell Theatre

**Rita Schaffer Memorial Young
Investigator Lecture****NEW PARADIGMS FOR CELL
MIGRATION IN CONFINED
MICROENVIRONMENTS**

Kimberly Stroka, PhD

**Diversity Lecture**

Naomi Chesler, PhD

PLATFORM SESSION Sat 2 1:30pm - 3:00pm

See pages 182-188, HBGCC

PLATFORM SESSION Sat 3 3:15pm - 4:15pm

See pages 189-193, HBGCC

PLATFORM
SESSIONS

Sat-1

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

SATURDAY, October 25, 2014

8:00 AM - 9:30 AM

PLATFORM SESSIONS – SAT - I

**Track: Tissue Engineering, Cardiovascular
Engineering****OP-Sat-I-1 - Room 001A****Cardiac Muscle and Valve Tissue
Engineering****Chairs:** Nenad Bursac, Song Li**8:00AM**

Tubular Heart Valves by Suturing Decellularized Engineered Tissue Tubes

J. REIMER¹, Z. SYEDAIN¹, B. HAYNIE¹, AND R. TRANQUILLO¹¹University of Minnesota, Minneapolis, MN**8:15AM**

Electrically Stimulated Heart Microbundles as a 3D Model of Neonatal to Adult Cardiac Tissue Maturation

C. JACKMAN¹ AND N. BURSAC¹¹Duke University, Durham, NC**8:30AM**

Fibrous Tissue Scaffolds: Relationships between Geometric Structure and Mechanical Behavior

J. CARLETON¹, G. RODIN¹, AND M. SACKS¹¹University of Texas at Austin, Austin, TX**8:45AM**

Three-Dimensional Artificial Heart Muscle to Supplement the Framework of a Bioartificial Heart

M. HOGAN¹, M. MOHAMED¹, Z-W. TAO¹, L. GUTIERREZ¹, AND R. BIRLA¹¹University of Houston, Houston, TX**9:00AM**

Tuning Material Properties of Cardiac Extracellular Matrix for Cardiac Tissue Engineering

M. JEFFORDS¹, J. WU², Q. DING², Y. HONG², AND G. ZHANG¹¹The University of Akron, Akron, OH, ²University of Texas at Arlington, Arlington, TX**9:15AM**

Native Fiber Structure in Decellularized Myocardium Promotes Cardiac Cell Alignment and Maturation

J. SCHWAN¹, A. KWACZALA¹, T. RYAN¹, A. LEBID¹, AND S. CAMPBELL¹¹Yale University, New Haven, CT**Track: Biomaterials, Nano to Micro Technologies****OP-Sat-I-2 - Room 001B****Micro and Nanostructured Materials****Chairs:** Scott Verbridge, Tzahi Cohen-Karni**8:00AM**

Tunable Microtopography Reduces Myofibroblast Activation and Cutaneous Fibrosis

J. ALLEN¹, J. RYU¹, AND T. DESAI¹¹University of California, San Francisco, San Francisco, CA**8:15AM**

Heat-Resistant RNA Biomaterials to Construct Nanoparticles with Controllable Size, Shape, and Stoichiometry for Biomedical Applications

E. KHISAMUTDINOV¹, D. JASINSKI¹, AND P. GUO¹¹Nanobiotechnology Center, Markey Cancer Center, and Department of Pharmaceutical Sciences, College of Pharmacy, University of Kentucky, Lexington, KY

8:30AM**2D Nanosheets for Osteogenic Differentiation of Human Mesenchymal Stem Cells**

J. XAVIER¹, P. DESAI¹, AND A. GAHARWAR¹
¹Texas A&M University, College Station, TX

8:45AM**Antigen-Independent Targeting of Cancer Cells on Polylysine/Fatty Acid Complexes**

C. CASTELLANOS¹, J. LI¹, M. MITCHELL¹, AND M. KING¹
¹Cornell, Ithaca, NY

9:00AM**Heparin Hydrogel Microdroplets for Cultivation of Embryonic Stem Cells**

C. SILTANEN¹, E. FOSTER¹, J. YOU¹, A. HAQUE¹, D-S. SHIN¹, AND A. REVZIN¹
¹UC Davis, Davis, CA

9:15AM**Biocompatible Sub-100 nm Patterning TiO₂ for the Regulation of Endothelial and Smooth Muscle Cell Functions**

M. RIZWAN¹, S. LIM¹, S. GOH¹, J. LAW², M. SAIFULLAH², G. HO¹, AND E. YIM¹
¹National University of Singapore, Singapore, Singapore, ²Institute of Materials Research and Engineering, Singapore, Singapore

Track: Cardiovascular Engineering**OP-Sat-1-3 - Room 006A****Microcirculation**

Chairs: Taby Ahsan, Steven George

8:00AM**Monocytes are Recruited From Post-Capillary Venules During the Early Phases of Arteriogenesis**

A. BRUCE¹, M. KELLY-GOSS¹, J. MEISNER¹, R. PRICE¹, AND S. PEIRCE¹
¹Univ. of Virginia, Charlottesville, VA

8:15AM**The Role Of Cathepsin B In The Control Of Neutrophil Pseudopod Activity Under Flow**

M. AKENHEAD¹ AND H. SHIN¹
¹University of Kentucky, Lexington, KY

8:30AM**Flow Characteristics of Sickle Cell Blood in Hypoxic Conditions**

X. LU¹, C. JONAS¹, J. HIGGINS^{2,3}, AND D. WOOD¹
¹University of Minnesota, Minneapolis, MN, ²Harvard Medical School, Boston, MA, ³Massachusetts General Hospital, Boston, MA

8:45AM**Vein-On-a-Chip: Functional Assessment and Activation of Intact Mouse Mesenteric Vein**

Z. ABDI DEZFOOLI¹, S-S. BOLZ¹, AND A. GÜNTHER¹
¹University of Toronto, Toronto, ON, Canada

9:00AM**Exogenous Nitric Oxide Supplementation To Enhance The Outcome Of Fluid Resuscitation From Hemorrhagic Shock**

J. CRUMP¹, J. BRICENO¹, AND P. CABRALES²
¹Universidad de Los Andes, Bogota D.C., Colombia, ²University of California, San Diego, La Jolla, CA

9:15AM**Platelet GpIb α Binding to Von Willebrand Factor (VWF) under Hydrodynamic Shear: Relative Contributions of The D'D3-domain, AI-domain Flanking Peptide and O-linked Glycosylation**

C. ZHANG¹, A. KELKAR¹, S. MADABHUSHI¹, K. DAYANANDA¹, AND S. NEELAMEGHAM¹
¹SUNY at Buffalo, Buffalo, NY

Track: Biomechanics, Cardiovascular Engineering
OP-Sat-1-4 - Room 006B**Cardiovascular Biomechanics I**

Chairs: Hanjoong Jo, Danial Shahmirzadi

8:00AM**Biomechanical Characterizations Of Scar ECM During The Acute To Chronic Stages Of Myocardial Infarction**

B. BRAZILE¹, J. BUTLER¹, S. PATNAIK¹, Y. XU², A. CLAUDE¹, R. PRABHU¹, L. WILLIAMS¹, G. ZHANG³, J. GUAN², AND J. LIAO¹
¹Mississippi State University, Mississippi State, MS, ²Ohio State University, Columbus, OH, ³University of Akron, Akron, OH

8:15AM**Bending and Twisting the Embryonic Heart Tube: A Novel Computational Model**

Y. SHI¹, J. YAO², R. PERUCCHIO³, AND L. TABER¹
¹Washington University, St. Louis, MO, ²Dassault Systemes Simulia Corp., Providence, RI, ³University of Rochester, Rochester, NY

8:30AM**Quantitative Histomorphological Analysis of Right Ventricular Myocardium Under Chronic Pressure Overload**

S. M. SIEGEL¹, U. A. DAR¹, M. RAHMAN¹, M. R. HILL¹, M. A. SIMON², AND M. S. SACKS¹
¹The University of Texas at Austin, Austin, TX, ²The University of Pittsburgh, Pittsburgh, PA

8:45AM**Exogenous Relaxin Treatment Reverses Left Ventricular Fibrosis and Improves Diastolic Function in a Rate Model**

J. HANEY¹, D. SCHWARTZMAN^{1,2}, AND S. SHROFF¹
¹University of Pittsburgh, Pittsburgh, PA, ²University of Pittsburgh Medical Center, Pittsburgh, PA

9:00AM**Time-Evolving Growth and Remodeling Response of Right Ventricular Myocardium to Pressure Overload**

M. HILL¹, M. SIMON², AND M. SACKS¹
¹University of Texas at Austin, Austin, TX, ²University of Pittsburgh, Pittsburgh, PA

9:15AM**Probing Local Nonlinear Mechanics with Whole-Tissue Experiments**

C. WITZENBURG¹ AND V. BAROCAS¹
¹University of Minnesota, Minneapolis, MN

Track: Cellular and Molecular Bioengineering**OP-Sat-1-5 - Room 006C****Cell and Molecular Immunoengineering**

Chairs: Lance Kam, Chris Love

8:00AM**Lipopolysaccharide (LPS) Induces the Interactions of Breast Cancer and Endothelial Cells via Activated Monocytes**

C. CHEN¹ AND D. KHISMATULLIN¹
¹Tulane University, New Orleans, LA

8:15AM**T-Pharmacocytes for the Targeted Eradication of Latent HIV Reservoirs**

B. JONES¹, S. MUELLER¹, R. O'CONNOR¹, V. VRBANAC¹, A. TAGER¹, B. WALKER^{1,2}, AND D. IRVINE^{1,2}
¹Ragon Institute of MGH, MIT, and Harvard, Cambridge, MA, ²Howard Hughes Medical Institute, Chevy Chase, MD

8:30AM**TLR3 Stimulation Enhances The Immune Stimulatory Properties of Exosome-based Vaccines**M. DAMO¹, E. SIMEONI¹, D. WILSON¹, AND J. HUBBELL¹¹Swiss Federal Institute of Technology, Lausanne, Switzerland**8:45AM****Development of a Tissue-Engineered Lymph Node to Study Stromal Immunomodulatory Functions *In Vitro***C. BUCHANAN¹ AND M. SWARTZ¹¹Ecole Polytechnique Federal de Lausanne, Lausanne, Switzerland**9:00AM****Molecular-level Deconvolution of the Human Serum Antibody Repertoire Elicited by Vaccination**J. LAVINDER¹, G. IPPOLITO¹, Y. WINE¹, D. BOUTZ¹, J. BLAZECK¹, A. HORTON¹, C. GIESECKE², K. HOI¹, B. TAN¹, E. MURRIN¹, M. WIRTH¹, A. ELLINGTON¹, T. DÖRNER², E. MARCOTTE¹, AND G. GEORGIU¹¹University of Texas at Austin, Austin, TX, ²Charite Universitätsmedizin Berlin, Berlin, Germany**9:15AM****Dysregulated Sphingolipid Metabolism In Sickled Erythrocytes & Inflammatory Microparticle Generation**A. AWOJODOU¹, P. KEEGAN¹, A. LANE¹, Y. ZHANG¹, M. PLATT¹, AND E. BOTCHWEY¹¹Georgia Institute of Technology, Atlanta, GA**Track: Cardiovascular Engineering, Tissue Engineering****OP-Sat-I-6 - Room 006D****Cardiac Regeneration****Chairs:** Milica Radisic, Lauren Black III**8:00AM****Designing an Elastic Scaffold with Shape-Memory for Functional Tissue Delivery**M. MONTGOMERY¹, B. ZHANG¹, L. REIS¹, AND M. RADISIC¹¹University of Toronto, Toronto, ON, Canada**8:15AM****Generation of Functional Human Myocardium from Native Human Heart Matrix and Human iPS-derived Cardiomyocytes**J. GUYETTE¹, J. CHAREST¹, P. MOSER¹, AND H. OTT¹¹Harvard Medical School, Boston, MA**8:30AM****Engineering Mature Cardiac Tissue *In Vitro*: Biomechanical and Biochemical Stimulation of Physiological Hypertrophy.**C. RUPERT¹, M. REGNIER², C. MURRY², AND K. COULOMBE¹¹Brown University, Providence, RI, ²University of Washington, Seattle, WA**8:45AM*****In Vitro* Recruitment of Macrophages by Human Embryonic Stem Cell-Derived Cardiomyocytes**I. PALLOTTA¹, E. WRONA¹, AND D. FREYTES¹¹The New York Stem Cell Foundation Research Institute, New York, NY**9:00AM****Cardiac Progenitor Cell Exosomes to Treat the Heart**S. GHOSH-CHOUDHARY¹, W. GRAY², K. KANTER³, B. KOGON³, M. PLATT², AND M. DAVIS⁴¹Georgia Institute of Technology, Atlanta, GA, ²Georgia Institute of Technology and Emory University, Atlanta, GA, ³Children's Healthcare of Atlanta, Atlanta, GA, ⁴Georgia Institute of Technology and Emory University and Children's Healthcare of Atlanta, Atlanta, GA**9:15AM****Hepatic Cell-Mediated Delivery of Trefoil Factor 3 to Ischemic Myocardium - A Trans-system Mechanism Against Cardiomyocyte Calcification**S. LIU¹, B. ZHANG¹, AND Y. WU¹¹Northwestern University, Evanston, IL**Track: Stem Cell Engineering, Biomechanics
OP-Sat-I-7 - Room 007A****Mechanobiology of Stem Cells****Chairs:** Rhima Coleman, Shyni Varghese**8:00AM *Invited*****Nuclear Scaling in Stem Cell Differentiation**D. DISCHER¹¹Univ Pennsylvani, Philadelphia, PA**8:30AM****ColVI and DCN's Role In Mechanotransduction And Scaffold Material Properties During Chondrogenesis**J. TWOMEY¹, B. BULKA¹, AND A. HSIEH^{1,2}¹University of Maryland, College Park, College Park, MD, ²University of Maryland, Baltimore, Baltimore, MA**8:45AM****Differentiation of Human Adipose-Derived Stem Cells in Response to Mechanical Stimulation**K. MEGERLE¹, W. COLE², I. MAHAFFEY², P. LEUCHT¹, J. CHANG¹, AND A. CASTILLO^{1,2}¹Stanford University School of Medicine, Palo Alto, CA, ²VAPAHCS, Palo Alto, CA**9:00AM****Hippo-YAP Dependent Mechanosensitive Motor Neuron Differentiation of Human Pluripotent Stem Cells**Y. SUN¹, K. AW YONG¹, W. CHEN¹, R. PHILSON¹, S. WENG¹, AND J. FU¹¹University of Michigan, Ann Arbor, MI**9:15AM****Parsing Stem Cell Phenotypes Using High Content Imaging of Mechanotransductive Nuclear Reporters**A. DHALIWAL¹, S. VEGA¹, V. ARVIND¹, M. BRENNER¹, Z. ZHANG², Y. MAO², J. KOHN³, AND P. MOGHE^{1,4}¹Biomedical Engineering, Rutgers University, Piscataway, NJ, ²New Jersey Center for Biomaterials, Rutgers University, Piscataway, NJ, ³Department of Chemistry & Chemical Biology, Rutgers University, Piscataway, NJ, ⁴Department of Chemical & Biochemical Engineering, Rutgers University, Piscataway, NJ**Track: Cardiovascular Engineering****OP-Sat-I-8 - Room 007B****Angiogenesis****Chairs:** Bob Tranquillo, Sara Nunes Vasconcelos**8:00AM****Recruitment and Programming of Endogeneous Progenitor Cells *In Situ* for Therapeutic Angiogenesis**L. DEVEZA¹, J. CHOI¹, J. ASHOKEN², AND F. YANG¹¹Stanford University, Stanford, CA, ²San Jose State University, San Jose, CA**8:15AM****Uncoupling Angiogenesis and Inflammation in Peripheral Artery Disease by Therapeutic Peptides with Injectable Microgels**A. Zachman¹, X. Wang¹, J. Tucker-Schwartz¹, S. Lee¹, M. Skala¹, and H-J. Sung¹¹Vanderbilt University, Nashville, TN

8:30AM**Syndesomes: A Novel Therapy For Peripheral Ischemia**S. DAS¹, A. MONTEFORTE¹, G. SINGH¹, M. MARTINEZ¹, A. DUNN¹, AND A. BAKER¹¹University of Texas, Austin, Austin, TX**8:45AM****A Fluid Shear Stress Threshold Regulates Angiogenic Sprouting**P. GALIE¹, P. JANMEY¹, AND C. CHEN²¹University of Pennsylvania, Philadelphia, PA, ²Boston University, Boston, MA**9:00AM****Evaluation of Endothelial Progenitor Cells for Microvessel Tissue Engineering**E. BROWN PETERS¹, N. CHRISTOFOROU^{1,2}, K. LEONG¹, G. TRUSKEY¹, AND J. WEST¹¹Duke University, Durham, NC, ²Khalifa University, Abu Dhabi, United Arab Emirates**9:15AM****Physical Signals That Promote Vascularization of Capillary-Scale Channels**N. BOLAND¹, G. COVARRUBIAS¹, AND J. TIEN¹¹Boston University, Boston, MA**Track: Cellular and Molecular Bioengineering****OP-Sat-1-9 - Room 007C****Young Innovator Session I****Chairs:** Cynthia Reinhart-King, Deborah Leckband**8:00AM****Shrink Wrapping Cells in a Defined Extracellular Matrix to Modulate the Chemo-Mechanical Microenvironment**R. PALCHESKO¹, J. SZYMANSKI¹, A. SAHU¹, AND A. FEINBERG¹¹Carnegie Mellon University, Pittsburgh, PA**8:15AM****Efficiency of Protease-activatable Virus Nanonodes Tuned Through Incorporation of Wild-type Capsid Subunits**M. HO¹, J. JUDD¹, B. KUYPERS¹, M. YAMAGAMI¹, F. WONG¹, AND J. SUH¹¹Rice University, Houston, TX**8:30AM****Aqueous Two-Phase Printing of Tumor Spheroids For Drug Screening**E. ATEFI¹, S. LEMMO¹, D. FYFFE¹, G. LUKER², AND H. TAVANA¹¹University of Akron, Akron, OH, ²University of Michigan, Ann Arbor, MI**8:45AM****Quantitative Evaluation and Optimization of Co-drugging to Improve Anti-HIV Latency Therapy**V. WONG¹, L. FONG¹, N. ADAMS¹, Q. XUE¹, S. DEY², AND K. MILLER-JENSEN¹¹Yale University, New Haven, CT, ²Hubrecht Institute, Utrecht, Netherlands**9:00AM****PAActivation of a Bacterial Mechanosensitive Channel in Mammalian Cells by Cytoskeletal Stress**A. LIU¹, J. HEUREAUX¹, D. CHEN¹, V. MURRAY¹, AND C. DENG¹¹University of Michigan, Ann Arbor, MI**9:15AM****Network Modeling Approach to Predict Myofibroblast Differentiation**A. SCHROER¹, L. RYZHOVA¹, AND W. MERRYMAN¹¹Vanderbilt University, Nashville, TN**Track: Orthopaedic and Rehabilitation Engineering, Tissue Engineering****OP-Sat-1-10 - Room 007D****Musculoskeletal Tissue Engineering****Chairs:** Clark Hung, Warren Grayson**8:00AM****Chondroinductive Biomaterials for Cartilage Tissue Engineering**M. DETAMORE¹¹University of Kansas, Lawrence, KS**8:15AM****Spatial Control of MSC Fate Using 3D Multi-compartment Scaffolds for Engineering Orthopedic Interfaces**W. GRIER¹, L. MOZDZEN¹, S. CALIARI¹, D. WEISGERBER¹, M. BOPPART¹, AND B. HARLEY¹¹University of Illinois at Urbana-Champaign, Urbana, IL**8:30AM****Dynamic Hydrostatic Pressure-induced Formation of Micropores in Mature Tissue-engineered Articular Cartilage**T.A. KELLY¹, S. SIRSI², A. NOVER¹, C. CHEN¹, A. DITZEL¹, P. MOUNTFORD², S. ETEZAZIAN², G. ATESHIAN¹, M. BORDEN², AND C. HUNG¹¹Columbia University, New York, NY, ²University of Colorado at Boulder, Boulder, CO**8:45AM****Engineering Craniofacial Bone And Skeletal Muscle From Adipose-Derived Stem Cells**W. GRAYSON¹¹Johns Hopkins University, Baltimore, MD**9:00AM****A Combined Experimental and Theoretical Approach to Designing Enzyme Degradable Hydrogels for Cartilage Tissue Engineering**S. SKAALURE¹, S. CHU¹, U. AKALP¹, F. VERNEREY¹, A. DOOSTAN¹, AND S. BRYANT¹¹University of Colorado, Boulder, CO**9:15AM****The Use of Laminin-functionalized Hydrogels to Restore Pathological Nucleus Pulposus Cells of the Intervertebral Disc**P. HWANG¹, A. FRANCISCO¹, L. JING¹, W. RICHARDSON¹, R. ISAACS¹, C. BROWN¹, J. CHEN¹, AND L. SETTON¹¹Duke University, Durham, NC**Track: Nano to Micro Technologies, Device Technologies and Biomedical Robotics****OP-Sat-1-11 - Room 008A****Cells Tissues and Organs on Chip I****Chairs:** Keith Neeves, Maribel Vazquez**8:00AM****Capillary Formation under Interstitial Flow in a Microfluidic Device for Liver Tissue Engineering**R. SUDO¹, Y. ABE¹, S. MENJO¹, AND K. TANISHITA²¹Keio University, Yokohama, Japan, ²Waseda University, Tokyo, Japan**8:15AM****Simple Microfluidic Device for Automated, High-throughput Morphological Analysis of Stored Red Blood Cells**N. PIETY¹, S. GIFFORD¹, X. YANG¹, AND S. SHEVKOPLYAS¹¹University of Houston, Houston, TX

8:30AM**Inflammation Mediated Modulation of Blood Brain Barrier *In Vitro***A. SMITH¹, J. ROSANO¹, C. GARSON¹, K. BHATT¹, B. PRABHAKARPANDIAN¹, M. ASCHNER², AND K. PANT¹¹CFD Research, Huntsville, AL, ²Albert Einstein College of Medicine, Bronx, NY**8:45AM****A Human Blinking 'Eye-on-a-chip'**J. SEO¹ AND D. HUH¹¹University of Pennsylvania, Philadelphia, PA**9:00AM****A Microfabricated Platform for Evaluating Prodrug Metabolism and Toxicity in a Hepatocyte-Cancer Model**S. BALE¹, R. JINDAL¹, G. SRIDHARAN¹, I. GOLBERG¹, W. MCCARTY¹, M. HEGDE¹, A. BHUSHAN¹, L. PRODANOV¹, O. USTA¹, AND M. YARMUSH¹¹Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School and Shriners Burns Hospital, Boston, MA**9:15AM****A Microfluidic-Based Array for Large-Scale Ordering And High-Resolution Imaging Of Islets**M. NOURMOHAMMADZADEH¹, J. MENDOZA-ELIAS¹, Y. XING¹, J. OBERHOLZER¹, AND Y. WONG¹¹University of Illinois at Chicago, Chicago, IL**Track: Respiratory Bioengineering, Tissue Engineering****OP-Sat-I-12 - Room 008B****Engineering Strategies for Lung Transplant & Regeneration****Chairs:** Daniel Weiss, Samir Ghadiali**8:00AM** *Invited***Ex-Vivo Lung Perfusion – A Bench to Bedside Platform for Pulmonary Investigation**

B. WHITSON

¹The Ohio State University, Columbus, OH**8:15AM****Design and Validation of a Clinical-Scale Biomimetic Whole-Lung Bioreactor**J. CHAREST¹, T. OKAMOTO¹, A. YASUDA¹, S. GILPIN^{1,2}, D. MATHISEN¹, AND H. OTT^{1,2}¹Massachusetts General Hospital, Boston, MA, ²Harvard Medical School, Boston, MA**8:30AM****Enhanced Reseeding of Decellularized Rodent Lung Airway and Vasculature**C. STABLER¹, S. LECHT¹, M. BARAKAT¹, L. CAIRES², A. RYLANDER¹, R. CHIAVERELLI¹, E. SCHULMAN³, C. MARCINKIEWICZ¹, AND P. LELKES¹¹Temple University, Philadelphia, PA, ²Federal University of Juiz de Fora, Juiz de Fora, Brazil, ³Drexel University College of Medicine, Philadelphia, PA**8:45AM****Mechanical Control of Airway Branching Morphogenesis**V. VARNER¹, J. GLEGHORN¹, AND C. NELSON¹¹Princeton University, Princeton, NJ**9:00AM****Engineered Cartilaginous Structures for Tracheal Tissue Replacement**A. DIKINA¹, H. STROBEL², B. LAI¹, M. ROLLE², AND E. ALSBERG¹¹Case Western Reserve University, Cleveland, OH, ²Worcester Polytechnic Institute, Worcester, MA**9:15AM****An Alginate-Based Pulmonary Patch For Repairing Pleural Injuries**S. FENN¹, D. WAGNER¹, P. SAUNDERS¹, P. CHARRON¹, D. WEISS¹, AND R. OLDINSKI¹¹University of Vermont, Burlington, VT**Track: Device Technologies and Biomedical Robotics, Translational Biomedical Engineering**
OP-Sat-I-13 - Room 201**Biosensors I: Materials and Techniques****Chairs:** J-C Chiao, Jeff LaBelle**8:00AM****Advancing Silicon Photonics for Clinical Applications**D. RATNER¹¹University of Washington, Seattle, WA**8:30AM****Macromolecularly Imprinted Polymers on the Surface of Nanoparticle Supports for Low-Cost Biosensors**H. CULVER¹, C. FAUVARQUE NUYTTEN², AND N. PEPPAS¹¹University of Texas at Austin, Austin, TX, ²Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland**8:45AM****A High Density Electrochemical Imaging System for Understanding Cell-to-Cell Communication**W. WILSON¹, K. SCHOELFIELD¹, J. WYDALLIS¹, R. FEENY¹, W. TEJIO¹, T. KERN¹, S. LANTVIT¹, C. HENRY¹, S. TOBET¹, M. REYNOLDS¹, AND T. CHEN¹¹Colorado State University, Fort Collins, CO**9:00AM****Protease Detection Assay Based on Aggregation of Stimulus-Responsive Polypeptides**A. GHOORCHIAN¹, A. CHILKOTI¹, AND G. LOPEZ¹¹Duke University, Durham, NC**9:15AM****Up-Regulation of Metabolites for Early Detection of Bacterial Pathogens in Human Biofluids**H. SISMAET¹, T. WEBSTER¹, AND E. GOLUCH¹¹Northeastern University, Boston, MA**Track: Drug Delivery, Cancer Technologies**
OP-Sat-I-14 - Room 103B**Cancer Drug Delivery I****Chairs:** Natalie Artzi, Hao Cheng**8:00AM****Role of Endocytosis in Electroporation of Tumor Cells**M. WU¹, C-C. CHANG¹, AND F. YUAN¹¹Duke University, Durham, NC**8:15AM****Mapping The CXCR4 Receptor On Breast Cancer Cells By AFM: A Tool For Engineering Targeted Drug Delivery Vehicles**B. WANG¹ AND D. AUGUSTE¹¹The City College of New York, New York, NYPLATFORM
SESSIONS

Sat-1

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

8:30AM**Systemic Delivery of Liposome-Anchored Cytokines Elicits Antitumor Immunity Without Lethal Toxicity**Y. ZHANG^{1,2,3} AND D. IRVINE^{1,2,3,4,5}¹Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, ²Department of Biological Engineering, Massachusetts Institute of Technology, Cambridge, MA, ³Koch Institute for Integrative Cancer Research, Massachusetts Institute of Technology, Cambridge, MA, ⁴Ragon Institute of Massachusetts General Hospital, Massachusetts Institute of Technology, and Harvard, Cambridge, MA, ⁵Howard Hughes Medical Institute, Chevy Chase, MD**8:45AM****Core/Shell Systems for Improved Control of the Externally Triggered Release of Chemotherapeutics**J. PETERS¹, N. LIZANA¹, I. VERMA¹, AND N. PEPPAS¹¹The University of Texas at Austin, Austin, TX**9:00AM****A Long Circulating PVX-Based Nanoparticle for Enhanced Tumor Homing and Therapeutic Payload Delivery**K. LEE¹, S. SHUKLA¹, K. WEBER BONK¹, R. KERI¹, AND N. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH**Track: Neural Engineering, Device Technologies and Biomedical Robotics****OP-Sat-I-15 - Room 202A****Brain-computer Interfaces****Chairs:** Chris Passaglia, Erkin Seker**8:00AM****Role of Interleukin 1β Converting Enzyme on Recording Performance and the Reactive Tissue Response Around Chronic Neural Electrode**T. KOZAI¹, X. LI¹, L. BODILY¹, E. CAPAROSA¹, D. CARLISLE¹, R. FRIEDLANDER¹, AND X. CUI¹¹University of Pittsburgh, Pittsburgh, PA**8:15AM****Understanding the Immune Response to Intracortical Microelectrodes**J. HERMANN^{1,2}, M. RAVIKUMAR, PHD^{1,2}, J. JIANG^{1,3}, J. NGUYEN^{1,2}, S. SUNIL¹, C. WONG¹, A. SOFFER¹, V. SRIVASTAVA¹, D. TAYLOR, PHD^{2,3}, AND J. CAPADONA, PHD^{1,2}¹Case Western Reserve University, Cleveland, OH, ²Louis Stokes Cleveland VA Medical Center, Cleveland, OH, ³Cleveland Clinic Lerner Research Institute, Cleveland, OH**8:30AM****The Spatial Distribution of FBR Biomarkers Correlates with Recording Performance in Rats**N. NOLTA¹, M. CHRISTENSEN¹, AND P. TRESKO¹¹University of Utah, Salt Lake City, UT**8:45AM****Modeling Mechanics of Flexible Neural Probes Coated in an Ultra-fast Degrading Polymer for Optimizing Probe Design**S. SINGH¹, M-C. LO¹, V. DAMODARAN², H. KAPLAN², J. KOHN², J. ZAHN¹, AND D. SHREIBER¹¹Rutgers University, Piscataway, NJ, ²New Jersey Center for Biomaterials, Piscataway, NJ**9:00AM****Flexible Neural Micropores Coated with a Fast Degrading Polymer as an Aid to Tissue Insertion**M-C. LO¹, S. SINGH¹, V. B. DAMODARAN¹, S. WANG¹, H. M. KAPLAN¹, K. COFFEY¹, D. BARKER¹, J. D. ZAHN¹, D. I. SHREIBER¹, AND J. KOHN¹¹Rutgers, the State University of New Jersey, Piscataway, NJ**9:15AM****Extracellular Matrix Coatings for CNS Neural Recording Arrays**R. OAKES¹, M. POLEI¹, J. SKOUSEN¹, AND P. TRESKO¹¹University of Utah, Salt Lake City, UT**Track: New Frontiers and Special Topics, Device Technologies and Biomedical Robotics****OP-Sat-I-16 - Room 202B****Global Health I****Chairs:** Sergey Shevkopyas, Leo Wan**8:00AM****A Low-cost, Paper-based Assay for Diagnosis of Sickle Cell Disease in Resource-limited Settings**N. PIETY¹, X. YANG¹, B. DINU², A. GEORGE², AND S. SHEVKOPYAS¹¹University of Houston, Houston, TX, ²Baylor College of Medicine, Houston, TX**8:30AM****GlucoSense: Design of a Low Cost Diabetes Glucometer System**K. GAINEY¹, T. OVINGTON¹, J. DESJARDINS¹, AND D. DEAN¹¹Clemson University, Clemson, SC**8:45AM****Immunomodulatory Nanoparticles Ameliorate Disease in the Leishmania (Viannia) panamensis Mouse Model**A. SIEFERT¹, A. EHRlich¹, M. CORRAL CARIDAD², K. GOLDSMITH-PESTANA¹, D. MCMAHON-PRATT¹, AND T. FAHMY¹¹Yale University, New Haven, CT, ²Universidad Complutense de Madrid, Madrid, Spain**9:00AM****Towards Development of an Autonomous Network of BacteriaBots: High-Throughput Spatiotemporal Characterization of Bacterial Quorum-Sensing Response**A. SAHARI¹, M. TRAORE¹, A. STEVENS¹, B. SCHARF¹, AND B. BEHKAM¹¹Virginia Tech, Blacksburg, VA**9:15AM****Increasing Access to HIV Medication in Developing Countries: An Operational, Feasibility Study in Zambia**A. DAHINTEN¹, J. EKUTA¹, AND R. MALKIN¹¹Duke University, Durham, NC**Track: Biomedical Imaging and Optics****OP-Sat-I-17 - Room 203A****Ultrasound Imaging****Chairs:** Baohong Yuan, Paul Carson**8:00AM****Development and Application of Ultrasound Techniques for Investigating Pathogenesis in Experimental Abdominal Aortic Aneurysms**E. PHILLIPS¹, A. YRINEO¹, H. SCHROEDER¹, F. DAMEN¹, A. BOGUCKI¹, S. JUBAER¹, A. JACKSON¹, R. FOLEY¹, N. BLAIZE¹, J-X. CHENG¹, AND C. GOERGEN¹¹Purdue University, West Lafayette, IN**8:15AM****RSNA QIBA Ultrasound Shear Wave Speed: Sources of Variability in Phantoms, Simulations and Humans**P. CARSON¹, A. MILKOWSKI², T. HALL³, B. GARRA⁴, K. NIGHTINGALE⁵, M. PALMERI⁵, A. SAMIR⁶, S. CHEN⁷, T. LYNCH⁸, N. ROUZE⁹, M. DHYANI⁶, AND D. SULLIVAN⁵¹Univ. of Michigan, Ann Arbor, MI, ²Siemens Ultrasound, Issaquah, WA, ³Univ. of Wisconsin, Madison, WI, ⁴Veterans Health System, Hyattsville, MD, ⁵Duke Univ., Durham, NC, ⁶Mass. Gen¹ Hospital, Boston, MA, ⁷Mayo Clinic, Rochester, MN, ⁸CIRS, Inc., Norfolk, VA**8:30AM****Ultrasound and Photoacoustic Imaging of Anatomical and Functional Indicators of Lymph Node Metastasis**G. LUKE¹ AND S. EMELIANOV¹¹The University of Texas at Austin, Austin, TX

8:45AM**Formulation and *In Vitro* Characterization of Targeted Lipid-Pluronic Nanobubbles**P. KOTA¹, C. HERNANDEZ¹, H. WU¹, AND A. EXNER¹¹Case Western Reserve University, Cleveland, OH**9:00AM****Skeletal Imaging and Assessment Using Hand-Held Focal Quantitative Ultrasound Technology**J. MUIR¹, L. LIN¹, J. CHENG¹, AND Y-X. QIN¹¹Stony Brook University, Stony Brook, NY**9:15AM****Bipolar Nanosecond Electric Pulses Display Reduced Efficacy Due to Acoustic Interference**C. ROTH¹, R. BARNES², S. MASWAD², B. IBEY², H. BEIER², AND R. GLICKMAN¹¹UTHSCSA, San Antonio, TX, ²UTSA, San Antonio, TX, ³Air Force Research Laboratories, San Antonio, TX**Track: Biomedical Imaging and Optics****OP-Sat-I-18 - Room 203B****Optical Imaging and Microscopy I****Chairs:** Bernard Choi, Ken Tichauer**8:00AM****Near Infrared Fluorescent Neural Progenitor Cells to Track Differentiation and Tissue Innervation**A. MOHS^{1,2}, S. RAGHAVAN^{1,2}, R. GILMONT², S. SOMARA², F. MARINI², AND K. BITAR^{1,2}¹Wake Forest - Virginia Tech School of Biomedical Engineering and Sciences, Winston-Salem, NC, ²Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC**8:15AM****Imaging Three-Dimensional Nanoscale Morphometry of Type I Collagen Gels Using Focused Ion Beam Scanning Electron Microscopy**S. REESE¹, N. FARHANG¹, AND J. WEISS¹¹University of Utah, Salt Lake City, UT**8:30AM****Light-sheet Single-Molecule Super-resolution Imaging of Tissues**Y. HU¹, Z. KATZ¹, B. LILLEMEIER¹, AND H. CANG¹¹Salk Institute, La Jolla, CA**8:45AM****Intracellular Three-Dimensional Single-Particle Tracking with Multiplexed Two-Photon Excitation**E. PERILLO¹, Y-L. LIU¹, C. LIU¹, H-C. YEH¹, AND A. DUNN¹¹The University of Texas Austin, Austin, TX**9:00AM****Large Scale, High Resolution Imaging with a Simple and Robust Super-resolution Light Sheet Microscopy**P. FEI¹¹UCLA, Los Angeles, CA**9:15AM****Ultra-Wide Field-Of-View Gigapixel Fluorescent Imaging System Using A Modified Flatbed Scanner**Z. GÖRÖCS¹, Y. LING¹, M. YU¹, D. KARAHALIOS¹, K. MOGHARABI¹, K. LU¹, Q. WEI¹, AND A. OZCAN^{1,2}¹University of California, Los Angeles, Los Angeles, CA, ²California NanoSystems Institute, Los Angeles, CA**Track: Cancer Technologies, Nano to Micro Technologies****OP-Sat-I-19 - Room I03A****Nanotechnologies for Cancer I****Chairs:** Carlos Rinaldi, Craig Duvall**8:00AM****Resources For Preclinical Characterization Of Nanomaterials For Cancer Diagnosis, Imaging & Therapy**N. PANARO¹, S. STERN¹, A. PATRI¹, AND S. MCNEIL¹¹Leidos Biomedical Research, Frederick, MD**8:15AM*****In Vivo* Targeting of Tumor Associated Macrophages Using Mannosylated Endosomal-Escape Nanoparticles**R. ORTEGA¹, W. BARHAM¹, I. MCFADDEN¹, O. TIKHOMIROV¹, K. SHARMAN¹, F. YULL¹, AND T. GIORGIO¹¹Vanderbilt University, Nashville, TN**8:30AM****Targeting Nanotechnology to Invasive Brain Tumors**P. PEIRIS¹, A. ABRAMOWSKI¹, L. BAUER¹, R. TOY¹, E. DOOLITTLE¹, S. RAO¹, S. SHAH¹, K. GHAGHADA², S. BRADY-KALNAY¹, J. BASILION¹, M. GRISWOLD¹, AND E. KARATHANASIS¹¹Case Western Reserve University, Cleveland, OH, ²Texas Children's Hospital, Houston, TX**8:45AM****A Novel Triple Negative Breast Cancer Theranostic Target for Nanomedicine**P. GUO¹ AND D. AUGUSTE²¹Boston Children's Hospital, Boston, MA, ²City College of New York, New York, NY**9:00AM*****In Vivo* Targeting of Adoptively Transferred T-cells with Nanoparticles for Cancer Immunotherapy**Y. ZHENG^{1,2} AND D. IRVINE^{1,2,3,4}¹Massachusetts Institute of Technology, Cambridge, MA, ²Koch Institute for Integrative Cancer Research, MIT, Cambridge, MA, ³Ragon Institute of Massachusetts General Hospital, MIT and Harvard University, Cambridge, MA, ⁴Howard Hughes Medical Institute, Chevy Chase, MD**9:15AM*****In Vivo* Multiplex Photoacoustic Molecular Imaging for Optimization of Nanoparticle Targeting and Kinetics**C. BAYER¹, G. LUKE¹, AND S. EMELIANOV¹¹The University of Texas at Austin, Austin, TX

Track: Biomedical Engineering Education (BME)**OP-Sat-I-20 - Room 204A****Novel Laboratory Modules****Chairs:** Ann Saterbak, Chris Geiger**8:00AM****Teaching Sequential Design of Experiments and Biomedical Process Optimization**J. AUDET¹¹University of Toronto, Toronto, ON, Canada**8:15AM****"Building Blocks" for Inventing Instruments in the Classroom**D. HILL¹, L. ANDERSON¹, C. HILL¹, AND W. GROVER¹¹University of California, Riverside, Riverside, CA**8:30AM****Receiving Feedback from Instructor and Peers Increases the Quality of Written Reports in a Biomedical Instrumentation Laboratory Course**R. RAMOS¹¹Rice University, Houston, TX**8:45AM****Integrating 3D Additive Manufacturing Technologies into a Tissue Engineering Lab Course**A. FEINBERG¹¹Carnegie Mellon University, Pittsburgh, PA**9:00AM****A Two-Dimensional Motion Analysis Laboratory for Introductory Courses in Biomedical Engineering**C. HENAK¹ AND S. ARCHER¹¹Cornell University, Ithaca, NY**9:15AM****Cloud Experimentation And Biotic Games As Novel Media For Bioengineering Education**I. RIEDEL-KRUSE¹, Z. HOSSAIN¹, A. CHUNG¹, AND N. CIRA¹¹Stanford Bioengineering, Stanford, CA**SPECIAL SESSION****8:00 AM – 9:30 AM**

Ballroom A, Convention Center

Advanced Biomanufacturing: Application Towards the Next Generation Therapies and Diagnostics

Advanced Biomanufacturing is an emerging field in biomedical engineering. Unlike conventional bioprocessing technologies, advanced biomanufacturing builds on the groundbreaking discoveries such as 3D additive manufacturing, genome editing, cell reprogramming and transdifferentiation, systems and synthetic biology, stem cell biology, computational modeling, micro and nanofabrication, material genomes, biomaterials, tissue engineering and regenerative medicine. A group of leading scientists have worked together and recently launched a BMES special interest group (SIG) for advanced biomanufacturing (ABioM-SIG). The objective of the BMES SIG is to bring academic and industrial leaders together to promote the development of advanced biomanufacturing, foster collaborations among investigators in the field, and create a new mode of educating and training the next generation leaders and workforce in advanced biomanufacturing. This inaugural session is the BMES ABioM-SIG's first official session to discuss opportunities and grand challenges in advanced biomanufacturing and to lay out a strategic plan to spur research, education, and industry growth and innovation in advanced biomanufacturing towards significant benefits to the patient population and the society at large.

SPEAKERS:**Microphysiological Tissue Platforms for Drug Testing in Human Health and Disease**

GORDANA VUNJAK-NOVAKOVIC, Professor, Department of Biomedical Engineering and Department of Medical Sciences, Columbia University,

Advanced Biomanufacturing: A New Wave of Biomedical Engineering

KAIMING YE, Professor and Department Chair, Department of Bioengineering, State University of New York, Binghamton (SUNY Binghamton)

On the Threshold – Advanced Biomanufacturing and Clinical Challenges

PETER DILLON, Professor and Department Chair, Department of Surgery, Penn State Milton S. Hershey Medical Center, Penn State College of Medicine

Moderator: ATHANASSIOS SAMBANIS**Panelists:** CHENG DONG, KAM LEONG, DAVID KAPLAN, GANG BAO, AND GILDA BARABINO

SATURDAY, October 25, 2014**1:30 PM - 3:00 PM****PLATFORM SESSIONS – SAT - 2****Track: Tissue Engineering, Stem Cell Engineering**
OP-Sat-2-1 - Room 001A**Adult Stem Cells in Tissue Engineering****Chairs:** Liping Tang, Michelle Dawson**1:30PM****TGF- β I Pretreatment Improves The Function Of Mesenchymal Stem Cells In The Wound Bed**D. GHOSH¹, D. MCGRAIL¹, AND M. DAWSON¹¹Georgia Institute of Technology, Atlanta, GA**1:45PM****Photocrosslinkable, Biodegradable Hydrogels with Controlled Cell Adhesivity for Tunable siRNA Delivery to Encapsulated hMSCs**M. NGUYEN¹, D. SCHAPIRA¹, A. MCMILLAN¹, AND E. ALSBERG¹¹Case Western Reserve University, Cleveland, OH**2:00PM****Gelatin-based Injectable Microspheres for Encapsulating Mesenchymal Stem Cells**B. SUNG¹, S. SHAFFER¹, C. KIM¹, AND M-H. KIM¹¹Kent State University, Kent, OH**2:15PM****A Novel 'Differentiation Niche' Promoting Stem Cell Differentiation to Smooth Muscle Lineage**L. VELUTHERIL THOMAS¹ AND J. L. WEST¹¹Duke University, Durham, NC**2:30PM****Hypoxic Modulation of Mesenchymal Stem Cells Affects Macrophage Function for Ischemic Tissue Repair**L. RICLES¹, E. CHUNG¹, N. KOPCHO¹, AND L. SUGGS¹¹The University of Texas at Austin, Austin, TX**2:45PM****Tissue Regeneration Using Scaffold-mediated Autologous Progenitor Cell Responses *In Vivo***A. NAIR¹, J. SHEN¹, C. ZHANG², R. SAXENA², J. BORRELLI³, R. TRAN⁴, J. YANG⁴, AND L. TANG¹¹University of Texas at Arlington, Arlington, TX, ²University of Texas Southwestern Medical Center at Dallas, Dallas, TX, ³Texas Health Arlington Memorial Hospital, Arlington, TX, ⁴Pennsylvania State University, University Park, PA**Track: Biomaterials, Cellular and Molecular Bioengineering****OP-Sat-2-2 - Room 001B****Biomaterials for Immunoengineering I****Chairs:** Jeffrey Capadona, Adam Ekenseair**1:30PM****The Aggregate Structure of Self-Assembled Nanocarriers Specifies Their *In Vivo* Uptake By Antigen Presenting Cell Subsets**E. SCOTT¹, A. DE TITTA², AND J. HUBBELL²¹Northwestern University, Evanston, IL, ²EPFL, Lausanne, Switzerland**1:45PM****Nanomaterials-based Vaccines for Cocaine Addiction**R. APPAVU¹, C. DING¹, S. STUTZ¹, Y. DING¹, K. CUNNINGHAM¹, J. ZHOU¹, AND J. RUDRA¹¹Department of Pharmacology and Toxicology, Center for Addiction Research, University of Texas Medical Branch, Galveston, TX**2:00PM****M2e Conjugated Gold Nanoparticles Protect Against H1N1, H3N2 and H5N1 Influenza A Viruses**W. TAO¹, E. TARBET², AND H. GILL¹¹Texas Tech University, Lubbock, TX, ²Utah State University, Logan, UT**2:15PM****Immunogenicity and Adjuvanticity of Biologically Derived Nanoparticles**Y. WANG¹, Y. HUANG¹, L. SUN¹, AND M. ZHANG¹¹Ohio State University, Columbus, OH**2:30PM****Membrane-interacting, Amphiphilic Gold Nanoparticles: Mechanisms for Bilayer-embedding and Applications in Peptide Vaccine Therapy**P. ATUKORALE¹, K. MOYNIHAN¹, D. YUN¹, AND D. IRVINE¹¹Massachusetts Institute of Technology, Cambridge, MA**2:45PM****Pre-clinical Development of a Biomaterial-based Microparticle Vaccine for Type I Diabetes Attenuation**J. LEWIS¹, M. CARSTENS¹, N. DOLGOVA¹, C-Q. XIA¹, M. CLARE-SALZLER¹, AND B. KESELOWSKY¹¹University of Florida, Gainesville, FL**Track: Biomaterials****OP-Sat-2-3 - Room 006A****Biomaterials Design I****Chairs:** Abigail Koppes, Matt Kipper**1:30PM *Invited*****Biomaterials Design for Enhanced Vascularization and Healing**¹G. VUNJAK-NOVAKOVIC¹Columbia University, New York, NY**2:00PM****Periadventitial Application of Rapamycin-Loaded Nanoparticles Produces Sustained Inhibition of Vascular Restenosis**G. CHEN¹, X. SHI², L. GUO², K. KENT², AND S. GONG^{1,3}¹Materials Science Program and Wisconsin Institute for Discovery, University of Wisconsin-Madison, Madison, WI, ²Department of Surgery, University of Wisconsin Hospital and Clinics, Madison, WI, ³Department of Biomedical Engineering, University of Wisconsin-Madison, Madison, WI**2:15PM****Polysaccharide Mediated Pore Formation For 3D Myotube Formation**M. RICH¹, M. LEE¹, N. MARSHALL², J. CHEN¹, AND H. KONG¹¹University of Illinois, Urbana, IL, ²Drake University, Des Moines, IA**2:30PM****Polycarbonates Built From the Polyhydroxyl Natural Products Quinic Acid and Glucose: Tuning the Thermal, Mechanical, and Surface Properties for Degradable Medical Plastics Applications**L. LINK¹, T. GUSTAFSON¹, A. LONNECKER¹, J. RAYMOND¹, K. HEARON¹, C. MAHER¹, D. MAITLAND¹, AND K. WOOLEY¹¹Texas A&M University, College Station, TX**2:45PM****Rheological and Mechanical Characterization of Biocomposites Based on Chitosan with Potential Use as Bone Adhesives**L. PINZON¹, F. CEDANO¹, F. SALCEDO¹, J. CASAS¹, C. MORENO¹, J. BRICENO¹, AND D. TABIMA¹¹Universidad de los Andes, Bogota, Colombia

Track: Biomechanics, Cardiovascular Engineering
OP-Sat-2-4 - Room 006B

Aortic Biomechanics

Chairs: Craig Goergen, Zhijie Wang

1:30PM

Translation of AAA Rupture Risk Assessment: Wall Mechanics and Geometric Quantification

S. RAUT¹, J. SHUM², AND E. FINOL³

¹University of Texas at Austin, Austin, TX, ²Carnegie Mellon University, Pittsburgh, PA,

³University of Texas at San Antonio, San Antonio, TX

1:45PM

Role of Aneurysm on Biomechanics of Radially-Oriented Fibers in Human Ascending Thoracic Aorta

A. TSAMIS¹, S. PAL², J. PHILLIPPI², S. PASTA³, A. D'AMORE^{2,3}, T. GLEASON², D. VORP², AND S. MAITI²

¹Carnegie Mellon University, Pittsburgh, PA, ²University of Pittsburgh, Pittsburgh, PA,

³Fondazione Ri.MED and DICGM University of Palermo, Palermo, Italy

2:00PM

The Role of Heparanase in Aneurysm Development and Cardiac Function

V. LE¹ AND A. BAKER¹

¹University of Texas at Austin, Austin, TX

2:15PM

A Biochemomechanics Model of Stress-Mediated Vascular Adaptation in Normal Physiological Conditions

H. GETACHEW¹ AND S. BAEK¹

¹Michigan State University, East Lansing, MI

2:30PM

Viscoelastic Characterization of Damage Progress in Porcine Aortic Tissues *In Vitro*

M. SHARMA¹, A. VALDEVIT¹, C. PERLMAN¹, Y. WU¹, A. KHARGE¹, AND D. SHAHMIRZADI¹

¹Stevens Institute of Technology, Hoboken, NJ

2:45PM

An Alternative Method to Measure the Diameter of Abdominal Aortic Aneurysms Using Maximally Inscribed Spheres

H. GHARAH¹, B. ZAMBRANO¹, C. LIM¹, J. CHOI¹, W. LEE², AND S. BAEK¹

¹Michigan State University, East Lansing, MI, ²Seoul National University Hospital, Seoul, Korea, Republic of

Track: Biomechanics

OP-Sat-2-5 - Room 006C

Ocular Biomechanics

Chairs: Ross Ethier, Matthew Reilly

1:30PM

Effect Of Cell Stiffness On Transcellular And Paracellular Pore Formation In Schlemm's Canal Cells

M. JOHNSON¹, S. BRAAKMAN², R. PEDRIGI², A. VAHABIKASHI¹, J. SHERWOOD², R. VARGAS-PINTO¹, R. GUPTA², K. PERKUMAS³, W. STAMER³, C. ETHIER⁴, AND D. OVERBY²

¹Northwestern University, Evanston, IL, ²Imperial College London, London, United Kingdom,

³Duke University, Durham, NC, ⁴Georgia Tech, Atlanta, GA

1:45PM

The Role of Ocular Lens-Specific Proteins In Determining Lens Optical and Mechanical Properties

M. REILLY¹, S. KUMAR¹, B. RAPP², N. RAVI^{3,4}, P. HAMILTON⁴, M. LEROUX¹, A. SHIELS¹, AND B. MARCHAND¹

¹University of Texas at San Antonio, San Antonio, TX, ²Indiana University Health, Indianapolis, IN, ³Washington University in St. Louis, St. Louis, MO, ⁴Department of Veterans Affairs, St. Louis, MO

2:00PM

Effect of Orbital Geometry on Eye Response to Survivable Primary Blast Overpressure

V. ALPHONSE¹, A. KEMPER¹, AND S. DUMA¹

¹Virginia Tech - Wake Forest University Center for Injury Biomechanics, Blacksburg, VA

2:15PM

Matrix Stiffening Contributes to Retinal Endothelial Inflammation Associated with Diabetic Retinopathy

X. YANG¹, H. SCOTT¹, S. ARDEKANI¹, AND K. GHOSH¹

¹University of California, Riverside, Riverside, CA

2:30PM

Ocular Compliance in Mice

S. SCHWANER¹, J. SHERWOOD², E. GEISERT³, D. OVERBY², AND C. ETHIER¹

¹Georgia Institute of Technology, Atlanta, GA, ²Imperial College London, London, United Kingdom, ³Emory University, Atlanta, GA

2:45PM

Primary Blast Influences Incidence and Severity of Ocular Injury in a Porcine Eye Model

D. SHERWOOD¹, B. LUND², R. GLICKMAN³, W. SPONSEL^{1,4}, W. GRAY¹, R. WATSON¹, K. THOE⁴, AND M. REILLY¹

¹University of Texas San Antonio, San Antonio, TX, ²U.S. Army Institute of Surgical Research, Ft Sam Houston, TX, ³University of Texas Health Science Center at San Antonio, San Antonio, TX, ⁴WESMDPA, San Antonio, TX

Track: Cancer Technologies, Nano to Micro Technologies

OP-Sat-2-6 - Room 006D

Microtechnologies for Cancer I

Chairs: Rafael Davalos, Samir Iqbal

1:30PM

Dielectrophoretic Isolation and Detection of Cancer Related Circulating Cell Free DNA Biomarkers from Blood and Plasma

M. HELLER¹

¹University of California San Diego, La Jolla, CA

1:45PM

Circulating Tumor Cell Cluster-Chip

A. SARIOGLU¹, N. ACETO¹, N. KOJIC¹, M. DONALDSON¹, M. ZEINALI¹, B. HAMZA¹, A. ENGSTROM¹, H. ZHU¹, T. SUNDARESAN¹, D. MIYAMOTO¹, X. LUO¹, A. BARDIA¹, B. WITTNER¹, S. RAMASWAMY¹, T. SHIODA¹, D. TING¹, S. STOTT¹, R. KAPUR¹, S. MAHESWARAN¹, D. HABER¹, AND M. TONER¹

¹Harvard Medical School, Charlestown, MA

2:00PM

Platelet-Targeted Microfluidic Isolation of Circulating Tumor Cells

X. JIANG¹, A. KHANKHEL¹, E. REATEGUI¹, M. ZEINALI¹, M. PHILLIPS¹, F. FACHIN¹, A. HOANG¹, A. JENSEN¹, L. SEQUIST², S. MAHESWARAN², D. HABER², S. STOTT¹, AND M. TONER¹

¹Massachusetts General Hospital and Harvard Medical School, Boston, MA, ²Massachusetts General Hospital Cancer Center and Harvard Medical School, Boston, MA

2:15PM

Non-Fixative Preservative Solution for Stabilizing Circulating Tumor Cells in Whole Blood

R. SANDLIN¹, K. WONG¹, T. CAREY¹, A. KHANKHEL¹, A. SHANK¹, J. WALSH¹, D. IRIMIA¹, S. MAHESWARAN¹, D. HABER¹, S. STOTT¹, AND M. TONER¹

¹Massachusetts General Hospital, Harvard Medical School, Charlestown, MA

2:30PM

Shear-responsive Nanocoating for Single Circulating Tumor Cell DNA Analysis

E. REATEGUI^{1,2}, N. ACETO^{2,3}, J. SULLIVAN^{2,3}, A. JENSEN¹, E. LIM⁴, M. ZEINALI¹, J. MARTEL^{1,2}, A. ARANYOSI¹, W. LI⁴, A. BARDIA³, L. SEQUIST³, D. HABER^{3,5}, S. MAHESWARAN³, P. HAMMOND⁴, M. TONER^{1,2}, AND S. STOTT^{1,3}

¹Center for Engineering in Medicine, Massachusetts General Hospital, Charlestown, MA, ²Harvard Medical School, Boston, MA, ³Massachusetts General Hospital Cancer Center, Charlestown, MA, ⁴Massachusetts Institute of Technology, Cambridge, MA, ⁵Howard Hughes Medical Institute, Chevy Chase, MD

2:45PM**Detecting DNA Damage Electrically With Solid-State Nanopores**M. MARSHALL¹, J. RUZICKA¹, E. TAYLOR¹, AND A. HALL²¹University of North Carolina Greensboro, Greensboro, NC, ²Wake Forest University School of Medicine, Winston-Salem, NC**Track: Stem Cell Engineering, Tissue Engineering****OP-Sat-2-7 - Room 007A****Directing Stem Cell Differentiation****Chairs:** Steven George, Randolph Ashton**1:30PM Invited****Membrane Capacitance Indicates Neural Stem Cell Fate Via Specific Cell Surface Molecules**J. NOURSE¹, S. AHMED¹, J. ARULMOLI¹, B. POVIENG¹, L. MCDONNELL¹, C. SOEMARDY¹, AND L. FLANAGAN¹¹University of California Irvine, Irvine, CA**1:45PM****Nanog Restores the Lost Myogenic Capacity of Senescent Stem Cells**P. MISTRIOTIS¹, M. LIANG¹, L. KARACOSTA², AND S. ANDREADIS¹¹University at Buffalo, Amherst, NY, ²University at Buffalo, Buffalo, NY**2:00PM****Oxygenation Augments Myogenic Differentiation of Mesenchymal Stem Cells under Ischemic Conditions**Y. XU¹, M. FU¹, Z. LI¹, X. LI¹, Z. FAN¹, P. ANDERSON¹, Z. LIU¹, AND J. GUAN¹¹The Ohio State University, Columbus, OH**2:15PM****Direct Conversion of Skin Stem Cells into Functional Neural Crest Fate**V. BAJPAI¹ AND S. ANDREADIS¹¹University at Buffalo, Amherst, NY**2:30PM****Directed *In Vitro* Myogenesis of Human Embryonic Stem Cells and Their *In Vivo* Delivery Using Biomimetic Materials**S. VARGHESE¹, H. KABRA², Y. HWANG², AND M. KAR²¹UC San Diego, La Jolla, CA, ²UCSD, La Jolla, CAPLATFORM
SESSIONS
Sat-2**Track: Cardiovascular Engineering****OP-Sat-2-8 - Room 007B****Heart Valves and Stents I****Chairs:** Michael Sacks, Craig Simmons**1:30PM****Simulation of Heart Valve Biomaterial Fatigue**M. SACKS¹¹University of Texas at Austin, Austin, TX**1:45PM****A Comparative Analysis of Valvular Cell Calcification from Coronary or Non-coronary Aortic Valve Cusps**S. MASJEDI¹, R. ACHARYA¹, AND Z. FERDOUS¹¹University of Tennessee, Knoxville, TN**2:00PM****Pharmacological Targeting of Cadherin-11 Prevents Valvular Calcific Nodule Formation**M. BOWLER¹ AND W. MERRYMAN¹¹Vanderbilt University, Nashville, TN**2:15PM****The Role of Valve Interstitial Cell Structure on Initiation and Progression of Aortic Valve Disease**A. RAZAVI¹, J. CARRADINI¹, AND K. BALACHANDRAN¹¹University of Arkansas, Fayetteville, AR**2:30PM****Novel Mechanism of Directing Osteoblastic-like Differentiation in Valvular Interstitial Cells**E. HEDBERG-DIRK¹ AND M. RUSH¹¹University of New Mexico, Albuquerque, NM**2:45PM****Effect of Boundary Stiffness on Maintenance of Myofibroblast Phenotype**M. KURAL¹ AND K. BILLIAR¹¹Worcester Polytechnic Institute, Worcester, MA**Track: Cellular and Molecular Bioengineering****OP-Sat-2-9 - Room 007C****Young Innovator Session II****Chairs:** Cynthia Reinhart-King, Deborah Leckband**1:30PM****The Relative Role of Soluble Guanylyl Cyclase Dependent and Independent Pathways in Nitric Oxide Inhibition of Platelet Aggregation Under Flow**J. SYLMAN¹, S. LANTVIT², M. REYNOLDS², AND K. NEEVES¹¹Colorado School of Mines, Golden, CO, ²Colorado State University, Ft Collins, CO**1:42PM****Depolarization of Resting Membrane Potential Stimulates Neonatal Cardiomyocyte Proliferation *In Vitro***J-Y. LAN¹, C. WILLIAMS¹, M. LEVIN¹, AND L. BLACK III^{1,2}¹Tufts University, Medford, MA, ²Tufts University School of Medicine, Boston, MA**1:54PM****Membranes Promote Endothelial Differentiation of Adipose-Derived Stem Cells and Perivascular Interactions**A. MAZZOCCHI¹, J-P. DESORMEAUX², A. MAN¹, AND T. GABORSKI¹¹Rochester Institute of Technology, Rochester, NY, ²SIMPore Inc., West Henrietta, NY**2:06PM****Microscale Bio-adhesive Hydrogel Arrays for Cell Engineering Applications**R. PATEL¹, A. PURWADA¹, A. GAHARWAR², AND A. SINGH¹¹Cornell University, Ithaca, NY, ²Texas A&M University, College Station, TX**2:18PM****Nuclear Deformability Constitutes a Rate-limiting Step During Cell Migration in 3-D Environments**P. DAVIDSON¹, C. DENAIS¹, M. BAKSHI¹, AND J. LAMMERDING¹¹Cornell University, Ithaca, NY**2:30PM****Electrospun Polymers for Reprogramming Human Cells**T. CORDIE¹, T. HARKNESS¹, X. JING¹, H-Y. MI¹, L-S. TURNG¹, AND K. SAHA¹¹University of Wisconsin-Madison, Madison, WI**2:42PM****Endometrial Epithelial Cell Response to Macrophage-Secreted Factors is Dependent on Extracellular Matrix Context**K. POLLOCK¹, T. JARACZEWSKI¹, M. CARROLL¹, D. LEBOVIC², AND P. KREEGER¹¹University of Wisconsin-Madison, Madison, WI, ²University of Wisconsin School of Medicine and Public Health, Madison, WIP = Poster Session
OP = Oral Presentation
🏆 = Reviewer Choice Award

Track: Drug Delivery

OP-Sat-2-10 - Room 007D

Targeted Drug Delivery I

Chairs: Yun Wu, Michael Davis

1:30PM

A Universal Protein Tag for Delivery of SiRNA - Aptamer Chimeras

H. LIU¹ AND X. GAO²

¹Georgia Regents University, Evans, GA, ²University of Washington, Seattle, WA

1:45PM

Local Inhibition of MMPs in Abdominal Aortic Aneurysm Rat Model Using Anti-elastin Decorated Nanoparticles Loaded with Batimastat

N. NOSOUDI¹, A. SINHA¹, P. NAHAR¹, AND N. VYAVAHARE¹

¹Clemson University, Clemson, SC

2:00PM

Membrane-Embedding Nanoparticles as Cytosolic Drug Delivery Vehicles for Infectious Diseases.

Y-S. YANG¹, A. BEKDEMIR², F. STELLACCI², AND D. IRVINE³

¹Massachusetts Institute of Technology, Cambridge, MA, ²École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, ³Massachusetts Institute of Technology and Howard Hughes Medical Institute, Cambridge, MA

2:15PM

Selective Enhancement of Macropinocytosis For The Delivery Of a Mitochondriotoxic Peptide To Non-Small Cell Lung Cancer (NSCLC)

R. IGLESIAS¹ AND P. KORAI¹

¹University of South Florida, Tampa, FL

2:30PM

Targeting of Atheroprone Vasculature for Diagnostic Imaging and Prophylactic Drug Delivery

L. HOFMEISTER¹, S. LEE¹, W. CHEN¹, T. GIORGIO¹, D. HARRISON¹, AND H-J. SUNG¹

¹Vanderbilt University, Nashville, TN

2:45PM

Soluble Epoxide Hydrolase Inhibitor for Nerve Regeneration: Delivery by a Synthetic Nerve Conduit.

C. TERRY¹, J. AGARWAL¹, Y. HE¹, S. HEILSHORN², C. MORISSEAU³, AND J. SHEA¹

¹University of Utah, Salt Lake City, UT, ²Stanford University, Stanford, CA, ³UC Davis, Davis, CA

Track: Nano to Micro Technologies, Device Technologies and Biomedical Robotics

OP-Sat-2-11 - Room 008A

Cells Tissues and Organs on Chip II

Chairs: Shannon Weigum, Joseph Kinsella

1:30PM

Inflammatory Cell Trafficking Dynamics Across the Blood-Brain Barrier on a Novel Fluidic Platform

C. PALMIOTTI¹, R. BEARD², A. CONWAY¹, F. SINATRA¹, S. YUAN², S. SUNDARAM¹, AND A. ACHYUTA³

¹Draper Laboratory, Tampa, FL, ²Dept. of Molecular Pharmacology & Physiology, Morsani College of Medicine, University of South Florida, Tampa, FL, ³Draper Laboratory, Cambridge, MA

1:45PM

Body-on-a-Chip Simulation with Gastrointestinal Tract and Liver Tissues Suggests that Ingested Nanoparticles Have the Potential to Cause Liver Injury

M. ESCH¹, G. MAHLER², T. STOKOL¹, AND M. SHULER¹

¹Cornell University, Ithaca, NY, ²Binghamton University, Binghamton, NY

2:00PM

A Microfluidic Vascular Injury Model Using Heat-induced Endothelial Cell Activation

J. SYLMAN¹, S. RETTERER², K. RANA¹, AND K. NEEVES^{1,3}

¹Colorado School of Mines, Golden, CO, ²Oak Ridge National Laboratory, Oak Ridge, TN, ³University of Colorado Denver, Denver, CO

2:15PM

Digital Microfluidic Immunocytochemistry in Single Cells (DISC) for Analysis of Cell Signaling

A. H. C. NG¹, M. D. CHAMBERLAIN¹, AND A. R. WHEELER¹

¹University of Toronto, Toronto, ON, Canada

2:30PM

Microfluidic Reconstruction of 3D Osteocyte Network and Mechanotransduction Function

Y. GU¹, Q. SUN¹, W. ZHANG¹, J. ZILBERBERG², A. VALDEVIT¹, AND W. LEE¹

¹Stevens Institute of Technology, Hoboken, NJ, ²Hackensack University Medical Center, Hackensack, NJ

2:45PM

A Microfluidic Platform For Dopaminergic Neuron Growth And In-Line Dopamine Uptake Measurements

Y. YU¹, M. SHAMSI¹, D. KRASTEVI¹, AND A. R. WHEELER¹

¹University of Toronto, Toronto, ON, Canada

Track: Respiratory Bioengineering, New Frontiers and Special Topics

OP-Sat-2-12 - Room 008B

Translational Respiratory Engineering

Chairs: Joseph Bull, William Federspiel

1:30PM Invited

Respiratory Devices – “Bench to Bedside”

P. DECOMO¹

¹ALung Technologies, Inc., Pittsburgh, PA

1:45PM

An Acoustic Method for Detecting Air Flow in Artificial Airways

K. YANG¹, A. MUELENAER^{2,3}, A. WICKS⁴, AND T. RUSCHER⁴

¹Burton Center for Arts and Technology- Center for Engineering, Salem, VA, ²Carilion Clinic Children’s Hospital, Roanoke, VA, ³Virginia Tech Carilion School of Medicine, Roanoke, VA, ⁴Virginia Tech, Blacksburg, VA

2:00PM

In Vitro Performance Of A Compact Integrated Blood Pump-Oxygenator For Ambulatory Respiratory Assist

S. MADHANI¹, B. FRANKOWSKI¹, C. BERMUDEZ¹, AND W. FEDERSPIEL¹

¹University of Pittsburgh, Pittsburgh, PA

2:15PM

Microtopographies LIMIT Bacterial Biofilm Accumulation: A Novel Approach to Decreasing Ventilator-Associated Pneumonia CASES

E. MANN¹, R. MAY¹, R. METTETAL¹, A. BRENNAN², AND S. REDDY¹

¹Sharklet Technologies, Inc, Aurora, CO, ²University of Florida, Gainesville, FL

2:30PM

Modeling A Novel Design For A Total Artificial Lung With Enhanced Flow Mixing

P. FERNANDO¹, H. CHERIYAN¹, J. BULL¹, AND R. BARTLETT¹

¹University of Michigan, Ann Arbor, MI

2:45PM

Personalized Predictions of Recruitment, Derecruitment, and Tissue Distention in the Injured Lung

B. SMITH¹, L. LUNDBLAD¹, J. SATALIN², M. KOLLISCH-SINGULE², B. EMR², K. SNYDER², L. GATTO³, P. ANDREWS⁴, N. HABASHI⁴, G. NIEMAN², AND J. BATES¹

¹University of Vermont, Burlington, VT, ²SUNY Upstate Medical University, Syracuse, NY, ³SUNY Cortland, Cortland, NY, ⁴University of Maryland, Baltimore, MD

Track: Device Technologies and Biomedical Robotics, Translational Biomedical Engineering

OP-Sat-2-13 - Room 201

Biosensors II: Applications

Chairs: Sihong Wang, Lissett Bickford

1:30PM

Multimarker Diabetes Management Device

J. LA BELLE^{1,2} AND C. COOK²

¹Arizona State University, Tempe, AZ, ²Mayo Clinic College of Medicine, Scottsdale, AZ

1:45PM

Colorimetric Detection of Substrate Binding to Cytochrome P450 with Plasmonic Nano Lycyrgus Cup Array

L. PLUCINSKI¹, A. HSIAO¹, M. GARTIA¹, W. ARNOLD¹, A. AMEEN¹, A. DAS¹, AND G. LIU¹

¹University of Illinois at Urbana-Champaign, Urbana, IL

2:00PM

Rapid And No-wash Detection Of Avianin Fluena A Virus From Clinical Swab Samples

C. CHENG¹, H. CUI¹, Q. YUAN¹, J. WU¹, AND S. EDA¹

¹The University of Tennessee, Knoxville, TN

2:15PM

A Focused Surface Acoustic Wave Device for Rapid and Sensitive Detection of Listeria Monocytogenes Based on Recombinase Polymerase Amplification

L. REN¹, F. GUO¹, Y. CHEN¹, P. LI¹, Y. XIE¹, AND T. HUANG¹

¹Penn state university, State College, PA

2:30PM

Multi-Modal System For Monitoring Cellular Behavior

L. WONG¹, C. MANJUNATH¹, M. PEREZ¹, C. HORNER¹, M. MALDONADO¹, AND J. NAM¹

¹University of California, Riverside, Riverside, CA

2:45PM

Multi-Electrode Sensing for Signal-to-Noise Ratio Enhancement of Impedance Cytometry

S. EMAMINEJADI¹, S. TALEBI¹, R. DAVIS¹, AND M. JAVANMARD¹

¹Stanford University, Stanford, CA

2:00PM

Nanotechnology Strategies to Improve Therapeutic Relevancy of Cisplatin for Malignant Gliomas

C. ZHANG¹, E. NANCE¹, P. MASTORAKOS¹, J. CHISHOLM¹, S. BERRY¹, J. SUK¹, AND J. HANES¹

¹Center for Nanomedicine at the Wilmer Eye Institute, Johns Hopkins University School of Medicine, Baltimore, MD

2:15PM

Polyanionic Nanoscale Hydrogels for the Oral Delivery of Chemotherapeutics

A. PURANIK¹, D. SPENCER¹, V. WHITE¹, L. PAO¹, AND N. PEPPAS¹

¹The University of Texas at Austin, Austin, TX

2:30PM

Non-viral DNA Delivery to Human Adipose Mesenchymal Stem Cells for Glioblastoma Treatment

A. DENDULURI¹, S. TZENG¹, K. KOZIELSKI¹, O. WIJESSEKERA², A. MANGRAVITI², K. CHAICHANA², H. GUERRERO-CAZARES², J. GREEN³, AND A. QUINONES-HINOJOSA²

¹Dept. of Biomedical Engineering, Johns Hopkins University, Baltimore, MD, ²Dept. of Neurosurgery, Johns Hopkins University, Baltimore, MD, ³Dept. of Biomedical Engineering & Dept. of Neurosurgery, Johns Hopkins University, Baltimore, MD

2:45PM

Biological Response To Multiple Administrations Of Viral Nanoparticles Carriers: Implication For Long-Term Drug Delivery Applications

S. SHUKLA¹, D. DORAND¹, J. MYERS¹, J. WHITNEY¹, A. HUANG¹, AND N. STEINMETZ¹

¹Case Western Reserve University, Cleveland, OH

Track: Neural Engineering

OP-Sat-2-15 - Room 202A

Glial Cell Engineering / Neural Progenitor Cell and Tissue Engineering

Chairs: Deanna Thompson, Ryan Gilbert

1:30PM

Schwann Cells and Electrical Stimulation: Enhanced Migration and Neurotrophic Factors to Aid PNS Repair

L. ZHANG¹, A. KOPPEL¹, K. KEARNS¹, AND D. THOMPSON¹

¹Rensselaer Polytechnic Institute, Troy, NY

1:45PM

Piezoelectric Fibrous Scaffolds for Schwann Cell Induced Spinal Cord Repair

Y-S. LEE¹, S. DAMARJU², S. WU², M. BUNGE¹, AND T. ARINZEH²

¹University of Miami, Miami, FL, ²New jersey Institute of Technology, Newark, NJ

2:00PM

Aligned, Electrospun Fibers as Artificial Axons to Study Oligodendrocyte Myelination

S. LEE¹, S. TUCK², M. LEACH³, S. CHONG¹, J. CHAN¹, AND J. COREY^{2,3}

¹University of California at San Francisco, San Francisco, CA, ²VA Ann Arbor Healthcare Center, Ann Arbor, MI, ³The University of Michigan, Ann Arbor, MI

2:15PM

Three-Dimensional Microscaffolds for Enrichment and Transplantation of Human Pluripotent Stem Cell-Derived Neurons

N. FRANCIS¹, N. BENNETT¹, A. CARLSON¹, A. HALIKERE^{1,2}, Z. PANG², AND P. MOGHE¹

¹Rutgers University, Piscataway, NJ, ²Child Health Institute of New Jersey, New Brunswick, NJ

2:30PM

A Novel Injectable Hydrogel-Based Drug Delivery System for Local Delivery of T3 to Promote Myelination after Spinal Cord Injury

R. SHULTZ¹ AND Y. ZHONG¹

¹Drexel University, Philadelphia, PA

Track: Drug Delivery, Cancer Technologies

OP-Sat-2-14 - Room 103B

Cancer Drug Delivery II

Chairs: Beata Chertok, Omolola Eniola-Adefeso

1:30PM

Hydrophobically Modified Glycol Chitosan Nanoparticles: Enzymatic Stability, pH Responsiveness, Biocompatibility and Uptake

G. SUARATO¹, A. CHIN², AND Y. MENG¹

¹Stony Brook University, Stony Brook, NY, ²Rensselaer Polytechnic Institute, Troy, NY

1:45PM

Unnatural Killer Cells: TRAIL-coated Leukocytes Kill Cancer Cells in a Spontaneous Metastasis Mouse Model of Prostate Cancer

M. MITCHELL¹, E. WAYNE¹, C. SCHAFFER¹, AND M. KING¹

¹Cornell University, Ithaca, NY

2:45PM**Engineering a White Matter Model of Traumatic Brain Injury**B. PFISTER¹, A. ADAMS¹, J. ZALK¹, AND H. KIM²¹New Jersey Institute of Technology, Newark, NJ, ²Rutgers University, Newark, NJ**Track: New Frontiers and Special Topics, Device Technologies and Biomedical Robotics****OP-Sat-2-16 - Room 202B****Global Health II****Chairs:** Elain Fu, Anand Ramasubramanian**1:30PM****Colorimetric Detection of Azidothymidine Using an Alkyne-Modified Dextran Substrate**G. PRATT¹, A. FAN¹, AND C. KLAPPERICH¹¹Boston University, Boston, MA**1:45PM****Conversion of a Laboratory-based Colorimetric Assay to a Field-use Paper-based Test for the Detection of Phenylketonuria in Newborns**G. THIESSEN¹, K. DE LOS REYES¹, R. MONNAT¹, AND E. FU²¹University of Washington, Seattle, WA, ²Oregon State University, Corvallis, OR**2:00PM****Quantitative Real-Time Recombinase Polymerase Amplification of HIV-1 DNA**B. ROHRMAN¹, Z. CRANNELL¹, AND R. RICHARDS-KORTUM¹¹Rice University, Houston, TX**2:15PM****Real-time Fluorescence Detection of Nucleic Acid Amplification on a Mobile Phone for TB Diagnosis**A. SKANDARAJAH¹, B. BAKER², M. KATO-MAEDA³, A. CATTAMANCHI³, AND D. FLETCHER¹¹University of California, Berkeley, Berkeley, CA, ²Lawrence Livermore National Laboratory, Livermore, CA, ³UCSF Medical School, San Francisco, CA**2:30PM****Fluorescence Detection of DNA Amplification in Porous Media for Point-of-Care Diagnostics**C. MONAHAN¹, J. BISHOP¹, AND P. YAGER¹¹University of Washington, Seattle, WA**2:45PM****A Fully Integrated Paper-Based Assay for the Extraction, Isothermal Amplification, and Detection of Pandemic (H1N1) Influenza A RNA**N. RODRIGUEZ^{1,2}, A. FAN¹, J. LINES¹, C. CHEN^{1,2}, AND C. KLAPPERICH¹¹Boston University, Boston, MA, ²Wyss Institute for Biologically Inspired Engineering, Harvard University, Boston, MA**Track: Biomedical Imaging and Optics****OP-Sat-2-17 - Room 203A****Novel Approaches to Biomedical Imaging****Chairs:** B. Hyle Park, Nozomi Nishimura**1:30PM****Multi-parametric Photoacoustic Microscopy of Arterial Ligation**M. KENNEDY¹, B. NING¹, S. SEAMAN¹, R. CHEN², Q. ZHOU², K. SHUNG², S. PEIRCE¹, AND S. HU¹¹University of Virginia, Department of Biomedical Engineering, Charlottesville, VA,²University of Southern California, Resource Center for Medical Ultrasonic Transducer Technology, Los Angeles, CA**1:45PM****Diagnostic Accuracy of Integrated Intravascular Ultrasound and Optical Coherence Tomography for the Detection and Characterization of Human Atherosclerotic Plaque**T. MA¹, J. LI², A. CORREA¹, D. MOHAR², P. PATEL², K. SHUNG¹, Z. CHEN², AND Q. ZHOU¹¹University of Southern California, Los Angeles, CA, ²University of California, Irvine, Irvine, CA**2:00PM****Multi-Modal Validation Framework of Mitral Valve Geometry and Biomechanical Models**S. GRBIC¹, T. EASLEY², T. MANSI¹, D. NEUMANN¹, E. PIERCE², M. JENSEN², C. BLOODWORTH², A. SIEFERT², J. KREBS¹, D. YUH³, A. YOGANATHAN², AND D. COMANICIU¹¹Siemens, Princeton, NJ, ²Georgia Tech, Atlanta, GA, ³Yale University School of Medicine, New Haven, CO**2:15PM****Rapid Throughput, Seamless Imaging of Human Hip Joint Tissue Across Length Scales to Elucidate Emergent Structure-Function Relationships**D. ZEIDLER¹, U. KNOTHE², T. GARBOWSKI¹, G. DELLEMAN¹, AND M. KNOTHE TATE³¹Carl Zeiss Microscopy, Oberkochen, Germany, ²Cleveland Clinic, Cleveland, OH, ³University of New South Wales, UNSW Sydney, Australia**2:30PM****Quantitative Measurement of Cerebrospinal Fluid Flow in Ventricular Shunts by Contrast-enhanced Ultrasound and Cross-correlation Based Microbubble Tracking**R. HARTMAN¹, S. AGLYAMOV¹, D. FOX², AND S. EMELIANOV¹¹University of Texas at Austin, Austin, TX, ²St. David's NeuroTexas Institute, Austin, TX**2:45PM****Novel Dental Imaging System**J. JOHNSON¹, S. GRAY¹, L. LEONARD¹, AND R. WEBER²¹UTSI, Tullahoma, TN, ²MDI, Arlington Heights, IL**Track: Biomedical Imaging and Optics****OP-Sat-2-18 - Room 203B****Optical Imaging and Microscopy II****Chairs:** Javier Jo, Michael Fenn**1:30PM****Bioengineering Autobioluminescence for Biomedical Imaging: From Microbe to Man**S. RIPP¹, T. XU², D. CLOSE², AND G. SAYLER¹¹The University of Tennessee, Knoxville, TN, ²BioTech Inc., Knoxville, TN**1:45PM****Live-Cell Analysis of Fibroblast Phenotype on Electrospun Meshes using Surface Enhanced Raman Spectroscopy**E. KIBROM¹, N. ROKI¹, C. BASHUR¹, AND M. FENN¹¹Florida Institute of Technology, Melbourne, FL**2:00PM****Optimization of Time Gate Selection in Bi-exponential Fluorescence Lifetime Imaging via Sensitivity Analysis**T. OMER¹, N. SINSUEBPHON¹, L. ZHAO¹, X. INTES¹, AND J. HAHN¹¹Rensselaer Polytechnic Institute, Troy, NY**2:15PM****Multiplexing Imaging of Single mRNA Isoforms for Dynamical Quantification in Live Cells**K. LEE^{1,2}, Y. CUI², L. LEE¹, AND J. IRUDAYARAJ²¹University of California Berkeley, Berkeley, CA, ²Purdue University, West Lafayette, IN

2:30PM**Confocal Fluorescence Nanocytology: Detecting The Molecular Mechanisms Of Carcinogenesis**J. CHANDLER¹, Y. STYPULA-CYRUS¹, L. ALMASSALHA¹, B. FRESE¹, H. SUBRAMANIAN¹, AND V. BACKMAN¹¹Northwestern University, Evanston, IL**2:45PM****Predictive Model Of Probe-Dependent Sampling Depth In Diffuse Reflectance Spectroscopy**W. GOTH¹, R. HENNESSY¹, M. SHARMA¹, AND J. TUNNELL¹¹The University of Texas at Austin, Austin, TX**Track: Cancer Technologies, Nano to Micro Technologies****OP-Sat-2-19 - Room 103A****Nanotechnologies for Cancer II****Chairs:** Kaiming Ye, Debadyuti (Rana) Ghosh**1:30PM****Tumor-penetrating Nanocomplexes for siRNA Delivery to Pancreatic Cancer**J. LO^{1,2}, E. KWON¹, M. MUZUMDAR^{1,3}, Y. REN^{1,2}, T. JACKS¹, AND S. BHATIA^{1,4,5}¹MIT, Cambridge, MA, ²Harvard-MIT MD-PhD program, Boston, MA, ³Dana-Farber Cancer Institute, Boston, MA, ⁴Brigham and Women's Hospital, Boston, MA, ⁵Broad Institute of Harvard and MIT, Cambridge, MA**1:45PM****Spherical Nucleic Acids as an RNAi-Based Therapy for Glioblastoma**E. DAY^{1,2}, S. JENSEN², C. KO², L. HURLEY², A. STEGH², AND C. MIRKIN²¹University of Delaware, Newark, DE, ²Northwestern University, Evanston, IL**2:00PM****Magnetic Fluid Hyperthermia Increases Bortezomib Cytotoxicity in Cancer Cells by Proteotoxic Stress**M. TORRES-LUGO¹, M. ALVAREZ², A. CASTILLO², O. SOTO², AND C. RINALDI³¹University of Puerto Rico, Mayaguez Campus, Mayaguez, Puerto Rico, ²University of Puerto Rico, Mayaguez Campus, Mayaguez, PR, Puerto Rico, ³University of Florida, Gainesville, Gainesville, FL**2:15PM****Prussian Blue Nanoparticles For Laser-Induced Photothermal Therapy Of Tumors**H. HOFFMAN¹, L. CHAKRABARTI¹, M. DUMONT¹, A. SANDLER^{1,2}, AND R. FERNANDES^{1,2}¹Children's National Health System, Washington, DC, ²George Washington University, Washington, DC**2:30PM****Synergistic Antitumor Activity from Two-Stage Delivery of Piperlongumine and TRAIL Nanoparticles**C. SHARKEY¹, J. LI¹, AND M. KING¹¹Cornell University, Ithaca, NY**2:45PM****A Nano-plasmonic Sensor for Label-free Detection and Molecular Profiling of Cancer Exosomes**H. IM¹, H. SHAO¹, Y. PARK¹, V. PETERSON¹, C. CASTRO¹, R. WEISSELEDER^{1,2}, AND H. LEE¹¹Massachusetts General Hospital, Boston, MA, ²Harvard Medical School, Boston, MA**Track: Undergraduate****OP-Sat-2-20 - Room 204B****Undergraduate Research I****Chairs:** William Guilford, Kristine Ropella**1:30PM****Computational Prediction of G-quadruplex Formation**J. CALVERT¹, A. KREIG¹, S. SINHA¹, AND S. MYONG¹¹University of Illinois at Urbana-Champaign, Champaign, IL**1:40PM****Spatiotemporal-Specific Antibody Signatures Associated with Tenofovir Microbicide Use**L. DUNPHY¹, D. ARCHARY², K. ARNOLD¹, K. SEATON³, J-A. PASSMORE^{2,4,5}, L. WERNER², L. MORRIS⁴, G. TOMARAS³, AND D. LAUFFENBURGER¹¹Massachusetts Institute of Technology, Cambridge, MA, ²Centre for the AIDS Programme of Research in South Africa (CAPRISA), Durban, South Africa, ³Duke Human Vaccine Institute, Duke University Medical Center, Durham, NC, ⁴National Health Laboratory Services, Johannesburg, South Africa, ⁵Institute of Infectious Diseases and Molecular Medicine, University of Cape Town, South Africa**1:50PM****Bioactive Glass Ceramics: The Ideal Synthetic Bone Substitute**E. MASON¹, M. FENN¹, AND L. HENCH¹¹Florida Institute of Technology, Melbourne, FL**2:00PM****Zeolite-loaded Alginate-chitosan Hydrogel Beads As A Topical Hemostat**K. CHRISTODOULIDES¹, M. BAYOMI¹, Y. CHOI¹, P. FATHI¹, A. GHODASARA¹, J. KNAZIK¹, K. LANGAN¹, B. MILLER¹, M. SIKORSKI¹, H. THAKER¹, J. TITCOMB¹, O. WONODI¹, A. BEHRENS¹, AND P. KOFINAS¹¹University of Maryland, College Park, MD**2:10PM****Evaluation of Screw-Tunnel Divergence and Graft Fixation Biomechanics using Flexible and rigid Reamer Systems for Anterior Cruciate Ligament Reconstruction**M. DRAZEK^{1,2}, K. WALLEY^{1,3}, M. PEREZ-VILORIA¹, S. OKAJIMA^{1,3}, O. MANOUKIAN^{1,4}, A. MASOUDI^{1,5}, A. CHILOYAN^{1,3}, R. NAIR^{1,3}, M. STEINER⁶, AND A. NAZARIAN¹¹Beth Israel Deaconess Medical Center, Boston, MA, ²Tufts University School of Medicine, Boston, MA, ³Boston University, Boston, MA, ⁴University of Connecticut, Storrs, CT, ⁵Harvard Medical School, Boston, MA, ⁶New England Baptist Hospital, Roxbury Crossing, MA**2:20PM****Mechanical Activity of Valve Interstitial Cells in Disease-like Conditions**V. PRAMIL¹, E. FARRAR¹, C. MOSHER², J. RICHARDS¹, AND J. BUTCHER¹¹Cornell University, Ithaca, NY, ²Case Western University, Cleveland, OH**2:30PM****Imaging Collagen Architecture With Polarization-Sensitive Optical Coherence Tomography**R. DE LA ROSA¹, M. VILLIGER^{2,3,4}, N. URIBE-PATARROYO^{2,3,4}, AND B. BOUMA^{2,3,4}¹Brown University, Providence, RI, ²Wellman Center for Photomedicine, Boston, MA, ³Harvard Medical School, Boston, MA, ⁴Massachusetts General Hospital, Boston, MA**2:40PM****Ultrasound Imaging of Forearm Muscles for Decoding Hand Movements in Real Time**M. LAHLOU¹, N. AKHLAGHI¹, H. ZAFAR¹, AND S. SIKDAR¹¹George Mason University, Fairfax, VA**2:50PM****Using Nonlinear Dynamical Measures to Compare MEG Recordings of Epilepsy Patients with Normal Controls**S. SUBRAMANIAN¹, S. ROBINSON², S. INATI², AND R. COPPOLA²¹Johns Hopkins University, Baltimore, MD, ²National Institutes of Health, Bethesda, MD

SATURDAY, October 25, 2014**3:15 PM - 4:45 PM****PLATFORM SESSIONS – SAT - 3****Track: Tissue Engineering, Orthopaedic and Rehabilitation Engineering****OP-Sat-3-1 - Room 001A****Muscular, Tendinous, Ligamentous Tissue Engineering****Chairs:** George Christ, Vassilios Sikavitsas**3:15PM****Highly Functional Engineered Skeletal Muscle Tissues: From Rat to Human**N. BURSAC¹¹Duke University, Durham, NC**3:30PM****Mechanical Stimulation of Cellularized Polyurethane-Collagen Composite Meshes for Connective Tissue Applications**P. THAYER¹, E. TONG¹, L. DAHLGREN¹, S. GUELCHER², AND A. GOLDSTEIN¹¹Virginia Tech, Blacksburg, VA, ²Vanderbilt University, Nashville, TN**3:45PM****Keratin Hydrogels as a Cell and Growth Factor Delivery Vehicle for Treatment of Volumetric Muscle Loss**H. BAKER^{1,2}, J. PASSIPIERI¹, S. TOMBLYN³, M. SIRIWARDANE¹, C. OKOUKONI^{1,2}, C. STEWART⁴, M. ELLENBURG³, L. BURNETT³, AND G. CHRIST^{1,2}¹Wake Forest Institute for Regenerative Medicine, Winston Salem, NC, ²VT-WFU School of Biomedical Engineering and Sciences, Winston Salem, NC, ³KeraNetics, LLC, Winston Salem, NC, ⁴University of Virginia, Charlottesville, VA**4:00PM****Tendon Tissue Engineering using a Mechanostimulator and Adult Stem Cell Seeded Decellularized Human Umbilical Vein**V. SIKAVITSAS¹ AND B. ENGBRETSON¹¹University of Oklahoma, Norman, OK**4:15PM****Contractile Composite Scaffolds for Skeletal Muscle Tissue Engineering**D. BROWNE¹, C. SIMMONDS¹, K. MCKEON-FISCHER¹, AND J. FREEMAN¹¹Rutgers University, Piscataway, NJ**4:30PM****Localized BMP-4 Release For Improvement of the Engineered Enthesis**A. LEE¹, C. LEE¹, M. VIDAL¹, AND K. BAAR¹¹University of California, Davis, Davis, CA**Track: Biomaterials, Cellular and Molecular Bioengineering****OP- Sat - 3-2 - Room 001B****Biomaterials for Immunoengineering II****Chairs:** Lindsay Fitzpatrick, Anjelica Gonzalez**3:15PM****Immunomodulatory Scaffolds for Enhanced Cell Transplant**R. GOWER¹, X. ZHANG¹, J. ZHANG¹, J. LIU¹, C. RICCI¹, AND L. SHEA¹¹Northwestern University, Chicago, IL**3:30PM****Biodegradable Nanoellipsoidal Artificial Antigen Presenting Cells for Cancer Immunotherapy**R. MEYER¹, J. SUNSHINE¹, K. PERICA¹, K. AJE¹, J. SCHNECK¹, AND J. GREEN¹¹School of Medicine, Johns Hopkins University, Baltimore, MD**3:45PM****Incorporation of The Extra Domain A of Fibronectin (EDA) in Fibrin Matrices Mediates Activation of DCs and T-cell-dependent Tumor Regression**Z. JULIER¹, M. MARTINO¹, A. DE TITTA¹, AND J. HUBBELL¹¹Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland**4:00PM****Effects of Age-Related Changes in Biomechanical and Biochemical Properties Upon Host Response to ECM**S. LOPRESTI^{1,2}, L. ZHANG^{1,2}, C. DEARTH¹, AND B. BROWN^{1,2}¹University of Pittsburgh, Pittsburgh, PA, ²McGowan Institute for Regenerative Medicine, Pittsburgh, PA**4:15PM****Injectable Thermogelling Block Copolymers as Vaccine Delivery Devices**J. ADAMS¹ AND S. MALLAPRAGADA¹¹Iowa State University, Ames, IA**4:30PM****Modulation of Cardiac Macrophages via Hydrogel-mediated IL-4 Delivery as a Strategy for Infarct Healing**I. SOMASUNTHARAM¹, S. CARROLL¹, M. BROWN², A. SALIMATH¹, A. GARCIA¹, AND M. DAVIS^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**Track: Biomaterials****OP-Sat-3-3 - Room 006A****Biomaterials Design II****Chairs:** Nasim Annabi, Michael Davis**3:15PM****Near-infrared Light Triggerable Polysaccharides Double Network Hydrogel**R. LUO¹, Z. LIM¹, W. LI², P. SHI², AND C-H. CHEN¹¹National University of Singapore, Singapore, Singapore, ²City University of Hong Kong, Hong Kong, Hong Kong**3:30PM****The Design of Hypoxia-Inducible Hydrogels via *In Situ* Oxygen Consuming Reaction**K. PARK¹ AND S. GERECHT¹¹Johns Hopkins University, Baltimore, MD**3:45PM****Hierarchical Design of Tunable Tissue-Like Collagen Materials**K. BLUM¹, T. NOVAK¹, C. NEU¹, AND S. VOYTIK-HARBIN¹¹Purdue University, West Lafayette, IN**4:00PM****Superbiocompatible Hydrogels for Islet Encapsulation Therapy: Tuning the Geometry of Hydrogels Prevents Foreign Body Immune Responses and Fibrosis to Enable Long-Term Blood Glucose Correction in Diabetic Mice**O. VEISEH¹, J. DOLOFF¹, A. VEGAS¹, R. LANGER¹, AND D. ANDERSON¹¹Massachusetts Institute of Technology, Cambridge, MA**4:15PM****Directing Cell Functions Using Bioorthogonally Clicked Multiblock Hybrid Copolymers**S. LIU¹, H. ZHANG¹, J. FOX¹, AND X. JIA¹¹University of Delaware, Newark, DE

Track: Biomechanics**OP-Sat-3-4 - Room 006B****Biomechanics in Degeneration and Regeneration****Chairs:** Alesha Castillo, Kyle Allen**3:15PM****A Novel Biomechanical Model to Study Subchondral Microdamage Following Acute Knee Injury**O. KENNEDY¹, B. BEUTEL¹, AND M. LENDHEY¹¹New York University School of Medicine, NY, NY**3:30PM****Prevention of Cartilage Degeneration by Intraarticular Treatment with Lubricin-Mimetics in the Rat Following Anterior Cruciate Ligament Transection**K. SAMAROO¹, M. TAN¹, M. DEMANGE², A. TITAN², C. CARBALLO², M. SISTO², S. RODEO², D. PUTNAM¹, AND L. BONASSAR¹¹Cornell University, Ithaca, NY, ²Hospital for Special Surgery, New York, NY**3:45PM****Indentation Method to Map Mechanical Properties of Articular Surface to Identify Degenerated Regions**S. SIM^{1,2}, A. CHEVRIER¹, M. GARON², E. QUENNEVILLE², AND M. BUSCHMANN¹¹Ecole Polytechnique de Montreal, Montreal, QC, Canada, ²Biomomentum Inc., Laval, QC, Canada**4:00PM****Mechanobiology Assessment of Temporomandibular Disc Surfaces: A Nanoindentation and TEM Study**C. JURAN¹, A. MATUSKA¹, AND P. MCFETRIDGE¹¹University of Florida, Gainesville, FL**4:15PM****Genipin Effect on Soft Palates for the Treatment of Snoring and Obstructive Sleep Apnea**J. KUO¹, P. SLUSAREWICZ¹, AND T. HEDMAN^{1,2}¹Orthoedics LP, Lexington, KY, ²University of Kentucky, Lexington, KY**4:30PM****The Effect of IGF-I Gene Therapy on the Mechanical Properties of Repaired Equine Cartilage**D. GRIFFIN¹, K. ÖRTVED¹, A. NIXON¹, AND L. BONASSAR¹¹Cornell University, Ithaca, NY**3:30PM****How the Morphology of Osteocytes Contributes to their Mechanotransduction near Microdamage**E. BUDYN^{1,2}, M. BENSIDHOUM³, E. HENRY¹, J-C. AUREGAN³, H. PETITE³, AND E. DEPPEZ¹¹Ecole Normale Supérieure de Cachan, Cachan, France, ²University of Illinois at Chicago, Chicago, IL, ³University Paris Diderot, Paris, France**3:45PM****Finite Element Modeling of Normal and Pathological Chinchilla Ears**X. WANG¹, X. GUAN¹, R. BROWDER¹, D. MCCASKILL¹, AND R. GAN¹¹University of Oklahoma, Norman, OK**4:00PM****Coarse-Grained Molecular Dynamics Modeling of Band-3 Protein Diffusion in the Defective Red Blood Cell Membrane**H. LI¹ AND G. LYKOTRAFITIS¹¹University of Connecticut, Storrs, CT**4:15PM****Computational Analysis of Eustachian Tube Opening during Inflammatory Otitis Media in Children with Cleft Palate**J. MALIK¹ AND S. GHADIALI¹¹The Ohio State University, Columbus, OH**4:30PM****A Computational-Experimental Approach for the In Situ Estimation of Aortic Valve Interstitial Cell Biophysical State**R. BUCHANAN¹ AND M. SACKS¹¹The University of Texas at Austin, Austin, TX**Track: Cancer Technologies, Nano to Micro Technologies****OP-Sat-3-6 - Room 006D****Microtechnologies for Cancer II****Chairs:** Sihong Wang, Wei Li**3:15PM****Metastatic Cancer Cells Migration in 3D Collagen Matrix and Microtracks**A. RAHMAN¹, S. CAREY¹, C. KRANING-RUSH¹, B. ROMERO¹, R. WILLIAMS¹, AND C. REINHART-KING¹¹Cornell University, Ithaca, NY**3:30PM****Decoupling Protrusion from Migration: A New Assay to Study Cancer Cell Protrusion Dynamics in the Absence of Migration**B. KOONS¹ AND A. NAIN¹¹Virginia Tech, Blacksburg, VA**3:45PM****Programmable Bacteria for Cancer Therapy and Diagnostics**T. DANINO¹, A. PRINDLE², O. DIN², G. KWONG¹, S. BHATIA¹, AND J. HASTY²¹MIT, Cambridge, MA, ²UCSD, La Jolla, CA**4:00PM****Epidermal Growth Factor as a New Migration-Targeted Therapy for Pediatric Brain Tumors**J. RICO¹, T. SINGH¹, S. MCCUTCHEON¹, AND M. VAZQUEZ¹¹The City College of New York (CUNY), New York, NY**4:15PM****A Kinetic Model for Rapid Molecular Phenotyping of Resected Tissues during Cancer Surgery**L. SINHA¹, Y. WANG², C. YANG¹, A. KHAN², S. LEIGH², J. LIU², AND K. TICHAUER¹¹Illinois Institute of Technology, Chicago, IL, ²Stony Brook University (SUNY), Stony Brook, NYPLATFORM
SESSIONS

Sat-3

Track: Biomechanics**OP-Sat-3-5 - Room 006C****Multiscale Biomechanics****Chairs:** Heather Hayenga, Rouzbeh Amini**3:15PM****A Multiscale Particle Based Model of Platelets in Shear Flows: Correlating Numerical Simulations with *In Vitro* Results**P. ZHANG¹, J. SHERIFF¹, C. GAO¹, M. LIVELLI¹, S. POTHAPRAGADA¹, N. ZHANG¹, L. ZHANG¹, M. SLEPIAN², Y. DENG¹, AND D. BLUESTEIN¹¹Stony Brook University, Stony Brook, NY, ²University of Arizona, Tucson, AZP = Poster Session
OP = Oral Presentation
= Reviewer Choice Award

4:30PM**A Comparative Study Of Patient-Derived Primary Brain Tumor Cells Using 3D Biomimetic Hydrogels**C. WANG¹, X. JIANG¹, C. WILSON¹, A. PONNUSWAMI¹, V. CARETTI¹, M. MONJE¹, G. GRANT¹, AND F. YANG¹¹Stanford University, Stanford, CA**Track: Stem Cell Engineering, Tissue Engineering
OP-Sat-3-7 - Room 007A****Stem Cells in Translational Science****Chairs:** Eduardo Silva, Stephanie Willerth**3:15PM Invited****Spatiotemporal Mapping of De Novo Tissue Genesis by Stem Cells & Tissue-Implant Interactions**C. HEU¹, S. MOORE², U. KNOTHE³, R. SEGAL¹, T. PIEPERGERDES⁴, AND M. KNOTHE TATE¹¹University of New South Wales, UNSW Sydney, Australia, ²Case Western Reserve University, Cleveland, OH, ³Cleveland Clinic, Cleveland, OH, ⁴Vanderbilt University, Nashville, TN**3:30PM****Preparation of Native Extracellular Matrix for Stem Cell-based Salivary Gland Regeneration.**A. MALAKHOV¹, B-X. ZHANG¹, H. WANG¹, A. LIN¹, D. DEAN¹, S. WEINTRAUB¹, X-D. CHEN¹, AND C-K. YEH²¹UTHSC, San Antonio, TX, ²STVHCS, San Antonio, TX**3:45PM****A Human iPS-derived In Vitro Model of 3D Vascularized Cardiac Muscle**Y. KUOKAWA¹, D. TRAN¹, M. MOYA¹, A. SOBRINO¹, L. ALONZO¹, C. HEYLMAN¹, C. TU¹, L. LOCK¹, C. HUGHES¹, B. CONKLIN², AND S. GEORGE¹¹University of California, Irvine, Irvine, CA, ²Gladstone Institutes, San Francisco, CA**4:00PM****Stable Human Induced Pluripotent Stem Cell-derived Cardiomyocyte Syncytium That Supports Paced Electrical Activities and Responds to IKr Blockage**R. ZHU¹, A. BLAZESKI¹, K. BOHELER¹, AND L. TUNG¹¹The Johns Hopkins University, Baltimore, MD**4:15PM****Beat Whole Decellularized Mouse Heart with Human Induced Pluripotent Stem (iPS) Cells**B. LIN¹, T. LU¹, J. KIM¹, M. SULLIVAN¹, K. TOBITA¹, G. SALAMA¹, AND L. YANG¹¹University of Pittsburgh, Pittsburgh, PA**Track: Cardiovascular Engineering
OP-Sat-3-8 - Room 007B****Heart Valves and Stents II****Chairs:** Mehdi Nikkah, Gulden Camci-Unal**3:15PM****Physiological Relevant Shear Stress and Flexure in Developing Valvular Tissues**S. RATH¹, A. VILLEGAS¹, M. SALINAS¹, AND S. RAMASWAMY¹¹Florida International University, Miami, FL**3:30PM****Design of an In Vitro Simulation Pipeline for the Development of Computational Mitral Valve Modeling**C. BLOODWORTH IV¹, E. PIERCE¹, T. EASLEY¹, M. TOMA¹, A. KHALIGHI², C-H. LEE², M. SACKS², A. SIEFERT¹, M. JENSEN¹, AND A. YOGANATHAN¹¹Georgia Institute of Technology, Atlanta, GA, ²University of Texas at Austin, Austin, TX**3:45PM****Integrated Experimental-Computational Modeling of Mitral Valve Intestinal Cell Deformation Under In Situ Physiological Loading**C-H. LEE¹, C. CARRUTHERS², B. GOOD³, S. AYOUB¹, R. GORMAN⁴, J. GORMAN⁴, AND M. SACKS¹¹The University of Texas at Austin, Austin, TX, ²Metronic, Minneapolis, MN, ³Pennsylvania State University, State College, PA, ⁴University of Pennsylvania, Philadelphia, PA**4:00PM****Impact of Transcatheter Aortic Valve Oversizing on Leaflet Stress and Strain Distribution**M. ABBASI¹ AND A. AZADANI¹¹University of Denver, Denver, CO**4:15PM****Hemodynamic Changes in Coronary Arteries Due to Regional Aortic Root Pathologies**H. MOHAMMADI¹, R. CARTIER², AND R. MONGRAIN¹¹McGill University, Montreal, QC, Canada, ²Montreal Heart Institute, Montreal, QC, Canada**4:30PM****Stent Strut Geometry Affects Endothelial Cell Migration**J. JIMÉNEZ¹, P-J. WANG¹, AND P. DAVIES¹¹University of Pennsylvania, Philadelphia, PA**Track: Drug Delivery
OP-Sat-3-9 - Room 007D****Targeted Delivery II****Chairs:** Emily Day, Junghae Suh**3:15PM****Targeting Drug Delivery to Motor Neurons in the Spinal Cord**R. SIRIANNI¹ AND A. PRAKAPENKA¹¹Barrow Neurological Institute, Phoenix, AZ**3:30PM****Albumin Nanoparticles for Targeted EDTA Delivery to Reverse Elastin Specific Medial Calcification**Y. LEI¹ AND N. VYVAHARE¹¹Clemson University, Clemson, SC**3:45PM****Cystathionine-Gamma-Lyase Enzyme Prodrug Therapy Targeted to Tumor Vasculature in Immune Competent Model**J. KRAIS¹, C. KURKJIAN², AND R. HARRISON¹¹University of Oklahoma, Norman, OK, ²University of Oklahoma Health Sciences Center, Oklahoma City, OK**4:00PM****Protease-activatable Virus Based on Adeno-associated Virus for Cardiovascular Disease Therapy**M. HO¹, M. LAM¹, M. YAMAGAMI¹, C. GUENTHER¹, AND J. SUH¹¹Rice University, Houston, TX**4:15PM****Development of Poly-aspartic Acid Peptide Linked PLGA-based Nanoparticles for Bone Targeting**E. CARBONE¹, X. YU¹, T. JIANG¹, C. NELSON¹, H. KAN¹, AND W. LO¹¹UConn Health Center, Farmington, CT**4:30PM****Plasma Proteins Alter the Vascular Wall Adhesion of Drug Carriers in a Material & Donor Specific Way**D. SOBCYNSKI¹, P. CHAROENPHOL¹, P. ONYSKIW¹, K. NAMDEE¹, A. THOMPSON¹, AND L. ENIOLA-ADEFESO¹¹University of Michigan, Ann Arbor, MI

Track: Respiratory Bioengineering, Biomechanics OP-Sat-3-10 - Room 008B

Mechanobiology in the Respiratory System

Chairs: Konstantin Birukov, Rebecca Heise

3:15PM

Genetic Variants of Cytoskeletal Elements Linked to Acute Lung Injury Impair Lamellipodia Dynamics and Endothelial Wound Healing

D. LECKBAND¹, S. CHOI¹, AND S. DUDEK²

¹University of Illinois at Urbana, Urbana, IL, ²University of Illinois at Chicago, Chicago, IL

3:30PM

The Role of MicroRNAs in Ventilator Induced Lung Injury (VILI) and Inflammation

K. NELSON¹, C. BOBBA¹, B. WHITSON^{1,2}, AND S. GHADIALI^{1,3}

¹Ohio State University, Columbus, OH, ²Department of Surgery and Division of Cardiac Surgery, Columbus, OH, ³Department of Pulmonary, Allergy, Critical Care, and Sleep, Columbus, OH

3:45PM

Paxillin-GEF-HI-MAPK Signalosome and Pathologic Mechanotransduction in Mechanically Ventilated Lung

G. GAWLAK¹, X. TIAN¹, A. BIRUKOVA¹, AND K. BIRUKOV¹

¹University of Chicago, Chicago, IL

4:00PM

Enhanced Matrix Elastin Production and Organization Using Pentagalloyl Glucose in Pulmonary Fibroblast Cultures

V. PARASARAM¹, N. NOSOUDI¹, AND N. VYAVAHARE¹

¹Clemson University, Clemson, SC

4:15PM

Chronic Tone and Substrate Stiffness Modulation Alters Airway Smooth Muscle Contractile Phenotype

R. WISE¹, N. ZAMAN¹, A. WEST², P. GRATZER¹, K. BILLIAR³, AND G. MAKSYM¹

¹Dalhousie University, Halifax, NS, Canada, ²University of Manitoba, Winnipeg, MB, Canada, ³Worcester Polytechnic Institute, Worcester, MA

4:30PM

Age Related Changes in Pulmonary Mechanics and Inflammatory Response to Experimental Ventilator Induced Lung Injury

J. HERBERT¹, M. VALENTINE¹, P. PATEL¹, A. REYNOLDS¹, R. PIDAPARTI², AND R. HEISE¹

¹Virginia Commonwealth University, Richmond, VA, ²University of Georgia, Athens, GA

3:45PM

Increased Shoulder Abduction Loads Decrease Voluntary Finger Flexion in Individuals with Chronic Stroke

Y. LAN¹, J. YAO¹, AND J. DEWALD¹

¹Northwestern University, CHICAGO, IL

4:00PM

Dynamic Simulation and Neuromuscular Control of Balance in Children with Cerebral Palsy: Implications for Rectus Femoris Transfer Surgery

M. MANSOURI BOROUJENI¹ AND J. REINBOLT¹

¹University of Tennessee, Knoxville, TN

4:15PM

Optimizing the Spinal Cord: Finding the Best Sensory Input to Improve Walking after Injury

J. WHITE^{1,2}, L. MCCOLLOUGH³, K. TANSEY^{2,4}, AND S. DEWEERTH^{1,2}

¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA, ³Shepherd Center, Atlanta, GA, ⁴Atlanta VA Medical Center, Atlanta, GA

4:30PM

An Analytical Solution For Obtaining The Lumbar Spine Segmental Rotations

I. SHOJAEI¹ AND B. BAZRGARI¹

¹University of Kentucky, Lexington, KY

Track: Drug Delivery, Cancer Technologies OP-Sat-3-12 - Room I03B

Cancer Drug Delivery III

Chairs: Srivatsan Kidambi, Joseph Kinsella

3:15PM

Targeted Polymeric Nanoparticles for Leukemia Cell-Specific Delivery of Pediatric Chemotherapy

V. KRISHNAN^{1,2}, X. XU³, R. W. MASON², X. JIA¹, AND A. K. RAJASEKARAN¹

¹University of Delaware, Newark, DE, ²Nemours Alfred I DuPont Hospital for Children, Wilmington, DE, ³Massachusetts Institute of Technology, Cambridge, MA

3:30PM

Functionalization of Gold Nanorods for Cancer Cell Imaging, Drug Delivery and Photothermal Therapy

D. PACARDO¹, B. NEUPANE², M. RIKARD¹, Y. LU¹, R. MO¹, G. WANG², F. LIGLER¹, AND Z. GU¹

¹North Carolina State University and University of North Carolina, Raleigh, NC, ²North Carolina State University, Raleigh, NC

3:45PM

Novel Functionalization of Single Walled Carbon Nanohorns for Controlled Chemotherapeutic Delivery

A. PEKKANEN¹, M. DEWITT¹, AND M. RYLANDER¹

¹Virginia Tech, Blacksburg, VA

4:00PM

A Magnetic Field to Target Paramagnetic Nanoparticles in a Tumor Model of Glioblastoma

M. NAVATI¹, S. LOPEZ¹, M. URBAN-MALDONADO¹, M. SILVA¹, J. SEGALL¹, D. SPRAY¹, AND J. FRIEDMAN¹

¹Yeshiva University, Bronx, NY

4:15PM

Oxidized Graphene Nanoribbons As A Novel Delivery System For The Anticancer Sphingolipid Ceramide

C. SUHRLAND¹, B. SITHARAMAN¹, AND J-P. TRUMAN¹

¹SUNY Stony Brook, Stony Brook, NY

Track: Neural Engineering, Orthopaedic and Rehabilitation Engineering

OP-Sat-3-11 - Room 201

Neuro-rehabilitation Biomechanics

Chairs: Jeffrey Capadona, Aysegul Gunduz

3:15PM

Predicting Metabolic Costs of Pathologic Gait in Cerebral Palsy

K. STEELE¹ AND M. SCHWARTZ^{2,3}

¹University of Washington, Seattle, WA, ²Gillette Children's Specialty Healthcare, St. Paul, MN, ³University of Minnesota, Minneapolis, MN

3:30PM

Information Theoretic Metrics as Biomarkers of Parkinsonian Symptom Severity

C. ANDERSON¹ AND A. DORVAL¹

¹University of Utah, Salt Lake City, UT

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

4:30PM**Thermo-responsive, Multimodal Imaging Enabled Nanoparticles Towards Cancer Therapy**N. PANDEY¹, A. WADAJKAR¹, V. SUNDARESAN^{1,2}, E. HERNANDEZ², J-T. HSIEH², L. TANG^{1,2}, J. YANG³, AND K. NGUYEN^{1,2}¹University of Texas at Arlington, Arlington, TX, ²The University of Texas Southwestern Medical Center, Dallas, TX, ³The Pennsylvania State University, University Park, PA**Track: Neural Engineering, Biomedical Imaging and Optics****OP-Sat-3-13 - Room 202A****Macro/micro Design for Neurotechnologies / Networked Neural Sensors, Actuators, and Instrumentation****Chairs:** Pedro Irazoqui, Mehmet Kaya**3:15PM****Implantable Networks of Wireless Nanoelectronic Nodes**P. IRAZOQUI¹¹Purdue University, West Lafayette, IN**3:30PM****System for Integrated Neural Imaging, Recording and Stimulation**Z. LIU¹ AND H. CHENG²¹Purdue University, West Lafayette, IN, ²Indiana University, Bloomington, IN**3:45PM****Ultrasound Neuromodulation: Field Overview and Observations in the Vagus Nerve of a Rat**E. JUAN¹¹UPR-Mayagüez, Mayagüez, PR**4:00PM****Nanowire Electrophysiology for *In Vivo* Measurement of the *C. elegans* Neuromuscular Junction**D. GONZALES¹, B. AVANTS¹, D. VERCOSA¹, AND J. ROBINSON^{1,2}¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX**4:15PM****The Multipatcher: A Robot for High Density Measurement of Intracellular Recordings *In Vivo***S. KODANDARAMAIAH¹, F. FLORES^{1,2}, G. HOLST³, I. WICKERSHAM¹, E. BROWN^{1,2}, C. FOREST³, AND E. BOYDEN¹¹Massachusetts Institute of Technology, Cambridge, MA, ²Massachusetts General Hospital, Cambridge, MA, ³Georgia Institute of Technology, Atlanta, GA**4:30PM****Principles of High Fidelity, High Density 3D Neural Recording**C. MOORE-KOCHLACS^{1,2}, J. SCHOLVIN², J. KINNEY², J. BERNSTEIN², Y. YOON², S. ARFIN², N. KOPELL¹, AND E. BOYDEN²¹Boston University, Boston, MA, ²Massachusetts Institute of Technology, Cambridge, MA**Track: Undergraduate****OP-Sat-3-14 - Room 204B****Undergraduate Research II****Chairs:** William Guilford, Kristine Ropella**3:15PM****AAV9-based Gene Delivery for Cardiac Regeneration via Fibroblast Reprogramming**S. HANSEN¹ AND B. FRENCH¹¹University of Virginia, Charlottesville, VA**3:25PM****Promoting Elastin Production in Tissue-Engineered Blood Vessels by Inhibiting microRNA-29 in Human Neonatal Dermal Fibroblasts**S. PEREZ¹, C. FERNANDEZ¹, W. REICHERT¹, AND G. TRUSKEY¹¹Duke University, Durham, NC**3:35PM****Washing with Human Albumin Improves the Ability of Stored Red Blood Cells to Perfuse an Artificial Microvascular Network**R. ABIDI¹, N. PIETY¹, AND S. SHEVKOPLYAS¹¹University of Houston, Houston, TX**3:45PM****The Effect of Lovastatin Treatment on Activated Endothelial Cell Gene Expression and Monocyte Adhesion**K. HENDERSON¹, C. FERNANDEZ², W. REICHERT², AND G. TRUSKEY²¹University of Missouri-Columbia, Kansas City, MO, ²Duke University, Durham, NC**3:55PM****New Chameleon NanoCluster Beacons for Emission-Spectrum-Based SNP Detection**D. IMPHEAN¹, R. BATSON¹, J. OBLIOSCA¹, AND H-C. YEH¹¹University of Texas at Austin, Austin, TX**4:05PM****Single-cell Transfection Within a 3D Tumor Model Using Optoporation**M. MAURER¹, M. MONAGHAN², Y. MÖLLER³, M. OLAYIOYE³, AND K. SCHENKE-LAYLAND^{1,2}¹Eberhard-Karls-University Tübingen, Tübingen, Germany, ²Fraunhofer Institute for Interfacial Engineering and Biotechnology (IGB), Stuttgart, Germany, ³University of Stuttgart, Stuttgart, Germany**4:15PM****Computational Fluid Dynamic Modeling of 3D Scaffolds in Dynamic Culture**H. KO¹, B. NGUYEN¹, AND J. FISHER¹¹University of Maryland, College Park, College Park, MD**4:25PM****Postural Sway as a Correlate of Psychosis Proneness and Social Behavior**H. BOTHWELL¹ AND D. EVANS²¹Bucknell University, Lewisburg, PA, ²Geisinger-Bucknell Autism and Developmental Medicine Institute, Lewisburg, PA**4:35PM****An Enzyme-activatable, Receptor-targeted Filamentous Viral Nanoparticle**P. CHARIOU¹, K. LEE¹, AND N. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH

SATURDAY

REFRESHMENT BREAKS

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SATURDAY, October 25, 2014**9:30 AM - 1:00 PM****POSTER SESSIONS**

Poster Viewing with Authors – 9:30 AM – 10:30 AM

Bioinformatics, Computational and Systems Biology**P-Sat-1**

Computational Modeling of Integrated HDAC5 Response to Electrical and Neurohormonal Stimuli

J. SAUCERMAN¹, M. RHOADS¹, R. NORTH¹, AND W. BOYD¹¹University of Virginia, Charlottesville, VA**P-Sat-2**PDGFR α And PDGFR β Cell Surface Levels Are Positively Correlated With Cell Confluency In VitroX. GUO¹, O. IMARENEZOR¹, S. CHEN¹, AND P. IMOUKHUEDE¹¹University of Illinois at Urbana-Champaign, Urbana, IL**P-Sat-3**

An Agent-Based Model Predicts How Pancreatic Islet Size Affects Revascularization and Engraftment Potential Following Transplantation

M. LATAILLADE¹ AND S. PEIRCE-COTTLER¹¹University of Virginia, Charlottesville, VA**P-Sat-4**

Examining The Partitioning Of Angiogenic Receptors In Vitro

A. STORM¹, W. WOODS¹, AND P. IMOUKHUEDE¹¹University of Illinois, Urbana-Champaign, Urbana, IL**P-Sat-5**

A Computational Model of Collagen Fibrillogenesis

V. LANKA¹, J. HOLMES², AND W. RICHARDSON²¹University of Virginia, Ashburn, VA, ²University of Virginia, Charlottesville, VA**P-Sat-6**

Modeling Temporal Dynamics of Infarct Collagen Turnover

W. PILCHER¹, J. HOLMES¹, AND W. RICHARDSON¹¹University of Virginia, Charlottesville, VA**P-Sat-7**

Experimental and Computational Analysis of Cardiomyocyte Generation from iPS Cells via Temporal Modulation of Wnt Signaling

T. JONES¹ AND P. AURORA¹¹University of Virginia, Charlottesville, VA**P-Sat-8**

Automated Validation and Systematic Revision of a Cardiac Hypertrophy Signaling Model

A. PAAP¹, K. RYALL¹, R. NORTH¹, AND J. SAUCERMAN¹¹University of Virginia, Charlottesville, VA**P-Sat-9**

Integrating the Effects of Exercise to the UVa/Padova Type 1 Diabetes Simulator

N. FRANTZ¹, K. TURKSOY¹, M. SERTBAS¹, J. FENG¹, AND A. CINAR¹¹Illinois Institute of Technology, Chicago, IL**P-Sat-10**

Pan-Cancer Analysis for Identifying Proteins Related to Cancer Stage

S. MISHRA¹, C. KADDI¹, AND M. WANG¹¹Georgia Institute of Technology, Atlanta, GA**P-Sat-11**

Towards Optimizing the Production of Pertussis Vaccine Using Computational Modeling

M. BLOOM¹, H. TRUONG¹, M. GRAY¹, E. HEWLETT¹, AND J. PAPIN¹¹University of Virginia, Charlottesville, VA**Biomaterials****P-Sat-13**

Efficacy And Degradation Analysis of Heat Labile Antibiotic Compounds Subjected To Thermal Conditions Indicative Of PMMA Curing Processes

J. CHANG^{1,2}, T. HESS¹, AND M. DESILVA¹¹Naval Medical Research Unit San Antonio, San Antonio, TX, ²Naval Research Enterprise Internship Program, San Antonio, TX**P-Sat-15**

Study of the Second Virial Coefficient of Cowpea Mosaic Virus Under Varying pH and Ionic Strength Using Composition-Gradient Multi-Angle Light Scattering

D. ACOSTA¹, Y. MA¹, A. WEN¹, R. PODGORNIK^{2,3,4}, V. PARSEGAN², R. FRENCH¹, AND N. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH, ²University of Massachusetts, Amherst, MA, ³J. Stefan Institute, Ljubljana, Slovenia, ⁴University of Ljubljana, Ljubljana, Slovenia

MOVED TO P-SAT-51

P-Sat-16Creating Biomimetic Neighbors for In Vitro 3D β -Cell Culture systemsS. AHMADMEHRABI^{1,2}, S. AKBARI², AND P. HAMMOND²¹Case Western Reserve University, Cleveland, OH, ²Massachusetts Institute of Technology, Cambridge, MA**P-Sat-17**

Comparison of Mechanical Testing Methods for Biomaterials: Nanoindentation, Pipette Aspiration, and Macroscale Testing

K. TONG¹, R. BLAHO¹, C. BUFFINTON¹, AND D. EBENSTEIN¹¹Bucknell University, Lewisburg, PA**P-Sat-18**

Analysis of Cement Particles Present in Human Biopsies Affected by Peri-implantitis

M. BURBANO¹, T. WILSON², P. VALDERRAMA², J. BLANSETT³, C. WADHWANI⁴, P. CHOUDHARY¹, AND D. RODRIGUES¹¹University of Texas at Dallas, Richardson, TX, ²Private Practice of Periodontics, Dallas, TX, ³Private Practice of Periodontics, Rogers, AR, ⁴University of Washington, Seattle, WA**P-Sat-19**

Fabrication of a Human Lamina Cribosa Mimic by Co-electrospinning

J. HOCHSTEIN^{1,2}, M. EARLEY^{1,3}, A. RAJABI ZAMANI¹, G. COLLINS¹, B. MANTILLA¹, AND M. JAFFE¹¹New Jersey Institute of Technology, Newark, NJ, ²Johns Hopkins University, Baltimore, MD, ³Virginia Tech, Blacksburg, VA**P-Sat-20**

Tuning an In Vitro Hydrogel Microenvironment with Fibroblast Co-Culture for Improved Skeletal Myoblast Delivery

N. RAO¹, G. AGMON¹, M. TIERNEY², A. SACCO², AND K. CHRISTMAN¹¹UC San Diego, La Jolla, CA, ²Sanford-Burnham Medical Research Institute, La Jolla, CA**P-Sat-21**

Characterization of Lactose-Containing Two-Solution Bone Cements

E. BENTLEY¹, L. RODRIGUEZ¹, J. CHARI¹, S. AGHYARIAN¹, AND D. RODRIGUES¹¹The University of Texas at Dallas, Richardson, TX**P-Sat-22**

Determination of Variables Affecting Degradation of Polyethylene Glycol Hydrogels

J. REDINGTON¹, E. JAIN², S. SELL², AND S. ZUSTIAK²¹Shorter University, Suwanee, GA, ²Saint Louis University, St Louis, MO**P-Sat-23**

Comparative Analysis of Chemical and Photochemical Crosslinking of Polyacrylamide Gels

A. KARADAGHY¹, H. STEVENSON¹, AND S. ZUSTIAK¹¹Saint Louis University, St Louis, MO

P-Sat-24

Conditioning Cells to Microenvironmental Cues

S. SYED¹ AND S. ZUSTIAK¹¹Saint Louis University, St Louis, MO**P-Sat-25**

Characterization of a Collagen Film at Various pH and Temperatures Using a QCM-D

A. WILLIAMS¹, T. ALEXANDER², L. LOZEAU², AND T. CAMESANO²¹Vanderbilt University, Nashville, TN, ²Worcester Polytechnic Institute, Worcester, MA**P-Sat-26**

Genetically Engineered Fluorescent Plant Viral Nanoparticles as Versatile Optical Imaging Agents

A. NAGARAJAN¹, S. SHUKLA¹, C. DICKMEIS², R. FISCHER², U. COMMANDEUR², AND N. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH, ²RWTH Aachen, ⁵²⁰⁷⁴ Aachen, Germany**P-Sat-27**

Investigating the Effect of Conducting Polymer Graphene Oxide Composite Coatings on Magnesium Corrosion

H. LI¹, K. CATT¹, AND X. CUI¹¹University of Pittsburgh, Pittsburgh, PA**P-Sat-28**

Analyzing ROS Generation from Magnetic Nanoparticles in an Alternating Magnetic Field and its Role in Intracellular Hyperthermia

C. OLIVER¹, R. WYDRA², D. COCHRAN², K. ANDERSON², T. DZIUBLA², AND J. HILT²¹University of Connecticut, Storrs, CT, ²University of Kentucky, Lexington, KY**P-Sat-29**

Self Assembled Organosilane Coatings For Resorbable Devices

O. JACKSON¹, A. PATIL¹, AND E. BENIASH¹¹University of Pittsburgh, Pittsburgh, PA**P-Sat-30**

Syndesomes Enhance Cutaneous Wound Healing in Diabetic Mice

G. SINGH¹, S. DAS¹, M. MARTINEZ¹, A. DUNN¹, AND A. BAKER¹¹University of Texas, Austin, TX**P-Sat-31**Designing a SiO₂-coated Gd-loaded Macromolecular Magnetic Resonance Contrast AgentL. RANDOLPH¹, M. BRUCKMAN¹, AND N. STEINMETZ^{1,2}¹Case Western Reserve University, Cleveland, OH, ²Case Western Reserve University School of Medicine, Cleveland, OH**P-Sat-32**

Interface of Physics and Biology: Engineering Virus-Based Nanoparticles for Biophotonics

D. KERNAN¹, A. WEN¹, M. INFUSINO^{1,2}, A. DE LUCA^{1,3}, G. STRANGI^{1,3}, AND N. F. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH, ²Universidad San Francisco de Quito, Quito, Ecuador, ³University of Calabria, Rende, Italy**P-Sat-33**

Methods for Coating Microspheres with Mesenchymal Stem Cell-Derived Matrix

R. REESE¹, A. TONDON¹, C. GREGORY², AND R. KAUNAS¹¹Texas A&M University, College Station, TX, ²Texas A&M Health Science Center, Temple, TX**P-Sat-34**

Self-Assembly of DNA-Based Responsive Soft Biomaterials: A Computational and Experimental Approach

J. DOMINGUEZ¹, Z. GODDARD¹, S. BENNER², C. HALL², AND T. BETANCOURT¹¹Texas State University, San Marcos, TX, ²North Carolina State University, Raleigh, NC**P-Sat-36**

Bio-Corrosion Evaluations Using Dynamic Electrochemical Methods

H. LUNDIN¹¹Wichita State University, Park City, KS**P-Sat-37**

Effects Of Dual Frequency Excitation On Cavitation Of Microbubbles

A. SMITH¹, L. PHILLIPS¹, S. GUO², X. JIANG², AND P. DAYTON¹¹University of North Carolina, Chapel Hill, NC, ²North Carolina State University, Raleigh, NC**P-Sat-38**

Optimizing Electrospun Fiber Mats For Use As Mock Blood-Brain Barriers

M. MENDIVE¹, V. PENSABENE^{2,3}, D. BALIKOV³, AND H-J. SUNG³¹SyBBURE-Searle Undergraduate Research Experience, Vanderbilt University, Nashville, TN, ²Vanderbilt Institute for Integrative Biosystems Research and Education, Vanderbilt University, Nashville, TN, ³Department of Biomedical Engineering, Vanderbilt University, Nashville, TN**P-Sat-39**

Random Sequential Adsorption of Proteins on Polymer-covered Surfaces: A Simulation-based Approach

A. GORE¹, E. DUMONT², P. KATIRA¹, AND H. HESS¹¹Columbia University, New York, NY, ²The Joan and Irwin Jacobs Technion-Cornell Innovation Institute, New York, NY**P-Sat-40**

Study of the Effects of Detoxification Treatments on Titanium used in Osseointegrative Applications

S. WHEELIS¹, I. GINDRI¹, S. SRIDHAR¹, P. VALDERRAMMA², T. WILSON³, AND D. RODRIGUES¹¹University of Texas at Dallas, Richardson, TX, ²Private Practice of Periodontics, Dallas, TX, ³Baylor College of Dentistry, Dallas, TX**P-Sat-41**

Effect of Lateral Retinacular Release after Total Knee Replacement on Patellar Kinematics and Patellofemoral Contact Pressure at Varying Patellar Component Thicknesses

J. RODRIGUEZ¹, X. XIE¹, R. RUSLY¹, A. C. CLARK¹, F. VOSS², J. DESJARDINS¹, AND M. LABERGE¹¹Clemson University, Clemson, SC, ²University of South Carolina, School of Medicine, Clemson,**SC P-Sat-42**

Improved Magnetically Responsive Gels for Controlled Drug Delivery

C. ROCO^{1,2}, S. KENNEDY^{1,2}, C. CEZAR^{1,2}, A. DÉLÉRIS^{1,2}, S. PATRIZIA^{1,2}, AND D. MOONEY^{1,2}¹Harvard School of Engineering and Applied Science, Cambridge, MA, ²Wyss Institute for Biologically Inspired Engineering, Boston, MA**P-Sat-43**

Biomimetic Nanofiber Microenvironments for Metastatic Tumor Cell Line Development

R. BANOUB¹, T. NELSON¹, J. LANG¹, AND J. LANNUTTI¹¹The Ohio State University, Columbus, OH**P-Sat-44**

Electrospun Nanofibers as a Biomimetic Platform for Melanoma Migration

S. BUSHMAN¹, T. NELSON¹, R. UNDERINER¹, X. GUAN¹, A. HOLDERBAUM¹, J. LANNUTTI¹, AND C. BURD¹¹Ohio State University, Columbus, OH**P-Sat-45**

Synthesis of Mg-Microbeads using Electrospaying Technique

T. CAMPBELL¹, R. BLOUNT², AND N. BHATTARAI²¹University of Rhode Island, Kingston, RI, ²North Carolina A&T State University, Greensboro, NC**P-Sat-46**

Fabrication and Characterization of 3D-Printed Pore Architecture Scaffolds for Mesenchymal Stem Cell Adhesion and Proliferation

M. PRENDERGAST¹, K. FERLIN¹, D. KAPLAN², AND J. FISHER¹¹University of Maryland - College Park, College Park, MD, ²Food and Drug Administration, Silver Spring, MD

P-Sat-47**Characterizing Gold Nanoparticle Interactions with a Supported Lipid Bilayer in the Presence of Humic Acid**C. BAILEY¹, E. KAMALOO¹, K. WATERMAN¹, K. WANG¹, AND T. CAMESANO¹
¹Worcester Polytechnic Institute, Worcester, MA**P-Sat-48****Design And Manufacture Of Novel Polymer Neural Electrodes For Blast Testing**G. TERZIEV¹, G. WOOD¹, J. SHRIDHARANI¹, A. ALSHAREEF¹, B. BIGLER¹, E. SKOLNICK¹, AND C. BASS¹
¹Duke University, Durham, NC**P-Sat-49****Fabrication of Porous PDMS Thin Films as a Microfluidic Blood Brain Barrier**N. BRAMAN^{1,2}, L. HOFMEISTER^{1,2}, V. PENSABENE^{2,3}, D. SCHAFFER³, C. MARASCO^{1,2,3}, AND J. WIKSWO^{2,3}
¹Searle SyBBURE Undergraduate Research Program, Nashville, TN, ²Vanderbilt University, Nashville, TN, ³Vanderbilt Institute for Integrative Biosystems Research and Education, Nashville, TN**P-Sat-50****Osseointegration of Wrapped Dental Implants in Rabbits**A. WHITEHEAD¹, S. HYZY¹, D. COHEN¹, B. BOYAN^{1,2}, AND Z. SCHWARTZ^{1,3}
¹Virginia Commonwealth University, Richmond, VA, ²Georgia Institute of Technology, Atlanta, GA, ³University of Texas Health Science Center at San Antonio, San Antonio, TX**P-Sat-51****Characterization of Gold Nanoparticle Interactions with DNA Aptamers Studied through Absorbance and Fluorescent Spectroscopy**J. YOHO^{1,2}, J. CHAVEZ², N. KELLEY-LOUGHNANE², AND J. HAGEN²
¹University of Dayton, Dayton, OH, ²Wright-Patterson Air Force Base, Dayton, OH**P-Sat-52****Drosophila melanogaster as a Simple Model to Test Dark Toxicity and Tolerance of Potential Photodynamic Therapy Agents**J. YOHO¹, C. STROH¹, S. SWAVEY¹, AND M. KANGO-SINGH¹
¹University of Dayton, Dayton, OH**Biomechanics****P-Sat-61****Analysis of Arterial Mechanics During Head-Down-Tilt Bed Rest**M. ELLIOTT^{1,2}, D. MARTIN³, C. WESTBY², M. STENGER³, AND S. PLATTS⁴
¹Saint Louis University, Chattanooga, TN, ²Universities Space Research Association, Houston, TX, ³Wyle Science, Technology, and Engineering Group, Houston, TX, ⁴NASA Johnson Space Center Life Sciences, Houston, TX**P-Sat-62****Investigation of the Tibialis Posterior and Peroneus Longus Muscles on Foot Kinematics While Walking**M. BUCKLIN¹ AND C. NEVILLE²
¹University of Rochester, Rochester, NY, ²Upstate Medical University, Syracuse, NY**P-Sat-64****Naive Endoscope Users Have Higher Forces on a Simulated Colon Model Compared to Experienced Endoscopist**M. FARNHAM¹, K. BIERYLA¹, E. GEIST¹, AND D. DIEHL²
¹Bucknell University, Lewisburg, PA, ²Geisinger Health System, Danville, PA**P-Sat-65****Single-Level Cervical Fusion Does Not Increase Range of Motion in Adjacent Segments During Head Rotation**T. WEST¹, W. ANDERST¹, W. DONALDSON¹, J. LEE¹, AND J. KANG¹
¹University of Pittsburgh, Pittsburgh, PA**P-Sat-66****Radiographic Evaluation of the Carpometacarpal Joint in Osteoarthritis Severity and Joint Laxity**S. GUANG¹, T. PATEL¹, AND J. CRISCO¹
¹Brown University, Providence, RI**P-Sat-67****Development of Pipette Aspiration Technique for Measurement of Chick Embryonic Myocardium Mechanical Properties**R. BLAHO¹, K. TONG¹, C. BUFFINTON¹, D. EBENSTEIN¹, AND E. BUFFINTON²
¹Bucknell University, Lewisburg, PA, ²Lafayette College, Easton, PA**P-Sat-68****Structural and Effective Material Properties of the Anterior, Lateral, and Posterior Human Rib Bone**T. COMTE¹, A. LAU¹, AND M. KINDIG²
¹University of North Carolina, Chapel Hill, NC, ²University of Virginia, Charlottesville, VA**P-Sat-69****Factors that Contribute to Inter-Subject Variation in Human Liver and Spleen Material Properties**S. ZWOLSKI¹, T. LEROITH², AND A. KEMPER³
¹University of Rochester, Rochester, NY, ²Virginia-Maryland College of Veterinary Medicine, Blacksburg, VA, ³Virginia Tech - Wake Forest University, Blacksburg, VA**P-Sat-70****Statistical Shape Analysis of the Human Spleen by Landmark Sliding**K. YATES¹, Y-C. LU², AND C. UNTAROIU²
¹Michigan Technological University, Houghton, MI, ²Virginia Polytechnic and State University, Blacksburg, VA**P-Sat-71****Relationship of Lumbar Angle and Torso Inclination in Adolescent Females**S. GALVIS¹, G. BAKER¹, S. WILSON¹, AND E. FRIIS¹
¹University of Kansas, Lawrence, KS**P-Sat-72****Single Cell Directionality on Suspended and Aligned Nanofibers**S. RAO^{1,2}, J. WANG², AND A. NAIN²
¹University of Virginia, Charlottesville, VA, ²Virginia Tech, Blacksburg, VA**P-Sat-73****A More Rigorous Swimming Regimen Does Not Enhance Cardiovascular Changes in Elastin-Deficient Mice**D. CHIRUMBOLE¹, K. STOKA¹, AND J. WAGENSEIL¹
¹Washington University in St. Louis, St. Louis, MO**P-Sat-74****Reduced arterial compliance decreases plaque development in Eln^{-/-} ApoE^{-/-} mice**S. BHAYANI¹, J. MAEDEKER², K. STOKA², AND J. WAGENSEIL²
¹Saint Louis University, St. Louis, MO, ²Washington University in St. Louis, St. Louis, MO**P-Sat-75****Determining the Effect of Vimentin on Cell Traction Force and Stiffness**A. DAGLE¹, G. THOMAS², AND Q. WEN²
¹Clark University, Worcester, MA, ²Worcester Polytechnic Institute, Worcester, MA**P-Sat-76****In 2D and 3D In Vitro Vibrations Modulate Mesenchymal Stem Cell Proliferation and Enhance Gap Junction Intercellular Interaction with Osteoblast Like Bone Cells**R. PATEL¹, A. DAMATO^{1,2}, S. PONGKITWITON¹, AND S. JUDEX¹
¹Stony Brook University, Stony Brook, NY, ²Stony Brook University School of Medicine, Stony Brook, NY**P-Sat-78****Using Virtual Reality To Improve The Compliance Of Children And Adults To Daily Vibration Treatment While Measuring Treatment Efficacy**S. TIKKIREDDY¹, S. LEE¹, A. YANG¹, G. PAGNOTTI¹, R. TONG², C. RUBIN¹, AND M. CHAN¹
¹Stony Brook University, Stony Brook, NY, ²The Hong Kong Polytechnic University, Hong Kong, China, People's Republic of**P-Sat-79****Initiation and Propagation of Microdamage in Cancellous Bone**M. LUNA¹, A. TORRES², J. MATHENY², AND C. HERNANDEZ²
¹University of Arizona, Tucson, AZ, ²Cornell University, Ithaca, NY

P-Sat-103**Development of a Finite Element Model of the Gottingen Minipig Head to Investigate Complex Impact Scenarios**

W. BAKER¹, E. FIEVISOHN¹, P. VANDEVORDE¹, C. UNTAROIU¹, AND W. HARDY¹
¹Virginia Polytechnic Institute and State University, Blacksburg, VA

P-Sat-104**Design And Testing Of Composite Materials For Use In The Outer Shell Of Contact Sport Helmets**

N. WALTERS¹, N. PATZIN¹, D. BARRY¹, G. BATT¹, AND J. DESJARDINS¹
¹Clemson University, Clemson, SC

Biomedical Imaging and Optics**P-Sat-108****Assessing Edge-Thickness of Soft Contact Lenses Using Gabor-Domain Optical Coherence Microscopy**

J. WON¹, P. TANKAM¹, I. COX¹, AND J. ROLLAND¹
¹University of Rochester, Rochester, NY

P-Sat-109**Evaluation of an Infrared Imager for Breast Cancer Screening**

S. TIRUMALA¹ AND M. LOEW¹
¹George Washington University, Washington, DC

P-Sat-110**Color Coding Optically Sectioned Fresh Biopsies for Rapid Pathological Assessment**

J. JUAN¹, N. LOEWKE², S. SENSARN², S. ROGALLA², D. RIMM³, AND C. CONTAG²
¹Brown University, Providence, RI, ²Stanford University, Stanford, CA, ³Yale University, New Haven, CT

P-Sat-111**Evaluation of the Targeting Ability of Chain-Like Nanoparticles Towards Micrometastasis**

G. DORON¹, A. GOLDBERG¹, P. PEIRIS¹, E. DOOLITTLE¹, R. TOY¹, AND E. KARATHANASIS¹
¹Case Western Reserve University, Cleveland, OH

P-Sat-112**Phase Microscopy of Endothelial Cell Interactions in Scattering Media with Oblique Back-Illumination**

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¹University of Rochester, Rochester, NY, ²Massachusetts General Hospital, Boston, MA, ³Harvard Medical School, Boston, MA

P-Sat-113**Quantifying Cell Surface Receptor Expression In Live Tissue Culture Media Using Dual-Tracer Approach**

A. SINGH¹, X. XIAOCHUN XU¹, L. SINHA¹, C. YANG¹, J. XIANG¹, AND K. TICHAUER¹
¹Illinois Institute of Technology, Chicago, IL

P-Sat-114**Computer Simulation of Tooth Mobility Using Varying Material Properties**

A. BECKMANN¹, S. RAITH², L. UNTERBERG², AND H. FISCHER²
¹Virginia Commonwealth University, Richmond, VA, ²RWTH Aachen University, Aachen, Germany

P-Sat-115**Non-linear Optical Microscopy of Murine Abdominal Aortic Aneurysm**

K. WILSON¹, A. YRINEO², A. ADELSPERGER², H. SCHROEDER², D. ZHANG², J. ZHANG², C-S. LIAO², F. DAMEN², E. PHILLIPS², J-X. CHENG², AND C. GOERGEN²
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P-Sat-116**Design and Optimization of a Hyperspectral Illumination Source for Clinical and Preclinical Imaging**

A. ARSHAD¹, S. MAYES¹, T. RICH¹, AND S. LEAVESLEY¹
¹University of South Alabama, Mobile, AL

P-Sat-117**Detection of Giardia lamblia Cysts and Cryptosporidium parvum Oocysts Using Digital Image Processing**

A. GIFFORD¹, H. CEYLAN KODEMIR¹, AND A. OZCAN¹
¹University of California Los Angeles, Los Angeles, CA

P-Sat-118**Using Targeted Molecular Imaging For In Vivo Evaluation Of Doxorubicin-Based Anti-Cancer Treatment In Combination With The Herbal Medicine Black Cohosh In MCF-7 Xenografts**

S. SCHUH^{1,2}, M. WOZNIAK^{1,3}, J. HEDHLI^{1,2}, S. SLANIA^{1,2}, A. CZERWINSKI⁴, L. KALINOWSKI^{1,3}, L. DOBRUCKI^{1,2}, AND I. DOBRUCKI¹
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P-Sat-119**Vesicular Localization Induced by Dextran Uptake**

T. NETTERFIELD¹, M. KEMP¹, C. PAYNE¹, AND S. SARKAR²
¹Georgia Institute of Technology, Atlanta, GA, ²Northeastern University, Boston, MA

P-Sat-120**Single-Nucleotide Polymorphism (SNP) Detection Using a DNA-based Machine**

M. FAN¹, K. YEHL¹, AND K. SALAITA¹
¹Emory University, Atlanta, GA

P-Sat-121**Diffuse Correlation Spectroscopy to Monitor Longitudinal Vascular Changes in Murine Allografts with Tissue-Engineered Periosteum**

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P-Sat-122**Optimizing Imaging and Computational Analysis for 3D Topographical Visualization of Optically Cleared Whole Normal and Regenerative Tissues**

K. COWDRICK^{1,2}, K. NELSON^{1,3}, G. CHRIST¹, AND F. MARINI^{1,4}
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P-Sat-123**Quantitative Analysis of Conceptual Pattern Recognition Tasks under Ambiguous Conditions**

M. WENKE¹, E. LIN¹, P. SHAH¹, J. IDE¹, AND L. MUJICA-PARODI¹
¹State University of New York at Stony Brook, Stony Brook, NY

P-Sat-124**Kinetic Modeling of Fluorescent Uptake in the Retina for Blood Flow Mapping**

L. HONES¹, M. GUTHRIE¹, L. SINHA¹, J. KANG-MIELER¹, AND K. TICHAUER¹
¹Illinois Institute of Technology, Chicago, IL

P-Sat-125**Axonal Water Fraction is Related to Head Impact Exposure in High School Varsity Football Players**

K. APKARIAN^{1,2}, E. DAVENPORT², J. URBAN², M. ESPELAND², C. WHITLOW², Y. JUNG², D. ROSENBAUM², A. POWERS², J. STITZEL², AND J. MALDJIAN²
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P-Sat-126**PET-CT Imaging of Peripheral Angiogenesis in Type-1 Diabetes Using Novel Dimeric cRGD Peptide**

S. SLANIA^{1,2}, A. CZERWINSKI³, I. DOBRUCKI², AND L. DOBRUCKI^{1,2}
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P-Sat-177**Lysyl Oxidase Inhibitor β aminopropionitrile Reduces Invasiveness of Male Mammary Tumor Cells**K. YOUNG¹, A. ABRAHAM¹, A. BROCK¹, AND R. HO¹¹The University of Texas, Austin, TX**P-Sat-179****Clinical and Molecular Expression Profiles Revealed Abnormal Plasma mir22 in Patients with Aortic Valve Stenosis**M. BANGE¹, S. SAMY², M. SHULER¹, AND M. ARIZA-NIETO¹¹Cornell University, Ithaca, NY, ²Guthrie Clinic, Sayre, PA**P-Sat-180****Amplifying Signals From Riboswitch Biosensors**A. BENNETT^{1,2}, M. GOODSON², AND N. KELLY-LOUGHNANE²¹The University of Dayton, Dayton, OH, ²71th Human Performance Wing, Dayton, OH**P-Sat-181****In vitro Endothelialized Microfluidic Assay to Study Pulmonary Vaso-occlusion in Sickle Cell Disease**A. MOORE^{1,2}, P. SUND^{1,2,3}, E. GUTIERREZ⁴, AND A. GROISMAN⁴¹University of Pittsburgh, Pittsburgh, PA, ²Heart, Lung, Blood and Vascular Medicine Institute, University of Pittsburgh-School of Medicine, Pittsburgh, PA, ³Division of Pulmonary, Allergy and Critical Care Medicine, University of Pittsburgh-School of Medicine, Pittsburgh, PA, ⁴Department of Physics, University of California-San Diego, La Jolla, CA**P-Sat-182****Engineering The Extracellular Matrix Of Probiotic Bacteria To Control Localized Adhesion In The Gut**T. NASH^{1,2}, F. WARD^{1,2}, P. PRAVESHCHOTINUNT^{1,2}, A. DURAJ-THATTE^{1,2}, AND N. JOSHI^{1,2}¹Harvard University, Cambridge, MA, ²Wyss Institute for Biologically Inspired Engineering, Boston, MA**P-Sat-183****Characterizing Thermodynamic Constraints of T4 Lysozyme Secretion via the Type III Secretion System**C. LI¹, A. AZAM¹, AND D. TULLMAN-ERCEK²¹College of Engineering, UC Berkeley, Berkeley, CA, ²College of Chemistry, UC Berkeley, Berkeley, CA**P-Sat-184****Expression Profiles of Extracellular Vesicle CD14 in Liver Tissue and Plasma in Patients Undergoing Roux-en-Y Gastric Bypass**M. BANGE¹, J. ALLEY², M. SHULER¹, AND M. ARIZA-NIETO¹¹Cornell University, Ithaca, NY, ²Guthrie Clinic, Sayre, PA**P-Sat-185****Modeling Tumor-Macrophage Interactions In 3D Micro-Tissues**A. RODRIGUEZ¹, A. BROCK¹, AND H. JOYCE¹¹The University of Texas at Austin, Austin, TX**P-Sat-186****Proliferation of Aging Human Cord Blood-Derived Endothelial Cells on Variably Compliant Polyacrylamide Gels**S. BOWMAN^{1,2}, T. CHEUNG², J. FU², AND G. TRUSKEY²¹Vanderbilt University, Nashville, TN, ²Duke University, Durham, NC**P-Sat-187****The Use Of Ga(III) and Zn(II) Hemocomplexes As A Novel Strategy For Treatment of Staphylococcus aureus Biofilms**A. ALBACH^{1,2}¹US Army Institute of Surgical Research, Ft. Sam Houston, TX, ²St. Mary's University, San Antonio, TX**P-Sat-188****Structural Determination of an Avian Astrovirus Capsid Core Structural Determination of an Avian Astrovirus Capsid Core**R. YORK¹ AND R. DUBOIS¹¹University of California Santa Cruz, Santa Cruz, CA**P-Sat-189****Application of Interfacial Shear Stress to Annulus Fibrosus Cells**A. UPPALA¹, S. HAN¹, AND A. HSIEH¹¹University of Maryland College Park, College Park, MD**P-Sat-190****Effect of Chitosan's Biochemical Properties on Antimicrobial Activity**A. TABASSUM¹, B. KOPPOLU¹, AND D. ZAHAROFF¹¹University of Arkansas, Fayetteville, AR**Device Technologies and Biomedical Robotics****P-Sat-195****An ECG-Embedded Weight Scale for the Measurement of the QTc Interval in Healthy Adult Individuals**X. NIU¹ AND J-P. COUDERC¹¹University of Rochester, Rochester, NY**P-Sat-197****Neonatal Temperature Sensor for the Developing World**M. YAMAGAMI¹, E. SILVA¹, H. CHEN¹, E. ALEXANDER¹, K. MAYNARD¹, P. KEAHEY¹, Q. DUBE², AND R. RICHARDS-KORTUM¹¹Rice University, Houston, TX, ²Queen Elizabeth Central Hospital, Blantyre, Malawi**P-Sat-198****Firefighter Health Monitoring Using Wearable EKG Sensors with Bio-identification Capability**J. FARMER¹ AND J. YAO¹¹East Carolina University, Greenville, NC**P-Sat-199****An Implantable Pneumatic Driver With Non-Invasive Transmural Powering For Cardiac Assist Devices**S. RAZVI^{1,2}, S. ZAMBRANO¹, J. COELLO³, J. CRISCIONE¹, AND M. MORENO¹¹Texas A&M University, College Station, TX, ²The University of Texas at Austin, Austin, TX, ³Instituto Tecnológico de Mérida, Yucatán, Mexico**P-Sat-200****Debubbling Rotary Planar Peristaltic Micropump**S. RICE¹, R. REISERER¹, D. MARKOV¹, S. SHERROD¹, E. WERNER¹, K. SEALE¹, AND C. MARASCO¹¹Vanderbilt University, Nashville, TN**P-Sat-201****Development of an Analog Front End for the AD5933 Impedance Analyzer to Make Accurate Bio-Impedance Measurements for a Brain on a Chip Device**S. HALIM¹, O. HOILETT¹, J. KRIBB¹, R. REISERER¹, AND J. WIKSWO¹¹Vanderbilt University, Nashville, TN**P-Sat-202****Electronic Platform For Automatic Short Performance Physical Battery (SPPB) Test**Y. BAI¹, N. MARCO¹, W. JIA¹, H. ZHANG², Z-H. MAO¹, J. ZGIBOR¹, L. BURKE¹, S. ALBERT¹, A. NEWMAN¹, AND M. SUN¹¹University of Pittsburgh, Pittsburgh, PA, ²Beihang University, Beijing, China, People's Republic of**P-Sat-203****Pressure-sensing Pads for Ultrasound Tissue Mechanics Characterization**C. CORBETT¹, K. SHOWERS¹, H. SCRUGGS¹, E. KOWAL¹, C. KERR¹, H. CASH¹, M. HANSCHKE¹, D. DEAN¹, AND D. KWARTOWITZ¹¹Clemson University, Clemson, SC**P-Sat-204****A Method for Determining Skull Coupling of an Instrumented Mouthguard Using Stereo Vision**K. BUI¹ AND B. HAMMOOR¹¹Stanford University, Stanford, CA

P-Sat-205**Optimizing Fat Delivery Methods in Continuous Enteral Feeding of Expressed Breast Milk to Neonates**K. ABDELRAHMAN^{1,2}, A. HAIR², K. HAWTHORNE², AND S. ABRAMS²¹University of Pittsburgh, Pittsburgh, PA, ²Baylor College of Medicine, Houston, TX**P-Sat-206****Upper Extremity Frailty Assessment in Trauma Patients Using Wearable Sensor Technology**M. HEUSSER¹, N. TOOSIZADEH¹, B. ZANGBAR-SABEGH¹, J. MOHLER¹, B. JOSEPH¹, AND B. NAJAFI¹¹University of Arizona Medical Center, Tucson, AZ**P-Sat-207****Finite Element Analysis Comparison of Two Types of Removable Partial Denture Designs**L. PETKU¹, E. MEYER¹, AND J. KNAPP²¹Lawrence Technological University, Southfield, MI, ²University of Michigan, Ann Arbor, MI**P-Sat-208****An Automated Fast-ELISA System for the Quantitative Detection of Biomarkers In Vitro**D. MAXIM^{1,2} AND I. GEORGAKOUDI²¹Brigham and Women's Hospital, Harvard Medical School, Boston, MA, ²Tufts University, Medford, MA**Drug Delivery****P-Sat-211****Cross-linked Lipid Particles for Delivery of Antiretroviral Combinations to Inhibit HIV-1 Infection**W. LYKINS¹, R. RAMANATHAN¹, Y. JIANG¹, AND K. WOODROW¹¹University of Washington, Seattle, WA**P-Sat-212****Targeting Human Epidermal Hyperplasia by Suppressing Human HRAS Through Spherical Nucleic Acid (SNA) Nanoconjugates**S. SRINIVASAN¹, H. MANNAM², Q. SONG², C. MIRKIN², AND A. PALLER²¹Case Western Reserve University, Cleveland, OH, ²Northwestern University, Chicago, IL**P-Sat-213****Dual Drug Release of Doxorubicin and 2-Methoxyestradiol to Inhibit Cancer Cell Invasion and Proliferation**J. NAM¹, E. RIVERA¹, AND H. VON RECUM¹¹Case Western Reserve University, Cleveland, OH**P-Sat-214****Transgene Induction from Cyclodextrin Based Polymers**E. WARD¹, E. RIVERA-DELGADO¹, AND H. VON RECUM¹¹Case Western Reserve University, Cleveland, OH**P-Sat-215****Multivalent Presentation of HER2 Epitopes on Filamentous Plant Virus Platform: A Potential Breast Cancer Vaccine**N. DI FRANCO¹, S. SHUKLA¹, U. COMMANDEUR², AND N. STEINMETZ^{1,2}¹Case Western Reserve University, Cleveland, OH, ²RWTH Aachen University, Aachen, Germany**P-Sat-216****TMV Formulation for Imaging and Targeted Treatment of Thrombosis**G. HSU¹, A. WEN¹, Y. WANG², K. JIANG¹, A. YANG¹, H. GAO², X. YU¹, D. SIMON², AND N. STEINMETZ^{1,2}¹Case Western Reserve University, Cleveland, OH, ²Case Cardiovascular Research Institute, Cleveland, OH**P-Sat-217****Estimating the Controlled Release of PRP Components Encapsulated in Biodegradable PEG Hydrogels**S. SHETH¹, E. JAIN¹, S. SELL¹, AND S. ZUSTIAK¹¹Saint Louis University, St. Louis, MO**P-Sat-218****Synthesis and Characterization of Magnetic Nanoparticles for Drug Delivery to Central Nervous System**L. BRUK¹, N. SNYDER¹, X. CUI¹, Y. ZHAO¹, AND T. IBRAHIM¹¹University of Pittsburgh, Pittsburgh, PA**P-Sat-219****Engineering of Liposomal Nanoparticles as a Platform for Advanced Drug Delivery Applications**D. FRANCIS¹, P. KHOLMATOV¹, S. HAYWARD¹, AND S. KIDAMBI¹¹University of Nebraska-Lincoln, Lincoln, NE**P-Sat-220****Effect of Nanoparticle Morphology and Surface Modification on Tumor Penetration and Distribution**L. SIMS¹, H. FRIEBOES¹, AND J. STEINBACH¹¹University of Louisville, Louisville, KY**P-Sat-221****A Sweet Nano-affair of Carbon Particles with Deoxyribose Nucleic Acid for Gene Therapy**A. OHOKA^{1,2}, S. MISRA^{1,2,3}, AND D. PAN^{1,2,3}¹University of Illinois at Urbana-Champaign, Champaign, IL, ²Biomedical Research Center and Carle Foundation Hospital, Urbana, IL, ³Beckman Institute, Urbana, IL**P-Sat-222****Effects Of Industrially Processed PLGA Thin Films On Drug Delivery and Material Properties**D. HORNE¹, Y. ZHOU², K. VEDANTHAM², AND T. STEELE²¹Clemson University, Clemson, SC, ²Nanyang Technological University, Singapore, Singapore**P-Sat-223****Optimization of Parameters Influencing Polyethylene Glycol Microsphere Fabrication Using Electrospraying**K. SCOTT¹, E. JAIN¹, S. ZUSTIAK¹, AND S. SELL¹¹Saint Louis University, St. Louis, MO**P-Sat-224****Novel Chitosan-based Hydrogel for Controlled Release of Anti-tumor Cytokines**E. LOWRY¹, C. WALLACE¹, B. KOPPOLU¹, S. SMITH¹, AND D. ZAHAROFF¹¹University of Arkansas, Fayetteville, AR**P-Sat-225****A Novel Approach For Root Canal Treatment: Encapsulation of Oral Antibiotics For Drug Delivery Into Dentin Tubules**R. HASEEB¹, M. LAU¹, L. RODRIGUEZ¹, M. STEFANI¹, K. PALMER¹, F. MONTAGNER², AND D. RODRIGUES¹¹University of Texas at Dallas, Richardson, TX, ²Federal University of Rio Grande do Sul, Porto Alegre, Brazil**P-Sat-226****Role of Membrane Rafts in Nanoparticle Uptake by Endothelial Cells**M. BLAND¹, S. SON², AND P. BUTLER²¹University of Alabama, Birmingham, AL, ²Penn State University, University Park, PA**P-Sat-227****The Characterization of PEG-based Hydrogels for Application in Ocular Drug Delivery**E. CANNING¹, E. DOSMAR², AND J. KANG-MIELER²¹Saint Louis University, St. Louis, MO, ²Illinois Institute of Technology, Chicago, IL**P-Sat-228****Controlled Self-Assembly and Dynamics of Nanoscale Bacteria-Enabled Autonomous Drug Delivery Systems (NanoBEADS)**C. DAMICO¹, M. TRAORE^{1,2}, AND B. BEHKAM¹¹Virginia Polytechnic and State University, Blacksburg, VA, ²Washington University, St. Louis, MO

P-Sat-229**Regional Nanoparticle Delivery in the Central Nervous System as a Function of Route of Administration**

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Nano to Micro Technologies**P-Sat-239****Experimental Optical Properties Of Quadruplex DNA**

K. KRAWIEC¹, K. LEE¹, D. DRYDEN¹, Y. MA¹, R. FRENCH¹, N. STEINMETZ¹, L. POUDEL², W-Y. CHING², R. PODGORNIK³, AND V. PARSEGIAN³

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P-Sat-240**Dual-gel Construct with Dynamic Control of Soluble Chemotactic Cues for the Study of Neural Cells**

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P-Sat-241**Application of Switchable Silicon Nanomembranes for Controlled Therapeutic Release**

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P-Sat-242**High Yielding Conversion of Modified Tobacco Mosaic Virus to Functional Spherical Nanoparticles Using a Mesofluidic Device**

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P-Sat-243**Fabrication of a Porous Matrix Integrated into Microfluidic Devices for HIV Capture**

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P-Sat-244**The Effect of Chondroitin Sulfate Proteoglycan Surface Gradient Profile on Neurite Growth**

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P-Sat-245**Paper-Based Capture of Neisseria gonorrhoeae for Point-of-Care Diagnostics**

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¹Boston University, Boston, MA

P-Sat-246**Microfluidic Chromatin Immunoprecipitation in Nanoliter-scale Droplets**

A. ORESKOVIC¹, R. GRAYBILL¹, M. MODAK¹, Y. XU¹, S. DOONAN¹, J. TICE¹, T. ORDOG², AND R. BAILEY¹

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P-Sat-247**A Chemical Patterned Paper-Based Microfluidic Device For Biochemical Detections**

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P-Sat-248**The Development of an Epidermal Electronic Heating Device for Perioperative Warming**

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P-Sat-249**Cellular Deformation Via Varying Geometric Channels And Dynamic Flow Resistance**

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P-Sat-250**Optical Imaging of Biomolecular Tension with Sub-100 nm Resolution**

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P-Sat-251**Testing the Effect of Red Blood Cell Shape on Perfusion of a Microvascular Network**

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P-Sat-252**The Effects of Nanoparticle Ingestion on Glucose Transport and Uptake in the Gut Microbiome**

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P-Sat-253**Extending the Spectral Range of Inkjet-Fabricated Paper-Based Plasmonic Enhancing Sensors with Silver Staining**

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P-Sat-254**Development of a Salivary Cortisol Sensor Using Surface Plasmon Resonance**

H. SCHMIDT¹, T. LONG¹, S. PAUTLER¹, A. WOOD¹, S. GRANT¹, AND S. GANGOPADHYAY¹

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P-Sat-255**On-chip Oxygen Gradient Stimulation of Pancreatic Beta Cells**

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P-Sat-256**Detecting Pesticides with Antibody Conjugated CPMV Nanoparticles**

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P-Sat-257**Complement-mediated Cell Death of Leukemia and E. coli Cells with Fc Functionalized Beads**

M. DEVLIN¹, B. GIZAW¹, A. KHAJA¹, A. MYLARAPU¹, C. PATONJA¹, P. PACHECO¹, AND T. SULCHEK¹

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P-Sat-258**Reference Sensors using Poly-acrylonitrile (PAN) Nanobeads for Improved Accuracy in Implantable Optical Sensing Devices**

M. SCHECHINGER¹, R. UNRUH¹, A. NAGARAJA¹, J. WEAVER¹, AND M. MCSHANE¹

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P-Sat-259**In Vitro Turnover of Endothelial Cells**

A. WNOROWSKI¹, J. DEStEFANO¹, A. WONG¹, AND P. SEARSON¹

¹Johns Hopkins University, Baltimore, MD

P-Sat-260**Pressure Measurement In PDMS Microchannels Using The Ideal Gas Law**

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

Neural Engineering

P-Sat-261

Two-Dimensional Movement Control using a Non-Invasive, Low-Cost, Brain-Computer Interface

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P-Sat-262

The Role of Blood-Derived Macrophages and Resident Microglia in the Neuroinflammatory Response to Implanted Intracortical Microelectrodes

S. SUNIL^{1,2}, M. RAVIKUMAR^{1,2}, J. BLACK¹, D. BARKAUSKAS¹, A. HAUNG¹, R. MILLER¹, S. SELKIRK^{1,2}, AND J. CAPADONA^{1,2}

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P-Sat-263

Volumetric Differences of the Amygdala, Hippocampus and Caudate Nucleus in Autism Spectrum Disorder

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P-Sat-265

Transient Spectral Dynamics Correlates with Blood Pressure Excursions During MoyaMoya Neurosurgery

N. SEO¹, S. RYU², R. MURPHY³, J. LEONARD⁴, AND S. CHING^{2,3}

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P-Sat-266

The Ladder Rung Walking Task as a Technique to Quantify Traumatic Cerebellar Injury in Rats

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P-Sat-267

Model of Blast Traumatic Brain Injury with *In Vitro* Dorsal Root Ganglia in Shock Tube

T. LOUK^{1,2}, M. SISK^{1,3}, M. SKOTAK¹, M. KURIAKOSE¹, A. ADAMS¹, N. CHANDRA¹, AND B. PFISTER¹

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P-Sat-268

Determining the Role of IGF-I in Post-Traumatic Epileptogenesis

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P-Sat-269

The Effects of Binaural Stimulation on Brainwave Entrainment

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P-Sat-270

Local Field Potentials Indicate Object Presence During Human Neuroprosthetic Control

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P-Sat-271

Diffusion Tensor Imaging Segmentation and Tractography of Infantile Nystagmus Syndrome

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P-Sat-272

Dexamethasone Attenuates Immediate Microglial Responses to Brain Microdialysis *In Vivo* as Revealed by Two-Photon Microscopy

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P-Sat-273

Development of Superoxide Dismutase Mimetic Surfaces to Reduce Accumulation of Reactive Oxygen Species for Neural Interfacing Applications

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P-Sat-274

A Wireless, Real-Time Embedded Hand Gesture Recognition System For Myoelectric Control

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P-Sat-275

Inhibition Of Cluster Of Differentiation 14 (CD14) Attenuates Neuroinflammation Around Intracortical Microelectrode Interface

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P-Sat-276

Diffusion Tractography as a Tool for Subject-Specific Computational Models of DBS in the MLR

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P-Sat-278

Novel Fractal Electrode Geometries for Efficient Deep Brain Stimulation of Neural Tissue

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P-Sat-279

In Vitro Model For Mimicking Concussion Impacts on Sterile Cell Culture

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P-Sat-280

Histological and Biodistribution Assessment of Daily Administration of Resveratrol: Application for Intracortical Microelectrodes

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P-Sat-281

Mechanically-compliant Intracortical Implants Reduce the Neuroinflammatory Response

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P-Sat-282

Complexing Blood Proteins and Resveratrol to Increase Reactive Oxygen Species Scavenging for Intracortical Electrode Use

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New Frontiers and Special Topics

P-Sat-294

Synthesis and Characterization of a Citrate-based Hydrogel for Injection Assisted Endoscopic Mucosal Resection

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P-Sat-295

The Interaction Between Cytochrome B5 and Cytochrome B5 Reductase-I in Electron Transport

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P-Sat-296

Detecting Electrophysiologic Abnormalities In Chronic Insomnia Using Detrended Fluctuation Analysis

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P-Sat-297

Development Of X-ray Irradiation Port For Biological Material At CUEBIT

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P-Sat-298

Bioproduction Of Ethanol Via Co-culture of *Ralstonia eutropha* and *Saccharomyces cerevisiae*

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P-Sat-299

Reagent Stability for Ultra-low-cost Sickle Cell Disease Assay

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P-Sat-300

Design of an Inexpensive Recording Device To Overcome Obstacles Resulting From Low Literacy Rates In Developing Countries

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Orthopaedic and Rehabilitation Engineering

P-Sat-301

Interaction Between Mirror Visual Feedback and Goal-Directed Task Shows Increased Cortical Excitability in Untrained Hemisphere; Possible Stroke Rehabilitation Applications

N. MUBIN^{1,2}, A. ALBANESE^{1,3}, M. YAROSSI^{1,4}, E. TUNIK⁴, AND S. ADAMOVICH¹

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P-Sat-302

The Role Of Scleraxis In Bone Remodeling and Callus Formation During Fracture Healing

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P-Sat-303

Biomechanical Analysis of Internal Fixation Methods for Distal Interphalangeal Joint Arthrodesis

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P-Sat-304

Modeling Finger Pose and Position in a Cable-Actuated Soft Exomusculate Robotic Glove For Stroke Rehabilitation

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P-Sat-305

Effects of Exercise and Reduced Collagen Crosslinking on Bone Geometry and Microarchitecture in Mice

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P-Sat-306

Sleeve Gastrectomy on Obese Rats Impairs Trabecular Bone in Quantity and Quality

J. TAN¹, J. ABRAHAM¹, G. PAGNOTTI¹, V. PATEL¹, A. YANG¹, M. ALTIERI¹, A. PRYOR¹, D. TELEM¹, C. RUBIN¹, AND M. CHAN¹

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P-Sat-307

Utilization Of Peak Extraction Force Of Kirschner (K-) Wire And Reference Probe Indentation Parameters As Predictors Of Bone Mineral Density (BMD)

S. DENNING¹, A. DINCER¹, R. PISANO¹, T. BOWEN², D. EBENSTEIN¹, AND E. KENNEDY¹

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P-Sat-308

A Mechanically Induced Model of Pain and Structural Changes in the Temporomandibular Joint in the Rat

T. ZHOU¹, S. KARTHA¹, E. GRANQUIST¹, AND B. WINKELSTEIN¹

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P-Sat-309

Development of a Device To Non-Invasively Induce Osteoarthritis Of The Elbow In An Animal Model

L. KAHAN¹ AND S. LAKE¹

¹Washington University in St. Louis, St. Louis, MO

P-Sat-310

First Steps Towards the Development Of An Artificial Vocal Fold Prosthesis

M. SANDOE¹, G. BURKS¹, AND A. LEONESSA¹

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P-Sat-311

Comparing Cyclic Tensile Properties of Porcine Meniscus when Hydrated in PBS versus Synovial Fluid

C. KLINE¹, E. LAKES¹, P. MCFETRIDGE¹, AND K. ALLEN¹

¹University of Florida, Gainesville, FL

P-Sat-312

Sleeve Gastrectomy on Obese Rats Reduces the Quantity of Cortical Bone at the Mid Diaphysis

J. ABRAHAM¹, J. TANG¹, G. PAGNOTTI¹, V. PATEL¹, A. YANG¹, M. ALTIERI¹, A. PRYOR¹, D. TELEM¹, C. RUBIN¹, AND E. CHAN¹

¹Stony Brook University, Stony Brook, NY

P-Sat-313


Quantitative Assessment of Gait and Balance for Determining Alignment Parameters for Prosthetic Fitting

J. LOAYZA¹, A. ARRINDA¹, A. KONJENGBAM², A. ALFRED¹, A. THOTA¹, AND R. JUNG¹

¹Florida International University, Miami, FL, ²Wakefield Girls High School, Wakefield, United Kingdom

P-Sat-314**Older Adults Learn Equally From Large And Small Errors During Split-Belt Locomotor Adaptation**H. HARKER¹, C. SOMBRIC¹, P. SPARTO¹, AND G. TORRES-OVIEDO¹¹University of Pittsburgh, Pittsburgh, PA**P-Sat-315****Alignment of Hinged Dynamic External Fixators Using the Elbow's Flexion-Extension Axis of Rotation**F. UNUKPO¹, R. BAKER¹, C. KOPFLER¹, C. LOBRANO², D. O'NEIL¹, AND A. HOLLISTER²¹Louisiana Tech University, Ruston, LA, ²Louisiana State University Health Sciences Center, Shreveport, LA**P-Sat-316****Effect of Ankle Immobilization on Able-Bodied Gait to Model Bilateral Transtibial Amputee Gait**A. NEPOMUCENO¹, M. MAJOR^{1,2}, R. STINE², AND S. GARD^{1,2}¹Northwestern University Prosthetics-Orthotics Center, Chicago, IL, ²Jesse Brown VA Medical Center, Chicago, IL**P-Sat-317****Altered Trabecular Bone In An Animal Model Of Post-Traumatic Elbow Stiffness**M. LIU¹, R. CASTILE¹, L. GALATZ¹, AND S. LAKE¹¹Washington University in St. Louis, St. Louis, MO**P-Sat-318****Use of Natural Crosslinkers to Stabilize Decellularized Cartilage**A. PINHEIRO^{1,2}, A. GOTTIPATI², AND S. ELDER²¹The University of Akron, Akron, OH, ²Mississippi State University, Mississippi State, MS**P-Sat-319****Development of Silver Doped Tricalcium Phosphate Thin Films for the Coating of Magnesium Implants**T. MOSES¹, G. HARRIS², E. CRAVEN², N. YAMOA², R. KOTOKA², S. IBRAHIM², S. AJINOLA², AND D. KUMAR²¹Clemson University, Clemson, SC, ²North Carolina Agricultural and Technical State University, Greensboro, NC**Respiratory Bioengineering****P-Sat-322****Darcy Permeability Characterization of PMP Hollow Fiber Membrane Bundles**B. D'ALOISO¹, S. MADHANI¹, B. FRANKOWSKI¹, AND W. FEDERSPIEL^{1,2}¹Medical Devices Lab, McGowan Institute for Regenerative Medicine, University of Pittsburgh, Pittsburgh, PA, ²University of Pittsburgh, Pittsburgh, PA**P-Sat-323****Design of Collapsible Tubing System for Simulated Airway Reopening**C. FAULMAN¹, E. YAMAGUCHI¹, AND D. GAVER¹¹Tulane University, New Orleans, LA**P-Sat-324****Computational and Experimental Analysis of Mucus Adhesive Properties during Otitis Media**J. MCGUIRE¹, J. MALIK², N. HIGUITA-CASTRO², AND S. GHADIALI²¹Virginia Tech, Blacksburg, VA, ²The Ohio State University, Columbus, OH**P-Sat-325****The Use Of Exhaled Breath Condensate To Assess Surfactant Dysfunction From Chlorine Exposure**C. EDWARDS¹, E. SVENDSEN¹, AND D. GAVER¹¹Tulane University, New Orleans, LA**P-Sat-326****A Microfluidic Model of Pulmonary Airway Reopening in Asymmetric Bifurcating Networks**L. NOLAN¹, E. YAMAGUCHI¹, AND D. GAVER¹¹Tulane University, New Orleans, LA**P-Sat-327****Mechanical Stretch and Aging of Alveolar Epithelial Cells induces Endoplasmic Reticulum Stress and Pro-inflammatory Gene Expression**J. NKWOCHA¹, J. HERBERT¹, A. REYNOLDS¹, AND R. HEISE¹¹Virginia Commonwealth University, Richmond, VA**P-Sat-328****Assessment of Ventilatory Function and Respiratory Muscle Electromyograms in Rodents for Design of an Adaptive Ventilatory Neuromuscular Pacing Device**B. DAVIS¹, R. SIU¹, B. HILLEN¹, C. VALE¹, AND R. JUNG¹¹Florida International University, Miami, FL**Track: Undergraduate Research****Stem Cell Engineering****P-Sat-337****Redirecting Intestinal Stem Cell Fate Using Small Molecules**K. BENJAMIN¹, S. MOHAMMADI¹, AND E. WIELLETTE¹¹Novartis Institutes for Biomedical Research, Cambridge, MA**P-Sat-338****Combined Role of Basic Fibroblast Growth Factor and pH on Glioblastoma Stem Cell Expansion**E. HALEY¹, S. TILSON¹, D. DOZIER¹, AND Y. KIM¹¹The University of Alabama, Tuscaloosa, AL**P-Sat-339****The Effect of Y-27632 on the Propagation of Glioblastoma Stem Cells**S. TILSON¹, E. HALEY¹, D. DOZIER¹, G. YANCEY GILLESPIE², AND Y. KIM¹¹University of Alabama, Tuscaloosa, AL, ²University of Alabama at Birmingham, Birmingham, AL**P-Sat-340****Improving Transfection Efficiency of Nucleofection Technique by Manipulating Cell Concentration**M. BLOOM¹, A. MELLOTT¹, M. DETAMORE¹, AND H. SHINOGLÉ¹¹University of Kansas, Lawrence, KS**P-Sat-341****The Role of Hydrocortisone in the Maturation of Pancreatic Endocrine Beta-like Cells Derived from Murine Embryonic Stem Cells *In Vitro***J. CHOE¹ AND H. KU²¹University of California, Berkeley, Berkeley, CA, ²City of Hope, Duarte, CA**P-Sat-342****Adipose-Derived Stem Cells From Diabetic Patients Display A Pro-Thrombotic Phenotype**D. PEZZONE^{1,2}, J. KRAWIEC^{1,2}, J. WEINBAUM^{1,2}, J. RUBIN^{1,2}, AND D. VORP^{1,2}¹University of Pittsburgh, Pittsburgh, PA, ²McGowan Institute for Regenerative Medicine, Pittsburgh, PA**P-Sat-343****Investigating the Effects of Stromal Cell - Neuronal Cell Co-culture on Neuronal Maturity and Neuronal Viability Under Oxidative Stress**K. SMITH¹, P. MOGHE², N. BENNETT², AND N. FRANCIS²¹University of Connecticut, Storrs, CT, ²Rutgers, The State University of New Jersey, Piscataway, NJ**P-Sat-344****Optimization Of Polyethyleneimine Coated Gold Nanorods For Use In Caspase-3-siRNA Knockdown Of Adipose-Derived Stem Cells**B. HENSON¹, D. SANTIESTEBAN¹, L. SUGGS¹, AND S. EMELIANOV¹¹The University of Texas at Austin, Austin, TX**P-Sat-345****Cytoskeletal Remodeling due to Applied Shear Stress in Differentiating Pluripotent Stem Cells**J. GUIDRY¹, R. WOLFE¹, AND T. AHSAN¹¹Tulane University, New Orleans, LA

P-Sat-346**Human Mesenchymal Stem Cell Response to a Patterned and Electrostimulated Monolayer of Graphene**B. FANG¹¹Vanderbilt University, Nashville, TN**P-Sat-347****Site Directed Differentiation of Using a Fibronectin-VEGF Matrix Blend**N. WHITE¹, J. ZAMORA¹, R. BURTZLAFF¹, D. GLASER¹, AND K. MCCLOSKEY¹¹University of California, Merced, Merced, CA**Tissue Engineering****P-Sat-349****Sustained Protein Release from Tissue Engineering Scaffolds for Bone Regeneration Using Layer-by-Layer Coating**M. LEE¹, M. KEENEY¹, X. JIANG¹, AND F. YANG¹¹Stanford University, Stanford, CA**P-Sat-350****Enhanced Human Bone Marrow Mesenchymal Stem Cell Behavior on Novel 3D Printed Osteochondral Nanocomposite Scaffolds**R. PATEL¹, N. CASTRO¹, AND L. ZHANG¹¹The George Washington University, Washington, DC**P-Sat-351****Enhancing Bone Regeneration by using Osteoinductive Microspheres**C. DODSON¹, C. HAASE¹, R. KAUNAS¹, AND C. GREGORY²¹Texas A&M University, College Station, TX, ²Texas A&M Health Science Center, Temple, TX**P-Sat-352** **β -Catenin Signaling Leading to Cell Maintenance or Differentiation in Response to Electrospun Fibers**R. NAGURNEY¹ AND J. BROWN¹¹The Pennsylvania State University, State College, PA**P-Sat-353****Mechanical Characterization Of Extracellular Matrix Hydrogels For Peripheral Nerve Reconstruction**D. SRINIVASACHAR¹, T. PREST¹, AND B. BROWN¹¹University of Pittsburgh, Pittsburgh, PA**P-Sat-354****Adipose Stem Cell Suspension in Keratin Hydrogel for Nervous Tissue Regeneration**L. MARRA¹, D. MINTER¹, AND K. MARRA^{1,2}¹University of Pittsburgh, Pittsburgh, PA, ²McGowan Institute for Regenerative Medicine, Pittsburgh, PA**P-Sat-355****Single Walled Carbon Nanohorns Modulate Extracellular Matrix Response in Tendons and Ligaments**J. JACKSON¹, E. EKWUEME², A. PEKKANEN³, P. BROLINSON⁴, M. RYLANDER³, AND J. FREEMAN²¹Rensselaer Polytechnic Institute, Troy, NY, ²Rutgers University, Piscataway, NJ, ³Virginia Tech, Blacksburg, VA, ⁴Edward Via Virginia College of Osteopathic Medicine, Blacksburg, VA**P-Sat-356****Design of a Mold System for 3D Self-Assembly of Skeletal Muscle *In Vitro***M. MANCUSO¹, J. FORTE², AND R. PAGE²¹Union College, Schenectady, NY, ²Worcester Polytechnic Institute, Worcester, MA**P-Sat-357****Development of Carbon Nanotube Hydrogel Composites**D. VASILEVA¹, K. SHAH¹, AND S. ZUSTIAK¹¹Saint Louis University, St Louis, MO**P-Sat-358****Quantifying Cell Aggregation in 3D Smooth Muscle Cell Tissue Rings**C. NUNEZ¹, K. LEVI², AND M. ROLLE²¹University of Rhode Island, Kingston, RI, ²Worcester Polytechnic Institute, Worcester, MA**P-Sat-359****Development of a Tendon Graft for Rotator Cuff Repair Using the Human Amniotic Membrane**J. LIU¹, M. MOUCHIROUD¹, J. ARRIZABALAGA¹, AND M. NOLLERT¹¹University of Oklahoma, Norman, OK**P-Sat-360****Cell Surface Engineering of Embryonic Stem Cells with Modular Biomaterial Chemistries**R. YADA¹, N. BANSAL¹, AND G. UNDERHILL¹¹University of Illinois at Urbana-Champaign, Champaign, IL**P-Sat-361****Development of Nerve Guidance Conduit for Peripheral Nerve Regeneration from Urinary Bladder Matrix**C. LOVELAND^{1,2}, B. YOUNG¹, C. VALMIKINATHAN¹, AND T. GILBERT¹¹ACell, Inc., Columbia, MD, ²Johns Hopkins University, Baltimore, MD**P-Sat-362****Oxygen Sensing Microparticles For Use In Tissue Engineering Scaffolds**N. VERA-GONZALEZ¹, N. VIRDONE¹, B. NSIAH¹, AND J. WEST¹¹Duke University, Durham, NC**P-Sat-363****Influence of the Elastic Modulus of Aligned Electrospun Fibers on Mesenchymal Stem Cell Behavior in Collagen Gels**N. BUTLER-ABISRROR¹, P. THAYER², AND A. GOLDSTEIN²¹Virginia Polytechnic Institute and State University, Richmond, VA, ²Virginia Polytechnic Institute and State University, Blacksburg, VA**P-Sat-364****Creation of a Functional Mitral Regurgitation Reversal Model in a Physiological Flow Loop Bioreactor**S. KIM¹, P. CONNELL¹, M. JACKSON², S. LITTLE², AND J. GRANDE-ALLEN¹¹Rice University, Houston, TX, ²The Methodist Hospital, Houston, TX**P-Sat-365****Transcriptional Activator TAZ Increases Fibroblast ECM Deposition in the Context of Pulmonary Fibrosis**L. STOPFER^{1,2}, A. JORGENSON¹, D. SICARD¹, AND D. TSCHUMPERLIN¹¹Mayo Graduate School, Rochester, MN, ²University of Wisconsin Madison, Madison, WI**P-Sat-366****Precise Triaxial Deposition of Near Field Electrospun Nanofibers for the Fabrication of Tissue Scaffolds**J. DOVER¹ AND J. BROWN¹¹The Pennsylvania State University, University Park, PA**P-Sat-367****Characterization Of Highly Aligned Collagen Sponge-Like Scaffolds For Nerve Tissue Engineering**M. GROTA¹, C. LOWE², AND D. SHREIBER²¹University of Massachusetts Dartmouth, New Bedford, MA, ²Rutgers The State University of New Jersey, New Brunswick, NJ**P-Sat-368****Prevascularization of Natural Extracellular Matrix Scaffold**M. TAHTINEN¹, L. ZHANG¹, AND F. ZHAO¹¹Michigan Technological University, Houghton, MI**P-Sat-369****Bell-shaped Dose Response Of Sodium Pyruvate On Properties Of Tissue Engineered Cartilage**S. BANSAL¹, E. ESTELL¹, G. ATESHIAN¹, AND C. HUNG¹¹Columbia University, New York, NY

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

P-Sat-370**The Effect Of Interleukin β On VLDL Secretion In Steatotic Hepatocytes During Defatting**A. CHEN-LIAW¹, G. YARMUSH², AND F. BERTHIAUME²¹University of Scranton, Scranton, PA, ²Rutgers, The State University of New Jersey, Piscataway, NJ**P-Sat-371****Extraction of Platelet-Rich Plasma Derived Lipids from Electrospun Structures for Wound Healing**K. POLITO¹ AND S. SELL¹¹Saint Louis University, St. Louis, MO**P-Sat-372****Investigating the Response of Fibroblasts to Microgravity: an *In Vitro* Platform to Study Wound Healing**S. BRADY¹, L. STAPLETON², E. EVANS¹, AND D. HOFFMAN-KIM¹¹Brown University, Providence, RI, ²University of New Mexico, Albuquerque, NM**P-Sat-373****Preventing Articular Cartilage Calcification by the Controlled Release of Dorsomorphin**P. BIANCONI^{1,2}, R. GOTTARDI^{1,3,4,5,6}, V. ULICI^{1,4}, S. LITTLE^{1,2,7}, AND R. TUAN^{1,3,4}¹University of Pittsburgh, Pittsburgh, PA, ²Department of Bioengineering, Pittsburgh, PA, ³McGowan Institute for Regenerative Medicine, Pittsburgh, PA, ⁴Orthopedic Surgery, Pittsburgh, PA, ⁵Ri.Med Foundation, Palermo, Italy, ⁶Department of Mechanical Engineering, Pittsburgh, PA, ⁷Department of Chemical Engineering, Pittsburgh, PA**P-Sat-374****Peptide linkage of Poly(caprolactone)-Chitosan Blend Scaffolds**M. SANCHEZ¹, D. RAMOS^{1,2}, C. LAURENCINI^{1,2,3}, AND S. KUMBAR^{1,2,3}¹University of Connecticut, Storrs, CT, ²Institute For Regenerative Engineering, Farmington, CT, ³University of Connecticut Health Center, Farmington, CT**P-Sat-375****Extended Bioreactor Conditioning of MNC Seeded Heart Valves**C. URYASZ¹, M. VEDEPO¹, C. MCFALL¹, K. NEILL¹, R. HOPKINS¹, AND G. CONVERSE¹¹Children's Mercy Hospital, Kansas City, MO**P-Sat-376****UCP-1 Expression in White Adipose Depots in Laminin α 4 Knockout Mice**A. WANAGAS¹, M. VAICIK¹, M. MORSE², R. COHEN², AND E. BREY¹¹Illinois Institute of Technology, Chicago, IL, ²University of Chicago, Chicago, IL**P-Sat-377****Cellular Response To PPF Reinforced Pericardium Scaffold**V. NIBA¹, L. BRACAGLIA¹, AND J. FISHER¹¹University of Maryland, College Park, MD**P-Sat-378****Three-Dimensional Microfluidic Computational Study in Tissue Engineering**J. STEWART¹¹Tarleton State University, Stephenville, TX**P-Sat-379****Cell Culture on Photovoltaic Surfaces: An Alternative to Trypsinization**C. Arthur¹, A. Stastny¹, C. Jones¹, A. Desai¹, D. Dean¹, and J. Rodriguez-Devora¹¹Clemson University, Clemson, SC**P-Sat-380****Developing an *In Vitro* Cardiac Infarct Model With Silk and Cardiac Progenitor Cells**A. GREANEY¹¹Tufts University, Medford, MA**P-Sat-381****Mechanical Properties & Degradation of Hydroxyapatite & Tri-Calcium Phosphate Incorporated Hydrogels**D. KAMIREDDI¹, B. AKAR², AND E. BREY²¹University of Connecticut, Storrs, CT, ²Illinois Institute of Technology, Chicago, IL**P-Sat-382****Increasing Engineered Cardiac Muscle Tissue Alignment in 2D**S. KIM¹, I. BATALOV¹, AND A. FEINBERG¹¹Carnegie Mellon University, Pittsburgh, PA**P-Sat-383****Rabbit Corneal Fibroblast Response to Substrate Stiffness**K. CURLIN¹ AND E. ORWIN¹¹Harvey Mudd College, Claremont, CA**P-Sat-384****Biodegradable Polyurethane and Its Application in Tissue Engineering**R. AEKINS¹, D. DORCEMUS¹, R. BEZWADA², AND S. NUKAVRAPU³¹University of Connecticut, Storrs, CT, ²Bezwada Biomedical LLC, Hillsborough, NJ,³University of Connecticut, Farmington, CT**P-Sat-385****Glioma Stem Cells Respond Differentially to Treatment in Tissue Engineered Brain Tumor Microenvironments**A. BERR¹, O. COSSIO¹, AND J. MUNSON¹¹University of Virginia, Charlottesville, VA**P-Sat-386****Spatiotemporal Oxygen Monitoring for Three-Dimensional Engineered Tissues**S. KNOWLTON¹, A. ACUN², AND P. ZORLUTUNA²¹University of Connecticut, Storrs Mansfield, CT, ²University of Notre Dame, Notre Dame, IN**P-Sat-387****Three Dimensional Cell Culture Effects on Chondrogenesis of Kartogenin-treated hMSCs**M. PATIL¹, R. GOTTARDI^{1,2,3}, V. ULICI³, S. LITTLE¹, AND R. TUAN³¹Swanson School of Engineering, University of Pittsburgh, Pittsburgh, PA, ²Ri.MED Foundation, Palermo, Italy, ³McGowan Institute for Regenerative Medicine, University of Pittsburgh, Pittsburgh, PA**P-Sat-388****A Long Term Imaging Platform for Patterned Substrates**E. TAGUE¹¹The University of Illinois Urbana-Champaign, Batavia, IL**P-Sat-389****Alignment-Induced RNA Expression of Endothelial Cells**I. BUCZKO¹ AND K. MCCLOSKEY¹¹University of California, Merced, Merced, CA**Track: Undergraduate, Translational Biomedical Engineering****Translational Biomedical Engineering - Undergraduate Research****P-Sat-396****Synth-AID: A Synthetic Skin Delivery System**K. CYR¹ AND C. MARASCO¹¹Vanderbilt University, Nashville, TN**P-Sat-397****Optimizing Antibiotic Treatment Strategies Using Small Molecule Inhibitors of DNA Damage Repair**H. THORP^{1,2}, J. YANG^{1,2}, AND J. COLLINS^{1,2}¹Boston University, Boston, MA, ²Howard Hughes Medical Institute, Boston, MA**P-Sat-398****Synthesizing PLA-PEG Nanoparticles With A Fluidic Nanoprecipitation System For Industrial Scale Up**N. SCHINDLER¹, M. LASHOF-SULLIVAN¹, R. GROYNOM¹, AND E. LAVIK¹¹Case Western Reserve University, Cleveland, OH

P-Sat-399

Efficient Expression and Purification of Beta Amyloid 42

T. Armand I, S. Sharma I, and T. Head-Gordon I

I University of California, Berkeley, Berkeley, CA

P-Sat-400

Computational Modeling of Pancreatic Duct Strictures as a Predictor for Stent Therapy

C. MOREAU¹ AND C. LEE²¹University of Texas Health Science Center at San Antonio, San Antonio, TX, ²University of Texas at San Antonio, San Antonio, TX**P-Sat-401**

The Impact of Mild Cognitive Impairment on Balance and Gait: a Systematic Review

L. BAHUREKSA¹, M. SCHWENK¹, A. SALEH¹, M. SABBAGH², D. COON³, J. MOHLER¹, AND B. NAJAFI¹¹University of Arizona, Tucson, AZ, ²Banner Sun Health Research Institute, Sun City, AZ, ³Arizona State University, Phoenix, AZ**P-Sat-402**

Structural and Functional Analysis of Neonatal Fibrin Clots

R. HANNAN¹, A. BROWN¹, J. FERNANDEZ², N. GUZZETTA^{2,3}, AND T. BARKER¹¹Georgia Institute of Technology, Atlanta, GA, ²Children's Healthcare of Atlanta, Atlanta, GA, ³Emory University, Atlanta, GA**P-Sat-403**

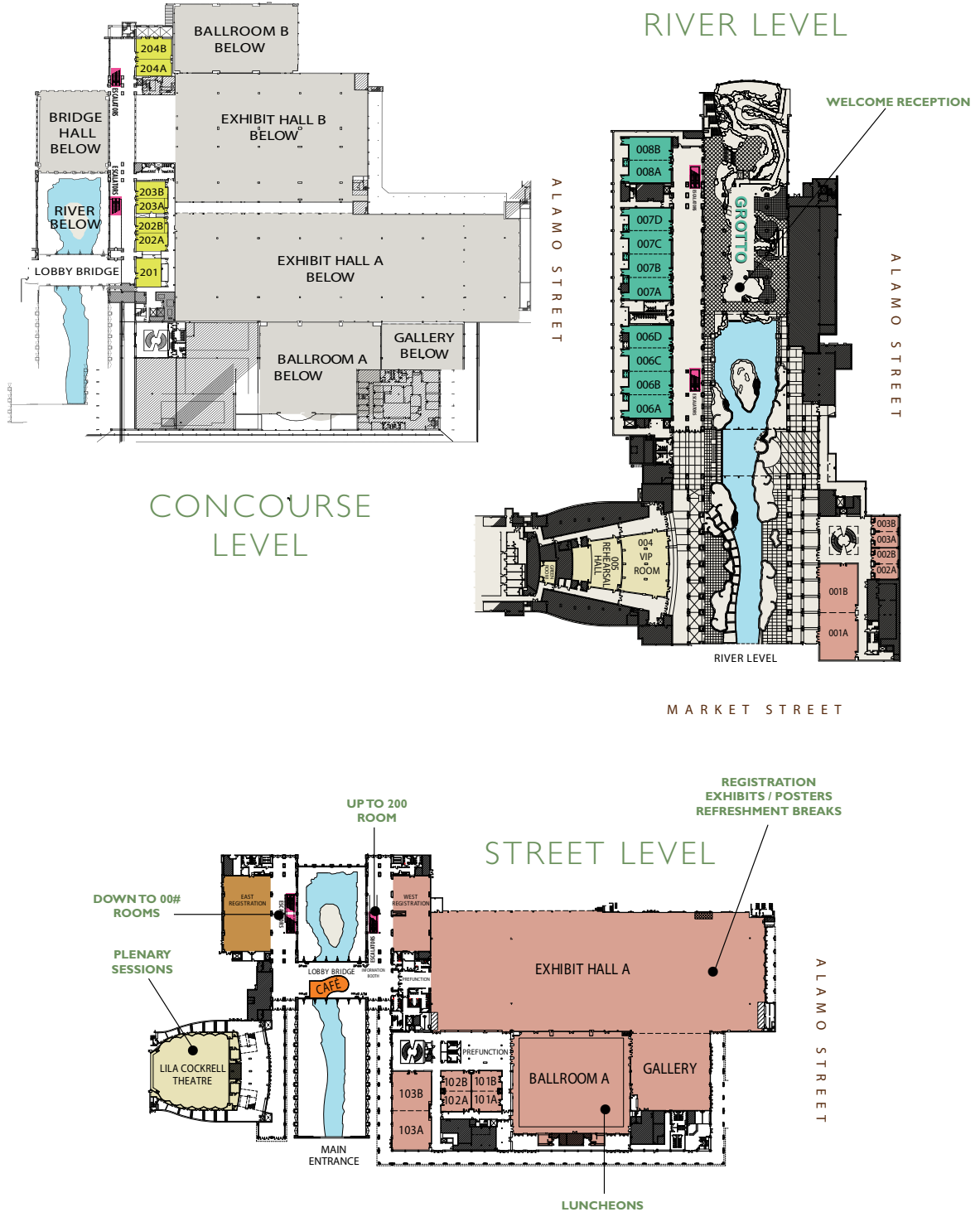
Patient-Derived Biomaterials for Bone Regeneration

C. STEPHENS¹, P. MIKAEL², AND S. NUKAVRAPU²¹Syracuse University, Syracuse, NY, ²University of Connecticut, Farmington, CT

HENRY B. GONZALES CONVENTION CENTER

Henry B. Gonzales Convention Center

200 East Market Street
 San Antonio, TX 78205
 (210) 207-8500



TRACK	8:00AM – 9:30AM	2:00PM - 3:30PM	4:30PM - 6:00PM
BIINFORMATICS, COMPUTATIONAL AND SYSTEMS BIOLOGY	Single Cell, Heterogeneity, Noise Room 202A	Multiscale Modeling Room 202A	Cell Regulatory Circuits Room 202A Engineering Cells and Pathways via Synthetic and Systems Biology Room 007D
BIOMATERIALS	Biomaterial Scaffolds I Room 006A Bioinspired and Self Assembling Biomaterials I Room 006B	Therapeutic and Theranostic Biomaterials I Room 006A Biomaterials for Controlling Cell Environment I Room 006B	Therapeutic and Theranostic Biomaterials II Room 006A Biomaterials for Controlling Cell Environment II Room 006B Hepatic, Pancreatic, Digestive & Renal Tissue Engineering Room 001A
BIOMECHANICS	Cell Biomechanics I Room 006D Head Injury Room 103B Mechanotransduction I Room 007D Skeletal Muscle Mechanics Room 202B	Cell Biomechanics II Room 006D Spine Biomechanics Room 103B Mechanotransduction II Room 007D	Heart Valve Biomechanics Room 006D Methods for Assessing Injury and Injury Risk Room 103B Cardiovascular Flow Modeling in Health and Disease Room 007B Structure-Function Relationships in Musculoskeletal Tissues Room 202B
BIOMEDICAL ENGINEERING EDUCATION	Innovations in BME Education Room 203B	Teaching in a Flipped Classroom Room 203B	Effective Use of Technology in the BME Classroom Room 203B
BIOMEDICAL IMAGING & OPTICS	Applied Biomedical Imaging Techniques Room 203A	Molecular Probes I Room 203A Musculoskeletal Imaging Room 202B	Molecular Probes II Room 203A
CANCER TECHNOLOGIES	Cancer Mechanobiology Room 007A	Tumor Microenvironment I Room 007A	Tumor Microenvironment II Room 007A
CARDIOVASCULAR ENGINEERING	Hemodynamics and Vascular Mechanics I Room 007B Blood Vessel Tissue Engineering Room 001A	Hemodynamics and Vascular Mechanics II Room 007B Cardiovascular Devices: Intelligent Design Using Computations and Experiments Room 201	Cardiovascular Flow Modeling in Health and Disease Room 007B Heart Valve Biomechanics Room 006D
CELLULAR & MOLECULAR BIOENGINEERING	Cell Adhesion Room 007C Mechanotransduction I Room 007D Cell Biomechanics I Room 006D Microfluidic Platforms I Room 008B	Cell Adhesion and the Extracellular Matrix Interaction Room 007C Mechanotransduction II Room 007D Biomaterials for Controlling Cell Environment I Room 006B Cell Biomechanics II Room 006D Microfluidic Platforms II Room 008B	Cell Interactions with the Extracellular Matrix Room 007C Engineering Cells and Pathways via Synthetic and Systems Biology Room 007D Biomaterials for Controlling Cell Environment II Room 006B
DEVICE TECHNOLOGIES AND BIOMEDICAL ROBOTICS	Implantable Devices and Implantable Electronics Room 201 Biomedical Products and Devices Ballroom A	Cardiovascular Devices: Intelligent Design Using Computations and Experiments Room 201	Medical Device Technologies Room 201

Track	8:00am – 9:30am	2:00pm - 3:30pm	4:30pm - 6:00pm
DRUG DELIVERY	Nano/Micro Drug Delivery Room 006C	Drug Delivery in Tissue Engineering I Room 006C	Drug Delivery in Tissue Engineering II Room 006C
NANO AND MICRO TECHNOLOGIES	BioMEMS I Room 008A Microfluidic Platforms I Room 008B Nano/Micro Drug Delivery Room 006C	BioMEMS II Room 008A Microfluidic Platforms II Room 008B	Paper Fluidics Room 008A Microfluidic Platforms III Room 008B
NEURAL ENGINEERING	Head Injury Room 103B		
NEW FRONTIERS & SPECIAL TOPICS	Microfluidic Platforms I Room 008B Implantable Devices and Implantable Electronics Room 201 Microfabrication and 3D Printing for Tissue Engineering Room 001B Biomedical Products and Devices Ballroom A	Microfluidic Platforms II Room 008B	Paper Fluidics Room 008A Hepatic, Pancreatic, Digestive & Renal Tissue Engineering Room 001A
ORTHOPEDIC AND REHABILITATION ENGINEERING	Skeletal Muscle Mechanics Room 202B	Musculoskeletal Imaging Room 202B Spine Biomechanics Room 103B	Structure-Function Relationships in Musculoskeletal Tissues Room 202B Orthopaedic Biomechanics Room 204A
STEM CELL ENGINEERING	Microfabrication and 3D Printing for Tissue Engineering Room 001B		
TISSUE ENGINEERING	Blood Vessel Tissue Engineering Room 001A Microfabrication and 3D Printing for Tissue Engineering Room 001B Biomaterial Scaffolds I Room 006A	Tissue Engineering of Models for Study of Disease and Drug Discovery Room 001A Scaffolds and Surfaces for Tissue Engineering I Room 001B Drug Delivery in Tissue Engineering I Room 006C	Hepatic, Pancreatic, Digestive & Renal Tissue Engineering Room 001A Scaffolds and Surfaces for Tissue Engineering II Room 001B Drug Delivery in Tissue Engineering II Room 006C
TRANSLATIONAL BIOMEDICAL ENGINEERING	Biomedical Products and Devices Ballroom A Applied Biomedical Imaging Techniques Room 203A Microfluidic Platforms I Room 008B Microfabrication and 3D Printing for Tissue Engineering Room 001B	Overcoming Challenges and Obstacles for Clinical Translation: From Bench to Bedside Room 204A Microfluidic Platforms II Room 008B	Paper Fluidics Room 008A
OTHER	8:00 – 9:30am Professional Integrity Workshop Room 102AB	2:00-6:00pm BMES-NSF Special Session on Research & Grant Writing Room 004	4:00-7:30pm Korea-US Joint Workshop in Biomedical Engineering Ballroom A
STUDENT AND EARLY CAREER	9:00 – 10:30am What Do Biomedical Engineers Actually Do? What Are the Specialization Areas? Room 103A	1:30 – 2:45pm How to Get Your First Job Room 103A 2:00-4:00pm Resume Review & Critique Room 102AB	3:15 – 4:30pm Networking for Career Success Room 103A 5:00 – 6:15pm Mock Interview Room 103A

Track	8:00am – 9:30am	1:45pm - 2:45pm	3:00pm – 4:00pm
BIOINFORMATICS, COMPUTATIONAL AND SYSTEMS BIOLOGY	Signaling Systems Analysis Room 202A	System Proteomics: Measurement and Computation Room 202A	Prokaryotic Systems Biology Room 202A
BIOMATERIALS	Intelligent/Multifunctional Biomaterials Room 006A Bone & Cartilage Tissue Engineering I Room 008B	Biomaterial Scaffolds II Room 006A Bone & Cartilage Tissue Engineering II Room 008B	Bioinspired & Self Assembling Biomaterials II Room 006A Engineering Stem Cell Environments Room 001A Scaffolds and Surfaces for Tissue Engineering III Room 008B
BIOMECHANICS	Mechanics of Biomaterials Room 103B Cell-Cell Interactions and Intercellular Forces Room 203B	Impact and Injury Biomechanics Room 103B Computational Modeling of the Respiratory System Room 203B	Countermeasures for Bone Loss and Injury Room 103B Translational Research Relevant to Common Orthopaedic Injuries Room 007D
BIOMEDICAL ENGINEERING EDUCATION		Design in BME Education Room 006	
BIOMEDICAL IMAGING & OPTICS	Magnetic Resonance Imaging I Room 202B Diagnostic Devices and Biosensors I Room 203A	Magnetic Resonance Imaging II Room 202B Diagnostic Devices and Biosensors II Room 203A Cardiovascular Flow Imaging and Modeling in Health and Disease Room 007B	Imaging Strategies in Cancer Room 007A
CANCER TECHNOLOGIES	Engineered Models of Cancer I Room 007A	Engineered Models of Cancer II Room 007A	Imaging Strategies in Cancer Room 007A
CARDIOVASCULAR ENGINEERING	Cardiac Electrophysiology and Mechanics Room 006B Cardiovascular Assist Devices Room 007B	Cardiovascular Flow Imaging and Modeling in Health and Disease Room 007B	Structure-Function Relationship in the Cardiovascular System Room 007B
CELLULAR & MOLECULAR BIOENGINEERING	Molecular and Cell Engineering I Room 007C Cell-Cell Interactions and Intercellular Forces Room 203B	Molecular and Cell Engineering II Room 007C	Cell Motility Room 007C Engineering Stem Cell Environments Room 001A
DEVICE TECHNOLOGIES AND BIOMEDICAL ROBOTICS	Wearable Technology Room 201 Cardiovascular Assist Devices Room 007B	Verification and Validation of Computational Models of Medical Devices Room 201 Peripheral Neural Interfaces: Simulation & Recording Room 001B	Biomedical Robotics Room 201
DRUG DELIVERY	Nucleic Acid Delivery Room 006C	Novel Materials and Self Assembly Room 006C	Multifunctional Drug Delivery Room 006C
NANO AND MICRO TECHNOLOGIES	Nanobiointerfaces Room 008A Bio-nanomedicine in Healthcare Room 006D	Diagnostics Room 008A	Nanoparticles and Theranostics Room 008A
NEURAL ENGINEERING	CNS Injury: SCI, TBI and Concussions Room 001B Neural Tissue Engineering Room 001A	Peripheral Neural Interfaces: Simulation & Recording Room 001B	Neural Control and Modeling Room 001B Neural Engineering: Controlling Cell Behavior Room 006B

Track	8:00am – 9:30am	1:45pm - 2:45pm	3:00pm – 4:00pm
NEW FRONTIERS & SPECIAL TOPICS	Intelligent/Multifunctional Biomaterials Room 006A Diagnostic Devices and Biosensors I Room 203A Wearable Technology Room 201	Bioelectronics Room 006D Diagnostic Devices and Biosensors II Room 203A Diagnostics Room 008A	
ORTHOPEDIC AND REHABILITATION ENGINEERING	Pain Room 007D Bone & Cartilage Tissue Engineering I Room 008B	Rehabilitation Engineering: Prosthetics and Wearable Devices Room 007D Peripheral Neural Interfaces: Simulation & Recording Room 001B Bone & Cartilage Tissue Engineering II Room 008B	Translational Research Relevant to Common Orthopaedic Injuries Room 007D
RESPIRATORY BIOENGINEERING		Computational Modeling of the Respiratory System Room 203B	
STEM CELL ENGINEERING		Epithelial and Adipose Tissue Engineering Room 001A	Engineering Stem Cell Environments Room 001A Translational Therapeutics for Regenerative Medicine Room 006D
TISSUE ENGINEERING	Neural Tissue Engineering Room 001A Bone & Cartilage Tissue Engineering I Room 008B	Epithelial and Adipose Tissue Engineering Room 001A Bone & Cartilage Tissue Engineering II Room 008B Biomaterial Scaffolds II Room 006A	Scaffolds and Surfaces for Tissue Engineering III Room 008B
TRANSLATIONAL BIOMEDICAL ENGINEERING	Bio-nanomedicine in Healthcare Room 006D	Diagnostics Room 008A Bioelectronics Room 006D	Translational Therapeutics for Regenerative Medicine Room 006D
OTHER	Whitaker International Room 204A	2:00-4:00pm Diversity, Health Disparities and Affordable Healthcare Room 004	
STUDENT AND EARLY CAREER	8:30 – 9:30am Student Chapter Outstanding Best Practices Room 103A 9:30 – 10:30am Chapter Outreach & Mentoring Best Practices Room 103A	1:30 – 2:30pm Owning Your Career & Using Mentors Room 103A 2:00-4:00pm Resume Review & Critique Room 102AB	

Track	8:00am – 9:30am	1:30pm - 3:00pm	3:15pm - 4:45pm
BIOMATERIALS	Micro and Nanostructured Materials Room 001B	Biomaterial for Immunoengineering I Room 001B Biomaterials Design I Room 006A	Biomaterial for Immunoengineering II Room 001B Biomaterials Design II Room 006A
BIOMECHANICS	Cardiovascular Biomechanics I Room 006B	Aortic Biomechanics Room 006B Ocular Biomechanics Room 006C	Biomechanics in Degeneration and Regeneration Room 006B Multiscale Biomechanics Room 006C Mechanobiology in the Respiratory System Room 008B
BIOMEDICAL ENGINEERING EDUCATION	Novel Laboratory Modules Room 204A		
BIOMEDICAL IMAGING & OPTICS	Ultrasound Imaging Room 203A Optical Imaging and Microscopy I Room 203B	Novel Approaches to Biomedical Imaging Room 203A Optical Imaging and Microscopy II Room 203B	Macro/Micro Design for Neurotechnologies: Networked Neural Sensors and Instrumentation Room 202A
CANCER TECHNOLOGIES	Nanotechnologies for Cancer I Room 103A Cancer Drug Delivery I Room 103B	Nanotechnologies for Cancer II Room 103A Microtechnologies for Cancer I Room 006D Cancer Drug Delivery II Room 103B	Microtechnologies for Cancer II Room 006D Cancer Drug Delivery III Room 103B
CARDIOVASCULAR ENGINEERING	Cardiac Muscle and Valve Tissue Engineering Room 001A Microcirculation Room 006A Cardiovascular Biomechanics I Room 006B Cardiac Regeneration Room 006D Angiogenesis Room 007B	Heart Valves & Stents I Room 007B Aortic Biomechanics Room 006B	Heart Valves & Stents II Room 007B
CELLULAR & MOLECULAR BIOENGINEERING	Cellular and Molecular Immunoengineering Room 006C Young Innovator Session I Room 007C	Biomaterial for Immunoengineering I Room 001B Young Innovator Session II Room 007C	Biomaterial for Immunoengineering II Room 001B
DEVICE TECHNOLOGIES AND BIOMEDICAL ROBOTICS	Biosensors I: Materials and Techniques Room 201 Cells Tissues and Organs on Chip I Room 008A Global Health I Room 202B Brain Computer Interfaces Room 202A	Biosensors II: Applications Room 201 Cells Tissues and Organs on Chip II Room 008A Global Health II Room 202B	
DRUG DELIVERY	Cancer Drug Delivery I Room 103B	Cancer Drug Delivery II Room 103B Targeted Drug Delivery I Room 007D	Cancer Drug Delivery III Room 103B Targeted Drug Delivery II Room 007D

Track	8:00am – 9:30am	1:30pm - 3:00pm	3:15pm - 4:45pm
NANO AND MICRO TECHNOLOGIES	<p>Cells Tissues and Organs on Chip I Room 008A</p> <p>Micro and Nanostructured Materials Room 001B</p> <p>Nanotechnologies for Cancer I Room 103A</p>	<p>Cells Tissues and Organs on Chip II Room 008A</p> <p>Microtechnologies for Cancer I Room 006D</p> <p>Nanotechnologies for Cancer II Room 103A</p>	<p>Macro/Micro Design for Neurotechnologies: Networked Neural Sensors and Instrumentation Room 202A</p> <p>Microtechnologies for Cancer II Room 006D</p>
NEURAL ENGINEERING	<p>Brain Computer Interfaces Room 202A</p>	<p>Glial Cell Engineering / Neural Progenitor Cell and Tissue Engineering Room 202A</p>	<p>Neuro-rehabilitation Biomechanics Room 201</p> <p>Macro/Micro Design for Neurotechnologies: Networked Neural Sensors and Instrumentation Room 202A</p>
NEW FRONTIERS & SPECIAL TOPICS	<p>Global Health I Room 202B</p> <p>Biosensors I: Materials and Techniques Room 201</p> <p>Cells Tissues and Organs on Chip I Room 008A</p> <p>Nanotechnologies for Cancer I Room 103A</p>	<p>Global Health II Room 202B</p> <p>Biosensors II: Applications Room 201</p> <p>Cells Tissues and Organs on Chip II Room 008A</p>	
ORTHOPEDIC AND REHABILITATION ENGINEERING	<p>Musculoskeletal Tissue Engineering Room 007D</p>		<p>Neuro-rehabilitation Biomechanics Room 201</p>
RESPIRATORY BIOENGINEERING	<p>Engineering Strategies for Lung Transplant & Regeneration Room 008B</p>	<p>Translational Respiratory Engineering Room 008B</p>	<p>Mechanobiology in the Respiratory System Room 008B</p>
STEM CELL ENGINEERING	<p>Mechanobiology of Stem Cells Room 007A</p> <p>Cardiac Regeneration Room 006D</p>	<p>Directing Stem Cell Differentiation Room 007A</p> <p>Adult Stem Cells in Tissue Engineering Room 001A</p>	<p>Stems Cells in Translation Science Room 007A</p>
TISSUE ENGINEERING	<p>Cardiac Muscle and Valve Tissue Engineering Room 001A</p> <p>Cardiac Regeneration Room 006D</p> <p>Cells Tissues and Organs on Chip I Room 008A</p> <p>Musculoskeletal Tissue Engineering Room 007D</p> <p>Engineering Strategies for Lung Transplant & Regeneration Room 008B</p>	<p>Adult Stem Cells in Tissue Engineering Room 001A</p> <p>Directing Stem Cell Differentiation Room 007A</p> <p>Cells Tissues and Organs on Chip II Room 008A</p>	<p>Muscular, Tendinous, Ligamental Tissue Engineering Room 001A</p>
TRANSLATIONAL BIOMEDICAL ENGINEERING	<p>Biosensors I: Materials and Techniques Room 201</p> <p>Global Health I Room 202B</p> <p>Nanotechnologies for Cancer I Room 103A</p>	<p>Biosensors II: Applications Room 201</p> <p>Global Health II Room 202B</p> <p>Translational Respiratory Engineering Room 008B</p>	
OTHER	<p>ABioM SIG Special Session: Application towards the Next Generation Therapies and Diagnostics Ballroom A</p>	<p>Undergraduate Research I Room 204B</p>	<p>Undergraduate Research II Room 204B</p>

WEDNESDAY, October 22, 2014

11:00am – 7:00pm	Registration	HBGCC, Exhibit Hall A
8:30am – 4:30pm	BMES Board of Directors Meeting	HBGCC, Room 102AB
3:30pm – 5:30pm	Meet the Faculty Candidates	HBGCC, West Registration Area
5:30pm – 7:00pm	Welcome Reception	HBGCC, Grotto, River Level

- Plenary Sessions
- Platform Sessions
- Posters
- Workshops
- Student & Early Career
- Exhibits
- Special Events
- General

AFFILIATE EVENTS:

<p>11:00am – 4:00pm</p> <p>AIMBE Board of Directors Meeting</p> <p><i>Henry B. Gonzales Convention Center, Room 003AB</i></p>	<p>4:00pm - 5:00pm</p> <p>AIMBE Academic Council Policy Briefing</p> <p><i>Henry B. Gonzales Convention Center, Room 003AB</i></p>	<p>6:15pm – 9:00pm</p> <p>Council of Chairs Dinner & Meeting</p> <p><i>Marriott Rivercenter Salon J</i></p>	<p>7:00pm – 10:00pm</p> <p>Annals of Biomedical Engineering Editorial Board Dinner</p> <p><i>Marriott Rivercenter, Conference Room 13-14</i></p>
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THURSDAY, October 23, 2014

7:00am – 6:00pm	Registration	HBGCC, Exhibit Hall A
7:00am - 8:00am	Diversity Committee Meeting	HBGCC, Room 003B
7:00am - 8:00am	National Meetings Committee Meeting	HBGCC, Room 003A
8:00am - 9:30am	Platform Session – Thurs I	HBGCC, 19 concurrent rooms
8:00am - 9:30am	Professional Integrity Workshop	HBGCC, Room 102AB
9:00am - 10:30am	What Do Biomedical Engineers Actually Do?	HBGCC, Room 103A
9:30am – 5:00pm	Exhibit Hall Open	HBGCC, Exhibit Hall A
9:30am – 5:00pm	Poster Session – Thurs	HBGCC, Exhibit Hall A
9:30am – 10:30am	Poster Viewing with Authors & Refreshment Break	HBGCC, Exhibit Hall A
10:30am – 12:15pm	Plenary Session & State of the Society Pritzker Distinguished Lecturer	HBGCC, Lila Cockrell Theatre
12:30pm – 1:45pm	Celebration of Minorities in BME Luncheon	HBGCC, Ballroom A
12:15pm – 1:45pm	Lunch on Your Own	
12:45pm – 1:45pm	Medical Devices SIG Business Meeting	HBGCC, Room 003B
1:30pm - 2:30pm	Membership Committee Meeting	HBGCC, Room 003A
1:30pm – 2:45pm	How to Get Your First Job	HBGCC, Room 103A
2:00pm - 3:30pm	Overcoming challenges and obstacles for clinical translation: From bench to bedside	HBGCC, Room 204A
2:00pm - 4:00pm	Resume Review & Critique	HBGCC, Room 012AB
2:00pm - 3:30pm	Platform Session – Thurs - 2	HBGCC - 20 concurrent rooms
2:00pm -6:00pm	BMES-NSF Special Session	HBGCC, Room 004
3:30pm - 4:30pm	Poster Viewing with Authors & Refreshment Break	HBGCC, Exhibit Hall A
3:15pm – 4:30pm	Networking Effectively– Social Media & Face-to-Face	HBGCC, Room 103A
4:30pm - 6:00pm	Platform Session – Thurs - 3	HBGCC - 89 concurrent rooms
4:00pm - 7:30pm	Korea-US Joint Workshop in Biomedical Engineering	HBGCC, Ballroom A
5:00pm – 6:15pm	Mock Interview	HBGCC, Room 103A
6:15pm - 7:30pm	Plenary Session: Computational Modeling and Simulation for Medical Devices	HBGCC, Lila Cockrell Theatre
8:00pm – 9:30pm	University Receptions	Marriott Rivercenter and Marriott Riverwalk

	Plenary Sessions
	Platform Sessions
	Posters
	Workshops
	Student & Early Career
	Exhibits
	Special Events
	General

AFFILIATE EVENTS:

<p>12noon – 1:30pm</p> <p>Cellular and Molecular Bio-engineering - Editorial Board</p> <p><i>Marriott Rivercenter , Conference Room 13-14</i></p>	<p>4:00pm – 5:30pm</p> <p>AEMB Annual Grand Meeting</p> <p><i>Henry B. Gonzales Convention Center, Room 002AB</i></p>	<p>6:00pm – 8:00pm</p> <p>AEMB Reception</p> <p><i>The Republic of Texas Restaurant</i></p>	<p>8:00pm – 9:30pm</p> <p>University Reception</p> <p><i>Marriott Rivercenter and Marriott Riverwalk</i></p>
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FRIDAY, October 24, 2014

Plenary Sessions
Platform Sessions
Posters
Workshops
Student & Early Career
Exhibits
Special Events
General

7:00am – 6:00pm	Registration	HBGCC, Exhibit Hall A
7:00am - 8:00am	2015 Annual Meeting Planning Committee Meeting	HBGCC, Room 003A
7:00am - 8:00am	ABioM SIG Business Meeting	HBGCC, Room 102AB
7:00am - 8:00am	Education Committee	HBGCC, Room 003B
8:00am – 9:30am	Platform Sessions - Fri - I - I	HBGCC - 18 concurrent rooms
8:00am - 9:30am	Whitaker International Session	HBGCC, Room 204A
8:30am - 9:30am	BMES Student Chapter—Outstanding Chapter Best Practices	HBGCC, Room 103A
9:30am - 10:30am	BMES Student Chapter Outreach and Mentoring Best Practices	HBGCC, Room 103A
9:30am – 5:00pm	Exhibit Hall Open	HBGCC, Exhibit Hall A
9:30am – 5:00pm	Poster Session – Fri	HBGCC, Exhibit Hall A
9:30am – 10:30am	Poster Viewing with Authors & Refreshment Break	HBGCC, Exhibit Hall A
10:30am – 12noon	Plenary Session NIBIB Lecture	HBGCC, Lila Cockrell Theatre
12noon – 1:30pm	Lunch on Your Own	
12noon – 1:30pm	CMBE SIG Business Meeting	HBGCC, Room 003B
12:15pm - 1:30pm	Woman in BME Luncheon	HBGCC, Ballroom A
1:30pm – 2:30pm	International Affairs Committee	HBGCC, Room 003A
2:00pm - 4:00pm	Resume Review & Critique, <i>repeated</i>	HBGCC, Room 102AB
1:45pm - 2:45pm	Platform Session – Fri - 2	HBGCC - 18 concurrent rooms
2:00pm - 4:00pm	Diversity, Health Disparities and Affordable Healthcare	HBGCC, Room 204A
3:00pm - 4:00pm	Platform Session – Fri - 3	HBGCC - 15 concurrent rooms
4:00pm - 5:00pm	Industry Affairs Committee Meeting	HBGCC, Room 003A
4:00pm - 5:00pm	Poster Viewing with Authors & Refreshment Break	HBGCC, Exhibit Hall A
5:15pm - 6:15pm	Plenary Session	HBGCC, Lila Cockrell Theatre

AFFILIATE EVENTS:

9:00am – 10:00am

AEMB Ethics Session

Henry B. Gonzales Convention Center, Room 002AB









1:30pm - 3:00pm

AIMBE-AEMB Student Public Policy Session

Henry B. Gonzales Convention Center, Room 002AB

SATURDAY, OCTOBER 24, 2014

7:00am – 2:00pm	Registration	HBGCC, Exhibit Hall A
8:00am – 9:30am	Platform Sessions - Sat-1	HBGCC - 20 concurrent rooms
8:00am - 9:30am	ABioM SIG Special Session	HBGCC, Ballroom A
9:30am – 1:30pm	Exhibit Hall Open	HBGCC, Exhibit Hall A
9:30am – 1:00pm	Poster Session – Sat	HBGCC, Exhibit Hall A
9:30am – 10:30am	Poster Viewing with Authors & Refreshment Break	HBGCC, Exhibit Hall A
10:30am – 12:30pm	Plenary Session Rita Schaffer Young Investigator Lecture & Diversity Award Winner	HBGCC, Lila Cockrell Theatre
12:30pm - 1:30pm	Student Affairs Committee Meeting	HBGCC, Room 003A
12:30pm – 1:30pm	Lunch on Your Own	
1:00pm – 3:30pm	BMES Board of Directors Meeting	HBGCC, Room 102AB
1:30pm – 3:00pm	Platform Session – Sat - 2	HBGCC - 20 concurrent rooms
3:15pm – 4:15pm	Platform Session – Sat - 3	HBGCC - 14 concurrent rooms

	Plenary Sessions
	Platform Sessions
	Posters
	Workshops
	Student & Early Career
	Exhibits
	Special Events
	General



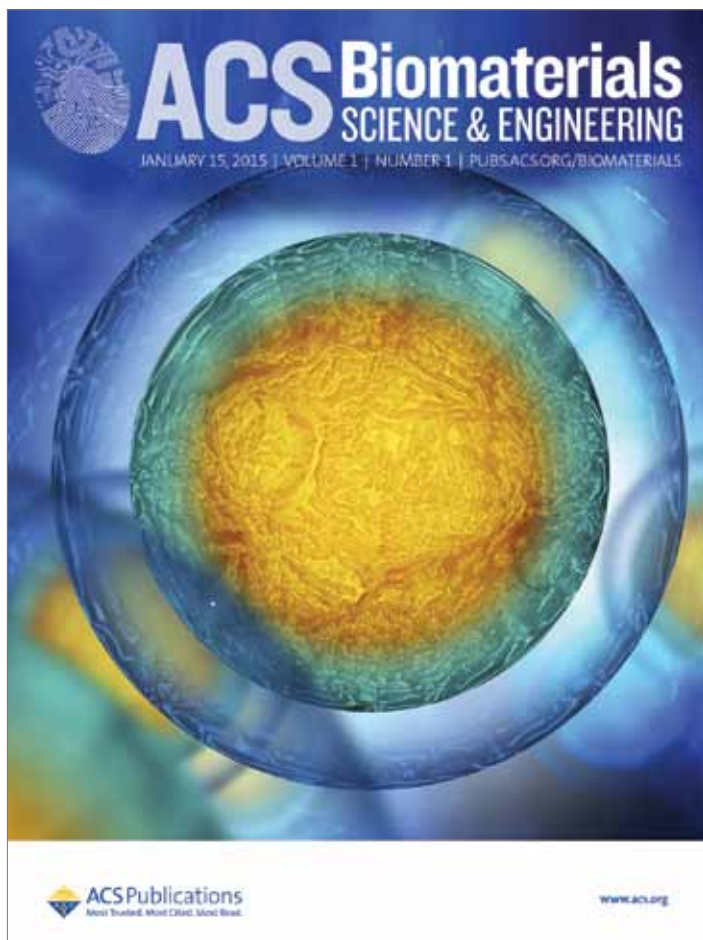
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Keynote Speakers



Kristi Anseth

University of Colorado Boulder



Anthony Atala

Wake Forest University



Ben Fabry

University of Erlangen-Nuremberg



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Hotel reservations must be made by Nov 24, 2014. BMES has negotiated a special conference rate of \$235 for 3 nights or \$245 for 4 nights.

To receive the special conference rate call 1-800-966-3426 and reference "BMES".

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