



BMES

BIOMEDICAL ENGINEERING SOCIETY™
Advancing Human Health and Well Being™

2011 ANNUAL MEETING

Fostering Collaborative Academic,
Clinical, and Industrial Research
in Biomedical Engineering

October 12–15, 2011
**Connecticut Convention
Center, Hartford, CT**

2011
BMES





BMES

BIOMEDICAL ENGINEERING SOCIETY
Advancing Human Health and Well Being

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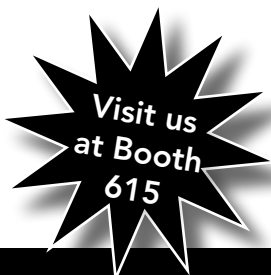
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Thursday, October 13, 2011
 8:00 – 10:00 pm
 Marriott Hartford
 Capital 2 Room
 Hartford, CT



Richard E. Waugh, PhD BMES President

University of Rochester

WELCOME TO THE 2011 Annual Meeting of the Biomedical Engineering Society! The theme this year is "Fostering Collaborative Academic, Clinical, and Industrial Research in Biomedical Engineering," and Conference Chair Tom Webster, Vice Conference Chair Don Peterson, and Technical Program Chair, Karen Haberstroh, have assembled an exciting program. I want to thank all of the track chairs and session chairs for their important role in reviewing the new extended abstracts and assembling an outstanding program that highlights the latest advances in both basic and translational research.

Our plenary lectures highlight the range of achievement in the field. Professor Michael Schuler from Cornell University will deliver the 2011 Robert A. Pritzker Distinguished Award Lecture, and Roderic Pettigrew, Director of NIBIB, will deliver the BMES Distinguished Achievement Award Lecture. Professor Cato T. Laurencin, M.D., Ph.D., from the University of Connecticut is this year's winner of the BMES Diversity Award, and Jordan Green, Assistant Professor at Johns Hopkins University, was selected for the BMES Rita Schaffer Memorial Award. There will also be a special session this year celebrating the International Journal of Nanomedicine Early Career Award and Distinguished Scientists Award winners.

As part of our efforts to increase interactions among physicians and engineers in academia and industry, we are, for the first time, offering CME credit for a number of our sessions and symposia, and we are introducing several sessions with a panel discussion format to encourage greater interaction among participants in our translational research track. We will continue our new tradition on Wednesday afternoon, October 12 from 3-5 PM, and hold a poster session for faculty candidates. This will provide an opportunity for those BMES members looking for faculty positions to meet faculty from departments that are recruiting this year.

There are a number of special events you might wish to check out. Don't miss the special social event on Friday evening, October 14 at the Connecticut Science Center. You'll get to sample local food and enjoy the more than 150 hands-on exhibits. In addition, there will be a Women in BMES Luncheon on Friday, and last year's Celebration of Minorities in BME Luncheon returns to this year's meeting on Thursday. This year's speaker for the Celebration of Minorities in BME luncheon is Roderic I. Pettigrew. All are welcome (with ticket, of course!).

The student program includes several career related activities including an alumni panel, a resume review and writing workshop, and career fair. There are undergraduate technical sessions and design project sessions and special sessions for BMES student chapters. There is a Student Chapter Development workshop Friday morning and the Student Chapter Leadership workshop Friday early afternoon. A Professional Development workshop will also take place Friday afternoon. The workshop will provide students and early career workers with insights on what skills made the speakers marketable in the workforce.

We welcome other student and professional groups attending the meeting including the student honor society Alpha Eta Mu Beta, the Council of Chairs, AIMBE, the BME Career Alliance, and the Whitaker International Scholars and Fellows program.

Finally I would be remiss if I did not express a big "Thank You!" to our record number of supporters for the meeting, including NIH, NSF, Medtronic, Boston Scientific, Clemson University, the Whitaker Foundation, and especially Covidien, our first ever Diamond level supporter.

I wish you all an enjoyable and productive time at the meeting!

Richard E. Waugh, PhD

BMES President



Thomas Webster, PhD

Annual Meeting Chair

Brown University

WELCOME TO NEW ENGLAND AND THE CONNECTICUT CONVENTION CENTER in Hartford, the Northeast's newest Convention Center ideally located close to numerous hospitals, universities, and BME industries. For those of you new to Hartford, it is a city rich in history, Connecticut after all is nicknamed the "Constitution State." In 1868, Mark Twain wrote "Of all the beautiful towns it has been my fortune to see this [Hartford] is the chief." The Convention Center is just steps from Downtown Hartford, overlooking the beautiful Connecticut River at Adriaen's Landing, the city's exciting new riverfront district — so take advantage of the free hotel and downtown shuttles to explore (just not during the meeting). Hartford has been often called the "Insurance Capital of World" generating more economic activity than sixteen U.S. states, but today and this week, it will definitely be the "Biomedical Engineering Capital of the World".

Hartford is also home to the new Connecticut Science Center which currently boasts 6 floors of over 150 hands-on exhibits, a state-of-the-art 3D digital theater, and four educational labs which makes it perfect for endless exploration for children, teens and adults. A two minute walk from the Connecticut Convention Center, we will take advantage of this inspirational Science Center for our Friday Night Celebration so that we can mingle, network, and refresh our excitement towards science — be sure to check out the Sports Lab and Picture of Health exhibits!

This year at the BMES Annual Meeting, some things are the same, but a lot is new. We have worked very hard over the past year to put together a stimulating program featuring over 2000 presentations covering all aspects of Biomedical Engineering. While we are confident that the tradition of a strong BMES meeting will continue this year, we have made a number of key changes for improvement. Since our theme is: "Fostering Collaborative Academic, Clinical, and Industrial Research in Biomedical Engineering," one of our goals was to increase participation among clinicians, academics, and industry. Of course, New England is home to a number of biomedical industries which has brought new faces to our exhibit hall, and new supporters, with a first time ever Diamond Supporter from New England's own Covidien (thanks to all of our supporters). To increase clinical participation, for the first time ever, we have incorporated Continuing Medical Education (CMEs) Credits into the program. For those that do not know, it is required that clinicians complete a certain number of CMEs every year and we hope that this new direction for BMES will continue in the years to come to improve clinical participation. As New England is home to more than 300 Universities and Colleges, the strong academic presence at BMES will continue this year. We have also continued the well received "Meet the Faculty Candidate" event to help our newest graduates find jobs and we will have a special birthday to celebrate this year—Dr. Shu Chien turns 80 ! (be sure to check out the special symposium in his honor—party hats required).

On a more practical level, this year, we moved into a longer abstract format, incorporated required financial disclosures of presenters to become a more open society, and established stronger guidelines for abstract reviews. A longer abstract format improves our society by increasing quality and providing more information for assessment. It is also anticipated that the new longer abstract format will increase research visibility both in terms of references in scholarly journals and presentations.

So get out there BMES attendees, catch up with old friends, meet new people, and have a great meeting (just don't eat too much lobster) !

Thomas Webster, PhD

Annual Meeting Chair



Don Peterson PhD

*Annual Meeting Vice-Chair
University of Connecticut*

IT IS WITH GREAT HONOR AND PRIVILEGE that I welcome you to Hartford, Connecticut, for the 2011 Annual Meeting of the Biomedical Engineering Society! We here at the University of Connecticut are honored to be co-hosting the Annual Meeting in the Connecticut Convention Center with Brown University! For several decades following the Civil War, Hartford was the wealthiest city in the U.S. and, from October 12th through the 15th, 2011, it will once again become the nation's wealthiest – but this time in BME!

The BMES Annual Meetings provide a vehicle for understanding the latest trends in BME as it embodies the cutting-edge of BME research and technological developments from faculty and students from top universities and colleges. The theme for this year's meeting is "Fostering Collaborative Academic, Clinical, and Industrial Research in Biomedical Engineering" and the Technical Program Chair, Karen Haberstroh, has composed a great Program that will certainly expand upon this theme. I am proud to announce that a newly restructured Translational Biomedical Engineering track has been incorporated into this year's Program that promises to demonstrate how Translation is BME's next engineering milestone. This track will have platform presentations and posters from students and faculty who are on the cutting-edge of translational work and it will also feature panel sessions on Nanomedicine, Personalized Medicine, Translational Education, and the translational initiatives of universities funded by the Coulter Foundation. Also new this year is an additional plenary lecture sponsored by the National Institute of Biomedical Imaging and Bioengineering (NIBIB) on Robotics and Sensory Motor Restoration. And, I would also like to welcome BMES's first ever Diamond-level sponsor, Covidien, who is Connecticut's largest manufacturer of medical devices.

The conference theme is ideally suited for the location of this year's BMES Annual Meeting. The Hartford metropolitan area continues to be a dynamic leader in economic development and in Biomedical Engineering. In 2010, the Hartford area ranked 2nd nationally based on per capita economic activity behind San Francisco, California, and is currently ranked 32nd (out of 318 metropolitan areas) in total economic production. The Hartford-Springfield metropolitan region is collectively nicknamed the "Knowledge Corridor" because of its 32 universities and colleges (including several of the America's most prestigious) and approximately 160,000 students. The Corridor also has a significantly large educated workforce that supports a concentration of high-tech industries, from health care services to the precision manufacturing of metals, plastics, and electronics. Incidentally, the Knowledge Corridor region generates over \$110 billion GDP, which is higher than the GDP of 16 U.S. states. Connecticut alone has about 800 biomedical companies, half of which are medical device manufacturers producing \$3.5 billion in sales and about \$1 billion in exports per year. Overall, Hartford and the Knowledge Corridor have become vital components to the thriving medical device manufacturing industry in the United States and to the advancement of Biomedical Engineering.

The city of Hartford, which is nicknamed the "Insurance Capital of the World" as it is the headquarters for many of the world's insurance companies, is rich in history and accomplishment. At nearly 375 years old, Hartford is one of oldest cities in the U.S. In 1639, the world's first written constitution used to establish a government was created here and served as a prototype for the U.S. Constitution. Hartford has the oldest continually-published newspaper in the U.S., the Hartford Courant, whose first issue appeared on October 29, 1764 (as the Connecticut Courant). Many of the nation's oldest landmarks are here: the oldest state house in the U.S. (1796), the oldest public art museum, the Wadsworth Atheneum (1842 and has a collection that spans over 5000 years), and the world's oldest publically-established park, Bushnell Park (1854). (All three of these landmarks are just a short walk from the Convention Center.)

Hartford was home to several famous people, such as authors Mark Twain and Harriet Beecher Stowe, and to inventors like Samuel Colt, who patented the first revolving cylinder firearm (1836) and invented the first electrically-powered underwater torpedo (1841). (If you walk out the back side of the Convention Center overlooking Interstate 91 and look off in the distance to your right, you will see a large red brick building with a large blue onion dome on top. This was his firearms factory, the Colt Armory.) Hartford is also home to many of the nation's firsts. Apollos Kinsley built the first steam-powered road wagon (1797), Charles Richtel flew the first successful dirigible flight for two hours (1878), and the first pneumatic tires were manufactured here (1895). Hartford was the birth place of the American automobile industry and was its center for many years, where the Pope Manufacturing Company made electric and gasoline powered automobiles (and motorcycles and bicycles) under the brand name Columbia (1897). President Theodore Roosevelt was the first president to ride in an automobile on August 22, 1902, as he rode through Hartford in a Columbia Electric Victoria. Hartford was also the first city in the world to have a radio station broadcast in FM (WDRC in 1939).

Many thanks to Tom Webster, the Meeting Chair, and Karen Haberstroh, the Technical Program Chair, for all their hard work to make this event possible and to the entire staff at BMES for supporting this Annual Meeting, especially Ed Schilling, BMES Executive Director, and Debby Tucker, BMES Meetings Director, for their patience and support of our ideas, suggestions, and modifications. This will truly be a great meeting and I hope that you find it both beneficial and experiential in your career as a Biomedical Engineer! I hope your visit to BMES 2011 and to Hartford will be enjoyable and memorable.

Sincerely,

Don Peterson, PhD

Annual Meeting Vice Chair



Karen M. Haberstroh, PhD

*Program Chair
Brown University*

WELCOMES TO BMES 2011 and to Hartford, CT! This year's meeting promises to be very exciting. From systems biology to tissue engineering - it includes tracks and sessions that have been well-received in previous years, and also features some new biomedical engineering research and educational sessions. Of note, the technical program now highlights multiple sessions and panels focused on translational biomedical engineering and industrial collaborations, including "Clinical and Translational Research and Science in Biomedical Engineering" and "Research to Practice (R2P)". In total, the meeting contains 14 concurrent sessions, 704 oral presentations, and 1,357 poster presentations, and represents speakers chosen from over 2,188 submitted abstracts. In addition, we have an excellent representation of undergraduate student presenters, as highlighted in the Saturday afternoon undergraduate sessions. Please attend their talks and support the next generation of biomedical engineers!

We know that there were a lot of changes put into effect with this year's meeting, including a new one page abstract, a new abstract scoring rubric, and an earlier abstract deadline. We appreciate everyone's patience in this process and hope is that these have all helped to ensure the highest quality of technical presentations in each of these exciting areas.

Before we all head to our favorite sessions, I'd like to take this opportunity to thank a few people that have helped to make this meeting a success. First and foremost, I'd like thank the staff at BMES for their patience and guidance in this process - I now (fully) appreciate all of the hard work that goes into planning a meeting of this scale, and I hope that the staff knows how much they are appreciated and valued. Debby Tucker, in particular, has spent endless hours communicating with myself, the track chairs, Mira, researchers, and the Hartford convention center, among others; she has aided in creating not only a fantastic technical and social agenda, but also a high quality and professional meeting program. I would also like to thank all of the track chairs, reviewers, and session chairs - as specialists in their fields, these scientists have each volunteered their (extensive) time and effort to this event, and I truly appreciate all of their hard work. I'd like to thank the meeting co-chairs, Tom Webster and Don Peterson, who together have helped the BMES staff and I pull off this monumental event. Finally, I'd like to thank all of the previous meeting and technical chairs - I now understand the hard work and care that they donated in making their own BMES meeting run smoothly. We are very fortunate to have members so dedicated to this society, and to making this annual meeting a success!

Again, welcome to Hartford and enjoy BMES 2011!

Karen Haberstroh

Technical Program Chair

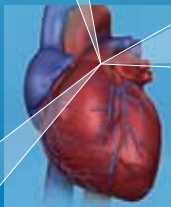


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Pritzker Distinguished Lecturer:

Michael L. Shuler, PhD

Cornell University

THURSDAY, OCTOBER 13, 2011
8:00AM
BALLROOM, CONVENTION CENTER

Modeling Life

WE SEEK TO CONSTRUCT physical and mathematical models of life. Such models allow us to test our understanding of how living systems function and how they respond to human imposed stimuli. Our “Body-on-a-Chip” is a microfabricated, microfluidic system with cells or tissue constructs representing various organs in the body. It can be constructed from human or animal cells and used in drug discovery development. The model is a physical representation of a physiologically based pharmacokinetic model. The second system is a genomically and chemically complete model of a minimal cell. This cell is a hypothetical bacterium with the fewest number of genes possible. Such a minimal cell provides a platform to ask about the essential features of a living cell and forms a platform to investigate “synthetic biology.” While the two systems differ greatly in detail, both illustrate an engineering approach to understand “What is life?” and how living organisms can be manipulated for human benefit.

MICHAEL SHULER is the James and Marsha McCormick Chair of the Department of Biomedical Engineering as well as the Samuel Eckert Professor of Chemical Engineering in the School of Chemical and Biomolecular Engineering at Cornell University. He is also the Director of the Center on the Microenvironment and Metastasis, a Physical Sciences-Oncology Center funded by the National Cancer Institute. Shuler received his degrees in chemical engineering (BS, University of Notre Dame, 1969 and Ph.D., University of Minnesota, 1973) and has been a faculty member at Cornell University since January 1974. He joined the faculty of chemical engineering and chaired the School of Chemical and Biomolecular Engineering from 1998 to 2002. He was the founding chair of Biomedical Engineering starting July 2004. Mike has advised 59 PhD students as well as numerous Masters level students and 17 post-doctoral associates.

Shuler's research is focused on biomolecular engineering and nanobiotechnology with a recent emphasis on applications in human health. His work includes development of an “artificial” animal (in vitro) for testing pharmaceuticals, models of the vasculature to identify interactions of circulating tumor cells with the endothelium, controlled drug delivery to treat brain tumors, production systems for useful compounds, such as paclitaxel from plant cell cultures, and computer models of cells relating physiological function to genomic structure. Shuler's research has led to commercial processes for production of the anticancer agent, Taxol, to tools to produce proteins from recombinant DNA (the “High Five” cell line), to software to support systems biology, and to devices for drug development (HuRel system).

He has received numerous awards for his research and teaching. He has an honorary doctorate from the University of Notre Dame. He has received the Amgen Award in Biochemical Engineering, the Professional Progress and Warren K. Lewis Awards from the American Institute of Chemical Engineers and the Marvin Johnson Award from American Chemical Society. Also, he was the inaugural awardee for the J.E. Bailey Award from the Society for Biological Engineering. Shuler has been elected to membership in the National Academy of Engineering (1989) and the American Academy of Arts and Science (1996).



BMES Distinguished Achievement Lecture Award:

Roderic Pettigrew, PhD, MD

National Institute of Biomedical Imaging and Bioengineering

FRIDAY, OCTOBER 14, 2011
8:00AM
BALLROOM, CONVENTION CENTER

The Critical Roles of Convergence Science and Technological Innovation in Tomorrow's Healthcare

ADDRESSING THE CURRENT AND emerging challenges in healthcare through biomedical science and technological innovation increasingly requires expertise from several disciplines such as chemistry, physics, mathematics, engineering, computer science, cell /molecular biology and genomics. Scientists from different disciplines collaborating to form a new interdisciplinary team is a powerful approach to achieve an important research and development goal. This is essential for realizing the vision of patient-centric medicine that is more personalized and globally accessible. Moreover, meeting the opposing modern challenges of increased medical access and functionality while decreasing cost is critically dependent on technological innovation. Such innovation has already begun to show advances in a number of healthcare areas, including point-of-care systems, mobile health, image guided interventions, regenerative medicine, and molecular theranostics. This promises even greater advances in both the understanding and treatment of disease and in reshaping tomorrow's practice of medicine towards more effective healthcare for all.

RODERIC I. PETTIGREW, PH.D., M.D., is the first Director of the National Institute of Biomedical Imaging and Bioengineering at the NIH. Prior to his appointment at the NIH, he was Professor of Radiology, Medicine (Cardiology) at Emory University and Bioengineering at the Georgia Institute of Technology and Director of the Emory Center for MR Research, Emory University School of Medicine, Atlanta, Georgia.

Dr. Pettigrew is known for his pioneering work at Emory University involving four-dimensional imaging of the cardiovascular system using magnetic resonance (MRI). More recently he has focused on integrated coronary imaging and the biomechanics of atherosclerotic plaque. Dr. Pettigrew graduated cum laude from Morehouse College with a B.S. in Physics, where he was a Merrill Scholar; has an M.S. in Nuclear Science and Engineering from Rensselaer Polytechnic Institute; and a Ph.D. in Applied Radiation Physics from the Massachusetts Institute

of Technology, where he was a Whitaker Harvard-MIT Health Sciences Scholar. Subsequently, he received an M.D. from the University of Miami School of Medicine in an accelerated two-year program, did an internship and residency in internal medicine at Emory University and completed a residency in nuclear medicine at the University of California, San Diego. Dr. Pettigrew then spent a year as a clinical research scientist with Picker International, the first manufacturer of MRI equipment. In 1985, he joined Emory as a Robert Wood Johnson Foundation Fellow with an interest in non-invasive cardiac imaging.

Dr. Pettigrew's awards include membership in Phi Beta Kappa, the Bennie Award (Benjamin E. Mays) for Achievement, and being named the Most Distinguished Alumnus of the University of Miami. In 1989, when the Radiological Society of North America celebrated its 75th Diamond anniversary scientific meeting, it selected Dr. Pettigrew to give the keynote Eugene P. Pendergrass New Horizons Lecture. He has also served as chairman of the Diagnostic Radiology Study Section, Center for Scientific Review, NIH. He has been elected to membership in both the Institute of Medicine, and the National Academy of Engineering of the National Academies, fellowship in the American Heart Association, American College of Cardiology, American Institute for Medical and Biological Engineering, International Society for Magnetic Resonance in Medicine, and was elected an Honorary Fellow of the Biomedical Engineering Society.

Numerical and Statistical Methods for Bioengineering Applications in MATLAB

Michael R. King, *Cornell University, New York*

Nipa A. Mody, *Cornell University, New York*

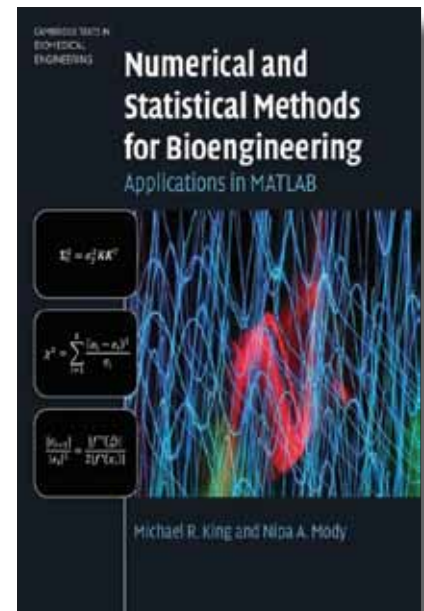
"The book is really easy to read and places frameworks for numerical analysis into realistic bioengineering concepts that students will find familiar and relevant. This is most evident in the excellent boxed examples, but also in many of the homework problems. I also really liked the 'key points to consider' at the end of the chapters – these are useful reminders for the students. Finally, the book presents bioinformatics in a manageable fashion that should help demystify this subject for interested students."

- K. Jane Grande-Allen, *Rice University*

The first MATLAB-based numerical methods textbook for bioengineers that uniquely integrates modeling concepts with statistical analysis, while maintaining a focus on enabling the user to report the error or uncertainty in their result. A unique feature of the book is the inclusion of examples from clinical trials and bioinformatics, which are not found in other numerical methods textbooks for engineers. With a wealth of biomedical engineering examples, case studies on topical biomedical research, and the inclusion of end of chapter problems, this is a perfect core text for a one-semester undergraduate course.

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NIH National Institute of Biomedical Imaging and Bioengineering Lecture:

David Reinkensmeyer, PhD

University of California at Irvine

FRIDAY, OCTOBER 14, 2011
8:45AM
BALLROOM, CONVENTION CENTER

Robotics and Sensory Motor Restoration

ADVANCES IN ROBOTICS are assisting people with sensory motor impairment in achieving greater mobility. For example, exoskeletons help people with paralysis to walk and use their hands, and robotic training devices allow movement training to be delivered in more intense, motivating, and quantifiable ways. Yet, even with these advances in rehabilitation technology, individuals with mobility impairment still too often experience too little recovery. This talk will describe efforts of rehabilitation, robotics, and neural engineers to develop technologies to assist the injured motor system in reorganizing in a way that best promotes functional recovery. A central theme is that technologies that provide an optimal level of challenge to the patient produce better therapeutic outcomes; a key question is whether optimal recovery requires more sophisticated assistive technologies, such as multi-joint exoskeletons, that can assist in more naturalistic movement. Ultimately, treatments that combine regenerative or plasticity-enhancing therapies with intensive motor learning experiences will facilitate neuro-recovery beyond what is currently possible. These treatments will require a new science of combination therapies to be developed.

DAVID REINKENSMAYER is Professor in the Departments of Mechanical and Aerospace Engineering, Anatomy and Neurobiology, and Biomedical Engineering at the University of California at Irvine. He received the B.S. degree in electrical engineering from the Massachusetts Institute of Technology and the M.S. and Ph.D. degrees in electrical engineering from the University of California at Berkeley, in 1988, 1991, and 1993, respectively, studying robotics and the neuroscience of human movement. He carried out postdoctoral studies at the Rehabilitation Institute of Chicago and Northwestern University Medical School from 1994 to 1997, building one of the first robotic devices for rehabilitation therapy after stroke. He became an assistant professor at U.C. Irvine in 1997, establishing a research program that develops robotic and sensor-based systems for movement training and assessment following neurologic injuries and disease. He recently served as the chair of the National Science Foundation initiated International Study on Technology for Mobility, and is the lead researcher for iMove, a collaborative effort at U.C. Irvine focused on using technology to help restore human mobility.

Dr. Reinkensmeyer's research group seeks to understand how to improve sensory motor recovery following neurologic injury and disease. Since motor learning and neuroplasticity occur in response to the physical effects of motion, his group manipulates the physics of motor tasks with robots to try to enhance motor learning, developing and drawing on computational models of neuromotor learning and plasticity to provide a rational framework for device development. Increasingly his group is interested in combining technologies for movement training with regenerative therapies, including stem cell therapies. His group is also seeking to develop sensor-based technologies for movement evaluation that improve insight into regenerative clinical trials by enabling continuous, high-resolution assessment of neuro-muscular control.



BMES 2011 Rita Schaffer Memorial - Young Investigator Lecturer:

Jordan Green, PhD

Johns Hopkins University

SATURDAY, OCTOBER 15, 2011
8:00AM
BALLROOM, CONVENTION CENTER

Polymeric Nanoparticles for Cell-Specific Intracellular Delivery

THERE IS A NEED to safely and effectively deliver biological molecules inside cells to treat many diseases. We have developed a library of polymers to encapsulate various molecules including nucleic acids into biodegradable nanoparticles. These particles degrade either hydrolytically or in response to changing environmental conditions. Nucleic acid-based medicines (DNA or RNA) in particular hold great promise in treating many genetic disorders including cancer, but lack a viable delivery method. The nanobiotechnologies that we develop here are more effective than the leading commercially available reagents for *in vitro* intracellular delivery to a range of cell types including human primary cells and human cancer cells and are promising for *in vivo* use. Small changes to chemical structure tune intracellular delivery in a cell-type specific manner. Leading polymeric nanoparticles exhibit low non-specific toxicity and high transfection efficiencies of ~80% in difficult to transfect human cells. Certain nanoparticle formulations are particularly effective for transfection of human macrovasculature and microvasculature cells and for transfection of human brain cancer cells.

DR. JORDAN J. GREEN is an assistant professor of Biomedical Engineering and Ophthalmology at the Johns Hopkins University School of Medicine. He is also a member of the Institute for NanoBioTechnology and the Translational Tissue Engineering Center at JHU. Dr. Green received his B.S. in biomedical engineering and chemical engineering from Carnegie Mellon University in 2003 and studied at Imperial College London from 2001-2002. He was awarded Whittaker, NSF, and Phi Kappa Phi Fellowships for graduate study and completed his Ph.D. in biological engineering from the Massachusetts Institute of Technology in 2007. Subsequently, Dr. Green was a postdoctoral associate at MIT in Institute Professor Robert Langer's lab from 2007-2008 and was also a biotechnology consultant. His work has resulted in 25 papers and book chapters, 24 invited talks, multiple patents, and has been featured by News@Nature.com and the Boston Globe among other outlets. He has served on national grant panels for the National Institutes of Health, the National Science Foundation, the Department of Defense, and the American Association for the Advancement of Science. Dr. Green's main research interests are in developing biomaterials and nanobiotechnology to meet challenges in regenerative medicine, ophthalmology, and cancer. His work on biomaterials and drug delivery is supported by grants from the National Institutes of Health, the Maryland Technology Development Corporation, the Institute for Nanobiotechnology, and the Edward N. and Della L. Thome Memorial Foundation, Award in Age-Related Macular Degeneration Research.

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.



Diversity Lecture:

Cato Laurencin, MD, PhD

University of Connecticut Health Center

SATURDAY, OCTOBER 15, 2011
 8:45AM
 BALLROOM, CONVENTION CENTER

What I Teach When I Mentor, What I've Learned When I've Been Taught

CATO T. LAURENCIN, M.D., PH.D. is an elected member of the Institute of Medicine of the National Academy of Sciences and an elected member of the National Academy of Engineering.

Dr. Laurencin is the Albert and Wilda Van Dusen Distinguished Chair in Orthopaedic Surgery, and Professor of Chemical, Materials and Biomolecular Engineering at the University of Connecticut. In addition, Dr. Laurencin is a University Professor at the University of Connecticut (the 5th in the institution's history). An internationally prominent orthopaedic surgeon, engineer, and administration, Dr. Laurencin directs the Institute for Regenerative Engineering at the University of Connecticut Health Center, and is Chief Executive Officer of the Connecticut Institute for Clinical and Translational Science. Dr. Laurencin previously served as Vice President for Health Affairs and Dean of the School of Medicine at the University of Connecticut Health Center.

Dr. Laurencin earned his undergraduate degree in chemical engineering from Princeton University and his medical degree Magna Cum Laude from Harvard Medical School. During medical school, he also earned his Ph.D. in biochemical engineering/biotechnology from the Massachusetts Institute of Technology.

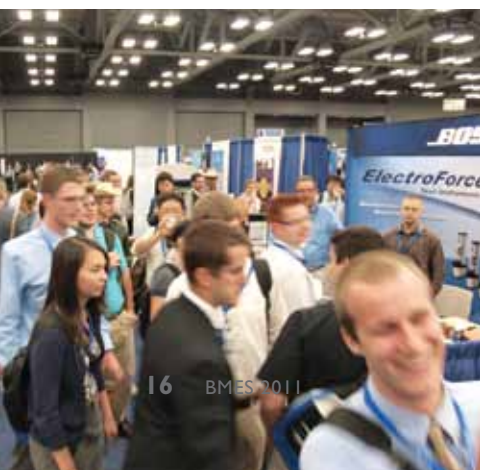
Dr. Laurencin has been named to America's Top Doctors and America's Top Surgeons, and is a Fellow of the American Surgical Association, a Fellow of the American College of Surgeons, and a Fellow of the American Academy of Orthopaedic surgeons.

Dr. Laurencin's research involves tissue engineering, biomaterials science, nanotechnology and stem cell science. He is an International Fellow in Biomaterials Science and Engineering and a Fellow of the American Institute for Medical and Biological Engineering. His work was honored by Scientific American Magazine as one of the 50 greatest achievements in science in 2007. Dr. Laurencin was named the 2009 winner of the Pierre Galletti Award, medical and biological engineering's highest honor and was named one of the 100 Engineers of the Modern Era by the American Institute of Chemical Engineers at its Centennial celebration.

Dr. Laurencin's work in mentoring students is well known. He received the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring from President Obama in ceremonies at the Whitehouse. He has been a member of the National Science Foundation's Advisory Committee for Engineering (ADCOM), and has served both on the National Science Board of the FDA, and the National Advisory Council for Arthritis, Musculoskeletal and Skin Diseases at N.I.H. Dr. Laurencin is a former Speaker of the House of the National Medical Association, and currently serves as Chairman of the Board of the W. Montague Cobb/National Medical Association Health Policy Institute. Dr. Laurencin is also a member of the National Academies Board on Life Sciences, and sits on the National Academy of Sciences Roundtable on Evidence Based Medicine and Value.



EXHIBITS



CAREER FAIR BOOTHS

60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31

129A | 129B | 138A | 138B | 139A | 139B | 140A | 140B | 141A | 141B | 142A | 142B | 143A | 143B | 144A | 144B | 150A | 150B | 151A | 151B | 152A | 152B | 160A | 160B | 161A | 161B | 162A | 162B | 174A | 174B | 175A | 175B | 176A | 176B | 177A | 177B | 180A | 180B | 181A | 181B | 182A | 182B | 183A | 183B | 184A | 184B | 185A | 185B | 186A | 186B | 199A | 199B | 200A | 200B | 201A | 201B | 202A | 202B | 203A | 203B | 204A | 204B | 205A | 205B | 211A | 211B | 222A | 222B | 223A | 223B | 224A | 224B | 225A | 225B | 226A | 226B | 227A | 227B | 228A | 228B | 229A | 229B | 230A | 230B | 231A | 231B | 232A | 232B | 233A | 233B | 234A | 234B | 235A | 235B | 236A | 236B | 237A | 237B | 238A | 238B | 239A | 239B | 240A | 240B | 241A | 241B | 242A | 242B | 243A | 243B | 244A | 244B | 245A | 245B | 246A | 246B | 247A | 247B | 248A | 248B | 249A | 249B | 250A | 250B

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University of Connecticut 421
 HARTFORD HOSPITAL 309
 COVIDIEN 509
 BMES 514

822 | 723 | 722 | 623 | 820 | 721 | 720 | 621 | 816 | 717 | 716 | 617 | 814 | 715 | 714 | 615

622 | 521 | 620 | 521 | 616 | 517 | 614 | 515 | 710 | 609 | 708 | 609 | 707 | 603 | 702 | 603 | 700 | 601

422 | 323 | 420 | 321 | 421 | 421 | 317 | 414 | 315 | 510 | 409 | 508 | 409 | 404 | 305 | 402 | 303 | 400 | 301

322 | 223 | 320 | 221 | 320 | 221 | 316 | 217 | 314 | 215 | 310 | 211 | 308 | 209 | 304 | 205 | 302 | 203 | 300 | 201

222 | 123 | 220 | 121 | 216 | 117 | 210 | 111 | 208 | 109 | 204 | 104 | 202 | 102 | 200 | 101

222 | 123 | 220 | 121 | 216 | 117 | 210 | 111 | 208 | 109 | 204 | 104 | 202 | 102 | 200 | 101

222 | 123 | 220 | 121 | 216 | 117 | 210 | 111 | 208 | 109 | 204 | 104 | 202 | 102 | 200 | 101

222 | 123 | 220 | 121 | 216 | 117 | 210 | 111 | 208 | 109 | 204 | 104 | 202 | 102 | 200 | 101

222 | 123 | 220 | 121 | 216 | 117 | 210 | 111 | 208 | 109 | 204 | 104 | 202 | 102 | 200 | 101

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STUDENT CHAPTER TABLES

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POSTERS

822 | 723 | 722 | 623 | 820 | 721 | 720 | 621 | 816 | 717 | 716 | 617 | 814 | 715 | 714 | 615

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ENTRANCE

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EXHIBITS

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American Physiological Society

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Web: www.the-aps.org

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Web: <http://engineering.asu.edu/bhse>

The School of Biological and Health Systems Engineering (SBHSE) provides a relevant and challenging curriculum that immerses our students in progressive and exciting developments and discoveries of Biomedical Engineering and medicine. SBHSE represents the true fusion of modern medicine and modern engineering. Research and development areas include Neuroengineering, Regenerative Medicine, Imaging, Tissue Engineering, Cardiovascular Engineering, Genetic Engineering, Computational and Synthetic Biological Engineering, and Medical Devices and Diagnostics. In addition to the PhD program, we offer a Master's degree designed to be completed in one calendar year of full-time study.

BOOTH # 321

Biomedical Engineering Alliance & Consortium - BEACON

One Congress Street, Suite 201
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Web: www.beaconalliance.org

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BME Career Alliance

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The BME Career Alliance is a non-profit organization that facilitates interactions between biomedical engineering programs and industry. Students, alumni, faculty and industry can access our job board, regional meetings and many other career resources on our website: www.bmecareer.org. Come by our booth at BMES to learn more!

BOOTH # 515

Boston University

DEPARTMENT OF BIOMEDICAL ENGINEERING

44 Cummings Street
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 Web: www.bu.edu/bme

The Boston University Department of Biomedical Engineering is one of the largest and oldest departments of its kind in the country. We attract exceptional students to our BS, MEng, MS and PhD degree programs, which are known for their highly quantitative approach. We have strengths in numerous research areas including 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 # 810

Brown University

BIOMEDICAL ENGINEERING

Box D, 184 Hope Street
 Providence, RI 02912
 Phone: 401-863-2318
 Email: Thomas_Webster@Brown.edu
 Web: http://www.brown.edu/Departments/Center_for_Biomedical_Engineering/

THE Center for Biomedical Engineering (BME) is a joint program between the School of Engineering and the Division of Biology and Medicine at Brown University. As the oldest Engineering program in the Ivy League, Brown has a strong tradition of innovative biomedical engineering research. We offer B.S., Sc.M., and Ph.D. degrees in BME that closely link clinicians from the Brown Medical School with researchers possessing strengths in biomaterials, biomechanics, neuroscience, nanotechnology, regenerative medicine, tissue engineering, and many others.

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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, engineering entrepreneurship, to medical care.

BOOTH # 400

Case Western Reserve University

DEPARTMENT OF BIOMEDICAL ENGINEERING

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

The Department of Biomedical Engineering at CaseWesternReserveUniversity 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

DEPARTMENT OF BIOMEDICAL ENGINEERING

160 Convent Avenue
 New York, NY 10031
 Phone: 212-650-7531
 Email: fu@ccny.cuny.edu
 Web: bme.ccny.cuny.edu

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

BOOTH # 205

Clemson University**INSTITUTE FOR BIOLOGICAL INTERFACES
OF ENGINEERING**

301 Rhodes Research Center

Clemson, SC 29634-0905

Phone: 864-656-7276

Email: mariam@clemson.eduWeb: www.clemson.edu/centers-institutes/ibioe/

The IBIOE mission is to develop diagnostic tissue test systems to improve health care through education, research and training in: advanced biomaterials, biotooling and instrumentation, human-centered electronic collaboration, and tissue fabrication. We are proud to offer innovative graduate opportunities in leading-edge tissue engineering research.

BOOTH # 614

Colorado State University**SCHOOL OF BIOMEDICAL ENGINEERING**

1376 Campus Delivery, Engineering Building, AR 204

Fort Collins, CO 80523

Phone: 970-491-7157

Email: sara.neys@colostate.eduWeb: www.engr.colostate.edu/sbme

Colorado State University's School of Biomedical Engineering offers Biomedical Engineering undergraduate and graduate degrees (BS, ME, MS, PhD, and ME online) and certificates in Regulatory Affairs. We integrate engineering, veterinary and human medicine and basic sciences to transcend disciplinary boundaries, providing breadth and depth in bioengineering education and research.

BOOTH # 323

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Connecticut's Business Development team is comprised of three agencies dedicated to creating and retaining jobs, attracting capital investment, and supporting innovation and growth in key industry sectors.

BOOTH # 500

Cornell University**DEPARTMENT OF BIOMEDICAL ENGINEERING**

101 Weill Hall

Ithaca, NY 14853

Phone: 607-255-2573

Email: bh42@cornell.eduWeb: 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 as its main campus at Ithaca in the Finger Lakes Region of upstate New York. 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. For more information, please visit <http://www.bme.cornell.edu/>.

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The School of Biomedical Engineering at Dalhousie University offers Masters & Doctorate programs with over 40 faculty from Biomaterials and Regenerative Medicine to Biomechanics and Imaging. The new Bio-Medic Entrepreneurship Certificate program includes stipend support, clinician mentoring, industrial placements, training in clinical needs and medical device regulatory & industry standards.

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Drexel's School of Biomedical Engineering, Science and Health Systems academic thrust areas focus on bringing life saving solutions to health care and include cellular tissue engineering, neuroengineering and integrated bioinformatics. The faculty's core competences are at the forefront of biosensing, bioimaging, bioinformation engineering and, drug delivery, biomedical ultrasound & optics, bionanotechnology, and human performance. The School's student body comprises more than 650 students, 40% of whom are graduate students.

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Phone: 919-682-7788
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Engineering World Health is an NGO that works with the BME community to improve healthcare in hospitals of the developing world. We carry out repairs, build local capacity to manage and maintain the equipment and develop low-cost technologies. Come find out how you too can make a lasting impact on healthcare in the developing world!

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FASEB MARC Program provides a variety of activities to support the training of minority students, postdoctorates, faculty and scientists in the biomedical and behavioral sciences. We offer travel awards for scientific meetings, research conferences, and student summer research opportunities programs. We also sponsor Career Development Programs including grantsmanship training seminars.

The FASEB MARC Program will provide career counseling and resume critiquing in booth 409 in the exhibit hall during the BMES meeting. This service is free to you; therefore come by and sign-up for a session with either Dr. Howard Adams or Dr. Andrew Green.

Career Counseling Scheduling:

Thursday, October 13, from 10:00am-4:30pm
Friday, October 14, from 10:00am-4:30pm
Saturday, October 15, from 10:00am-1:00pm

BOOTHS # 622

Florida International University**BIOMEDICAL ENGINEERING DEPARTMENT**

10555 West Flagler Street

EC 2618

Miami, FL 33174

Phone: 305-348-6717

Email: claudia.estrada1@fiu.eduWeb: www.bme.fiu.edu

The Department of Biomedical Engineering at Florida International University (FIU) in Miami is the only department in the State University System of Florida offering BS (accredited) through PhD degrees as well as a BS/MS and BS/MS in Engineering Management. Established in 2004, the doctoral program has benefitted from the steady expansion of the FIU research enterprise which had one of the largest increases in ranking in federal research and expenditure over the last decade. The department is investing extensively in: Basic Research in Engineered Tissue Model Systems, Diagnostic Bioimaging and Sensor Systems, and Therapeutic and Reparative Neurotechnology. The department has expanding industrial ties and is closely linked with FIU's new College of Medicine.

BOOTH # 605

Found Animals Foundation

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Los Angeles, CA 90066

Phone: 310-574-5793

Email: k.palfrey@foundanimals.orgWeb: michelson.foundanimals.org

Found Animals Foundation sponsors the Michelson Prize and Grants in Reproductive Biology - \$75 million available toward achievement of a single dose, non-surgical sterilant that is safe, effective, and practical for use in male and female cats and dogs. Visit <http://michelson.foundanimals.org/> for more information.

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Atlanta, GA 30332-0535

Phone: 404-894-7063

Email: sally.gerrish@bme.gatech.eduWeb: www.bme.gatech.edu

The Biomedical Engineering PhD program offered through the Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech/Emory University has an emphasis on applications to human health. Research areas include: Biomaterials and Regenerative Medicine, Cardiovascular Biology and Biomechanics, Cellular and Biomolecular Engineering, Integrative Biosystems, Medical Imaging, Neuroengineering.

BOOTH # 203

Hartford Hospital

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Hartford, CT 06102

Phone: 860-545-6048

Email: mmaibau@harthosp.orgWeb: www.harthosp.org

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Illinois Institute of Technology

3255 South Dearborn Street

Wishnick Hall 314

Chicago, IL 60616

Phone: 312-567-5324

Email: mogul@iit.eduWeb: www.iit.edu/engineering/bme/

The Department of Biomedical Engineering at the Illinois Institute of Technology offers B.S. and Ph.D. degrees specializing in the areas of cell and tissue engineering, neuroengineering, and medical imaging. Partnerships within IIT and across multiple academic institutions in the Chicago area offer students unique opportunities to engage in state-of-the-art research in areas at the intersection of engineering and biomedical & clinical biology.

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BOOTHS # 702/704

Johns Hopkins University

DEPARTMENT OF BIOMEDICAL ENGINEERING

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Phone: 410-516-0786
Email: camerer@jhu.edu
Web: www.bme.jhu.edu

The Department of Biomedical Engineering at Johns Hopkins, consistently ranked #1 in the US, has a long history of ground-breaking and innovative research. The Center for Bioengineering Innovation and Design at Hopkins is a translational research center that offers an intensive one-year masters program that focuses on developing medical devices that solve important clinical problems.

BOOTH # 820

Journal of Visualized Experiments

48 Grove Street, Suite 325
Somerville, MA 02144
Phone: 617-996-5363
Email: beth.hovey@jove.com
Web: www.jove.com

The Journal of Visualized Experiments (JoVE) is the first and only PubMed/MEDLINE indexed online journal publishing video articles of methods in biological, medical, chemical, and physical sciences research. JoVE has published over 1,200 articles from leading academic and research institutions. JoVE articles are read by more than 120,000 scientists per month.

BOOTH # 302

Khalifa University

P.O. Box 127788 Al Saada Street
Abu Dhabi, United Arab Emirates
Phone: 001-971-2-401-8000
Email: erin.brannen@kustar.ac.ae
Web: www.kustar.ac.ae

Khalifa University provides a world-class educational, intellectual and research environment and produce graduates that form a superlative cadre of engineers, technologists and applied scientists capable of making major contributions to the current and future sectors of UAE industry and society. The programs offered by Khalifa University are designed to be flexible, competitive and intellectually stimulating. Students are provided with excellent services, including a comprehensive library collection, laboratories and workshops equipped with the latest technology, and extensive computing facilities, in addition to language learning laboratories, accommodation, and sports and recreational facilities.

BOOTH # 615

Marquette University

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

Graduate Programs in Healthcare Technologies Management Program (Marquette University and the Medical College of Wisconsin) - Unique graduate curriculum combines business, technology, and healthcare to prepare engineers for management positions with medical device companies, hospitals, and healthcare consulting firms. Full time students can earn the MS degree in Healthcare Technologies Management in one year.

The graduate program in biomedical engineering at Marquette University offers MS, ME, and PhD degrees in Biomedical Engineering. Research opportunities are available in areas such as rehabilitation engineering, neurorehabilitation, cardiovascular and pulmonary systems, imaging, biomechanics, systems physiology, biotelemetry and others. The program is recognized for strong industry ties and research collaborations with the Medical College of Wisconsin, Froedert Hospital, Children's Hospital of Wisconsin, Zablocki VA Medical Center, and Shriners' Hospital (Chicago).

BOOTH # 201

Materialise

44650 Helm Court
Plymouth, MI 48170
Phone: 734-259-6672
Email: jamie.milas@materialise.com
Web: www.materialise.com

Materialise has extensive experience in medical image-processing with the Mimics Innovation Suite, which provides researchers the tools to quickly create patient-specific 3D models. These models can be used for many applications including design, FEA, or prototyping. As experts in the field, Materialise also offers engineering services for any image-processing project.

BOOTHS # 115/ 214

Medtronic, Inc.

710 Medtronic Parkway
Minneapolis, MN 55432-5604
Phone: 763-505-4542
Email: mike.hess@medtronic.com
Web: www.medtronic.com

At Medtronic, we're changing the face of chronic disease. By working closely with physicians around the world, we create therapies to help patients do things they never thought possible. Our medical technologies help make it possible for millions of people to resume everyday activities, return to work, and live better, longer. We're able to do this with the help of some very special people around the world: 38,000 dedicated employees who share a passionate purpose to improve lives, thousands of medical professionals who share their insights and ideas, and hundreds of advocacy associations that help us share information so people with debilitating diseases know relief is possible. Visit us online at www.medtronic.com.

BOOTH # 502

The Methodist Hospital Research Institute

6670 Bertner Street
Houston, TX 77030
Phone: 713-441-7267
Email: aswright@tmhs.org
Web: www.tmhri.org

The purpose of The Methodist Hospital Research Institute (TMHRI) Academy for Medical Science and Technology is to develop educational and research partnerships that foster medical innovation. In conjunction with partner institutions, the Academy will teach students and postgraduate trainees to be leaders of medicine by identifying clinically relevant challenges, and developing research programs that translate into technological advances in the clinic. In addition to being governed by the Council of Deans, which includes members of the Institute of Medicine, National Academy of Science, and National Academy of Engineers; the Academy has organized the Methodist Academy Trainee Association. The Association is a self-governed organization of undergraduate, graduate, and medical students, as well as postdoctoral fellows, residents, and clinical research fellows involved in research at TMHRI. The Association has journal clubs, open-mic research sessions, as well as social activities for all trainees to participate in. Come by and visit our booth to learn more about our translational research opportunities!

BOOTH # 305

Morgan & Claypool Publishers

40 Oak View Drive
San Rafael, CA 94903
Phone: 415-785-8003
Email: jones@morganclaypool.com
Web: www.morganclaypool.com

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

BOOTH # 316

NanoInk, Inc.

8025 Lamon Avenue
Skokie, IL 60077
Phone: 847-679-6266
Email: info@nanoink.net
Web: www.nanoink.net

NanoInk provides direct write, tip-based desktop lithography instruments and services for nano and micro scale patterning. The product portfolio optimizes controllable deposition of different materials, under ambient conditions, to rapidly generate user-defined multiplexed patterns with feature sizes 50 nm to 10 microns, enabling cutting edge nanofabrication, nanoengineering and nanobiological applications.

BOOTH # 211

National Institute of Biomedical Imaging and Bioengineering

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

The National Institute of Biomedical Imaging and Bioengineering (NIBIB) leads the development and accelerates the application of emerging and breakthrough biomedical technologies in order to improve human health. The Institute is committed to integrating the engineering and physical sciences with the life sciences to advance basic research and medical care.

BOOTHS # 609 / 611

National Instruments

11500 N. Mopac Expressway
Austin, TX 78759
Phone: 512-683-0100
Email: info@ni.com
Web: www.ni.com/biomedical

National Instruments provides powerful graphical system design software and modular hardware for biomedical engineering education and research. Professors and students benefit from industry-leading tools such as NI LabVIEW software, which helps students visualize and implement engineering concepts. NI also offers resources to universities to support laboratories and research. For more information about NI products, curriculum resources, and discounts, visit www.ni.com/biomedical.

BOOTH # 714

New Jersey Institute of Technology**DEPARTMENT OF BIOMEDICAL ENGINEERING**

University Heights
Newark, NJ 07702
Phone: 973-596-5476
Email: rocha@njit.edu
Web: <http://biomedical.njit.edu>

The Department of Biomedical Engineering at NJIT offers Bachelor's, Master's and Doctor of Philosophy degrees in Biomedical Engineering: BS in Biomedical Engineering. Biomedical engineering students combine a study of fundamental biological and physiological processes with a study of engineering methods. Master of Science in Biomedical Engineering. The MS in Biomedical Engineering stresses the application of the principles and practices of engineering, science and mathematics in solving clinical problems in medicine and surgery. PhD in Biomedical Engineering. The Doctor of Philosophy in Biomedical Engineering offers advanced graduate education providing students with the skills necessary for careers in basic and applied research, as well as the intellectual foundation to provide leadership in academia and industry. The PhD is jointly awarded by NJIT and The University of Medicine & Dentistry of New Jersey (UMDNJ).

BOOTH # 822

nScript

12151 Research Parkway, Suite 150

Orlando, FL 32826

Phone: 407-275-4720

Email: jrobinson@nscript.com

Web: www.nscript.com

Offering B.S., M.S., Ph.D., and M.D./Ph.D. degree options, researchers in biomechanics/biotransport; biomaterials; bioimaging; molecular, cellular, tissue engineering; biomedical devices, instrumentation and micro/nanotechnology collaborate campus-wide. State-of-the-art facilities include the Davis Heart and Lung Research Institute, Nanotech West, Ohio Supercomputing Center, Children's Hospital of Columbus, and The Ohio State University Medical Center.

BOOTH # 111

The Ohio State University**DEPARTMENT OF BIOMEDICAL ENGINEERING**

270 Bevis Hall, 1080 Carmack Road

Columbus, OH 43210

Phone: 614-292-7152

Email: bmegrad@osu.edu

Web: www.bme.ohio-state.edu

Offering B.S., M.S., Ph.D., and M.D./Ph.D. degree options, researchers in biomechanics/biotransport; biomaterials; bioimaging; molecular, cellular, tissue engineering; biomedical devices, instrumentation and micro/nanotechnology collaborate campus-wide. State-of-the-art facilities include the Davis Heart and Lung Research Institute, Nanotech West, Ohio Supercomputing Center, Children's Hospital of Columbus, and The Ohio State University Medical Center.

BOOTH # 517

Pennsylvania State University**DEPARTMENT OF BIOENGINEERING**

205 Hallowell Building

University Park, PA 16802

Phone: 814-865-1407

Email: hhlbio@enr.psu.edu

Web: http://bioeng.psu.edu

Offering B.S., M.S. and Ph.D. programs in Bioengineering, our mission is to educate students to become world-class engineers who contribute to social and economic development through innovative solutions to problems in medicine and the life sciences. Our uniquely trained faculty and specialized facilities enable cutting-edge research in fundamental biology, medical device design, and disease diagnosis, with a goal to translate discovery from academia to society. Come by for a visit. We look forward to meeting you!

BOOTH # 723

PolySciTech Division: Akina, Inc.

1291 Cumberland Avenue

West Lafayette, IN 47906

Phone: 765-464-0501x6

Email: jg@akinainc.com

Web: www.polysciotech.com

PolySciTech Division of Akina, Inc. specializes in providing biodegradable block copolymers, fluorescent dyes/probes, rapidly swelling hydrogels, and other 'hard to find' research materials. PST also performs custom synthesis to match your specifications check out www.polysciotech.com to learn more.

BOOTH # 300

Purdue University**WELDON SCHOOL OF BIOMEDICAL ENGINEERING**

206 S. Martin Jischke Drive

West Lafayette, IN 47907-2032

Phone: 765-494-2995

Email: weldonbmegrad@purdue.edu

Web: www.purdue.edu/bme

Opportunities abound through the Weldon School of Biomedical Engineering's innovative graduate programs, interdisciplinary research, and entrepreneurial partnerships. Graduate degrees are focused in the following areas of research excellence: Engineered Biomaterials and Tissue Systems, Biophotonics and Medical Imaging, Neuroengineering, Orthopaedic Biomechanics, and Systems Science and Healthcare Engineering. Our courses on Regulatory Affairs provide outstanding preparation for industrial careers. Students can also participate in BIOMEDSHIP, a focused educational program that provides formal training in innovation and entrepreneurship in the context of biomedical technology, leading to insight on the processes necessary for taking medical technology from design to implementation and commercialization.

BOOTH # 715

Rensselaer Polytechnic Institute

110 8th Street

Troy, NY 12180

Phone: 518-276-6216

Email: gradadmissions@rpi.edu

Web: www.rpi.edu

Rensselaer Polytechnic Institute is the nation's oldest technological research university. Rensselaer offers a broad range of graduate programs from five schools—Engineering, Science, Lally School of Management and Technology, Architecture, and Humanities and Social Sciences. Unique programs include interdisciplinary degrees in information technology, the MFA and Ph.D. in Electronic Arts.

BOOTH # 215

Rutgers University

599 Taylor Road
 Piscataway, NJ 08854
 Phone: 732-445-4500 x6113
 Email: langrana@rutgers.edu
 Web: <http://biomedical.rutgers.edu>

The Rutgers Department of Biomedical Engineering (BME) is a vibrant and dynamic enterprise of scholarship, learning, and technology development. Located in the heart of New Jersey's "Cure Corridor", BME offers a remarkably diverse array of opportunities for undergraduate, graduate, and postgraduate training and research in molecular systems bioengineering, biomaterials and tissue engineering, bionanotechnology, biomechanics, rehabilitation engineering, and biomedical imaging.

BOOTH # 620

Simulia

166 Valley Street
 Providence, RI 02909
 Phone: 401-276-8423
 Email: Christina.apostal@3ds.com
 Web: www.3ds.com

SIMULIA is the DassaultSystèmes brand that makes realistic simulation an integral business practice improving product performance, reducing physical prototypes, and driving innovation. SIMULIA solutions include Abaqus Unified Finite Element Analysis solutions, multiphysics solutions for insight into challenging engineering problems, and SIMULIA SLM for managing simulation data, processes, and intellectual property.

BOOTH # 708

Springer

233 Spring Street
 New York, NY 10013
 Phone: 201-348-4033
 Email: Michael.Weston@springer.com
 Web: www.springer.com

Springer is the proud publishing partner of the BMES and a leading publisher in biomedical engineering. Please stop by our booth to browse our books and journals. Publishing editors will be on hand to answer any questions you might have about publishing with Springer.

BOOTH # 703

Stanford University

318 Campus Drive
 Stanford, CA 94305-5428
 Phone: 650-723-9645
 Email: christina.kurihara@stanford.edu
 Web: <http://biodesign.stanford.edu>

Stanford University offers several programs in the Biomedical Engineering arena. The Biodesign Program is a multi-disciplinary training program in Medical Technology Innovation that features a fellowship and course offerings to graduate and undergraduate students in Engineering, Medicine and Business; the Department of Bioengineering is jointly supported by the Schools of Medicine and Engineering and includes, in a single department, research and teaching programs that embrace biology as a new engineering paradigm and apply engineering principles to medical problems and biological systems. Bioengineering has undergraduate and graduate program offerings.

BOOTH # 814

Temple University

College of Engineering
 1947 N. Broad Street
 Philadelphia, PA 19122
 Phone: 215-204-8824
 Email: grbaran@temple.edu
 Web: www.temple.edu/engineering

Temple University's College of Engineering offers graduate programs in a number of specialty areas including Bioengineering, which is managed by the new Department of Bioengineering. The department includes faculty advisors and collaborators at the School of Medicine and the College of Science and Technology.

BOOTH # 403

Texas A & M University**DEPARTMENT OF BIOMEDICAL ENGINEERING**

4462 TAMU
 College Station, TX 77843-4462
 Phone: 979-845-4631
 Email: bmckay@bme.tamu.edu
 Web: biomed.tamu.edu

The Texas A&M Department of Biomedical Engineering offers an opportunity to participate in ground-breaking research in Biomedical Sensing and Imaging, Biomedical Optics, Cardiovascular Biomechanics, and Biomaterials. The outstanding faculty within this ABET-accredited department have strong collaborations with both medical and veterinary schools. Offering degree options at the bachelor's (B.S.), master's (M.S., M.Eng., M.Eng./MBA), and doctoral (Ph.D. & D.Eng.) level, the Department of Biomedical Engineering at Texas A&M provides an exceptional academic experience.

BOOTHS # 521 / 523

Tufts University**BIOMEDICAL ENGINEERING**

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

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

BOOTH # 310

Tulane University

500 Lindy Boggs Bldg.
 New Orleans, LA 70118
 Phone: 504-865-5897
 Email: cstewar3@tulane.edu
 Web: www.bmen.tulane.edu

An established department (since 1977) that offers B.S. - Ph.D. degrees. Research includes biomechanics, biotransport, regenerative medicine, biomaterials and devices. Within the School of Science and Engineering, opportunities abound for collaboration with the School of Medicine and numerous centers. Tulane is located in New Orleans, a diverse cultural mecca.

BOOTH # 117

University of Alabama at Birmingham**DEPARTMENT BIOMEDICAL ENGINEERING**

1530 3rd Avenue South, Shel 801
 Birmingham, AL 35294-2182
 Phone: 205-934-8420
 Email: tmwick@uab.edu
 Web: <http://www.uab.edu/engineering/departments-research/bme>

The Biomedical Engineering Graduate Program at The University of Alabama at Birmingham (UAB) has both Master's (thesis-based) and Doctoral degree options. Primary research areas are biomedical imaging, biomedical implants and devices, cardiac electrophysiology, multiscale computational modeling, tissue engineering, and regenerative medicine. Other research opportunities are available through our ongoing collaborations with the UAB Medical and Dental Schools. Students complete the Master of Science in Biomedical Engineering in 18-24 months. The Ph.D. degree usually takes 24-42 months beyond the Master's degree. UAB graduates find employment in healthcare delivery, medical devices, pharmaceuticals, biomedical imaging, instrumentation, medical sales and marketing, regulatory agencies, or computer application groups.

BOOTH # 800

The University of Arizona**BIOMEDICAL ENGINEERING**

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

The Biomedical Engineering Graduate Interdisciplinary Program at The University of Arizona offers challenging opportunities for students interested in research and training in biomedical engineering. Students integrate engineering, mathematics, biology, and medicine in a highly collaborative and multi-disciplinary environment, with over 60 faculty mentors. Immediate proximity to the college of medicine as well as several disease centers, facilitates cutting-edge translational research. Students can participate in a number of specialized training programs including biomedical imaging, cardiovascular engineering, computational modeling, and entrepreneurship.

BOOTH # 402

University of Arkansas

Biomedical Engineering
 3189 Bell Engineering
 Fayetteville, AR 72701
 Phone: 479-575-7236
 Email: bwhill@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 # 304

University of California at Davis**BIOMEDICAL ENGINEERING**

One Shields Avenue
 Davis, CA 95616
 Phone: 530-752-6978
 Email: jcyhu@ucdavis.edu
 Web: www.bme.ucdavis.edu

BME at UC Davis consists of 27 primary faculty and a graduate group of ~70 faculty members spanning the Medical and Veterinary Schools. Our mission is to combine exceptional teaching with state-of-the-art research to prepare students for challenges in academics and industry. Visit our exhibit to learn about our BS program emphasizing biomolecular engineering and PhD programs in imaging, cell and molecular systems, biomechanics, and regenerative medicine

BOOTH # 603

University of California, Irvine**DEPARTMENT OF BIOMEDICAL ENGINEERING**

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

The Department of Biomedical Engineering at UCI has 19 faculty, 5 staff, 574 undergraduates, and 156 graduate students, with significant potential for growth. Our research programs are supported by major centers including the Beckman Laser Institute, the Laboratory for Florescence Dynamics, the Micro/Nano Fluidics Fundamentals Focus Center, and the Edwards Lifesciences Center for Advanced Cardiovascular Technology.

BOOTH # 816

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

900 University Drive
Bourns Hall, Room A 220
Riverside, CA 92521
Phone: 951-827-6416
Email: jennifer@engr.ucr.edu
Web: www.bioeng.ucr.edu

The Bioengineering Interdepartmental Graduate (BIG) program combines a solid fundamental foundation in biological science and engineering, and aims to equip the students with diverse communication skills and training in the most advanced quantitative bioengineering research so that they can become leaders in their respective fields. Students have the opportunity to interact with, not only their advisors, but continuously with the BIG Faculty in a host of academic settings. The result is a rigorous, but exceptionally interactive and welcoming educational training for BIG students.

BOOTH # 421

University of Connecticut**SCHOOL OF ENGINEERING**

191 Auditorium Road, Unit 3187
Storrs, CT 06269
Phone: 860-486-5536
Email: srenfro@engr.uconn.edu
Web: www.engr.uconn.edu

UConn Engineering offers nine M.S. and Ph.D. degree programs in core and interdisciplinary subjects. Our faculty are superbly trained, widely respected, and involved in strategic research in areas such as nanotechnology, sustainable engineering, security technologies, wireless and sensor network technologies, informatics and bioinformatics, tissue engineering and regenerative medicine. Nestled amid handsome forests and farmlands, UConn is located near the urban centers of Hartford, Boston and New York. The UConn community provides exciting cultural and athletic activities, dedicated housing for graduate student families and individuals, and top ranked K-12 schools.

Our graduates advance to impressive careers in industry, government and academic institutions. Over 150 of our alumni serve as faculty members at top colleges and universities across the globe. UConn Engineering is a great place to pursue your graduate studies - and a potent launching pad for your career. Please visit www.engr.uconn.edu for more information

BOOTH # 315

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: bioen@illinois.edu
Web: www.bioen.illinois.edu

The Department of Bioengineering offers studies leading to the Master of Science in Bioengineering and the Doctor of Philosophy in Bioengineering. The Bioengineering Graduate Program 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 Bio-imaging, Cell & Tissue Engineering, Micro and Molecular Technologies, and Computational Biology. Opportunity also exists for specializing in (i) computational science and engineering and (ii) energy and sustainability engineering via the Computational Science and Engineering (CSE) Option and the Energy and Sustainability Engineering (EaSE) Option. The Medical Scholars Program permits highly qualified students to integrate the study of medicine with study for a graduate degree in a second discipline, including Bioengineering.

BOOTH # 200

University of Kansas**BIOENGINEERING GRADUATE PROGRAM**

1520 West 15th Street, Room 1
Lawrence, KS 66045
Phone: 785-864-5258
Email: sewilson@ku.edu
Web: <http://bio.engr.ku.edu>

The University of Kansas' Bioengineering program offers M.S. and Ph.D. degree programs. Coordinating with KU's School of Medicine, the M.D./Ph.D. degree is also offered. The program has six tracks: Bioimaging, Bioninformatics, Biomolecular, Biomedical Product Design & Development, Biomechanics & Neural, and Biomaterials & Tissue. KU Bioengineering provides breadth in engineering and biological sciences, and depth in a particular research area chosen from one of the six tracks.

BOOTH # 503

University of Maryland College Park**FISCHELL DEPARTMENT OF BIOENGINEERING**

Room 2330

Jeong H. Kim Engineering Building (Bldg. #225)

College Park, MD 20742

Phone: 301-405-7426

Email: rnoble2@umd.eduWeb: <http://www.bioe.umd.edu>

The Fischell Department of Bioengineering is the home of an emerging academic discipline, exciting degree programs and students who want to make a difference in human health care through education, research and invention. Our programs serve a community that in many universities comprises two departments: biological engineering and biomedical engineering. Our program centers on the cell, subcellular systems, and systems of cells. We integrate engineering and the life sciences in building a quantitative systems approach for the development of tools and techniques that will serve the molecular underpinnings of health care envisioned for the next generation. The Fischell Department of Bioengineering offers undergraduate and graduate educational programs leading to B.S., E.N.P.M, M.S./M.D. and Ph.D. degrees.

BOOTH #600

University of Memphis**UNIVERSITY OF TENNESSEE HEALTH SCIENCES CENTER**

330 Engineering Technology Building

Herff College

Memphis, TN 39152-3210

Phone: 901-678-3733

Email: eckstein@memphis.eduWeb: 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 # 401

University of Michigan**BIOMEDICAL ENGINEERING DEPARTMENT**

1107 Carl A. Gerstacker Building

2200 Bonisteel Blvd.

Ann Arbor, MI 48109-2099

Phone: 734-763-5290

E-mail: sbitzer@umich.eduWeb: www.bme.umich.edu

The University of Michigan Biomedical Engineering Department provides outstanding education 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 # 700

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.eduWeb: www.umn.edu/bme

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

BOOTH # 701

University of Pittsburgh**CENTER FOR BIOTECHNOLOGY**

300 Technology Drive

Pittsburgh, PA 15219

Phone: 412-624-6445

Email: lspararo@pitt.eduWeb: www.pitt.edu/bioengineering/main/

The University of Pittsburgh, Department of Bioengineering display includes materials related to undergraduate and graduate educational programs and fellowship opportunities along with examples of faculty research programs

BOOTH # 314

University of Rochester**DEPARTMENT OF BIOMEDICAL ENGINEERING**

209 Robert E. Georgen Hall

Rochester, NY 14627

Phone: 585-275-3891

Email: donna.porcelli@rochester.eduWeb: www.urmc.rochester.edu/bme

The Graduate Program in Biomedical Engineering at the University of Rochester provides training at the Masters and Doctoral level. Research covers a broad spectrum, ranging in length scale from molecular to whole animal, and encompassing a wide variety of physiological systems and experimental approaches. 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. Multiple active centers and affiliated groups offer collaborative research in Biomedical Optics; Neuroengineering; Biomechanics; Medical Imaging; Biomaterials, Nanotechnology and Cell & Tissue Engineering.

BOOTH # 204

University of Southern California

VITERBI SCHOOL OF ENGINEERING

3650 McClintock Ave, Suite 106
Los Angeles, CA 90089
Phone: 213-821-1553
Email: camillia.lee@usc.edu
Web: usc.edu/viterbi

BOOTH # 510

University of Texas at Arlington

BIOENGINEERING

500 UTA Blvd., ERB 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 at Arlington offers joint Ph.D. and M.S. degrees with The University of Texas Southwestern Medical Center at Dallas and The University of Texas at Dallas. Many research opportunities in the areas of Bioinstrumentation, Biomaterials & Tissue Engineering, Biomechanics & Orthopedics, Medical Imaging and Protein Engineering are available. Please visit our booth to learn more.

BOOTH # 504

The University of Texas at Austin

DEPARTMENT OF BIOMEDICAL ENGINEERING

1 University Station, 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 research areas such as cellular and molecular imaging, cellular and biomolecular engineering, and computational biomedical engineering and bioinformatics.

BOOTH # 501

University of Washington

DEPARTMENT OF BIOENGINEERING

William H. Foege Building
3720 15th Avenue NE, Box 355061
Seattle, WA 98195-5061
Phone: 206-685-2000
Email: bioeng@uw.edu
Web: <http://depts.washington.edu/bioe/index.html>

Our department serves a worldwide leadership role in bioengineering research, education, service, clinical applications, and technology transfer. Prospective graduate students, postdoctoral fellows, and faculty candidates are encouraged to hear, from faculty and students, about educational paths, research projects, and employment opportunities in the department. Informational brochures and souvenirs are also available.

BOOTH # 420

Valtronic

6168 Cochran Rd.
Solon, OH 44139
Phone: 440-349-1239 x18
Email: pklavova@valtronic.com
Web: www.valtronic.com

Valtronic is a full service global provider of engineering, design & development and manufacturing services for the medical device and select industrial markets. With facilities on four continents our solutions range from micro-electronics to complete box builds. Our technology has applications for monitoring, sensing, physical restoration, stimulation, and imaging. Medical markets which we serve include Active Implants, Medical Equipment and Diagnostic Imaging. Valtronic serves customers who demand the highest quality and reliability. ISO 13485:2003 certified.

BOOTH # 404

Vanderbilt University

DEPARTMENT OF BIOMEDICAL ENGINEERING

5824 Stevenson Center
VU Station 35-1631
Nashville, TN 37235
Phone: 615-322-3521
Email: bme-info@vanderbilt.edu
Web: <http://engineering.vanderbilt.edu/BiomedicalEngineering.aspx>

VU BME exists at both the scientific and geographic intersection of Vanderbilt's engineering and basic science departments and its renowned medical center, providing an ideal location for engineering research at the interface of technology and medicine. Research strengths exist in image-based technologies, nanobiotechnology and biophotonics and are complemented by other core competencies, including modeling and forecasting, biomaterials and bioregenerative engineering, bioMEMS, multiscale systems biology and the capacity for translation of research into practice. In close association with VU BME is the Institute of Imaging Science (vuis.vanderbilt.edu), the Institute of Nanoscale Science and Engineering (www.vanderbilt.edu/vinse) and the Institute for Integrative Biosystems Research and Education (www.vanderbilt.edu/viibre). The VU School of Medicine is among the top ten in funding from the NIH and includes a cancer center, a children's hospital and a Level I trauma center. Proximity to these resources, all positioned within our compact campus, and the strong relationships among faculty across multiple Vanderbilt schools stimulate high impact research and provide unique educational and research opportunities for learners. A comprehensive and highly integrated program of graduate education, including a unique first year curriculum, rapidly prepares graduate students for success in research.

BOOTH # 101 / 103 / 105

Virginia Tech-Wake Forest University

SCHOOL OF BIOMEDICAL ENGINEERING & SCIENCE

VT-WFU SBES:
319 ICTAS, Stanger Street MC0298
Blacksburg, VA 24061
Phone: 540-231-8191
E-mail: tsentell@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 70 biomedical engineering faculty with active research programs in tissue engineering, imaging, biomechanics, medical physics, nano-medicine, surgical simulation, and other emerging fields.

BOOTH # 601

Washington University in St. Louis

DEPARTMENT OF BIOMEDICAL ENGINEERING

One Brookings Drive, Box 1097

St. Louis, MO 63130

Phone: 314-935-6164

Email: teasdalek@wustl.edu

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

In partnership with our world-class medical school, our department emphasizes interdisciplinary, multi-scale training with a medical focus 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 in Whitaker Hall for Biomedical Engineering and the just completed Brauer Hall. We offer BS, MS, MS/MBA, PhD and MD/PhD degrees.

BOOTH # 604

Wayne State University

BIOMEDICAL ENGINEERING

818 W. Hancock

Detroit, MI 48201

Phone: 313-577-1345

Email: bme@eng.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 # 508

Whitaker International Fellows and Scholars Program Institute of International Education (IIE)

809 United Nations Plaza

New York, NY 10017

Phone: 212-984-5442

Email: saltaf@iie.org

Web: www.iie.org

The Whitaker International Fellows and Scholars 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. Prior to closing in 2006, the Whitaker Foundation provided funding for the ongoing administration of the Whitaker Program by the Institute of International Education (IIE). The 2012-2013 competition is now open, with a January 23th deadline. For more information, including program details and the online application, visit: <http://www.whitaker.org>

BOOTH # 705

Worcester Polytechnic Institute

100 Institute Road

Worcester, MA 01609

Phone: 508-831-5301

Email: grad@wpi.edu

Web: www.wpi.edu/admissions/graduate

A leader in science, engineering, and business, Worcester Polytechnic Institute anticipated some of the latest trends in higher education by nearly two generations. WPI's founding principle of balancing theory with practice underlies a project-based, experiential curriculum that prepares students to solve important problems through interdisciplinary study and applied research.

BOOTH # 709

World Precision Instruments, Inc.

175 Sarasota Center Blvd.

Sarasota, FL 34240

Phone: 941-371-1003

Email: jam@wpiinc.com

Web: www.wpiinc.com

World Precision Instruments (WPI) proudly represents Fluigent microfluidic pressure pumps. Our display features a live demonstration of the MFCS control system and FAESFLO software interface. Product features: fast response time (<200ms), non-pulsatile flow, low volume delivery can be determined by pressure OR flow rate, 1 - 8 channels.

BOOTH # 322

Yale University

BIOMEDICAL ENGINEERING

55 Prospect Street

New Haven, CT 06516

Phone: 203-432-4262

Email: tarek.fahmy@yale.edu

Web: www.seas.yale.edu

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.

Congratulations

2011 Coulter Fellows

For successfully completing the requirements of the
Coulter Translational Research Award



• **Edward Boyden**

Massachusetts Institute of Technology

Direct Optical Neural Silencing: A new strategy for
Treating Brain Disorders



• **Utkan Demirci**

Harvard University – MIT

Electrical Sensors for Rare Cell Populations
in Whole Blood



• **Ayman El-Baz**

University of Louisville

Novel Image Analysis Framework
for Early Diagnosis
of Lung Cancer



• **Julie Hasenwinkel**

Syracuse University

Novel Two-solution Based
Bone Cements for
Vertebroplasty and
Kyphoplasty





▶ **Pedro Irazoqui**

Purdue University

A Hermetic Biocompatible Ceramic Package for Neural Prosthesis



▶ **Ho-Wook Jun**

University of Alabama at Birmingham

Biomimetic Nano Matrix for Drug Eluting Stent Application



▶ **Yunzhi Yang**

University of Texas – Austin

Optimizing Bone Regeneration with Load-bearing and Osteoinductive Functionally Graded Biomimetic Scaffolds



▶ **Xiaojun Yu**

Stevens Institute of Technology

Novel Structured Nanofibrous Scaffolds for Bone Healing



Meeting Location

Connecticut Convention Center

100 Columbus Boulevard
Hartford, CT 06103
860-249-6000

Marriott Hartford Downtown

200 Columbus Boulevard
Hartford, CT 06103
860-249-8000

Registration

Paid registration is required for admission to all meeting functions including scientific sessions, posters, exhibits, breaks and the Special Event at the Science 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, Women in BMES Luncheon are separate and above BMES meeting registration.

On-Site Registration Hours

Wednesday, October 12	10:00am – 5:00pm
Thursday, October 13	7:00am – 6:00pm
Friday, October 14	7:00am – 6:00pm
Saturday, October 15	7:00am – 2:00pm

Exhibits

Exhibit Hall, Convention Center

Exhibits are located in the Exhibit Hall on the first level of the Convention Center. Exhibits will be open:

Thursday, October 13	9:30am – 5:00pm
Friday, October 14	9:30am – 5:00pm
Saturday, October 15	9:30am – 1:30pm

Poster Sessions

Exhibit Hall, Convention Center

Posters are located in Exhibit Hall on the first level of the Convention Center. Posters are numbered with a card corresponding to the number assigned in the program. Authors should be present during Poster Sessions as indicated in the Scientific Program.

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 that 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 for both the morning and afternoon sessions will be on display throughout the entire day and should be manned by the author during the time indicated in the Scientific Program, especially during the breaks between platform sessions. All posters will be in the Exhibit Hall on the first level of the Convention Center. Posters are numbered with a card corresponding to the number assigned in the program.

Speaker Ready Room

Hall B Office 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 12	1:00pm – 5:00pm
Thursday, October 13	7:00am – 5:00pm
Friday, October 14	7:00am – 5:00pm
Saturday, October 15	7:00am – 3:30pm

Program Highlights

Don't Miss These Events

WEDNESDAY, October 12

Welcome Reception

5:00pm - 6:00pm

Convention Center, Exhibit Hall Foyer

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

THURSDAY, October 13

Celebration of Minorities in BME Luncheon*

12:00noon - 1:30pm

Convention Center, Ballroom C

This is the second year of this event sponsored by the BMES Diversity Committee to create a community and network within the Society that fosters 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.

This year's speaker is **Roderic I. Pettigrew, Ph.D., M.D.**, the first and current Director of the National Institute of Biomedical Imaging and Bioengineering (NIBIB). Dr. Pettigrew is known for his pioneering research involving four-dimensional imaging of the heart using magnetic resonance (MRI). He has been elected to the Institute of Medicine, and as a Fellow in the American Heart Association, the American College of Cardiology, the American Institute for Medical and Biological Engineering, the International Society for Magnetic Resonance in Medicine, and the Biomedical Engineering Society.

This luncheon complements the Diversity Award lecture to be delivered on Saturday and the Women in BMES Networking Luncheon on Friday.

Celebrities of Minorities in BME Luncheon Supported by



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

Refreshment Breaks

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

Thursday morning & afternoon refreshment breaks are sponsored by



Friday morning refreshment break sponsored by



BMES Town Hall, Fellows Induction & Awards Ceremony

5:30pm – 7:00pm

Convention Center, Ballroom AB

Please join us for a dialogue with BMES President Richard Waugh and other leaders of the Society. The BMES Awards will also be presented. See page 39 for the award winners.

FRIDAY, October 14

Women in BMES Luncheon*

12:00noon - 1:30pm

Convention Center, Ballroom C

"I Never Have Enough Time... A Pro-active Approach to Work-Life Balance" Luncheon work-shop with networking opportunities

Networking events for women in BMES create a community within the Society that fosters support and professional development, while offering opportunities to nourish old ties and forge new relationships. 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.

Woman in BMES Luncheon Supported by



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

SPECIAL EVENT

Science Museum

6:30pm - 9:30pm

250 Columbus Blvd Hartford—

one block from the Convention Center

All full and guest registrations receive a ticket for the event that includes food and one drink ticket. A cash bar will be available. Additional tickets may be purchased for \$100 each.

STUDENT & EARLY CAREER PROGRAMS

BMES Career Development

Wednesday, October 12

3:00pm - 5:00pm

Convention Center, Exhibit Hall

Meet the Faculty Candidate Poster Session

This event will provide an opportunity for faculty, recruiters, and Department Chairs to speak directly with current graduate students and postdoctoral researchers who are seeking faculty positions. More than 120 faculty candidates will be presenting.

Thursday, October 13

4:00pm - 5:30pm

Convention Center, Ballroom C

BME Alumni Panel

BME alumni share their industry experiences and lessons learned to the audience.

5:45pm - 7:15pm

Convention Center, Ballroom C

Resume Writing Workshop

Students and early career alike can participate and take away writing tips from career professionals representatives.

Friday, October 14

1:00pm - 4:00pm

Convention Center, Exhibit Hall

Career Fair OPEN TO ALL ATTENDEES

Employers and candidates come together at The Biomedical Engineering Society (BMES) Career Fair. This event is designed to connect organizations looking to hire high-level people with candidates that can bring specialized knowledge and innovation to new product and process development, teaching/training, scientific research, critical resource management, and more. Many of these BMEs are at the cutting edge of such areas as high-speed electronics, sophisticated mathematical analysis, sensors, safety studies, and massive data storage and processing.

Career Counseling in the FASEB MARC Booth #409

The FASEB MARC Program will provide career counseling and resume critiquing in booth 409 in the exhibit hall during the BMES meeting. This service is free to you; therefore come by and sign-up for a session with either Dr. Howard Adams or Dr. Andrew Green.

Career Counseling Scheduling:

Thursday, October 13, 10:00am-4:30pm

Friday, October 14, 10:00am-4:30pm

Saturday, October 15, 10:00am-1:00pm

BMES Student Chapter Development Meeting

Friday, October 14

10:00am - 11:30am

Marriott, Ballroom C

This workshop is designed to provide information in how to charter and/or renew a BMES Student Chapter, and its benefits. Also it is an opportunity for interaction with the BMES staff and successful chapters providing examples of best practice, the place where the chapter members exchange ideas and generate new ones, as well setting chapter goals for the upcoming year.

BMES Student Chapter Leadership Meeting

Friday, October 14

1:30pm - 2:30pm

Marriott, Ballroom C

This workshop will be for those students that are interested in enhancing their leadership skills and/or their involvement with BMES at a national level. Various leadership methods and techniques will be discussed. Students' newly acquired leadership skills will then be applied to the development of community, a vision, and a plan of action for the BMES national student leadership.

Professional Development Workshop

Decrease Time to Market through Academic Collaborations

Saturday, October 15

10:30am - 12:30pm

Marriott, Capital Room

Join us for this workshop to discover the benefits universities provide to industry leaders from research to clinical trials. Hear from top universities on how they positioned themselves to be selected for collaborative projects. See how time to market may be reduced through academic resources. Learn about cutting-edge software solutions that can give you a competitive advantage. If you're an industry leader looking for new outsourcing opportunities or if you are affiliated with a college/university and are interested in exploring the possibilities with industry, then this workshop is for you!

REU / Summer Undergraduate Technical Sessions

Saturday, October 15

Convention Center, Room 26

There will be two Undergraduate Research platform sessions on Saturday, October 15 featuring eighteen oral presentations. See pages 157 and 161 for details. The presentations in these sessions were chosen from submissions of undergraduates during the summer of 2011. Over 300 posters will also be presented on Saturday morning from 9:30am to 1:00pm. See pages 134 - 212.

Whitaker International Fellows and Scholars Program: Funding Opportunity for Young Biomedical Engineers

Thursday, October 13
4:00pm - 5:30pm

Convention Center, Room 12

Initially funded by the Whitaker Foundation, the Whitaker Fellows and Scholars Program is managed by the Institute of International Education (IIE) and supports international collaboration in the growing field of biomedical engineering. For all levels of emerging bioengineers, from graduating seniors to post-doctorate degree-holders in biomedical engineering, the Whitaker Program provides funding to U.S. citizens and permanent residents to undertake activities overseas directly related to the field. Past awards have included research in heart blood flow, improved prosthetic leg design, and development of affordable oral cancer screening tools. Projects are implemented worldwide, including countries like Australia, China, Kenya, Switzerland, the UK and Vietnam. The Whitaker Session will feature a panel of current and former Whitaker Program participants who will present their research projects, talk about their grant experience and offer application tips.

- Mechanical Cues Induce Beta-Catenin Signaling Through a Wnt Independent, Mechanosensing Mechanism**
Randall Platt, Whitaker International Fellow, 2010-11.
UK, Imperial College of London
- A Whitaker Scholar's Experiences in Immunobioengineering at EPFL in Switzerland**
Evan Scott, Whitaker International Scholar, 2010-11,
Switzerland, EPFL
- Schlemm's Canal Endothelial Cell Biomechanics as a Basis for Elevated Intraocular Pressure in Glaucoma**
Ryan Pedrigi, Whitaker International Scholar, 2009-10,
UK, Imperial College London
- Investigating Fibronectin Conformation Within 3D Tissue Models**
Wes Legant, Whitaker International Fellow, 2010-11,
Switzerland, ETH
- A Histological, Optical, and Mechanical Examination of Fiber Orientation and Response to Loading in Carotid Artery Tissue**
Lucas H. Timmins, Ph.D., Whitaker International Fellow, 2006-07
UK, Queen Mary, University of London

Alpha Eta Mu Beta (AEMB) Programs

Alpha Eta Mu Beta Annual Grand Meeting

Thursday, October 13
10:30am - 12noon

Marriott, Capital 1 Room

Session Chair: Anthony McGoron, PhD and Dominic Nathan, PhD

At this annual grand meeting, members representing chapters nationwide will come together to discuss important contemporary events relating to AEMB. In addition, we will also be conducting several development workshops that focusing on areas of chapter management, leadership and professional development. (Attendance is mandatory for all AEMB members).

Alpha Eta Mu Beta Annual Banquet

Thursday, October 13
12:30apm - 2:00pm

Marriott, Capital 1 Room

Session Co-Chairs : Alicia Fernandez and Stefanie Gonzalez

The Annual AEMB banquet will be held at City Steam Brewery Café (942 Main Street, Hartford, CT 06103). We are delighted to have Ken Horner, husband of the late Patricia I Horner as our distinguished guest of honor. Ken has been very supportive of AEMB and Pat's role in leading AEMB since its beginning. We are also honored to have Dr. Jerry Collins as our distinguished banquet key note speaker. This session is open to all AEMB student and faculty members.

Alpha Eta Mu Beta Annual Ethics Session: The Role of Wonder in the Life of the Engineer : Curiosity and Professional Humility

Thursday, October 13
2:30pm - 4:00pm

Marriott, Capital 1 Room

Session Co-Chairs: David Smith, PhD and Stephanie Naufel, MS

The significance of ethics in driving key engineering decisions that shape the biomedical and biotechnology fields every day is one that merits true attention. Indeed, the ethically-conscious engineer must properly cultivate his or her innate curiosity to innovate with sound judgment and informed decision-making. But what are the necessary steps to bring about such awareness, and what is the role of professional humility? The goal of this session is to provide students, professionals, and educators with a framework to understand how ethics drive the field of biomedical engineering, and to discuss its impact on human dynamics in academics, industry and society as a

whole. This session further examines the role of professional humility and its influence on creating engineers who understand contemporary challenges, recognize limitations in the field, and who listen and respect the contributions of others.

Alpha Eta Mu Beta (AEMB), the National Biomedical Engineering Honor Society, is committed to promoting ethics in the field of biomedical engineering. This year, AEMB is honored to host Dr. David Smith, Director of the Yale Interdisciplinary Bioethics Center, as the distinguished ethics speaker. Dr. Smith has over 40 years of experience in the field of ethics, and has deliberated ethics education, care for the dying, research ethics, ethics and corporate responsibility, and ethics in genetic testing. An accomplished professional in the field, Dr. Smith is the author of over 13 books, numerous papers, and is the recipient of several grants that specifically examine various aspects of bioethics.

AEMB Special Session: Postharvest Intervention to Minimize Losses on Horticulture Crops in Sub-Saharan African Countries: A Case Study

Friday, October 14

11:00am - 12noon

Marriott, Capital 1

Session Co-Chairs: Jerry C. Collins, PhD, Lamin S. Kassama, PhD and Dominic E. Nathan, PhD.

The ability to maintain reliable supply of food to Sub-Saharan African (SSA) regions is a significant challenge. The lack of appropriate infrastructure to support good postharvest management has led to significant losses (40-80%) and waste. This has led to an increase in poverty and hunger in the region. In addition, change in climate, political instability and living habits have made matters worse. Such an event presents itself as an ethical challenge to bioengineers and others in the field, who are endowed with the technical knowledge to assist in alleviating the human suffering that threatens to plunge the developing world into chaos. The central question is how do we confront and contribute to providing innovative and sustainable solutions appropriate to these SSA regions? This session defines the problem specifically in terms of a bioengineering context and engages students and faculty to actively determine how bioengineers can provide solutions to compliment current relief efforts.

This case study presented in this session is real and relevant. This is part of a larger research initiative on using real-world case studies as pedagogical tools in biomedical and bioengineering education. This is an inter-institution collaborative effort focused on curriculum development, teaching and assessment methods that encompasses a large but related group of disciplines within the biomedical and bioengineering fields.

Student Session: How Public Policy and Funding Affect You (Co-sponsored by AEMB and AIMBE)

Friday, October 14

2:00pm - 3:00pm

Marriott, Capital 1 Room

Session Co-Chairs: Jennifer Ayers, Sean Gallagher and Teresa Murray

How does government funding impact biomedical research? How does this affect public health? Moreover, how can you influence policy-making? Find the answers at this informative session co-hosted by Alpha Eta Mu Beta (AEMB), the National Biomedical Engineering Honor Society, and the American Institute for Medical and Biological Engineering (AIMBE). AIMBE is the leading voice for public policy supporting medical and biological engineering innovation to improve public health. During this session, we will demonstrate how advocacy for the profession and the field can have important personal impact and ensure public policy continues to support our work. Furthermore, you will learn about the different types of government funding, how levels have changed, what impact that will have on our field and what you can do to influence policy-makers. 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, AMIBE. AIMBE represents the top 2% of medical and biological engineers in the field, biomedical and bioengineering university programs through the US, industry and 18 professional societies. We play a critical role in advancing public policy for medical and biological engineering by meeting regularly with key administration officials, Congress, and monitoring trends in public policy that may impact the field. In total we reach nearly 50,000 individuals who are leading the way towards improved medical and biological engineering interventions for human health and well-being.

2011 BMES 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

Michael L. Shuler, PhD
Cornell University

Distinguished Lecture

Roderic Pettigrew, PhD, MD
National Institute of Biomedical Imaging and Bioengineering

Rita Schaffer Young Investigator Lecture

Jordan Green, PhD
Johns Hopkins University

Diversity Lecture

Cato Laurencin, MD, PhD
University of Connecticut Health Center

Distinguished Services

Kyriacos A. Athanasiou, PhD
University of California, Irvine

BMES Extended Abstract Award Winners:

Graduate Student

Eline Boghaert
Princeton University

Jamie Brugnano
Purdue University

Xiaoyue Chen
Cornell University

Benjamin Filas
Washington University

Akhilesh Gaharwar
Purdue University

Priyaveena Puvanakrishnan
University of Texas, Austin

Erik Taylor
Brown University

Ying Wang
University of California, Davis

Undergraduate Students

Elissa Leonard
Harvey Mudd College

Cecillia Lui
Princeton University

Kevin Mohsenian
University of Minnesota

Sophia Pilipchuk
Illinois Institute of Technology

Ada Tsoi
Stony Brook University

ADDITIONAL MEETINGS & HOSTED RECEPTIONS

Additional Meetings

BMES Board of Directors Meeting

Wednesday, October 12

8:30am – 4:30pm

Marriott, Ballroom A

Organizer: Richard Waugh

AIMBE Board of Directors Meeting

Wednesday, October 12

12:00noon - 5:00pm

Marriott, Capital 1 Room

Organizer: Katie Goodman

Council of Chairs of Biomedical Engineering and Bioengineering Meeting & Dinner

Wednesday, October 12

5:30pm - 9:30pm

The Old State House, 800 Main St., Hartford

Organizer: Don Peterson

ABME Editorial Board Dinner

Wednesday, October 12

7:30pm – 10:00pm

Marriott, Capital 2

Organizer: Michael Weston

BMES National Meetings Committee Meeting

Thursday, October 13

10:00am - 12:00noon

Convention Center, Hall A Office

Organizer: David Vorp

CVET Editorial Board Lunch

Thursday, October 13

12:00noon - 2:00pm

Marriott, Conference Room 5

Organizer: Michael Weston

2012 BMES Annual Meeting Committee Meeting

Friday, October 14

9:30am - 11:00am

Hall A Office

Organizer: Hanjoong Jo

AIMBE Academic Council Meeting

Thursday, October 13

1:30pm - 4:30pm

Marriott, Capital 3 Room

Organizer: Katie Goodman

2012-2013 BMES Orientation & Board of Directors Meeting

Saturday, October 15

10:00am – 2:30pm

Marriott, Ballroom A

Organizer: Richard Waugh

Hosted Receptions

(by invitation only)

Thursday, October 13

Individual organizations have set their own times for their private receptions. Please consult your invitation for the specific time.

Generally receptions are from 8-9:30pm.

Boston University

Marriott, Ballroom E

Case Western Reserve University

Convention Center, Room 12/13

The City College of New York

Marriott, Capital 3 Room

Cornell University

Convention Center The Landing

Georgia Tech & Emory University

Marriott, Private Dining Room (Vivo Restaurant)

Johns Hopkins University

Convention Center, Room 17

International Journal of Nanomedicine

Marriott, Conference Room 4

Marquette University

Marriott, Capital 2 Room

Purdue University

Convention Center, Room 14

Rensselaer Polytechnic Institute

Marriott, Capital 1 Room

Rice University

Convention Center, Room 11

University of California, Berkeley

Convention Center, Room 16

University of California San Diego

Marriott, Ballroom A

University of Maryland

Convention Center, Art Gallery

University of Pennsylvania

Convention Center, Room 15

University of Pittsburgh

Marriott, Ballroom B

University of Texas Austin

Marriott, Ballroom C

University of Washington

Marriott, Conference Room 7

Vanderbilt University

Marriott, Ballroom D

Whitaker International Program Alumni and Grantees

Marriott, Conference Room 5



Whitaker International Fellows And Scholars Program

Grants For Biomedical Engineering Study or Research Abroad

The **Whitaker Program** provides young biomedical engineers 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 Fellow or Scholar experience will ideally advance your career, while also advancing the goal of increased international collaboration in BME.

Activities could include:

- **After BS:** Pursuing an academic year of study or research that leads into graduate study in BME, Business or another field with the possible ability to transfer credit toward an advanced degree.
- **During Graduate Studies:** Conducting study or research at an overseas institution.
- **Internship:** Performing in-depth work in industry or policy-making (related to BME).
- **During/After Ph.D:** Engaging in a culminating experience by conducting research to foster career opportunities and/or link the U.S. and international BME communities.
- **Post-Doctoral:** Pursuing pre-professional post-doctoral work at a leading overseas institution.

Phone: +212-984-5442

www.whitaker.org


INSTITUTE OF
INTERNATIONAL
EDUCATION

Institute of International Education, 809 United Nations Plaza, New York, NY 10017
whitaker@iie.org

Biomedical Engineering Society's Annual Meeting Clinical Track

The Biomedical Engineering Society's Annual Meeting Clinical Track is jointly sponsored by the Warren Alpert Medical School of Brown University and the Biomedical Engineering Society (BMES).

The Alpert Medical School, an accredited provider by the Accreditation Council for Continuing Medical Education, is committed to presenting CME activities that promote quality improvements in health-care and are that are independent of control of commercial interests.

Platform Sessions and specific talks approved for *American Medical Association (AMA) PRA Category 1 Credit* are identified with the following symbol. 

If you are a clinician and would like to submit for CME credit, please stop by the BMES registration desk for the complete packet of information.

CME ACCREDITATION

This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint sponsorship of the Warren Alpert Medical School of Brown University and the Biomedical Engineering Society. The Warren Alpert Medical School of Brown University is accredited by the ACCME to provide continuing medical education for physicians.



CREDIT DESIGNATION

Physicians: The Warren Alpert Medical School of Brown University designates this live activity for a maximum of 18.5 *AMA PRA Category 1 Credits*.™ Physicians should only claim credit commensurate with the extent of their participation in the activity.

The following entire sessions have been approved for CME :

Thursday, October 13:

8:30am - 9:30am

PLENARY SESSION

Pritzker Distinguished Lecture

10:30am - 12noon

Novel Biomedical Imaging and Microscopy

1:30pm - 3:00pm

Orthopedic Imaging

4:00pm - 5:30pm

Clinical and Translational Research and Science in Biomedical Engineering

Friday, October 14:

8:30am - 9:30am

PLENARY SESSIONS

Distinguished Achievement Lecture

NIH NIBIB Lecture

10:30am - 12noon

Lasers in Medicine

Models and Practices of Commercialization and Entrepreneurship

Translational Biomedical Engineering: Research to Practice (R2P) - I

1:30pm - 3:00pm

Mechanobiology in the Lung

4:00pm - 5:30pm

Translational Biomedical Engineering: Research to Practice (R2P) - III

Saturday, October 15:

8:30am - 9:30am

PLENARY SESSIONS

Rita Schaffer Memorial - Young Investigator Lecture

Diversity Award Lecture

10:30am - 12noon


Neural Trauma and Repair - I

1:30pm - 3:00pm

Visualization Strategies at the Interface

3:15pm - 4:45pm

Prosthetics Engineering

Look for  next to specific sessions that have been approved for CME credit.

Biomedical Engineering Education

Judy Cezeaux
WNEC

Biomedical Imaging & Optics

Fiorenzo Omenetto
Tufts University
Sergio Fantini
Tufts University

Cardiovascular Engineering

Joyce Wong
Boston University
Jeff Holmes
University of Virginia

Cellular and Molecular Engineering

Clark Hung
Columbia University
Kevin Costa
Mt. Sinai

Devices: Nano to Micro

Tarek Famy
Yale University
Darrel Irvine
Massachusetts Institute of Technology

Drug Delivery Systems

Justin Hanes
Johns Hopkins/University of North Carolina
Suzie Pun
University of Washington

Neural Engineering

Lance Kam
Columbia University
Barclay Morrison
Columbia University

New Frontiers in Bioengineering

Guillermo Ameer
Northwestern University
Rebecca Carrier
Northeastern University

Orthopedic and Rehabilitation Engineering

David Kaplan
Tufts University
Catherine Kuo
Tufts University

Respiratory Engineering

Bela Suki
Boston University
Jason Bates
University of Vermont

Systems Biology, Bioinformatics and Computational Biology

Ann Rundell
Purdue University
Yusheng Feng
University of Texas, San Antonio

Tissue Engineering

Ali Khademhosseini
MIT/Harvard University
Andrea Gobin
University of Louisville

Translational Biomedical Engineering

Donald Peterson
University of Connecticut
Joe Bronzino
BEACON

Undergraduate Research (REU)

Jiro Nagatomi
Clemson University
Rebecca Heise
Virginia Commonwealth University



bme Leaders in Innovation
UNIVERSITY OF MICHIGAN
BIOMEDICAL ENGINEERING
www.bme.umich.edu

- U-M is one of the only universities in the country with top-ranked engineering, medical, and business schools on the same campus.
- With the newly endowed Wallace H. Coulter Translational Research Partnership Program, U-M BME embraces the translation of research into lifesaving technologies.
- The BME design program consistently produces student teams that compete and win awards in design competitions on the national stage.

MichiganEngineering UNIVERSITY OF MICHIGAN

**Thank you to our reviewers
for their time and effort.**

Biomedical Engineering Education and Outreach

Shivaun Archer
David Barnett
Julien Benchetrit
Paul Benkeser
Judy Cezeaux
Colin Drummond
Robert Gettens
Michele Grimm
Connie Hall
Eric Kennedy
Suzanne Olds
Arthur Ritter
Michael Rust
Youseph Yazdi

Biomedical Imaging and Optics

Randy Bartels
Bernard Choi
Michael Choma
Brian Chow
Heather Clark
Mark Cronin-Golomb
Luca Dal Negro
Xue Han
Elizabeth Hillman
Jeffrey Jacot
Evan Morris
Smita Sampath
Erik Shapiro
Siddhartha Sikdar
Hu Tao
Van Toi Vo

Cardiovascular Engineering

Gilda Barabino
Kristen Billiar
Lauren Black
Danny Bluestein
Naomi Chesler
Keith Gooch
Jeff Holmes
Brett Isenberg
Jeffrey Jacot
Deborah Leckband
Baruch Lieber
Elizabeth Lipke
Alison Marsden
Kara McCloskey
Kit Parker
Robert Peattie
Manu Platt

Anne Robertson
Michael Sacks
Craig Simmons
Michael Smith
Laura Suggs
Wei Sun
Joyce Wong

Cellular and Molecular Engineering

Fred Allen
Pen-hsiu Grace Chao
Kevin Costa
Eric Darling
C Dewey Jr
Eno Ebong
Adam Engler
Dan Fletcher
Jianping Fu
Guy Genin
Aaron Goldstein
Henry Hess
Hayden Huang
Clark Hung
Phil LeDuc
Jung-Chi Liao
Wendy Liu
Robert Mauck
Alisa Morss Clyne
David Odde
Alisha Sarang-Sieminski
Alexander Spector
Wei Tan
Sihong Wang
Eda Yildirim-Ayan

Devices: Nano to Micro

Jeffrey Borenstein
Xuanhong Cheng
Junsang Doh
Rebekah Drezek
Shyamsunder Erramilli
Tarek Fahmy
Rong Fan
Andre Gobin
Anjelica Gonzalez
Jongyoon Han
Darrell Irvine
Lance Kam
Roger Kamm
Benjamin Keselowsky
Ali Khadamhossen
Daeyeon Lee
Shuang Liu
J. Christopher Love
Peter Michaely
Sangjun Moon
Niren Murthy
Shashi Murthy
Andre Palmer
Ketul Popat

Mark Saltzman
Gudrun Schmidt
Melody Swartz
Anubhav Tripathi
Andrew Tsourkas

Drug Delivery Systems

Roger Adami
Guillermo Ameer
Debra Auguste
Jeremy Bartlett
Chris Bettinger
Edward Botchwey
Rebecca Carrier
Yupeng Chen
Joel Collier
James Cooper
Michelle Dawson
Craig Duvall
Jordan Green
Eric Grovender
Dean Ho
Pankaj Karande
Erin Lavik
Samir Mitragotri
Michael Perlman
Kaushal Rege
Joonil Seog
Stavroula Sofou
Millicent Sullivan
Horst von Recum
Jian Yang

Neural Engineering

Cameron Bass
Ravi Bellamkonda
Todd Coleman
Tracy Cui
D. Kacy Cullen
Andrew Dunn
Ryan Gilbert
Elizabeth Hillman
Lance Kam
Erin Lavik
Barclay Morrison
Kevin Otto
Kit Parker
Lucas Parra
David Schaffer
John Simeral
Deanna Thompson
Dustin Tyler
Bruce Wheeler
Beth Winkelstein

New Frontiers in Biomedical Engineering

Yupeng Chen
Kris Dahl
Mariah Hahn
Gang Han
Ali Khademhosseini
Hakho Lee
Mohammad Mofrad
Robert Nerem
Manu Platt
Amina Qutub
Cynthia Reinhart-King
Adrian Shieh
Dhananjay Tambe
Chenjie Xu

Orthopedic and Rehabilitation Engineering

Eben Alsberg
Hani Awad
Lawrence Bonassar
Edward Botchwey
David Corr
Irene Georgakoudi
Mark Grinstaff
Christopher Jacobs
Elizabeth Lobo
Helen Lu
Robert Mauck
William Murphy
Yi-Xian Qin
Johnna Temenoff
Sara Wilson
Pamela Yelick

Respiratory Engineering

Jason Bates
Konstantin Birukov
Lauren Black
Donald Gaver
Samir Ghadiali
Robb Glenn
David Kaczka
Kenneth Lutchen
Geoffrey Maksym
Susan Marguiles
Wayne Mitzner
Brett Simon
Michael Smith
Laura Suggs
Bela Suki
Daniel Tschumperlin
Jose Venegas
Christopher Waters
Tilo Winkler

Systems Biology Bioinformatics and Computational Bioengineering

Ioannis Androulakis
Yusheng Feng
Melissa Gardner
Brian Helmke
Oleg Igoshin
Daniel Kamei
John LaDisa
Mohammad Mofrad
Jason Papin
Matteo Pellegrini
Nathan Price
Ravi Radhakrishnan
Sandra Rugonyi
Ann Rundell
Michael Smith

Tissue Engineering

Patrick Alford
Julia Babensee
Ravi Bellamkonda
Chris Bettinger
Jeffrey Borenstein
Xudong Cao
Naomi Chesler
Karen Christman
Peter Crapo
Guohao Dai
Antonio D'Amore
Utkan Demirci
George Engelmayr
Claudia Fischbach-Teschl
Hermann Frieboes
Keith Gooch
Jianjun Guan
Mariah Hahn
Elizabeth Hedberg-Dirk
Yi Hong
Brett Isenberg
Esmail Jabbari
Ehsan Jabbarzadeh
Jeffrey Jacot
Sha Jin
Shiva Kotha
Nic Leipzig
Jun Liao
Elizabeth Lipke
Kara McCloskey
Todd McDevitt
Peter McFetridge
Angel Mercado
William Murphy
Ashwin Nair
Kytai Nguyen
Raquel Perez-Castillejos
Shelly Peyton
Milica Radisic
Anne Robertson
Michael Sacks
Alisha Sarang-Sieminski
Molly Shoichet

Patricia Soucy
Lakeisha Taite
Liping Tang
Sarah Tao
Mark Ungrin
Shyni Varghese
Scott Verbridge
Zhewei Xie
Jian Yang
Yunzhi Yang
Kaiming Ye
Kelvin Yeung
Lijie Zhang
Jun Zhou

Translational Biomedical Engineering

Joseph Bronzino
Larry McIntire
Donald Peterson

Undergraduate Research

Frank Alexis
Li Cao
Kevin Champaigne
Raffaella De Vita
Delphine Dean
Sandy Deitch
John Desjardins
Eno Ebong
Jordan Green
Rebecca Heise
Marian Kennedy
David Kwartowitz
Spencer Lake
Jeoungsoo Lee
Brittany McGowan
Jiro Nagatomi
Shawn Olsen
Devanathan Raghavan
Scott Sell
Charles Taylor
Jonathan Vande Geest
Patricia Wolfe
Scott Wood
Cassandra Wright-Walker

Awards

Jennifer Elisseff
Aaron Goldstein
Daniel Hammer
Larry McIntire
W. David Merryman
Kristina Ropella
Shelly Sakiyama-Elbert
Chris Siedlecki
Scott Simon



PROGRAM



THURSDAY, OCTOBER 13
TODAY'S HIGHLIGHTS**PLENARY SESSION** 8:00am - 9:30am
Ballroom, Convention Center**Robert A. Pritzker**
Distinguished Lecture
Michael L. Shuler, PhD
Cornell University**EXHIBIT HALL OPEN** 9:30am - 5:00pm
Exhibit Hall, Convention Center**POSTER SESSION Thurs A** 9:30am - 1:00pm
Exhibit Hall, Convention Center**PLATFORM SESSIONS Thurs-I** 10:30am - 12:00noon
See pages 60-64, Convention Center**Celebration of Minorities
in BME Luncheon** 12:00noon - 1:30pm
Additional ticket purchase required
Convention Center, Ballroom C**PLATFORM SESSIONS Thurs-2** 1:30pm - 3:00pm
See pages 77-81, Convention Center**POSTER SESSION Thurs B** 1:30pm - 5:00pm
Exhibit Hall, Convention Center**PLATFORM SESSIONS Thurs-3** 4:00pm - 5:30pm
See pages 82-87, Convention Center**CAREER ALUMNI PANEL** 4:00pm - 5:30pm
Ballroom C, Convention Center**RESUME WRITING
WORKSHOP** 5:45pm - 7:15pm
Ballroom C, Convention Center**BMES Town Hall
& Award Ceremony** 5:45pm - 7:15pm**Hosted Receptions**
*Invitation only***Thursday, October 13, 2011**9:30AM - 1:00PM
POSTER SESSION – THU-A**Track: Cardiovascular Engineering****Cardiac Electrophysiology****PS-Thurs-A-1****Dauricine Suppresses Early After Depolarizations and Torsade de Pointes in Rabbit Hearts with Long QT2 Syndrome**A. PARIKH^{1,2}, X.Y. YANG³, F.-D. ZENG³ AND G. SALAMA²¹ Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, ²Department of Medicine, Cardiovascular Institute, University of Pittsburgh, PA, ³Department of Pharmacology, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China**PS-Thurs-A-2****Temporal Evolution of Motor Evoked Potentials in Post Cardiac Arrest Rats**X. JIA¹, Y. MA¹, R. GEOCADIN¹, AND N. V. THAKOR¹¹Johns Hopkins University School of Medicine, Baltimore, MD**PS-Thurs-A-3****Hysteresis in Restitution of Action Potential Duration in a Human Ventricular Myocyte Model**A. AGARWAL¹, AND A. PATWARDHAN¹¹University of Kentucky, Lexington, KY**PS-Thurs-A-4****Adaptive Mesh Refinement for Modeling Electric Propagation in a Realistic Heart**M. A. FUNK¹, AND K. T. NG¹¹New Mexico State University, Las Cruces, NM**PS-Thurs-A-5****Effects of Phase Variation on Formation of Discordant Alternans**L. JING¹, S. CHOURASIA¹, A. AGARWAL¹, AND A. PATWARDHAN¹¹University of Kentucky, Lexington, KY**Track: Cardiovascular Engineering****Cardiac Structure and Function****PS-Thurs-A-6****Low Order Dynamical Model of the Left Ventricle**M. J. MOULTON¹, AND T. W. SECOMB¹¹University of Arizona, Tucson, AZ**PS-Thurs-A-7****Surface Deformation Analysis of the Mouse Heart via Computer Aided Speckle Interferometry**R. HARTNETT¹, P. SWASZEK¹, AND F. VETTER¹¹University of Rhode Island, Kingston, RI**PS-Thurs-A-8****Investigation of the Collagen Structure of Right-Ventricular Myocardium**D. VALDEZ-JASSO¹, H. C. HUNTER¹, M. A. SIMON¹, AND M. S. SACKS¹¹University of Pittsburgh, Pittsburgh, PA

Track: Cardiovascular Engineering**Cardiovascular Fluid Dynamics****PS-Thurs-A-9****Quantification of Variation of Blood Pressure Dynamics During Sleep Apnea**R. ALEX¹, D. E. WATENPAUGH², A. BASHABONYINA¹, G. BHAVE¹, M. AL-ABED¹, S. IYER¹, E. ALTUWAJRI¹, R. ZHANG³, AND K. BEHBEHANI¹¹University of Texas at Arlington, Arlington, TX, ²Sleep Consultants Inc., Fort Worth, TX, ³University of Texas Southwestern Medical Center at Dallas, Dallas, TX**PS-Thurs-A-10****Comparative Study of the Hemodynamics in Different Anastomotic Configurations of Arteriovenous Fistulae**P. MCGAH¹, D. LEOTTA¹, K. BEACH¹, J. RILEY¹, AND A. ALISEDA¹¹University of Washington, Seattle, WA**PS-Thurs-A-11****The Effects Anatomical Variations Have on Collateral Flows within a Realistic Circle of Willis Model**P. FAHY¹, P. DELASSUS¹, P. O FLYNN¹, AND L. MORRIS¹¹Galway Mayo Institute Of Technology (GMIT), Galway, Ireland**PS-Thurs-A-12****The Importance of Extensional Stresses in Hemolysis**L. DOWN^{1,2}, D. PAPAVALSILIOU², AND E. O'REAR^{1,2}¹University of Oklahoma Bioengineering Center, Norman, OK, ²University of Oklahoma School of Chemical, Biological and Materials Engineering, Norman**PS-Thurs-A-13****Assessment of Surgical Planning Accuracy: Comparing Virtual Models to Post-Operative Anatomies**C. SWANSON¹, C. M. HAGGERTY¹, J. ROSSIGNAC¹, K. R. KANTER², M. FOGEL³, AND A. YOGANATHAN¹¹Georgia Tech, Atlanta, GA, ²Children's Hospital of Atlanta, Atlanta, GA, ³Children's Hospital of Philadelphia, Philadelphia, PA**PS-Thurs-A-14****On the Relation Between Left Ventricular Wall Vibrations and Poststenotic Coronary Flow Instabilities**P. MCGAH¹, K. BEACH¹, AND A. ALISEDA¹¹University of Washington, Seattle, WA**PS-Thurs-A-15****The Effect of Flow on Microparticle (MP) Transport to Glass Surfaces**Y-H. LEE¹, M. FRANCIS-SEDLAK¹, A. FOGELSON², AND V. TURITTO¹¹Illinois Institute of Technology, Chicago, IL, ²University of Utah, Salt Lake City, UT**PS-Thurs-A-16****Fluid Mechanical Analysis of Surgically Reconstructed Aortas**L. G. BRACAGLIA¹, C. M. HAGGERTY¹, M. RESTREPO¹, M. A. FOGEL², AND A. YOGANATHAN¹¹Georgia Institute of Technology, Atlanta, GA, ²Children's Hospital of Philadelphia, Philadelphia, PA**PS-Thurs-A-17****The Effects of Implantation Orientation of Bi-leaflet Mechanical Heart Valves in Patient-Specific Left Heart Anatomy**T. B. LE¹, AND F. SOTIROPOULOS²¹University of Minnesota, Saint Paul, MN, ²University of Minnesota, Minneapolis, MN**PS-Thurs-A-18****Effect of Geometry on Particle Flux Distribution at Bifurcations in Low Reynold's Flow**A. KADAM¹, AND M. D. FRAME¹¹Stony Brook University, Stony Brook, NY**PS-Thurs-A-19****Effects of Plasma Viscosity on Erythrocyte Cell Free Layer Width in Arterioles After Moderate Hemodilution**O. YALCIN¹, M. JIVANI¹, P. CABRALES¹, AND P. JOHNSON¹¹University of California, San Diego, La Jolla, CA**PS-Thurs-A-20****Pulsatile Flow Model of the Arteriovenous Vascular Access Fistula with Nonlinear Elements**V. S. BHATNAGAR¹, W. D. PAULSON², AND S. A. JONES³¹Louisiana Tech University, Ruston, LA, ²Medical College of Georgia, Augusta, GA, ³Louisiana Tech University, Ruston, LA**PS-Thurs-A-21**

MOVED TO PS-FRI-B-31

Track: Cellular and Molecular Engineering**Cell Adhesion****PS-Thurs-A-22****Immobilized SDF-1 Modulates Selectin-Mediated Capture of Cancer Cells Under Flow**E. A. HEDGES¹, A. HUGHES¹, J. L. LIESVELD², AND M. R. KING¹¹Cornell University, Ithaca, NY, ²University of Rochester School of Medicine and Dentistry, Rochester, NY**PS-Thurs-A-23****Lubricin as a Novel Protein Coating to Reduce Bacteria Adhesion and Proliferation**G. E. ANINWENE II¹, E. N. TAYLOR¹, A. MEI¹, G. D. JAY^{1,2}, AND T. J. WEBSTER¹¹Brown University, Providence, RI, ²Brown University School of Medicine, Providence, RI**PS-Thurs-A-24****Strengthening of the P-selectin: PSGL-1 Interaction in Acidic pH**T. CAO¹, T. TAKATANI¹, AND M. R. KING¹¹Cornell University, Ithaca, NY**PS-Thurs-A-25****Cell Adhesive Area and Cell Spreading Area: Two Distinct Cues that Regulate Cell Adhesion Strength**K. ELINENI¹, AND N. GALLANT¹¹University of South Florida, Tampa, FL**PS-Thurs-A-26****Vinculin Binding to Actin Filaments: A Molecular Dynamics Study**J. GOLJI¹, J. LAM¹, AND M. R. MOFRAD¹¹University of California, Berkeley, CA**PS-Thurs-A-27****Specific I,3 FTs Regulating Selectin Binding in Leukocytes: Role of FT-IX in E-selectin Ligands**A. BUFFONE, JR.¹, N. MONDAL¹, K. P. MCHUGH¹, AND S. NEELAMEGHAM¹¹State University of New York at Buffalo, Buffalo, NY**PS-Thurs-A-28****Cell Junctions and Cytoskeleton Regulate Cell-Cell Adhesion Strength**Q. WEI¹, D. REIDLER¹, AND H. HUANG¹¹Columbia University, New York, NY**PS-Thurs-A-29****Chemomechanics of the BCAM/Lu-laminin Complex in Sickle Cell Disease: A Murine Model**J. L. MACIASZEK¹, AND G. LYKOTRAFITIS¹¹University of Connecticut, Storrs, CT

PS-Thurs-A-30**JNK Phosphorylation Regulates Rigidity-dependent Cross Talk between Focal Adhesions and Adherent Junctions**H. YOU¹, A. RANGANATHAN¹, AND S. T. ANDREADIS¹¹University at Buffalo, the State University of New York, Amherst, NY**PS-Thurs-A-31****A Micropatterning and Image Processing Approach to Simplify Measurement of Cellular Traction Forces**S. POLIO¹, K. E. ROTHENBERG¹, D. STAMENOVIC¹, AND M. L. SMITH¹¹Boston University, Boston, MA**PS-Thurs-A-32****Nanofibrous Architectures for Prevention of Bacterial Infection on Biomedical Implants: Effects of Nanofiber Separation Distance and Substrate Material**M. KARGAR¹, J. SAUCKE¹, A. NAIN¹, AND B. BEHKAM¹¹Virginia Tech, Blacksburg, VA**PS-Thurs-A-33****Breast Cancer Cells Express a Novel Molecule (Mac-2bp) and CD44 as E-selectin Ligands**V. S. SHIRURE¹, T. LIU¹, AND M. M. BURDICK¹¹Ohio University, Athens, OH**PS-Thurs-A-34****Factor Xa Activity as an Indicator of Adherent TF-Bearing Microparticles**C. L. HALL¹¹The College of New Jersey, Ewing, NJ**PS-Thurs-A-35****Endothelial Cell Identification Using PEG-ylated Microfluidic Channels**D. VICKERS¹, E. CHORY¹, AND S. MURTHY¹¹Northeastern University, Boston, MA**Track: Cellular and Molecular Engineering****Cellular Engineering & Modeling****PS-Thurs-A-36****Microtubule Assembly Dynamics *In Vivo* in the Presence of Taxol: from the Nanoscale to the Microscale**B. CASTLE¹, J. BERNENS¹, AND D. ODDE¹¹University of Minnesota, Minneapolis, MN**PS-Thurs-A-37****Myosin II Dependent Differential Bacterial Invasion in Normal and Cancer Hepatocytes**J. HONG¹, M. KIM¹, AND J. H. SHIN¹¹KAIST, Daejeon, Korea, Republic of**PS-Thurs-A-38****The Effect of pAAV/IGF-I on Chondrocyte Matrix Production**I. N. AGUILAR¹, S. B. TRIPPEL², AND L. J. BONASSAR¹¹Cornell University, Ithaca, NY, ²Indiana University School of Medicine, Indianapolis, IN**PS-Thurs-A-39****Two-Component Coarse-Grain Model for Erythrocyte Membrane**H. LI¹, AND G. LYKOTRAFITIS¹¹University of Connecticut, Storrs, CT**PS-Thurs-A-40****DOPA Decarboxylase Inhibition for Levodopa Cell Assembly via Selective Membrane Permeability**B. W. PARCHER¹, AND T. DESAI¹¹University of California, San Francisco, San Francisco, CA**PS-Thurs-A-41****Microtubule Length Regulation by Depolymerizing Kinesins**M. K. GARDNER^{1,2}, M. ZANIC², AND J. HOWARD²¹University of Minnesota, Minneapolis, MN, ²Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany**PS-Thurs-A-42****Imbalanced Oncogenic Signaling: Analogies Between Structurally Distinct EGFR Mutants of Relevance to Lung and Brain Cancers**J. M. HALL¹, C. M. FURCHT¹, AND M. J. LAZZARA¹¹University of Pennsylvania, Philadelphia, PA**PS-Thurs-A-43****Modeling the Role of Hydrophobic Structural Coupling in Cellular Biomechanics**C. MIHAI¹, J. CARRIER², O. BUTT³, N. ROMAN⁴, A. STEFAN⁵, A. VELEA⁶, AND N. I. MOLDOVAN⁷¹Department of Biophysics, University of Bucharest, Bucharest, Romania, ²Department of Computer Sciences, Ohio State University, Columbus, OH, ³Department of Biomedical Engineering, Ohio State University, Columbus, OH, ⁴Department of Mathematics, Ohio State University, Lima, OH, ⁵Department of Biomedical Engineering, Lawrence Technological University, Southfield, MI, ⁶National Institute of Physics and Engineering of Materials, Bucharest, Romania, ⁷Davis Heart and Lung Research Institute, Department of Internal Medicine, Ohio State University, Columbus, OH**PS-Thurs-A-44****Stochastic Modeling of the Insulin Sensitivity of Differentiating Adipocytes**N. SHIMON¹, AND A. GEFEN¹¹Tel Aviv university, Tel Aviv, Israel**PS-Thurs-A-45****Platelets Collisions: A Key Event in the Initiation of Micro Thrombi**W. WANG¹, N. MODY¹, AND M. R. KING¹¹Cornell University, Ithaca, NY**PS-Thurs-A-46****The Effects of ECM Fibers on Cellular Stress Transmission**X. MA¹, M. WEBER¹, M. STEVENSON¹, S. N. GHADIALI¹, K. J. GOOCH¹, AND R. T. HART¹¹The Ohio State University, Columbus, OH**PS-Thurs-A-47****Theoretical Modeling of Intra- and Inter-Cellular Spatiotemporal Calcium Patters in Vascular Endothelial and Smooth Muscle Cells**A. Kapela¹, J. Parikh¹, S. Nagaraja¹, and N. M. Tsoukias¹¹Florida International University, Miami, FL**PS-Thurs-A-48****Towards a Computer Simulation Platform for the Glutathione Redox Cycle in an Alzheimer's Transgenic Mouse Model**C. ZHANG¹, C-C. KUO¹, A. W. CHIU¹, AND J. FENG¹¹Louisiana Tech University, Ruston, LA**PS-Thurs-A-49****Synuclein, a Parkinson's Protein that Remodels the Membrane: From Dynamics to Mechanics**A. R. BRAUN¹, AND J. N. SACHS²¹University of Minnesota, Minneapolis, MN, ²University of Minnesota, Minneapolis, MN

Track: Cellular and Molecular Engineering**Cellular and Subcellular Imaging****PS-Thurs-A-50****Detect FAK Activations at Membrane Microdomains by FRET**J. SEONG¹, M. OUYANG¹, T. KIM¹, S. CHIEN², AND Y. WANG¹¹University of Illinois at Urbana-Champaign, Urbana, IL, ²University of California, San Diego, San Diego, CA**PS-Thurs-A-51****Efficient Self-Assembly of DNA-Conjugated Antibody Complexes for High-Bandwidth In Situ Marker Analyses**R. M. SCHWELLER¹, A. R. ROGERS¹, D. Y. DUOSE¹, J. ZIMAK¹, AND M. R. DIEHL¹¹Rice University, Houston, TX**PS-Thurs-A-52****Multiphoton Microscopy Reveals Flawed Pro-Angiogenic Signaling In Breast Tumor Endothelial Cells**J. LAPEIRA SOTO¹, K. S. MADDEN¹, AND E. B. BROWN III¹¹University of Rochester, Rochester, NY**PS-Thurs-A-53****Novel Observation of Live T cell Membrane Organization at the Single Molecular Level Using Dual-Color Photoactivated Localization Microscopy**K-H. ROH^{1,2}, B. F. LILLEMEIER³, AND M. M. DAVIS^{1,2}¹Stanford University, Palo Alto, CA, ²Howard Hughes Medical Institute, Palo Alto, ³Salk Institute, San Diego, CA**PS-Thurs-A-54****Quantitative Analysis Of Flow-Induced Sub-Cellular Movement Of Endothelial Glucocorticoid Receptor**A. NAYEBOSADRI¹, AND J. Y. JI²¹Purdue University, West Lafayette, IN, ²Indiana University Purdue University Indianapolis, Indianapolis, IN**PS-Thurs-A-55****Advanced Analysis of Stem/Progenitor Cell Preparations for Optimization of Therapy**M. ANGHELINA¹, D. JONES¹, C. KOBE¹, E. RAMADAN¹, L. MOLDOVAN¹, T. GEORGE², AND N. I. MOLDOVAN¹¹Davis Heart and Lung Research Institute, Ohio State University, Columbus, OH, ²Amnis Corporation, Seattle, WA**PS-Thurs-A-56****Microinjection of Quantum Dot Fluorescent Protein FRET Probe Measures Changes in Intracellular pH**D. C. SOTTO¹, AND G. BAO¹¹Georgia Institute of Technology, Atlanta, GA**PS-Thurs-A-57****Single Molecule Imaging of Prestin Diffusion after Cholesterol Depletion**R. KAMAR¹, AND R. M. RAPHAEL¹¹Rice University, Houston, TX**PS-Thurs-A-58****Multicolor Cell Staining for Cancer Molecular Characterization**P. ZRAZHEVSKIY¹, AND X. GAO¹¹University of Washington, Seattle, WA**Track: Devices: Nano to Micro****Biomems and Nanotech for Cellular Engineering****PS-Thurs-A-59****Novel Combination of Total Internal Reflection Fluorescent Imaging with Transparent Electrochemical Electrodes to Record Exocytosis of Single Vesicles**X. LIU¹, AND K. D. GILLIS¹¹University of Missouri-Columbia, Columbia, MO**PS-Thurs-A-60****Microwell Arrays for Dynamically Tracking the Functional Activity of Individual Natural Killer Cells**Y. J. YAMANAKA¹, M. SIPS², G. ALTER², AND J. C. LOVE^{1,2}¹Massachusetts Institute of Technology, Cambridge, MA, ²The Ragon Institute of MGH, MIT, and Harvard, Boston, MA**PS-Thurs-A-61****Assessing Cellular Neurite Guidance Cues Using Microwells**S. CHEN¹, AND M. M. MAHARBIZ¹¹University of California, Berkeley, CA**PS-Thurs-A-62****Profiling the Secretome of Glioma Cells by Spotbarcode Cytometry**J. WANG¹, D. THAM¹, H. AHMAD¹, AND J. R. HEATH¹¹California Institute of Technology, Pasadena, CA**PS-Thurs-A-63****Combined Experimental and Mathematical Approach to Study Microfabrication-Based Cell Migration**S. SARKAR¹, B. L. BUSTARD¹, J. F. WELTER¹, AND H. BASKARAN¹¹Case Western Reserve University, Cleveland, OH**PS-Thurs-A-64****Electrochemical Measurement of Electroporation-induced Chloride-stimulated Exocytosis on Microchips**J. GHOSH^{1,2}, X. LIU^{1,2}, AND K. D. GILLIS^{1,2}¹University of Missouri, Columbia, MO, ²Dalton Cardiovascular Research Center, Columbia, MO**PS-Thurs-A-65****Design, Testing and Analysis of a Novel Microfluidic Flow Device that Assays the Mechanism and Dynamics of Platelet Adhesion and Aggregation**N. MONDAL¹, K. W. OH¹, AND S. NEELAMEGHAM¹¹State University of New York at Buffalo, Buffalo, NY**PS-Thurs-A-66****Dielectrophoretic Spheroid Formation in High Conductive Medium**E. A. HENSLEE¹, H. FATOYINBO¹, M. P. HUGHES¹, AND F. H. LABEED¹¹University of Surrey, Guildford, United Kingdom**PS-Thurs-A-67****Transport Characteristics of Bilayer Device for Cell Culture and Tissue Development**N. K. INAMDAR¹, L. G. GRIFFITH², AND J. T. BORENSTEIN¹¹Draper Laboratory, Cambridge, MA, ²MIT, Cambridge, MA**PS-Thurs-A-68****A Novel Multiplexing Approach For Addressing Electrode Arrays With Reduced Connections**J. YAO^{1,2}, AND K. GILLIS^{1,2}¹University of Missouri, Columbia, MO, ²Dalton Cardiovascular Research Center, Columbia, MO**PS-Thurs-A-69****Multi-scale Multi-object Bio-patterning**S. ZHAO¹, Y. LI¹, A. REVZIN¹, AND T. PAN¹¹University of California, Davis, CA

PS-Thurs-A-70**Microfluidic Co-culture System to Study Soluble Factor Signaling in Epithelial Ovarian Cancer**G. J. CZAPLEWSKI¹, AND P. K. KREEGER¹¹University of Wisconsin-Madison, Madison, WI**PS-Thurs-A-71****Cellular Sensing and Responses to Nanotopography**W. CHEN¹, Y. SUN¹, AND J. FU²¹University of Michigan, Ann Arbor, MI**PS-Thurs-A-72****Live Cell Array for Real Time Monitoring of Pathway Activation During Myogenic Differentiation of Mesenchymal Stem Cells**J. MOHARIL¹, P. LEI¹, J. TIAN¹, AND S. T. ANDREADIS^{1,2}¹University at Buffalo-SUNY, Amherst, NY, ²Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY**PS-Thurs-A-73****A Novel In Vitro Microfluidic Blood-Brain Barrier Model**B. PRABHAKARPANDIAN¹, M.-C. SHEN¹, J. NICHOLS¹, I. MILLS¹, M. ASCHNER², AND K. PANT¹¹CFD Research Corporation, Huntsville, AL, ²Vanderbilt University Medical Center, Nashville, TN**Track: Devices: Nano to Micro****Biosensors, Bio-Interfaces and Implantable Devices****PS-Thurs-A-74****An Electro-Deposited IrOx Thin Film pH Sensor**C. M. NGUYEN¹, H. CAO¹, W. D. HUANG¹, AND J.-C. CHIAO¹¹University of Texas at Arlington, Arlington, TX**PS-Thurs-A-75****Microfluidic Human Blood Plasma Separation**R. ZHONG¹, N. WU¹, AND Y. LIU¹¹West Virginia University, Morgantown, WV**PS-Thurs-A-76****Direct Printing of Frequency Tunable RFID Antennas on Shrinkable Substrates**M. YANG¹, H. TAO¹, M. KHINE², AND F. OMENETTO¹¹Tufts University, Medford, MA, ²University of California, Irvine, Irvine, CA**PS-Thurs-A-77****Development of Implantable Single Component Resonant Circuits for Wireless Force Sensing**R. A. WACHS¹, K. P. COLE¹, D. L. FIORELLA¹, M. ALLEY¹, AND E. H. LEDET¹¹Rensselaer Polytechnic Institute, Troy, NY**PS-Thurs-A-78****Electrochemical Detection of Pyocyanin for Single Cell Studies**T. A. WEBSTER¹, A. P. FUSCO¹, C.-W. KUO¹, AND E. D. GOLUCH¹¹Northeastern University, Boston, MA**PS-Thurs-A-79****Neurons as Biosensors: Examining Toxicity with Fluorescence**H. P. KUTOSKY¹, R. K. WILLITS², S. D. MINTNER¹, AND A. B. HARKINS¹¹Saint Louis University, St. Louis, MO, ²University of Akron, Akron, OH**PS-Thurs-A-80****Single-molecule Discrimination of Thymine-Mercury-Thymine Complex in a Nanopore Sensor for Ultrasensitive Detection of Contaminating Mercury (II) Ion**I. KANG¹, C. REAGAN¹, AND L.-Q. A. GU¹¹University of Missouri, Columbia, MO**PS-Thurs-A-81****Colorimetric Determination of Oxygen Tension within Tissue Engineering Scaffolds**P. BHAGWAT¹, J. STUKEL², C.-S. KIM¹, AND D. HENTHORN²¹Missouri University of Science and Technology, Rolla, MO, ²Saint Louis University, Saint Louis, MO**PS-Thurs-A-82****A Wireless and Batteryless Data Acquisition System for Biomedical Implants**V. LANDGE¹, H. CAO¹, S. THAKAR¹, M. SHETH¹, Y.-S. SEO¹, AND J.-C. CHIAO¹¹University of Texas at Arlington, Arlington, TX**PS-Thurs-A-83****Synthesis of Pt Nanoflower/Polyaniline Composite Nanofibers and Their Application in the Enzymatic Detection of Urea**W. JIA¹, L. SU¹, AND Y. LEI¹¹University of Connecticut, Storrs, CT**PS-Thurs-A-84****Glucose Biosensor Based on Modified Electrode of Polypyrrole-Glucose Oxidase-Modified Multi-Walled Carbon Nanotubes**D. M. SAVANI¹, A. SANTIAGO¹, P. PATRA¹, AND D. BURTON¹¹University of Bridgeport, Bridgeport, CT**PS-Thurs-A-85****Copper Nanowires-based Ultrasensitive Non-enzymatic Sensor for Blood Glucose Monitoring**L. SU¹, Y. ZHANG^{1,2}, D. MANUZZI¹, C. HOU², D. HUO², AND Y. LEI¹¹University of Connecticut, Storrs, CT, ²Chongqing University, Chongqing, China, People's Republic of**PS-Thurs-A-86****Immobilization of Hyaluronic Acid on Surface Enhanced Raman Scattering Substrates Functionalized with Cysteamine**M. A. FIGUEROA¹, J. PATEL¹, K. POURREZAEI¹, AND S. TYAGI¹¹Drexel University, Philadelphia, PA**PS-Thurs-A-87****Impact of Structural Factors on Thermal Sensitivity of Nanocarbon Composites.**E. S. KIRKOR^{1,2}, A. D. SCHRICKER¹, A. SCHEELINE^{1,3}, AND S. K. SINHA^{1,2}¹Anchor Science LLC, Branford, CT, ²University of New Haven, West Haven, CT, ³University of Illinois, Urbana, IL**PS-Thurs-A-88****A Novel Approach for Wireless Communication of In Vivo Data from Freely Moving Research Animals**A. GAILEY¹, K. BERBERIAN¹, B. N. KIM¹, M. LINDAU¹, AND M. G. KAPLITT²¹Cornell University, Ithaca, NY, ²Cornell Weill Medical College, New York, NY**PS-Thurs-A-89****Effect of Hydrodynamic Focusing on Increased Sensitivity of Thermoelectric Method for DNA Sequencing**G. G. NESTOROVA¹, V. L. KOPPARTHY¹, S. M. TANGUTOORU¹, R. GUMMA¹, AND E. J. GUILBEAU¹¹Louisiana Tech University, Ruston, LA**PS-Thurs-A-90****Enhancing In-Field Detection of Bioterrorism Agents Using Aqueous Two-Phase Systems**F. MASHAYEKHI¹, R. Y. CHIU¹, A. M. LE¹, P. M. NAFISI¹, B. M. WU¹, AND D. T. KAMEI¹¹University of California, Los Angeles, CA**PS-Thurs-A-91****Electromagnetic Sensor for Monitoring Blood Coagulation in Brain Phantom**M. A. KANDADAI¹, J. KORFHAGEN¹, J. F. CLARK¹, G. J. SHAW¹, AND O. A. ADEOYE¹¹University of Cincinnati, Cincinnati, OH

PS-Thurs-A-92**Optofluidic Microdevice for Glucose Monitoring Fabricated from Dry Film Photoresist**Z. GAO¹, C-S. KIM¹, AND D. HENTHORN²¹Missouri University of Science and Technology, Rolla, MO, ²Saint Louis University, Saint Louis, MO**PS-Thurs-A-93****Fabrication of Cost Effective Electrode Arrays for Micro Coulter Cell Counters**S. CHO¹, A. ZHANG¹, AND E. SALDIVAR¹¹West Wireless Health Institute, La Jolla, CA**PS-Thurs-A-94****Intermediate Frequency Electrical Modeling Study of DNA Detecting Nanobiosensor**V. U. DESAI¹, S. K. SINHA¹, B. STEBER¹, E. SAPI¹, AND B. ALIANE¹¹University of New Haven, West Haven, CT**Track: Devices: Nano to Micro****Nano to Micro Fluidic Technologies****PS-Thurs-A-95****A Rotary Planar Peristaltic Micropump for Microfluidics**L. T. HOANG¹, P. A. GOULD¹, S. DARBY¹, M. MOORE¹, K. T. SEALE¹, AND J. WIKSWO¹¹Vanderbilt University, Nashville, TN**PS-Thurs-A-96****Isolation of Breast Cancer Cells based on Metastatic Phase Using Contactless Dielectrophoresis**A. D. ROJAS¹, E. SCHMELZ¹, AND R. V. DAVALOS¹¹Virginia Tech, Blacksburg, VA**PS-Thurs-A-97****On Chip Membranes for Physiologically Realistic Microfluidic Models of the Gastrointestinal Tract**M. B. ESCH¹, J. YANG¹, J. H. SUNG¹, J. C. MARCH¹, AND M. L. SHULER¹¹Cornell University, Ithaca, NY**PS-Thurs-A-98****Effect of Particle Shape on Inertial Focusing**M. MASAEI^{1,2}, E. SOLLIER^{1,2}, H. AMINI^{1,2}, S. C. HUR^{1,2}, N. DOSHI³, S. MITRAGOTRI³, AND D. DI CARLO^{1,2}¹University of California Los Angeles, Los Angeles, CA, ²California NanoSystems Institute, Los Angeles, ³University of California Santa Barbara, Santa Barbara, CA**PS-Thurs-A-99****Computational Models of Interactions Between Light and Photocatalytic Thin Film Devices**A. E. PERRIN^{1,2}, S. M. MIJAILOVICH^{1,2}, P. M. MARTIN^{1,2}, AND R. J. GILBERT^{1,2}¹Steward St. Elizabeth's Medical Center, Brighton, MA, ²Tufts School of Medicine, Boston, MA**PS-Thurs-A-100****A Biopolymer System for Gentle and Efficient Cell Recovery from Microfluidic Cell Capture Devices**A. SHAH¹, J. CICILIANO², S. MAHESWARAN², D. HABER³, AND M. TONER²¹Harvard-MIT Division of HST, Charlestown, MA, ²MGH, Charlestown, MA, ³MGH/HM, Charlestown, MA**PS-Thurs-A-101****Frequency Discretization in a Dielectrophoretic Trapping Array for Neural Stem/Progenitor Cell and Neuron Sorting**J. L. PRIETO¹, J. LU¹, J. L. NOURSE¹, L. A. FLANAGAN¹, AND A. P. LEE¹¹University of California Irvine, Irvine, CA**PS-Thurs-A-102****Development of a Three Dimensional Contactless Dielectrophoresis Platform**M. B. SANO¹, AND R. V. DAVALOS¹¹Virginia Tech Wake Forest School of Biomedical Engineering, Blacksburg, VA**PS-Thurs-A-103****Superior Screening Technology for Medicines Quality Control in Low-Resource Countries**D. DESAI¹, P. VERMILION¹, N. OUHIB¹, M. DUFFY¹, P. LUKULAY², AND M. ZAMAN¹¹Boston University, Boston, MA, ²United States Pharmacopeia, Rockville, MD**PS-Thurs-A-104****Pillar-induced Mixing in Microchannels**H. AMINI^{1,2}, AND D. DI CARLO^{1,2}¹University of California, Los Angeles (UCLA), Los Angeles, CA, ²California NanoSystems Institute (CNSI), Los Angeles, CA**PS-Thurs-A-105****Pressure Differential Trapping Mechanism for Suspended Micro-particles in Micro-fluidic Devices**A. O. CRUZ-DIAZ¹, AND R. E. DIAZ-RIVERA¹¹University of Puerto Rico Mayaguez Campus, Mayaguez, Puerto Rico**PS-Thurs-A-106****Artificial Microfluidic Vessels to Study Stem cell Mechanobiology**J. ZHOU¹, AND L. NIKLASON^{1,2}¹Yale School of Medicine, New Haven, CT, ²Yale University, New Haven, CT**PS-Thurs-A-107****A Self-Pumping Membrane**I-K. JUN¹, AND H. HESS¹¹Columbia University, New York, NY**PS-Thurs-A-108****Calibration-Free, Microliter per Minute Flow Sensor for Lab-on-a-Chip Applications**J. M. LIPPMANN¹, AND A. P. PISANO²¹State University of New York at Buffalo, USA, Buffalo, NY, ²University of California, Berkeley, Berkeley, CA**PS-Thurs-A-109****Towards Precise Control of the Mechanical and Chemical Milieu of Cells at Length and Time Scales Relevant for Emergent Subcellular Structure and Function**J. ZHANG¹, Y. WANG¹, J. PARENT¹, AND M. L. KNOTHE TATE¹¹Case Western Reserve University, Cleveland, OH**PS-Thurs-A-110****Serpentine Microfluidic Structures Combined with Nanostructured Quartz (1x1 in2) as CD4+ T cell Separation and Counting Devices**S-K. LEE^{1,2}, D-J. KIM², Y. WU¹, Y. LIU¹, AND R. FAN¹¹Yale University, New Haven, CT, ²Chonbuk National University, Jeonju, Korea, Republic of**PS-Thurs-A-111****PEG-DA Hydrogel Microfluidic Devices for Study of Cellular Dynamics under Customizable Chemical Gradient Fields**M. A. TRAORE¹, E. ACOME¹, AND B. BEHKAM¹¹Virginia Tech, Blacksburg, VA**PS-Thurs-A-112****Combining 4D Imaging with Microfluidics to Study Innate Cell Migration *In Vitro***C. E. PETRIE ARONIN¹, N. Y. MORGAN¹, AND R. N. GERMAIN¹¹NIH, Bethesda, MD**PS-Thurs-A-113****Microfluidic Devices for Functional Phenotyping of Human Donors**T. V. COLACE¹, AND S. L. DIAMOND¹¹University of Pennsylvania, Philadelphia, PA

PS-Thurs-A-114

Numerical and Experimental Validation of a Computational Program to Analyze Transport in Micromixers

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PS-Thurs-A-115

Stiffness-dependent Separation of Human Cells in a Microfluidic Device

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PS-Thurs-A-116

3-D Numerical Simulation of Lateral Migration and Deformation of Leukocytes in Microfluidic Flow

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PS-Thurs-A-117

Flow of Blood Cells Through Micro-scale Constricted Geometries: Micro-PIV Studies

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PS-Thurs-A-118

Microfluidic Capture of Corneal Progenitor Cells from Primary Cultures of Human Corneal Stromal Cells

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PS-Thurs-A-119

Migration Characteristics of Prostate Cancer Cells in Response to Epidermal Growth Factor (EGF)

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¹UT Arlington, Arlington, TX, ²UTSW Medical Center at Dallas, Dallas, TX

Track: Drug Delivery Systems**Drug Delivery in Tissue Engineering****PS-Thurs-A-120**

Magnetic Nanoparticle Uptake by Osteoblast Under the Influence of a Magnetic Field

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PS-Thurs-A-121

Vascular Endothelial Growth Factor Release From Self-Assembled Monolayers on Hydroxyapatite

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PS-Thurs-A-122

Directed Control of Mesenchymal Stem Cells and Connexin43 Mimetic Peptide for Use in Regenerative Medicine.

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PS-Thurs-A-123

Directed Blood Vessel Growth Using Microfiber Patches Assembled Through *In Situ* Electrospinning and Electrospaying

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¹University of Illinois, Urbana, IL, ²Institute of Genomic Biology, Urbana, ³Chung-Ang University, Seoul, Korea, Republic of

PS-Thurs-A-124

The Effects of Hydrogel Chemical and Physical Properties on Protein Release from 3D Photopolymerizable Networks

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¹Stanford University, Stanford, CA

PS-Thurs-A-125

Effects of Surfactants on Properties of PLGA Nanoparticles

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¹University of Texas at Arlington, Arlington, TX

PS-Thurs-A-126

Poly(ethylene glycol) Microgels as Drug Delivery Vehicles

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PS-Thurs-A-127

Synthesis and Characterization of a Bi-layered, Nanofibrous Scaffold for Drug Delivery Applications

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PS-Thurs-A-128

Interplay of Matrix Rigidity and Cell Population for Non-viral BMP-gene Delivery

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PS-Thurs-A-129

PLGA-Nanoporous Silicon Composite Microspheres for Enhanced Loading and Controlled Release of Osteogenic Factors: *In vitro* and *In vivo* Characterization

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PS-Thurs-A-130

Modeling of Release of Bioactive Molecules from Nanofiber Meshes

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PS-Thurs-A-131

Functionalized Photocrosslinked Dextran Hydrogels for Sustained, Localized Delivery of siRNA

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PS-Thurs-A-132

Stimuli-Responsive Microspheres for Sustained Protein Delivery to Ischemic Environments

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Track: Neural Engineering**Cellular and Molecular Neurophysiology****PS-Thurs-A-133**

Immuno Microbiosensor for *In Vitro* Diagnosis of Alzheimer's Disease

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PS-Thurs-A-134

Helix Aspersa Neuronal Process Growth in Culture

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PS-Thurs-A-135**Transport of mRNA in the Projections of Maturing Hippocampal Neurons**G. J. DAVE¹, J. LOVE¹, J. CHETTA¹, AND S. B. SHAH¹¹University of Maryland, College Park, MD**PS-Thurs-A-136****Plastic Effects Of Electrical Stimulation On Slow Waves Activity:****A Computational Study**D. REATO¹, M. BIKSON¹, AND L. C. PARRA¹¹The City College of New York, New York, NY**PS-Thurs-A-137****Acute Stress Disrupts Emotional Memories**J. H. BLAISE¹, AND M. SUNAY¹¹Trinity College, Hartford, CT**PS-Thurs-A-138****Suppression of Hyperactivity in the Hippocampus using Targeted Optogenetic Stimulation**T. P. LADAS¹, L. GONZALEZ-REYES¹, AND D. M. DURAND¹¹Case Western Reserve University, Cleveland, OH**Track: Neural Engineering****Neural Electrode Tissue Interface****PS-Thurs-A-139****Neurotoxicity of Serum: Blood-Brain Barrier Breakdown and Neuronal Loss around Neural Electrodes**G. GOYAL¹, AND Y. ZHONG¹¹Drexel University, Philadelphia, PA**PS-Thurs-A-140****Flexible Probes for Neural Activity Recording**E. ISMAILOVA¹, T. DOUBLET^{2,3}, D. KHODAGHOLY¹, P. QUILICHINI², A. GHESTEM², S. YOON YANG⁴, C. BERNARD², AND G. G. MALLIARAS¹¹EMSE/CMP, Gardanne, France, ²INSERM U 781, Marseille, France, ³Microvitae Technologies, Gardanne, France, ⁴Cornell University, Ithaca, NY**PS-Thurs-A-141****Quantitative Assessment of Effects of Poly(ethylene Glycol) on Responses of Primary Cortical Cells to Microwire In Vitro**S. SOMMAKIA¹, J. L. RICKUS¹, AND K. J. OTTO¹¹Purdue University, West Lafayette, IN**PS-Thurs-A-142****Recent Insights Gathered Through Imaging the Intact Neural Electrode-Tissue Interface**A. J. WOOLLEY¹, H. A. DESAI¹, AND K. J. OTTO¹¹Purdue University, West Lafayette, IN**PS-Thurs-A-143****Neurotrophic Electrodes as Reliable Central Nervous System Interfaces**R. S. OAKES¹, AND M. TABIB-AZAR¹¹University of Utah, Salt Lake City, UT**PS-Thurs-A-144****Novel 3D Stacking Approach for MEMS Microelectrodes to Create High Density Neural Interfaces**J. SUTANTO¹, R. KORB¹, M. OKANDAN², M. BAKER², AND J. MUTHUSWAMY¹¹Arizona State University, Tempe, AZ, ²Sandia National Laboratory, Albuquerque, NM**PS-Thurs-A-145****A Current-Limited Low-Voltage Design For Transcranial Direct Current Stimulation**A. RAHMAN¹, C. HAHN¹, L. C. OLIVEIRA¹, AND M. BIKSON¹¹City College of New York, CUNY, New York, NY**PS-Thurs-A-146****Flexible Neural Electrode Arrays**V. TOLOSA¹, A. TOOKER¹, K. SHAH¹, T. DELIMA¹, H. SHETH¹, M. SHUSTEFF¹, AND S. PANNU¹¹Lawrence Livermore National Laboratory, Livermore, CA**Track: Neural Engineering****Neural Engineering Technology I****PS-Thurs-A-147****Autonomic Function Assessment in Epileptic Patients Using Kernel Method**A. K. KAMAL¹¹TTU, Cookeville, TN**PS-Thurs-A-148****Logarithmic ISI Distributions Enable Robust Neuronal Information Estimates**A. DORVAL¹¹University of Utah, Salt Lake City, UT**PS-Thurs-A-149****High-density Surface EMG Denoising with Spectrum Interpolation and Empirical Mode Decomposition**X. ZHANG¹, AND P. ZHOU¹¹Rehabilitation Institute of Chicago, Chicago, IL**PS-Thurs-A-150****Multi-Neural Chip Reader System for Parallel Neural Activity Monitoring of Cultured Neuronal Networks**J. MYOUNG¹, M. J. JANG¹, AND Y. NAM¹¹KAIST, Daejeon, Korea, Republic of**PS-Thurs-A-151****On Low Frequency Entrainment Using Auditory Steady State Responses**R. PALANIAPPAN¹¹University of Essex, Colchester, United Kingdom**PS-Thurs-A-152****Motor Unit Discrimination in ALS Using Single Channel Surface EMG**Q. LI¹, P. BARKHAUS², AND P. ZHOU³¹Southwest University of Science and Technology, Mianyang, China, People's Republic of, ²Medical College of Wisconsin, Milwaukee, WI, ³Rehabilitation Institute of Chicago, Chicago, IL**PS-Thurs-A-153****A Digital Wireless System for Closed-loop Inhibition of Nociceptive Signals**C. ZUO^{1,2}, Y. WANG^{1,2}, C. HAGAINS¹, A. L. LI¹, X. F. YANG², Y. B. PENG¹, AND J.-C. CHIAO¹¹University of Texas at Arlington, Arlington, TX, ²Huazhong University of Science and Technology, Wuhan, China, People's Republic of**PS-Thurs-A-154****Design of a Novel Low-Cost MEA for High-Content/High-Throughput Experiments with Excitable Cells**H. CHARKHKAR¹, G. L. KNAACK¹, G. P. POLLACK², R. ROBBINS², B. E. GNADE², J. J. PANCRIZIO¹, AND E. W. KEEFER³¹George Mason University, Fairfax, VA, ²Univ. of Texas at Dallas, Richardson, TX, ³Plexon Inc., Dallas, TX**PS-Thurs-A-155****Computational Modeling of Pedunculopontine Nucleus Deep Brain Stimulation**K. MOHSENIAN¹, AND M. JOHNSON¹¹University of Minnesota, Minneapolis, MN**PS-Thurs-A-156****Probabilistic Model Predicting Retinal Ganglion Cell Responses to Natural Images**N. IVZAN¹, AND N. M. GRZYWACZ¹¹Department of Biomedical Engineering, University of Southern California, Los Angeles, CA

Track: Neural Engineering**Neural Trauma and Repair****PS-Thurs-A-157**

Controlling Neurosphere-Derived Neuronal Precursor Cell Proliferation on Compliant Substrates

M. L. PREVITERA¹, M. HUI¹, S. PARIKH¹, D. VERMA¹, R. SCHLOSS¹, AND N. LANGRANA¹
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PS-Thurs-A-158

Development of *In Situ* Forming Alginate Hydrogel Blends using Cerebrospinal Fluid for Spinal Cord Repair

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PS-Thurs-A-159

Architecture and Histology of The Sub Arachnoid Space Trabeculae in The Brain

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PS-Thurs-A-160

Investigation of Effective Mass Differences for Helmet to Helmet Impacts in Football: Role of the Neck and Implications on Injury

R. W. DANIEL II¹, S. ROWSON¹, S. DUMA¹, J. MIHALIK², AND K. GUSKIEWICZ²
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PS-Thurs-A-161

An Implemented Method of Quantifying Beading Intensity in Cultured Neurons

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PS-Thurs-A-162

Engineering the Astrocytic Response Using Extracellular Matrix Coated PLLA Electrospun Fibers

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¹Rensselaer Polytechnic Institute, Troy, NY

PS-Thurs-A-163

Quantitative Analysis of Porcine Brain Microstructure via Interruption Testing

M. T. BEGONIA¹, R. PRABHU^{1,2}, M. F. HORSTEMEYER^{1,2}, J. LIAO¹, AND L. N. WILLIAMS¹
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PS-Thurs-A-164

Short-Term Exposure to Magnesium Ions Supports Increased Neural Stem Cells *In Vitro*

T. HOPKINS¹, J. KUHLMANN¹, J. VENNEMEYER¹, AND S. K. PIXLEY¹
¹University of Cincinnati, Cincinnati, OH

PS-Thurs-A-165

A Novel Internal Fixator Device for Peripheral Nerve Regeneration

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PS-Thurs-A-166

Deficiencies in Mechanical Properties of Peripheral Nerves in Fibrillin-2 Knockout Mice

D. REDMOND-WHITE¹, R. STAHL², D. CAREY², AND D. EBENSTEIN¹
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PS-Thurs-A-167

Syngeneic Stem Cells from Olfactory Mucosa Induce Functional Improvement in Brain Injured Inbred Rats

S. KUMARAN¹, C. KREIPKE¹, J. M. CAVANAUGH¹, C. LIMA², J. M. MEYTHALER¹, AND J. D. PEDUZZI¹
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PS-Thurs-A-168

Biomaterials for the Prevention of Post-Surgical Adhesions in Neurosurgery

D. VERMA¹, N. KULKARNI¹, V. SHAH¹, M. PREVITERA¹, R. SCHLOSS¹, AND N. LANGRANA¹
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PS-Thurs-A-169

Encapsulated Mesenchymal Stromal Cells Prevent Degradation in an Organotypic Model of Traumatic Brain Injury

J-P. DOLLE¹, J. BARMINKO¹, S. VERUVA¹, C. MOURE¹, R. SCHLOSS¹, AND M. L. YARMUSH¹
¹Rutgers University, Piscataway, NJ

PS-Thurs-A-170

Changes in Electrophysiological Function after Controlled Deformation of Hippocampal Slice Cultures

W. KANG¹, Z. YU¹, AND B. MORRISON III¹
¹Columbia University, New York, NY

PS-Thurs-A-171

Age and Direction Dependent Viscoelastic Mechanical Properties of the Rat Brain

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¹Columbia University, New York, NY

PS-Thurs-A-172

Novel Device Design for Rapid Testing of Brain Injuries Related to Shock Wave Exposure

C. E. HAMPTON¹, B. A. MATHIE¹, AND P. J. VANDEVORD¹
¹Wayne State University, Detroit, MI

PS-Thurs-A-173

The Cell Microenvironment May Potentiate Neuronal Mild Traumatic Brain Injury

M. A. HEMPHILL¹, B. E. DABIRI¹, J. A. GOSS¹, P. W. ALFORD¹, AND K. K. PARKER¹
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PS-Thurs-A-174

The Effects of Impulsive Pressurization on Human Neuronal Cell Viability and Neurite Length

J. LEE¹, M. NIENABER¹, R. FENG¹, AND J. LIM¹
¹University of Nebraska-Lincoln, Lincoln, NE

PS-Thurs-A-175

Blast-Sensitive Photonic Nanocrystals: A Colorimetric Dosimeter for Blast Traumatic Brain Injury

D. CULLEN¹, K. D. BROWNE¹, Y. XU¹, J. A. WOLF¹, S. YANG¹, M. CHAVKO², AND D. H. SMITH¹
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Track: Biomedical Imaging and Optics**Novel Biomedical Imaging and Microscopy****PS-Thurs-A-176**

Monitoring the Relative Phase of Oscillations of Cerebral Oxy-hemoglobin and Deoxy-hemoglobin Concentrations During Sleep in Human Subjects

M. L. PIERRO¹, A. SASSAROLI¹, P. R. BERGETHON², AND S. FANTINI¹

¹Tufts, Medford, MA, ²Boston University School of Medicine, Boston, MA

PS-Thurs-A-177

Comparison of Localization Algorithms for Three-Dimensional Super-Resolution Microscopy

E. B. KROMANN^{1,2}, M. F. JUETTE^{1,3}, AND J. BEWERSDORF¹

¹Yale University, New Haven, CT, ²The Technical University of Denmark, Kgs. Lyngby, Denmark, ³University of Heidelberg, Heidelberg, Germany

PS-Thurs-A-178

Probing Sepsis and Acute Inflammation Using ICAM-1 Specific mSPIO Nanoparticles

R. WONG^{1,2}, X. CHEN¹, T. LIU¹, Y. A. WANG³, Y. WANG^{1,2}, AND M. JIN¹

¹Cornell University, Ithaca, NY, ²Cornell University Weill Medical College, New York, ³Ocean Nanotech LLC, Fayetteville, AR

PS-Thurs-A-179

Determining Fatty Acids Ratios in Single Cellular Lipid Droplets with CARS Microscopy, Raman Spectroscopy and PLSR

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PS-Thurs-A-180

Field-Portable Reflection and Transmission Microscope

G. BIENER¹, A. GREENBAUM¹, S. O. ISIKMAN¹, K. LEE¹, D. TSENG¹, AND A. OZCAN¹

¹University of California Los Angeles, Los Angeles, CA

PS-Thurs-A-181

Can We Solve Radiative Transfer Equation as Fast as Diffusion Approximation?

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PS-Thurs-A-182

Hybrid True-color Micro-CT System Design and Image Reconstruction

G. WANG¹, Q. XU^{2,3}, AND H. YU²

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PS-Thurs-A-183

A Novel Prototype Hybrid Probe for *In Vivo* Ovary Evaluation

Y. YANG¹, T. WANG¹, AND Q. ZHU¹

¹University of Connecticut, Storrs, CT

PS-Thurs-A-184

In Vivo Measurement of Retinal Venous Pulsatility Using Infrared Imaging

M. GOLZAN¹, A. AVOLIO¹, AND S. L. GRAHAM¹

¹Macquarie University, Sydney, Australia

PS-Thurs-A-185

Biocompatible and pH Sensitive PLGA Encapsulated MnO Nanocrystals for Molecular and Cellular MRI

M. F. BENNEWITZ¹, M. N. NKANSAH¹, G. ULAS¹, G. W. BRUDVIG¹, AND E. M. SHAPIRO¹

¹Yale University, New Haven, CT

Track: Systems Biology, Bioinformatics and Computational Bioengineering**Methodology and Techniques Supporting Computational Bioengineering and Bioinformatics****PS-Thurs-A-186**

Methods in Agent Based Modeling of Reaction-Diffusion Systems: Application in Nucleocytoplasmic Transport and Beyond

M. AZIMI¹, Y. JAMALI¹, AND M. R. MOFRAD¹

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PS-Thurs-A-187

Identifying Perturbed Pathways in Glioblastoma through Network Reconstruction and Analysis

J. A. EDDY¹, AND N. D. PRICE¹

¹University of Illinois, Urbana, IL

PS-Thurs-A-188

Leveraging Modeling Approaches: Reaction Networks and Rules

M. L. BLINOV¹, J. C. SCHAFF¹, AND I. I. MORARU¹

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PS-Thurs-A-189

Meta-Analysis of Maximal Aerobic Capacity and the Influence of Age, Sex, and Training Status

T. J. MALKINSON¹

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PS-Thurs-A-190

Assessment of Autonomic Function in Alzheimer Patients

A. K. KAMAL¹, AND A. KARIM¹

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PS-Thurs-A-191

Mobile Virtual Reality System for Cardiovascular CFD Analysis

D. J. QUAM¹, L. M. ELLWEIN¹, H. OTAKE^{2,3}, R. Q. MIGRINO^{4,5}, AND J. F. LADISA^{1,5}

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PS-Thurs-A-192

University of Rochester Database for the Analysis of Seizure Detection Algorithms (UR DASDA)

G. M. HARTNETT¹, Z. MILSTONE¹, C. M. O'CONNELL¹, G. W. YEE¹, A. HAGAR¹, B. SCHWARTZ¹, S. ERICKSON¹, R. HEISIG¹, M. J. BERG¹, J. L. BURCHFIELD¹, AND L. H. CARNEY¹

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PS-Thurs-A-193

Strong Features Built From Haar Like Features for Abdominal Aortic Aneurysm Centerline Detection

H. ZHANG¹, AND E. FINOL¹

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PS-Thurs-A-194

Experiment Design via Multiple Model Control with Normalization

J. PERLEY¹, V. DINH¹, J. MIKOLAJCZAK¹, G. BUZZARD¹, M. HARRISON¹, AND A. RUNDELL¹

¹Purdue University, West Lafayette, IN

PS-Thurs-A-195

Identifying the Identifiable Parameter Subset in Complex Biological Processes

S. M. PEARCE¹, G. T. BUZZARD¹, AND A. E. RUNDELL¹

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PS-Thurs-A-196**Tracking OMTC Microbeads: Comparison of the Center of Mass and a Curve Fitting Algorithm**E. M. REDOSCHI¹, A. S. FREITAS¹, AND A. M. ALENCAR²¹Escola Politécnica, Universidade de São Paulo, São Paulo, Brazil, ²Instituto de Física, Universidade de São Paulo, São Paulo, Brazil**PS-Thurs-A-197****Constrained Fuzzy Logic for Quantitative Modeling of Biological Networks**M. K. MORRIS^{1,2}, J. SAEZ-RODRIGUEZ³, D. C. CLARKE^{1,2}, P. K. SORGER^{2,4}, AND D. A. LAUFFENBURGER^{1,2}¹Massachusetts Institute of Technology, Cambridge, MA, ²Cell Decision Process Center, Cambridge, ³European Bioinformatics Institute, Hinxton, United Kingdom, ⁴Harvard Medical School Department of Systems Biology, Boston, MA**Track: Systems Biology, Bioinformatics and Computational Bioengineering****Multi-Scale and Multiphysics Modeling****PS-Thurs-A-198****Tools for Multi-scale Cell-to-organ Modeling and Analysis Using Deformable 3D Atlases**J. CARSON¹, I. KAKADIARIS², AND T. JU³¹Pacific Northwest National Lab, Richland, WA, ²University of Houston, Houston, TX, ³Washington University in St. Louis, St. Louis, MO**PS-Thurs-A-199****Collagen Type I Telopeptides Mediate Mechanical Response in Native Collagen Crosslinks**A. L. KWANSA¹, AND J. W. FREEMAN¹¹Virginia Polytechnic Institute & State University (Virginia Tech), Blacksburg, VA**PS-Thurs-A-200****Finite Element Modeling of Tympanic Membrane Surface Vibration in Chinchilla Ear**X. GUAN¹, X. ZHANG¹, W. YOUNG², AND R. GAN¹¹University of Oklahoma, Norman, OK, ²University of Texas at Dallas, Richardson, TX**PS-Thurs-A-201****A Mechanical Model for the Relationship Between Jaw Imbalance and Arm Strength Loss**V. VOVANTOI¹, M. LE¹, N. DANG¹, AND V. NGUYEN¹¹International University of VNU-HCM, Ho Chi Minh, Vietnam**PS-Thurs-A-202****Multijoint Control of the Lower Extremity during Landings with Different Degrees of Hip External Rotation**A. M. ZAFERIOU¹, AND J. L. MCNITT-GRAY¹¹University of Southern California, Los Angeles, CA**PS-Thurs-A-203****Biphasic Finite Element Modeling of Soft Tissue Contact Using Augmented Lagrangian Method**H. GUO¹, AND R. L. SPILKER¹¹Rensselaer Polytechnic Institute, Troy, NY**PS-Thurs-A-204****Timing Transponder and GPS Applications for Endurance Athletics**T. J. MALKINSON¹¹SAIT Polytechnic, Calgary, AB, Canada**PS-Thurs-A-205****Validation Study of a Lower Extremity Musculoskeletal Model for Drop Landing and Stop Jump Tasks**J. S. AKINS¹, AND T. C. SELL¹¹Neuromuscular Research Laboratory, University of Pittsburgh, Pittsburgh, PA**PS-Thurs-A-206****Varying the Frequency Step in Acoustic Reflectometry**E. R. VAZQUEZ CERON¹, J. H. PIERLUISSI², E. M. RODRIGUEZ¹, V. R. BARRALES GUADARRAMA¹, AND R. BARRALES GUADARRAMA¹¹Universidad Autonoma Metropolitana, Mexico D.F., Mexico, ²The University of Texas at El Paso, El Paso, TX**PS-Thurs-A-207****A Virtual Reality System for Diagnosing and Analyzing the Effectiveness of Treatment Methods for Schizophrenia**J. T. ASH¹, J. M. HUGHES¹, AND T. V. PAPHATHOMAS¹¹Rutgers University, Piscataway, NJ**PS-Thurs-A-208****An Evaluation of the Effects of Mass Scaling on Regional and Global Finite Element Human Body Models**N. A. VAVALLE^{1,2}, D. P. MORENO^{1,2}, F. S. GAYZIK^{1,2}, AND J. D. STITZEL^{1,2}¹Virginia Tech Wake Forest Center for Injury Biomechanics, Winston-Salem, NC, ²Wake Forest University School of Medicine, Winston-Salem, NC**PS-Thurs-A-209****Shape Effects in the Selective Thermal Ablation of Tumor Tissues with Superparamagnetic Nanoparticles**A. CERVADORO¹, S. SARANGI², A. BRAZDEIKIS², AND P. DECUZZI¹¹The Methodist Hospital Research Institute, Houston, TX, ²University of Houston, Houston, TX, ³University of Oklahoma, Norman, OK, ⁴University of Texas at Dallas, Richardson, TX**PS-Thurs-A-210****A Model for Intramuscular Fluid Pressure in a Fusiform Skeletal Muscle During Contraction and Stretch**L. CAUSEY¹, S. WEINBAUM¹, AND S. COWIN¹¹The City College of New York, New York, NY**PS-Thurs-A-211****Tendon Transfer of Biarticular Muscles Reduces Balance Recovery: A Computer Simulation Study**A. E. CLARK¹, A. SETH², AND J. A. REINBOLT¹¹The University of Tennessee Knoxville, Knoxville, TN, ²Stanford University, Stanford, CA**PS-Thurs-A-212****Multi-scale Mathematical Modeling to Support Drug Development**D. A. NORDSLETTEN¹, B. Y. YANKAMA², R. UMETON³, V. S. AYYADURAI², AND C. F. DEWEY, JR.²¹King's College, U. London, London, United Kingdom, ²Massachusetts Institute of Technology, Cambridge, MA, ³Sapienza University, Rome, Italy**Track: Tissue Engineering****Bioinspired Materials****PS-Thurs-A-213****Engineered Basal Lamina Membrane for Biomedical Applications**D. TAMULY¹, S. BANDA¹, S. VASUDEVAN¹, P. ABHYANKAR¹, S. PANDEY¹, AND Y-T. KIM¹¹University of Texas at Arlington, Arlington, TX**PS-Thurs-A-214****Strain Dependent Molecular Changes in Protein nanofabrics**L. F. DERAVI¹, P. W. ALFORD¹, B. E. DABIRI¹, A. GROSBERG¹, AND K. K. PARKER¹¹Disease Biophysics Group, Harvard University, Cambridge, MA

Track: Tissue Engineering

Bioreactors and Bioprocessing in Tissue Engineering

PS-Thurs-A-215

Perfusion Bioreactor Accelerates Cryoprotective Agent Permeation into Porcine Articular Cartilage

W. H. DAHL¹, K. G. BROCKBANK², E. D. GREENE², AND T. M. WICK¹¹The University of Alabama at Birmingham, Birmingham, AL, ²Cell and Tissue Systems, Inc., Charleston, SC

PS-Thurs-A-216

Application of Novel Materials and Bone Morphogenetic Protein-7 in Bioartificial Kidneys

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PS-Thurs-A-217

Scaffold-free Tissue Engineered Cartilage using Through-thickness Perfusion

E. GILBERT¹, AND S. ELDER¹¹Mississippi State University, Starkville, MS

PS-Thurs-A-218

Bioreactor Design for Characterization of Effect of Nonchemical Signals on Rabbit Corneal Fibroblasts

E. K. LEONARD¹, AND E. J. ORWIN¹¹Harvey Mudd College, Claremont, CA

PS-Thurs-A-219

Electrospun Scaffolds That Mimic the Native Microstructure of Arteries

W-C. CHAO¹, H-Y. TUAN-MU¹, AND J-J. HU¹¹Department of Biomedical Engineering, National Cheng Kung University, Tainan, Taiwan

PS-Thurs-A-220

Optimizing Oxygen Delivery to a Novel Liver Bioreactor: a Direct 3D Simulation Approach

G. SHI¹, AND R. COGER¹¹University of North Carolina at Charlotte, Charlotte, NC

Track: Tissue Engineering

Cell-Biomaterial Interfaces

PS-Thurs-A-221

Engineering Bioadhesive Polyvinyl Alcohol Hydrogels for Aneurysm Treatment

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PS-Thurs-A-222

Broad Application of a Heptaglutamate Bone-Binding Domain to Functionalize Hydroxyapatite-containing Biomaterials

B. K. CULPEPPER¹, S. L. BELLIS¹, AND A. A. SAWYER²¹University of Alabama at Birmingham, Birmingham, AL, ²Freelance science editor, Singapore, Singapore

PS-Thurs-A-223

Micropatterned Hydrogel Substrates of Tunable Stiffness for Cell Migration Studies

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PS-Thurs-A-224

PLA and PLA-Ionomeric Thin Films Influence Osteoblast Cell Differentiation

C. T. GOMILLION¹, R. K. LAKHMAN², R. M. KASI², R. A. WEISS³, L. T. KUHN¹, AND A. J. GOLDBERG¹¹Department of Reconstructive Sciences, University of Connecticut Health Center, Farmington, CT, ²Institute of Materials Science, University of Connecticut, Storrs, CT, ³Department of Polymer Engineering, University of Akron, Akron, OH

PS-Thurs-A-225

Hydrogel Functionalization with Nucleic Acid Aptamers for Cell Adhesion

N. CHEN¹, Z. ZHANG¹, L. LI¹, AND Y. WANG¹¹University of Connecticut, Storrs, CT

PS-Thurs-A-226

Changes in Cytoskeletal Networks and Nuclear Structures at the Cell-Carbon Nanotube Interface

N. G. DURMUS¹, J. R. PIETRUSKA¹, R. H. HURT¹, AND A. B. KANE¹¹Brown University, Providence, RI

PS-Thurs-A-227

Osteoblast Adhesion and Migration to Surfaces is Predicted by Microcracks

Y. SHU¹, M. BAUMANN¹, E. CASE¹, AND L. MCCABE¹¹Michigan State University, East Lansing, MI

PS-Thurs-A-228

Combinatorial Development of Biomaterials for Improved Human Pluripotent Stem Cell Culture

Y. MEI¹, K. SAHA², R. LANGER¹, R. JAENISCH², AND D. G. ANDERSON¹¹MIT, Cambridge, MA, ²Whitehead Institute for Biomedical Research, Cambridge, MA

PS-Thurs-A-229

The Effects of of and Poly (Vinylidene Fluoride) Polymorphs with Varying Surface Topographies on Cell Attachment and Proliferation

Y. LOW¹, M. NATARAJAN¹, F. BOEY¹, AND K. NG¹¹Nanyang Technological University, Singapore, Singapore

PS-Thurs-A-230

VEGF in PEG Hydrogels Up-regulates Angiogenic Pathways in Endothelial Cells

A. PORTER¹, C. KLINGE¹, AND A. GOBIN¹¹University of Louisville, Louisville, KY

PS-Thurs-A-231

ECM Evaluation of MC3T3-E1 Cells Cultured on Ti alloys using Electrochemical Techniques

J. A. BUENO-VERA¹, I. DE JESUS¹, AND P. SUNDARAM¹¹University of Puerto Rico Mayaguez Campus, Mayaguez, Puerto Rico

PS-Thurs-A-232

The Effects of Collagen Thin Films upon Osteogenic Differentiation Illuminated by pOBCol2.3GFP Cells

T. L. ESTUS¹, A. J. GOLDBERG¹, AND L. T. KUHN¹¹University of Connecticut, Farmington, CT

PS-Thurs-A-233

Electrospun Polymeric Nanofibers for Controlling the Cellular Modulators of MAPK Signaling in Differentiating Osteoblast Cells.

T. OZDEMIR¹, AND J. L. BROWN²¹Penn State University, State College, PA, ²Penn State University, University Park, PA

PS-Thurs-A-234

Control of Alginate-Encapsulated Mesenchymal Stromal Cells Using Magnetic Nanoparticles

A. GRAY¹, J. BARMINKO¹, T. MAGUIRE¹, R. SCHLOSS¹, AND M. YARMUSH¹¹Rutgers University, Piscataway, NJ

PS-Thurs-A-235**Engineering CSS-coated PCL Electrospun Scaffolds for Antibody Immobilization and Cell Capture**C. COHN¹, Z. ZHA¹, W. TENG¹, S. LEUNG¹, AND X. WU¹¹University of Arizona, Tucson, AZ**PS-Thurs-A-236****The Effects of Titanium Nanopography in Osseointegration**P. SANTIAGO¹, P. SUNDARAM¹ AND N. DIFFOOT-CARLO¹¹University of Puerto Rico, Mayaguez, PR**PS-Thurs-A-237****Development and Characterization of Novel Hybrid Scaffolds for Tissue Engineered Cartilage Interface Studies**B. R. MINTZ¹, AND J. A. COOPER JR.¹¹Rensselaer Polytechnic Institute, Troy, NY**PS-Thurs-A-238****Cryogenic Electrospun Silk Scaffold for In Vitro Mucosal Modeling**A. A. BULYSHEVA¹, G. L. BOWLIN¹, AND W. A. YEUDALL¹¹Virginia Commonwealth University, Richmond, VA

Thursday, October 13, 2011

10:30AM - 12:00PM

PLATFORM SESSION - THU - I

Track: Translational Biomedical Engineering – OP- Thurs-I-1**Education and Promotion of Translational Biomedical Engineering I****Chair:** Paul G. Yock**Convention Center – Room 11**

Entrepreneurship and Product Development in Biomedical Engineering Programs – This session will feature a lively panel of faculty who lead BME programs and courses that have created environments that provide substantial experiential learning opportunities to support student engagement in translation and commercialization of biomedical innovations. Panelists will discuss emerging best practices in innovation, design, technology transfer and entrepreneurship in biomedical engineering education. This session is sponsored by the National Collegiate Inventors and Innovators Alliance (NCIIA).

Panelists include:

- Paul G. Yock, Martha Meier Weiland Professor of Medicine and Director of Biodesign, Stanford University
- Yousef Yazdi, Director of the Center for Bioengineering Innovation and Design (CBID), Johns Hopkins University
- Aileen Huang-Saad, Assistant Director of Academic Programs, College of Engineering Center for Entrepreneurship, University of Michigan
- Andrew DiMeo, Senior Design Director and Assistant Professor UNC/ NCSU Joint Department of Biomedical Engineering

Track: Drug Delivery Systems – OP- Thurs-I-2**New Concepts and Applications in Drug Delivery****Chairs:** Jeffrey Capadona, Suzie Pun**Convention Center – Room 12****10:30AM Thurs-I-2-A****Controlled Release of IGF-I from a Biodegradable Matrix Improves Functional Recovery of Skeletal Muscle from Ischemia/Reperfusion**D. W. HAMMERS¹, C. T. DRINNAN¹, R. P. FARRAR¹, AND L. J. SUGGS¹¹The University of Texas at Austin, Austin, TX**10:45AM Thurs-I-2-B****Delivery of siRNA Nanoparticles for HSV-2 Inhibition**J. M. STEINBACH¹, C. E. WELLER¹, AND W. M. SALTZMAN¹¹Yale University, New Haven, CT**11:00AM Thurs-I-2-C****Characterizing Intracellular Delivery of an MK2 Inhibitor Using Cell Penetrating Peptides**J. BRUGNANO¹, AND A. PANITCH¹¹Purdue University, West Lafayette, IN**11:15AM Thurs-I-2-D****A Novel Securable Hyaluronic Acid-Silk Hydrogel Composite for Controlled Drug Release**R. ELIA¹, D. R. NEWHIDE¹, P. D. PEDEVILLANO¹, G. R. REISS², M. A. FIRPO³, E. W. HSU³, D. L. KAPLAN¹, G. D. PRESTWICH³, AND R. A. PEATTIE¹¹Tufts University, Medford, MA, ²Columbia University Medical Center, New York, NY,³University of Utah, Salt Lake City, UT**11:30AM Thurs-I-2-E****Engineering a Food-grade Bacterium as an Oral Delivery Vehicle for Glucoregulatory Proteins**D. T. NG¹, AND C. A. SARKAR¹¹University of Pennsylvania, Philadelphia, PA**11:45AM Thurs-I-2-F****Evaluation of Polysaccharide-Modified Complexation Hydrogels for Oral Protein Delivery**M. A. PHILLIPS¹, AND N. A. PEPPAS^{1,2}¹University of Texas at Austin, Austin, TX, ²University of Texas at Austin, Austin**Track: Drug Delivery Systems – OP- Thurs-I-3****Nanotechnology Solutions to Drug Delivery - I****Chairs:** Dean Ho, Jian Yang**Convention Center – Room 13****10:30AM Thurs-I-3-A****Targeted and Selective Antimicrobial Delivery System**A. T. QURESHI¹, J. A. HOBDEN², P. B. SAVAGE³, AND D. J. HAYES¹¹Louisiana State University and Louisiana Agricultural Center, Baton Rouge, LA, ²Louisiana Health Sciences Center, New Orleans, LA, ³Brigham Young University, Provo, UT**10:45AM Thurs-I-3-B****Superparamagnetic Iron Oxide Nanoparticles That Decrease Infection Under External Control**E. N. TAYLOR¹, AND T. J. WEBSTER¹¹Brown University, Providence, RI**11:00AM Thurs-I-3-C****Design of Anesthetic Nanoparticle-Based Delivery Systems for Short Term Pain Management**B. D. ULERY¹, L. S. NAIR¹, AND C. T. LAURENCIN¹¹University of Connecticut Health Center, Farmington, CT**11:15AM Thurs-I-3-D****Controlled Chemotherapeutic Delivery via Thermally Responsive Polymer-nanoshell Composites**L. STRONG¹, M. BIKRAM¹, S. SERSHEN¹, AND J. WEST¹¹Rice University, Houston, TX**11:30AM Thurs-I-3-E****Gold Nanoparticle Based Molecular Activated Stealth Chemotherapy**A. Y. LIN¹, J. K. YOUNG¹, L. LUO¹, L. C. KENNEDY¹, AND R. A. DREZEK¹¹Rice University, Houston, TX**11:45AM Thurs-I-3-F****Multifunctional Nanodiamond Drug Delivery Platforms for Cancer Treatment**E. K. CHOW¹, L. K. MOORE², X-Q. ZHANG², M. CHEN², R. LAM², E. ROBINSON², E. OSAWA³, AND D. HO^{2,4}¹University of California, San Francisco, San Francisco, CA, ²Northwestern University, Evanston, IL, ³NanoCarbon Research Institute, Nagano, Japan, ⁴Robert H. Lurie Comprehensive Cancer Center, Chicago

Track: Systems Biology, Bioinformatics and Computational Bioengineering – OP- Thurs-I-4

High Throughput Genomics and Computational Proteomics

Chairs: Jason Papin, Matteo Pellegrini
Convention Center – Room 14

10:30AM Thurs-I-4-A

Metabolic Network Reconstruction and Genome-scale Model of Butanol-producing Strain *Clostridium beijerinckii* NCIMB 8052

C. B. MILNE¹, J. A. EDDY¹, H. P. BLASCHEK¹, AND N. D. PRICE¹

¹University of Illinois, Urbana-Champaign, Urbana, IL

10:45AM Thurs-I-4-B

Evaluation of Normalization Methods in microRNA-Seq Data

L. GARMIRE¹, AND S. SUBRAMANIAM¹

¹University of California San Diego, La Jolla, CA

11:00AM Thurs-I-4-C

Systems Analysis of Epithelial Cell Response to *Clostridium difficile* Toxins

K. D'AURIA¹, G. DONATO¹, M. GRAY¹, G. KOLLING¹, C. WARREN¹, E. HEWLETT¹, AND J. A. PAPIN¹

¹University of Virginia, Charlottesville, VA

11:15AM Thurs-I-4-D

A Systems Approach to Identifying the Global Effects of Genetic Mutations on Cancer Metabolism

E. M. BLAIS¹, R. W. TILGHMAN¹, D. WALTERS¹, T. W. BAUER¹, J. T. PARSONS¹, AND J. A. PAPIN¹

¹University of Virginia, Charlottesville, VA

11:30AM Thurs-I-4-E

Analyzing DNA Methylation Profiles in Mice Using Reduced Representation Bisulfite Sequencing (RRBS)

P-Y. CHEN¹, A. K. GANGULY¹, L. RUBBI¹, S. DEVASKAR¹, AND M. PELLEGRINI¹

¹University of California, Los Angeles, Los Angeles, CA

11:45AM Thurs-I-4-F

Robust Clustering of ERBB Phosphorylation Dynamics Predicts Protein Macromolecular Complex Formation and Reveals a Role for Novel Components of the ERBB Network

K. NAEGLER¹, F. M. WHITE¹, D. A. LAUFFENBURGER¹, AND M. B. YAFFE¹

¹Massachusetts Institute of Technology, Cambridge, MA

Track: Neural Engineering – OP- Thurs-I-5

Cellular and Molecular Neurophysiology

Chairs: Lance Kam, David Schaffer
Convention Center – Room 15

10:30AM Thurs-I-5-A

Mapping Calcium-activated Potassium Channels (SK) in Living Neurons Using Single Molecule Force Spectroscopy

J. L. MACIASZEK¹, A. TZINGOUNIS¹, AND G. LYKOTRAFITIS¹

¹University of Connecticut, Storrs, CT

10:45AM Thurs-I-5-B

Synaptic Pathway-Dependent Effects of DC Electric-Fields In Rat Cortical Brain Slices

A. RAHMAN¹, D. REATO¹, L. C. PARRA¹, AND M. BIKSON¹

¹City College of New York, CUNY, New York, NY

11:00AM Thurs-I-5-C

Multicompartmentalized Microfluidic Primary Culture Platform for the Study of Fast Axonal Transport in Neurons

H. CAICEDO¹, T. SARMA¹, G. PIGINO¹, AND S. BRADY¹

¹University of Illinois at Chicago, Chicago, IL

11:15AM Thurs-I-5-D

Spinal Neuronal Hyperexcitability is Induced Within 1 Day of a Painful Facet Joint Injury

N. CROSBY¹, AND B. A. WINKELSTEIN¹

¹University of Pennsylvania, Philadelphia, PA

11:30AM Thurs-I-5-E

Migration of Microglia Is Modulated by Amyloid Beta during the Progression of Alzheimer Disease

H. CHO^{1,2}, E. HUDRY¹, M. TONER^{1,2}, H. T. BRADLEY¹, AND D. IRIMIA^{1,2}

¹Massachusetts General Hospital, Charlestown, MA, ²Harvard Medical School, Charlestown, MA

11:45AM Thurs-I-5-F

Very-low Carbohydrate Diet Reduces Long-Term Potentiation in the Dentate Gyrus of Freely-behaving Rats

D. N. RUSKIN¹, J. L. KORANDA², S. A. MASINO¹, AND J. H. BLAISE¹

¹Trinity College, Hartford, CT, ²University of Chicago, Chicago, IL

Track: Orthopedic and Rehabilitation Engineering – OP- Thurs-I-6

Orthopedic Bioengineering

Chairs: Lawrence Bonassar, Pamela Yelick
Convention Center – Room 16

10:30AM Thurs-I-6-A

Enzyme-Sensitive Adhesives for On-Demand Separation in 3D Co-Culture Platforms

S. K. HAMILTON¹, N. C. BLOODWORTH¹, C. S. MASSAD¹, T. M. HAMMOUDI¹, H. LU¹, AND J. S. TEMENOFF^{1,2}

¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA

10:45AM Thurs-I-6-B

Analysis of Bone Ongrowth and Ingrowth of Retrieved Porous Tantalum-Coated Tibial Trays

J. A. HANZLIK¹, D. W. MACDONALD¹, J. S. DAY^{1,2}, G. R. KLEIN³, H. B. LEVINE³, M. A. HARTZBAND³, C. M. RIMNAC⁴, J. PARVIZ⁵, AND S. M. KURTZ^{1,2}

¹Drexel University, Philadelphia, PA, ²Exponent Inc, Philadelphia, ³Hartzband Center for Hip & Knee Replacement, Paramus, NJ, ⁴Case Western Reserve University and University Hospitals Case Medical Center, Cleveland, OH, ⁵Rothman Institute, Philadelphia, PA

11:00AM Thurs-I-6-C

Injury Risk from Repeated Axial Loading in the Lumbar Spine

A. L. SCHMIDT¹, C. R. BASS¹, K. A. LYONS¹, G. PASKOFF², AND B. SHENDER²

¹Duke University, Durham, NC, ²NAVAIR, Patuxent River, MD

11:15AM Thurs-I-6-D

Inadequate Bone Compensatory Approaches to Diet-Induced Obesity

A. TSOI¹, M. BOTROS¹, E. FIEVISOHN¹, M. CHAN¹, AND C. RUBIN¹

¹Stony Brook University, Stony Brook, NY

11:30AM Thurs-I-6-E

Bone Tissue Quality Determination of Mice Through Novel Reference Point Indentation Technique

M. LENDHEY¹, J. BASTA-PLIAKIC¹, O. KENNEDY¹, D. BRIMER², AND M. SCHAFFLER¹

¹The City College of CUNY, New York, NY, ²Active Life Scientific Inc., Santa Barbara, CA

11:45AM Thurs-I-6-F

Partial Preservation and Restoration of Bone Lost to Disuse with Bisphosphonate and Remobilization

P. E. PALACIO MANCHENO¹, D. BAJAJ², M. B. SCHAFFLER¹, L. CARDOSO¹, AND J. C. FRITTON²

¹City College of New York, New York, NY, ²New Jersey Medical School / University of Medicine & Dentistry of New Jersey, Newark, NJ

Track: Biomedical Imaging and Optics – OP-Thurs-I-7

Novel Biomedical Imaging and Microscopy

Chairs: Michael Choma, Elizabeth Hillman
Convention Center – Room 17

10:30AM Thurs-I-7-A

Optical Sensing of Cell Nano-Architecture During Early Carcinogenesis: Implications to Colorectal Cancer Screening

D. DAMANIA¹, H. SUBRAMANIAN¹, Y. ZHU¹, L. CHERKEZYAN¹, Y. STYPULA¹, M. DELACRUZ², C. A. WHITE¹, P. PRADHAN¹, H. K. ROY², AND V. BACKMAN¹

¹Northwestern University, Evanston, IL, ²Northshore University Healthsystem, Evanston, IL

10:45AM Thurs-I-7-B

Real-time Optical-Sectioning Microscopy for Guiding Brain tumor Resection Using Molecular Probes

S. Y. LEIGH¹, D. WANG¹, M. J. MANDELLA², O. SOLGAARD², C. H. CONTAG², AND J. T. LIU¹

¹Stony Brook University, Stony Brook, NY, ²Stanford University, Stanford, CA

11:00AM Thurs-I-7-C

Lensless Optical Tomography On a Chip

S. O. ISIKMAN¹, W. BISHARA¹, S. MAVANDADI¹, F. W. YU¹, S. FENG¹, R. LAU¹, AND A. OZCAN¹

¹University of California, Los Angeles, CA

11:15AM Thurs-I-7-D

Photothermal Optical Coherence Tomography with Gold Nanorod Contrast Agents

J. TUCKER - SCHWARTZ¹, T. MEYER¹, C. DUVALL¹, AND M. SKALA¹

¹Vanderbilt University, Nashville, TN

11:30AM Thurs-I-7-E

Microfluidic Phenotyping of Cilia-Driven Fluid Flow Using Optical Coherence Tomography-Based Particle Tracking Velocimetry

S. JONAS¹, D. BHATTACHARYA¹, M. K. KHOKHA¹, AND M. A. CHOMA¹

¹Yale University, New Haven, CT

11:45AM Thurs-I-7-F

In Vivo Imaging of NIR FRET in Small Animals using Time-resolved Fluorescence Molecular Tomography

V. VENUGOPAL¹, R. WANIEWSKI¹, M. BARROSO², AND X. INTES¹

¹Rensselaer Polytechnic Institute, Troy, NY, ²Albany Medical College, Albany, NY

Track: New Frontiers in Biomedical Engineering – OP-Thurs-I-8

Immunobioengineering and Regenerative Medicine

Chairs: Yupeng Chen, Frank Marini
Convention Center – Room 21

10:30AM Thurs-I-8-A

Enzyme-free Method for Amplifying Detection of Cytokines Released by Single Immune Cells *Ex Vivo*

J. CHOI¹, K. R. LOVE¹, Y. GONG¹, T. M. GIERAHN¹, AND J. LOVE¹

¹Massachusetts Institute of Technology, Cambridge, MA

10:45AM Thurs-I-8-B

Stimulation of CD8+ T-cell Responses by Mucosal Vaccination Via Toll-Like Receptor Agonist-Carrying Nanoparticles

A. V. LI¹, M. YEN¹, J. VELAZQUEZ¹, J. ELKHADER¹, AND D. J. IRVINE^{1,2}

¹Massachusetts Institute of Technology, Cambridge, MA, ²Howard Hughes Medical Institute, Chevy Chase, MD

11:00AM Thurs-I-8-C

Identification of Therapeutic Agent that Expands Muscle Stem Cells in Bioengineered Niche Platform

B. D. COSGROVE¹, P. M. GILBERT¹, AND H. M. BLAU¹

¹Stanford University School of Medicine, Stanford, CA

11:15AM Thurs-I-8-D

Engineered *In Vivo* Erythrocyte-Binding Antigen Induces Immune Tolerance

S. KONTOS¹, K. Y. DANE¹, AND J. A. HUBBELL^{1,2}

¹Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, ²University of Miami Miller School of Medicine, Miami, FL

11:30AM Thurs-I-8-E

Poly(propylene) Sulfide Nanoparticles for Immunomodulating the Tumor Microenvironment

I. C. KOURTIS¹, H. SACHIKO¹, S. KONTOS¹, J. A. HUBBELL¹, AND M. A. SWARTZ¹

¹Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

11:45AM Thurs-I-8-F

Mechanosensitive Costimulation of T Lymphocytes

E. JUDOKUSUMO¹, E. TABDANOV¹, M. DREYER¹, B. AGUILAR¹, AND L. KAM¹

¹Columbia University in the City of New York, New York, NY

Track: Tissue Engineering – OP-Thurs-I-9

Host Response to Biomaterials

Chairs: Julie Babensee, Lijie Zhang
Convention Center – Room 22

10:30AM Thurs-I-9-A

Polymethacrylates Mediated Differential Dendritic Cell Phenotype Through Distinct Transcription Factor Activation Profiles

P. KOU¹, R. PATEL¹, N. PALLASSANA², B. CUNNINGHAM², J. KOHN², AND J. E. BABENSEE¹

¹Georgia Institute of Technology, Atlanta, GA, ²Rutgers University, Piscataway, NJ

10:45AM Thurs-I-9-B

Examining the Effects of Early Stage Inflammation on Implantable Glucose Sensor Performance

M. T. NOVAK¹, F. YUAN¹, AND W. M. REICHERT¹

¹Duke University, Durham, NC

11:00AM Thurs-I-9-C

Macrophages Potentially Promote Stable Vascularization of Engineered Tissue Constructs

C-W. HSU¹, R. A. POCHÉ¹, J. E. SAIK², T. J. VADAKKAN¹, J. L. WEST², AND M. E. DICKINSON¹

¹Baylor College of Medicine, Houston, TX, ²Rice University, Houston, TX

11:15AM Thurs-I-9-D

Spatiotemporal Effects of a Controlled-release Anti-inflammatory Drug on Host Response

T. T. DANG¹, K. M. BRATLIE^{1,2}, S. R. BOGATYREV^{1,2}, X. Y. CHEN¹, R. LANGER¹, AND D. G. ANDERSON¹

¹Massachusetts Institute of Technology, Cambridge, MA, ²Children's Hospital Boston, Boston, MA

11:30AM Thurs-I-9-E

Evaluation of Macroporous Scaffolds and MSCs on Engraftment in a Nonhuman Primate Model

C. L. STABLER¹, S. SUKERT¹, A. RABASSA¹, M. A. WILLMAN¹, E. PEDRAZA¹, N. KENYON¹, C. RICORDI¹, D. M. BERMAN¹, AND N. S. KENYON¹

¹University of Miami, Miami, FL

PS = Poster Session
OP = Oral Presentation

 = Credit approved

11:45AM Thurs-I-9-F**Inflammatory Response-mediated Regulation of Angiogenesis in Bioactive Hydrogels**A. L. ZACHMAN¹, C. M. BRONIKOWSKI¹, O. ORTIZ², K. ZIENKIEWICZ¹, S. W. CROWDER¹, S. A. GUELCHER¹, J. KOHN², H. KLEINMAN², AND H.-J. SUNG¹¹Vanderbilt University, Nashville, TN, ²Rutgers University, Piscataway, NJ, ³National Institute of Health, Bethesda, MD**Track: Tissue Engineering – OP-Thurs-I-10****Cardiovascular Tissue Engineering - I****Chairs:** Karen Christman, Yi Hong
Convention Center – Room 23**10:30AM Thurs-I-10-A****Directed Alignment in 3D Micropatterned Cardiac Tissue Improves Morphology and Contractile Function**J. W. NICHOL^{1,2}, S. YAMANLAR^{1,3}, C. B. HUTSON^{1,3}, S. AL-HAQUE^{3,4}, H. BAE^{1,3}, Y. C. CHEN^{1,3}, L. NGUYEN^{1,3}, M. NIKKHAH^{1,3}, P. ZORLUTUNA^{1,3}, D. M. CROPEK⁵, AND A. KHADEMOSSEINI^{1,3}¹Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, ²Endicott College, Beverly, MA, ³Harvard Medical School, Brigham and Women's Hospital, Cambridge, MA, ⁴University of Toronto, Toronto, Canada, ⁵US Army Corps of Engineers, Champaign, IL**10:45AM Thurs-I-10-B****The Effect of Varying Frequency of Mechanical Stimulation on Engineered Myocardium Twitch Force**K. Y. YE¹, AND L. D. BLACK¹¹Tufts University, Medford, MA**11:00AM Thurs-I-10-C****Long-Term Remodeling of a Tissue Engineered Pulmonary Arterial Conduit**C. E. ECKERT¹, D. GOTTLIEB², J. E. MAYER², AND M. SACKS¹¹University of Pittsburgh, Pittsburgh, PA, ²Children's Hospital Boston, Boston, MA**11:15AM Thurs-I-10-D****Antigen Removal Does Not Compromise Xenograft Properties or Correlate to Histological Acellularity**M. L. WONG¹, AND L. G. GRIFFITHS¹¹University of California, Davis, Davis, CA**11:30AM Thurs-I-10-E****Stiffness Mediated Cardiac Differentiation of Human Mesenchymal Stem Cells in an Injectable Hydrogel**Z. LI¹, X. GUO¹, AND J. GUAN²¹Ohio State University, Columbus, OH, ²Ohio State University, Columbus, OH**11:45AM Thurs-I-10-F****Therapeutic Cardiac Patch with Delivery and Differentiation of Embryonic Stem Cells**M. K. GUPTA¹, D. K. JUNG¹, J. M. WALTHALL¹, R. VENKATARAMAN¹, S. W. CROWDER¹, S. S. YU¹, F. J. BAUDENBACHER¹, A. K. HATZOPOULOS¹, AND H. J. SUNG¹¹Vanderbilt University, Nashville, TN**Track: Devices: Nano to Micro – OP-Thurs-I-1*****Micro and Nanostructured Biomaterials - I****Chairs:** Hojae Bae, Deok-Ho Kim
Convention Center – Room 24**10:30AM Thurs-I-11-A****Cell-Derived, Biomimetic Micropatterning Using Image Guided Laser Scanning Lithography**J. H. SLATER¹, J. C. CULVER², M. E. DICKINSON², AND J. L. WEST¹¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX**10:45AM Thurs-I-11-B****Transparent, Elastomeric and Tough Bio-Nanocomposite Hydrogels from Poly(ethylene glycol) and Silicate Nanoparticles**A. K. GAHARWAR¹, C. P. RIVERA¹, C.-J. WU¹, AND G. SCHMIDT¹¹Purdue University, West Lafayette, IN**11:00AM Thurs-I-11-C****Halloysite Nanotube Coating Applications for Enhanced Capture and Reprogramming of Circulating Tumor Cells**A. D. HUGHES¹, J. C. MATTISON¹, K. RANA¹, B. GREENE², AND M. R. KING¹¹Cornell University, Ithaca, NY, ²BioCytics, Inc., Huntersville, NC**11:15AM Thurs-I-11-D****Reducing Infection on Nanomodified Endotracheal Tubes: A Dynamic Analysis**M. MACHADO¹, K. M. TARQUINIO², AND T. J. WEBSTER¹¹Brown University, Providence, RI, ²Rhode Island Hospital, Providence, RI**11:30AM Thurs-I-11-E****Selenium Nanoclusters for the Prevention of Polyvinyl Chloride-related Infections**J. F. RAMOS¹, P. A. TRAN², AND T. J. WEBSTER¹¹Brown University, Providence, RI, ²Rhode Island Hospital, Providence, RI**11:45AM Thurs-I-11-F****Micro-patterned Homodynamic Niches for Endothelial Regulation of Coagulation on Prosthetic Cardiovascular Devices**C. FRENDL¹, S. TUCKER¹, A. GARCIA² AND J. BUTCHER¹¹Cornell University, Ithaca, NY, ²Georgia Institute of Technology, Atlanta, GA

*Supported by an unrestricted educational grant from

**Track: Cardiovascular Engineering – OP-Thurs-I-12****Cardiovascular Mechanotransduction - I****Chairs:** Deborah Leckband, Michael Smith
Convention Center – Room 25**10:30AM Thurs-I-12-A****Effects of Changing Flow Direction on Endothelial Cells Studied by a Novel In Vitro Flow System**C. WANG¹, AND M. SCHWARTZ^{1,2}¹University of Virginia, Charlottesville, VA, ²Yale University, New Haven, CT**10:45AM Thurs-I-12-B****Endothelial Glycocalyx Visualization and Mechanotransduction via Heparan Sulfate and Glypican-1**E. E. EBONG^{1,2}, D. C. SPRAY², AND J. M. TARBELL¹¹City College of New York, New York, NY, ²Albert Einstein College of Medicine, Bronx, NY**11:00AM Thurs-I-12-C****Fibronectin Assembly Regulates Structural Dynamics and Cell Migration Under Shear Stress**R. E. EVANS¹, AND B. P. HELMKE¹¹University of Virginia, Charlottesville, VA**11:15AM Thurs-I-12-D****Laser Speckle Flowmetry for Measuring Hemodynamic Changes Throughout Large Microvascular Networks**J. K. MEISNER¹, S. SUMER¹, J. SONG¹, AND R. J. PRICE¹¹University of Virginia, Charlottesville, VA**11:30AM Thurs-I-12-E****Multiscale Structural and Functional Adaptation to Extrinsic Cyclic Loading in Engineered Cardiac Tissue**M. L. MCCAIN¹, S. P. SHEEHY¹, J. A. GOSS¹, AND K. K. PARKER¹¹Disease Biophysics Group, Harvard University, Cambridge, MA

11:45AM Thurs-I-12-F**Effects of Shear Stress on the Forces Across Endothelial Junction Molecules VE-cadherin and PECAM-1**D. E. CONWAY¹, AND M. A. SCHWARTZ¹¹University of Virginia, Charlottesville, VA**Track: Cardiovascular Engineering – OP-Thurs-I-13****Cardiovascular Modeling and Measurement - I****Chairs:** Kristen Billiar, Lauren Black**Convention Center – Room 26****10:30AM Thurs-I-13-A****Mechanical Flow Restoration in Acute Ischemic Stroke: A Model System of Cerebrovascular Occlusion**J. Y. CHUEH¹, A. K. WAKHLOO¹, AND M. J. GOUNIS²¹University of Massachusetts Medical School, Worcester, MA**10:45AM Thurs-I-13-B****Cohesive Zone Modeling of Abdominal Aortic Aneurysm Rupture**É. O MAIRTÍN¹, AND P. MCGARRY¹¹National University of Ireland, Galway, Galway, Ireland**11:00AM Thurs-I-13-C****Frequency-dependent Electrochemical Impedance Analysis for Sensitive and Specific Characterization of Rupture-prone Atherosclerotic Lesions**F. YU¹, X. DAI¹, AND T. HSIANG¹¹University of Southern California, Los Angeles, CA**11:15AM Thurs-I-13-D****A 3D Microstructural Artery Model with Collagen Fiber Orientation**H. P. WAGNER¹, Q. WU¹, A. YEH¹, AND J. HUMPHREY²¹Texas A&M University, College Station, TX, ²Yale University, New Haven, CT**11:30AM Thurs-I-13-E****MEA-based Cardiac Muscle Fiber Model to Measure Electrical Conduction Across the Laser-patterned Stem Cells Bridge**Z. MA¹, H. YANG¹, Q. LIU^{1,2}, J. X. YUN¹, AND B. Z. GAO¹¹Clemson University, Clemson, SC, ²Jinan University, Guangzhou, China, People's Republic of**11:45AM Thurs-I-13-F****Estimation of Platelet Adhesion Potential in the Left Coronary Artery**D. A. RUBENSTEIN¹, AND W. YIN¹¹Oklahoma State University, Stillwater, OK**Track: Respiratory Engineering – OP-Thurs-I-14****Multiscale Behavior in the Lung****Chairs:** Robb Glenny, Tilo Winkler**Convention Center – Room 27****10:30AM Thurs-I-14-A****Emergence of Matched Airway and Vascular Trees from Fractal Rules**R. W. GLENNY¹¹University of Washington, Seattle, WA**10:45AM Thurs-I-14-B****Loss of Fractal Scaling in CT Images of Patients with Lymphangioleiomyomatosis**H. PARAMESWARAN¹, S. D. AMIN¹, G. FINLAY², AND B. SUKI¹¹Boston University, Boston, MA, ²Tufts Medical Center, Boston, MA**11:00AM Thurs-I-14-C****Multiscale Deposition of Aerosols in Real vs. Model Airway Tree Geometry**T. GENGENBACH¹, V. HEUVELINE¹, A. SOUALAH², B. SAPOVAL², J. B. GROTBORG³, AND M. FILOCHE²¹Karlsruhe Institute of Technology, Karlsruhe, Germany, ²Ecole Polytechnique, Palaiseau, France, ³University of Michigan, Ann Arbor, MI**11:15AM Thurs-I-14-D****A Multiscale Bidirectionally Coupled Model of The Rodent Respiratory System**S. KABILAN¹, A. P. KUPRAT¹, K. R. MINARD¹, R. E. JACOB¹, J. P. CARSON¹, M. P. HLASTALA², R. A. CORLEY¹, AND D. R. EINSTEIN¹¹Pacific Northwest National Laboratory, Richland, WA, ²University of Washington, Seattle, WA**11:30AM Thurs-I-14-E****Modeling and Quantifying Heterogeneity of Airway Narrowing and the Contribution to Lung Mechanics**D. LEARY¹, A. BRAUNE², T. WINKLER², AND G. MAKSYM¹¹Dalhousie, Halifax, NS, Canada, ²Massachusetts General Hospital and Harvard Medical School, Boston, MA**11:45AM Thurs-I-13-F****Emergent Behavior in Pulmonary Multiscale Models**T. WINKLER¹¹Massachusetts General Hospital and Harvard Medical School, Boston, MA**Track: Cellular and Molecular Engineering – OP-Thurs-I-15****Symposium in Honor of Shu Chien's Birthday - I****Chairs:** Song Li, Geert W. Schmid-Schonbein**Marriott – Ballroom B****10:30AM Thurs-I-15-A****Proteolytic Receptor Cleavage and Failure in Mechanotransduction in the Metabolic Syndrome**G. W. SCHMID-SCHÖNBEIN¹, AND A. CHEN¹¹UCSD, La Jolla, CA**10:45AM Thurs-I-15-B****From a Proteomic-scale method that probes Conformation to Nuclear Mechanobiology of Stem Cells**D. E. DISCHER¹¹University of Pennsylvania, Philadelphia, PA**11:10AM Thurs-I-15-C****The Role of the Glycocalyx in Mechanotransduction**J. M. TARBELL¹, E. EBONG¹, M. NIKMANESH¹, AND Z. SHI¹¹City College / CUNY, New York, NY**11:35AM Thurs-I-15-D****Mechanobiology of Vascular Stem Cells**Z. TANG¹, A. WANG¹, R. DIOP¹, X. LI¹, AND S. LI¹¹University of California, Berkeley, Berkeley, CA

Thursday, October 13, 2011

1:30PM - 5:00PM

POSTER SESSION – THU- B

Track: Cardiovascular Engineering**Cardiovascular Mechanotransduction****PS-Thurs-B-1****Anisotropy Promotes a Mature Gene Expression Profile in Cultured Neonatal Rat Ventricular Myocytes**S. P. SHEEHY¹, P. QIN², E. GORDON², A. GROSBERG¹, L. YOON³, J. G. FALLS³, J. GOSS¹, T. PIPES², X. XU², R. WILLETTE², E. HU², AND K. K. PARKER¹¹Disease Biophysics Group, Wyss Institute for Biologically-Inspired Engineering, Harvard University, Cambridge, MA, ²Glaxo Smith Kline, Philadelphia, PA, ³Glaxo Smith Kline, Research Triangle Park, NC**PS-Thurs-B-2****Variability on Stretch Rescues the Mitochondrial Respiratory Chain in Bovine Smooth Muscle Cells**N. MARTINEZ¹, E. BARTOLÁK-SUKI¹, AND B. SUKI¹¹Boston University, Boston, MA**PS-Thurs-B-3****Endothelial ILK in a Novel Smad2 Dependent Mechanosensitive Signaling Pathway**R. D. SHEPHERD¹, J. DENG¹, M. P. WALSH¹, AND K. D. RINKER¹¹University of Calgary, Calgary, AB, Canada**PS-Thurs-B-4****Syndecan-1 Mediates Endothelial Cell Mechanotransduction in Response to Shear Stress**P. VOJVODIC¹, AND A. BAKER¹¹The University of Texas at Austin, Austin, TX**PS-Thurs-B-5****Substrate Stiffness Promotes Vascular Smooth Muscle Cell Podosome Formation**J. HUYNH¹, AND C. A. REINHART-KING¹¹Cornell University, Ithaca, NY**PS-Thurs-B-6****Shear Stress Regulates Expression of DAPK in Suppressing TNF α -Induced Endothelial Apoptosis**K. RENNIE¹, AND J. Y. JI¹¹Indiana University Purdue University Indianapolis, Indianapolis, IN**PS-Thurs-B-7****Heparan Sulfate Proteoglycan Mediates Shear Stress-induced Endothelial Gene Expression in Mouse Embryonic Stem Cell-Derived Endothelial Cells**M. NIKMANESH¹, Z-D. SHI¹, AND J. M. TARBELL²¹The City College of New York/CUNY, New York, NY, ²The City College of New York/CUNY, New York**PS-Thurs-B-8****Leukocyte Sensitivity to Fluid Flow Stimulation Depends on Membrane Cholesterol-Dependent Fluidity**X. ZHANG¹, J. HURNG², D. RATERI¹, A. DAUGHERTY¹, AND H. SHIN¹¹University of Kentucky, Lexington, KY, ²University of California San Diego, La Jolla, CA**PS-Thurs-B-9****Variable Stretch Regulates NF B Translocation in Cultured Aortic Smooth Muscle Cells**S. MITRA¹, B. SUKI¹, AND E. BARTOLÁK-SUKI¹¹Boston University, Boston, MA**PS-Thurs-B-10****Decoupling of Hemodynamic Parameters *In Vitro* to Determine Their Effect on Vascular Cell Dysfunctions**L. HOFMEISTER¹, C. AUGUSTY¹, A. BOONE¹, I. BAIRD¹, D. K. JUNG¹, J. EDD¹, AND H-J. SUNG¹¹Vanderbilt University, Nashville, TN**PS-Thurs-B-11****Incorrect Stent Sizing Promotes Intimal Hyperplasia: Role of Endothelial Shear Stress and Intramural Wall Stress**H. Y. CHEN¹, I. D. MOUSSA², D. L. BHATT³, AND G. S. KASSAB⁴¹Purdue University, Indianapolis, IN, ²Weill Cornell Medical Center, New York, NY, ³Harvard Medical School, Boston, MA, ⁴IU-Purdue, Indianapolis, IN**Track: Cardiovascular Engineering****Heart Valve Structure and Function****PS-Thurs-B-12****Bioresorbable Acellular Xenograft for Tissue Engineered Mitral and Tricuspid Valve Repair**M. W. GERDISCH¹, AND L. AKLOG²¹St. Francis Heart Center, Indianapolis, IN, ²St. Joseph's Hospital and Medical Center, Phoenix, AZ**PS-Thurs-B-13****Vortex Instability of Transmitral Flow**A. FALAHATPISHEH^{1,2}, AND A. KHERADVAR^{1,2}¹University of California, Irvine, Irvine, CA, ²Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA**PS-Thurs-B-14****Mechanical Properties of Sclerotic Aortic Valve Leaflets**O. CHEBOTAREV¹, K. L. SIDER¹, AND C. A. SIMMONS¹¹University of Toronto, Toronto, ON, Canada**PS-Thurs-B-15****Comparison of Aortic Valve Mechanical Properties between Human and Common Animal Models**C. MARTIN¹, T. PHAM¹, AND W. SUN¹¹University of Connecticut, Storrs, CT**PS-Thurs-B-16****Quantification of Structural Compliance of Aged Human and Porcine Aortic Root**K. LI¹, Q. WANG¹, AND W. SUN¹¹University of Connecticut, Storrs, CT**PS-Thurs-B-17****Assessment of Aortic Root Geometry from 64-slice MDCT Images: A Comparison of Methods**G. A. BOOK^{1,2}, S. ORTIZ¹, Q. WANG¹, C. PRIMIANO³, AND W. SUN¹¹University of Connecticut, Storrs, CT, ²Hartford Hospital, Hartford, ³Hartford Hospital, Hartford, CT**PS-Thurs-B-18****Computational Fluid Dynamics Study of Transcatheter Aortic Valve Replacement: Impact of Deployed Device Orientation and Height**E. M. SIROIS¹, Q. WANG¹, S. KODALI², AND W. SUN¹¹University of Connecticut, Storrs, CT, ²Columbia University, New York, NY**PS-Thurs-B-19****Fiber Pattern in Heart Valve Leaflet Material Controls Valve Shape and Stresses**P. E. HAMMER^{1,2}, R. D. HOWE², AND P. J. DEL NIDO¹¹Children's Hospital, Boston, MA, ²Harvard School of Engineering and Applied Sciences, Cambridge, MA

PS-Thurs-B-20**Effect of Gold Nanorods and Sample Preparation Methods on Mechanical Properties of Porcine Heart Valves**H. L'ECUYER¹, S. DEITCH¹, E. GOLDSMITH², AND D. DEAN¹¹Clemson University, Clemson, SC, ²University of South Carolina, Columbia, SC**PS-Thurs-B-21****The Influence of Cyclic Pressure on the Biomechanical Properties of Aortic Valves**V. MYLES¹, J. WARNOCK¹, AND J. LIAO¹¹Mississippi State University, Mississippi State, MS**PS-Thurs-B-22****Characterization of Collagen Fiber Orientation by Multiphoton Imaging in Loading-Unloading Phases**S. ALAVI^{1,2}, E. BOTVINICK^{1,2}, AND A. KHERADVAR^{1,2}¹University of California, Irvine, Irvine, CA, ²The Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA**PS-Thurs-B-23****Effect of Asymmetric Mitral Valve Geometry on the Mitral Valve Dynamics**Y. RIM¹, D. D. MCPHERSON¹, K. B. CHANDRAN², AND H. KIM¹¹The University of Texas Health Science Center at Houston, Houston, TX, ²The University of Iowa, Iowa City, IA**PS-Thurs-B-24****GPCR Targeted Control of TGF-(β)I Signaling in AVICs**J. D. HUTCHESON¹, AND W. D. MERRYMAN¹¹Vanderbilt University, Nashville, TN**PS-Thurs-B-25****eNOS-Phosphorylation Regulates Myocardial Perfusion and the Outcome of Ischemic Postconditioning**T. PONG^{1,2}, M. SCHERRER-CROSBIE^{1,3}, AND P. L. HUANG^{1,3}¹Massachusetts General Hospital, Boston, MA, ²Harvard-MIT, Cambridge, ³Harvard Medical School, Boston**Track: Cellular and Molecular Engineering****Mechanotransduction & Mechanobiology****PS-Thurs-B-26****Vinculin Phosphorylation and Activation**J. GOLJI¹, T. WENDORFF¹, AND M. R. MOFRAD¹¹University of California, Berkeley, CA**PS-Thurs-B-27****The Initial Orientation of Endothelial Cells Affects RhoGTPases Activation Induced by Fluid Shear Stress**K. NISHIO¹, Y. UEKI^{1,2}, N. SAKAMOTO¹, AND M. SATO^{1,3}¹Department of Bioengineering and Robotics, Graduate School of Engineering, Tohoku University, Miyagi, Japan, ²Hitachi Research Laboratory, Hitachi, Ltd., Ibaraki, Japan, ³Department of Biomedical Engineering, Graduate School of Bioengineering, Tohoku University, Miyagi, Japan**PS-Thurs-B-28****Elevations in Pulse Rate Attenuate the Atheroprotective Effects of Pulsatile Shear Stress: A New Insight into the Effects of Arrhythmias on Endothelial Responses**N. JEN¹, R. LI¹, B. CHAN¹, C. CHEN¹, J. LEE¹, J. MUNG¹, J. YEN¹, M. HAMDAN², AND T. HSIAI¹¹University of Southern California, Los Angeles, CA, ²University of Utah School of Medicine, Salt Lake City, UT**PS-Thurs-B-29****MOVED TO ORAL OP-Fri-2-I****PS-Thurs-B-30****Endothelial Cell Behavior is Modulated by 3D Extracellular Matrix Stiffening via Non-enzymatic Glycation**B. N. MASON¹, L. J. BONASSAR¹, AND C. A. REINHART-KING¹¹Cornell University, Ithaca, NY**PS-Thurs-B-31****How Deeply Cells Feel: Microenvironmental Signals to Nuclear Readouts**A. BUXBOIM¹, E. C. ECKELS¹, AND D. E. DISCHER¹¹University of Pennsylvania, Philadelphia, PA**PS-Thurs-B-32****Transglutaminase Linked Collagen Promotes Integrin-Mediated Mechanotransduction in Prostate Cancer**J. SRIVASTAVA^{1,2}, AND M. ZAMAN³¹University of Texas at Austin, Brookline, MA, ²Boston University, Boston, ³Boston University, Boston, MA**PS-Thurs-B-33****Matrix Stiffness Alters Cell-Cell and Cell-Matrix Interactions During Tissue Assembly**J. P. CALIFANO¹, C. R. MONTAGUE¹, A. STARCHENKO¹, AND C. A. REINHART-KING¹¹Cornell University, Ithaca, NY**PS-Thurs-B-34****Hypoxia-Reoxygenation Induces Mitochondrial Removal by Autophagy in Endothelial Cells**A. C. SANTOSO¹, R. J. GIETD¹, M. PRAETORIUS-IBBA², AND B. R. ALEVRIADOU¹¹Department of Biomedical Engineering and The Davis Heart and Lung Inst., The Ohio State University, Columbus, OH, ²Department of Cellular and Molecular Biochemistry, The Ohio State University, Columbus, OH**PS-Thurs-B-35****Cyclic Tensile Stress Induced Migration and Invasion Properties of MCF10A**H. HAN¹, M. KIM¹, AND J. H. SHIN¹¹Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of**PS-Thurs-B-36****Lipid Bilayer as Mechanosensor**M. CHACHISVILIS¹¹La Jolla Bioengineering Institute, San Diego, CA**PS-Thurs-B-37****Gene Expression of Endothelial Cells in Response to Hemodynamic Conditions Mimicking Arterial Bifurcation**N. SAKAMOTO¹, T. OKUMURA¹, M. KANZAKI¹, AND M. SATO¹¹Tohoku University, Sendai, Japan**PS-Thurs-B-38****Prolonged Application of High Fluid Shear to Chondrocytes Recapitulates Gene Expression Profiles Associated with Osteoarthritis**F. ZHU¹, P. WANG¹, N. LEE², M. GOLDRING³, AND K. KONSTANTOPOULOS¹¹The Johns Hopkins University, Baltimore, MD, ²The George Washington University, Washington, D.C., DC, ³Hospital for Special Surgery, New York, NY**PS-Thurs-B-39****Matrix Compliance Regulates Epithelial-Mesenchymal Transition**K. LEE¹, Q. K. CHEN¹, C. LUI¹, E. W. GOMEZ¹, D. C. RADISKY², AND C. M. NELSON¹¹Princeton University, Princeton, NJ, ²Mayo Clinic Cancer Center, Jacksonville, FL**PS-Thurs-B-40****Effects of Hypoxia and of Elevated Pressure on Retinal Cell Proliferation**R. E. CORONADO¹, M. E. WECHSLER¹, K. L. LOVELADY¹, T. Q. DUONG², AND R. BIZIOS¹¹University of Texas at San Antonio, San Antonio, TX, ²University of Texas Health Science Center at San Antonio, San Antonio, TX

PS-Thurs-B-41**Mechanical Force Transmission Through the Cellular Cytoskeleton**Y. HWANG¹, AND A. BARAKAT¹¹Ecole Polytechnique, Palaiseau, France**PS-Thurs-B-42****The Conformational Transition of Actin Binding Domains in Alpha-Actinin**H. SHAMS¹, J. GOLJI¹, AND M. R. MOFRAD¹¹University of California, Berkeley, CA**PS-Thurs-B-43****Tumor Cell Invasion and Role of ECM Presentation, Topology and Mechanical Properties**L. CASSEREAU¹, J. LOPEZ², I. ACERBI², J. LAKINS², Q. SHI³, J. LIPHARDT³, AND V. WEAVER²¹UCSF/UC Berkeley, San Francisco, CA, ²UCSF, San Francisco, CA, ³UC Berkeley, Berkeley, CA**PS-Thurs-B-44****Simulated Mechanical Stress Using PGE2 Causes Pericytes to Express Osteogenic Markers**R. A. WASHINGTON¹, V. H. HARPER¹, S. SILVA¹, A. DEB ROY¹, AND L. AGGISON¹¹University of Connecticut, Storrs, CT**PS-Thurs-B-45****Atmospheric Pressure Plasma Induced Mesenchymal-Epithelial Transition (MET) like Phenotypic Changes in Human Dermal Fibroblasts**B. GWEON¹, M. KIM¹, H. KIM¹, S. KIM¹, W. CHOE¹, AND J. H. SHIN¹¹Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of**PS-Thurs-B-46****Deformation of Stereocilia Membrane: Implications for the Mechanoelectrical Transduction Channel**R. J. POWERS¹, S. ROY¹, E. ATILGAN², W. E. BROWNELL³, S. X. SUN¹, P. G. GILLESPIE¹, AND A. A. SPECTOR¹¹Johns Hopkins University, Baltimore, MD, ²Columbia University, New York, NY, ³Baylor College of Medicine, Houston, TX, ⁴Oregon Health&Science University, Portland, OR**PS-Thurs-B-47****The Effect of Substrate Stiffness on Endothelial Mechanotransduction Under Fluid Shear Stress**M. MAVI¹, P. TAO¹, AND J. JI¹¹Indiana University Purdue University Indianapolis, Indianapolis, IN**PS-Thurs-B-48****Human Umbilical Vein Endothelial Cells Respond to Substrate Stiffness by Spreading Less and by Exerting Variable Traction Forces on Elastic Surface**J. WANG¹, M. DENG², S. K. SHAW², AND J. X. TANG³¹Brown University, Providence, RI, ²Women and Infants Hospital, Providence, RI, ³Brown University, Providence, RI**PS-Thurs-B-49****On the Interactions Between Vinculin and PIP2**A. AL-ZIREENI¹, J. GOLJI¹, AND M. R. MOFRAD¹¹University of California, Berkeley, CA**Track: Cellular and Molecular Engineering****Molecular Engineering****PS-Thurs-B-50****Single-Molecule Enzyme Chemotaxis**P. J. BUTLER¹, S. SENGUPTA¹, H. MUDDANA², T. TABOUILLOT³, AND A. SEN¹¹Penn State University, University Park, PA, ²University of California San Diego, La Jolla, CA, ³University of Michigan, Ann Arbor, MI**PS-Thurs-B-51****High-Throughput Screening of Transcription Factor Activity**A. M. KABADI¹, AND C. A. GERSBACH¹¹Duke University, Durham, NC**PS-Thurs-B-52****Engineered ErbB Receptor Ligands: Useful Approach to Targeted Chemotherapeutics**E. KURTAGIC¹, S. M. JAY^{1,2}, L. M. ALVAREZ¹, R. T. LEE^{2,3}, AND L. G. GRIFFITH^{1,3}¹MIT, Cambridge, MA, ²Brigham and Women's Hospital, Harvard Medical School, Boston, ³Harvard Stem Cell Institute, Cambridge, MA**PS-Thurs-B-53****Novel Technique To Study DARPin-Target Binding Using Single-Molecule Force Spectroscopy**L.-L. CHEUNG¹, M. KANWAR¹, M. OSTERMEIER¹, AND K. KONSTANTOPOULOS¹¹Johns Hopkins University, Baltimore, MD**PS-Thurs-B-54****Gene Therapy for Duchenne Muscular Dystrophy: Gene Editing of Dystrophin by Synthetic Enzymes.**D. G. OUSTEROUT¹, M. T. BROWN¹, P. PEREZ-PINERA¹, AND C. A. GERSBACH¹¹Duke University, Durham, NC**PS-Thurs-B-55****Computer-aided Engineering of Myosin VI to Alter the Locking Mechanism of the Converter**Y. ZHANG¹, AND J.-C. LIAO¹¹Columbia University, New York, NY**PS-Thurs-B-56****Real Time Dynamic Study of Cytochrome-c Release in Human Lung Cancer Cells**S. S. PIRACHA¹, S. WANG¹, Z. KORKUT¹, AND X. JIANG²¹City College of New York, New York, NY, ²Memorial Sloan Kettering Cancer Center, New York, NY**PS-Thurs-B-57****Recombinant Silk Fibronectin Fragment Fusion Peptides for Growth Factor Binding to Silk Fibroin Hydrogel for Engineering Extracellular Matrices**A. M. HOPKINS¹, F. TORTELLI², D. L. KAPLAN¹, AND J. A. HUBBELL²¹Tufts University, Medford, MA, ²École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland**PS-Thurs-B-58****Streamlined Protocol for mRNA Display**P. A. BARENDT¹, C. N. MCQUADE¹, AND C. A. SARKAR¹¹University of Pennsylvania, Philadelphia, PA**PS-Thurs-B-59****Development of FRET-based High-Throughput Screening to Discover Small Chemical Inhibitors of the SUMOylation Pathway**Y. SONG¹, V. MADAHAR¹, Y. LIU¹, AND J. LIAO¹¹University of California, Riverside, Riverside, CA**PS-Thurs-B-60****Mechanical Coupling of the Motor Protein Ncd in the Microtubule Minus-end Directed Motion**S. K. LAKKARAJU¹, AND W. HWANG¹¹Texas A&M University, College Station, TX**PS-Thurs-B-61****Visualizing PDGFR Activity in Live Cells at Subcellular Level**M. HUANG¹, AND Y. WANG¹¹University of Illinois, Urbana, IL**PS-Thurs-B-62****Mechanistic Inhibition of Alzheimer's-associated Aggregation by Gold Nanoparticles**K. A. WILSON¹, J. LIM¹, K. JACKSON², R. MAHTAB², AND M. MOSS¹¹University of South Carolina, Columbia, SC, ²South Carolina State University, Orangeburg, SC**PS-Thurs-B-63****Targeted Engineering of DNA-binding Proteins**C. BACH¹, H. BAJWA¹, K. ERODULA², J. PALLIS¹, P. PATRA¹, AND W. SHERMAN³¹University of Bridgeport, Bridgeport, CT, ²GE, Hamden, CT, ³Brookhaven National Laboratory, Upton, NY

Track: Devices: Nano to Micro**Drug Delivery Technologies: Nano to Micro Devices****PS-Thurs-B-64**
CANCELED BY AUTHOR**PS-Thurs-B-65**
Porous Silicon Films with Tunable Diffusion Coefficients for Controlled Drug ReleaseJ. W. MARES¹, AND S. M. WEISS¹
¹Vanderbilt University, Nashville, TN**PS-Thurs-B-66**
Silk as an Alternative Biomaterial for Microneedles SystemW. K. RAJA¹, K. TSIORIS¹, E. M. PRITCHARD¹, B. PANILAITIS¹, F. G. OMENETTO¹, AND D. L. KAPLAN¹
¹Tufts University, Medford, MA**PS-Thurs-B-67**
Multifunctional Microbubbles Fabricated by Co-axial Electro-hydrodynamic Technique for Drug DeliveryL. ZHANG¹, Y. WU¹, F. WANG¹, J. LEE¹, C. J. ROBERTS¹, AND R. XU¹
¹The Ohio State University, Columbus, OH**PS-Thurs-B-68**
Improved Tumor Targeting of Polymer-based Nanovesicles using Polymer-Lipid BlendsZ. CHENG¹, D. R. ELIAS², N. P. KAMAT³, E. D. JOHNSTON³, A. POLOUKHTINE⁴, V. POPIK⁵, D. A. HAMMER⁶, AND A. TSOURKAS³
¹University of Pennsylvania, Philadelphia, PA, ²University of Pennsylvania, Philadelphia, PA, ³University of Pennsylvania, Philadelphia, PA, ⁴University of Georgia, Athens, GA, ⁵University of Georgia, Athens, GA, ⁶University of Pennsylvania, Philadelphia, PA**Track: Devices: Nano to Micro****Emerging Concept of Medical Micro Devices****PS-Thurs-B-69**
Engineering Protein-based Dumbbell Architectures for Shear SensingZ. BOTYANSZKI^{1,2}, N. KORIN², AND N. JOSHI^{1,2}
¹Harvard University, Cambridge, MA, ²Wyss Institute for Biologically Inspired Engineering, Boston, MA**Track: Drug Delivery Systems****Nanotechnology Solutions to Drug Delivery Challenges****PS-Thurs-B-70**
Poly DL-Lactic-co-Glycolic Acid Nanoparticles as Nano-Carriers to Prolong Antibiotic ActivitiesM. N. DESILVA¹, W. W. ZHAO², K. WHANG², S. T. SCHULTZ¹, AND L. CHU²
¹Naval Medical Research Unit San Antonio, Fort Sam Houston, TX, ²University of Texas Health Science Center at San Antonio, San Antonio, TX**PS-Thurs-B-71**
Nanoengineering Approach to Reverse Cardiovascular Collapse from Hemorrhagic ShockP. CABRALES¹
¹University of California, San Diego, La Jolla, CA**PS-Thurs-B-72**
Modeling of Tumor Response to NanotherapeuticsH. FRIEBOES¹, M. WU², AND J. LOWENGRUB²
¹University of Louisville, Louisville, KY, ²University of California, Irvine, CA**PS-Thurs-B-73**
Porous Silicon Nanoneedles for the Intracellular Delivery of Heterogeneous PayloadsE. DE ROSA¹, C. CHIAPPINI², M. FERRARI¹, X. LIU¹, AND E. TASCIOTTI¹
¹The Methodist Hospital, Houston, TX, ²University of Texas, Austin, TX**PS-Thurs-B-74**
20-100 kHz Ultrasound-mediated, Non-invasive Transdermal Drug Delivery with LiposomesA. NGUYEN¹, E. PAPAOGLOU², Y. SUNNY², C. BAWIEC², J. SAMUELS², AND P. A. LEWIN²
¹Drexel University, Cherry Hill, NJ, ²Drexel University, Philadelphia, PA**PS-Thurs-B-75**
Dual-Sensitive Multi-Functional Magnetic Nanoparticles for Cancer TherapyH. HOMAYONI¹, AND K. T. NGUYEN¹
¹Joint Program, University of Texas (at Arlington), and Southwestern Medical Center at Dallas, Arlington-Dallas, TX**PS-Thurs-B-76**
Formulation of Curcumin-modified Chitosan Nanoparticles for Prolonged Systemic BioavailabilityM. G. O'TOOLE¹, P. S. SOUCY¹, B. H. TOTTEN¹, P. J. HOBLITZELL¹, R. S. KEYNTON¹, W. D. EHRINGER¹, AND A. S. GOBIN¹
¹University of Louisville, Louisville, KY**PS-Thurs-B-77**
TAT Peptide-Conjugated Poly(Lactic-co-Glycolic Acid) Nanoparticles For Delivery of Paclitaxel to Multidrug-Resistant Cancer CellsE. GULLOTTI¹, AND Y. YEO¹
¹Purdue University, West Lafayette, IN**PS-Thurs-B-78**
Size and Shape Effects in the Adhesion Propensity of Mesoporous Silicon ParticlesG. ADRIANI^{1,2}, H. HUANG², G. PASCAZIO¹, M. FERRARI², X. LIU², AND P. DECUZZI²
¹Politecnico di Bari, Bari, Italy, ²The Methodist Hospital Research Institute, Houston, TX**PS-Thurs-B-79**
A Systems Approach to Engineering Cancer NanotechnologiesJ. PARK¹
¹KAIST, Daejeon, Korea, Republic of**PS-Thurs-B-80**
Effects of Electrospinning on Retention of Functionality of Pertussis ToxinD. KARATAS¹, K. M. SAWICKA¹, AND S. R. SIMON¹
¹Stony Brook University, Stony Brook, NY**PS-Thurs-B-81**
Natural Tea-chitosan Nanoparticle System for Drug DeliveryS. YI¹, L. XIA¹, S. LENAGHAN¹, Z. LEJEUNE¹, AND M. ZHANG¹
¹University of Tennessee, Knoxville, TN**PS-Thurs-B-82**
The Unique Voyage of Nanoparticles in Blood CirculationR. TOY¹, E. HAYDEN¹, C. SHOUP¹, H. BASKARAN¹, AND E. KARATHANASIS¹
¹Case Western Reserve University, Cleveland, OH**PS-Thurs-B-83**
pH/Thermosensitive Liposomes Modified with Poly(N-isopropylacrylamide-co-propylacrylic acid) Copolymers for Focused Ultrasound-triggered Release of Doxorubicin.T. TA¹, A. J. CONVERTINE², C. R. REYES¹, P. S. STAYTON², AND T. M. PORTER¹
¹Boston University, Boston, MA, ²University of Washington, Seattle, WA

PS-Thurs-B-84**Study of Virucidal Action by Gold Nanoassemblies of Peptide Triazole Inhibitors Targeting Env gp120 of HIV-1**A. ROSEMARY BASTIAN¹, K. KANTHARAJU¹, K. MCFADDEN¹, C. DUFFY¹, S. RAJAGOPAL¹, M. CONTARINO¹, E. PAPZOGLU¹, AND I. CHAIKEN¹¹Drexel University, Philadelphia, PA**Track: Drug Delivery Systems****New Concepts and Applications in Drug Delivery****PS-Thurs-B-85****Oral Delivery Of Microencapsulated Lipidoid Nanoparticles Containing Platinum Drugs For Colon Cancer Therapy**A. M. URBANSKA¹, E. D. KARAGIANNIS¹, R. S. LANGER¹, AND D. G. ANDERSON^{1,2}¹MIT, Cambridge, MA, ²Harvard, Cambridge, MA**PS-Thurs-B-86****pH-Sensitive Hydrogels for Encapsulation and Controlled Release of Antibody-Coated Nanocarriers for Oral Drug Delivery.**R. GHAFFARIAN¹, A. BAGAL¹, S. R. RAGHAVAN¹, AND S. MURO^{1,2}¹University of Maryland, College Park, College Park, MD, ²Institute for Bioscience and Biotechnology Research, College Park**PS-Thurs-B-87****Nanomaterials for Oral Delivery and Prolonged Retention of Protein Drugs in Colon**P. BLICHMANN¹, P. KOCHERGINSKAYA², B. ZDYRKO¹, I. LUZINOV¹, AND A. VERTEGEL¹¹Clemson University, Clemson, SC, ²Moscow State University, Moscow, Russian Federation**PS-Thurs-B-88****Impact of Food-associated Stimuli on Barrier Properties of Gastrointestinal Mucus to Particle Transport**H. M. YILDIZ¹, AND R. L. CARRIER¹¹Northeastern University, Boston, MA**PS-Thurs-B-89****Quantitative Analysis of MicroRNA 29b Induced Cancer Cell Apoptosis**
X. Wang¹¹The Ohio State University, Columbus, OH**PS-Thurs-B-90****Bacterial Motility Governs the Location and Extent of Bacterial Accumulation in Tumors *In Vitro***B. J. TOLEY¹, AND N. S. FORBES¹¹Univ of Massachusetts Amherst, Amherst, MA**PS-Thurs-B-91****Multimodal PLGA Nanoparticles for Drug Delivery and Quantitative, Noninvasive Imaging with Positron Emission Tomography**R. W. SIRIANNI¹, M-Q. ZHENG¹, T. PATEL¹, J. ZHOU², W. SALTZMAN², H. HUANG¹, AND R. E. CARSON¹¹Yale School of Medicine, New Haven, CT, ²Yale University, New Haven, CT**PS-Thurs-B-92****Predicting the Outcome of Drug Treatments: A Machine Learning Approach for Analysis of Drug Delivery**Y. LI¹, S. LENAGHAN¹, AND M. ZHANG¹¹University of Tennessee, Knoxville, TN**PS-Thurs-B-93**

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PS-Thurs-B-94**Antiretroviral Drug Delivery Pouch for Children Born at Home to HIV+ Mothers**R. A. MALKIN¹¹Duke University, Durham, NC**PS-Thurs-B-95****Optimization of Chitosan Particles for Immunotherapy**B. KOPPOLU^{1,2}, AND D. A. ZAHAROFF^{1,2}¹Biomedical Engineering Program, University of Arkansas, Fayetteville, AR, ²Department of Biological Engineering, University of Arkansas, Fayetteville, AR**PS-Thurs-B-96*****In Vitro* Evaluation of a Dexamethasone Coating to Improve the Mass Transport of Chronically Implanted Glucose Sensors**S. G. VALLEJO-HELIGON¹, AND W. M. REICHERT¹¹Duke University, Durham, NC**PS-Thurs-B-97****Abdominal Aortic Aneurysm Repair by Pentagalloyl Glucose (PGG) Microparticle Delivery**A. SINHA¹, AND N. VYAVAHARE¹¹Clemson University, Clemson, SC**Track: Drug Delivery Systems****Novel Materials and Self Assembly: Cancer Applications****PS-Thurs-B-98****Self-assembled Nanoplatfor for Inflammation-targeted Chemotherapy Using Affinity-regulated Molecular Interactions**S. PARK¹, S. KANG¹, X. CHEN¹, J. MUNIR¹, A. BOGORAD¹, A. VEACH¹, J-Y. KIM², AND M. JIN¹¹Cornell University, Ithaca, NY, ²Kangwon National University, Samcheok, Korea, Republic of**PS-Thurs-B-99****Engineering Viral Nanoparticles for Applications in Medicine: Shape Matters – Comparing Nanorods and Spheres Side by Side**S. SHUKLA¹, AND N. F. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH**PS-Thurs-B-100****Nanoparticles and Thermally Responsive Polymer for Hyperthermia and Sustained Drug Delivery**M. C. LIU¹, S. WANG¹, AND K. A. KANG²¹Dupont Manual High School, Louisville, KY, ²University of Louisville, Louisville, KY**PS-Thurs-B-101****Curcumin Uptake and Effects on Gamma Irradiated Cells**P. S. SOUCY¹, I. M. JAIN¹, B. H. TOTTEN¹, M. G. O'TOOLE¹, P. HOBLITZEL¹, R. KEYNTON¹, W. D. EHRINGER¹, AND A. S. GOBIN¹¹University of Louisville, Louisville, KY**PS-Thurs-B-102****Synthesis and Characterization of pH Sensitive Disulfide Cross-linked Polymer Vector for the Delivery of Genes to MCF-7 Breast Cancer Cells**I. BACALOCOSTANTIS¹, M. S. KANG¹, A. S. GOODLEY¹, S. MURO^{1,2}, AND P. KOFINAS¹¹University of Maryland, College Park, MD, ²Institute for Bioscience and Biotechnology Research (IBBR) University of Maryland, College Park, MD**PS-Thurs-B-103****Hydrophobic-Hydrophilic Interpenetrating Networks for Oral Chemotherapeutic Delivery**C. SCHOENER¹, AND N. PEPPAS¹¹University of Texas at Austin, Austin, TX**PS-Thurs-B-104****Enhancing Suicide Gene Therapy by Polymeric Micellar Nanoparticles**J. WANG¹, J-I. HSU¹, AND C-A. PENG¹¹Michigan Technological University, Houghton, MI

PS-Thurs-B-105**Hydrophobic Nanoparticles Encapsulated in Hydrophilic Hydrogel for Oral Delivery of Chemotherapeutics**H. HUTSON¹, C. SCHOENER¹, AND N. PEPPAS¹¹University of Texas at Austin, Austin, TX**PS-Thurs-B-106****Salmonella Targets Tumor Regions of Low Vascular Density and at Short Distances to Blood Vessel**M. ZHANG¹, AND N. S. FORBES¹¹Univ. of Massachusetts-Amherst, Amherst, MA**Track: Neural Engineering****Engineering the Neural Environment****PS-Thurs-B-107****Effect of L1 Grafted Collagen on Mouse ESC Differentiation**G. Monteiro¹, H. A. Shih¹, and D. Shreiber¹¹Rutgers University, New Brunswick, NJ**PS-Thurs-B-108****Traumatic Brain Injury Biomarker Discovery Using Mass Spectrometry Imaging of 3D Neural Cultures**D. OLIVERO¹, AND M. LAPLACA¹¹Georgia Institute of Technology, Atlanta, GA**PS-Thurs-B-109****Ascertaining Network Connections in a Computational Model**F. W. HAMILTON¹, T. BERRY¹, T. SAUER¹, AND N. PEIXOTO¹¹George Mason University, Fairfax, VA**PS-Thurs-B-110****Neuronal Cell Patterning Using Micro-Contact Printing**I. POUDEL¹, J. LEE¹, AND J. LIM¹¹University of Nebraska-Lincoln, Lincoln, NE**Track: Neural Engineering****Neural Engineering Technology II****PS-Thurs-B-111****Conducting Polymer Electrodes for Human Electrophysiological Recordings**P. LELEUX^{1,2}, P. CHAUVEL², C. BÉNAR², T. HERVÉ³, J-M. BADIER², AND G. G. MALLIARAS²¹Ecole des Mines de Saint Etienne, Gardanne, France, Metropolitan, ²INSERM U-761 Epilepsie et Cognition, Marseille cedex 06, France, Metropolitan, ³Microvitae Technologies, Gardanne, France, Metropolitan**PS-Thurs-B-112****High-Density Peripheral Nerve Resonant Stimulation System**J. M. STAROBIN¹, V. VARADARAJAN¹, AND S. ARAVAMUDHAN²¹The University of North Carolina at Greensboro, Greensboro, NC, ²North Carolina A&T State University and University of North Carolina at Greensboro, Greensboro, NC**PS-Thurs-B-113****Electrochemical Deposition of Polydopamine Films for Site-Selective Biofunctionalization**K. KANG¹, S. LEE¹, I. S. CHOI¹, AND Y. NAM¹¹KAIST, Daejeon, Korea, Republic of**PS-Thurs-B-114****A Progress Report on Flexible Neurotransmitters Sensors**H. CAO¹, C. M. NGUYEN¹, A-L. LI¹, Y. PENG¹, AND J-C. CHIAO¹¹UT Arlington, Arlington, TX**PS-Thurs-B-115****Binding Affinity and Neurite Generation Characterization of Neuroblastoma Cells on a Functionalized Graphene Substrate**B. A. MATHIE¹, J. YANG¹, M. M-C. CHENG¹, AND P. VANDEVORD¹¹Wayne State University, Detroit, MI**PS-Thurs-B-116****Local Microglia Cell Ablation at the Cortical Tissue-Electrode Interface**J. NGUYEN^{1,2}, M. RAVIKUMAR³, S. SELKIRK³, AND J. CAPADONA^{1,2}¹Case Western Reserve University, Cleveland, OH, ²Louis Stokes VA Medical Center, Cleveland, ³Louis Stokes VA Medical Center, Cleveland, OH**Track: Orthopedic and Rehabilitation Engineering****Orthopedic Biomaterials****PS-Thurs-B-117****Injectable, Nanospheres Containing Two-solution Bone Cements (-TSBC) with Bioactive Strontium-hydroxyapatite (SrHA) Microspheres**S. H. JARIWALA¹, AND J. M. HASENWINKEL¹¹Syracuse University, Syracuse, NY**PS-Thurs-B-118****Microencapsulation of Octylcyanoacrylate for Applications as the Healing Agent in a Self-healing Bone Cement**A. BROCHU¹, W. CHYAN¹, AND W. REICHERT¹¹Duke University, Durham, NC**PS-Thurs-B-119****Biomechanical Properties of Bovine Intervertebral Discs Under Combined Compressive and Torsional Loadings**J. A. MOJICA-SANTIAGO¹, AND P. A. SUNDARAM¹¹University of Puerto Rico Mayaguez Campus, Mayaguez, PR**PS-Thurs-B-120****Unique Surface Structures Resulting from the Double Anodization of Titanium-based Pedicle Screws**A. P. ROSS¹, AND T. J. WEBSTER¹¹Brown University, Providence, RI**PS-Thurs-B-121****Distal Clavicle Fracture Repair Techniques: a Biomechanical Comparison**M. ROESCH¹, B. LEWIS¹, G. JONES¹, J. BISHOP¹, AND A. S. LITSKY¹¹Ohio State University, Columbus, OH**PS-Thurs-B-122****Development of Nanostructured Coatings for Controlling the Biodegradation of Magnesium Implants**M. ISKANDAR¹, I. JOHNSON¹, A. ASLANI², AND H. LIU¹¹University of California, Riverside, Riverside, CA, ²Spire Biomedical, Inc, Bedford, MA**PS-Thurs-B-123****An Integrated Bi-layered Scaffold for Osteochondral Tissue Engineering**A. GALPERIN¹, R. A. OLDINSKI¹, S. J. FLORCZYK¹, J. D. BRYERS¹, M. ZHANG¹, AND B. D. RATNER¹¹University of Washington, Seattle, WA**PS-Thurs-B-124****Osteoblast Cell Responses to Degraded Self-assembled Materials Containing Hydroxyapatite Composites**L. SUN¹, H. FENNIRI^{2,3}, AND T. J. WEBSTER¹¹Brown University, Providence, RI, ²University of Alberta, Edmonton, Canada, ³National Research Council, Edmonton, Canada**PS-Thurs-B-125****Induction and Cleavage of Fluorescent Non-enzymatic Glycation Crosslinks in the Components of the Extracellular Matrix**L. CHEN¹, A. D. SHARAN², AND S. Y. TANG¹¹University of California, San Francisco, San Francisco, CA, ²Albert Einstein College of Medicine, New York City, NY

PS-Thurs-B-126**Surface of Magnesium Yttrium Alloys Regulates the Degradation and Cell Adhesion**I. JOHNSON¹, D. PERCHY², A. ROY², P. KUMTA², AND H. LIU¹¹University of California at Riverside, Riverside, CA, ²University of Pittsburgh, Pittsburgh, PA**PS-Thurs-B-127**

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Track: Orthopedic and Rehabilitation Engineering**Orthopedic Tissue Biomechanics****PS-Thurs-B-128****Biomechanical Human Factors Analysis In Helicopter Crashes**D. J. STRICKLAND^{1,2}, S. KUMAR¹, C. UNDERWOOD¹, J. BURTON³, AND P. LEWIS³¹Safety Research Institute, Hoschton, GA, ²Gainesville State College, Oakwood, GA, ³Burton and Associates, Alpharetta, GA**PS-Thurs-B-129****Biomechanics of Head-Neck Injuries In Heavy Truck Motor Vehicle Accidents**D. J. STRICKLAND^{1,2}, S. KUMAR¹, K. FRIEDMAN³, J. HUTCHINSON³, AND D. MOBREM³¹Safety Research Institute, Hoschton, GA, ²Gainesville State College, Oakwood, GA, ³Friedman Research Corporation, Austin, TX**PS-Thurs-B-130****An Annular Tear Model and the Effect on Intradiscal Pressure**R. CARDIN¹, AND J. G. BLEDSOE¹¹Saint Louis University, St Louis, MO**PS-Thurs-B-131****New Method for Performance Analysis of Pedicle Screw Designs**A. VALDEVIT¹, J. GOLDSTEIN², J. TURNER³, AND A. RITTER¹¹The Stevens Institute of Technology, Hoboken, NJ, ²NYU Langone Medical Center, New York, NY, ³Medtronic Spinal and Biologics Business, Memphis, TN**PS-Thurs-B-132****Mechanically Overloaded Collagen Fibrils Contain Frequent Regions of Denatured Collagen**S. P. VERES¹, AND J. M. LEE¹¹Dalhousie University, Halifax, NS, Canada**PS-Thurs-B-133****Rate Dependent Effects of Chronic Cyclic Loading on the Lumbar Spine in an In-Vivo Animal Model**S. E. LINLEY¹, G. SANDERS², S. MCCALLUM¹, E. BRULE¹, E. LEIMER¹, E. PUZAS³, G. SOWA⁴, J. LOTZ⁵, J. VANDERZANDEN⁶, J. GLENNON⁷, J. LAWRENCE⁶, D. DIRISIO⁶, AND E. LEDET¹¹Rensselaer Polytechnic Institute, Troy, NY, ²Union College, Schenectady, NY, ³University of Rochester, Rochester, NY, ⁴University of Pittsburgh, Pittsburgh, PA, ⁵UCSF, San Francisco, CA, ⁶Albany Medical College, Albany, NY, ⁷Veterinary Specialty Surgical Associates, Pattersonville, NY**PS-Thurs-B-134****Dynamic Viscoelastic Properties of Porcine Patellar Tendon: Study of Frequency, Loading, and Regional Dependency**S. S. PATNAIK¹, B. WEED¹, T. C. YOUNG¹, J. LIAO^{1,2}, AND L. N. WILLIAMS^{1,2}¹Mississippi State University, Mississippi State, MS, ²Center for Advanced Vehicular Systems (CAVS), Mississippi State University, Mississippi State, MS**PS-Thurs-B-135****Stability of the Proximal Interphalangeal Joint in the Finger: An In Vitro Kinematic Study**P. CARAVAGGI¹, L. CHEN¹, L. UKO¹, B. SHAMIAN¹, AND J. CAPO¹¹UMDNJ, Newark, NJ**PS-Thurs-B-136****Application of a Non-Linear Viscoelastic Model to the Relaxation of Ligaments**F. M. DAVIS¹, AND R. DEVITA¹¹Virginia Tech, Blacksburg, VA**PS-Thurs-B-137****Simulation and Evaluation of Constitutive Models for Human Flesh in Uniaxial Tension and Dynamic Compression**F. S. GAYZIK^{1,2}, D. P. MORENO^{1,2}, N. A. VAVALLE^{1,2}, AND J. D. STITZEL^{1,2}¹Virginia Tech Wake Forest Center for Injury Biomechanics, Winston-Salem, NC, ²Wake Forest University School of Medicine, Winston-Salem, NC**PS-Thurs-B-138****Detecting Mechanical Signatures of Enzymatically Induced Structural Changes in Articular Cartilage**D. J. GRIFFIN¹, M. R. BUCKLEY¹, J. SILVERBERG¹, D. SEVENLER¹, I. COHEN¹, AND L. J. BONASSAR¹¹Cornell University, Ithaca, NY**PS-Thurs-B-139****The Characterization of Local Microstructure of the Human Calcaneus**M. F. SOUZANCHI¹, P. E. PALACIO MANCHENO², Y. A. BORISOV², L. CARDOSO², AND S. C. COWIN²¹the City College of The City University of New York, New York, NY, ²the City College of the City University of New York, New York, NY**PS-Thurs-B-140****In Vitro Evidence of Fast and Slow Wave Propagation in the Human Calcaneus**P. E. PALACIO MANCHENO¹, Y. A. BORISOV¹, M. F. SOUZANCHI¹, S. C. COWIN¹, AND L. CARDOSO¹¹The City College of New York, New York, NY**PS-Thurs-B-141****Determination of the Lacunar Canalicular Permeability Using Cyclic Loading**M. BENALLA¹, L. CARDOSO², AND S. C. COWIN³¹CCNY, Bronx, NY, ²CCNY, New York, NY, ³CCNY, New York**PS-Thurs-B-142****Compressive Properties of PMMA due to Release of Multiple Antibiotics over Extended Time Periods**M. MUSIB¹, K. CHAKOTE¹, W. HAYES¹, V. RASQUINHA¹, AND S. SAHA¹¹State University of New York, Brooklyn, NY**PS-Thurs-B-143****Numerical Simulation of Poroelastic Wave Propagation in Human Calcaneum**Y. A. BORISOV¹, P. E. PALACIO MANCHENO², M. F. SOUZANCHI³, S. C. COWIN³, AND L. CARDOSO³¹The City College of New York, New York, NY, ²City College of New York, New York City, NY, ³The City College of New York, New York, NY**PS-Thurs-B-144****Evaluation of Injury Causation in Motorcycle-Barrier Crashes: A Clinical Study**A. DANIELLO¹, J. STITZEL², AND H. C. GABLER¹¹Virginia Tech Wake Forest University School of Biomedical Engineering and Sciences, Blacksburg, VA, ²Virginia Tech Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC**PS-Thurs-B-145****Comparisons of Real-World Knee-Thigh-Hip Injuries and Anthropomorphic Test Device Risks**K. L. LOFTIS¹, AND J. D. STITZEL¹¹VT-WFU Center for Injury Biomechanics, Winston-Salem, NC**PS-Thurs-B-146****Knee Kinematics Tracking Using A-Mode Ultrasound: Simulation and Feasibility Study**R. TADROSS¹, AND M. R. MAHFOUZ¹¹University of Tennessee, Knoxville, TN**PS-Thurs-B-147****Combined Effects of Glucocorticoids and TNF-alpha on Murine Bone Strength and Quality**J. INZANA¹, M. TAKAHATA¹, S. JUNEJA¹, E. SCHWARZ¹, AND H. AWAD¹¹University of Rochester, Rochester, NY

PS-Thurs-B-148**Effect of Water Loss on the Progressive Post-Yield Behavior of Bone in Tension**B. GIRI¹, J. SAMUEL¹, AND X. WANG¹¹University of Texas at San Antonio, San Antonio, TX**PS-Thurs-B-149****Dimensional (Size) Effect on Determination of Bone Toughness Using a Nanoscratch Test**R. HANSBERGER¹, A. ISLAM¹, AND X. WANG¹¹UTSA, San Antonio, TX**PS-Thurs-B-150****Compressive and Tensile Stiffness of a Cervical Motion Segment with Incomplete Fibers in Annulus**M. Hussain¹¹Logan University, Chesterfield, MO**PS-Thurs-B-151****PGE2 Mediates Mechanical Stimulus in Osteoblasts: Changes in Cell Morphology and Stress Distribution**A. DEB ROY¹, R. H. KNAPP¹, K. A. BURKHART¹, AND R. A. WASHINGTON¹¹University of Connecticut, Storrs, CT**PS-Thurs-B-152****Inhibition of SDF-1/CXCR4 Signaling Attenuates Load-Induced Periosteal Bone Formation in Mice**S. TEMIYASATHIT¹, P. LEUCHT², V. RAMACHANDRAN¹, C. R. JACOBS³, J. A. HELMS², AND A. B. CASTILLO¹¹VA Palo Alto Health Care System, Palo Alto, CA, ²Stanford University, Stanford, CA,³Columbia University, New York, NY**Track: Systems Biology, Bioinformatics and Computational Bioengineering****Genomics, Transcriptomics and Computational Proteomics****PS-Thurs-B-153****Metabolic Systems Analysis of Virulence in the Drug-resistant Pathogen *Pseudomonas aeruginosa***J. A. BARTELL¹, M. A. OBERHARDT², J. B. GOLDBERG¹, AND J. A. PAPIN¹¹University of Virginia, Charlottesville, VA, ²Tel Aviv University, Tel Aviv, Israel**PS-Thurs-B-154****Modeling Peripheral Clock Gene Entrainment By Cortisol**P. D. MAVROUDIS¹, J. D. SCHEFF¹, S. E. CALVANO², S. F. LOWRY², AND I. P. ANDROULAKIS¹¹Rutgers University, Piscataway, NJ, ²UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ**PS-Thurs-B-155**

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PS-Thurs-B-156**Principal Oscillation Patterns of Genome-wide Gene Expression**D. WANG¹, M. K. MARKEY^{1,2}, AND A. ARAPOSTATHIS¹¹The University of Texas at Austin, Austin, TX, ²The University of Texas M. D. Anderson Cancer Center, Houston, TX**PS-Thurs-B-157****Are You Sure in Sequence Information Reception?**M. R. MOFRAD¹, E. G. AZNAKAYEV², AND D. E. AZNAKAYEVA²¹University of California, Berkeley, CA, ²National Aviation University, Kiev, Ukraine**PS-Thurs-B-158****On-chip Gene Synthesis and Its Application in DNA Nanostructure Formation and Protein Expression**I. SAAEM¹, AND J. TIAN¹¹Duke University, Durham, NC**PS-Thurs-B-159****Imputing Linkage Disequilibrium for Genome-Wide Association Studies**S. ZAHID¹, H. HUANG¹, AND J. BADER¹¹Johns Hopkins University, Baltimore, MD**PS-Thurs-B-160****Brain Transcriptional Regulatory Network Predicts Social Behavior-Specific Gene Expression**S. CHANDRASEKARAN¹, S. AMENT¹, J. EDDY¹, S. RODRIGUEZ-ZAS¹, B. SCHATZ¹, N. D. PRICE¹, AND G. ROBINSON¹¹UIUC, Urbana, IL**PS-Thurs-B-161****A Novel *In Silico* Methodology for Drug Discovery**R. R. VALLABHAJOSYULA¹, B. PRABHAKARPANDIAN¹, AND K. PANT¹¹CFD Research Corp, Huntsville, AL**PS-Thurs-B-162****Exploring the Feasibility of Next-Generation Sequencing and Microarray Meta-Analysis**P-Y. WU¹, J. H. PHAN², AND M. D. WANG²¹Georgia Institute of Technology, Atlanta, GA, ²Georgia Institute of Technology and Emory University, Atlanta, GA**PS-Thurs-B-163****Modeling Transcriptional Responses to Ultradian Glucocorticoid Rhythms**J. D. SCHEFF¹, A. K. KOSMIDES¹, S. E. CALVANO², S. F. LOWRY², AND I. P. ANDROULAKIS¹¹Rutgers University, Piscataway, NJ, ²UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ**PS-Thurs-B-164****Bioinformatic Analysis of the Relationship Between VEGF and Notch Protein Families**C. G. RIVERA¹, S. MELLBERG², L. CLAESSION-WELSH², J. S. BADER¹, AND A. S. POPEL¹¹Johns Hopkins University, Baltimore, MD, ²Uppsala University, Uppsala, Sweden**PS-Thurs-B-165****Permutational Segment Mutations for Deep Local Characterization of sRNA-mRNA Interaction**K. JAIN¹, R. WARTELL¹, AND T. UPDEGROVE¹¹Georgia Institute of Technology, Atlanta, GA**PS-Thurs-B-166****Comparison of Similarity Measures for Colocalization Studies in Tissue Imaging Mass Spectrometry**C. KADDI¹, R. M. PARRY¹, Y. CHEN¹, M. C. SULLARDS¹, A. H. MERRILL¹, AND M. D. WANG¹¹Georgia Institute of Technology, Atlanta, GA

Track: Systems Biology, Bioinformatics and Computational Bioengineering

Mathematical and Computational Models of Cellular and Molecular Processes: Cell Signaling and Mechanics

PS-Thurs-B-167

Characterization of Temporal Effects of Endothelial Sprouting by Statistical Model

W. W. YUEN¹, N. R. DU¹, D. SHVARTSMAN¹, P. R. ARANY¹, H. LAM², AND D. J. MOONEY¹

¹Wyss Institute for Biologically Inspired Engineering, Harvard University, Cambridge, MA, ²Mathematics & Statistics, Boston University, Boston, MA

PS-Thurs-B-168

Calibration and Validation of Particle-Based Model for Tissue Morphogenesis

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PS-Thurs-B-169

Analysis of the Molecular Network Regulating TGF Beta Induced Epithelial-Mesenchymal Transition

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PS-Thurs-B-170

Limitations To Fat Metabolism During Exercise: Role of Adipose Tissue

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PS-Thurs-B-171

Analysis of Biopterin availability for eNOS based NO and Superoxide Production

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PS-Thurs-B-172

Analysis of Metabolic Impairment of Skeletal Muscle Related to Fatigue

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PS-Thurs-B-173

Leukocyte Motion Quantization and Metabolic Profiling for Dual Indication of Multiple Toxin Response

A. GARZA¹, C. MARASCO¹, C. GOODWIN¹, J. ENDERS¹, K. SEALE¹, J. MCLEAN¹, AND J. WIKSWO¹

¹Vanderbilt University, Nashville, TN

PS-Thurs-B-174

The Role of Spatial Organization in Protein Scaffold-Mediated Signaling Cascades

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PS-Thurs-B-175

Experimental Puzzles Solved via Integrin Clustering Model

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PS-Thurs-B-176

Population Based Model of Human Embryonic Stem Cell Differentiation During Endoderm Induction

K. TASK¹, M. JARAMILLO¹, AND I. BANERJEE¹

¹University of Pittsburgh, Pittsburgh, PA

PS-Thurs-B-177

Quantitative Analysis of Human Monocyte Differentiation

K-Y. PARK¹, AND M. O. PLATT¹

¹Georgia Institute of Technology and Emory University, Atlanta, GA

PS-Thurs-B-178

Comparing Elastic Moduli of Femurs from Genetically Modified Mice using a Correction Factor Method

M. BUECHEL¹, E. ROAN¹, Z. XIAO², AND N. QUI²

¹The University of Memphis, Memphis, TN, ²University of Tennessee Health Science Center, Memphis, TN

PS-Thurs-B-179

Computational and Experimental Analyses of Palmitate-Binding on the IRE1 protein

H. CHO¹, L. FANG¹, L. PILLOW¹, P. PALASUBERNIAM¹, C. BUSH¹, M. FEIG¹, AND C. CHAN¹

¹Michigan State University, East Lansing, MI

Track:Tissue Engineering

Cardiovascular Tissue Engineering

PS-Thurs-B-180

Gap Junction Formation in Human Amniotic Fluid Cells Modulated by Co-culture with Cardiomyocytes

J. J. PETSCHER¹, O. M. BENAVIDES¹, K. J. MOISE^{2,3}, A. JOHNSON^{2,3}, AND J. G. JACOT^{1,3}

¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX, ³Texas Children's Hospital, Houston, TX

PS-Thurs-B-181

Microtemplated Fibrin Scaffolds for Pre-Vascularized Cardiac Tissue Engineering Applications

K. S. THOMSON¹, F. S. KORTE¹, C. M. GIACHELLI¹, B. D. RATNER¹, M. SCATENA¹, AND M. REGNIER¹

¹University of Washington, Seattle, WA

PS-Thurs-B-182

Polymers Stabilize Engineered Human Microvessels *In Vitro*

A. D. LEUNG¹, K. WONG¹, AND J. TIEN¹

¹Boston University, Boston, MA

PS-Thurs-B-183

A Novel Ovine *ex-vivo* Arteriovenous Shunt Model for the Test of Vascular Implantability

H. PENG¹, E. M. SCHLAICH², S. ROW², S. T. ANDREADIS^{2,3}, AND D. D. SWARTZ⁴

¹University at Buffalo, Buffalo, NY, ²University at Buffalo, Buffalo, NY, ³Center of Excellence, Buffalo, NY, ⁴Children's Hospital, Buffalo, NY

PS-Thurs-B-184

In Vivo Remodeling of Fibrin-based Tissue-engineered Arteries

Z. SYEDAIN¹, P. ARIZA¹, L. MEIER¹, S. JOHNSON¹, E. BRAUNLIN¹, J. OSBORN¹, AND R. TRANQUILLO¹

¹University of Minnesota, Minneapolis, MN

PS-Thurs-B-185

Alginate-based Muscular Thin Films for *In Vitro* Cardiac Contractility Assays

Y. FAROUZ^{1,2}, A. AGARWAL¹, M. L. MCCAIN¹, AND K. K. PARKER¹

¹Disease Biophysics Group, Harvard University, Cambridge, MA, ²Ecole Polytechnique ParisTech, Palaiseau, France

PS-Thurs-B-186

Valvulogenic Differentiation and Engineered Tissue Formation on Microfabricated Poly(glycerol Sebacate) Scaffolds

N. MASOUMI¹, K. L. JOHNSON¹, J. T. ZUGATES¹, AND G. C. ENGELMAYR¹

¹Penn State University, University Park, PA

PS-Thurs-B-187**Optimization of a Novel Small Diameter Vascular Graft: Synthesis, Seeding, and Conditioning**J. ARENAS-HERRERA¹, H. AHN¹, S. BAKER², T. HILL³, C. M. HWANG¹, A. ATALA¹, J. J. YOO¹, AND S. LEE¹¹Wake Forest School of Medicine, Winston Salem, NC, ²Wake Forest University, Winston Salem, NC, ³Virginia Tech/Wake Forest University School of Biomedical Engineering and Sciences, Winston Salem, NC**PS-Thurs-B-188****Tissue Engineering an Impedance Pump from Biological Building Blocks**H. AZIZGOLSHANI¹, AND M. GHARIB¹¹California Institute of Technology, Pasadena, CA**PS-Thurs-B-189****Adaptation of Vascular Network Formation Assay to Reconfigurable Culture Platform**D. J. LI¹, D. DEY¹, G. R. EVANS¹, AND E. E. HUI¹¹University of California, Irvine, CA**PS-Thurs-B-190****Comparative Analysis of Biodegradation Kinetics of Polymer Foams**C. LEBLON¹, AND S. JEDLIKA¹¹Lehigh University, Bethlehem, PA**PS-Thurs-B-191****Hyaluronic Acid-Heparin Hydrogels to Enhance Endothelialization**G. CAMCI-UNAL^{1,2}, AND A. KHADEMOSSEINI^{1,2}¹Center for Biomedical Engineering, Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, ²Harvard-MIT Division of Health Sciences and Technology, Cambridge**PS-Thurs-B-192****MSC-mediated Cardiomyocyte Proliferation: A Potential Mechanism for Cardiac Regeneration**G. GAUDETTE¹, E. J. BURFORD¹, K. MINN¹, AND A. CLEMENTE¹¹Worcester Polytechnic Institute, Worcester, MA**PS-Thurs-B-193****Characterization of Inner Layer Material for Intimal Layer Substitution in a Novel Vascular Composite Graft**J. D. BANIK¹, L. DUAN¹, N. SCHIELE¹, D. T. CORR¹, AND J. A. COOPER¹¹Rensselaer Polytechnic Institute, Troy, NY**PS-Thurs-B-194****Controlling Differentiation of Mouse Embryonic Stem Cells Through Combinatorial Effects of Shear Stress, Matrices, and Soluble Factors**D. Y. KIM¹, L. O. CRUZ¹, AND G. DAI¹¹Rensselaer Polytechnic Institute, Troy, NY**PS-Thurs-B-195****Controlling Endothelial Differentiation from Human Pluripotent Stem Cells**S. KUSUMA¹, S. TAN¹, P. MALI¹, L. CHENG¹, AND S. GERECHT¹¹Johns Hopkins University, Baltimore, MD**Track: Tissue Engineering****Novel Biomaterials and Scaffolds****PS-Thurs-B-196****Optimization of the 'Click' Reaction for Therapeutic Cell Encapsulation Utilizing RIN-5F Cells**J. BREGER^{1,2}, B. FISHER², I. ISAYEVA², L. BAEVA², R. SAMY², S. POLLACK², AND N. WANG¹¹University of Maryland, College Park, College Park, MD, ²Food and Drug Administration, Silver Spring, MD**PS-Thurs-B-197****The Effect of Primary Amines, Overall Charge, and Ligand Targeting on the Effectiveness of Poly(ethylenimine)-Hyaluronic Acid Conjugates as Gene Therapy Agents**C. J. NEEDHAM¹, S. CHEW¹, A. K. WILLIAMS¹, F. K. KASPER¹, AND A. G. MIKOS¹¹Rice University, Houston, TX**PS-Thurs-B-198****Gelatin—based Injectable Gels for the Three Dimensional Culture of Osteoblasts**A. A. AMINI¹, AND L. S. NAIR¹¹University of Connecticut Health Center, Farmington, CT**PS-Thurs-B-199****Surface Chemical Characterization of Adhesive Nano-domains in Diblock Copolymer Foams**S. CHIRASATISIN¹, P. VISWANATHAN², G. BATTAGLIA², AND A. J. ENGLER¹¹University of California, San Diego, La Jolla, CA, ²The University of Sheffield, Sheffield, United Kingdom**PS-Thurs-B-200****In Vivo Cartilage Tissue Engineering with Lysozyme Susceptible Bacterial Cellulose as a Scaffold**V. YADAV¹, L. SUN¹, B. PANILAITIS¹, AND D. KAPLAN¹¹Tufts University, Medford, MA**PS-Thurs-B-201****Citric Acid-based Biodegradable Injectable Elastomeric Composites for Osteonecrosis Treatment**M. PALMER¹, D. GYAWALI¹, H. KIM², AND J. YANG¹¹University of Texas at Arlington, Arlington, TX, ²Scottish Rite Hospital for Children, Sarah M. and Charles E. Seay Center for Musculoskeletal Research, Dallas, TX**PS-Thurs-B-202****Laser Machined Trilayer Scaffolds for Blood Vessel Engineering**C. LEE¹, Y. LIM¹, D. FARSON¹, H. POWELL¹, AND J. LANNUTTI¹¹The Ohio State University, Columbus, OH**PS-Thurs-B-203****Novel Mechanically Competent Polysaccharide Scaffolds for Bone Tissue Engineering**U. TOTI¹, A. ARAVAMUDHAN¹, M. DENG¹, C. LAURENCIN¹, AND S. KUMBAR¹¹UConn Health Center, Farmington, CT**PS-Thurs-B-204****Synthetic Surface for Human iPSC Cell Expansion in Defined Medium**H. YAO¹, S. JIN¹, K. YE¹, AND Z. MELKOUMIAN²¹University of Arkansas, Fayetteville, AR, ²Corning Incorporated, New York, NY**PS-Thurs-B-205****Highly Elastic and Aligned Polyurethane Fiber Scaffolds for Tissue Engineering**J. WANG¹, K. SHEETS¹, AND A. S. NAIN¹¹Virginia Tech, Blacksburg, VA**PS-Thurs-B-206****Micro-CT Assessment of Magnesium Screws In-Vivo in the Rabbit Mandible**S. E. HENDERSON¹, A. J. ALMARZA¹, W. L. CHUNG¹, AND P. N. KUMTA¹¹University of Pittsburgh, Pittsburgh, PA**PS-Thurs-B-207****Creating Angiogenic Growth Factor Gradient in Tissue Constructs to Stimulate Angiogenesis**X. GUO¹, Z. LI¹, AND J. GUAN¹¹The Ohio State University, Columbus, OH**PS-Thurs-B-208****The Design of Detachable Nanoporous Polyelectrolyte Multilayer Films for Applications in Hepatic Tissue Engineering**A. L. LARKIN¹, R. M. PARHAM¹, AND P. RAJAGOPALAN¹¹Virginia Tech, Blacksburg, VA

PS-Thurs-B-209**Novel pH-responsive Scaffolds with Self-Actuating Oxygen Transport**J-O. YOU¹, D. ALMEDA¹, M. RAFAT¹, AND D. AUGUSTE¹¹Harvard University, Cambridge, MA**PS-Thurs-B-210****A Novel Three-Dimensional (3-D) Scaffold Enhancing Human MCF-10A Mammary Epithelial Cell Proliferation and Inducing 3-D Growth**H. P. HANNI¹, R. E. KAST¹, M. A. BRUSATORI¹, AND G. W. AUNER¹¹Wayne State University, Detroit, MI**PS-Thurs-B-211****Drainage of Vascularized Microfluidic Fibrin Scaffolds**K. WONG¹, AND J. TIEN¹¹Boston University, Boston, MA**PS-Thurs-B-212****Deep Grooved Fibers for Long Bone Regeneration: the Effect of Scaffold Cross-Sectional Geometry**S. STEWART-CLARK^{1,2}, V. TRAN^{1,2}, AND X. WEN^{1,2}¹Clemson University, Charleston, SC, ²Medical University of South Carolina, Charleston, SC**PS-Thurs-B-213****Crosslinking of Dermis-Derived Hydrogels Increases Stiffness and Resistance to Degradation**S. PILIPCHUK¹, M. VAICIK¹, J. LARSON¹, AND E. M. BREY^{1,2}¹Illinois Institute of Technology, Chicago, IL, ²Hines Veterans Administration Hospital, Hines, IL**PS-Thurs-B-214****Active Cell Culture: A 3D Programmable Shape-Memory Scaffold**L-F. TSENG^{1,2}, P. T. MATHER^{1,2}, AND J. H. HENDERSON^{1,2}¹Syracuse University, Syracuse, NY, ²Syracuse Biomaterials Institute, Syracuse, NY**PS-Thurs-B-215****Fabrication of Hydrogels with Elasticity Changeable by Alkaline Phosphatase**H. TODA¹, M. YAMAMOTO¹, AND Y. TABATA¹¹Kyoto University, Kyoto, Japan**PS-Thurs-B-216****Controlled Chemistry for Studying Combined effects of ECM proteins on Cell Response**A. K. CHEN¹, F. DELRIO¹, A. PETERSON¹, K-H. CHUNG¹, K. BHADRIRAJU¹, AND A. L. PLANT¹¹NIST, Gaithersburg, MD**PS-Thurs-B-217****Microencapsulation Of Octyl Cyanoacrylate For Self-Healing Bone Cement**V. D. GANDHAM¹, A. B. BROCHU¹, AND W. M. REICHERT¹¹Duke University, Durham, NC**PS-Thurs-B-218****Designing Fibrin Microthreads with Tunable Structural Properties for Skeletal Muscle Regeneration**J. M. GRASMAN^{1,2}, T. DOMINKO^{1,2}, R. L. PAGE^{1,2}, AND G. D. PINS^{1,2}¹Worcester Polytechnic Institute, Worcester, MA, ²Bioengineering Institute, Worcester, MA**PS-Thurs-B-219****Creation of Porous PLA Nanofibers Doped with Tricalcium Phosphate for Bone Tissue Engineering Applications**M. MOHITI-ASLI¹, B. POURDEYHIMI¹, AND E. G. LOBOA^{1,2}¹North Carolina State University, Raleigh, NC, ²University of North Carolina, Chapel Hill, NC**PS-Thurs-B-220****Extracellular Matrix-coated Microbeads Deployed in Alginate Hydrogels for Bone Formation**A. BHAT¹, A. HOCH¹, M. DECARIS¹, AND K. LEACH¹¹University of California, Davis, Davis, CA**PS-Thurs-B-221****Engineering the Rate of Degradation of Fumarate-based Polyesters**K. N. CICOTTE^{1,2}, S. M. DIRK², AND E. L. HEDBERG-DIRK¹¹University of New Mexico, Albuquerque, NM, ²Sandia National Laboratories, Albuquerque, NM**PS-Thurs-B-222****Perfluorocarbon Addition and Its Effect on the Transport of Biomolecules in Alginate Hydrogels**W. L. STOPPEL¹, J. C. WHITE¹, S. R. BHATIA¹, AND S. C. ROBERTS¹¹University of Massachusetts Amherst, Amherst, MA**PS-Thurs-B-223****Evaluation of a Composite Tissue Scaffold for Healing of Chronic Wounds**M. COZAD¹, S. BACHMAN¹, AND S. GRANT¹¹University of Missouri, Columbia, MO**PS-Thurs-B-224****Mechanical Optimization of a PEGDA-based Keratoprosthesis**A. ZELLANDER¹, M. MAKHSOUS², AND M. CHO¹¹University of Illinois, Chicago, IL, ²Northwestern University, Chicago, IL**PS-Thurs-B-225****Oxygen Release from Particulate Oxygen Generating Substances (POGS) and Its Effect on the Viability of Encapsulated Human Islets**J. P. MCQUILLING^{1,2}, R. A. PARETA², C. CHILDERS², B. HARRISON², A. C. FARNEY², AND E. C. OPARA²¹Virginia Tech Wake Forest University School of Biomedical Engineering and Sciences, Winston-Salem, NC, ²Wake Forest School of Medicine, Winston-Salem, NC**PS-Thurs-B-226****Influence of Hydrolysis on the Properties of Poly(ethylene glycol)-based Degradable Hydrogels**S. KOCAGOZ¹, Y. CHIU¹, J. LARSON¹, AND E. BREY^{1,2}¹Illinois Institute of Technology, Chicago, IL, ²Department of Research, Hines V.A. Hospital, Hines, IL**PS-Thurs-B-227****Porosity Dependence of the Weibull Modulus, Fracture Strength and Elastic Modulus for Hydroxyapatite and Other Brittle Materials**X. FAN¹, E. D. CASE¹, F. REN², Y. SHU¹, AND M. J. BAUMANN¹¹Michigan State University, East Lansing, MI, ²Oak Ridge National Laboratory, Oak Ridge, TN**PS-Thurs-B-228****Application of Parafilm[®] as Culture Substrate for Neurobiological Studies and Neuron Based Biochips**S. YOO¹, AND Y. NAM¹¹KAIST, Daejeon, Korea, Republic of**PS-Thurs-B-229****Incorporating Inducible Molecules for Engineering Genetically Interactive Materials**T. DEANS¹¹Johns Hopkins University, Baltimore, MD**PS-Thurs-B-230****In Vitro Characterization of Bioactivity on Polycaprolactone- Demineralized Bone Matrix Scaffolds for Bone Tissue Engineering**T. MOLOYE¹, AND C. BATICH¹¹University of Florida, Gainesville, FL**PS-Thurs-B-231****A Novel Method for Electrospinning Long Fibers using Poly (glycerol-dodecanoate)**X. DAI¹, K. KATHIRIA¹, AND Y-C. HUANG¹¹Florida International University, Miami, FL

PS-Thurs-B-232**Enhanced Angiogenesis of Omentum Pouch Transplanted with Alginate Microcapsules Containing FGF-1**J. P. MCQUILLING^{1,2}, J. ARENAS-HERRERA³, C. CHILDERS³, R. A. PARETA³, O. KHANNA⁴, E. M. BREY⁴, H. P. GREISLER^{5,6}, A. C. FARNEY^{2,3}, AND E. C. OPARA³¹Virginia Tech Wake Forest University, Winston-Salem, NC, ²Wake Forest School of Medicine, Winston-Salem, ³Wake Forest School of Medicine, Winston-Salem, NC, ⁴Illinois Institute of Technology, Chicago, IL, ⁵Hines VA Hospital, Hines, IL, ⁶Loyola University Medical center, Maywood, NC**PS-Thurs-B-233****Carbon Nanotubes Composite Scaffolds for Bone Tissue Engineering: Mechanical and *In Vivo* Investigation**P. E. MIKAEL¹, AND S. NUKAVARAPU¹¹University of Connecticut, Farmington, CT**PS-Thurs-B-234****Optimizing Spinneret-to-Collector Distance and Solvent Concentration Maximizes Alignment of Electrospun Poly-L-Lactide Nanofibers**S. J. TUCK¹, M. K. LEACH¹, AND J. M. COREY^{1,2}¹The University of Michigan, Ann Arbor, MI, ²GRECC VA Ann Arbor Healthcare Center, Ann Arbor, MI**PS-Thurs-B-235****Layered, Three-dimensional Tissue Structures Created with Electrospun Polymer Nanofibers and Live-cell Spraying**J. T. SEIL¹, AND T. J. WEBSTER¹¹Brown University, Providence, RI**PS-Thurs-B-236****Using Growth Factor Conditioning to Modify the Properties of a Cell Derived Extracellular Matrix Biomaterial**J. WOLCHOK¹, AND P. TRESKO¹¹University of Utah, Salt Lake City, UT**PS-Thurs-B-237****Micro-molded Thermoresponsive Polymer Platform for Culture and Release of Aligned Cell Sheets**K. ELINEN¹, S. J. DUPONT¹, R. TOOMEY¹, AND N. D. GALLANT¹¹University of South Florida, Tampa, FL**PS - Thurs - B - 238*****In situ* Re-endothelization via Multifunctional Urethane-doped Polyester (UPE) Nano-Scaffolds**L-C. SU¹, Y-T. TSAI², R. TRAIN², L. TANG², J. YANG², AND K. NGUYEN^{2,1}¹University of Texas at Arlington, Arlington, TX, ²University of Texas at Arlington, Arlington, TX

Thursday, October 13, 2011

1:30PM - 3:00PM

PLATFORM SESSION - THU - 2

Track: Translational Biomedical Engineering – OP-Thurs-2-1

Education and Promotion of Translational Biomedical Engineering II

Chair: Phil Weilerstein

Convention Center – Room 11

Student Engagement in Translation and Commercialization – A panel of student innovators who launched technologies and products will discuss the process of translating research innovations to commercially viable products and businesses as university students. Speakers will include BMEidea competition award winning innovators and others who led the translation of breakthrough technologies to successful commercial outcomes. Speakers will address the development of research based ideas from science to commercially viable innovations with impact on health-care delivery, the personal development that they experienced in doing so and the factors in the educational environment that supported their success. This session is sponsored by the National Collegiate Inventors and Innovators Alliance (NCIIA). Panelists include:

- Phil Weilerstein, Executive Director, National Collegiate Inventors and Innovators Alliance (NCIIA)
- Matthew Callighan, Founder, One Breath
- Brian Mullen, Founder and CEO, Therapeutic Systems
- Gerard Cote, Professor and Department Head, Biomedical Engineering, Texas A&M University

Track: Drug Delivery Systems – OP-Thurs-2-2

Drug Delivery in Tissue Engineering

Chairs: Debra Auguste, Erin Lavik

Convention Center – Room 12

1:30PM Thurs-2-2-A

A Versatile Layer-by-Layered Assembly for Controlled Delivery of Multiple Biomolecules

M. KEENEY¹, R. LEE¹, M. MATHUR¹, L. SEITZ¹, AND F. YANG¹

¹Stanford University, Stanford, CA

1:45PM Thurs-2-2-B

Genetically Engineered TGF- β 1 That Binds to Fibrin and Enhances the Function of Vascular Grafts with MSC Derived Smooth Muscle Progenitor Cells

M-S. LIANG¹, AND S. T. ANDREADIS^{1,2}

¹State University of New York at Buffalo, Amherst, NY, ²Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY

2:00PM Thurs-2-2-C

Drug-Eluting Nanofibrous Patches Demonstrate Importance of Release Kinetics in Spinal Cord Repair

T. L. DOWNING¹, A. WANG², Z-Q. YAN³, A. LEE², AND S. LI¹

¹UC Berkeley - UCSF Graduate Program in Bioengineering, Berkeley, CA, ²University of California, Berkeley, Berkeley, CA, ³Shanghai Jiao Tong University, Shanghai, China, People's Republic of

2:15PM Thurs-2-2-D

Affinity Hydrogel for Controlled Protein Release: Tuning the Binding Capability of Aptamers

M. R. BATTIG¹, B. SOONTORNWORAJIT¹, AND Y. WANG¹

¹University of Connecticut, Storrs, CT

2:30PM Thurs-2-2-E

Injectable, Biodegradable and Flexible Hydrogel Capable of Delivering Angiogenic Growth Factor and Stem Cells

Z. LI¹, X. GUO¹, AND J. GUAN²

¹Ohio State University, Columbus, OH, ²Ohio State University, Columbus, OH

2:45PM Thurs-2-2-F

Drug Eluting Biomaterials for Localized and Sustained Suppression of Inflammation in an Islet Transplant Site

J. D. WEAVER¹, E. Y. SONG¹, A. PILEGGI¹, C. RICORDI¹, P. BUCHWALD¹, AND C. L. STABLER¹

¹University of Miami, Miami, FL

Track: Drug Delivery Systems – OP-Thurs-2-3

Nanotechnology Solutions to Drug Delivery - II

Chairs: Chris Bettinger, Horst von Recum

Convention Center – Room 13

1:30PM Thurs-2-3-A

Liposomal and Nanotube Delivery of Doxorubicin to Tumor Cells Under Shear

C. S. CHEN¹, M. J. MITCHELL¹, A. D. HUGHES¹, V. PONMUDI¹, AND M. R. KING¹

¹Cornell University, Ithaca, NY

1:45PM Thurs-2-3-B

Treatment of Glioblastoma with Doxorubicin & Anti-invasive Imipramine Blue Yields Complete Survival

J. M. MUNSON¹, R. KHAN¹, J. ARBISER², AND R. V. BELLAMKONDA¹

¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA

2:00PM Thurs-2-3-C

Engineered Outer Membrane Vesicle Vaccines Can Induce Robust and Strain-Variable Immune Responses

J. ROSENTHAL¹, J. C-J. HUANG¹, A. DOODY¹, S. MENDEZ^{1,2}, M. DELISA¹, AND D. PUTNAM¹

¹Cornell University, Ithaca, NY, ²Baker Institute for Animal Health, Ithaca, NY

2:15PM Thurs-2-3-D

Hierarchical Nanostructured Polymer Films Enhance Protein, Antibody, and Drug Permeability *in vitro* and *In Vivo*

K. R. KAM^{1,2}, K. E. FISCHER^{1,2}, S. M. BOCK^{3,4}, J. OLLERENSHAW⁴, I. V. SCHUMACHER⁴, R. ROSS⁴, AND T. A. DESAI^{1,2}

¹University of California, San Francisco, San Francisco, CA, ²University of California, Berkeley, Berkeley, CA, ³Georgia Institute of Technology, Atlanta, GA, ⁴Kimberly-Clark, Atlanta, GA

2:30PM Thurs-2-3-E

Serum-Stable Polymeric Nanoparticles for Management of Atherosclerosis via Scavenger Receptor Blocking

A. W. YORK¹, D. R. LEWIS¹, K. R. ZABLOCKI¹, L. GU¹, K. E. UHRICH¹, R. K. PRUD'HOMME², AND P. V. MOGHE¹

¹Rutgers University, Piscataway, NJ, ²Princeton University, Princeton, NJ

2:45PM Thurs-2-3-F

Temperature-Responsive Interpenetrating Polymer Network Nanogels and Nanocomposites

B. V. SLAUGHTER¹, AND N. A. PEPPAS¹

¹The University of Texas at Austin, Austin, TX

PLATFORM
SESSIONS
Th-2

Track: Systems Biology, Bioinformatics and Computational Bioengineering – OP-Thurs-2-4

Image-based Modeling and Characterization for Biomedicine

Chairs: Brian P. Helmke, Melissa Klein Gardner
Convention Center – Room 14

1:30PM Thurs-2-4-A

In-Vivo MRI-Based Models Of Infarcted Hearts Successfully Predict Optimal Ablation Site

H. J. AREVALO¹, C. PARK¹, R. BLAKE¹, H. HALPERIN¹, AND N. TRAYANOVA¹
¹Johns Hopkins University, Baltimore, MD

1:45PM Thurs-2-4-B

Biological Interpretation of Image Biomarkers for Cancer Diagnosis

S. KOTHARI¹, M. D. WANG², AND J. H. PHAN²
¹Georgia Institute of Technology, Atlanta, GA, ²Georgia Institute of Technology and Emory University, Atlanta, GA

2:00PM Thurs-2-4-C

AAAVASC: A novel Integrated Approach for Image Based Modeling Toward Individualized AAA Rupture Risk Assessment

S. S. RAUT¹, J. SHUM¹, S. CHANDRA², A. JANA³, P. LIU⁴, K. LEE¹, E. S. DI MARTINO⁵, T. C. DOEHRING⁶, AND E. A. FINOL¹
¹Carnegie Mellon University, Pittsburgh, PA, ²University of Notre Dame, South Bend, IN, ³Pittsburgh Supercomputing Center, Pittsburgh, PA, ⁴Rex Medical, Conshohocken, PA, ⁵University of Calgary, Calgary, AB, Canada, ⁶Drexel University, Philadelphia, PA

2:15PM Thurs-2-4-D

Quantifying Rib Morphology Across Ages and Genders Using Image Segmentation and Registration Techniques

A. A. WEAVER¹, C. NGUYEN¹, C. L. WYATT², AND J. D. STITZEL¹
¹Virginia Tech-Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC, ²Virginia Tech, Blacksburg, VA

2:30PM Thurs-2-4-E

Blood Clot Structure and Integrity as a Function of Intra-Thrombus Chemo-Transport and Local Stress Mechanics: Modeling Based On In-Vivo Imaging Under Flow

R. S. VORONOV¹, T. J. STALKER², L. F. BRASS², AND S. L. DIAMOND¹
¹University of Pennsylvania, Philadelphia, PA, ²University of Pennsylvania School of Medicine, Philadelphia, PA

2:45PM Thurs-2-4-F

Mechanical Characterization of Multi-Layered Biological Samples using Atomic Force Microscopy

J. DIAS¹, D. GONZALEZ¹, AND N. ZIEBARTH¹
¹University of Miami, Coral Gables, FL

Track: Neural Engineering – OP-Thurs-2-5

Engineering the Neural Environment

Chairs: Ryan Gilbert, Erin Lavik
Convention Center – Room 15

1:30PM Thurs-2-5-A

Gradient-Engineered Synapse Formation in 3D Neural Cell Cultures

A. KUNZE¹, A. VALERO¹, AND P. RENAUD¹
¹EPFL, Lausanne, Switzerland

1:45PM Thurs-2-5-B

Neuronal Extracellular Matrix Synthesis and Deposition: Effects of Culture Dimensionality

S. BALASUBRAMANIAN¹, N. VADALA¹, AND J. B. LEACH¹
¹University of Maryland Baltimore County, Baltimore, MD

2:00PM Thurs-2-5-C

Guiding Neurites in Real-time with In Situ Multiphoton Photofabricated Topographies

M. ALI¹, AND J. B. SHEAR¹
¹University of Texas, Austin, TX

2:15PM Thurs-2-5-D

Multi-Protein Nanoarrays to Study Axonal Preference

S. G. RICOULT¹, J. P. CORREIA¹, T. E. KENNEDY¹, AND D. JUNCKER¹
¹McGill University, Montreal, QC, Canada

2:30PM Thurs-2-5-E

Intervertebral Disc Annular Yield May Play a Role in Lumbar Spine Segmental Instability

S. M. GONZALEZ^{1,2}, J. L. BAISDEN¹, AND B. D. STEMPEL¹
¹MEDICAL COLLEGE OF WISCONSIN, MILWAUKEE, WI, ²MILWAUKEE SCHOOL OF ENGINEERING, MILWAUKEE, WI

2:45PM Thurs-2-5-F

Mechanical Induction of SH-SY5Y Cell Neurogenesis

S. HIGGINS¹, J. LEE¹, AND J. LIM¹
¹University of Nebraska-Lincoln, Lincoln, NE

Track: Orthopedic and Rehabilitation Engineering – OP-Thurs-2-6

Orthopedic Imaging

Chairs: Hani Awad, Irene Georgakoudi, Mark Grinstaff
Convention Center – Room 16

1:30PM Thurs-2-6-A

Imaging of Angiogenic and Osteoblastic Parameters in a Model of Osteoarthritis

J. P. DYKE¹, M. SYNAN¹, P. EZELL¹, D. BALLON¹, AND R. K. AARON²
¹Weill Cornell Medical College, New York, NY, ²Brown Medical School, Providence, RI

1:45PM Thurs-2-6-B

A Method for Ultra-high Resolution Assessment of Cartilage Thickness in Small Animal Joints *ex vivo*

X. I. GU^{1,2}, D. J. LEONG^{1,2}, P. PALACIO¹, N. MALDONADO¹, E. WILLIAMS¹, H. B. SUN^{1,2}, AND L. CARDOSO¹
¹City University of New York, New York, NY, ²Mount Sinai School of Medicine, NY

2:00PM Thurs-2-6-C

Noninvasive Optical Monitoring of Bone Quality in an Arthritic Mouse Model

M. TAKAHATA^{1,2}, J. MAHER¹, J. INZANA¹, A. BERGER¹, AND H. AWAD¹
¹University of Rochester, Rochester, NY, ²University of Rochester, Rochester, NY

2:15PM Thurs-2-6-D

Hip Joint Morphology Characterization in Femoroacetabular Impingement and Normal Patients

J. URBAN¹, A. A. WEAVER¹, L. C. RUCKER¹, K. THEIVENDRAN², AND J. D. STITZEL¹
¹Virginia Tech-Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC, ²Royal Orthopedic Hospital, Birmingham, United Kingdom

2:30PM Thurs-2-6-E

Attenuation of Transverse Ultrasound in Direct and Circumferential Pathways in Cortical Bones: Simulation and Phantom Studies

L. LIN¹, J. CHENG¹, AND Y-X. QIN¹
¹Stony Brook University, Stony Brook, NY

2:45PM Thurs-2-6-F**A Cationic Contrast Agent for Enhanced Quantitative Computed Tomography of Cartilage**R. C. STEWART¹, P. BANSAL¹, B. SNYDER², AND M. GRINSTAFF¹¹Boston University, Boston, MA, ²Beth Israel Deaconess Medical Center, Boston, MA**Track: Biomedical Imaging and Optics – OP-Thurs-2-7****Imaging in the Enhancement or Assessment of Therapeutic Delivery****Chairs:** Mark Cronin-Golomb, Smita Sampath
Convention Center – Room 17**1:30PM Thurs-2-7-A****Assessment of Early Diastolic Function in Left Ventricle Using MRI- Invited**Z. ZHANG¹, B. A. LIN¹, D. P. DIONE¹, P. B. BROWN¹, A. J. SINUSAS¹, AND S. SAMPATH¹¹Yale University School of Medicine, New Haven, CT**2:00PM Thurs-2-7-B****Quantification of Engineered Adipose Tissue Development Using Multi-Photon Microscopy**K. P. QUINN¹, E. BELLAS¹, N. FOURLIGAS¹, D. L. KAPLAN¹, AND I. GEORGAKOUD¹¹Tufts University, Medford, MA**2:15PM Thurs-2-7-C****Comparing Carbon Nanotubes to Nanohorns as Therapeutic Platforms using Quantum Dot Imaging**K. ZIMMERMANN¹, J. ZHANG¹, H. C. DORN¹, T. E. LONG¹, M. N. RYLANDER¹, AND C. G. RYLANDER¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA**2:30PM Thurs-2-7-D****Fluoroscopic Imaging for Validation and Correction of Patient-Specific Radiation Therapy Treatment Target Margins for Mobile Tumors**K. T. MALINOWSKI^{1,2}, R. GEORGE², S. DIETERICH², AND W. D. D'SOUZA^{1,2}¹University of Maryland, College Park, MD, ²University of Maryland School of Medicine, Baltimore, MD, ³Stanford University Cancer Center, Stanford, CA**2:45PM Thurs-2-7-E****Mechanical and Microscopic Characterization of Engineered Tissue Growth and Remodeling**Y. BAI¹, J. D. HUMPHREY², AND A. T. YEH¹¹Nonlinear Optical Microscopy, College Station, TX, ²Biomedical Engineering, New Haven, CT**Track: New Frontiers in Biomedical Engineering – OP-Thurs-2-8****Bridging Medicine and Materials and Biomedical Imaging****Chairs:** Gang Han, Hakho Lee
Convention Center – Room 21**1:30PM Thurs-2-8-A****Multiplexed Magnetic Labeling Amplification Using Oligonucleotide Hybridization**M. LIONG¹, C. TASSA¹, S. Y. SHAW¹, H. LEE¹, AND R. WEISSLEDER¹¹Massachusetts General Hospital, Boston, MA**1:45PM Thurs-2-8-B****Enhanced T2 Shortening by Polymeric Entrapment and Cellular Internalization of MRI Contrast Agents**C. XU¹, D. MIRANDA-NIEVES², I. ROES¹, J. A. ANKRUM^{2,3}, M. NAHRENDORF⁴, AND J. M. KARP¹¹Brigham and Women's Hospital, Cambridge, MA, ²MIT, Cambridge, MA, ³Harvard, Cambridge, MA, ⁴Massachusetts General Hospital, Boston, MA**2:00PM Thurs-2-8-C****Rescue of Marrow Failure by Stem Cell Delivery into Microfabricated Biomaterial Implants**J. LEE^{1,2}, M. LI^{1,2}, J. MILWID^{1,3}, R. WEISSLEDER¹, M. YARMUSH^{1,2}, AND B. PAREKKADAN^{1,2}¹Massachusetts General Hospital, Harvard Medical School, Boston, MA, ²Shriners Hospital for Children, Boston, ³Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge**2:15PM Thurs-2-8-D****Inflamed Leukocyte-mimetic Nanoparticles for Molecular Imaging of Tumor and Tumor Vasculature**X. CHEN¹, R. WONG^{1,2}, I. KHALIDOV², A. WANG³, J. LEELAWATTANACHAI¹, Y. WANG^{1,2}, AND M. JIN^{1,2}¹Cornell University, Ithaca, NY, ²Weill Cornell Medical College, New York, ³Ocean Nanotech, LLC, Springdale, AR**2:30PM Thurs-2-8-E****Nondestructive Real-Time Imaging of Endothelial Cell Vessel-Like Formation Through a Tissue Engineered Scaffold**B. M. WHITED¹, M. HOFMANN¹, Y. XU¹, AND M. N. RYLANDER¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA**2:45PM Thurs-2-8-F****Evaluation of Photothermal Ablation of Cancer Cells by Using Chitosan Coates Gold Nanoparticles via Flow Cytometry Technique**G. ZHANG¹, D. PATEL¹, D. STEPHENS¹, R. ESTRADA¹, AND A. M. GOBIN¹¹University of Louisville, Louisville, KY**Track: Tissue Engineering – OP-Thurs-2-9****Musculoskeletal Tissue Engineering - I****Chairs:** Esmail Jabbari, Peter Yang
Convention Center – Room 22**1:30PM Thurs-2-9-A****Physiologic and Genetic Comparison Between Primary Human Skeletal Myoblasts and the C2C12 Cell Line**C. S. CHENG¹, Y. EL-ABD¹, Y-E. HYUN¹, R. HUGHES¹, W. E. KRAUS¹, AND G. A. TRUSKEY¹¹Duke University, Durham, NC**1:45PM Thurs-2-9-B****The Effect of Loading and Culture Duration on Anatomically Shaped Tissue-Engineered Menisci**J. L. PUETZER¹, J. J. BALLYNS¹, AND L. J. BONASSAR¹¹Cornell University, Ithaca, NY**2:00PM Thurs-2-9-C****Enhancing Cranial Allograft Integration Through Local FTY720 Delivery**T. WANG¹, C. S. HUANG¹, D. A. BARKER¹, S. S. THOLPADY¹, AND E. A. BOTCHWEY¹¹University of Virginia, Charlottesville, VA**2:15PM Thurs-2-9-D****Transient Hypoxia Enhances Matrix Synthesis and Mechanical Properties of Engineered Cartilage**S. YODMUANG¹, AND G. V. NOVAKOVIC¹¹Columbia University, New York, NY**2:30PM Thurs-2-9-E****In Vivo Tibial Compression Increases Bone Mass in a Breast Cancer Metastasis Model**M. LYNCH¹, S. PATHI¹, K. DENT¹, D. BROOKS¹, M. VAN DER MEULEN¹, AND C. FISCHBACH¹¹Cornell University, Ithaca, NY

2:45PM Thurs-2-9-F**Collagen Surface Localization of Tissue Engineered Menisci Treated with IGF-I**S. PARK¹, B. BROWN¹, AND L. BONASSAR¹¹Cornell University, Ithaca, NY**Track: Tissue Engineering – OP-Thurs-2-10****Cardiovascular Tissue Engineering - II****Chairs:** Mariah Hahn, Jeff Jacot*Convention Center – Room 23***1:30PM Thurs-2-10-A****Creation Of Perfused, Transplantable Vascular Constructs In 24 Hours Using Human Postnatal Cells**P. ALLEN^{1,2}, K-T. KANG^{2,3}, AND J. BISCHOFF^{2,3}¹Boston University, Boston, MA, ²Children's Hospital Boston, Boston, MA, ³Harvard Medical School, Boston, MA**1:45PM Thurs-2-10-B****Bioactive Nanofibrous Grafts for In Situ Vascular Tissue Engineering**J. J. HENRY¹, N. DERUGIN², AND S. LI¹¹University of California, Berkeley, Berkeley, CA, ²University of California, San Francisco, San Francisco, CA**2:00PM Thurs-2-10-C****Biological Response of Mesenchymal Stem Cells to Direct Coculture with Cord-Blood Derived Endothelial Cells and Fluid Shear Stress in Coculture**S. J. BOLGER¹, L. CAO¹, AND G. A. TRUSKEY¹¹Duke University, Durham, NC**2:15PM Thurs-2-10-D****Endothelial Cells from Embryonic Stem Cells in Chemically Defined Medium**K. E. MCCLOSKEY¹, AND A. BLANCAS¹¹UC, Merced, Merced, CA**2:30PM Thurs-2-10-E****Smooth Muscle Cells Enhances Early Functional Remodeling of Tissue Engineered Sheep Arterio-Venous Fistula Grafts**M. MACHINGAL¹, L. P. NEFF¹, J. ARENAS-HERRERA¹, B. W. BERNISH¹, S. SOKER¹, M. E. VAN DYKE¹, R. GEARY¹, AND G. CHRIST¹¹Wake Forest University Health Science, Winston Salem, NC**2:45PM Thurs-2-10-F****Development of a Small Diameter Vascular Graft Using the Amniotic Membrane**J. A. BRENNAN¹, AND M. U. NOLLERT¹¹University of Oklahoma, Norman, OK**Track: Devices: Nano to Micro – OP-Thurs-2-11*****Micro and Nanostructured Biomaterials - II****Chairs:** Ali Khadamhosseni*Convention Center – Room 24***1:30PM Thurs-2-11-A****Osteogenic Differentiation of Human Mesenchymal Stem Cells on Silicate Cross-linked Poly(ethylene Oxide)**V. KISHORE¹, A. K. GAHARWAR¹, W. PAVALKO¹, O. AKKUS¹, AND G. SCHMIDT¹¹Purdue University, West Lafayette, IN**1:45PM Thurs-2-11-B****In Vivo and In Vitro Nanoparticle Uptake by Endothelial Cells**A. L. DOIRON¹, S. JIANG¹, K. YAEHNE¹, R. D. SHEPHERD¹, S. CHILDS¹, D. T. CRAMB¹, AND K. D. RINKER¹¹University of Calgary, Calgary, AB, Canada**2:00PM Thurs-2-11-C****Microstructural Analysis of Insect Tracheal Tubes Toward Microfluidic Applications**M. R. WEBSTER¹, R. DE VITA¹, J. TWIGG¹, AND J. SOCHA¹¹VIRGINIA TECH, BLACKSBURG, VA**2:15PM Thurs-2-11-D****Quantifying Shifts in the Plasmonic Spectra of Metallic Nanoparticles Following Cellular Uptake**A. L. CHEN¹, AND R. DREZEK¹¹Rice University, Houston, TX**2:30PM Thurs-2-11-E****Single Wall Carbon Nanotubes Enter Cells: Uptake, Sub-cellular Localization and Targeting**B. D. HOLT¹, P. N. YARON¹, P. A. SHORT¹, M. LÖSCHE¹, M. F. ISLAM¹, AND K. N. DAHL¹¹Carnegie Mellon University, Pittsburgh, PA**2:45PM Thurs-2-11-F****Development of Novel Multi-Layer Microparticles for Cell Isolation and Enrichment**A. S. WADAJKAR^{1,2}, B. KOPPOLU^{1,2}, Z. BHAVSAR^{1,2}, AND K. T. NGUYEN^{1,2}¹University of Texas, Arlington, TX, ²University of Texas Southwestern Medical Center, Dallas

*Supported by an unrestricted educational grant from

**Track: Cardiovascular Engineering- OP-Thurs-2-12****Cardiovascular Mechanotransduction - II****Chairs:** Deborah Leckband, Michael Smith*Convention Center – Room 25***1:30PM Thurs-2-12-A****Effect of Mechanical Strain on Contractile Functions of Shape-Controlled Single Cardiac Myocytes**H. LEE¹, H. JIN¹, M. L. MCCAIN¹, AND K. K. PARKER¹¹Disease Biophysics Group, Harvard University, Cambridge, MA**1:45PM Thurs-2-12-B****Myocyte Intercellular Adhesion Signaling and Mechanics are Contractility Dependent**A. CHOPRA¹, A. PATEL², V. LIN³, P. A. JANMEY⁴, AND J. Y. KRESH³¹Drexel University, Philadelphia, PA, ²Drexel University College of Medicine, Philadelphia, PA, ³Drexel University College of Medicine, Philadelphia, PA, India, ⁴University of Pennsylvania, Philadelphia, PA, India**2:00PM Thurs-2-12-C****Effect of Mechanical Stress on Cardiac Muscle Excitation-Contraction Coupling**H. HAN¹, D. YU¹, E. LEON¹, L. IZU¹, T. PAN¹, K. LAM¹, AND Y. CHEN-IZU¹¹UCDavis, Davis, CA**2:15PM Thurs-2-12-D****Microfabricated Platforms to Measure Forces from Engineered Cardiac Microtissues**T. BOUDOU¹, W. R. LEGANT¹, N. THAVANDIRAN², M. A. BOROCHIN¹, A. MU³, K. B. MARGULIES³, M. RADISIC², P. W. ZANDSTRA², AND C. S. CHEN¹¹University of Pennsylvania, Philadelphia, PA, ²University of Toronto, Toronto, ON, Canada, ³Temple University Medical School, Philadelphia, PA

2:30PM Thurs-2-12 -E**Identifying the Molecular Mechanism of Cardiac Aging via *In Situ* Measurements of Drosophila Myocardial Stiffness**

G. KAUSHIK¹, M. NISHIMURA², A. CAMMARATO², R. BODMER², AND A. J. ENGLER¹
¹University of California, San Diego, La Jolla, CA, ²Sanford-Burnham Medical Research Institute, La Jolla, CA

2:45PM Thurs-2-12-F**Substrate Stiffness and Cell Cell Interactions Regulate Vascular Smooth Muscle Cell Behavior in an ECM Dependent Manner**

O. V. SAZONOVA¹, J. HERRMANN¹, J. WONG¹, AND M. NUGENT¹
¹Boston University, Boston, MA

Track: Cardiovascular Engineering- OP-Thurs-2-13**Cardiovascular Modeling and Measurement - II**

Chairs: Kristen Billiar, Lauren Black

Convention Center – Room 26

1:30PM Thurs-2-13-A**3D Analysis of Microcalcifications in Human Vulnerable Plaques**

N. MALDONADO¹, A. KELLY¹, L. CARDOSO¹, AND S. WEINBAUM¹
¹City College of New York, New York, NY

1:45PM Thurs-2-13-B**Variations of Myocardium Wall Radial Strain on the Outflow Tract of HH18 Chicken Embryos Based on 4D Optical Coherence Tomography Data**

X. YIN¹, A. LIU¹, R. K. WANG², K. L. THORNBURG¹, AND S. RUGONYI¹
¹Oregon Health & Science University, Portland, OR, ²University of Washington, Seattle, WA

2:00PM Thurs-2-13-C**A Dynamic Definition of Ventricular Elastance**

J. L. PALLADINO¹, AND A. NOORDERGRAAF²
¹Trinity College, Hartford, CT, ²University of Pennsylvania, Philadelphia, PA

2:15PM Thurs-2-13-D**High Resolution Experimental And Computational Study Of Flow Through A Bi-Leaflet Mechanical Heart Valve (BMHV) In A Model Left Ventricle**

B. CHAFFINS¹, T. LE², L. MIRABELLA¹, A. SANTHANAKRISHNAN¹, N. SAIKRISHNAN¹, F. SOTIROPOULOS², AND A. YOGANATHAN¹
¹Georgia Institute of Technology, Atlanta, GA, ²University of Minnesota, Minneapolis, MN

2:30PM Thurs-2-13-E***In Vitro* Quantification of Full Surface Strain Fields in Mouse Abdominal Aortic Aneurysm**

Y-U. LEE¹, M. COLLINS², K. GENOVESE³, AND J. D. HUMPHREY¹
¹Yale University, New Haven, CT, ²Texas A&M University, College Station, TX, ³Universita' degli Studi della Basilicata, Potenza, Italy

2:45PM Thurs-2-13-F**Aortic Stiffness Estimation via Pulse Wave Imaging in Patient-Specific Simulated and Silicone Phantoms**

D. SHAHMIRZADI¹, R. LI¹, AND E. E. KONOFAGOU¹
¹Columbia University, New York, NY

Track: Respiratory Engineering – OP-Thurs-2-14**Computational Modeling in the Lung**

Chairs: Geoffrey Maksym, Jose Venegas

Convention Center – Room 27

1:30PM Thurs-2-14-A**Lagrangian Transport Analysis of Microfluidic Experimental and Computational Pulsatile Airway Reopening Models**

B. J. SMITH¹, S. LUKENS², E. YAMAGUCHI¹, AND D. P. GAVER III¹
¹Tulane University, New Orleans, LA, ²University of Pittsburgh, Pittsburgh, PA

1:45PM Thurs-2-14-B**Image-based Finite Element Modeling of Lung Epithelial Cell Deformation during Airway Reopening**

X. CHEN¹, AND S. GHADIALI¹
¹The Ohio State University, Columbus, OH

2:00PM Thurs-2-14-C**The Prevalence of Pendelluft During Heterogeneous Bronchoconstriction**

E. E. GREENBLATT^{1,2}, AND T. WINKLER³
¹Massachusetts Institute of Technology, Cambridge, MA, ²Massachusetts General Hospital, Boston, ³Massachusetts General Hospital & Harvard Medical School, Boston, MA

2:15PM Thurs-2-14-D**Robustness and Optimality of the Human Tracheobronchial Tree**

M. FILOCHE^{1,2}, M. FLORENS², AND B. SAPOVAL^{1,2}
¹Ecole Polytechnique, Palaiseau, France, ²ENS Cachan, Cachan, France

2:30PM Thurs-2-14-E**Image-guided Stochastic Modeling of the Lung-Influence of Patchy Ventilation on Impedance Variability in Asthma**

D. LEARY¹, G. PARRAGA², AND G. MAKSYM¹
¹Dalhousie University, Halifax, NS, Canada, ²Robarts Research Institute, London, ON, Canada

2:45PM Thurs-2-14-F**Modeling the Effects of Airway Contraction on Parenchymal Mechanics**

B. MA¹, AND J. H. BATES¹
¹University of Vermont, Burlington, VT

Track: Cellular and Molecular Engineering – OP-Thurs-2-15**Symposium in Honor of Shu Chien's Birthday - II**

Chairs: Song Li, Geert W. Schmid-Schonbein

Marriott – Ballroom B

1:30PM Thurs-2-15-A**Going Against the Flow: Mechanotransduction in the Interstitium**

R. D. KAMM¹, V. VICKERMAN¹, AND W. POLACHEK¹
¹Massachusetts Institute of Technology, Cambridge, MA

2:00PM Thurs-2-15-B**Probing Mechanisms of Mechano-Sensitive Differentiation in Mesenchymal Stem Cells**

A. J. ENGLER¹, Y. S. CHOI¹, AND L. VINCENT¹
¹UC San Diego, La Jolla, CA

2:30PM Thurs-2-15-C**Molecular Imaging of Mechanotransduction in Live Cells**

Y. WANG¹
¹University of Illinois, Urbana-Champaign, Urbana, IL

Thursday, October 13, 2011

4:00PM - 5:30PM

PLATFORM SESSION – THU –3

Track: Cellular and Molecular Engineering – OP-Thurs-3-1**Cell Mechanics-I**

Chairs: Phil LeDuc, Alisha Sarang-Sieminski
Convention Center–Room 11

4:00PM Thurs-3-1-A**Bio-Active Gold Nanoparticles Affect Human Cell Mechanics**T. NOVELLINO¹, A. ZASKE², M. ZHONG¹, S. CRISTINA³, M. FERRARI^{1,4}, AND P. DECUZZI^{1,5}

¹The Methodist Hospital Research Institute, Houston, TX, ²The University of Texas Health Science Center, Houston, TX, ³Biomedical Campus University, Rome, Italy, ⁴MD Anderson Cancer Center, Houston, TX, ⁵University of Magna Graecia, Catanzaro, Italy

4:15PM Thurs-3-1-B**Effects of Cholesterol on Plasma Membrane Mechanics**N. KHATIBZADEH¹, S. GUPTA¹, B. FARRELL², W. BROWNELL², AND B. ANVARI¹

¹University of California, Riverside, Riverside, CA, ²Baylor College of Medicine, Houston, TX

4:30PM Thurs-3-1-C**Strain Measurement in Stress Fiber of Living Endothelial Cell Subjected to Shear Stress**M. SATO¹, Y. UEKI^{1,2}, Y. UDA¹, AND N. SAKAMOTO¹

¹Tohoku University, Sendai, Japan, ²Hitachi Ltd., Hitachi-naka, Japan

4:45PM Thurs-3-1-D**Hydrodynamic Interactions Significantly Alter F-actin Network Dynamics**R. KARIMI^{1,2}, M-R. ALAM¹, AND M. R. MOFRAD¹

¹University of California, Berkeley, CA, ²MIT, Cambridge, MA

5:00PM Thurs-3-1-E**Cell Reorientation is Linked to Traction Realignment and Cytoskeletal Fluidization**R. KRISHNAN¹, A. L. IORDAN^{1,2}, E. PERUSKI², A. P. PIRENTIS², J. P. BUTLER¹, J. J. FREDBERG¹, AND D. STAMENOVIC²

¹Harvard School of Public Health, Boston, MA, ²Boston University, Boston, MA

5:15PM Thurs-3-1-F**Interstitial Flow Influences Tumor Cell Migration Through Competing Mechanisms**W. J. POLACHEK¹, AND R. D. KAMM¹

¹Massachusetts Institute of Technology, Cambridge, MA

Track: Translational Biomedical Engineering – OP-Thurs-3-2**Clinical and Translational Research and Science in Biomedical Engineering**

Chairs: Joseph D. Bronzino, Donald R. Peterson
Convention Center–Room 27

4:00PM Thurs-3-2-A**Paper Based Point-of-Care Testing Strips for Pathogen Detection**C-Z. LI¹, K. VANDENBERG², AND E. ALMEIDE³

¹Florida International University, Miami, FL, ²Florida International University, Miami, FL, ³BIOSENSOR USA Corp., Doral, FL

4:15PM Thurs-3-2-B**Optical Molecular Imaging for Detecting Changes in Extracellular pH in Oral Neoplasia**Z. LUO¹, M. LOJA¹, D. FARWELL¹, Q. C. LUU¹, P. J. DONALD¹, R. GANDOUR-EDWARDS¹, AND N. NITIN¹

¹University of California-Davis, Davis, CA

4:30PM Thurs-3-2-C**Biofilm Quantification on Nano-Modified Endotracheal Tubes**K. M. TARQUINIO^{1,2}, E. SMITH³, AND T. J. WEBSTER²

¹Rhode Island Hospital, Hasbro Children's Hospital, Providence, RI, ²Brown University, Providence, RI, ³Rhode Island Hospital, Providence, RI

4:45PM Thurs-3-2-D**Wearable Ultrasound Therapy for Self Pain Management**G. K. LEWIS¹, S. GUARINO¹, AND R. ORTIZ^{2,3}

¹Cornell University, Ithaca, NY, ²Cayuga Medical Center, Ithaca, NY, ³Medical Pain Consultants, Dryden, NY

5:00PM Thurs-3-2-E**Fostering a Culture of Translational Research**C. K. DRUMMOND¹, A. HDEIB², AND J. L. DUERK¹

¹Case Western Reserve University, Cleveland, OH, ²University Hospitals Case Medical Center, Cleveland, OH

5:15PM Thurs-3-2-F**The Flexible Axial Stimulation (FAST) Intramedullary Nail-Case Study from Idea to Preclinical Study**H. DAILEY¹, C. DALY¹, J. GALBRAITH², M. L. CRONIN³, AND J. HARTY^{2,4}

¹Medical Engineering Design and Innovation Centre, Department of Biomedical Engineering, Cork Institute of Technology, Cork, Ireland, ²Department of Trauma and Orthopaedic Surgery, Cork University Hospital, Wilton, Cork, Ireland, ³Department of Anatomy, University College Cork, Cork, Ireland, ⁴Department of Surgery, University College Cork, Cork, Ireland

Track: Drug Delivery Systems – OP-Thurs-3-3**Novel Materials and Self Assembly: Cancer Applications**

Chairs: Craig Duvall, Stavroula Sofou
Convention Center–Room 13

4:00PM Thurs-3-3-A**Modular Designed Thermoreversible Hydrogels with Controlled Swelling**D. OVERSTREET¹, R. MCLEMORE^{1,2}, AND B. VERNON¹

¹Arizona State University, Tempe, AZ, ²Banner Good Samaritan Medical Center, Phoenix, AZ

4:15PM Thurs-3-3-B**CD8+ T cell Cross-Priming with Polymersome Encapsulated Antigen**E. A. SCOTT¹, A. STANO¹, M. GILLARD¹, M. A. SWARTZ¹, AND J. A. HUBBELL¹

¹Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland

4:30PM Thurs-3-3-C**Doxorubicin Loaded Silk Films for Local Breast Cancer Therapy**P. F. SEIB¹, AND D. L. KAPLAN¹

¹Tufts University, Medford, MA

4:45PM Thurs-3-3-D**Smart Packaging: A Novel Thermo-Responsive Chitosan-Niosome System for Localized Drug Delivery**E. WILLIAMS¹, M. WIRANOWSKA¹, R. TOOMEY¹, AND N. ALCANTAR¹


¹University of South Florida, Tampa, FL

5:00PM Thurs-3-3-E**Capture and Neutralization of Circulating Cancer Cells: Immobilized TRAIL Treatment Combined with Aspirin**K. RANA¹, C. A. REINHART-KING¹, AND M. R. KING¹

¹Cornell University, Ithaca, NY

PLATFORM
SESSIONS
Th-3

PS = Poster Session
OP = Oral Presentation

 = Credit approved

5:15PM Thurs-3-3-F**Targeted Drug Delivery via Cellulose Nanocrystals, a Novel Biomaterial**K. R. COLACINO¹, S. DONG¹, M. ROMAN¹, AND Y. LEE¹¹Virginia Tech, Blacksburg, VA**5:30PM Thurs-3-3-G****Biodegradable Polymersomes for the *In Vitro* Delivery of Gemcitabine to Panc-I Cells**N. SOOD,¹ W. T. JENKINS,² X. YANG,² N. N. SHAH,³ J. S. KATZ,⁴ C. J. KOCH,² P. R. FRAIL,⁵ M. J. THERIEN,⁶ D. A. HAMMER,^{1,4} S. M. EVANS²¹ Department of Chemical and Biomolecular Engineering, University of Pennsylvania, Philadelphia, PA, USA, ² Department of Radiation Oncology, University of Pennsylvania, Perelman School of Medicine, Philadelphia, PA, USA, ³ Department of Neuroscience, University of Miami, Coral Gables, FL, USA, ⁴ Department of Bioengineering, University of Pennsylvania, Philadelphia, PA, USA, ⁵ Department of Chemistry, University of Pennsylvania, Philadelphia, PA, USA, ⁶ Department of Chemistry, Duke University, Durham, NC, USA**Track: Systems Biology, Bioinformatics and Computational Bioengineering – OP-Thurs-3-4****Mathematical and Computational Models of Cellular and Molecular Processes****Chairs:** Oleg Igoshin, Dan Kamei*Convention Center–Room 14***4:00PM Thurs-3-4-A****Computational Modeling of Cathepsin Proteolytic Activity Reveals Novel Mechanisms of Interactive Degradation**Z. BARRY¹, AND M. PLATT¹¹Georgia Institute of Technology, Atlanta, GA**4:15PM Thurs-3-4-B****Predicting Cellular Phenotype Through Integrative Modeling of Genome-scale Metabolic and Regulatory Networks**S. CHANDRASEKARAN¹, A. GHOSH¹, AND N. D. PRICE¹¹UIUC, Urbana, IL**4:30PM Thurs-3-4-C****Comparative Analysis of Graded Virulence in Multiple Burkholderia strains**J. A. BARTELL¹, J. J. VARGA¹, J. B. GOLDBERG¹, AND J. A. PAPIN¹¹University of Virginia, Charlottesville, VA**4:45PM Thurs-3-4-D****Computational Modeling of Coupled Signaling by TGF- β BMP**D. NICKLAS¹, AND L. SAIZ¹¹University of California, Davis, CA**5:00PM Thurs-3-4-E****Receptor Modifications Control VEGFR2 Endocytosis and Endocytic Trafficking: Insights From a Computational Model**G. LIU¹, F. MAC GABHANN¹, AND A. S. POPEL¹¹Johns Hopkins University, Baltimore, MD**5:15PM Thurs-3-4-F****Mechanistic Models of State-dependent Drug Binding During the Mouse Action Potential**Q. ZHOU¹, G. C. BETT¹, AND R. L. RASMUSSEN¹¹University at Buffalo, Buffalo, NY**Track: Neural Engineering – OP-Thurs-3-5****Neural Electrode Tissue Interface****Chairs:** Ravi Bellamkonda, Tracy Cui*Convention Center–Room 15***4:00PM Thurs-3-5-A****Implantable Neural Microthread Electrodes Probe at Mechanisms Behind Chronic Electrode Failure**T. D. KOZAI¹, N. B. LANGHALS¹, P. R. PATEL¹, X. DENG¹, H. ZHANG¹, K. L. SMITH², J. LAHANN¹, N. A. KOTOV¹, F. HOOI¹, A. K. MAJEWSKA³, E. B. BROWN³, AND D. R. KIPKE¹¹University of Michigan, Ann Arbor, MI, ²Wadsworth Center, Albany, NY, ³University of Rochester, Rochester, NY**4:15PM Thurs-3-5-B****Molecular Approaches to Study and Modulate Neurodegeneration at the Brain-Neural Prostheses Interface**M. RAVIKUMAR¹, J. R. CAPADONA¹¹Case Western Reserve University, Cleveland, OH**4:30PM Thurs-3-5-C****Mechanics of the Brain Tissue-Microelectrode Interface in Neural Prostheses**A. SRIDHARAN¹, AND J. MUTHUSWAMY¹¹Arizona State University, Tempe, AZ**4:45PM Thurs-3-5-D****Electrochemical Properties of Chronically Implanted Sputtered Iridium Oxide (SIROF) Microelectrodes**S. KANE¹, S. COGAN², D. MCCREERY³, AND J. EHRlich²¹EIC Laboratories, Norwood, MA, ²EIC Laboratories, Norwood, MA, ³HMRI, Pasadena, CA**5:00PM Thurs-3-5-E*****In Vivo* Effects of LI Coating on Inflammation and Neuronal Health at the Electrode/Tissue Interface**C. L. KOLARCIK¹, D. BOURBEAU¹, E. AZEMI¹, E. ROST¹, L. ZHANG¹, C. F. LAGENAUR¹, D. J. WEBER¹, AND X. T. CUI^{1,2}¹University of Pittsburgh, Pittsburgh, PA, ²McGowan Institute for Regenerative Medicine, Pittsburgh, PA**5:15PM Thurs-3-5-F****Spike Activity Recorded from Regenerative Peripheral Nerve Interfaces Despite Immature Myelination**V. DESAI¹, J. SEIFERT¹, Y-T. KIM¹ AND M. ROMERO¹¹University of Texas at Arlington, Arlington, TX**Track: Orthopedic and Rehabilitation Engineering – OP-Thurs-3-6****Orthopedic Biomaterials****Chairs:** Eben Alsberg, William Murphy*Convention Center–Room 16***4:00PM Thurs-3-6-A****Short and Long Term Growth Factor Release from Biofunctionalized Bone Allograft**F. SHARMIN¹, D. ADAMS², J. LIEBERMAN², AND Y. M. KHAN²¹University of Connecticut, Storrs, CT, ²University of Connecticut Health Center, Farmington, CT**4:15PM Thurs-3-6-B****Ribose Minimizes GAG Loss and Maintains Compressive Stiffness in Cartilage During Decellularization**S. V. ELESWARAPU¹, AND K. A. ATHANASIOU²¹Rice University, Houston, TX, ²University of California, Davis, CA

4:30PM Thurs-3-6-C**A Gene Therapy Approach to Critical Size Defect Repair**C. SIMPSON¹, C. SONNET², Z. LAZARD², R. OLABISI¹, K. SULLIVAN², E. OLMSTED-DAVIS², AND J. WEST¹¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX**4:45PM Thurs-3-6-D****Controlled BMP-2 Delivery Using Chondroitin Sulfate-blood Hydrogel for Musculoskeletal Application**J. A. SIMSON¹, Q. LU¹, E. VANDERPLOEG², I. STREHIN³, AND J. ELISSEFF¹¹Johns Hopkins University, Baltimore, MD, ²Pfizer Inc., Somerville, MA, ³Northwestern University, Evanston, IL**5:00PM Thurs-3-6-E****Composite PDLA/PCL Nanofiber-Injectable Chitosan Gel Scaffold for Osteochondral Regeneration**Z. CUI¹, L. WRIGHT², J. W. FREEMAN³, H. M. DRISSI¹, AND L. NAIR⁴¹University of Connecticut Health Center, Farmington, CT, ²Virginia Tech, Blacksburg, VA, ³Virginia Tech, Blacksburg, VA, ⁴University of Connecticut Health Center, Farmington, CT**5:15PM Thurs-3-6-F****Tough Fiber-Reinforced Hydrogels as Potential Cartilage Replacements**P. CALVERT¹, A. AGRAWAL¹, AND V. CHALIVENDRA¹¹UMass Dartmouth, N Dartmouth, MA**Track: Biomedical Imaging and Optics – OP-Thurs-3-7****Imaging with Applications in Cardiovascular Medicine, Regenerative Medicine, Cancer, and Neuroimaging****Chairs:** Chi Liu, Evan Morris, Siddhartha Sikdar*Convention Center–Room 17***4:00PM Thurs-3-7-A****Extreme Cardiac Imaging-an Overview-Invited**F. JANSEN¹¹GE Global Research, Niskayuna, NY**4:30PM Thurs-3-7-B****Differences in Appetite-Related Brain Activity with High and Low Calorie Food in Pre-Pubescent Girls**S. TSAO¹, T. ADAM¹, D. H. HWANG¹, M. I. GORAN¹, AND M. SINGH¹¹University of Southern California, Los Angeles, CA**4:45PM Thurs-3-7-C****Multi-Parameter Characterization of Circulating Tumor Cells Isolated from Cancer Patients using a Microfluidic Vortex Generator**S. L. STOTT¹, S. M. ROTHENBERG¹, D. T. MIYAMOTO¹, R. J. LEE¹, L. V. SEQUIST¹, S. MAHESWARAN¹, D. A. HABER¹, AND M. TONER¹¹Massachusetts General Hospital, Charlestown, MA**5:00PM Thurs-3-7-D****MRI Detection of Immune Cell Infiltration in Focal Cortical Stroke in Rats using MPIOs**K. S. TANG¹, D. GRANOT¹, S. QUINN¹, B. GANGANNA¹, AND E. M. SHAPIRO¹¹Yale University, New Haven, CT**5:15PM Thurs-3-7-E****Novel Core-shell Magnetic Nanoparticles as Highly Efficient Contrasting Agents for Magnetic Resonance Detection**H. SHAO^{1,2}, T.-J. YOON^{1,2}, R. WEISSLEDER^{1,2}, AND H. LEE^{1,2}¹Harvard Medical School, Boston, MA, ²Massachusetts General Hospital, Boston, MA**Track: New Frontiers in Biomedical Engineering – OP-Thurs-3-8****Bioengineering and Physical Sciences of Cancer****Chairs:** Cynthia Reinhart-King, Adrian Shieh*Convention Center–Room 21***4:00PM Thurs-3-8-A****The Role of Force Generation and MMP Activity in 3D Cancer Cell Migration and Metastasis**C. M. KRANING-RUSH¹, S. P. CAREY¹, J. M. CHAREST¹, A. STARCHENKO¹, AND C. REINHART-KING¹¹Cornell University, Ithaca, NY**4:15PM Thurs-3-8-B****Host Epithelial Geometry Regulates Breast Cancer Cell Invasiveness**E. BOGHAERT¹, D. C. RADISKY², AND C. M. NELSON¹¹Princeton University, Princeton, NJ, ²Mayo Clinic Cancer Center, Jacksonville, FL**4:30PM Thurs-3-8-C****Tyrosine Phosphatase Dysregulation Mediates EGF Sensitivity in MenalNVPositive Breast Cancer Cells**S. ALFORD¹, J. CONDEELIS², F. GERTLER¹, AND D. LAUFFENBURGER¹¹MIT, Cambridge, MA, ²Albert Einstein College of Medicine, Bronx, New York City, NY**4:45PM Thurs-3-8-D****Breast Cancer Associated-Adipose Derived Stem Cells Promote Tumor Growth, Stiffening, and Vascularization**E. M. CHANDLER¹, B. SEO¹, J. CALIFANO¹, J. LEE¹, D. TIMS¹, J. WANG¹, L. CHENG¹, M. BUCKLEY¹, I. COHEN¹, A. NIKITIN¹, C. REINHART-KING¹, AND C. FISCHBACH¹¹Cornell University, Ithaca, NY**5:00PM Thurs-3-8-E****Tumor Associated Lymphatic Vessels: New targets for Cancer Immunotherapy?**A. W. LUND¹, F. DURAES², V. RAGHAVAN¹, S. HIROSUE¹, S. HUGUES², AND M. A. SWARTZ¹¹Swiss Federal Institute of Technology, Lausanne, Switzerland, ²University of Geneva Medical School, Geneva, Switzerland**5:15PM Thurs-3-8-F****Differential Adhesion and Recruitment Mechanisms of Breast Cancer Cells to E-selectin under Flow**Y. GENG¹, AND M. R. KING¹¹Cornell University, Ithaca, NY

Track:Tissue Engineering – OP-Thurs-3-9**Musculoskeletal Tissue Engineering-II****Chairs:** Johnna Temenoff, Pam Yelick*Convention Center–Room 22***4:00PM Thurs-3-9-A****Delivery of SIP Receptor-Targeted Drugs Enhances Bone Regeneration in a Cranial Defect**S. A. TANNER¹, D. A. BARKER¹, AND E. A. BOTCHWEY¹¹University of Virginia, Charlottesville, VA**4:15PM Thurs-3-9-B****Effect of the Scaffold Architecture on Osteogenic Differentiation of Human Embryonic Stem Cells**I. MARCOS-CAMPOS¹, D. MAROLT^{1,2}, P. PETRIDIS¹, S. BHUMIRATANA¹, X. E. GUO¹, AND G. VUNJIAK-NOVAKOVIC¹¹Columbia University, New York, NY, ²The New York Stem Cell Foundation, New York, NY**4:30PM Thurs-3-9-C****Optimization of TMAO Concentration for Improved Collagen Production in Engineered Articular Cartilage**G. D. O'CONNELL¹, N. DUNLEAVY¹, M. A. CARAPEZZA¹, G. A. ATESHIAN¹, AND C. T. HUNG¹¹Columbia University, New York, NY**4:45PM Thurs-3-9-D****Effects of Mechanical Stimulation on Tissue Engineered Intervertebral Discs**R. I. MOZIA¹, A. JAMES², R. HARTL², AND L. BONASSAR¹¹Cornell University, Ithaca, NY, ²Weill Cornell Medical College, New York City, NY**5:00PM Thurs-3-9-E****Electrospun Mineralized Chitosan Scaffolds as a Bioactive Aide in the Osseo-Integration of Autograft Substitutes**A. KATSMAN¹, M. FROBERGH², N. JOHANSON¹, AND P. LELKES²¹Drexel University College of Medicine, Philadelphia, PA, ²Drexel University, Philadelphia, PA**5:15PM Thurs-3-9-F****Evaluating the Effects of FTY720 in Comparison with BMP-2 on Critical Size Cranial Defect Healing**A. DAS¹, D. BARKER¹, AND E. BOTCHWEY¹¹UVA, Charlottesville, VA**Track:Tissue Engineering – OP-Thurs-3-10****Bioinspired Materials****Chairs:** Andrea Gobin, Lakeisha Taite*Convention Center–Room 23***4:00PM Thurs-3-10-A****Synthesis and Optimization of an ECM-Hydrogel for Chondrocyte Biosynthesis and Cartilage Repair**M. R. SOLOMON¹, AND H. H. LU¹¹Columbia University, New York, NY**4:30PM Thurs-3-10-B****Image-Guided Patterning of Hydrogel Scaffolds to Mimic Neurovascular Structural Relationships in the Neural Stem Cell Niche**J. C. CULVER¹, J. C. HOFFMANN², R. A. POCHÉ¹, J. L. WEST², AND M. E. DICKINSON¹¹Baylor College of Medicine, Houston, TX, ²Rice University, Houston, TX**4:45PM Thurs-3-10-C****The Evaluation of a GAG Mimic for Cartilage Tissue Engineering Applications**G. PORTOCARRERO¹, B. JOSHI¹, A. BAKHTINA¹, G. COLLINS¹, AND T. LIVINGSTON ARINZEH¹¹New Jersey Institute of Technology, Newark, NJ**5:00PM Thurs-3-10-D****Biologically Inspired Nanobiomaterials for Orthopedic Tissue Engineering and Regenerative Medicine**L. ZHANG^{1,2}, J. D. LEE¹, J. R. O'BRIEN¹, AND H. FENNIR³¹The George Washington University, Washington, DC, ²Institute for Biomedical Engineering, The George Washington University, Washington, DC, ³University of Alberta, Edmonton, AB, Canada**5:15PM Thurs-3-10-E****Effect of Glutamic Acidic Peptide Modification of Aligned Electrospun PLGA Nanofibers on Calcium-Phosphate Deposition**O. KARAMAN¹, A. KUMAR¹, X. HE¹, AND E. JABBARI¹¹University of South Carolina, Columbia, SC**Track: Devices: Nano to Micro – OP-Thurs-3-11*****Medical Diagnostics: Nano to Micro Devices-I****Chairs:** Andre Gobin*Convention Center–Room 24***4:00PM Thurs-3-11-A****Nanoparticle-Chaperoned 'Synthetic Biomarkers' for Advanced Functional Diagnostics**G. A. KWONG¹, G. VON MALTZAHN¹, G. MURUGAPPAN¹, O. ABUDAYYEH¹, S. MO¹, D. SVERDLO², I. PAPAYANNOPOULOS¹, Y. POPOV², D. SCHUPPAN², AND S. BHATIA^{1,3}¹Massachusetts Institute of Technology, Cambridge, MA, ²Beth Israel Deaconess Medical Center, Boston, MA, ³Howard Hughes Medical Institute, Cambridge, MA**4:15PM Thurs-3-11-B****Micro Magnetic Resonance Relaxometry for Label-free Rapid Malaria Diagnosis**W. K. PENG¹, AND J. HAN^{2,3}¹Singapore-Massachusetts of Institute Technology Alliance for Research and Technology, Science Drive², Singapore, ²Massachusetts Institute of Technology, Cambridge, MA, ³Massachusetts Institute of Technology, Cambridge**4:30PM Thurs-3-11-C****IRIS-MALDI for High-Throughput Protein****Arrays: Prospectus for Clinical Analysis of Cancer Markers**V. N. Bhatia¹, J. Anding¹, M. E. McComb², C. E. Costello², and B. B. Goldberg¹¹Boston University, Boston, MA, ²Boston University School of Medicine, Boston, MA**4:45PM Thurs-3-11-D****Protein-G Based Surface Chemistry for HIV Detection On-chip**S. WANG¹, M. ESFAHANI¹, U. A. GURKAN¹, D. R. KURITZKES², AND U. DEMIRCI^{1,3}¹Harvard Medical School, Bio-Acoustic MEMS laboratory, Center for Biomedical Engineering, BWH, Cambridge, MA, ²Harvard Medical School, Infectious Disease/Partners AIDS Research Center, BWH, Cambridge, MA, ³Harvard-MIT Health Sciences and Technology, Cambridge, MA**5:00PM Thurs-3-11-E****High Content Single Cell Secretome Measurement Using a Multiplexed Sub-nanoliter Immunoassay Array**Y. LU¹, J. WANG¹, E. PERRY¹, AND R. FAN¹¹Yale university, New Haven, CT**5:15PM Thurs-3-11-F****Miniaturized Magnetic Resonance for Point-of-Care Diagnostics**D. ISSADORE¹, C. MIN¹, M. LIONG¹, J. CHUNG¹, R. WEISSLEDER¹, AND H. LEE¹¹Massachusetts General Hospital, Boston, MA

*Supported by an unrestricted educational grant from



Track: Cardiovascular Engineering – OP-Thurs-3-12**Cardiovascular Tissue Engineering - III**

Chairs: Keith Gooch, Brett Isenberg
Convention Center–Room 25

4:00PM Thurs-3-12-A**ECM Hybrid Scaffolds for Cardiac Tissue Engineering**

M. R. BADROSSAMAY¹, R. EXILUS¹, J. A. GOSS¹, M. L. MCCAIN¹, AND K. K. PARKER¹
¹Disease Biophysics Group, Harvard University, Cambridge, MA

4:15PM Thurs-3-12-B**Effect of Thermosensitive Hydrogel Injection on Mechanical and Ultrastructural Properties of Porcine Myocardium**

B. WANG¹, R. BERTUCCI¹, Z. LI², L. WILLIAMS¹, J. GUAN², AND J. LIAO¹
¹Mississippi State University, Starkville, MS, ²Ohio State University, Columbus, OH

4:30PM Thurs-3-12-C**Oriented Capillary Structures for Cardiac Tissue Engineering**

L. L. CHIU¹, Y. LIANG¹, AND M. RADISIC¹
¹University of Toronto, Toronto, ON, Canada

4:45PM Thurs-3-12-D**A "Layer By Layer" Approach to Engineer Vascular Tissues**

S. AMENSAG¹, AND P. MCFETRIDGE²
¹University of Florida, Gainesville, FL, ²University of Florida, Gainesville, FL

5:00PM Thurs-3-12-E**Improved Endothelialization via Optimization of Hyaluronic Acid Modification of Polyurethanes**

A. RUIZ¹, J. CHEADLE¹, AND K. S. MASTERS¹
¹University of Wisconsin Madison, Madison, WI

5:15PM Thurs-3-12-F**Multilayer Hydrogel-electrospun Mesh Vascular Grafts**

D. J. MUNOZ¹, V. GUIZA¹, S. SANT², A. KHADEMOSSEINI², AND M. S. HAHN¹
¹Texas A&M University, College Station, TX, ²MIT-Harvard HST, Boston, MA

Track: Cardiovascular Engineering – OP-Thurs-3-13**Cardiovascular Growth and Remodeling**

Chairs: Manu Platt, Michael Sacks
Convention Center–Room 26

4:00PM Thurs-3-13-A**The Evolution of Vulnerable Plaques in Human Coronary Arteries Using High Contrast Micro-CT Imaging**

A. A. KELLY¹, N. MALDONADO¹, L. CARDOSO¹, AND S. WEINBAUM¹
¹The City College of New York, New York, NY

4:15PM Thurs-3-13-B**Hypertension Induced Remodeling of Muscular and Elastic Arteries in a Mini-Pig Coarctation Model**

H. N. HAYENGA¹, B. A. HALLMARK¹, J.-J. HU², C. A. MEYER¹, M. W. MILLER¹, T. W. FOSSUM¹, E. WILSON¹, AND J. D. HUMPHREY³
¹Texas A&M University, College Station, TX, ²National Cheng Kung University, Tainan, Taiwan, ³Yale University, New Haven, CT

4:30PM Thurs-3-13-C**Agent-Based Model of Fibroblast-Mediated Collagen Deposition and Alignment in Myocardial Infarcts**

A. D. ROUILLARD¹, AND J. W. HOLMES¹
¹University of Virginia, Charlottesville, VA

4:45PM Thurs-3-13-D**The Importance of Initial Conditions on AAA Growth and Properties: Toward Patient Specificity via Growth and Remodeling**

J. S. WILSON¹, S. BAEK², AND J. D. HUMPHREY¹
¹Yale University, New Haven, CT, ²Michigan State University, East Lansing, MI

5:00PM Thurs-3-13-E**Heparan Sulfate Incidence and Regrowth Rate in Atheroprotective Flow Profiles**

K. ADAMS¹, AND C. DEWEY¹
¹Massachusetts Institute of Technology, Cambridge, MA

5:15PM Thurs-3-13-F**Arterial pO₂ Stimulates Pathological Remodeling in Human Saphenous Veins via an eNOS- and Superoxide-dependent Pathway**

B. JODDAR¹, M. S. FIRSTENBERG¹, AND K. J. GOOCH²
¹The Ohio State University, Columbus, OH, ²Ohio State, Columbus, OH

OP-Thurs-3-14**Whitaker International Fellows and Scholars Program: Funding Opportunity for Young Biomedical Engineers**

Convention Center, Room 12

Initially funded by the Whitaker Foundation, the Whitaker Fellows and Scholars Program is managed by the Institute of International Education (IIE) and supports international collaboration in the growing field of biomedical engineering. For all levels of emerging bioengineers, from graduating seniors to post-doctorate degree-holders in biomedical engineering, the Whitaker Program provides funding to U.S. citizens and permanent residents to undertake activities overseas directly related to the field. Past awards have included research in heart blood flow, improved prosthetic leg design, and development of affordable oral cancer screening tools. Projects are implemented worldwide, including countries like Australia, China, Kenya, Switzerland, the UK and Vietnam. The Whitaker Session will feature a panel of current and former Whitaker Program participants who will present their research projects, talk about their grant experience and offer application tips.

- **Mechanical Cues Induce Beta-Catenin Signaling Through a Wnt Independent, Mechanosensing Mechanism**

Randall Platt, Whitaker International Fellow, 2010-11,
 UK, Imperial College of London

- **A Whitaker Scholar's Experiences in Immunobioengineering at EPFL in Switzerland**

Evan Scott, Whitaker International Scholar, 2010-11,
 Switzerland, EPFL

- **Schlemm's Canal Endothelial Cell Biomechanics as a Basis for Elevated Intraocular Pressure in Glaucoma**

Ryan Pedrigi, Whitaker International Scholar, 2009-10,
 UK, Imperial College London

- **Investigating Fibronectin Conformation Within 3D Tissue Models**

Wes Legant, Whitaker International Fellow, 2010-11,
 Switzerland, ETH

- **A Histological, Optical, and Mechanical Examination of Fiber Orientation and Response to Loading in Carotid Artery Tissue**

Lucas H. Timmins, Ph.D., Whitaker International Fellow, 2006-07
 UK, Queen Mary, University of London

OP-Thurs-3-15**International Journal of Nanomedicine
Symposium****Chair:** Thomas Webster*Marriott, Ballroom B***4:00PM Thurs - 3-15 - A****International Journal of Nanomedicine Early Career Award:
Nanomedicine Formulations for Combination Therapies**

TWAN LAMMERS

*Department of Pharmaceutics, Utrecht University, The Netherlands***4:30PM Thurs - 3-15 - B****International Journal of Nanomedicine Merit Award:
Nanomaterials for Implants and Medicine**

HUINAN LIU,

*Department of Bioengineering, University of California at Riverside, Riverside, CA, USA***5:00PM Thurs - 3-15 - C****International Journal of Nanomedicine Distinguished Career Award:
Nanomedicine: Next Generation Diagnostics and Therapeutics**

JAMES LEARY

*Department of Basic Medical Sciences and Biomedical Engineering, Purdue University,
West Lafayette, IN, USA*

**FRIDAY, OCTOBER 14
TODAY'S HIGHLIGHTS**



PLENARY SESSION
8:00am - 9:30am
Ballroom, Convention Center
Distinguished Achievement Lecture **CME**
THE CRITICAL ROLES OF CONVERGENCE SCIENCE AND TECHNOLOGICAL INNOVATION IN TOMORROW'S HEALTHCARE
Roderic Pettigrew, PhD, MD
National Institute of Biomedical Imaging and Bioengineering



NIH – NBIB Lecture **CME**
ROBOTICS AND SENSORY MOTOR RESTORATION
David Reinskensmeyer, PhD

EXHIBIT HALL OPEN 9:30am - 5:00pm
Exhibit Hall, Convention Center

POSTER SESSION Fri A 9:30am - 1:00pm
Exhibit Hall, Convention Center

PLATFORM SESSIONS Fri-1 10:30am - 12:00noon
See pages 100-105, Convention Center

WOMEN IN BMES Luncheon 12:00noon - 1:30pm
Ballroom C, Convention Center

CAREER FAIR 1:00pm - 5:00pm
Exhibit Hall, Convention Center

PLATFORM SESSIONS Fri-2 1:30pm - 3:00pm
See pages 118-122, Convention Center

POSTER SESSION Fri B 1:30pm - 5:00pm
Exhibit Hall, Convention Center

PLATFORM SESSION Fri-3 4:00pm - 5:30pm
See pages 123-127, Convention Center

SPECIAL EVENT 6:30pm - 9:30pm
Connecticut Science Museum

Friday, October 14, 2011

9:30AM - 1:00PM
POSTER SESSION – FRI - A

Track: Cardiovascular Engineering

Cardiovascular Tissue Engineering

PS – Fri – A - 1
Stabilizing Microvessels: Separating Paracrine from Contact-Dependent Effects of Pericytes
J. W. ANDREJECSK¹, M. TRIVELLAS¹, J. S. POBER¹, AND W. M. SALTZMAN¹
¹Yale University, New Haven, CT

PS – Fri – A – 2
Carbon Nanofibers for Myocardial Tissue Engineering Applications
D. STOUT¹, B. BASU², AND T. J. WEBSTER¹
¹Brown University, Providence, RI, ²India Institute of Technology, Kanpur, Kanpur, India

PS – Fri – A – 3
Aggressive Nutrient Gradients for Enhanced Cell Migration of Engineered Vascular Scaffolds
Z. TOSUN¹, AND P. MCFETRIDGE¹
¹University of Florida, Gainesville, FL

PS – Fri – A – 4
Valvular Interstitial Cell-seeded Microfibrous PGS-PCL Scaffolds for Heart Valve Tissue Engineering
S. SANT^{1,2}, D. IYER^{1,2}, A. KASHYAP^{1,2}, K. SHAPERO³, J. BISCHOFF³, AND A. KHADEMHOSEINI^{1,2}
¹Center for Biomedical Engineering, Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, ²Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, ³Vascular Biology Program, Children's Hospital, Boston, MA

PS – Fri – A – 5
A Hybrid Self-Regenerative Engineered Tissue for Heart Valve Leaflets
S. ALAVI^{1,2}, AND A. KHERADVAR^{1,2}
¹University of California, Irvine, Irvine, CA, ²The Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA

PS – Fri – A – 6
Injectable Biomimetic Materials Using Carbon Nanofibers For Cardiovascular Applications
X. MENG¹, D. STOUT¹, AND T. WEBSTER¹
¹Brown University, Providence, RI

PS – Fri – A – 7
Multi-Scale Structural-Mechanical Coupling Between Scaffold and Cardiomyocytes Embedded in Collagen for Cardiac Tissue Engineering
A. JEAN¹, S. R. BASS¹, R. WILUSZ², F. GUILAK², AND G. C. ENGELMAYR¹
¹The Pennsylvania State University, University Park, PA, ²Duke University, Durham, NC

PS – Fri – A – 8
The Study of Time Varying Effects in the Dynamic Culture of Engineered Heart Valves
M. SALINAS¹, R. LANGE², D. SCHMIDT³, AND S. RAMASWAMY¹
¹Florida International University, Miami, FL, ²Applied Sciences Corporation, Pittsburgh, PA, ³University of Pittsburgh, Pittsburgh, PA

PS – Fri – A – 9
Direct Co-Culture of Endothelial Progenitor Cells with Mesenchymal Stem Cells on Nanograted Surfaces
C. E. FERNANDEZ¹, F. ZHAO¹, K. W. LEONG¹, AND W. M. REICHERT¹
¹Duke University, Durham, NC

POSTER SESSION
FriA

PS = Poster Session **CME** = Credit approved
OP = Oral Presentation

PS – Fri – A – 10**Initial Polymer Molecular Weight Distribution Controls By-product Fate From Erodible Endovascular Scaffolds**J. FERDOUS¹, AND T. SHAZLY¹¹University of South Carolina, Columbia, SC**Track: Cardiovascular Engineering****Cardiovascular Growth and Remodeling****PS – Fri – A – 11****Arterial Buckling Promotes NF-κB Activation that Associates with Cell Proliferation in Porcine Carotid Arteries Perfused Ex Vivo**Y. XIAO¹, Y. ZHAO¹, D. HAYMAN¹, AND H-C. HAN¹¹University of Texas at San Antonio, San Antonio, TX**PS – Fri – A – 12****A Three-Dimensional Description of Arterial Growth and Remodeling**I. KARSAJ¹, J. SORIC¹, AND J. D. HUMPHREY²¹University of Zagreb, Zagreb, Croatia, ²Yale University, New Haven, CT**PS – Fri – A – 13****A Feedback Control Model of the Glomerular Capillary Wall**S. HUNT¹, K. DORFMAN¹, Y. SEGAL^{1,2}, AND V. BAROCAS¹¹University of Minnesota, Minneapolis, MN, ²Veterans Affairs Health Care System, Minneapolis, MN**PS – Fri – A – 14****Altered Intracardiac Flow Patterns in the Left Atrial Ligated Chick Embryo**N. C. TESLOVICH¹, W. J. KOWALSKI¹, J. P. TINNEY², B. B. KELLER², AND K. PEKKAN¹¹Carnegie Mellon University, Pittsburgh, PA, ²Cardiovascular Innovation Institute, University of Louisville, Louisville, KY**PS – Fri – A – 15****Accelerated Arteriogenesis In Collateral Arterial Segments Exposed To Flow Reversal After Femoral Arterial Ligation**J. K. MEISNER¹, J. NIU¹, AND R. J. PRICE¹¹UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE, VA**PS – Fri – A – 16****Regulating Calcitonin-like Receptor Signaling through Transmembrane Domain Interactions**P-C. SU¹, W. SI¹, J. K. WU², AND B. W. BERGER¹¹Lehigh University, Bethlehem, PA, ²Lehigh Valley Hospital, Allentown, PA**PS – Fri – A – 17****Tissue Remodeling in Sickle Cell Disease**P. M. KEEGAN¹, AND M. PLATT¹¹Georgia Institute of Technology, Atlanta, GA**PS – Fri – A – 18****Ascending Aortic Aneurismal Tissue Variations With Valve Type**E. WENER¹¹McGill University, Montreal, QC, Canada**PS – Fri – A – 19****Mechanical Properties of Fetal TGFβ2 Null Mouse Atrioventricular Valves**P. R. BUSKOHL¹, M. J. SUN¹, S. KASHYAP¹, AND J. T. BUTCHER¹¹Cornell University, Ithaca, NY**Track: Devices: Nano to Micro****Medical Diagnostics: Nano to Micro Devices****PS – Fri – A – 20****A Detailed Study of the Nano-Porous Membranes with Applications in the Enhanced Detection of Cardiovascular Biomarker Proteins**P. FEIKERT¹¹Wichita State University, Wichita, KS**PS – Fri – A – 21****A Lateral Flow Integrated Barcode Blood Chip for Multiplexed Detection of Glioblastoma Multiforme Biomarkers in Blood**J. WANG¹, A. SUTHERLAND¹, AND J. R. HEATH¹¹NanoSystems Biology Cancer Center, Kavli Nanoscience Institute, Division of Chemistry and Chemical E, Pasadena, CA**PS – Fri – A – 22****Wireless Recording of Multiple Physiological Parameters**Y-S. SEO¹, M. D. SHETH¹, H. CAO¹, W-D. HUANG¹, AND J-C. CHIAO¹¹University of Texas at Arlington, Arlington, TX**PS – Fri – A – 23****Performance of a Wirelessly Rechargeable Pacemaker for Gastric Stimulation**S. DEB¹, T. ABELL², C. LAHR², S. J. TANG², S. RAO¹, AND J-C. CHIAO¹¹University of Texas at Arlington, Arlington, TX, ²University of Mississippi Medical Center, Jackson, MS**PS – Fri – A – 24****A Label-Free CD4+ T-Lymphocyte Counting Microfluidic Chip for Portable Point of Care Testing**U. A. GURKAN¹, S. MOON^{1,2}, J. BLANDER³, W. W. FAWZI⁴, S. ABOUD⁵, F. MUGUSI⁶, D. R. KURITZKES¹, AND U. DEMIRCI¹¹Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, ²Daegu Gyeongbuk Institute of Science & Technology, Daegu, Korea, Republic of, ³Harvard Medical School, Boston, MA, ⁴Harvard School of Public Health, Boston, MA, ⁵Muhimbili University of Health and Allied Sciences, Dar es Salaam, Tanzania**PS – Fri – A – 25****Magnetic Nanoparticle Enhanced Nano-SPR Multiplex Biosensor**J. P. CASAS¹, M. VENKATARAMASUBRAMANI¹, W. H. SHI¹, AND L. TANG¹¹University of Texas at San Antonio, San Antonio, TX**PS – Fri – A – 26****Gold Enhanced ELISA for Ultra-Sensitive Detection**D. N. PATEL¹, Z. CLEMANS¹, K. JAMES¹, D. STEPHENS¹, AND A. M. GOBIN¹¹University of Louisville, Louisville, KY**PS – Fri – A – 27****Functionalized Microelectrodes for Electrochemical Measurement within Disposable Microfluidic Devices**S. W. COOKSON¹, AND E. SALDIVAR¹¹West Wireless Health Institute, La Jolla, CA**PS – Fri – A – 28****Facile and Chemoselective Fabrication of High Density Peptide Microarray by Click Chemistry in One Step**Y. ZHAO¹, Y. LIU¹, Y. SONG¹, AND J. LIAO¹¹University of California at Riverside, Riverside, CA**PS – Fri – A – 29****Dielectrophoretic Characterization of Mycobacteria and Prostate Cancer Cells**C. HUANG¹, S. ARASANIPALAI¹, B. G. HAWKINS¹, AND B. J. KIRBY¹¹Cornell University, Ithaca, NY

PS – Fri – A – 30**High Throughput Diagnostic Device for On-chip Capture and Analysis of Circulating Tumor Cells**J. CHUNG¹, H. SHAO¹, R. WEISSLEDER¹, AND H. LEE¹¹MGH / Harvard Medical School, Boston, MA**PS – Fri – A – 31****Flexible Multielectrode Array for Surface EMG Recordings From Facial Muscles**C. METALLO¹, AND B. TRIMMER²¹Tufts University School of Medicine, Boston, MA, ²Tufts University, Medford, MA**PS – Fri – A – 32****Million-Cell FISH Array for Large-Scale Genetic Characterization of Cancers**L. JIANG¹, AND J. GUAN¹¹Florida State University, Tallahassee, FL**PS – Fri – A – 33****Electrochemical Gas Sensor Array Platform for Lung Cancer Profiling**Q. YAN^{1,2}, H. SUN^{1,3}, AND F. F. CHEN¹¹Lawrence Berkeley National Laboratory, Berkeley, CA, ²Beijing University of Posts and Telecommunications, Beijing, China, People's Republic of, ³Zhejiang University, Zhejiang, China, People's Republic of**PS – Fri – A – 34****Nanomonitors for Cardiac Disease Diagnosis**S. M. BRANDIGAMPALA¹¹Wichita State University, Wichita, KS**PS – Fri – A – 35****Dynamic Staining Breaks Century-Old Traditions of Bioanalyses**V. NUNEZ¹, S. UPADHYAYULA¹, S. GUPTA¹, J. AVESAR¹, AND V. I. VULLEV¹¹University of California, Riverside, Riverside, CA**PS – Fri – A – 36****Self Contained Paper Driven Bead Based Diagnostics Device**J. CHOU¹¹Rice University, Houston, TX**PS – Fri – A – 37****Guided Tumor Cell Migration on Microscale Mimics of Contact Guidance Cues**D. GALLEGO PEREZ¹, N. HIGUITA CASTRO¹, L. DENNING¹, J. DEJESUS¹, K. DAHL¹, A. SARKAR², AND D. HANSFORD¹¹The Ohio State University, Columbus, OH, ²The Ohio State University, Columbus**PS – Fri – A – 38****Isothermal Nucleic Acid Amplification Assays to Detect Genomic Sequences of Mycobacterium tuberculosis**M. A. GARRETSON^{1,2}, T. FERGUSON³, I. TOLSTORUKOV², AND A. NIEMZ²¹Bard College at Simon's Rock, Great Barrington, MA, ²Keck Graduate Institute, Claremont, CA, ³Claremont Biosolutions, Claremont, CA**PS – Fri – A – 39****Clinical Applications of High-Throughput Single-Cell Deformability Measurements**D. R. GOSSETT¹, H. T. TSE¹, S. LEE¹, O. ADEYIGA¹, O. YANG¹, A. T. CLARK¹, AND D. DI CARLO¹¹University of California Los Angeles, Los Angeles, CA**PS – Fri – A – 40****A Low-Power, Multi-Channel Sensing System for Monitoring Patients**M. SHETH¹, H. CAO¹, S. K. THAKAR¹, Y-S. SEO¹, AND J-C. CHIAO¹¹University of Texas at Arlington, Arlington, TX**Track: Devices: Nano to Micro****Micro and Nanostructured Biomaterials****PS – Fri – A – 41****Adsorption of Proteins onto PDMS-Like Nanofilms to Promote Mammalian Cell Adhesion**R. E. CORONADO¹, K. Y. CHUMBIMUNI-TORRES¹, A. M. MFUH¹, M. F. SILVA², G. R. NEGRETE¹, R. BIZIOS¹, AND C. D. GARCIA¹¹University of Texas at San Antonio, San Antonio, TX, ²National University of Cuyo, Mendoza, Argentina**PS – Fri – A – 42****Green Microfluidics Made of Corn Proteins**A. HSIAO¹, J. LUECHA¹, L. LIU¹, AND J. KOKINI¹¹University of Illinois at Urbana-Champaign, Urbana, IL**PS – Fri – A – 43****Self-Assembled Organic Microwires as a New Biosensor Platform**N. HSU¹, P. LATTERMAN¹, M. TONG¹, C. TRAN¹, A. WU¹, M. ZIV¹, AND H. TSUTSUI¹¹University of California, Los Angeles, Los Angeles, CA**PS – Fri – A – 44****Self-Assembled Virus Templates for Surface Enhanced Raman Spectroscopy**A. L-H. FU¹, A. BROWN², W. W. YU¹, I. M. WHITE¹, J. N. CULVER², AND P. KOFINAS¹¹University of Maryland, College Park, MD, ²Institute for Bioscience and Biotechnology Research, College Park, MD**PS – Fri – A – 45****Nanofabrication of Very Large Scale Integration (VLSI) Circuits using Magnetotactic Bacteria**I. G. MACWAN¹, S. PATEL¹, A. APHALE¹, S. BHOSALE¹, J. RHO¹, AND P. PATRA¹¹University of Bridgeport, Bridgeport, CT**PS – Fri – A – 46****On-Demand Enzymatic Function: Entrapment Procedures Utilizing Hydrolysable Crosslinker PEGDA**A. M. MARIANI¹, S. JAMMULA¹, AND P. KOFINAS¹¹University of Maryland, College Park, College Park, MD**PS – Fri – A – 47****Portable Nanoimprinting of Silk Fibroin Films**A. N. MITROPOULOS¹, M. PAQUETTE¹, AND F. OMENETTO¹¹Tufts University, Medford, MA**PS – Fri – A – 48****Independently Controlling Protein Dot Size and Spacing in Particle Lithography**Z. R. TAYLOR¹, J. C. KEAY¹, M. B. JOHNSON¹, AND D. W. SCHMIDTKE¹¹University of Oklahoma, Norman, OK**PS – Fri – A – 49****Modeling Cooperative Self-Assembly**S. HE¹, A. LAM¹, Y. JEUNE-SMITH², AND H. HESS¹¹Columbia University, New York, NY, ²University of Florida, Gainesville, FL**PS – Fri – A – 50****Novel Method of Shear Induced Fibronectin Fibrillogenesis by Rotary Jet-Spinning**H. A. MCLWEE¹, M. R. BADROSSAMAY¹, P. MELLADO¹, J. A. GOSS¹, AND K. K. PARKER¹¹Disease Biophysics Group, Harvard University, Cambridge, MA**PS – Fri – A – 51****Modularity in Micropattern Engineering to Affect Cell Motility**K. KUSHIRO¹, AND A. R. ASTHAGIRI¹¹Northeastern University, Boston, MA**PS – Fri – A – 52****Rational Design of a Macroscale Linear Force Transducer Based on Molecular Filament-Arrays**R. R. AGAYAN¹, R. TUCKER², AND H. HESS¹¹Columbia University, New York, NY, ²University of California, San Francisco, San Francisco, CAPOSTER
SESSION

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PS – Fri – A – 53**Using AFM to Assess the Effect of Microbial Activity on Soil Electrical Properties**R. CHEN¹, N. HAO¹, D. NTLARLAGIANNIS², S. MOYSEY¹, AND D. DEAN¹
¹Clemson University, Clemson, SC, ²Rutgers University, Newark, NJ**PS – Fri – A – 54****Real-Time Monitoring of Cell Stretching and Migration on Aligned Fibrous Scaffolds**K. SHEETS¹, J. WANG¹, AND A. S. NAIN¹
¹Virginia Tech, Blacksburg, VA**Track: Drug Delivery Systems****Nucleic Acid Delivery****PS – Fri – A – 55****Designing a Molecular Beacon Based Selection of Cells Expressing a Targeted Gene Correction**B. SCOTT¹, B. WILE¹, AND G. BAO¹
¹Georgia Institute of Technology, Atlanta, GA**PS – Fri – A – 56****Non-viral Gene Delivery for Human Microvasculature and Macrovasculature**R. B. SHMUELI¹, J. C. SUNSHINE¹, Z. XU¹, E. DUH¹, AND J. J. GREEN¹
¹Johns Hopkins School of Medicine, Baltimore, MD**PS – Fri – A – 57****Poly(β-amino ester)s Exhibit an Optimal Molecular Weight for Plasmid DNA Delivery**A. A. ELTOUKHY¹, D. J. SIEGWART¹, J. S. RAJAN¹, R. S. LANGER¹, AND D. G. ANDERSON¹
¹Massachusetts Institute of Technology, Cambridge, MA**PS – Fri – A – 58****Nano-Gold/Degradable Polymer Hybrid Nanoparticles for Co-Delivery of DNA and siRNA**C. J. BISHOP¹, J. C. SUNSHINE¹, AND J. J. GREEN¹
¹JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD**PS – Fri – A – 59****Cathepsin B-Sensitive Polymers for Compartment-Specific Degradation and Nucleic Acid Release**D. S. CHU¹, R. N. JOHNSON¹, AND S. H. PUN¹
¹University of Washington, Seattle, WA**PS – Fri – A – 60****Octa-functional PLGA Nanoparticles for Targeted and Efficient siRNA Delivery to Tumors**J. ZHOU¹, T. PATEL¹, M. FU¹, J. BERTRAM¹, AND W. M. SALTZMAN¹
¹Yale University, New Haven, CT**PS – Fri – A – 61****HPMA-co-oligolysine-oligohistidine Copolymers for Nucleic Acid Delivery**J. SHI¹, R. JOHNSON¹, AND S. PUN¹
¹University of Washington, Seattle, WA**PS – Fri – A – 62****A Transferrin Variant Conjugated to Polyethyleneimine Improves Transfection Efficiency**C. T. YING¹, R. Y. CHIU¹, D. S. QUINLAN¹, A. B. MASON², AND D. T. KAMEI¹
¹UCLA, Los Angeles, CA, ²University of Vermont, Burlington, VT**PS – Fri – A – 63****A Novel Tumor Vascular Network for Screening Drug Delivery Systems**B. PRABHAKARPANDIAN¹, M-C. SHEN¹, J. NICHOLS¹, I. MILLS¹, M. MATAR², J. FEWELL², K. ANWER², AND K. PANT¹
¹CFD Research Corporation, Huntsville, AL, ²EGEN, Inc., Huntsville, AL**PS – Fri – A – 64****Creating and Selecting Aptamers using Cell-SELEX Through a Novel System — Yeast Surface Display**H-W. MENG¹, X. HU¹, X. CHEN¹, Y. TOYODA¹, AND M. JIN¹
¹Cornell University, Ithaca, NY**PS – Fri – A – 65****Direct Measurements of Mechanical Properties of Condensed DNA Using Optical Tweezers**A. LEE¹, A. KARCZ¹, C. TIE¹, S. SUCAYAN¹, J. MIXSON², J. KAHN¹, AND J. SEOG¹
¹University of Maryland, College Park, MD, ²University of Maryland, Baltimore, MD**PS – Fri – A – 66****Zein: A Natural Protein for Polymeric Gene Delivery**M. C. REGIER¹, T. BORCYK¹, J. MILLS¹, Y. YANG¹, AND A. K. PANNIER¹
¹University of Nebraska-Lincoln, Lincoln, NE**PS – Fri – A – 67****Targeted Gastrointestinal Tract Therapy through Sonoporation**J. TLAXCA¹, J. RYCHAK², A. KLIBANOV¹, C. BURKE¹, R. PRICE¹, AND M. LAWRENCE¹
¹University of Virginia, Charlottesville, VA, ²Targeson, Inc., San Diego, CA**Track: Drug Delivery Systems****Targeted Drug Delivery****PS – Fri – A – 68****Development of a Dual-receptor Targeted Drug Delivery System for Treating Vascular Disease**G. LAMBERTI¹, M. KIANI¹, AND B. WANG¹
¹Temple University, Philadelphia, PA**PS – Fri – A – 69****A Novel Application of Cellulose Nanocrystals for Targeted Drug Delivery to Brain Tumor Cells**H. J. CHO¹, S. DONG¹, M. ROMAN¹, AND Y. W. LEE^{1,2}
¹Virginia Polytechnic Institute and State University, Blacksburg, VA, ²Virginia Polytechnic Institute and State University, Blacksburg**PS – Fri – A – 70****Heterogeneous Liposome Membranes with pH-Triggered Permeability Enhance the *In Vitro* Antitumor Activity of Folate-Receptor Targeted Liposomal Doxorubicin**E. MAMASHEVA¹, S. SOFOU², AND A. BANDEKAR²
¹Polytechnic Institute of NYU, Brooklyn, NY, ²Rutgers University, Piscataway, NJ**PS – Fri – A – 71****Triggered Targeting of Liposomal Chemotherapy *In Vivo* Controls Tumor Growth and Potential Toxicities**A. BANDEKAR¹, AND S. SOFOU¹
¹Rutgers University, Piscataway, NJ**PS – Fri – A – 72****Engineering Viral Nanoparticles for Applications in Medicine: Loading the Interior Cavity of VNPS with Drugs and Imaging Moieties**A. WEN¹, AND N. F. STEINMETZ¹
¹Case Western Reserve University, Cleveland, OH**PS – Fri – A – 73****Nitric Oxide Induces Chemosensitivity to Carmustine in Human Glioblastoma Cells**S. SAFDAR¹, AND L. J. TAITE¹
¹Georgia Institute of Technology, Atlanta, GA

PS – Fri – A – 74**Quorum Sensing Salmonella Form Colonies and Selectively Trigger Protein Expression in Therapeutically Resistant Tumor Tissue**C. A. SWOFFORD¹, AND N. S. FORBES¹¹University of Massachusetts Amherst, Amherst, MA**PS – Fri – A – 75****Microbubbles for Diagnosis and Treatment of Cancer and Atherosclerosis**S. L. SANTIMANO^{1,2}, A. S. WADAJKAR^{1,2}, R. PATIL^{1,2}, Y. LIU^{1,2}, K. T. NGUYEN^{1,2}, AND B. YUAN^{1,2}¹University of Texas, Arlington, TX, ²University of Texas Southwestern Medical Center, Dallas, TX**PS – Fri – A – 76****Fabrication of Drug-loaded Polymeric Particles Coated with Calcium Phosphate and Functionalized with Bisphosphonate Moieties for Enhanced Bone Targeting**K. BASTARI¹, Y. KHUNG¹, S. VENKATRAMAN¹, AND S. LOO¹¹Nanyang Technological University, Singapore, Singapore**PS – Fri – A – 77****Targeted Enzyme Prodrug Therapy to Breast Tumor Vasculature**B. VAN RITE¹, M. CHERRY², C. KURKJIAN², V. SIKAVITSAS¹, AND R. HARRISON¹¹University of Oklahoma, Norman, OK, ²University of Oklahoma Health Sciences Center, Oklahoma City, OK**PS – Fri – A – 78****In Vitro Characterization of Docetaxel Loaded Microbubbles for Ultrasound Triggered Drug Delivery**M. COCHRAN¹, J. EISENBREY¹, T. BUSTAMANTE², AND M. WHEATLEY¹¹Drexel University, Philadelphia, PA, ²University of Marquette, Milwaukee, WI**PS – Fri – A – 79****Incorporation of Different Drugs in PLA Electrospun Nanofibers for Drug Delivery Applications**M. MOHITI-ASLI¹, S. SAHA^{1,2}, B. POURDEYHIMI¹, AND E. G. LOBOA^{1,2}¹North Carolina State University, Raleigh, NC, ²University of North Carolina, Chapel Hill, NC**PS – Fri – A – 80****Amphiphilic Diblock Polymer Micelles for Oxidation-dependent Drug Delivery**M. K. GUPTA¹, AND C. L. DUVALL¹¹Vanderbilt University, Nashville, TN**PS – Fri – A – 81****Novel Strategy of Selecting Human Single-Chain Antibodies Against Tumor Surface Antigen and Its Applications to Treat Thyroid Cancer Patients**J. LEELAWATTANACHAI¹, X. GU¹, P. MICHAEL¹, E. CASEY¹, S. PARK¹, J. MUNIR¹, AND M. M. JIN¹¹Cornell University, Ithaca, NY**PS – Fri – A – 82****Laser-triggered Au-NPs Coated PHB Granules for Targeted Drug Release**C. BARDLIVING¹, D. REY¹, D. KIRUI¹, AND C. BATT¹¹Cornell University, Ithaca, NY**PS – Fri – A – 83****A Composite Hybrid Nanoparticle to Overcome Intracellular Barriers in Drug Delivery**S. KHALED¹, A. PARODI¹, B. BROWN^{1,2}, AND E. TASCIOTTI¹¹The Methodist Research Institute, Houston, TX, ²University of Texas Health Science Center, Houston, TX**Track: Neural Engineering****Neural Tissue Engineering****PS – Fri – A – 84****Micro patterning Neuronal Networks on Nanofibers Platform**V. MALKOC¹, D. GALLEGU-PEREZ¹, J. JOHNSON¹, J. J. LANNUTTI¹, AND D. J. HANSFORD¹¹The Ohio State University, Columbus, OH**PS – Fri – A – 85****Single Walled Carbon Nanotube Inclusion in 3D Composite Hydrogels Does Not Affect Neurite Outgrowth**A. L. MCGREGOR¹, K. W. KEATING¹, A. N. KOPPEL¹, AND D. M. THOMPSON¹¹Rensselaer Polytechnic Institute & Center for Biotechnology and Interdisciplinary Studies, Troy, NY**PS – Fri – A – 86****Exogenous Electrical Stimulation of Non-Neural Support Cells Increases Migration in 3D Hydrogels**A. N. KOPPEL¹, A. L. NORDBERG¹, G. PAOLILLO¹, H. DARWISH¹, AND D. M. THOMPSON¹¹Rensselaer Polytechnic Institute and Center for Biotechnology and Interdisciplinary Studies, Troy, NY**PS – Fri – A – 87****Hydrolytically Degradable Affinity PEG Hydrogel Scaffolds for Neural Stem Cell Delivery**Y. WEI¹, AND J. B. LEACH¹¹University of Maryland, Baltimore County, Baltimore, MD**PS – Fri – A – 88****An Automated Algorithm for the Quantitative Analysis of Nerve Cell Alignment on Anisotropic Silk Films**A. R. NECTOW¹, M. E. KILMER¹, AND D. L. KAPLAN¹¹Tufts University, Medford, MA**PS – Fri – A – 89****Instructive Glycomimetic Functionalized Scaffolds for Peripheral Nerve Injury**S. N. MASAND¹, M. SCHACHNER¹, AND D. I. SHREIBER¹¹Rutgers, The State University of New Jersey, Piscataway, NJ**PS – Fri – A – 90****A Matlab-Based Algorithm for Automatic Tracing of Confluent Neuronal Images**J. A. MITCHEL¹, AND D. HOFFMAN-KIM¹¹Brown University, Providence, RI**Track: Neural Engineering****Prosthetics Engineering****PS – Fri – A – 91****Wavelet-Based Brain Feature Determination Using Functional Near-Infrared Spectroscopy**H. T. NGUYEN¹, AND V. VO¹¹International University of VNU-HCM, Ho Chi Minh, Vietnam**PS – Fri – A – 92****Ultra-High Photosensitivity Nanowire Arrays for Retinal Prosthesis**M. L. KHRAICHE¹, G. A. SILVA², G. CAUWENBERGHS², W. FREEMAN³, D. WANG², AND Y. LO²¹UCSD, La Jolla, CA, ²UCSD, La Jolla, CA, ³Jacobs Retina Center, La Jolla, CA**PS – Fri – A – 93****An Approach for Identifying Posturo-Locomotion-Manual Events Using Wavelet Denoising Technique and Three Wireless IMU**R. SOANGRA¹, AND T. E. LOCKHART¹¹Virginia Tech, Blacksburg, VA

PS – Fri – A – 94**Targeting Deep Brain Regions with Optimized Multielectrode Transcranial Direct Current Stimulation**J. DMOCHOWSKI¹, M. BIKSON², AND L. C. PARRA²¹CCNY, New York, NY, ²City College of New York, New York, NY**PS – Fri – A – 95****Dual-Sided Macro-Sieve Electrodes Enable Selective Activation of Motor Axons and Distal Musculature**M. R. MACEWAN¹, E. ZELLMER¹, AND D. MORAN¹¹Washington University, Saint Louis, MO**PS – Fri – A – 96****Plantarflexion Torque Variability in Extended and Flexed Knee Positions**E. M. MELLO¹, F. H. MAGALHÃES¹, AND A. F. KOHN¹¹University of Sao Paulo, Sao Paulo, Brazil**PS – Fri – A – 97****Application of a Web-based Simulator to a Study of Neuromuscular Training in Humans**L. A. ELIAS¹, V. M. CHAUD¹, R. N. WATANABE¹, AND A. F. KOHN¹¹UNIVERSITY OF SÃO PAULO, SÃO PAULO, BRAZIL**PS – Fri – A – 98****Comparison of Mechanical- and EMG-based Estimates of Trunk Reflexes to Sudden Perturbations**B. HENDERSHOT¹, B. BAZRGARI², M. A. NUSSBAUM¹, AND M. L. MADIGAN¹¹Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences, Virginia Tech, Blacksburg, VA, ²Department of Industrial and Systems Engineering, Virginia Tech, Blacksburg, VA**PS – Fri – A – 99****Probabilistic Models of Peripheral Axon Activation**E. J. PETERSON¹, AND D. J. TYLER^{1,2}¹Case Western Reserve University, Cleveland, OH, ²Louis Stokes Cleveland Department of Veterans Affairs Medical Center, Cleveland, OH**PS – Fri – A – 100****10 Hz Non-Invasive Electrical Stimulation May Modulate Visual Attention**J. K. RICE¹, AND L. PARRA²¹City College of New York, Brooklyn, NY, ²City College of New York, New York, NY**PS – Fri – A – 101****Nonlinear Feedforward-Feedback Control of an Uncertain, Time-delayed 2DOF Musculoskeletal Arm Model**P. COOMAN¹, AND R. F. KIRSCH^{1,2}¹Case Western Reserve University, Cleveland, OH, ²Louis Stokes Cleveland VA, Cleveland, OH**PS – Fri – A – 102****Calcium Channel Dynamics Limit Synaptic Release in Response to Prosthetic Stimulation with Sinusoidal Waveforms**D. K. FREEMAN^{1,2}, J. S. JENG^{1,2}, S. K. KELLY^{2,3}, E. HARTVEIT⁴, AND S. I. FRIED^{2,5}¹Massachusetts General Hospital and Harvard Medical School, Boston, MA, ²Boston VA Healthcare System, Boston, ³Massachusetts Institute of Technology, Cambridge, MA, ⁴University of Bergen, Bergen, Norway, ⁵Massachusetts General Hospital and Harvard Medical School, Boston, MA**PS – Fri – A – 103****Molecular Profile of Regenerated Peripheral Nerve Responses to Chronic Multi-electrode Arrays**T. MUSA¹, M. ROMERO-ORTEGA¹, AND E. W. KEEFER²¹University of Texas at Arlington, Arlington, TX, ²Plexon Inc, Dallas, TX**PS – Fri – A – 104****Factors Affecting the Reliability by Which Spikes are Generated in Response to High Rates of Stimulation**S. FRIED^{1,2}, C. CAI³, Q. REN³, AND J. RIZZO⁴¹Mass General Hospital, Boston, MA, ²VA Boston Healthcare System, Boston, ³Shanghai Jiaotong University, Shanghai, China, People's Republic of, ⁴MEEI, Boston, MA**Track: New Frontiers in Biomedical Engineering****Bioengineering & Physical Sciences of Cancer & System Biology****PS – Fri – A – 105****Stiffness Sensing as a Metastatic Indicator**D. RYMAN¹, Y. EBATA², A. CROSBY¹, AND S. PEYTON¹¹University of Massachusetts, Amherst, Amherst, MA, ²University of Massachusetts Amherst, Amherst, MA**PS – Fri – A – 106****Primary Cilia Mechanotransduction in Lung Adenocarcinoma Cells**S. PATEL¹, AND R. L. HEISE¹¹Virginia Commonwealth University, Richmond, VA**PS – Fri – A – 107****Breast Cancer Cell Chemotaxis using a 3D Microfluidic *In Vitro* Model**B. KIM¹, P. HANNANTA-ANAN¹, M. A. SWARTZ², AND M. WU¹¹Cornell University, Ithaca, NY, ²Ecole Polytechnique Federal de Lausanne, Lausanne, Switzerland**PS – Fri – A – 108****Photodynamic Therapy Using Targeted Single-Walled Carbon Nanotubes for Cancer Treatment**L. F. NEVES¹, D. E. RESASCO¹, AND R. G. HARRISON¹¹University of Oklahoma, Norman, OK**PS – Fri – A – 109****Pilot Study on Irreversible Electroporation with High Frequency Pulse Trains**C. B. ARENA¹, M. B. SANO¹, J. H. ROSSMEISL, JR.², M. N. RYLANDER¹, AND R. V. DAVALOS¹¹Virginia Tech-Wake Forest University, Blacksburg, VA, ²Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA**PS – Fri – A – 110****Novel Surfaces for the *In Vitro* Study of Endothelial and Cancer Cell Interactions**L. DICKINSON¹, AND S. GERECHT¹¹Johns Hopkins University, Baltimore, MD**PS – Fri – A – 111****Role of Beta-catenin Gene Expression in the Regulation of Colon Cancer Cell Adhesion**S. AGASTIN¹, Y. GENG¹, AND M. R. KING¹¹Cornell University, Ithaca, NY**PS – Fri – A – 112****Supplementation of MCF-7 Cells with Fatty Acids Increases the Effectiveness of Tamoxifen *In Vitro***C. T. GOMILLION^{1,2}, AND K. J. BURG¹¹Institute for Biological Interfaces of Engineering & Dept. of Bioengineering, Clemson University, Clemson, SC, ²Department of Reconstructive Sciences, University of Connecticut Health Center, Farmington, CT**PS – Fri – A – 113*****Ex Vivo* Study of Ethanol Enhanced Cavitation Activity in Tissue Exposed to High Intensity Focused Ultrasound**C. CHEN¹, D. B. KHISMATULLIN¹, Y. LIU², S. MARUVADA², AND M. MYERS²¹Tulane University, New Orleans, LA, ²Devices and Radiological Health, U.S. Food and Drug Administration, Silver Spring, MD**PS – Fri – A – 114****Changes in Cell Physical Properties Provide the Force Driving Uncontrolled Growth of Cancer Cells**P. KATIRA¹, M. ZAMAN², AND R. BONNECAZE¹¹The University of Texas at Austin, Austin, TX, ²Boston University, Boston, MA

PS – Fri – A – 115**Primary Tumor-Initiating Cells Overcome Matrix Limitations On Spreading, Motility, and Proliferation**S. Y. WONG^{1,2}, T. A. ULRICH^{1,2}, L. P. DELEYROLLE^{3,4}, B. A. REYNOLDS^{3,4}, AND S. KUMAR^{1,2}¹University of California, Berkeley, Berkeley, CA, ²UC Berkeley - UCSF Graduate Program in Bioengineering, Berkeley, ³McKnight Brain Institute, University of Florida, Gainesville, FL, ⁴Queensland Brain Institute, University of Queensland, Brisbane, Australia**PS – Fri – A – 116****Computational Modeling of Cancer Cell Migration and Detachment During Oncogenic EMT**R. E. ZIELINSKI¹, C. MIHAI¹, AND S. N. GHADIALI^{1,2}¹The Ohio State University, Columbus, OH, ²Dorothy M. Davis Heart and Lung Research Institute, Columbus, OH**PS – Fri – A – 117****The Effect of Shape on the Pharmacokinetics and Biodistribution of Iron Oxide Nanoparticles**R. TOY¹, E. TRAN¹, A. CAMANN¹, J. PANSKY¹, C. SHOUP¹, D. ZHOU¹, H. CHU¹, P. M. PEIRIS¹, AND E. KARATHANASIS¹¹Case Western Reserve University, Cleveland, OH**PS – Fri – A – 118****Analysis of Bone-Matrix Proteins Using Nanoscale-Size Bone Samples and Proteomics Methodology**G. SROGA¹, AND D. VASHISHTH¹¹Rensselaer Polytechnic Institute, Troy, NY**PS – Fri – A – 119****Correlation of Shear Stress and Angiogenesis Using μ PIV Flow Diagnostics in an *In Vitro* Tumor Model**C. F. BUCHANAN¹, E. E. VOIGT¹, C. S. SZOT¹, P. P. VLACHOS¹, J. W. FREEMAN¹, AND M. N. RYLANDER¹¹Virginia Tech, Blacksburg, VA**PS – Fri – A – 120****Diversity in Mycobacteria Through Asymmetric Growth and Division**B. ALDRIDGE¹, M. FERNANDEZ-SUAREZ^{1,2}, D. HELLER¹, D. IRIMIA³, M. TONER³, AND S. FORTUNE¹¹Harvard School of Public Health, Boston, MA, ²Massachusetts General Hospital, Boston, ³Massachusetts General Hospital, Boston, MA**PS – Fri – A – 121****Functional Assays of Drug-Target Engagement on High Purity CTCs Correlate with Patient Progression**B. KIRBY¹, E. PRATT¹, S. SANTANA¹, J. SMITH¹, J. GLEGHORN², H. LIU³, N. BANDER³, M. JODARI-KARIMI³, M. LOFTUS³, D. NANUS³, AND P. GIANNAKAKOU³¹Cornell University, Ithaca, NY, ²Princeton University, Princeton, NJ, ³Weill Cornell Medical College, New York, NY**PS – Fri – A – 122****A Microfluidic Device To Control Interstitial Pressures Within Engineered Tumors**J. TIEN¹, K. LEE², AND C. M. NELSON²¹Boston University, Boston, MA, ²Princeton University, Princeton, NJ**PS – Fri – A – 123****Methods Towards Elucidating Real-time α -factor-Induced Yeast Peptide Secretion**A. KOLE¹, E. L. CURTIS¹, C. C. MARASCO¹, C. R. GOODWIN¹, J. R. ENDERS¹, T. R. GRAHAM¹, P. A. WEIL¹, K. T. SEALE¹, J. A. MCLEAN¹, AND J. P. WIKSWO¹¹Vanderbilt University, Nashville, TN**PS – Fri – A – 124****Universal Vitrification of Rare Cancer Cells from Different Origins by Ultra-fast Cooling**Y. HEO¹, S. NAGRATH¹, A. L. MOORE¹, I. MALINOWSKA², M. ZENALI¹, D. KWIATKOWSKI², AND M. TONER¹¹Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA, ²Brigham and Women's Hospital, Harvard Medical School, Boston, MA**PS – Fri – A – 125****Dynamic Conductivity Changes due to Irreversible Electroporation for Treatment Planning**P. A. GARCIA¹, R. E. NEAL, II¹, C. B. ARENA¹, AND R. V. DAVALOS¹¹Virginia Tech - Wake Forest University, Blacksburg, VA**PS – Fri – A – 126****Tumor Targeting of Single-Walled Carbon Nanotubes Using the F3 Peptide**W. PRICKETT¹, D. RESASCO¹, AND R. HARRISON¹¹University of Oklahoma, Norman, OK**PS – Fri – A – 127****High-throughput Multiplexed Cell Sorting for Study of Complex Cellular Systems**C. E. PROBST¹, P. ZRAZHEVSKIY¹, AND X. GAO¹¹University of Washington, Seattle, WA**PS – Fri – A – 128****Computational Analysis of Dynamic Responses by Individual T cells**N. BAGHERI¹, Q. HAN¹, D. A. LAUFFENBURGER¹, AND J. C. LOVE¹¹MIT, Cambridge, MA**PS – Fri – A – 129****Role of Cellular Mechanics and Substrate Compliance in Oncogenic Epithelial to Mesenchymal Transition**C. MIHAI¹, L. I. VOLAKIS¹, R. LI¹, D. A. KNISS¹, AND S. GHADIALI¹¹The Ohio State University, Columbus, OH**PS – Fri – A – 130****Multiplex Cathepsin Zymography Captures Stage-specific Activity Profiles of Cathepsins K, L, and S in Human Breast, Lung, and Cervical Tumors**B. CHEN¹, AND M. O. PLATT¹¹Georgia Institute of Technology, Atlanta, GA**PS – Fri – A – 131*****In Vitro* Assessment of Lipid-Polymer Hybrid Melanosomes in Human Neonatal Epidermal Melanocytes**L. QUATTROCHI¹, D. Y. CHO¹, N. CHAVEZ¹, Z. PFEIFFER¹, E. OANCEA¹, AND E. MATHIOWITZ¹¹Brown University, Providence, RI**PS – Fri – A – 132****Kinetic Imaging of Collagen Type I Fibrillogenesis — Effect of Proteoglycans at Physiological Levels.**G. E. TILBUREY¹, B. SAMA¹, AND J. RUBERTI¹¹Northeastern University, Boston, MA**PS – Fri – A – 133****Nanometer Resolution Analysis of Tau Induced Axonal Transport Defects in a Neurodegeneration Model**M. QIU¹, Y. YU¹, AND G. YANG¹¹Carnegie Mellon University, Pittsburgh, PA**Track: Biomedical Imaging and Optics****Imaging in the Enhancement or Assessment of Therapeutic Delivery****PS – Fri – A – 134****Automatic Segmentation of Blood Vessel in the presence of Fibrosis in Volumetric Lung CT Images**S. T. GOVINDARAJAN¹, S. CHANDRASEKHARAN¹, AND W. G. O'DELL^{1,2}¹University of Rochester, Rochester, NY, ²University of Florida, Gainesville, FL**PS – Fri – A – 135****Gadolinium-Catalyzed Carbon Nanotubes as Advanced Magnetic Resonance Imaging Nanoprobes**P. K. AVTI¹, Y. TALUKDAR¹, E. D. CAPARELLI¹, K. R. SHROYER², AND B. SITHARAMAN¹¹Stony Brook University, Stony Brook, NY, ²Stony Brook University Medical Center, Stony Brook, NYPS = Poster Session
OP = Oral Presentation = Credit approved

PS – Fri – A – 136**Ultrasonic Beam Profile Validation of Custom Therapeutic Transducers**E. M. LI¹¹Cornell University, Ithaca, NY**PS – Fri – A – 137****A Web Interface for the Quantification of Microtubule Dynamics**K. Y. KONG¹, A. I. MARCUS², P. GIAANAKAKOU³, AND M. D. WANG⁴¹Georgia Tech, Atlanta, ²Winship Cancer Institute, Atlanta, GA, ³Cornell University, New York, NY, ⁴Georgia Institute of Technology, Atlanta, GA**PS – Fri – A – 138****Radiofrequency-Triggered Release of Chemotherapy from Multi-Component Nano-Chains**P. M. PEIRIS¹, R. PHAM¹, E. SCHMIDT¹, A. MAYER¹, M. CALABRESE¹, E. TRAN¹, R. TOY¹, AND E. KARATHANASIS¹¹Case Western Reserve University, Cleveland, OH**PS – Fri – A – 139****Spatial Cancer Viability Response to Photothermal Therapy in Tissue Phantoms**J. WHITNEY¹, A. P. RODGERS¹, S. HOPKINS¹, D. GEOHEGAN², AND N. RYLANDER¹¹Virginia Tech, Blacksburg, VA, ²Oak Ridge National Laboratory, Oak Ridge, TN**PS – Fri – A – 140****Microbubble-mediated Ultrasound Therapy for Improved Chemotherapeutic Delivery**A. G. SORACE¹, J. M. WARRAM¹, H. UMPHREY¹, AND K. HOYT¹¹University of Alabama at Birmingham, Birmingham, AL**PS – Fri – A – 141****Photoacoustic Detection of Metastatic Melanoma Cells in Whole Blood Isolated using Two-Phase Flow**K. D. ROOD¹, C. M. O'BRIEN¹, T. O. DESOUZA¹, AND J. A. VIATOR¹¹University of Missouri - Columbia, Columbia, MO**PS – Fri – A – 142****Optical Tactile Imaging System for Quantification and Display of Breast Tumors**C-H. WON¹, J-H. LEE¹, K. REILLY², AND D. CAROLINE²¹Temple University, Philadelphia, PA, ²Temple University Hospital, Philadelphia, PA**PS – Fri – A – 143****Total Internal Reflection Photoacoustic Detection Spectroscopy**A. SUDDUTH¹, B. GOLDSCHMIDT¹, E. SAMSON¹, P. WHITESIDE¹, AND J. VIATOR¹¹University of Missouri-Columbia, Columbia, MO**PS – Fri – A – 144****Measurement of Solute Transport in Peritoneal Membrane of Living Rat Using Fiberoptic-based Fluorescence Photobleaching Technique**D. LEE¹, E. SHIN², J. C. KIM³, K-H. OH², AND J. K. KIM¹¹Kookmin University, Seoul, Korea, Republic of, ²Seoul National University Hospital, Seoul, Korea, Republic of, ³Seoul National University, Seoul, Korea, Republic of**PS – Fri – A – 145****Enhancing the Sensitivity of Dynamic Label-free Detection of Low-molecular Weight Targets**S. AHN¹, D. FREEDMAN¹, P. MASSARI², M. S. ÜNLÜ¹, AND M. CABODI¹¹Boston University, Boston, MA, ²Boston University School of Medicine, Boston, MA**PS – Fri – A – 146****Total Internal Reflection Photoacoustic Flowmetry System for Early Metastatic Melanoma Detection**R. H. CONLEY¹, C. M. O'BRIEN¹, AND J. A. VIATOR¹¹University of Missouri-Columbia, Columbia, MO**PS – Fri – A – 147****Modeling Interstitial Water and Light Biotransport During Local Tissue Indentation with Optical Clearing Devices**W. C. VOGT¹, H. SHEN¹, G. WANG¹, AND C. G. RYLANDER¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA**PS – Fri – A – 148****Characterization of Particle Brightness Distributions Using Fluorescence Cumulant Analysis**E. OLSON¹, N. BENKHEDAH², AND M. J. LEVENE¹¹Yale University, New Haven, CT, ²German Cancer Research Center, Heidelberg, Germany**PS – Fri – A – 149****Aggregation Profile Dynamics for Concanavalin A/Glycosylated Dendrimer Glucose Sensing Chemistry**B. M. CUMMINS¹, J. LIM², E. E. SIMANEK², M. V. PISHKO¹, AND G. L. COTE¹¹Texas A&M University, College Station, TX, ²Texas Christian University, Fort Worth, TX**PS – Fri – A – 150****Ear Image Analysis from a Digital Video Otoscope Prototype using Laser**L. CHENG¹, J. LIU¹, C. ROEHM², AND T. VALDEZ³¹Trinity College, Hartford, CT, ²University of Connecticut Health Center, Farmington, CT, ³Connecticut Children's Medical Center, Hartford, CT**PS – Fri – A – 151****Dimensional Changes of a Thermoresponsive Biosensor Membrane via Optical Tomography and Microscopy**A. ABRAHAM¹, R. FEI¹, R. SHELTON¹, B. APPLIGATE¹, M. GRUNLAN¹, AND G. COTE¹¹Texas A&M University, College Station, TX**PS – Fri – A – 152****High Resolution Optical Molecular Imaging of Changes in Cancer Cell Metabolism in Response to Therapy**Z. LUO¹, R. V. TIKEKAR¹, K. M. SAMADZADEH¹, AND N. NITIN¹¹University of California-Davis, Davis, CA**PS – Fri – A – 153****Binding Kinetics of Human Embryonic Kidney Cells (HEK293) with Surface Proteins Expressed on Treated and Untreated Gold Surfaces**N. I. DRAPER¹, K. L. LOKEN¹, S. B. PRINCE¹, B. J. DRAPER¹, J. LIN¹, T. A. GILBERTSON¹, AND A. ZHOU¹¹Utah State University, Logan, UT**Track: Biomedical Imaging and Optics****Imaging with Applications in Cardiovascular Medicine, Regenerative Medicine, Cancer, and Neuroimaging****PS – Fri – A – 154****Specific Chemotaxis of Magnetically Labeled Mesenchymal Stem Cells Towards Glioma**M. F. BENNEWITZ¹, K. S. TANG¹, E. A. MARKAKIS¹, AND E. M. SHAPIRO¹¹Yale University, New Haven, CT**PS – Fri – A – 155****Respiratory Motion Correction for Abdominal Dynamic Contrast Enhanced Magnetic Resonance Imaging**B. J. DAVIS¹, J. BIESZCZAD¹, J. R. GAGNE¹, AND D. B. KYNOR¹¹Creare, Inc., Hanover, NH**PS – Fri – A – 156****Epicardial Fat Image Navigator for Direct Cardiac Motion Tracking with Applications in a Prospectively Gated Free-Breathing 3D SSFP Coronary MRA Sequence**K. KAWAJI^{1,2}, P. SPINCEMAILLE², T. D. NGUYEN², M. AGRAWAL², M. R. PRINCE², AND Y. WANG^{1,2}¹Cornell University, Ithaca, NY, ²Weill Cornell Medical College, New York, NY

PS – Fri – A – 157**Developing Fluorescent Molecular Contrast Agents for Microscopy-guided Brain Tumor Resection**D. WANG¹, S. Y. LEIGH¹, F. V. COCHRAN², H. HAEBERLE², C. H. CONTAG², AND J. T. LIU¹¹Stony Brook University, Stony Brook, NY, ²Stanford University, Stanford, CA**PS – Fri – A – 158****Obtaining Three Dimensional Vasculature and Blood Flow in the Rat Brain for Computational Fluid Dynamics Analysis**N. LIAW^{1,2}, C. IONITA¹, J. A. SPERNYAK³, H. MENG¹, AND J. KOLEGA¹¹State University of New York at Buffalo, Buffalo, NY, ²State University of New York at Buffalo, Buffalo, ³Roswell Park Cancer Institute, Buffalo, NY**PS – Fri – A – 159****High Resolution Optical Molecular Imaging of Changes in Choline Metabolism**Z. LUO¹, M. LOJA¹, D. FARWELL¹, Q. C. LUU¹, P. J. DONALD¹, R. GANDOUR-EDWARDS¹, AND N. NITIN¹¹University of California-Davis, Davis, CA**PS – Fri – A – 160****Robust Registration of Brain MRI with Missing Correspondences**N. CHITPHAKDITTHAI¹, V. L. CHIANG², K. P. VIVES², AND J. S. DUNCAN¹¹Yale University, New Haven, CT, ²Yale School of Medicine, New Haven, CT**PS – Fri – A – 161****High Frequency Ultrasound and Optical Calcium Mapping to Assess Electrical-mechanical Coupling of Regenerating Zebrafish Heart**F. YU¹, F. CHEN², K. SHUNG¹, AND T. HSIAI¹¹University of Southern California, Los Angeles, CA, ²University of California, Los Angeles, Los Angeles, CA**PS – Fri – A – 162****Distinct Mechanisms Regulating Calcium Signals at the Plasma Membrane and Endoplasmic Reticulum in response to Mechanical Stimulation**T.-J. KIM¹, C. JOO², J. SEONG¹, J. SUN³, N. WANG⁴, T. HA², AND Y. WANG^{1,5}¹Neuroscience Program, Beckman Institute, University of Illinois at Urbana-Champaign, Urbana, IL, ²Department of Physics, University of Illinois at Urbana-Champaign, Urbana, IL, ³Department of Molecular & Integrative Physiology, University of Illinois at Urbana-Champaign, Urbana, IL, ⁴Department of Mechanical Engineering and Science, University of Illinois at Urbana-Champaign, Urbana, IL, ⁵Department of Bioengineering, Center for Biophysics and Computational Biology, Urbana, IL**PS – Fri – A – 163****Development and Assessment of a Novel Bioreactor for OCT Imaging of Bioengineered Blood Vessel**A. A. GURJARPADHYE¹, AND C. G. RYLANDER¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA**PS – Fri – A – 164****Electromagnetically Guided Hybrid Imaging System for Endoscopic Ultrasound Tumor Biopsy Procedures**L. GRUIONU¹, A. SAFTOIU², A. IORDACHE², A.-M. IONCICĂ², D. BURTEA², AND G. GRUIONU³¹Medinsys, Ltd., Craiova, Dolj, Romania, ²University of Medicine and Pharmacy Craiova, Craiova, Romania, ³Indiana University School of Medicine, Indianapolis, IN**PS – Fri – A – 165****Automatic Technique for Diagnosis of Left Ventricular Ischemia Using Short Axis Cardiac MRI Perfusion and Function Testing**P. G. MENON¹, M. DOYLE², AND R. W. BIEDERMAN²¹Carnegie Mellon University, Pittsburgh, PA, ²The Gerald McGinnis Cardiovascular Institute, Allegheny General Hospital, Pittsburgh, PA**PS – Fri – A – 166****Accelerating Cardiac MRI via PRISM**H. GAO¹, Y. LIN², C. AHN³, AND O. NALCIOGLU²¹UCLA, Los Angeles, CA, ²UCIrvine, Irvine, CA, ³Kwangwoon University, Seoul, Korea, Republic of**PS – Fri – A – 167****Intraocular Pressure during High Speed Projectile Impacts to the Eye**V. D. ALPHONSE¹, J. A. BISPLINGHOFF¹, D. M. SENGE¹, C. MCNALLY¹, AND S. M. DUMA¹¹Virginia Tech, Blacksburg, VA**PS – Fri – A – 168****A Comprehensive Tale from Cancer Cells to Lesions: *In Vivo* CT Microscopy of Tumor Vasculature**R. TOY¹, A. CAMANN¹, E. HAYDEN¹, E. TRAN¹, J. PANSKY¹, Z. BERMAN¹, K. GHAGHADA², AND E. KARATHANASIS¹¹Case Western Reserve University, Cleveland, OH, ²University of Texas Health Science Center at Houston, Houston, TX**PS – Fri – A – 169****Completeness Map Module for CatSim Environment**B. LIU¹, J. BENNETT², H. YU¹, AND G. WANG²¹Wake Forest University Health Sciences, Winston-Salem, NC, ²Virginia Tech, Blacksburg, VA**PS – Fri – A – 170****Cytotoxicity Effects of Diesel Exhaust Particles on Single Human Lung Carcinoma Epithelial Cells (A549)**Y. WU¹, G. D. MCEWEN¹, M. TANG¹, T. YU¹, A. ZHOU¹, AND T. A. GILBERTSON¹¹Utah State University, Logan, UT**PS – Fri – A – 171****How to Accelerate Magnetic Cell Labeling Using MPIOs? Be Positive!**K. S. TANG¹, AND E. M. SHAPIRO¹¹Yale University, New Haven, CT**PS – Fri – A – 172****Magnetic Cellulose Particles as Relaxation Switches for Environmentally Sensitive MRI**M. K. NKANSAH¹, AND E. SHAPIRO^{1,2}¹Yale University, New Haven, CT, ²Yale University School of Medicine, New Haven, CT**PS – Fri – A – 173****Optical Cryoimaging of Kidney Mitochondrial Redox State and the Effect of BCL-2 Family Expression**R. SEPEHR¹, K. STANISZEWSKI¹, M. RANJ¹, AND S. MALEKI¹¹Biophotonics lab, Electrical Engineering, University of Wisconsin Milwaukee, Milwaukee, WI**Track: Orthopedic and Rehabilitation Engineering****Orthopedic Bioengineering and Imaging****PS – Fri – A – 174****Effects of Focused Ultrasound on Cell Viability in Its Application to Articular Cartilage Engineering**A. B. NOVER¹, G. D. O'CONNELL¹, G. A. ATESHIAN¹, E. G. LIMA², E. E. KONOFAGOU¹, AND C. T. HUNG¹¹Columbia University, New York, NY, ²The Cooper Union, New York, NY**PS – Fri – A – 175****Effect of Mechanically Induced Malocclusion on Rabbit Temporomandibular Joint Kinematics**S. E. HENDERSON¹, A. J. ALMARZA¹, S. TASHMAN¹, AND A. L. MCCARTY¹¹University of Pittsburgh, Pittsburgh, PA**PS – Fri – A – 176****Surface Free Energy-driven Spreading and Migration of Osteoblasts on Nanocrystalline Diamond**L. YANG¹, M. SIHLABELA¹, B. W. SHELDON¹, AND T. J. WEBSTER¹¹Brown University, Providence, RI**PS – Fri – A – 177****The State of Comparative Effectiveness Research in the Implant-focused Spine Biomechanics Literature**N. RAY^{1,2}, J. DUBIN¹, M. HILLS^{1,2}, J. LIU^{1,2}, L. BERO², AND J. BUCKLEY^{1,2}¹St. Mary's Medical Center, San Francisco, CA, ²University of California, San Francisco, San Francisco, CAPS = Poster Session
OP = Oral Presentation = Credit approved

PS – Fri – A – 178**Glenohumeral Kinematics for Healthy and Osteoarthritic Shoulders**B. MECCIA¹, E. SPENCER², S. ZINGDE¹, R. KOMISTEK¹, AND M. MAHFOUZ¹¹University of Tennessee Knoxville, Knoxville, TN, ²St. Mary's Hospital, Knoxville, TN**PS – Fri – A – 179****Real-Time Automatic Reconstruction of Patient-Specific 3D Knee Model Using Ultrasound RF Signals**R. TADROSS¹, AND M. R. MAHFOUZ¹¹University of Tennessee, Knoxville, TN**PS – Fri – A – 180****Acetabular Rim Profile Measurement in Femoroacetabular Impingement Patients**J. URBAN¹, A. WEAVER¹, K. THEIVENDRAN², AND J. STITZEL¹¹Virginia Tech - Wake Forest University, Winston-Salem, NC, ²Royal Orthopedic Hospital, Birmingham, BC, United Kingdom**PS – Fri – A – 181****Following a Lumbar Fusion, Do Adjacent Segments Increase in Overall Motion?**J. W. MITCHELL¹, J. S. CHENG², C. B. CARR¹, A. SHARMA¹, M. R. MAHFOUZ¹, AND R. D. KOMISTEK¹¹University of Tennessee, Knoxville, TN, ²Vanderbilt University Medical Center, Nashville, TN**PS – Fri – A – 182****Differences in Osteocyte Volume, Blood Vessel Cross-sectional Area, and Porosity in Human and Bovine Bone**R. H. KNAPP¹, A. DEB ROY¹, F. DECARLO², AND S. P. KOTHA^{1,3}¹University of Connecticut, Storrs, CT, ²Argonne National Laboratory, Chicago, IL, ³Rensselaer Polytechnic Institute, Troy, CT**Track: Orthopedic and Rehabilitation Engineering****Rehabilitation Engineering****PS – Fri – A – 183****Multi-Label Classification for the Analysis of Human Motion Quality during Exercises for Knee Osteoarthritis**P. E. TAYLOR¹, G. J. ALMEIDA², J. K. HODGINS¹, AND T. KANADE¹¹Carnegie Mellon University, Pittsburgh, PA, ²University of Pittsburgh, Pittsburgh, PA**PS – Fri – A – 184****Training Contingency Awareness Through an Interactive Augmented Environment**R. ZHANG^{1,2}, AND T. CHAU^{1,2}¹University of Toronto, Toronto, ON, Canada, ²Holland Bloorview Kids Rehabilitation Hospital, Toronto, ON, Canada**PS – Fri – A – 185****Effects of Orthotics on Dynamic Stability in the Elderly**T. E. LOCKHART¹, H. YEOH¹, R. SOANGRA¹, C. HAYNES¹, AND P. G. BROLINSON²¹Virginia Tech, Blacksburg, VA, ²Edward Via Virginia College of Osteopathic Medicine, Blacksburg, VA**PS – Fri – A – 186****Experimental Stimulation of Skeletal Muscle Co-contraction in Feedback Control**P. JARAMILLO¹, B. KOO¹, AND A. LEONESSA¹¹Virginia Tech, Blacksburg, VA**PS – Fri – A – 187****Weakened Trunk Muscles Influence Knee Valgus Moments Associated with ACL Injury**K. MORGAN¹, C. J. DONNELLY², AND J. REINBOLT¹¹University of Tennessee, Knoxville, TN, ²University of Western Australia, Perth, Australia**PS – Fri – A – 188****Quantitative Analysis of Muscle Activations and Real-time Simulations for Two Pitching Motions: Overhand Pitching and Sidearm Pitching**D. JEONG¹, AND K. LEE¹¹Case Western Reserve University, Cleveland, OH**PS – Fri – A – 189****Preliminary Modeling of the Prosthetic Socket Pseudo-Joint**M. WERNKE¹, D. LURA¹, S. CAREY¹, S. PHILLIPS², AND R. DUBEY¹¹University of South Florida, Tampa, FL, ²Veterans Affairs, Tampa, FL**PS – Fri – A – 190****Motion Analysis of an Overhand Fly Cast: A Case Study of Pro vs. Amateur Casting Techniques**T. N. JONES¹, D. MCCLEAF¹, T. BEVINS¹, AND K. R. CSAVINA¹¹Florida Gulf Coast University, Fort Myers, FL**PS – Fri – A – 191****Effect of an Unconstrained Total Shoulder Arthroplasty on Glenohumeral Translation**R. J. PATEL¹, D. CHOI², T. WRIGHT^{1,2}, AND Y. GAO¹¹Cornell University, Ithaca, NY, ²Hospital for Special Surgery, New York, NY**PS – Fri – A – 192****Obese Individuals Exhibit Increased Time to Postural Stabilization After a Perturbation Similar to a Trip**S. L. MATRANGOLA¹, AND M. L. MADIGAN¹¹Virginia Tech - Wake Forest School of Biomedical Engineering and Sciences, Blacksburg, VA**Track: Respiratory Engineering****Computational Modeling in the Lung****PS – Fri – A – 193****A New Calculation of the Oxygen Diffusion Conductance in the Acinar Capillaries**G. ARBIA¹, B. SAPOVAL², M. FILOCHE¹, AND A. FOUCQUIER¹¹Ecole Polytechnique, Palaiseau, France, ²Ecole polytechnique, Palaiseau, France**PS – Fri – A – 194****Computational Modeling of Inhibitory Gradients in Lung Development**J. P. GLEGHORN¹, J. KWAK¹, A. L. PAVLOVICH¹, AND C. M. NELSON¹¹Princeton University, Princeton, NJ**PS – Fri – A – 195****A First Principle Calculation of Oxygen Consumption in Strong Exercise**A. FOUCQUIER¹, M. FILOCHE^{1,2}, AND B. SAPOVAL^{1,2}¹Ecole Polytechnique, Palaiseau, France, ²ENS Cachan, Cachan, France**PS – Fri – A – 196****Numerical Simulations of High Frequency Respiratory Flows in a 3D Lung Bifurcation Model**Z. CHEN¹, S. PARAMESWARAN¹, Y. HU¹, AND Z. HE¹¹Texas Tech University, Lubbock, TX**PS – Fri – A – 197****Hybrid CFD-PBPK Models for Soluble Gas Uptake in Full Respiratory Systems of Rats, Monkeys, and Humans**S. KABILAN¹, A. P. KUPRAT¹, D. R. EINSTEIN¹, K. R. MINARD¹, R. E. JACOB¹, J. P. CARSON¹, AND R. A. CORLEY¹¹Pacific Northwest National Laboratory, Richland, WA**PS – Fri – A – 198****Pressure Loss in an Asymmetric Bifurcation of the Human Lung Airway**M-Y. KANG¹, J. HWANG¹, S-K. LEE¹, AND J-W. LEE¹¹Pohang University of Science and Technology, Pohang, Korea, Republic of**PS – Fri – A – 199****Inter-lobar Variability of Morphological Parameters in the Human Airway Tree**J. HWANG¹, AND J. LEE¹¹POSTECH, Pohang, Korea, Republic of

PS – Fri – A – 200**Calculation of the Airway Pressure Distribution During the Insufflation Phase of Xenon Anesthesia**I. KATZ^{1,2}¹Air Liquide Santé International, Jouy-en-Josas CEDEX, France, ²Lafayette College, Easton, PA**PS – Fri – A – 201****Quantitative Analysis of Respiratory Airspace Using High Resolution Three-dimensional Tomography**J. HWANG¹, AND J. LEE¹¹POSTECH, Pohang, Korea, Republic of**PS – Fri – A – 202****A Computational Investigation of Surfactant Transport During Pulsatile Airway Reopening**J. E. PILLERT¹, H. FUJIOKA¹, D. H. HALPERN², AND D. P. GAVER III¹¹Tulane University, New Orleans, LA, ²University of Alabama, Tuscaloosa, AL**PS – Fri – A – 203****Finite Element Modeling of Stress Transmission in Fibrotic and Non-Fibrotic Lung Tissue**M. WEBER¹, F. SHEER², C. BARAN^{3,4}, K. GOOCH^{1,4}, AND S. GHADIALI^{1,4}¹Department of Biomedical Engineering, The Ohio State University, Columbus, OH, ²Department of Mechanical Engineering, The Ohio State University, Columbus, OH, ³The College of Medicine (Internal Medicine), The Ohio State University, Columbus, OH, ⁴Dorothy M Davis Heart and Lung Research Institute, The Ohio State University, Columbus, OH**PS – Fri – A – 204****Stress Analysis During Post Closure Filling Flow in an Airway Model**C-F. TAI¹, D. HALPERN², AND J. B. GROTEBERG¹¹University of Michigan, Ann Arbor, MI, ²University of Alabama, Tuscaloosa, AL**PS – Fri – A – 205****Transient Displacement of Mucus Plugs in Airways**P. ZAMANKHAN¹, B. HELENBROOK², S. TAKAYAMA¹, AND J. GROTEBERG¹¹University of Michigan, Ann Arbor, MI, ²Clarkson University, Potsdam, NY**PS – Fri – A – 206****Alveolar Membrane Strain Distribution Near Deformed Lung Airways**H. FUJIOKA¹, D. HALPERN², AND D. P. GAVER¹¹Tulane University, New Orleans, LA, ²University of Alabama, Tuscaloosa, AL**PS – Fri – A – 207****Particle Deposition in a Subject-specific Tracheobronchial Airways using Experimental and Computational Approaches**S. HYUN¹, AND C. S. KIM²¹Mercer University, Macon, GA, ²US EPA, Chapel Hill, NC**PS – Fri – A – 208****Ozone Transport and Uptake in Anatomically-Accurate Models of the Respiratory Tract**B. KESHAVARZI¹, J. ULTMAN², AND A. BORHAN²¹The Pennsylvania State University, University Park, PA, ²The Pennsylvania State University, University Park, PA**PS – Fri – A – 209****Effect of Symmetric vs. Asymmetric Tree Geometry and Airway Size on the Emergence of Ventilation Defects**A. BRAUNE¹, D. LEARY², G. N. MAKSYM², AND T. WINKLER¹¹Massachusetts General Hospital and Harvard Medical School, Boston, MA, ²Dalhousie University, Halifax, NC, Canada**Track: Respiratory Engineering****Mechanistic Bases of Lung Disease from Cells to System****PS – Fri – A – 210****Physical Mechanisms Regulating Endothelial Barrier Integrity**R. KRISHNAN¹, C. HARDIN², K. RAJENDRAN¹, D. TAMBE¹, G. MANOMOHAN¹, R. MARTINELLI³, L. VARGHESE³, J. BUTLER¹, J. FREDBERG¹, AND C. CARMAN³¹Harvard School of Public Health, Boston, MA, ²Massachusetts General Hospital, Boston, MA, ³CVBR, Beth Israel Deaconess Medical Center, Boston, MA**PS – Fri – A – 211****Effect of Tidal Volume and Positive End-Expiratory Pressure on Airway Closure in Normal Lungs Assessed with Positron Emission Tomography**T. J. WELLMAN¹, T. WINKLER², G. MUSCH², R. S. HARRIS², J. VENEGAS², AND M. F. VIDAL MELO²¹Boston University, Boston, MA, ²Massachusetts General Hospital, Boston, MA**PS – Fri – A – 212****Cyclic-Stretch Induced Oxidative Stress Increases Alveolar Epithelial Permeability**N. DAVIDOVICH¹, G. G. LAWRENCE¹, B. C. DIPALO¹, AND S. S. MARGULIES¹¹University of Pennsylvania, Philadelphia, PA**PS – Fri – A – 213****The Effect of Epithelial Cell Laser Ablation on Small Airway Constriction**J. ZHOU¹, M. B. ALVAREZ-ELIZONDO¹, E. BOTVINICK¹, AND S. C. GEORGE¹¹University of California, Irvine, Irvine, CA**PS – Fri – A – 214****Secretory Group V Phospholipase A2 as Coordinator of Lung Systemic Response to Pathologic Mechanical Ventilation**N. M. MUÑOZ¹, A. Y. MELITON¹, L. N. MELITON¹, A. A. BIRUKOVA¹, A. R. LEFF¹, AND K. G. BIRUKOV¹¹The University of Chicago, Chicago, IL**PS – Fri – A – 215****Central Role for Metallothionein (MT) in Zn Dependent Nitric Oxide (NO) Mediated Resistance to LPS-induced Apoptosis in Sheep Pulmonary Artery Endothelial Cells (SPAEC)**K. THAMBIAYYA¹, AND B. R. PITT¹¹University of Pittsburgh, Pittsburgh, PA**PS – Fri – A – 216****Lung Location Relative to Crush from Crash Data in the Crash Injury Research and Engineering Network Database**K. A. DANELSON^{1,2}, D. P. MORENO^{1,2}, F. S. GAYZIK^{1,2}, AND J. D. STITZEL^{1,2}¹Wake Forest University School of Medicine, Winston Salem, NC, ²Virginia Tech/Wake Forest University SBES, Winston-Salem, NC**PS – Fri – A – 217****Effect of Bi-level Positive Airway Pressure on Respiratory Variability during Sleep in those with and without Asthma**L. M. CAMPANA¹, R. L. OWENS², B. SUKI¹, AND A. MALHOTRA²¹Boston University, Boston, MA, ²Brigham and Women's Hospital, Boston, MA**PS – Fri – A – 218****The Effect of Deep Inspiration on Lung Elasticity and Morphometry**M. V. SZABARI^{1,2}, S. SATO³, H. PARAMESWARAN¹, E. BARTOLÁK-SUKI¹, Z. HANTOS², AND B. SUKI¹¹Boston University, Boston, MA, ²University of Szeged, Szeged, Hungary, ³Kyoto University Hospital, Kyoto, Japan**PS – Fri – A – 219****Effects of a Liposomal Contrast Agent on CT Image Registration in the Injured Lung**D. W. KACZKA^{1,2}, D. CHON^{1,2}, B. A. SIMON^{1,2}, K. B. GHAGHADA³, A. ANNAPRAGADA³, Y. YIN⁴, AND E. A. HOFFMAN⁴¹Harvard Medical School, Boston, MA, ²Beth Israel Deaconess Medical Center, Boston, MA, ³The University of Texas Health Science Center at Houston, Houston, TX, ⁴The University of Iowa, Iowa City, IA

PS – Fri – A – 220**A Simple Device to Evaluate the Respiratory Resistance in Children**J. VOSSOUGH¹, AND A. JOHNSON²¹University of Maryland, Olney, MD, ²University of Maryland, College Park, MD**PS – Fri – A – 221****Continuous Variations in Sniffing and Basal Respiratory Frequencies of Rats Over a 16 Hour Period**W. MCKINNEY¹, J. REYNOLDS¹, AND D. FRAZER¹¹CDC / NIOSH, Morgantown, WV**PS – Fri – A – 222****A Portable Breathing Rate Monitor Using Respiratory Inductive Plethysmography for Developing Countries**H. T. NGO¹, C. V. NGUYEN¹, T. H. NGUYEN¹, AND V. VO¹¹International University of VNU-HCM, Ho Chi Minh, Vietnam**PS – Fri – A – 223****Regional Lung Mechanics of Rabbit Scoliosis Model**J. C. OLSON^{1,2}, R. CASTILLO³, E. CASTILLO³, T. GUERRERO³, AND B. D. SNYDER^{2,4}¹Boston University, Boston, MA, ²Beth Israel Deaconess Medical Center, Boston, MA, ³MD Anderson Cancer Center, Houston, TX, ⁴Children's Hospital, Boston, MA**PS – Fri – A – 224****Impact of the Correlation in Pathway Resistance to Lung Tissue Properties on Estimates of Heterogeneity**S. AMIN¹, AND B. SUKI¹¹Boston University, Boston, MA**Track:Tissue Engineering****Engineered Tissue Models for Drug Discovery and Disease****PS – Fri – A – 225****Comparison of Gold Nanoparticle Intracellularization by Primary Hepatic Cell Types Reveal Diverse Trends**C. J. DETZEL¹, AND P. RAJAGOPALAN¹¹Virginia Tech, Blacksburg, VA**PS – Fri – A – 226****The Development of a Fibrin Gel Based Engineered Myocardium Model of Myocardial Infarction**K. E. SULLIVAN¹, K. Y. YE¹, AND L. D. BLACK¹¹Tufts University, Medford, MA**PS – Fri – A – 227****A 3D Tissue Model of Human Kidney for the Study of Disease Progression**T. M. DESROCHERS¹, B. SUBRAMANIAN¹, W-C. KO¹, AND D. L. KAPLAN¹¹Tufts University, Medford, MA**PS – Fri – A – 228****Matrix Physicochemical Cues as Chemotherapeutic Protective Agents in Hepatocellular Carcinoma**T. V. NGUYEN¹, AND S. R. PEYTON¹¹University of Massachusetts-Amherst, Amherst, MA**PS – Fri – A – 229****Bioheat Transfer Modeling of Bovine Liver with Embedded Vasculature under RF Ablation and its Experimental Validation**C. A. ACOSTA BERLINGHIERI¹, JUN ZHOU^{1, 2}, RICHARD CANTY¹, DAVID FUENTES PH.D.³, YUSHENG FENG PH.D.¹¹Computational Bioengineering and Control Lab, The University of Texas at San Antonio²Department of Mechanical Engineering, The University of Texas at Austin³Department of Imaging Physics, The University of Texas M.D Anderson Cancer Center**PS – Fri – A – 230****Assembly of a Layered Lung Co-culture Model Using Magnetic Levitation**H. TSENG¹, R. M. RAPHAEL^{1,2}, T. C. KILLIAN^{1,2}, AND G. R. SOUZA²¹Rice University, Houston, TX, ²Nano²D Biosciences, Houston, TX**Track:Tissue Engineering****Neural Tissue Engineering****PS – Fri – A – 231****Differentiation of Neural Stem Cells in 3D Fast-Macroporous Photopolymerizable Hydrogel Scaffolds**H. LI¹, AND N. D. LEIPZIG¹¹University of Akron, Akron, OH**PS – Fri – A – 232****Effects of Growth Factors on Schwann Cell Differentiation**N. J. JESURAJ¹, AND S. SAKIYAMA-ELBERT¹¹Washington University in St. Louis, St. Louis, MO**PS – Fri – A – 233****Geometry-induced Neuronal Differentiation of Adult Neural Stem Cells**S. BAKHRU¹, AND A. S. NAIN²¹Brown University, Providence, RI, ²Virginia Tech, Blacksburg, VA**PS – Fri – A – 234****Development of a Linearly Aligned Porous Chitosan-Alginate Scaffold for Neural Tissue Engineering**N. L. FRANCIS¹, P. M. HUNGER¹, A. DONIUS¹, B. RIBLETT¹, U. G. WEGST¹, AND M. A. WHEATLEY¹¹Drexel University, Philadelphia, PA**PS – Fri – A – 235****Spatial Axon Guidance Utilizing Covalently Bound Attractive and Repulsive Fusion Proteins**A. M. MCCORMICK¹, E. J. ENDRIZZI¹, AND N. D. LEIPZIG¹¹The University of Akron, Akron, OH**PS – Fri – A – 236****Sensitivity of High-Throughput Arrays to Detect Cellular Metrics in 3D Biomaterials for PNS Repair**C. M. DUMONT¹, P. KARANDE¹, AND D. M. THOMPSON¹¹Rensselaer Polytechnic Institute, Troy, NY**PS – Fri – A – 237****Evaluation of Collagen/Chitosan Composite Matrices for the Treatment of Traumatic Brain Injury**K. SCHUNTER¹, C. KNEEN¹, H. HAM¹, J. WITTE¹, M. JIMENEZ¹, K. CRAWFORD¹, AND E. ORWIN¹¹Harvey Mudd College, Claremont, CA**PS – Fri – A – 238****Regulating Human Neural Stem Cell Biological Activity by Small Molecules -Thiolated ManNAc Analogs**J. DU¹, H. KIM¹, E. TAN¹, R. BHATTACHARYA¹, F. A. ESPINOZA¹, AND K. J. YAREMA¹¹The Johns Hopkins University, Baltimore, MD

Friday, October 14, 2011

10:30AM - 12:00PM

PLATFORM SESSION - FRI - I

Track: Cellular and Molecular Engineering
- OP - Fri - I - I

Mechanotransduction & Mechanobiology - I

Chairs: Robert Mauck, Nadine Chahine
Convention Center - Room 11

10:30AM Fri - I - I - A

Shear Stress Modulates RAGE-induced Inflammation in a Model of Diabetes-induced Metabolic Stress

J. S. DEVERSE¹, K. BAILEY¹, K. JACKSON¹, AND A. PASSERINI¹¹University of California, Davis, Davis, CA

10:45AM Fri - I - I - B

Shear-Induced Resistance to Neutrophil Activation via the Formyl Peptide Receptor

M. J. MITCHELL¹, AND M. R. KING¹¹Cornell University, Ithaca, NY

11:00AM Fri - I - I - C

Effects of Fluid Shear on Cardiac Myocytes Expressing Disease-Causing Plakoglobin Mutations

V. HARIHARAN¹, A. ASIMAKI², J. E. SAFFITZ², AND H. HUANG¹¹Columbia University, New York, NY, ²Beth Israel Deaconess Medical Center, Boston, MA

11:15AM Fri - I - I - D

Nuclear Rheological Response in Cells Under Fluid Shear Stress

E. A. BOOTH-GAUTHIER¹, AND K. N. DAHL¹¹Carnegie Mellon University, Pittsburgh, PA

11:30AM Fri - I - I - E

Mitochondrial Changes in Endothelial Cells Due to Mechanochemical Stimuli

R. J. GIEDT¹, C. YANG¹, J. L. ZWEIER¹, A. MATZAVINOS², AND B. R. ALEVRIADOU¹¹Department of Biomedical Engineering and Davis Heart and Lung Research Inst., Ohio State University, Columbus, OH, ²Department of Mathematics, Iowa State University, Ames, IA

11:45AM Fri - I - I - F

Combinatorial Effects of Fluid Shear Stress and Electric Field on Dermal Fibroblast Migration

S. SONG¹, H. HAN¹, J. KIM¹, U. KO¹, AND J. H. SHIN¹¹Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic ofTrack: Cellular and Molecular Engineering
- OP - Fri - I - I - 2

Cell-Cell Interactions

Chairs: Alisa Morss Clyne, Adam Engler
Convention Center - Room 12

10:30AM Fri - I - 2 - A

Inter-Cellular Cytoskeleton Mechanical Bi-Modality Provides Understanding of Cell-Cell Adhesion Development and Stability on the Example of Immune Synapse

E. TABDANOV¹, A. GONDARENKO¹, R. KERSLAKE¹, AND L. KAM¹¹Columbia University, New York, NY

10:45AM Fri - I - 2 - B

Micropatterned Mammalian Cells Exhibit Phenotype-Specific Left-Right Asymmetry

L. Q. WAN¹, K. RONALDSON¹, M. PARK¹, G. TAYLOR¹, Y. ZHANG¹, J. GIMBLE², AND G. VUNJAK-NOVAKOVIC¹¹Columbia University, New York, NY, ²Pennington Biomedical Research Center, Baton Rouge, LA

11:00AM Fri - I - 2 - C

Mechanisms of Skeletal Muscle Differentiation via Organized Co-culture Technology

N. RAO¹, K. SPENCER², E. HUI², AND K. L. CHRISTMAN¹¹University of California: San Diego, La Jolla, CA, ²University of California: Irvine, Irvine, CA

11:15AM Fri - I - 2 - D

Divergent Roles of CD44 and Carcinoembryonic Antigen in Colon Carcinoma Metastasis

M. DALLAS¹, G. LIU², S. THOMAS³, D. HUSO², AND K. KONSTANTOPOULOS¹¹Johns Hopkins University, Baltimore, MD, ²Johns Hopkins Medical Institutions, Baltimore, MD, ³Ecole Polytechnique de Lausanne, Lausanne, Switzerland

11:30AM Fri - I - 2 - E

Novel *In Vitro* and *In Silico* Assay System to Evaluate Skin Sensitization Potential of ChemicalsS. LEE¹, D. X. DONG¹, N. SHARMA¹, R. JINDAL¹, L. LI¹, B. MITRA¹, T. MAGUIRE¹, R. SCHLOSS¹, AND M. YARMUSH¹¹Rutgers University, Piscataway, NJ

11:45AM Fri - I - 2 - F

Local Matrix Alignment During Microvascular Network Formation

J. HIGGINS¹, C. M. MCLEOD¹, Y. A. MIROSHNIKOVA², AND A. L. SARANG-SIEMINSKI¹¹Franklin W. Olin College of Engineering, Needham, MA, ²UCSF & UCB, San Francisco, CA

Track: Drug Delivery Systems - OP - Fri - I - I - 3

Novel Materials and Self Assembling Systems

Chairs: Joel Collier, Pankash Karande
Convention Center - Room 13

10:30AM Fri - I - 3 - A

DNA Origami for Cell Delivery - The Effect of Particle Shape on Cell Internalization

F. GRAF^{1,2}, C. LIN^{1,2}, D. INGBER^{3,4}, AND W. SHIH^{1,2}¹Harvard Medical School, Boston, MA, ²Dana-Farber Cancer Institute, Boston, MA, ³Wyss Institute for Biologically Inspired Engineering, Boston, MA, ⁴Children's Hospital Boston, Boston, MA

10:45AM Fri - I - 3 - B

Engineering Viral Nanoparticles for Applications in Medicine: Bioconjugate Chemistry and Functionalization of Brome Mosaic Virus

I. YILDIZ¹, AND N. F. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH

11:00AM Fri - I - 3 - C

Bio-Inspired Green Nanomedicines: Engineering Viral Nanoparticles for Applications in Medicine

N. F. STEINMETZ¹¹Case Western Reserve University, Cleveland, OH

11:15AM Fri - I - 3 - D

Dihydroxyacetone and Lactic Acid Poly(carbonate-ester)s as Potential Biomaterials

J. WEISER¹, P. ZAWANEH², AND D. PUTNAM¹¹Cornell University, Ithaca, NY, ²Millennium: The Takeda Oncology Company, Cambridge, MAPLATFORM
SESSIONS
Fri-IPS = Poster Session
OP = Oral Presentation

CME = Credit approved

11:30AM Fri - I -3 - E**Self-assembly of Fluorinated Dendrimer-based Nanoparticles for Drug Delivery**S. LIU¹, AND T. FAHMY¹¹Yale University, New Haven, CT**11:45AM Fri - I -3 - F****Tunable Temperature-dependent Properties of Alginate-Pluronic F68 Composite Hydrogels with High Mechanical Strength**J. C. WHITE¹, AND S. R. BHATIA¹¹University of Massachusetts Amherst, Amherst, MA

Track: Systems Biology, Bioinformatics and Computational Bioengineering - OP - Fri - I - 4

Methodology and Applications in Computational Bioengineering and Bioinformatics

Chairs: Ioannis P.Androulakis, Yusheng Feng
Convention Center - Room 14

10:30AM Fri - I -4 - A**Inferring Defined Cellular Subpopulations From Stochastic Transcriptional Profiles**S. S. BAIJKAR¹, A. KOWARSCH², C. DARGATZ², F. J. THEIS², AND K. A. JANES¹¹University of Virginia, Charlottesville, VA, ²Helmholtz Center, Munich, Germany**10:45AM Fri - I -4 - B****Bioinformatics Analysis of Control Mechanisms of Inflammatory Response**M. A. ORMAN¹, Q. YANG¹, F. BERTHIAUME¹, M. G. IERAPETITOU¹, AND I. P. ANDROULAKIS¹¹Rutgers University, Piscataway, NJ**11:00AM Fri - I -4 - C****Statistical Analysis of Multiplexed Bead-Based Flow Cytometric Immunoassays Using Mixed-Effects Modeling**D. C. CLARKE¹, AND D. A. LAUFFENBURGER¹¹Massachusetts Institute of Technology, Cambridge, MA**11:15AM Fri - I -4 - D****SHREDding a Biochemical Network into Functional Modules**G. V. SRIDHARAN¹, S. HASSOUN¹, AND K. LEE¹¹Tufts University, Medford, MA**11:30AM Fri - I -4 - E****Global Protein Interaction Network of Angiogenesis and Implications for Drug Target Design**L-H. CHU¹, C. RIVERA¹, AND A. POPEL¹¹Johns Hopkins University, Baltimore, MD**11:45AM Fri - I -4 - F****Reverse Engineering Metabolic Pathway Regulation Using A Modern Controls Approach**C. F. QUO¹, R. A. MOFFITT¹, C. KADDI¹, A. H. MERRILL², AND M. D. WANG¹¹Georgia Institute of Technology and Emory University, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA**Track: Neural Engineering - OP - Fri - I - 5****Neural Engineering Technology - I****Chairs:** Andrew Dunn, Bruce Wheeler*Convention Center - Room 15***10:30AM Fri - I -5 - A****Implantable Wireless System for Multi-channel, Multi-polar Electrical Stimulation through High Impedance Neural Interfaces**E. ZELLMER¹, M. R. MACÉWAN¹, N. KATTA¹, AND D. MORAN¹¹Washington University, Saint Louis, MO**10:45AM Fri - I -5 - B****Neural Stimulation at Single-Cell Resolution on an Active CMOS Microarray**N. LEI¹, S. RAMAKRISHNAN¹, P. SHI², J. ORCUTT², L. KAM¹, AND K. SHEPARD¹¹Columbia University, New York, NY, ²Massachusetts Institute of Technology, Cambridge, MA**11:00AM Fri - I -5 - C****Quantitative Investigation of the Interfacial Capabilities of Regenerative Macro-Sieve Electrodes**E. ZELLMER¹, M. R. MACÉWAN¹, AND D. MORAN¹¹Washington University, Saint Louis, MO**11:15AM Fri - I -5 - D****Neuronal Imaging During Stimulus-evoked *C. elegans* Behaviors in Microfluidic Arenas**D. R. ALBRECHT¹, J. LARSCH¹, A. GORDUS¹, AND C. BARGMANN¹¹The Rockefeller University, New York, NY**11:30AM Fri - I -5 - E****Geometric Effect of Surface Micropatterns on Neurogenesis and Axonal Protrusion**M. J. JANG¹, AND Y. NAM¹¹KAIST, Daejeon, Korea, Republic of**11:45AM Fri - I -5 - F****Development of an *In Vitro* Blood-Brain Barrier Model**D. M. WUEST¹, AND K. H. LEE¹¹University of Delaware, Newark, DE**Track: Orthopedic and Rehabilitation Engineering - OP - Fri - I - 6****Orthopedic Tissue Kinematics and Biomechanics****Chairs:** David Corr, Yi-Xian Qin*Convention Center - Room 16***10:30AM Fri - I -6 - A****Kinematics of Relaxed Volunteers, Braced Volunteers, and Frontal ATD in Low-Speed Frontal Sled Tests**S. M. BEEMAN¹, A. R. KEMPER¹, M. L. MADIGAN¹, AND S. M. DUMA¹¹Virginia Tech, Blacksburg, VA**10:45AM Fri - I -6 - B****Effect of Pre-Impact Bracing on Chest Compression of Human Occupants in Low-Speed Frontal Sled Tests**A. R. KEMPER¹, S. M. BEEMAN¹, AND S. M. DUMA¹¹Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Blacksburg, VA

11:00AM Fri - I -6 - C**Quantification of Viscoelastic Properties of Healthy and Symptomatic Muscle Tissue Via Ultrasonic Elastography**J. J. BALLYNS¹, P. OTTO¹, J. HAMMOND², J. P. SHAH², T. GEBREAB², L. H. GERBER^{1,2}, AND S. SIKDAR¹¹George Mason University, Fairfax, VA, ²National Institutes of Health, Bethesda, MD**11:15AM Fri - I -6 - D****Massage-Like Loading Enhances Recovery of Muscle Mechanical Properties Following Eccentric Exercise**C. HAAS¹, Y. ZHAO¹, T. A. BUTTERFIELD², AND T. M. BEST¹¹The Ohio State University, Columbus, OH, ²University of Kentucky, Lexington, KY**11:30AM Fri - I -6 - E****An In Vivo/In Vitro Active/Passive Simulator to Quantify 3D Kinematics of the Thoracolumbar Spine**E. LEDET¹, AND K. ELSABEE¹¹Rensselaer Polytechnic Institute, Troy, NY**11:45AM Fri - I -6 - F****Factors that Affect Loading in the Spine In Vivo As Measured with a Novel Force-Sensing Implant**E. H. LEDET¹, C. W. HELDER¹, M. B. GRABOWSKY¹, R. A. WACHS¹, E. LEIMER¹, K. COLE¹, A. DUBIN², AND J. C. GLENNON²¹Rensselaer Polytechnic Institute, Troy, NY, ²Albany Medical College, Albany, NY**Track: New Frontiers in Biomedical Engineering - OP - Fri - I - 8****Integrated Cellular Systems - I****Chairs:** Robert Nerem, Krystyn Van Vliet*Convention Center - Room 21***10:30AM Fri - I -8 - A****Synthetic Biology: From Parts to Modules to Therapeutic Systems**R. WEISS¹¹Massachusetts Institute of Technology, Cambridge, MA**10:45AM Fri - I -8 - B****Engineering Functional Cardiac Myocytes from Human Pluripotent Stem Cells**S. P. PALECEK¹¹University of Wisconsin - Madison, Madison, WI**11:00AM Fri - I -8 - C****Integration of Endogenous and Exogenous Matrix Properties in Mediating Endothelial Cell Connectivity**J. P. CALIFANO¹, J. CHAREST¹, AND C. A. REINHART-KING¹¹Cornell University, Ithaca, NY**11:15AM Fri - I -8 - D****Microscale Manipulation of Cells and Their Environment for Cell Sorting and Stem Cell Biology**J. VOLDMAN¹¹MIT, Cambridge, MA**11:30AM Fri - I -8 - E****Integrated Neural Systems: Understanding and Controlling Behaviors of Neuron Clusters**M. U. GILLETTE¹, L. J. MILLET¹, A. JAIN¹, R. IYER¹, AND S. C. LIU¹¹University of Illinois at Urbana-Champaign, Urbana, IL**11:45AM Fri - I -8 - F****On The Activation Trajectory of Alpha-Actinin**H. SHAMS¹, J. GOLJI¹, AND M. R. MOFRAD¹¹University of California, Berkeley, CA**Track: Tissue Engineering - OP - Fri - I - 9****Nano- and Micro- Engineering in Tissue Engineering****Chairs:** Jeff Borenstein, Elizabeth Dirk*Convention Center - Room 22***10:30AM Fri - I -9 - A****In Vitro Model of the Neurovascular Unit on a Chip**A. ACHYUTA¹, S. SUNDARAM¹, AND A. TAYLOR¹¹Draper Laboratory, Tampa, FL**10:45AM Fri - I -9 - B****High Cell Aspect Ratio Alters Stem Cell Traction Stresses and Lineage**L. VINCENT¹, T. YONG², J. DEL ALAMO¹, L. TAN², AND A. J. ENGLER¹¹University of California, San Diego, La Jolla, CA, ²Nanyang Technical University, Singapore, Singapore**11:00AM Fri - I -9 - C****Engineering the Microenvironment of Embryoid Bodies via Heparin-modified Gelatin Microparticle Incorporation**K. A. HAMMERSMITH¹, A. BRATT-LEAL¹, AND T. C. MCDEVITT¹¹Georgia Institute of Technology, Atlanta, GAPLATFORM
SESSIONS

Fri-1

Track: Biomedical Imaging and Optics**- OP - Fri - I - 7****Lasers in Medicine****Chairs:** Randy Bartels, Bernard Choi*Convention Center - Room 17***10:30AM Fri - I -7 - A****Differential Multiphoton Microscopy- Invited**J. SQUIER¹¹Colorado School of Mines, Golden, CO**11:00AM Fri - I -7 - B****Real-time Laser Speckle Imaging During Port Wine Stain Therapy**O. YANG¹, B. YANG¹, K. KELLY¹, J. NELSON¹, AND B. CHOI¹¹University of California, Irvine, Irvine, CA**11:15AM Fri - I -7 - C****Optical Histology of Microvasculature in Thick Tissue Sections of the Brain**A. MOY^{1,2}, AND B. CHOI^{1,2}¹University of California, Irvine, Irvine, CA, ²Beckman Laser Institute, Irvine, CA**11:30AM Fri - I -7 - D****Comparison of Registration Methods for Line-Scanning Laser Ophthalmoscope Images from Optical Coherence Tomography**S. LIU¹, D. HO¹, K. SUNG¹, A. DATTA¹, T. E. MILNER¹, H. G. RYLANDER III¹, AND M. K. MARKEY^{1,2}¹The University of Texas at Austin, Austin, TX, ²The University of Texas M. D. Anderson Cancer Center, Houston, TX**11:45AM Fri - I -7 - E****Fluorescence Laminar Optical Tomography of Tissue Engineered Vascular Construct**L. ZHAO¹, V. K. LEE¹, G. DAI¹, AND X. INTES¹¹Rensselaer Polytechnic Institute, Troy, NYPS = Poster Session
OP = Oral Presentation

= Credit approved

11:15AM Fri - I -9 - D**Central Role of Macrophages in Controlling Long Term Continuous Glucose Monitoring *in Vivo***U. KLUEH¹, Y. QIAO¹, AND D. L. KREUTZER¹¹University of Connecticut, School of Medicine, Farmington, CT**11:30AM Fri - I -9 - E****Ultrahigh Permeability Substrates Induce 3-D Tissue Formation by Multiple Cell Types**J. MCGRATH¹, AND B. NEHILLA¹¹University of Rochester, Rochester, NY**11:45AM Fri - I -9 - F****Micro/Nanoengineering Hormone-Expressing Islet-Like Tissue Subunits**D. GALLEGOS PEREZ¹, N. HIGUITA CASTRO¹, R. K. REEN¹, M. PALACIO OCHOA¹, S. SHARMA¹, L. J. LEE¹, J. J. LANNUTTI¹, D. J. HANSFORD¹, AND K. J. GOOCH¹¹The Ohio State University, Columbus, OH**Track: Tissue Engineering - OP - Fri - I - 10****Bioreactors and Bioprocessing in Tissue Engineering****Chairs:** Mehmet Dokmeci, Milica Radisic*Convention Center - Room 23***10:30AM Fri - I -10 - A****A Novel Physiological Strain Rate Bioreactor for Engineered Heart Valve Mechanobiology**N. MASOUMI¹, K. L. JOHNSON¹, G. LEE¹, J. LIANG², AND G. C. ENGELMAYR¹¹Penn State University, University Park, PA, ²Penn State University, University Park, PA**10:45AM Fri - I -10 - B****Guided Commitment And Bioprocessing Of Human Pluripotent Stem Cells for Cardiac Cell Therapy**A. PARIKH¹, D. JING¹, AND E. S. TZANAKAKIS¹¹SUNY-Buffalo, Buffalo, NY**11:00AM Fri - I -10 - C****Computational Design of Perfusion Systems for Engineered Tissues**J. G. TRUSLOW¹, AND J. TIEN¹¹Boston University, Boston, MA**11:15AM Fri - I -10 - D****Design a Bioreactor with Coordinated Mechanical and Electrical Stimulations**B. WANG¹, C. ESTEBAN-PEREZ¹, A. WHITE², F. TO¹, A. L. CURRY², AND J. LIAO¹¹Mississippi State University, Starkville, MS, ²University of Memphis, Memphis, TN**11:30AM Fri - I -10 - E****A Novel Approach to Study ECM Remodeling and Deposition of Tissue-Engineered Vessels in a Mechanically Controlled Environment**A. H. HUANG¹, Y. BAI², H. WAGNER², A. T. YEH², J. D. HUMPHREY¹, AND L. E. NIKLASON^{1,3}¹Yale School of Engineering & Applied Science, New Haven, CT, ²Texas A&M College of Engineering, College Station, TX, ³Yale School of Medicine, New Haven, CT**11:45AM Fri - I -10 - F****The Role of Bioreactor Stimulation Frequency and Duration on an Engineered Tendon Tissue Construct**B. ENGBRETTSON¹, W. YATES¹, AND V. SIKAVITSAS¹¹University of Oklahoma, Norman, OK**Track: Devices: Nano to Micro - OP - Fri - I - 11*****Medical Diagnostics: Nano to Micro Devices - II****Chairs:** Andre Gobin*Convention Center - Room 24***10:30AM Fri - I -11 - A****Optimization of a Biomimetic Rare Blood Cell Separating Device on a Microfluidic Platform**A. JAIN^{1,2}, AND L. MUNN¹¹Massachusetts General Hospital, Charlestown, MA, ²Boston University, Boston, MA**10:45AM Fri - I -11 - B****Microfluidic Cell Immunophenotyping and Biomarker Detection for the Diagnosis of Ocular Diseases**J. V. GREEN¹, AND S. K. MURTHY¹¹Northeastern University, Boston, MA**11:00AM Fri - I -11 - C****High-Sensitivity Multiplexed Immunoassay on Threads**G. ZHOU^{1,2}, X. MAO^{1,2}, AND D. JUNCKER^{1,2}¹McGill University, Montreal, QC, Canada, ²Genome Quebec Innovation Centre, Montreal, Canada**11:15AM Fri - I -11 - D****Micromagnetic-Microfluidic Device for Isolation and Detection of Rare Pathogens using a Broad Spectrum Opsonin**R. M. COOPER^{1,2}, D. LESLIE³, K. DOMANSKY³, M. SUPER³, C. YUNG^{2,3}, S. WORKMAN³, AND D. INGBER^{2,3}¹MIT, Boston, MA, ²Children's Hospital Boston, Boston, ³Harvard University, Boston, MA**11:30AM Fri - I -11 - E****Enhancing Point-of-Care Infectious Disease Diagnostics With a Microfluidic Dialysis Device**N. T. HO¹, J. Y. ZHANG¹, M. CABODI¹, AND C. M. KLAPPERICH¹¹Boston University, Boston, MA**11:45AM Fri - I -11 - F****A Simple Method to Amplify RNA Targets**S. MCCALLA¹, A. SARMA², C. ONG¹, AND A. TRIPATHI¹¹Brown University, Providence, RI, ²Harvard University, Cambridge, MA**Supported by an unrestricted educational grant from***Track: Cardiovascular Engineering- OP - Fri - I - 12****Valve Mechanobiology/Tissue Engineering****Chairs:** Craig Simmons, Wei Sun*Convention Center - Room 25***10:30AM Fri - I -12 - A****Effects of Decellularization on the Viscoelastic Behavior of the Pulmonary Valve Leaflet**G. CONVERSE¹, M. ARMSTRONG¹, E. BUSE¹, R. QUINN¹, G. LOFLAND¹, S. HILBERT¹, AND R. HOPKINS¹¹Children's Mercy Hospital, Kansas City, MO**10:45AM Fri - I -12 - B****Focal, Layer-Specific Tissue Properties in Early Porcine Calcific Aortic Valve Disease**K. L. SIDER¹, AND C. A. SIMMONS¹¹University of Toronto, Toronto, ON, Canada**11:00AM Fri - I -12 - C****Inflammatory Microenvironments Induce Calcification Through Disruption of eNOS Signaling in Valve Endothelial Cells**J. M. RICHARDS¹, AND J. T. BUTCHER¹¹Cornell University, Ithaca, NYPLATFORM
SESSIONS

Fri-1

11:15AM Fri - I -12 - D**Biomechanical Characterizations of Acellular Mitral Valve Scaffolds**B. WANG¹, B. BRAZILE¹, D. MCCALLUM¹, L. WILLIAMS¹, AND J. LIAO¹¹Mississippi State University, Starkville, MS**11:30AM Fri - I -12 - E****Oscillatory Shear Stress Downregulates eNOS and Notch I in Valve Endothelial Cells and Correlates with Inflammation and Mesenchymal Transformation**G. J. MAHLER¹, AND J. T. BUTCHER¹¹Cornell University, Ithaca, NY**11:45AM Fri - I -12 - F****Calcific Nodule Morphogenesis by Aortic Valve Interstitial Cells is Strain Dependent**J. CHEN¹, C. I. FISHER¹, M. K. SEWELL-LOFTIN¹, AND W. D. MERRYMAN¹¹Vanderbilt University, Nashville, TN**Track: Cardiovascular Engineering- OP - Fri - I - 13****Vascular Permeability, Microvasculature, and Angiogenesis - I****Chairs:** Rob Peattie, Laura Suggs*Convention Center - Room 26***10:30AM Fri - I -13 - A****Capacity of Cardiac Fibroblasts to Serve as Support Cells for Vascularization of Engineered Myocardium**R. L. TWARDOWSKI¹, AND L. D. BLACK¹¹Tufts University, Medford, MA**10:45AM Fri - I -13 - B****Quantification of VEGF Receptor Expression in Hindlimb Skeletal Muscle Under Normal and Ischemic States**P. I. IMOUKHUEDE¹, A. O. DOKUN², B. H. ANNEX², AND A. S. POPEL¹¹Johns Hopkins University, Baltimore, MD, ²University of Virginia, Charlottesville, VA**11:00AM Fri - I -13 - C****The Permeability to Albumin of Blood-Derived Endothelial Cells**T. M. CHEUNG¹, M. P. GANATRA¹, AND G. A. TRUSKEY¹¹Duke University, Durham, NC**11:15AM Fri - I -13 - D****Validating the Utility of 3D Quantification with Pro-angiogenic Fibrin Gels**J. RYTLEWSKI¹, AND L. J. SUGGS¹¹University of Texas at Austin, Austin, TX**11:30AM Fri - I -13 - E****Permeability of the Blood-Brain Barrier to Therapeutic Antibodies**L. SHI¹, AND B. M. FU¹¹Department of Biomedical Engineering, City College of New York, New York, NY**11:45AM Fri - I -13 - F****Endothelial Surface Glycocalyx in Mammalian Blood Vessels**W-Y. YEN¹, B. CAI¹, M. ZENG¹, J. M. TARBELL¹, AND B. M. FU¹¹Department of Biomedical Engineering, The City College of New York, New York, NY**Track: Respiratory Engineering - OP - Fri - I - 14****Mechanistic Bases of Lung Disease from Cells to System****Chairs:** Susan Margulies, Brett Simon*Convention Center - Room 27***10:30AM Fri - I -14 - A****Stretch Induces Expression of Lung Protective Metallothionein Through a Zinc/MTF1 Dependent Pathway**F. BOUDREAU¹, M. PINILLA-VERA², A. KHO³, J. A. ENGLERT², R. M. BARON², AND D. J. TSCHUMPERLIN¹¹Harvard School of Public Health, Boston, MA, ²Brigham and Women's Hospital, Boston, MA, ³Children's Hospital Boston, Boston, MA**10:45AM Fri - I -14 - B****Pulmonary Contusion Identification using Computed Tomography in Injured Occupants of Motor Vehicle Crashes**K. A. DANELSON^{1,2}, A. B. THOMPSON^{1,2}, A. A. WEAVER^{1,2}, C. CHILES², AND J. D. STITZEL^{1,2}¹Virginia Tech - Wake Forest University School of Biomedical Engineering and Sciences, Winston Salem, NC, ²Wake Forest University School of Medicine, Winston Salem, NC**11:00AM Fri - I -14 - C****Hyperoxia Increased the Elastic Modulus of Alveolar Epithelial Cells**E. ROAN¹, K. WILHELM², A. BADA¹, V. GORANTLA², P. S. MAKENA², S. E. SINCLAIR², AND C. M. WATERS²¹University of Memphis, Memphis, TN, ²University of Tennessee Health Science Center, Memphis, TN**11:15AM Fri - I -14 - D****The Role of TLR-4 in Ventilator-Induced Lung Injury**G. B. ALLEN¹, K. TETENEV¹, J. VON REYN¹, AND J. H. BATES¹¹University of Vermont, Burlington, VT**11:30AM Fri - I -14 - E****Contribution of Proteoglycans to Lung Elasticity in an Elastase-induced Mouse Model of Emphysema**A. TAKAHASHI¹, A. MAJUMDAR¹, H. PARAMESWARAN¹, E. BARTOLÁK-SUKI¹, AND B. SUKI¹¹Boston university, Boston, MA**11:45AM Fri - I -14 - F****Bronchoconstriction Changes the Vertical Dependency in Regional Lung Inflation**C. WONGVIRIYAWONG^{1,2}, M. KONE¹, T. WINKLER¹, R. S. HARRIS¹, AND J. G. VENEGAS¹¹Massachusetts General Hospital, Harvard Medical School, Boston, MA, ²MIT, Cambridge, MA

Track: Translational Biomedical Engineering - OP - Fri - I- 15

Models and Practices of Commercialization and Entrepreneurship

Chair: Mostafa Analoui
Marriott – Ballroom A

Nanomedicine: Clinical Translation, Regulatory, and Investment Perspectives – Nanotechnology is impacting a wide range of sectors from energy, defense, materials, to life sciences. Nanotechnology applications in life sciences have brought together set of key sectors and as well as challenges. This session is designed to offer a series of unique views from three different, yet inter-related perspectives. Presenters will be sharing key activities within each of their respective institutions and companies, representing academic research, emerging biotech and clinical translation of therapeutic and diagnostic products, regulatory views and landscape in the business, federal and venture investment. In this panel discussion, key clinical science, business, and regulatory leaders will be discussing their current state of affairs, key challenges for moving forward, and the future trends. This session will conclude with a Q&A session providing opportunity for direct interaction between attendees and panelists. Panelists include:

- **Mostafa Analoui**, Head of Healthcare and Life Sciences
The Livingston Group
- **Rutledge Ellis-Behnke**, Director
Nanomedicine Translational Think Tank
- **Augenkllinik Mannheim**
Ruprecht-Karls-University Heidelberg, Germany
- **Edith Mathiowitz**, Professor of Medical Science and Engineering Director of Biotechnology Graduate Program
Brown University
- **Anthony Green**, Vice President, Technology Commercialization Group: Life Sciences, and the Ben Franklin Director;
The Nanotechnology Institute
- **Don Skerrett**, CEO, NanoScan Imaging
- **Esmail Jabbari**, Professor of Chemical and Biomedical Engineering, Director of Biomimetic Materials and Tissue Engineering Laboratory
University of South Carolina
- **Nick Wachtel**, Senior Associate, Lux Capital Management
- **Thomas J. Webster**, Associate Professor, School of Engineering and Department of Orthopaedics
Brown University; Founder, Nanovis; Founder, Axena; Founder, NanoVault; Founder, Axena; Founder, NanoFe

Track: Translational Biomedical Engineering - OP - Fri - I- 16

Translational Biomedical Engineering: Research to Practice (R2P) - Personalized Medicine in Real Time: A system engineering approach to enable gene-guided healthcare

Chair: Gualberto Ruano
Marriott – Ballroom B

Personalized Medicine in Real Time: A system engineering approach to enable gene-guided healthcare – One of the promises of the Human Genome Project is individualization of patient care based on highly heterogeneous innate metabolic factors determined by DNA typing of gene polymorphisms. The practice of DNA-guided medicine requires the translation of such gene polymorphism into clinical decision support for personalized healthcare. Pharmacogenetics serves as the foundation for the most clinically advanced application of DNA-guided medicine. Located at Hartford Hospital, the Laboratory of Personalized Health (LPH), performs clinical DNA typing for pharmacogenetic case referrals and provided web-based decision support tools via its Portal of Personalized Health. Operational since October 2005, LPH has already diagnosed drug metabolism capacities for nearly 3000 patients referred by physicians at throughout Connecticut through a partnership with Clinical Laboratory Partners. The hepatic cytochrome P450 (CYP450) isoenzymes CYP2D6, CYP2C9, and CYP2C19 metabolize, inactivate many drugs (including antidepressants, antipsychotics, anticoagulants, antiplatelets, and analgesics) and also activate pro-drugs (e.g. codeine into morphine) into their active metabolites. These isoenzymes are highly polymorphic in gene sequence and protein structure. Their resultant variable biochemical properties substantially alter individual patient drug response. Inherited common variations in DNA result in extremes of enzymatic activity with resultant highly deficient or ultra rapid drug metabolism. DNA typing is valuable in the diagnosis of patients refractive to psychotropic therapy or prone to recurrent side effects. Therapy can be directed to drugs whose primary metabolic pathway is least deficient or normal in an individual patient. The evolutionary synergy of energy conservation and detoxification with appetite and food seeking behaviors has led to unexpected interactions in drug responses. Pharmacogenetics research suggests that drug responses in cardiometabolic and neuroendocrine axes may lead to the desired efficacy in one axis but undesired side effects in the other. Examples will be presented on the cardiometabolic side effects of psychiatric medications and the neuroendocrine side effects of lipid-lowering and diabetic drugs. Panelists include:

- **Gualberto Ruano**, President and CEO, Genomas Inc.,
Director of Genetics Research, Hartford Hospital
- **Greg Makowski**, Clinical Laboratory Partners
- **John Goethe**, Institute of Living
- **Paul Thompson**, Hartford Hospital

Friday, October 14, 2011

1:30PM - 5:00PM

POSTER SESSION – FRI - B

Track: Cardiovascular Engineering

Cardiovascular Modeling and Measurement

PS – Fri – B - 1

Quantitative Comparison of Fetal Heart Variability in Different Delivery Modes Using Approximate Entropy

J. LIM¹, J. SONG², J. C. SHIN³, R. TAFRESHI¹, AND I. PARK³¹Texas A&M University of Qatar, Doha, Qatar, ²Scott & White Hospitals and Texas A&M Health Science Center, Temple, TX, ³The Catholic University of Korea, Seoul, Korea, Republic of

PS – Fri – B - 2

Quantitative Investigations of Characteristics of ECG Signals in Myocardial Infarction

J. LIM¹, R. TAFRESHI¹, AND J. SONG²¹Texas A&M University of Qatar, Doha, Qatar, ²Scott & White Hospitals and Texas A&M Health Science Center, Temple, TX

PS – Fri – B - 3

Valve Thin Films – A Novel Assay for the Testing of Cardiac Valve Function

K. BALACHANDRAN¹, P. W. ALFORD², AND K. K. PARKER¹¹Disease Biophysics Group, Harvard University, Cambridge, MA, ²University of Minnesota, Minneapolis, MN

PS – Fri – B - 4

Synthetic Composite Materials Emulating Patient Abdominal Aortic Aneurysm Wall Material Properties

C. M. MARGOSSIAN¹, E. GOLDEN¹, F. PANCHERI¹, M. D. IAFRATI², L. DORFMANN¹, AND R. A. PEATTIE¹¹Tufts University, Medford, MA, ²Tufts Medical Center, Boston, MA

PS – Fri – B - 5

Using MRI Velocimetry Data to Develop Fluid-Structure Models of Abdominal Aortic Aneurysms

A. D. SURESH¹, G. MIHAI¹, S. RAJAGOPALAN¹, O. P. SIMONETTI¹, AND S. N. GHADIALI¹¹The Ohio State University, Columbus, OH

PS – Fri – B - 6

Biomechanical Response of Abdominal Aortic Aneurysm Tissues Based on Planar Biaxial Testing

F. Q. PANCHERI¹, C. M. MARGOSSIAN¹, W. LIN¹, M. D. IAFRATI², L. DORFMANN¹, AND R. A. PEATTIE¹¹Tufts University, Medford, MA, ²Tufts Medical Center, Boston, MA

PS – Fri – B - 7

Decision Tree Model for Risk Prognosis of Patients on Continuous-Flow Left Ventricular Assist Device

Y. WANG¹, S. R. CLEMENTS², A. FERREIRA^{1,3}, T. A. SNYDER², J. W. LONG², AND J. F. ANTAKI¹¹Carnegie Mellon University, Pittsburgh, PA, ²INTEGRIS Advanced Cardiac Care, Oklahoma City, OK, ³Federal University of Maranhao, Sao Luis, Brazil

PS – Fri – B - 8

Human Platelet Convection Around a Developing Thrombus *In Vivo*W. WANG¹, J. P. LINDSEY II¹, J. CHEN², J. B. FREUND³, T. G. DIACOV², AND M. R. KING¹¹Cornell University, Ithaca, NY, ²Columbia University Medical Center, New York, NY, ³University of Illinois, Urbana Champaign, Urbana Champaign, IL

PS – Fri – B - 9

The *In Vitro* Adult Rat Cardiomyocytes End-to-End Aligned Model Achieved by Laser-Guided Micropatterning TechniqueA. H. YANG¹, Z. MA¹, H. LIU¹, T. K. BORG², AND B. Z. GAO¹¹Clemson University, Clemson, SC, ²Medical University of South Carolina, Charleston, SC

PS – Fri – B - 10

Balance-Point Approach to Characterize Regulation of Microvascular, Lymphatic, and Interstitial Pressures

R. M. DONGAONKAR¹, G. A. LAINE¹, R. H. STEWART¹, AND C. M. QUICK¹¹Michael E. DeBakey Institute, Texas A&M University, College Station, TX

PS – Fri – B - 11

Homogenization Theory Analysis of Patient-based Abdominal Aortic Aneurysm Wall Stress

W. LIN¹, F. Q. PANCHERI¹, M. D. IAFRATI², L. DORFMANN¹, AND R. A. PEATTIE¹¹Tufts University, Medford, MA, ²Tufts Medical Center, Boston, MA

PS – Fri – B - 12

A Fully Automated Mock Loop With Corresponding Simulink Simscape Model Connected to PhysioBank Data.

C. E. TAYLOR¹, AND G. E. MILLER¹¹Virginia Commonwealth University, Richmond, VA

PS – Fri – B - 13

Element Free Bioelectric Field Modeling for Inhomogeneous Anisotropic Cardiac Tissues

I. STURDEVANT¹, AND K. T. NG¹¹New Mexico State University, Las Cruces, NM

PS – Fri – B - 14

Decision Tree Models for the Assessment of Aortic Aneurysm Rupture Risk

J. SHUM¹, E. S. DIMARTINO², S. MULUK³, AND E. A. FINOL¹¹Carnegie Mellon University, Pittsburgh, PA, ²University of Calgary, Calgary, Canada, ³Allegheny General Hospital, Pittsburgh, PA

PS – Fri – B - 15

Collagenase Resistant Mice Have Normal Cardiopulmonary Function as Assessed by Pressure-volume Loops

L. TIAN¹, T. HACKER¹, AND N. CHESLER¹¹University of Wisconsin-Madison, Madison, WI

PS – Fri – B - 16

Computational Modeling of Interactions Between Myofibroblasts and Cardiomyocytes in Bioartificial Tissue Constructs

T. ABNEY¹, E. ELSON¹, T. WAKATSUKI², AND G. GENIN¹¹Washington University, St. Louis, MO, ²Medical College of Wisconsin, Milwaukee, WI

PS – Fri – B - 17

Mechanical Characterization of Thrombus From Acute Ischemic Stroke

G. M. SIEWIOREK¹, W. R. BARONE², S. D. ABRAMOWITZ², AND E. A. FINOL¹¹Carnegie Mellon University, Pittsburgh, PA, ²University of Pittsburgh, Pittsburgh, PA

PS – Fri – B - 18

Mathematical Modeling of Nanoparticle Transport and Adhesion in the Authentic Vasculature

S. S. HOSSAIN^{1,2}, T. J. HUGHES², M. FERRARI¹, AND P. DECUZZI¹¹The Methodist Hospital Research Institute, Houston, TX, ²The University of Texas at Austin, Austin, TX

PS – Fri – B - 19

Increased Pulse Wave Velocity Does Not Cause Increased Aortic Pulse Pressure

M. W. MOHIUDDIN¹, G. A. LAINE¹, AND C. M. QUICK¹¹Michael E. DeBakey Institute, Texas A&M University, College Station, TX

PS – Fri – B - 20

Oxygen and Carbon Dioxide Diffusion Modeling in the Neonates with Hypoplastic Left Heart Syndrome (HLHS)

A. JALALI¹, AND C. NATARAJ¹¹Villanova University, Villanova, PA

Track: Cardiovascular Engineering**Cardiovascular Stents and Devices****PS – Fri – B – 21****Computational Fluid Dynamics Based Characterization of Pediatric Outflow Cannula Jets for Better Hemodynamic Performance**P. G. MENON¹, D. R. TRUMBLE², A. UNDA³, AND K. PEKKAN¹¹Carnegie Mellon University, Pittsburgh, PA, ²Allegheny General Hospital, Pittsburgh, PA, ³Penn State Milton S. Hershey Medical Center, Hershey, PA**PS – Fri – B – 22****Arterial Wall Transport for Drug-eluting Stents: Effect of Drug Reaction Kinetics**F. BOZSAK¹, J.-M. CHOMAZ¹, AND A. I. BARAKAT^{1,2}¹Ecole Polytechnique, Palaiseau Cedex, France, ²University of California, Davis, Davis, CA**PS – Fri – B – 23****Drug Delivery from Rough Surfaces for Cardiovascular Stent Applications**S. E. STOEUBNER¹, AND G. MANI¹¹University of South Dakota, Sioux Falls, SD**PS – Fri – B – 24****Stent Strut Profile Streamlining Reduces Fibrin Deposition in the Peristrut Region**J. M. JIMÉNEZ¹, A. H. KAAKOUR¹, AND P. F. DAVIES¹¹University of Pennsylvania, Philadelphia, PA**PS – Fri – B – 25****Thrombogenic Optimization of a Novel Trileaflet Polymeric Prosthetic Heart Valve**T. E. CLAIBORNE¹, M. XENOS¹, J. SHERIFF¹, Y. KATO², L. PINCHUK², J. JESTY¹, S. EINAV¹, AND D. BLUESTEIN¹¹Stony Brook University, Stony Brook, NY, ²Innovia LLC, Miami, FL**PS – Fri – B – 26****Diffusion Studies Across Biodegradable Alginate Stents**S. DJOMEHRI¹, S. DARBHA¹, M. MOBED-MIREMADI¹, AND M. KERALAPURA¹¹San José State University, San Jose, CA**PS – Fri – B – 27****Tether-free Existence with the Free-range Resonant Electrical Energy Delivery (FREE-D) System for Ventricular Assist Device (VAD) Recipients**B. WATERS¹, A. P. SAMPLE¹, P. BONDE², AND J. R. SMITH¹¹University of Washington, Seattle, WA, ²University of Pittsburgh Medical Center, Pittsburgh, PA**PS – Fri – B – 28****Flow Modulation Algorithms for Intra-Aortic Rotary Blood Pumps to Reduce Coronary Steal**M. ISING¹, S. C. KOENIG¹, M. A. SOBIESKI¹, M. S. SLAUGHTER¹, AND G. A. GIRIDHARAN¹¹University of Louisville, Louisville, KY**PS – Fri – B – 29****Effect of Bifurcation Stenting on Endothelial Shear Stress: Role of SB Diameter, Angle and Lesion**H. Y. CHEN¹, I. D. MOUSSA², C. DAVIDSON³, AND G. S. KASSAB⁴¹Purdue University, Indianapolis, IN, ²Weill Cornell Medical Center, New York, NY, ³Northwestern University, Chicago, IL, ⁴IU-Purdue, Indianapolis, IN**PS – Fri – B – 30****Fault Detection Algorithm for Rotary Ventricular Assist Devices**K. G. SOUCY¹, S. C. KOENIG¹, M. A. SOBIESKI¹, M. S. SLAUGHTER¹, AND G. A. GIRIDHARAN¹¹University of Louisville, Louisville, KY**PS – Fri – B – 31****Effects of Degree of Stenosis on the Wall Shear Stress in Stenosed Coronary Artery Bifurcation**M. MOLAVI ZARANDI¹, R. MONGRAIN¹, AND O. F. BERTRAND²¹McGill University, Montreal, QC, Canada, ²Laval University, Quebec City, QC, Canada**Track: Cellular and Molecular Engineering****Cell Mechanics****PS – Fri – B – 32****Mechanical Properties of the Prestressed Nucleus in Cardiac Myocytes**H. LEE¹, W. J. ADAMS¹, P. W. ALFORD¹, A. W. FEINBERG¹, S. P. SHEEHY¹, J. A. GOSS¹, AND K. K. PARKER¹¹Disease Biophysics Group, Harvard University, Cambridge, MA**PS – Fri – B – 33****Cooperativity Between Integrins CD11c/CD18 and VLA-4 Supports Monocyte Arrest on VCAM-1**G. A. FOSTER¹, R. M. GOWER¹, AND S. I. SIMON¹¹University of California Davis, Davis, CA**PS – Fri – B – 34****Spatiotemporal Patterns of Contractility Cause Interspecies Differences in Early Brain Morphology**B. A. FILAS¹, A. OLTEAN¹, D. C. BEEBE¹, R. J. OKAMOTO¹, P. V. BAYLY¹, AND L. A. TABER¹¹Washington University, St. Louis, MO**PS – Fri – B – 35****Phenotyping of Endothelial Cells via Receptor Expression Changes in Microfluidic Channels**D. VICKERS¹, AND S. MURTHY¹¹Northeastern University, Boston, MA**PS – Fri – B – 36****Contribution of Stress Fiber Remodeling to the Response of Cells to Micropipette Aspiration**W. H. RONAN¹, N. H. REYNOLDS¹, AND J. P. MCGARRY¹¹National University of Ireland, Galway, Ireland**PS – Fri – B – 37****Mechano-Regulation of Pore Formation in Schlemm's Canal Endothelial Cells Perfused *In Vitro***R. M. PEDRIGI¹, S. T. BRAAKMAN¹, C. R. ETHIER¹, W. D. STAMER², AND D. R. OVERBY¹¹Imperial College London, London, United Kingdom, ²University of Arizona, Tucson, AZ**PS – Fri – B – 38****Effect of Dynamic Shear Stress on Platelet Microparticle Generation**W. YIN¹, F. ROUF¹, AND D. A. RUBENSTEIN¹¹Oklahoma State University, Stillwater, OK**PS – Fri – B – 39****Measuring the Modulus and Thickness of the Endothelial Glycocalyx with AFM**G. A. MARSH¹, AND R. E. WAUGH¹¹University of Rochester, Rochester, NY**PS – Fri – B – 40****Differential Mechanical Response of Human and Murine Mesenchymal Stem Cells: Therapeutic Implications**D. MCGRILL¹, D. GHOSH¹, AND M. DAWSON¹¹Georgia Institute of Technology, Atlanta, GA**PS – Fri – B – 41****Extracellular Mechanical Perturbations on Cytoskeletal Dynamics of Mitotic HeLa Cells**M.-T. WEI¹, D. VAVYLONIS¹, AND H. OU-YANG¹¹Lehigh University, Bethlehem, PA

PS – Fri – B – 42

Effects of Dynein on Microtubule Mechanics and Centrosome Positioning
J. WU¹, G. MISRA², R. J. RUSSELL¹, A. J. LADD¹, T. P. LELE¹, AND R. B. DICKINSON¹

¹University of Florida, Gainesville, FL, ²Stanford University, Stanford, CA

PS – Fri – B – 43

Toward the Development of New Strategies for the Delivery of MSC-Based Therapeutics

D. GHOSH¹, D. MCGRAIL¹, AND M. DAWSON¹

¹Georgia Institute of Technology, Atlanta, GA

PS – Fri – B – 44

A Computational Model of Axonal Microtubule Bundles Under Uniaxial Tension

S. PETER¹, AND M. R. MOFRAD¹

¹University of California, Berkeley, CA

PS – Fri – B – 45

ECM Micro-Patterning on Hydro-Gels to Study the Effect of Confinement on Cancer Metastasis

X. TANG¹, M. Y. ALI¹, AND T. A. SAIF¹

¹University of Illinois at Urbana-Champaign, Urbana, IL

PS – Fri – B – 46

Cell Sorting: Exploiting Elastic and Viscoelastic Properties

N. R. LABRIOLA¹, AND E. M. DARLING¹

¹Brown University, Providence, RI

PS – Fri – B – 47

Incorporation of Fluorescent Actin Monomers in Living Cells using Inkjet Printing for Cellular Biomechanics Studies

S. SHUFORD¹, A. OWCZARZAK¹, S. T. WOOD¹, AND D. DEAN¹

¹Clemson University, Clemson, SC

PS – Fri – B – 48

The Mechanism of Alpha-Actinin Binding to F-actin

H. SHAMS¹, J. GOLJI¹, AND M. R. MOFRAD¹

¹University of California, Berkeley, CA

PS – Fri – B – 49

The Effect Of Force Rate On The Energetics Of Membrane Tether Formation

D. STARK^{1,2}, P. BORDEN¹, T. KILLIAN¹, AND R. RAPHAEL¹

¹Rice University, Houston, TX, ²Rice University, Houston

PS – Fri – B – 50

Oscillatory Dynamics of Single Platelet Contraction

D. R. MYERS^{1,2}, Z. PENG^{1,2}, O. CHAUDHURI³, D. FLETCHER⁴, T. SULCHEK¹, AND W. A. LAM^{1,2}

¹Georgia Institute of Technology, Atlanta, GA, ²Emory University School of Medicine, Atlanta, GA, ³Harvard University, Cambridge, MA, ⁴University of California, Berkeley, Berkeley, CA

PS – Fri – B – 51

Application of Cell-Specific Finite Element Modeling to Evaluate Cytoplasmic Stiffness of Myoblasts

A. GEFEN¹, C. OOMENS², AND N. SLOMKA¹

¹Tel-Aviv University, Tel-Aviv, Israel, ²Eindhoven University of Technology, Eindhoven, Netherlands

PS – Fri – B – 52

Probing Tumor Cells via Composite Polymer Systems with Control of Local Substrate Elasticity

S-Y. CHOU¹, T. R. CASSINO², S. L. BROWER², L. SAKHAMURI², AND P. R. LEDUC¹

¹Carnegie Mellon University, Pittsburgh, PA, ²Precision Therapeutics, Pittsburgh, PA

Track: Cellular and Molecular Engineering**Cell Motility****PS – Fri – B – 53**

Scratch Assay on Nanogrooved Substrate: A Novel Anisotropic Model to Study Wound Healing *In Vitro*

Q. R. YOUMANS¹, P. BACKERIS¹, E. U. AZELOGLU¹, AND K. D. COSTA¹

¹Mount Sinai School of Medicine, New York, NY

PS – Fri – B – 54

A Microfluidic Approach to Study the Effect of Growth Factors on PC3 Cell Migration

U. TATA¹, S. RAO¹, K. T. NGUYEN¹, V. K. LIN², AND J-C. CHIAO¹

¹University of Texas at Arlington, Arlington, TX, ²University of Texas Southwestern Medical Center, Dallas, TX

PS – Fri – B – 55

Determining the Metastatic Potential of A375 Melanoma Cells via Migratory Patterns Using Microbubbles in PDMS

U. GIANG¹, L. XU², AND L. A. DELOUISE^{2,3}

¹University of Rochester, Rochester, NY, ²University of Rochester Medical Center, Rochester, NY, ³University of Rochester, Rochester

PS – Fri – B – 56

Focal Adhesion Maturation and Dynamics Regulate Variability in Migration Response to EGF Stimulation

Y. HOU¹, AND I. SCHNEIDER¹

¹Iowa State University, Ames, IA

PS – Fri – B – 57

Cellular Dynamics on Aligned Fibrous Scaffolds of Tunable Stiffness

S. WUNSCH¹, K. SHEETS¹, AND A. S. NAIN¹

¹Virginia Tech, Blacksburg, VA

PS – Fri – B – 58

Defined Concentration Gradients Modulate Tumor Cell Migration in a Microfluidic System

C. KOTHAPALLI¹, V. DUDU¹, AND M. VAZQUEZ¹

¹The City College of New York, New York, NY

PS – Fri – B – 59

Correlation of Membrane Patches in Extending and Retracting Neurons and Schwann Cells

J. M. LOVE¹, G. DAVE¹, J. CHETTA¹, AND S. SHAH¹

¹University of Maryland, College Park, MD, College Park, MD

PS – Fri – B – 60

Molecular Genetic Mechanisms of Glia Migration

C. BECK¹, C. NGNABEUYE¹, T. VENKATESH¹, AND M. VAZQUEZ¹

¹The City College of New York, New York, NY

PS – Fri – B – 61

Analysis of Area Coverage by Migrating Fibroblasts in Cultures Containing Mechanically-Damaged Sites

G. TOPMAN¹, O. SHARABANI-YOSEF¹, AND A. GEFEN¹

¹Tel Aviv University, Tel Aviv, Israel

PS – Fri – B – 62

Kinematics of Individual Fibroblasts Cultured in Monolayers When Migrating Into a Damaged Region

N. METOKI¹, A. ROY¹, O. SHARABANI¹, G. TOPMAN¹, AND A. GEFEN¹

¹Tel Aviv University, Tel Aviv, Israel

Track: Cellular and Molecular Engineering**Cell-Cell Interactions****PS – Fri – B – 63****Nonmyocytes Regulate Myocytes Maturation and Contractility Through Functional Gap Junction**Y. DUAN¹, J. DHULDHOYA¹, I. MARCOS¹, L. Q. WAN¹, AND G. VUNJAK-NOVAKOVIC¹¹Columbia University, New York, NY**PS – Fri – B – 64****Large-Scale Spatial Analysis of Patterned Neuron Populations**L. J. MILLET¹, M. B. COLLENS¹, AND R. BASHIR¹¹University of Illinois at Urbana-Champaign, Urbana, IL**PS – Fri – B – 65****Reverting Antibiotic Tolerance of Bacterial Persister Cells**J. PAN¹, S. HOU¹, AND D. REN¹¹Syracuse University, Syracuse, NY**PS – Fri – B – 66****Maturation of Elastin Fibers is Dependent on the Alpha V Beta 3 Integrin**D. PATEL¹, S. VANDROMME¹, AND L. TAITE¹¹Georgia Institute of Technology, Atlanta, GA**PS – Fri – B – 67****Controlled Initiation of Cell-Cell Interactions by MultiStep Microscope Projection Photolithography Based on a Bio-Friendly Photoresist**J-C. CHOI¹, AND J. DOH¹¹POSTECH, Pohang, Gyeongbuk, Korea, Republic of**PS – Fri – B – 68****Microfluidic Studies of Cancer Intravasation: Visualizing Tumor Cell Dynamics and Endothelial Permeability**I. K. ZERVANTONAKIS¹, S. CHUNG², J. L. CHAREST³, AND R. D. KAMM¹¹Massachusetts Institute of Technology, Cambridge, MA, ²Korea University, Seoul, Korea, Republic of, ³Draper Laboratories, Cambridge, MA**PS – Fri – B – 69****Inference of Human Immune Cell-Cell Communication from Single and Multi-Cell Cytokine Expression**K. F. BENEDICT^{1,2}, J. CHOI¹, D. A. LAUFFENBURGER¹, AND J. C. LOVE^{1,2}¹Massachusetts Institute of Technology, Cambridge, MA, ²The Ragon Institute, Charlestown, MA**PS – Fri – B – 70****Differential Requirement for Talin-1 and Kindlin-3 in LFA-1-Dependent Neutrophil Rolling and Arrest**C. T. LEFORT¹, B. G. PETRICH², M. MOSER³, R. FASSLER³, M. H. GINSBERG², AND K. LEY¹¹La Jolla Institute for Allergy and Immunology, La Jolla, CA, ²University of California San Diego, La Jolla, CA, ³Max Planck Institute of Biochemistry, Martinsreid, Germany**PS – Fri – B – 71****AI-2 Analogs and Antibiotics a Synergistic Approach to Reduce *E. coli* Biofilms in a Microfluidic Setting**V. ROY^{1,2}, M. T. MEYER^{1,2}, H. O. SINTIM^{1,3}, R. GHODSSI^{1,4}, AND W. E. BENTLEY^{1,2}¹University of Maryland College Park, College Park, MD, ²Fischell Department of Bioengineering, College Park, MD, ³Department of Chemistry and Biochemistry, College Park, MD, ⁴Institute of Systems Research, College Park, MD**Track: Biomedical Engineering Education and Outreach****Global Health****PS – Fri – B – 72****Low-Cost, Reliable Device to Measure Oxygen Output from Oxygen Concentrators in Developing World Hospitals**D. DORFMAN¹, S. J. BROWN¹, S. R. GANGIDI¹, J. SHAH¹, D. SHIN¹, A. CHANG¹, A. CONTAG¹, C. NEOH¹, J. LIN¹, M. DHAR¹, AND F. JIVAN¹¹Johns Hopkins University, Baltimore, MD**PS – Fri – B – 73****Heated Humidified Air For Hypothermic Resuscitation**G. NG¹, W. GALVEZ¹, M. HADIDI¹, A. MENDEZ¹, D. SHENDI¹, AND V. HAZELWOOD¹¹Stevens Institute of Technology, Hoboken, NJ**PS – Fri – B – 74****A Novel Bubble CPAP Device for Low Resource Settings**J. BROWN¹, H. MACHEN², R. RICHARDS-KORTUM¹, AND M. ODEN¹¹Rice University, Houston, TX, ²Texas Children's Hospital, Houston, TX**PS – Fri – B – 75****The Global Focus Microscope: A Portable, Battery-Operated, Low-Cost, Bright Field and Fluorescence Microscope**J. BROWN¹¹Rice University, Houston, TX**PS – Fri – B – 76****EWH-Duke Summer Institute Training Yields Annual Improvements in Equipment Repair**M. D. BEARD¹, R. MALKIN², AND L. HENDERSON²¹Engineering World Health, Durham, NC, ²Duke University, Durham, NC**PS – Fri – B – 77****A Structured Methodology for Context-Driven Design of Biomedical Devices**R. DZOMBAK¹, P. J. BUTLER¹, AND K. MEHTA¹¹The Pennsylvania State University, University Park, PA**Track: Biomedical Engineering Education and Outreach****K-12 Outreach****PS – Fri – B – 78****Design of a Human Circulation Museum Exhibit to Enhance Cardiovascular Health Literacy in Children**C. SEAMAN¹, W. GARRAHAN¹, AND P. SUCOSKY¹¹University of Notre Dame, Notre Dame, IN**PS – Fri – B – 79****Bringing Polymer Science To The Classroom: An Inquiry-Based Approach**J. P. CALIFANO¹, J. M. HENKEL², M. MCNALL², AND C. A. REINHART-KING¹¹Cornell University, Ithaca, NY, ²Eagle Hill Middle School, Manlius, NY**PS – Fri – B – 80****Evaluation of an Inquiry-Based After School STEM Mentorship Program for Middle School Youth**S. A. OLDS¹, M. KENNEDY¹, D. GROSSHANDLER², AND R. DAUGHERTY¹¹Northwestern University, Evanston, IL, ²University of Illinois at Chicago, Chicago, IL**PS – Fri – B – 81****Improving Arizona STEM Education - Summer 2010 Teacher Workshop Series**C. COHN¹, S. LEUNG¹, AND X. WU¹¹University of Arizona, Tucson, AZ

PS – Fri – B – 82**Bringing Biomedical Research to the Classroom**M. GOFF¹, Y. GENG¹, E. WAYNE¹, E. HOWELL¹, AND L. BONASSAR¹¹Cornell, Ithaca, NY**PS – Fri – B – 83****An Inquiry Based Approach to Teaching the use of Polymers for Tissue Engineering**E. M. CHANDLER¹, A. PHINNEY-FOREMAN², S. ARCHER¹, AND C. FISCHBACH¹¹Cornell University, Ithaca, NY, ²Waverly High School, Waverly, NY**PS – Fri – B – 84****Introducing Engineering Concepts in Elementary School Classrooms: Problem Based Learning Techniques**M. MACHADO¹, G. E. ANINWENE², AND K. HABERSTROH²¹Brown University, Warwick, RI, ²Brown University, Providence, RI**Track: Biomedical Engineering Education and Outreach****Pedagogical Innovations in Biomedical Engineering****PS – Fri – B – 85****Sharing Best Design Teaching Practices**A. SHOUKAS¹, AND R. H. ALLEN¹¹Johns Hopkins University, Baltimore, MD**PS – Fri – B – 86****Use of Active Learning to Teach BME Specific Professional Design Skills in Support of Capstone Design**J. BRUGNANO¹, M. POOL¹, A. SIEVING¹, S. VOYTIK-HARBIN¹, AND A. RUNDELL¹¹Purdue University, West Lafayette, IN**PS – Fri – B – 87****Teaching Ethics of Biomedical Engineering Innovation**F. MAC GABHANN¹, E. A. LOGSDON¹, E. RICE¹, AND Y. YAZDI¹¹Johns Hopkins University, Baltimore, MD**PS – Fri – B – 88****Assessing Adaptive Expertise in Physiology with Online Challenge-based Learning**R. NELSON¹ AND N. CHESLER¹¹University of Wisconsin-Madison, Madison, WI**PS – Fri – B – 89****Multi Campus Reverse Engineering Endeavor: The Twin Coil Dialysis Project**P. FAGETTE¹, AND C. HALL²¹Temple University, Philadelphia, PA, ²The College of New Jersey, Ewing, NJ**PS – Fri – B – 90****Development of a New Undergraduate Program in Biomedical Engineering**S. S. RHODES¹, AND C. R. STANDRIDGE¹¹Grand Valley State University, Grand Rapids, MI**PS – Fri – B – 91****Senior Design Capstone Project: Expanding on the Basics**S. ROWSON¹, AND S. M. DUMA¹¹Virginia Tech, Blacksburg, VA**PS – Fri – B – 92****A Discussion Platform for Promoting Critical and Creative Thinking Among Early Career Scientists**E. WAYNE¹, D. INFANGER¹, G. GAKHAR², P. DOERSCHUK¹, AND M. SHULER¹¹Cornell University, Ithaca, NY, ²Weill Cornell Medical College, New York, NY**Track: New Frontiers in Biomedical Engineering****Bridging Medicine and Materials and Biomedical Imaging****PS – Fri – B – 93****Nanoparticles as a Filler to Enhance Mechanical Properties of Silicone Gel For Medical Applications**L. XIA¹, Y. CHEN¹, S. YI¹, AND M. ZHANG¹¹University of Tennessee, Knoxville, TN**PS – Fri – B – 94****Analysis of Codebook Construction Strategies in the Bag-of-features Method for Histopathological Image Classification**S. H. RAZA¹, R. M. PARRY^{1,2}, A. N. YOUNG², AND M. D. WANG^{1,2}¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA**PS – Fri – B – 95****Correlation of *In Vivo* and *In Vitro* Degradation Profiles for Bio-Absorbable Polymer Implants**A. KUMAR¹, AND E. VAILHE¹¹Ethicon Inc, Somerville, NJ**PS – Fri – B – 96****Wide-field Fluorescent Microscopy on a Cell-phone**H. ZHU¹, O. YAGLIDERE¹, T-W. SU¹, D. TSENG¹, AND A. OZCAN¹¹University of California Los Angeles, Los Angeles, CA**PS – Fri – B – 97****Quantitative Testing of Robust Dry Reagent Storage with Filter Paper**G. WU¹, AND M. ZAMAN¹¹Boston University, Boston, MA**PS – Fri – B – 98****Assembly of Linear Nano-chains from Iron Oxide Nanospheres with Asymmetric Surface Chemistry**P. M. PEIRIS¹, E. SCHMIDT¹, M. CALABRESE¹, A. MAYER¹, C. SHOUP¹, D. ZHOU¹, R. PHAM¹, AND E. KARATHANASIS¹¹Case Western Reserve University, Cleveland, OH**PS – Fri – B – 99****Fabrication of Silk Films via Electrogelation**J. E. BRESSNER¹, G. QIN¹, L. E. KLINKER¹, Y. ZHANG¹, D. L. KAPLAN¹, AND F. G. OMENETTO¹¹Tufts University, Medford, MA**PS – Fri – B – 100****Manufacturing Polymeric Products With Controlled Biodegradation Characteristics**Q. LI¹, B. BEKISLI¹, S. S. JEDLICKA¹, AND J. P. COULTER¹¹Lehigh University, Bethlehem, PA**PS – Fri – B – 101****Bacterial Ablation Using Polymer and Carbon Nanotubes**N. LEVI-POLYACHENKO¹, A. BRADEN¹, T. ROSENBALM¹, E. MARTIN¹, T. SMITH¹, B. SMITH¹, W. D. WAGNER¹, L. WEBB¹, D. L. CARROLL¹, M. MORYKWA¹, AND L. ARGENTA¹¹Wake Forest Health Sciences, Winston-Salem, NC**PS – Fri – B – 102****Electrochemical Inhibition of *Pseudomonas aeruginosa* Persister Cells**T. H. NIEPA¹, J. GILBERT¹, AND D. REN¹¹Syracuse University, Syracuse, NY**PS – Fri – B – 103****Conditioning of the Cellular Microenvironment by HaCaT Cells Cultured in Microbubbles Formed in Polydimethylsiloxane**S. CHANDRASEKARAN¹, U-B. GIANG¹, L. DELOUISE^{1,2}, AND M. KING³¹University of Rochester, Rochester, NY, ²University of Rochester Medical Center, Rochester, ³Cornell University, Ithaca, NY

PS – Fri – B – 104**Development of a Compliant Hydrogel-Based Surgical Adhesive for Urological Applications**B. FLEISHMAN¹, J. NAGATOMI¹, AND K. WEBB¹¹Clemson University, Clemson, SC**PS – Fri – B – 105****Modulation of PC3 Cell Growth on Titanium Surfaces with Altered Surface Roughness and Electric Current**P. HENTOSH¹, H. R. PHADKE¹, H. P. BAO¹, AND S. B. KNISLEY¹¹Old Dominion University, Norfolk, VA**PS – Fri – B – 106****Mechanism Study of PEG-based Polymeric Therapeutics for Cell Membrane Wounds**J-Y. WANG¹, J. MARKS¹, AND K. C. LEE¹¹The University of Chicago, Chicago, IL**Track: New Frontiers in Biomedical Engineering****Cellular Mechanics & Computational Bioengineering****PS – Fri – B – 107****A Middle Ear Pressure Exchange Model For Comfort Prediction During Flights**L. P. DE PAULA¹, AND J. I. YANAGIHARA¹¹University of Sao Paulo, Sao Paulo, Brazil**PS – Fri – B – 108****Regulation of Endoderm Commitment in Embryonic Stem Cells by Fibrillar Fibronectin Promotes Higher Adhesion Strength**A. FUHRMANN¹, H. TAYLOR-WEINER¹, J. R. TULER¹, AND A. J. ENGLER¹¹UC San Diego, La Jolla, CA**PS – Fri – B – 109****Gradients in Matrix Rigidity Guide Stem Cell Migration by Polarizing the Cytoskeleton**M. RAAB¹, AND D. DISCHER¹¹University of Pennsylvania, Philadelphia, PA**PS – Fri – B – 110****Regulation of Molecular Tension in Dynamic Focal Adhesions**B. D. HOFFMAN¹, C. GRASHOFF², AND M. A. SCHWARTZ¹¹University of Virginia, Charlottesville, VA, ²Max Planck Institute of Biochemistry, Martinsried, Germany**PS – Fri – B – 111****Analyzing the Differentiation of Pluripotent Stem Cells in 3D Environments via Rules Based Computational Modeling**D. WHITE¹, AND M. KINNEY¹¹Georgia Institute of Technology, Atlanta, GA**PS – Fri – B – 112****Meshfree and Digital Imaging Analysis of the Deformation in Tissue Phantom Elastography**H. AJABI NAEENI¹, M. HAGHPANAHI², AND H. PIRALI²¹Science & Research Branch, Islamic Azad University, Tehran, Iran, ²Iran University of Science and Technology, Tehran, Iran**PS – Fri – B – 113****Mapping 3D Cellular Traction in Real Time Using a Fluorescent Microscope**M. S. HALL¹, R. LONG¹, C. ROH¹, B. J. KIM¹, C-Y. HUI¹, AND M. WU¹¹Cornell University, Ithaca, NY**PS – Fri – B – 114****Poroviscoelastic Finite Element Model of Perfused Liver Tissue: Effect of Fluid Input Geometry on Interstitial Fluid Pressure**E. C. MORAN^{1,2}, N. A. VAVALLE^{1,2}, S. RAGHUNATHAN^{1,2}, AND J. L. SPARKS^{1,2}¹Wake Forest University, Winston-Salem, NC, ²Virginia Tech- Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC**PS – Fri – B – 115****Single Molecule Binding of CD44 to P-selectin versus Fibrin Probed Using Force Spectroscopy**P. S. RAMAN¹, C. S. ALVES¹, D. WIRTZ¹, AND K. KONSTANTOPOULOS¹¹Johns Hopkins University, Baltimore, MD**PS – Fri – B – 116****Mapping of Mechanical Stresses Within Three-Dimensional Epithelial Tissues**N. GJOREVSKI¹, AND C. M. NELSON¹¹Princeton University, Princeton, NJ**PS – Fri – B – 117****Coordinate and Differential Modulation of Cell-Cell and Cell-ECM Traction Forces**V. MARUTHAMUTHU¹, B. SABASS^{2,3}, U. SCHWARZ², AND M. L. GARDEL¹¹University of Chicago, Chicago, IL, ²University of Heidelberg, Heidelberg, Germany, ³University of Stuttgart, Stuttgart, Germany**PS – Fri – B – 118****Reaction-Diffusion Processes Alter Structure and Affect Metabolic Control in Healthy and Diseased Muscle**B. PATHI¹, S. K. DASIKA¹, B. R. LOCKE¹, AND S. T. KINSEY²¹Florida State University, Tallahassee, FL, ²University of North Carolina Wilmington, Wilmington, NC**PS – Fri – B – 119****Examining Cell Mechanics and Structure through a Minimal Coarse-Grained Monte Carlo Model**J. KANG¹, R. L. STEWARD¹, Y. KIM¹, P. R. LEDUC¹, K. M. PUSKAR², AND R. S. SCHWARTZ¹¹Carnegie Mellon University, Pittsburgh, PA, ²California State Polytechnic University, Pomona, CA**PS – Fri – B – 120****Ice-Free Cryopreservation of Spin-Dried Mammalian Cells Using Trehalose**N. CHAKRABORTY^{1,2}, M. A. MENZE³, S. C. HAND⁴, AND M. TONER^{1,2}¹Center for Engineering in Medicine, Harvard Medical School, Boston, MA, ²Massachusetts General Hospital, Charlestown, MA, ³Eastern Illinois University, Charleston, IL, ⁴Louisiana State University, Baton Rouge, LA**PS – Fri – B – 121****Contribution of Unfolding and Intermolecular Architecture to Fibronectin Fiber Extensibility**M. BRADSHAW¹, AND M. L. SMITH¹¹Boston University, Boston, MA**PS – Fri – B – 122****Principal Component Analysis of HRV and ECG R-Peaks for Detection of Sleep Disordered Breathing**M. AL-ABED¹, M. MANRY¹, J. E. BURK², AND K. BEHBEHANI¹¹University of Texas at Arlington, Arlington, TX, ²Sleep Consultants, Inc., Fort Worth, TX**PS – Fri – B – 123****Using Synthetic Protein Scaffold to Study Asymmetric Cell Fate Decision**J. LI¹, P. BU¹, K. CHEN¹, AND X. SHEN¹¹Cornell University, Ithaca, NY**PS – Fri – B – 124****Strain Stiffening Induced by Molecular Motors in Active Crosslinked Biopolymer Networks**V. B. SHENOY¹, AND P. CHEN¹¹Brown University, Providence, RI

Track: New Frontiers in Biomedical Engineering**Immunobioengineering and Regenerative Medicine****PS – Fri – B – 125**

Enhanced Potency of Molecular Adjuvants in Lymphoid Organs via Intra-lymph Node Controlled Release

C. M. JEWELL^{1,2}, AND D. J. IRVINE^{1,3}

¹Massachusetts Institute of Technology, Cambridge, MA, ²Ragon Institute of MGH, MIT, and Harvard, Charlestown, MA, ³Howard Hughes Medical Institute, Chevy Chase, MD

PS – Fri – B – 126

Phase-displayed Peptide for Specific Targeting of M2 Macrophages

M. CIESLEWICZ¹, M. ZAVALJEVSKI¹, J. TANG¹, E. RAINES¹, AND S. PUN¹

¹University of Washington, Seattle, WA

PS – Fri – B – 127

The Osteogenic Differentiation of Mesenchymal Stem Cells on Piezoelectric Scaffolds

S. M. DAMARAJU¹, S. WU¹, M. JAFFE¹, AND T. L. ARINZEH¹

¹New Jersey Institute of Technology, Newark, NJ

PS – Fri – B – 128

Self-Assembling Adjuvants Carrying Whole Protein Antigens: Influence of MHC Haplotype and TLR-4 Signaling

G. A. HUDALLA¹, AND J. H. COLLIER¹

¹University of Chicago, Chicago, IL

PS – Fri – B – 129

Biomaterial Based Strategy for Stem Cell Transplantation into the Brain

M. COOKE¹, Y. WANG¹, C. MORSHEAD¹, AND M. SHOICHET¹

¹University of Toronto, Toronto, ON, Canada

PS – Fri – B – 130

Optimized Wound Creation in a Deep Partial Thickness Porcine Burn Model

C. V. GAINES¹, D. PORANKI¹, AND M. VAN DYKE¹

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

PS – Fri – B – 131

In Vivo Tracking of Macrophage Nanodelivery Vectors for Cancer Vaccine Prevention and Therapy

C. H. LOO¹, G. QIN¹, I. M. MERAZ¹, J. DELACERDA², L. A. DIAZ¹, K. C. LI¹, AND R. E. SERDA¹

¹The Methodist Hospital Research Institute, Houston, TX, ²The University of Texas MD Anderson Cancer Center, Houston, TX

PS – Fri – B – 132

An Injectable, Synthetic Immune Center for Cancer Vaccines: Efficient Delivery of Tumor-Antigens and Immune-Modulatory Nucleic Acids to Dendritic Cells

E. DAWSON¹, J. LELEUX¹, N. A. PEPPAS¹, AND K. ROY¹

¹University of Texas at Austin, Austin, TX

PS – Fri – B – 133

A Novel Experimental Approach to Study the Dynamic Response of Individual Human T Cells

Q. HAN¹, N. BAGHERI¹, D. LAUFFENBURGER¹, AND J. LOVE¹

¹MIT, Cambridge, MA

PS – Fri – B – 134

Naringin Coated Membranes Inhibit MMP-1- Dependent Inflammation in Human Monocytes

S. STEWART-CLARK^{1,2}, V. TRAN^{1,2}, AND X. WEN^{1,2}

¹Clemson University, Charleston, SC, ²Medical University of South Carolina, Charleston, SC

PS – Fri – B – 135

Mechanical Regulation of Mammary Progenitor Cell Differentiation

C. LUI¹, AND C. M. NELSON¹

¹Princeton University, Princeton, NJ

PS – Fri – B – 136

Micropatterning of pMHC and CD86 for Spatially-Resolved Costimulation of T Lymphocytes

H. CHEN¹, E. JUDOKUSUMO¹, K. BASHOUR¹, M. DUSTIN², AND L. KAM¹

¹Columbia University, New York, NY, ²New York University School of Medicine, New York, NY

PS – Fri – B – 137

Selection of Induced Pluripotent Cells Cells By Detecting mRNA Using Molecular Beacons

B. M. WILE^{1,2}, K. BAN³, Y-S. YOON³, AND G. BAO^{1,2}

¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, ³Emory University, Atlanta, GA

PS – Fri – B – 138

High-Throughput Sequencing of the Antibody Repertoire

N. JIANG¹, J. A. WEINSTEIN², J. HE², L. PENLAND², D. S. FISHER², AND S. R. QUAKE²

¹Stanford University, Stanford, ²Stanford University, Stanford, CA

PS – Fri – B – 139

CANCELED BY AUTHOR

PS – Fri – B – 140

Enhancing Lymphatic Transport of Nanoparticles Using Complement Anaphylatoxin C5a

S. RAGHUNATHAN¹, W. KILARSKI¹, J. A. HUBBELL¹, AND M. A. SWARTZ¹

¹Ecole polytechnique federale de lausanne, Lausanne, Switzerland

PS – Fri – B – 141

Fibrillar Fibronectin Matrices Engineered with Time-Dependent Mechanical Properties to Promote Stem Cell Specification

H. TAYLOR-WEINER¹, A. FUHRMANN¹, AND A. J. ENGLER¹

¹University of California, San Diego, La Jolla, CA

PS – Fri – B – 142

Engraftment of Human Airway Epithelial Cells in Mouse Lungs towards a Cell-based Therapy for Cystic Fibrosis

L. GUI¹, AND L. E. NIKLASON¹

¹Yale University, New Haven, CT

PS – Fri – B – 143

Long Term Engraftment of Mesenchymal Stem Cells in Irradiated Tissues via Aortic Arch Injection

P. LIN¹, D. CORREA¹, T. J. KEAN², J. E. DENNIS², AND A. I. CAPLAN¹

¹Case Western Reserve University, Cleveland, OH, ²Benaroya Research Institute, Seattle, WA

Track: Biomedical Imaging and Optics**Lasers in Medicine****PS – Fri – B – 144**

Novel Fluorescent Particles for In Vivo Imaging of Physiological Concentrations

M. DUBACH¹, J. MARRON², K. GLEASON², AND H. CLARK¹

¹Northeastern University, Boston, MA, ²MIT, Cambridge, MA

PS – Fri – B – 145

Excitation Frequency and Temperature Dependence of Lipid Coated NaYF₄:Er³⁺/Yb³⁺Nanoparticle Emission

C. F. GAINER¹, G. S. JOSHUA¹, C. DE SILVA¹, AND M. ROMANOWSKI¹

¹University of Arizona, Tucson, AZ

PS – Fri – B – 146**Covalent Coupling of Anti-EGFR to PEGylated ICG-loaded Nanocapsules and Uptake by Cancer Cells**B. BAHMANI¹, S. GUPTA¹, V. VULLEV¹, AND B. ANVARI¹¹University of California, Riverside, Riverside, CA**PS – Fri – B – 147****Development of a Thermally Programmable Biomaterial Substrate for Cell Cultures**B. O'DONOGHUE¹, AND H. TAO¹¹Tufts University, Medford, MA**PS – Fri – B – 148****Optical Imaging and Early Identification of Deep Tissue Injury**R. MOZA¹, J. MELENDEZ², AND J. M. DIMAIO¹¹UT Southwestern Medical Center, Dallas, TX, ²Spectral MD, Dallas, TX**PS – Fri – B – 149****A Novel 2D Color Map for Interactive Segmentation of Stained Tissue Images**Q. CHAUDRY¹, Y. SHARMA¹, S. H. RAZA¹, AND M. D. WANG²¹Georgia Institute of Technology, Atlanta, GA, ²Georgia Institute of Technology and Emory University, Atlanta, GA**Track: Biomedical Imaging and Optics****Nanotechnology for Biomedical Optics****PS – Fri – B – 150****Graphene based MRI Contrast agents: Synthesis, Characterization and In vitro MRI**B. PARATALA¹, B. SITHARAMAN¹, AND E. D. CAPARELLI^{2,3}¹Stony Brook University, Stony Brook, NY, ²Brookhaven National Laboratory, Upton, NY,³Stony Brook University (SUNY), Stony Brook, NY**PS – Fri – B – 151****Tunable Polymerized Shell Microbubbles as Molecular Imaging Ultrasound Contrast Agents**Y. PARK¹, A. C. LUCE¹, R. D. WHITAKER¹, B. AMIN¹, M. CABODI¹, R. O. CLEVELAND¹, J. O. NAGY², AND J. Y. WONG¹¹Boston University, Boston, MA, ²Nanovalent Pharmaceuticals, Inc., Bozeman, MT**PS – Fri – B – 152****Iron Oxide Labeling of Three Different Cell Populations: Relevant to Tissue Engineered Heart Valves**C. MARTINEZ¹, A. HENAO¹, K. PADGETT², D. PELAEZ², AND S. RAMASWAMY¹¹Florida International University, Miami, FL, ²University of Miami, Miami, FL**PS – Fri – B – 153****Targeted Biodegradable Nanoparticles for Non-Invasive MR Imaging of Macrophages.**R. RAGHEB¹, A. BANDYOPHADYAY¹, Q. WANG², H. CHAHBOUNE¹, J. CRISCIONE¹, H. EZALDEIN¹, AND T. FAHMY¹¹Yale University, New Haven, CT, ²University of Connecticut, Storrs, CT**PS – Fri – B – 154****Fluorescent Nanoprobe for Early Detection of Esophageal Cancer**L. W-G. CHAN¹, L. Y. LIN¹, J. HWANG¹, AND S. H. PUN¹¹University of Washington, Seattle, WA**PS – Fri – B – 155****Highly Sensitive, Optical Contrast Agent with Gold Nanoparticles and Hollow Gold Nanospheres**J. WANG¹, M. NANTZ¹, S. ACHILEFU², J. Z. ZHANG³, AND K. A. KANG¹¹University of Louisville, Louisville, KY, ²Washington University, St. Louis, MO, ³University of California, Santa Cruz, Santa Cruz, CA**PS – Fri – B – 156****Photo-physical Properties of Europium Catalyzed Single Walled Carbon Nanotubes**B. SITHARAMAN¹, A. RENGARAJ SUGUMARAN¹, AND P. K. AVTI¹¹Stony Brook University, Stony Brook, NY**PS – Fri – B – 157****Manipulation of Silk Film Refractive Index through Doping and Annealing Treatments**Y. ZHANG¹, J. BRESSNER¹, G. QIN¹, D. L. KAPLAN¹, AND F. G. OMENETTO¹¹Tufts University, Medford, MA**PS – Fri – B – 158****Benchtop Validation of Contrast Enhanced Ultrasound and Fluorescence Imaging in Cholecystectomy**R. QIN¹, S. MELVIN¹, AND R. XU¹¹The Ohio State University, Columbus, OH**PS – Fri – B – 159****Ex Vivo Validation Studies of an Implantable Perfusion and Oxygenation Sensor**T. J. AKL¹, W. XU^{2,3}, M. N. ERICSON⁴, M. A. WILSON^{2,3}, AND G. L. COTÉ¹¹Texas A&M University, College Station, TX, ²University of Pittsburgh, Pittsburgh, PA,³Veterans Affairs Pittsburgh Healthcare System, Pittsburgh, PA, ⁴Oak Ridge National Laboratory, Oak Ridge, TN**PS – Fri – B – 160****The Diagnostic Utility of Fourier-Based Metrics for Assessing Cellular Organization**J. XYLAS¹, K. QUINN¹, M. HUNTER¹, AND I. GEORGAKOUDI¹¹Tufts University, Medford, MA**PS – Fri – B – 161****Using Photonic Crystal Enhanced Fluorescence to Improve the Sensitivity of Two-Color DNA Microarrays**S. GEORGE¹, A. POKHRIYAL¹, S. JONES¹, M. LU², L. VODKIN¹, AND B. CUNNINGHAM¹¹University of Illinois at Urbana-Champaign, Urbana, IL, ²SRU Biosystems, Urbana, IL**PS – Fri – B – 162****Direct Enumeration of Dilute Bio-Nanoparticles in an Optical Trap**Y. HU¹, D. H. OU-YANG¹, AND X. CHENG¹¹Lehigh University, Bethlehem, PA**Track: Biomedical Imaging and Optics****Optical Diagnostics, Sensing and Devices****PS – Fri – B – 163****Near-Infrared IR820-Chitosan Conjugate: In Vitro Studies**S. SRINIVASAN¹, R. MANCHANDA¹, A. FERNANDEZ-FERNANDEZ¹, T. LEI¹, AND A. MCGORON¹¹Florida International University, Miami, FL**PS – Fri – B – 164****Size Stable Solid Lipid Nanoparticles for Detection of Amyloid Plaques using Positron Emission Tomography and Magnetic Resonance Imaging**E. ANDREOZZI¹, A. LOUIE¹, AND M. DHENAIN²¹University of California, Davis, Davis, CA, ²Atomic Energy Commission (CEA) - Institute of Biomedical Imaging (iBIM), Fontenay aux Roses, France**PS – Fri – B – 165****Optical Pacing Combined with Optical Coherence Tomography for Studying the Developing Heart**S. GU¹, M. WATANABE¹, A. M. ROLLINS¹, AND M. W. JENKINS¹¹Case Western Reserve University, Cleveland, OH**PS – Fri – B – 166****Regenerative Elastography of Mesenchymal Based Constructs**E. T. CURTIS¹, S. ZHANG¹, AND S. F. OTHMAN¹¹University of Nebraska-Lincoln, Lincoln, NE

PS – Fri – B – 167**Dual-modality, Dual-functional Nanoemulsions for Cellular and Molecular Imaging**J. U. MENON¹, P. K. GULAKA², T. DARJAZANIE¹, S. GEETHANATH², AND V. D. KODIBAGKAR^{1,2}¹UT Southwestern Medical Center at Dallas, Dallas, TX, ²UT Arlington/ UT Southwestern Medical Center at Dallas, Dallas, TX**PS – Fri – B – 168****Clinically-viable Magnetic PLGA Particles for MRI-based Cell Tracking**M. K. NKANSAH¹, D. GRANOT², K. TANG¹, M. BENNEWITZ¹, AND E. SHAPIRO^{1,2}¹Yale University, New Haven, CT, ²Yale University School of Medicine, New Haven, CT**PS – Fri – B – 169****Compact and Cost-effective Lensfree Reflection Microscopy On a Chip**M. LEE¹, AND A. OZCAN^{1,2}¹University of California, Los Angeles, Los Angeles, CA, ²California NanoSystems Institute (CNSI), University of California, Los Angeles, CA**PS – Fri – B – 170****Iterative Method for X-ray Differential Phase-contrast Computed Tomography**W. CONG¹, A. MOMOSE², AND G. WANG¹¹Virginia Tech, Blacksburg, VA, ²The University of Tokyo, Tokyo, Japan**Track: Respiratory Engineering****Mechanistic Basis of Obstructive and Restrictive Lung Diseases****PS – Fri – B – 171****Bronchodilatory Induced Changes in Airway Reactance****and Its Variation in Asthma**S. A. BHATAWADEKAR¹, P. HERNANDEZ¹, C. MCPARLAND¹, S. FULTON², AND G. N. MAKSYM¹¹Dalhousie University, Halifax, NS, Canada, ²QE-II Health Sciences Centre, Halifax, NS, Canada**PS – Fri – B – 172****Modeling of Pulmonary Diseases in Flow-volume Loops imulations**M. FLORENS¹, T. SIMILOWSKI^{2,3}, C. STRAUS^{2,3}, AND M. FILOCHE^{1,4}¹ENS Cachan, Cachan, France, ²Université Paris 6, Paris, France, ³Hôpital Pitié-Salpêtrière, Paris, France, ⁴Ecole Polytechnique, Palaiseau, France**PS – Fri – B – 173****Impact of Constriction Time on the Bronchodilatory Effect of Breathing-Like Fluctuations**B. C. HARVEY¹, A. S. LAPRAD¹, AND K. R. LUTCHEN¹¹Boston University, Boston, MA**PS – Fri – B – 174****The Influence of a Change in Lung Volume on the Extent of Airway Narrowing Following Methacholine**V. KELLY¹, C. WONGVIRIYAWONG^{1,2}, T. WINKLER¹, S. HARRIS¹, AND J. VENEGAS^{1,2}¹Massachusetts General Hospital, Boston, MA, ²Massachusetts Institute of Technology, Cambridge, MA**PS – Fri – B – 175****Assessing the Stiffness of Fibrotic Airways**J. H. BATES¹, J. VAN DER VELDEN¹, M. ALIYEVA¹, AND Y. M. JANSSEN-HEININGER¹¹University of Vermont, Burlington, VT**PS – Fri – B – 176****Effects of Methacholine Diffusivity Across the Airway Wall on Airways Responsiveness**J. H. BATES¹, C. A. STEVENSON¹, M. ALIYEVA¹, AND L. K. LUNDBLAD¹¹University of Vermont, Burlington, VT**Track: Respiratory Engineering****Mechanobiology, Tissue Engineering and Microfluidics****PS – Fri – B – 177****Mechanical Forces Enhance Load Transfer and Lung Tissue Degradation During Collagenase Digestion**E. YI¹, S. SATO¹, A. MAJUMDAR¹, E. BARTOLAK-SUKI¹, AND B. SUKI¹¹Boston University, Boston, MA**PS – Fri – B – 178****Invasion of Non-Small Cell Lung Cancer Cells is Mediated by Vimentin Intermediate Filaments**M. KIDD¹, M. ROGEL¹, AND K. M. RIDGE¹¹Northwestern University, Chicago, IL**PS – Fri – B – 179****Targeting Actin Cytoskeleton to Reduce Cell Injury During Airway Reopening**N. HIGUITA-CASTRO¹, C. MIHAI¹, D. J. HANSFORD¹, AND S. N. GHADIALI¹¹The Ohio State University, Columbus, OH**PS – Fri – B – 180****Effects of Yield Stress on Mucus Clearance: An Experimental Study**Y. HU¹, S. BIAN¹, AND J. B. GROTEBERG¹¹University of Michigan, Ann Arbor, MI**PS – Fri – B – 181****Studying Flow Control Mechanisms in an Insect Respiratory System**A. SALMANZADEH¹, H. PENDAR¹, J. J. SOCHA², M. A. STREMLER¹, AND R. V. DAVALOS¹¹Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA, ²Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA**Track: Respiratory Engineering****Multiscale Behavior in the Lung****PS – Fri – B – 182****Dynamic Strain Transitions in Mucus may Hint at Mechanism behind Successful Mucociliary Transport**J. A. CRIBB¹, P. VASQUEZ¹, M. G. FOREST¹, P. MOORE², S. NORRIS³, S. SHAH⁴, AND R. SUPERFINE¹¹Univ. of North Carolina, Chapel Hill, NC, ²Boston University, Boston, MA, ³Univeristy of Michigan, Ann Arbor, MI, ⁴UCLA, Los Angeles, CA**PS – Fri – B – 183****Is the Whole More Than the Sum of Its Parts? A Constituent Based Material Model for Lung Parenchyma.**S. M. RAUSCH¹, O. PACK², C. MARTIN², S. UHLIG², AND W. A. WALL¹¹Technische Universität München, Garching, Germany, ²UK Aachen, Aachen, Germany**PS – Fri – B – 184****Effect of Lateral Mixing in the Conducting Zone on Oxygen Distribution in the Human Lung**M-Y. KANG¹, J. HWANG¹, S-K. LEE¹, AND J-W. LEE¹¹Pohang University of Science and Technology, Pohang, Korea, Republic of**PS – Fri – B – 185****Temporal Evolution of the Phenotype of Allergic Airways Hyperresponsiveness and Airway Inflammation**L. K. LUNDBLAD¹, J. H. BATES¹, E. RIESENFELD¹, AND M. E. POYNTER¹¹University of Vermont, Burlington, VT

PS – Fri – B – 186**An Analytical Model of the Mechanical Failure of Fibrous Extracellular Matrix**A. MAJUMDAR¹, AND B. SUKI¹¹Boston University, Boston, MA**PS – Fri – B – 187****A Deep Breath After a Few Short Ones Increases the Rate of Pulmonary Surfactant Adsorption to The Air-Water Interface**P. BOLOORI ZADEH¹, M. R. SILVA¹, AND A. GOULDSTONE¹¹Northeastern University, Boston, MA**Track: Systems Biology, Bioinformatics and Computational Bioengineering****Mathematical and Computational Models of Cellular and Molecular Processes: Electrophysiology****PS – Fri – B – 188****Fingertip Bio-impedance Identification for Improvement of Electro-tactile Preference**C. SHELTON¹, Y. SHEN¹, AND J. GREGORY²¹University of Nevada, Reno, Reno, NV, ²Michigan State University, Lansing, MI**PS – Fri – B – 189****Experimental Determination of Electroporation Conductivity Change for Cancer Treatment Planning**R. E. NEAL¹, P. A. GARCIA¹, C. B. ARENA¹, J. ROBERTSON², AND R. V. DAVALOS¹¹Virginia Tech, Blacksburg, VA, ²Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA**PS – Fri – B – 190****Glutamate Receptor Dynamics in Coupled Oscillator Model: A Preliminary Analysis of Network Complexity**S. RAMEZANI¹, AND A. W. CHIU¹¹Louisiana Tech University, Ruston, LA**PS – Fri – B – 191****A Computer Model of Mouse Ventricular Action Potential with Markov Models of Major K⁺ Currents**Q. ZHOU¹, G. C. BETT¹, AND R. L. RASMUSSEN¹¹University at Buffalo, Buffalo, NY**PS – Fri – B – 192****Local Control of Cardiomyocyte Excitation Contraction Coupling: A Role for Synchronous Transitions in Engineered Cells**F. S. PASQUALINI^{1,2}, H. LEE¹, M. L. MCCAIN¹, H. JIN¹, J. DYSON², AND K. K. PARKER¹¹Disease Biophysics Group, Harvard University, Cambridge, MA, ²Department of Physics and Material Engineering, Universita' Politecnica delle Marche, Ancona, Italy**PS – Fri – B – 193****Modeling Zn Protein Simulations with A Polarizable Potential: Applications to Structural Analysis and Binding Affinity Calculation**J. ZHANG¹, J. C. WU¹, AND P. REN¹¹The University of Texas at Austin, Austin, TX**PS – Fri – B – 194****Computational Model of Marginal Cell Ion Transport Under Energetic Depletion**M. THIELK¹, B. CHANG², AND R. RAPHAEL³¹Univ California Berkeley, Berkeley, CA, ²Northwestern University, Evanston, IL, ³Rice University, Houston, TX**Track: Tissue Engineering****Host Response to Biomaterials****PS – Fri – B – 193****Electrospun Fibrous PCL Scaffolds for Tracheal Defect Repair: A Preliminary *In Vivo* Study**L. OTT¹, R. WEATHERLY^{2,3}, AND M. DETAMORE^{1,4}¹University of Kansas, Lawrence, KS, ²Children's Mercy Hospital, Kansas City, MO, ³The University of Missouri, Kansas City School of Medicine, Kansas City, ⁴University of Kansas, Lawrence, KS**PS – Fri – B – 196****Effect of Co-Culture on Immunogenicity of a Tissue Engineered Construct**S. ALAVI^{1,2}, L. NAZEMI^{1,2}, W. LIU^{1,2}, AND A. KHERADVAR^{1,2}¹University of California, Irvine, Irvine, CA, ²The Edwards Lifesciences Center for Advanced Cardiovascular Technology, Irvine, CA**PS – Fri – B – 197****Macrophage Phenotype Predicts Tissue Remodeling Outcome Following Implantation of Biologic Scaffolds**B. N. BROWN¹, R. LONDONO², K. A. KUKLA², M. T. WOLF², K. A. DALY², S. TOTTEY², AND S. F. BADYLAK²¹Cornell University, Ithaca, NY, ²University of Pittsburgh, Pittsburgh, PA**PS – Fri – B – 198****Macrophage Activation Through Oxidative Response to Biodegradable Polyurethane Scaffolds with Functional Peptides**A. L. ZACHMAN¹, J. PAGE², C. M. BRONIKOWSKI², S. A. GUELCHER², AND H.-J. SUNG²¹Vanderbilt, Nashville, TN, ²Vanderbilt University, Nashville, TN**PS – Fri – B – 199****Nanoscale Study of Bacterial Biofilm Formation on Hydrogels**S. L. BASTIAN¹, S. K. SINHA¹, E. T. SAPI¹, A. APHALE², AND P. PATRA²¹University of New Haven, West Haven, CT, ²University of Bridgeport, Bridgeport, CT**Track: Tissue Engineering****Musculoskeletal Tissue Engineering****PS – Fri – B – 200****Inhibition of TRPV1 in Osteogenic Differentiated hMSCs Increases Mineralization**A. E. THURBER¹, S. SUNDELACRUZ¹, M. LEVIN¹, AND D. L. KAPLAN¹¹Tufts University, Medford, MA**PS – Fri – B – 201****TMJ Disc Tissue Engineering with Biodegradable Anisotropic Polymer Scaffolds**A. MATHEMA¹, K. GOTRALA¹, AND D. K. MILLS¹¹Louisiana Tech University, Ruston, LA**PS – Fri – B – 202****Increasing Tensile Properties of Engineered TMJ Fibrocartilage Using a Catabolic, Biophysical Stimulus**R. F. MACBARB¹, AND K. A. ATHANASIOU¹¹University of California, Davis, Davis, CA**PS – Fri – B – 203****Design of 3D Cross-linked Scaffold for Ligament Tissue Engineering**P. THAYER¹, AND A. GOLDSTEIN¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA**PS – Fri – B – 204****High Porosity PolyHIPEs as Injectable Bone Grafts**J. L. HOLM¹, R. MOGLIA¹, AND E. COSGRIFF-HERNANDEZ¹¹Texas A&M University, College Station, TX

PS – Fri – B – 205**Human Adipose Derived Stem Cell Seeding, Migration, and Proliferation in a Needle Punched Porous Human Allograft Meniscus**A. CHAROENPANICH¹, J. T. SPANG MD², AND E. G. LOBOA PHD¹¹UNC-Chapel Hill and NC State University, Raleigh, NC, ²University of North Carolina, Chapel Hill, NC**PS – Fri – B – 206****Expand Pig BMSC In Vitro and Use FGF2 to Enhance Osteogenic Differentiation**B. TEE¹, S. R. MALLERY¹, H. FIELDS¹, AND Z. SUN¹¹The Ohio State University, Columbus, OH**PS – Fri – B – 207****Age Impacts Extracellular Matrix Production by Chondrocytes in a Degradable Hydrogel System**S. SKAALURE¹, AND S. BRYANT¹¹University of Colorado, Boulder, CO**PS – Fri – B – 208****Repair of Defects in Rat Tail Intervertebral Discs Using High Density Collagen Gels**B. BORDE¹, A. JAMES², R. HARTL², AND L. BONASSAR¹¹Cornell University, Ithaca, NY, ²Weill Cornell Medical College, New York, NY**PS – Fri – B – 209****Hexosamine Analog Inhibits IL-1 β Related Changes in Bovine Chondrocytes**J. M. COBURN¹, L. WO¹, K. J. YAREMA¹, AND J. H. ELISSEFF¹¹Johns Hopkins University, Baltimore, MD**PS – Fri – B – 210****Use of a Novel Phospholipid Stimulus for Knee Meniscus Fibrocartilage Tissue Engineering**P. HADIDI¹, AND K. A. ATHANASIOU²¹University of California, Davis, CA**PS – Fri – B – 211****3-D Followed by 2-D Chondrogenesis of hESCs Results in Enhanced Cartilage Tissue Engineering**V. P. WILLARD¹, J. SANCHEZ-ADAMS¹, AND K. A. ATHANASIOU²¹Rice University, Houston, TX, ²University of California Davis, Davis, CA**PS – Fri – B – 212****The Effect of BMP-2 Peptide Concentration on the Short Term Osteogenic Protein Production of MC3T3 Cells**A. ALMARZA¹, M. MAROPIS¹, P. KAMELIN¹, AND C. HAGANDORA¹¹University of Pittsburgh, Pittsburgh, PA**PS – Fri – B – 213****Polyacrylic Acid/Polyvinyl Alcohol, Poly(ϵ -caprolactone), and Multi-walled Carbon Nanotube Scaffolds**K. M. FISCHER¹, D. FLAGG¹, AND J. W. FREEMAN¹¹Virginia Tech, Blacksburg, VA**PS – Fri – B – 214****Synergistic Effects of Mechanical and Soluble Cues on Embryonic Tendon Cell Gene Expression**V. G. FINLEY¹, J. P. BROWN¹, AND C. K. KUO¹¹Tufts University, Medford, MA**PS – Fri – B – 215****Mechanical Behavior and Failure of Scaffold Free Tissue Engineered Cartilage**M. MOTAVALLI¹, G. A. WHITNEY¹, J. DENNIS², AND J. M. MANSOUR¹¹Case Western Reserve University, Cleveland, OH, ²Benaroya Research Institute, Seattle, WA**PS – Fri – B – 216****Alignment of Mesenchymal Stem Cells in 3D Hydrogel with Cyclic Stretch**B. D. RIEHL¹, J. LEE¹, AND J. LIM¹¹University of Nebraska-Lincoln, Lincoln, NE**PS – Fri – B – 217****Annulus Fibrosus Cells as a Potential Cell Source for Nucleus Pulposus Tissue Engineering**A. S. LUENGO¹, AND G. D. O'CONNELL¹¹Columbia University, New York, NY**PS – Fri – B – 218****Investigation of Hydrogel-Nanofiber Composite for Cartilage Regeneration**L. D. WRIGHT¹, Z. CUI², L. S. NAIR², AND J. W. FREEMAN¹¹Virginia Tech, Blacksburg, VA, ²University of Connecticut, Farmington, CT**PS – Fri – B – 219****The Effect of Magnesium Ion Concentration on the Fibrocartilage Regeneration Potential of Goat Costal Chondrocytes**C. HAGANDORA¹, M. TUDARES¹, AND A. ALMARZA¹¹University of Pittsburgh, Pittsburgh, PA**PS – Fri – B – 220****Cellular Displacement from Acoustic Radiation Force: Using Ultrasound to Induce Mechanical Loading**J. VERONICK¹, V. PALUMBO¹, S. FRAZEE¹, B. HUEY¹, AND Y. M. KHAN²¹University of Connecticut, Storrs, CT, ²University of Connecticut Health Center, Farmington, CT**PS – Fri – B – 221****Expansion and Three-Dimensional Chondroinduction of Dermis Derived Cells**J. SANCHEZ-ADAMS¹, AND K. A. ATHANASIOU²¹Rice University, Davis, CA, ²UC Davis, Davis, CA**PS – Fri – B – 222****Acoustic Homogeneity as a Quality Measure in Tissue Engineered Cartilage**M. CITAK¹, H. BASKARAN¹, A. I. CAPLAN¹, J. M. MANSOUR¹, AND J. F. WELTER¹¹Case Western Reserve University, Cleveland, OH**PS – Fri – B – 223****Hydroxyapatite Nanoparticles Improve Retention of Tissue Engineered Cartilage Constructs**R. DUA¹, J. CENTENO¹, AND S. RAMASWAMY¹¹Florida International University, Miami, FL**PS – Fri – B – 224****Induction of Chondrogenic Differentiation and Matrix Elaboration by Human MSCs Encapsulated in Photocrosslinked Carboxymethylcellulose Hydrogels Supplemented with TGF- β_3** M. S. GUPTA¹, E. S. COOPER¹, AND S. B. NICOLL¹¹The City College of New York, New York, NY**PS – Fri – B – 225****Electrospun 3-D Scaffolds with Dual Structural Organization for Bone Tissue Engineering**T. ANDRIC¹, K. E. DEGEN², AND J. W. FREEMAN¹¹Virginia Tech, Blacksburg, VA, ²University of Virginia, Charlottesville, VA

Track: Tissue Engineering**Nano- and Micro- Engineering in Tissue Engineering****PS – Fri – B – 226****A Novel Nanoporous Poly ϵ -caprolactone Scaffold Supports Native-Like Retinal Pigment Epithelium**K. J. MCHUGH^{1,2}, M. SAINT-GENIEZ², AND S. L. TAO¹¹The Charles Stark Draper Laboratory, Inc., Cambridge, MA, ²Schepens Eye Research Institute, Harvard Medical School, Boston, ³Schepens Eye Research Institute, Harvard Medical School, Boston, MA**PS – Fri – B – 227****Micromolded Elastomeric Scaffolds for Cardiac Tissue Engineering**R. A. NEAL¹, H. PARK¹, M. D. GUILLETTE¹, J. C. HSIAO², S. R. JAIN¹, AND L. E. FREED^{1,2}¹Massachusetts Institute of Technology, Cambridge, MA, ²Charles Stark Draper Laboratory, Cambridge, MA**PS – Fri – B – 228****3D In Vitro Microenvironment Containing Perfused Human Capillaries**M. L. MOYA¹, Y-H. HSU¹, C. C. HUGHES¹, A. P. LEE¹, AND S. C. GEORGE¹¹University of California, Irvine, Irvine, CA**PS – Fri – B – 229****Engineering Collagen Structure in Multiphase Tissues**B. M. GILLETTE¹, N. S. ROSSEN², N. DAS¹, D. LEONG¹, M. WANG¹, A. DUGAR¹, AND S. K. SIA¹¹Columbia University, New York, NY, ²Copenhagen University, Copenhagen, Denmark**PS – Fri – B – 230****Microscale Guidance Effect on Stem Cell Based Chondrogenesis for Cartilage Repair**C-L. CHOU¹, A. L. RIVERA¹, A. CAPLAN¹, V. GOLDBERG¹, J. F. WELTER¹, AND H. BASKARAN¹¹Case Western Reserve University, Cleveland, OH**PS – Fri – B – 231****Biomechanical Response of Human Liver and Spleen Parenchyma in Uniaxial Unconfined Compression**A. R. KEMPER¹, A. C. SANTAGO², J. L. SPARKS², J. D. STITZEL³, AND S. M. DUMA¹¹Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Blacksburg, VA, ²Virginia Tech - Wake Forest University, School of Biomedical Engineering and Sciences, Winston Salem, NC, ³Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Winston Salem, NC**PS – Fri – B – 232****Fabricating Vascular Inspired Microfluidic Channels**M. E. WILSON¹, N. KOTA¹, O. B. OZDOGANLAR¹, P. R. LEDUC¹, D. B. STOLZ², AND Y. WANG²¹Carnegie Mellon University, Pittsburgh, PA, ²University of Pittsburgh, Pittsburgh, PA**PS – Fri – B – 233****Phospholipid Surface Modified Microporous Biopolymer-Microglial Cell Implants For Spinal Cord Repair**E. P. GOLDBERG¹, W. J. STREIT², J. MALLECK³, AND J. B. STOPEK³¹University of Florida, Mt Dora, FL, ²University of Florida, Gainesville, FL, ³University of Florida, Gainesville, FL**PS – Fri – B – 234****The Mechanical Properties of Single, Electrospun Nanofibers**S. BAKER¹, C. CARLISLE¹, J. SIGLEY¹, J. STITZEL², J. BERRY³, K. BONIN¹, AND M. GUTHOLD¹¹Wake Forest University, Winston-Salem, NC, ²Wake Forest University Health Sciences, Winston-Salem, NC, ³University of Alabama at Birmingham, Birmingham, AL**PS – Fri – B – 235****Conformally Coated Thermo-responsive Poly(dimethylsiloxane) Devices for Formation of Harvestable Tissue Units**H. TEKIN¹, T. TSINMAN², G. OZAYDIN-INCE³, K. K. GLEASON³, M. C. DEMIREL⁴, R. LANGER^{5,6}, AND A. KHADEMHOSEINI^{6,7}¹Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA, ²Department of Biological Engineering, Massachusetts Institute of Technology, Cambridge, MA, ³Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, MA, ⁴Pennsylvania State University, University Park, PA, ⁵David H. Koch Institute for Integrative Cancer Research, Massachusetts Institute of Technology, Cambridge, MA, ⁶Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, ⁷Center for Biomedical Engineering, Brigham and Women's Hospital, Harvard Medical School, Boston, MA**PS – Fri – B – 236****Design, Fabrication, and Validation of a Microscale Impinging Jet Bioreactor for Engineered Cartilage**S. M. GOLDMAN¹, AND G. A. BARABINO¹¹Georgia Institute of Technology, Atlanta, GA**PS – Fri – B – 237****Fabrication of High Channel Density 3D Microfluidic Networks for Artificial Vascular Systems**L. M. BELLAN¹, T. KNIAZEVA², E. KIM², R. LANGER¹, D. CROPEK³, AND J. BORENSTEIN²¹MIT, Cambridge, MA, ²Draper Laboratory, Cambridge, MA, ³ERDC-CERL, Champaign, IL**PS – Fri – B – 238****A Novel One Step Synthesis of Mesoporous Silica Nanorods for Drug Delivery and Tissue Engineering**C. SMID^{1,2}, S. DIETZ³, L. ISENHART³, T. HU³, AND E. TASCIOTTI³¹University of Texas at Austin, Austin, TX, ²The Methodist Hospital Research Institute, Houston, ³The Methodist Hospital Research Institute, Houston, TX**PS – Fri – B – 239****A Novel Method for Electrospinning Long Fibers using Poly (glycerol-dodecanoate)**X. DAI¹, K. KATHIRIA¹, AND Y-C. HUANG¹¹Florida International University, Miami, FL

Friday, October 14, 2011**1:30PM - 3:00PM****PLATFORM SESSION – FRI – 2****Track: Cellular and Molecular Engineering
- OP - Fri - 2 - 1****Mechanotransduction & Mechanobiology - II****Chairs:** C. Forbes Dewey Jr., Eno Essien Ebono
*Convention Center – Room 11***1:30PM Fri - 2-1 – A****Osteocyte Network Activation by Localized piconewton Loading**
D. WU¹, D. C. SPRAY², AND S. WEINBAUM¹¹The City College of New York, New York, NY, ²Albert Einstein College of Medicine, Bronx, NY**1:45PM Fri - 2-1 – B****siRNA-Mediated Knockdown of Vinculin Modulates MAPK1 Activation and Stiffness-Based Stem Cell Differentiation**A. W. HOLLE¹, D. VIJAYRAGHAVAN¹, X. TANG¹, J. DEL ALAMO¹, AND A. J. ENGLER¹¹University of California, San Diego, La Jolla, CA**2:00PM Fri - 2-1 – C****Mechanical Stimulation Modulates Local and Global Vesicle Dynamics in Neurons**W. AHMED¹, T. LI², S. RUBAKHIN³, A. CHIBA², J. SWEEDLER³, AND T. SAIF¹¹University of Illinois, Urbana, IL, ²University of Miami, Coral Gables, FL, ³Beckman Institute for Advanced Science and Technology, Urbana, IL**2:15PM Fri - 2-1 – D****Molecular Insight into the Antagonistic Effects of Binding Partners Toll-like Receptor 4 and Caveolin-1**P. WANG¹, F. ZHU¹, Z. TONG¹, AND K. KONSTANTOPOULOS¹¹The Johns Hopkins University, Baltimore, MD**2:30PM Fri - 2-1 – E****Fluorescence/Förster Resonance Energy Transfer Based von Willebrand Factor A2 Domain Proteins That Quantify Plasma ADAMTS13 Activity and Structural Changes**K. M. DAYANANDA¹, S. GOGIA¹, AND S. NEELAMEGHAM¹¹State University of New York at Buffalo, Buffalo, NY**2:45PM Fri - 2-1 – F****Regulation of Growth Factor-Dependent Tumor Cell Proliferation by Extracellular Matrix Mechanics**V. UMESH^{1,2}, T. ULRICH^{1,2}, AND S. KUMAR^{1,2}¹University of California, Berkeley, CA, ²UC Berkeley - UCSF Graduate Program in Bioengineering, Berkeley, CA**Track: Cellular and Molecular Engineering
- OP - Fri - 2 - 2****Cellular and Subcellular Imaging****Chairs:** X. Edward Guo, Jung-Chi Liao
*Convention Center – Room 12***1:30PM Fri - 2-2 – A****Functional Microscale Cell-based Assays for Measuring NF-κB Signal Transduction in Multiple Myeloma Cells**E. YOUNG¹, C. PAK¹, S. MIYAMOTO¹, AND D. BEEBE¹¹University of Wisconsin-Madison, Madison, WI**1:45PM Fri - 2-2 – B****Live-Cell Imaging of Osteogenic mRNA during Stem Cell Differentiation**H. V. DESAI¹, AND E. M. DARLING¹¹Brown University, Providence, RI**2:00PM Fri - 2-2 – C****Investigating Dorsal Ruffles in Cells by Varying Substrate Stiffness**
Y. ZENG^{1,2}, P. R. LEDUC¹, AND K-H. CHIAM²¹Carnegie Mellon University, Pittsburgh, PA, ²A*STAR Institute of High Performance Computing, Singapore, Singapore**2:15PM Fri - 2-2 – D****A Quantitative Method to Analyze the Ultrastructure of Articular Cartilage**R. STEFANI¹, R. K. AARON², AND B. BILGEN²¹Rhode Island Hospital, Providence, RI, ²Brown University and Providence VA Medical Center, Providence, RI**2:30PM Fri - 2-2 – E****Optical Toxin Biosensors Based on FRET**L-J. LIN¹, J. M. GRIMME², D. M. CROPEK², AND Y. WANG¹¹University of Illinois at Urbana-Champaign, Urbana, IL, ²U.S. Army Corps of Engineers, Champaign, IL**2:45PM Fri - 2-2 – F****Neutrophils Roll on P-selectin at High Shear Stress by Extending “Sling Shot” Tethers in Front**P. SUNDØ¹, E. KOLTSOVA¹, E. GUTIERREZ², A. GROISMAN², AND K. LEY¹¹La Jolla Institute for Allergy and Immunology, La Jolla, CA, ²University of California San Diego, La Jolla, CA**Track: Drug Delivery Systems - OP - Fri - 2 - 3****Nucleic Acid Delivery - I****Chairs:** Craig Duvall, Kaushal Rege*Convention Center – Room 13***1:30PM Fri - 2-3 – A****Membrane Binding of Plasmid DNA and Endocytic Pathways are Involved in Electrotransfection of Mammalian Cells**M. WU¹, AND F. YUAN¹¹Duke University, Durham, NC**1:45PM Fri - 2-3 – B****Enhancement of Transfection Efficiency with Substrate Topography: Reverse Transfection and siRNA**A. F. ADLER¹, A. T. SPEIDEL¹, N. CHRISTOFOROU¹, K. KOLIND², M. FOSS², AND K. W. LEONG¹¹Duke University, Durham, NC, ²Aarhus University, Aarhus C, Denmark**2:00PM Fri - 2-3 – C****Polymeric Gene Delivery to Human Brain Tumor Stem Cell Neurospheres**S. Y. TZENG¹, N. YOUNG¹, H. GUERRERO-CAZARES¹, A. QUINONES-HINOJOSA¹, AND J. J. GREEN¹¹Johns Hopkins University, Baltimore, MD**2:15PM Fri - 2-3 – D****Self-assembly of Bioreducible Nucleic Acid Nanocomplexes with Microfluidics**C. L. GRIGSBY¹, Y-P. HO¹, C. LIN², J. F. ENGBERSEN², AND K. W. LEONG¹¹Duke University, Durham, NC, ²University of Twente, Enschede, Netherlands**2:30PM Fri - 2-3 – E****HPMA-Oligolysine Polymer-Coated Adenovirus Improves Transduction in CAR Negative Cell Lines**C. K. WANG¹, R. N. JOHNSON¹, D. S. CHU¹, J. G. SCHELLINGER¹, A. LIEBER¹, AND S. H. PUN¹¹University of Washington, Seattle, WAPLATFORM
SESSIONS

Fri-2

PS = Poster Session
OP = Oral Presentation = Credit approved

2:45PM Fri - 2-3 - F**Facile Self-Assembly of Virus-Like Particles for Efficient Targeted Delivery of Nucleic Acids**S. KANG¹, AND M. M. JIN¹¹Cornell University, Ithaca, NY**Track: Systems Biology, Bioinformatics and Computational Bioengineering - OP - Fri - 2 - 4****Model-based Experiment Design and Computer Model Validation****Chairs:** Nathan D. Price

Convention Center – Room 14

1:30PM Fri - 2-4 - A**Investigating Redox Regulation of Early TGF Signaling by Computational Modeling**A. F. PRASANPHANICH¹, AND M. L. KEMP¹¹Georgia Institute of Technology, Atlanta, GA**1:45PM Fri - 2-4 - B****The Inoculum Effect and Band-Pass Bacterial Response to Periodic Antibiotic Treatment**C. TAN^{1,2}, R. P. SMITH¹, M. KUEHN¹, AND L. YOU¹¹Duke University, Durham, NC, ²Carnegie Mellon University, Pittsburgh, PA**2:00PM Fri - 2-4 - C****Measuring Ex-Vivo Spatial Gradients of Tumor Necrosis Factor- during M. tuberculosis Infection**N. A. CILFONE¹ AND J. LINDERMAN¹¹University of Michigan, Ann Arbor, MI**2:15PM Fri - 2-4 - D****Variations in Behaviors and Fates of Individual Endothelial Cells During the Morphogenesis of Human Microvascular Tissue**H. PARSA¹, AND S. SIA¹¹Columbia University, New York, NY**2:30PM Fri - 2-4 - E****Cell State Transition Dynamics in Angiogenesis: Experimental Results and Computational Modeling**T. RIMCHALA¹, R. D. KAMM¹, AND D. LAUFFENBURGER¹¹MIT, Cambridge, MA**2:45PM Fri - 2-4 - F****Validation of the Mass Distribution of a Full Body Finite Element Model**A. B. THOMPSON^{1,2}, A. C. RHYNE^{1,2}, D. P. MORENO^{1,2}, F. S. GAYZIK^{1,2}, AND J. D. STITZEL^{1,2}¹Virginia Tech – Wake Forest University School of Biomedical Engineering and Sciences, Winston Salem, NC, ²Wake Forest University School of Medicine, Winston Salem, NC**Track: Neural Engineering - OP - Fri - 2 - 5****Neural Engineering Technology - II****Chairs:** Lucas Parra, John Simeral, Elizabeth Hillman

Convention Center – Room 15

1:30PM Fri - 2-5 - A**Cytotoxic Effects of Iron Oxide Nanoparticles on Primary Neuron and Astrocyte Cultures**Y. YUAN¹, C. J. RIVET¹, R. J. GILBERT¹, AND D. BORCA TASCICU¹¹Rensselaer Polytechnic Institute, Troy, NY**1:45PM Fri - 2-5 - B****Intracranial Implants Induce BBB Opening to Micro and Nanoscale Particles.**A. J. SAWYER¹, AND T. KYRIAKIDES¹¹Yale University, New Haven, CT**2:00PM Fri - 2-5 - C****Modulation of Neural Degeneration at the Cortical-Tissue Device Interface through Molecular Control of the Inflammatory Response**K. POTTER^{1,2}, AND J. R. CAPADONA^{1,2}¹Case Western Reserve University, Cleveland, OH, ²L. Stokes Cleveland Department of Veteran's Affairs Medical Center, Cleveland**2:15PM Fri - 2-5 - D****Smart Catheter Intracortical Electrodes for Continuous Monitoring of Cerebral Electrophysiology**C. LI¹, J. HARTINGS², AND R. NARAYAN³¹Feinstein Institute for Medical Research, Manhasset, NY, ²University of Cincinnati, Cincinnati, OH, ³Hofstra North Shore LIJ School of Medicine, Manhasset, NY**2:30PM Fri - 2-5 - E****Biohybridized Neural Tissue Engineered Constructs for Electrical Interface with Peripheral Nerve**J. A. WOLF¹, N. KAMESWARAN¹, I. CHEN¹, K. D. BROWNE¹, D. H. SMITH¹, AND D. CULLEN¹¹University of Pennsylvania, Philadelphia, PA**2:45PM Fri - 2-5 - F****Force Required to Insert Probes into the Epineurial and Perineurial Membranes**S. S. KOPPAKA¹, AND D. J. TYLER^{1,2}¹Case Western Reserve University, Cleveland, OH, ²Louis-Stokes, Cleveland, OH**Track: Orthopedic and Rehabilitation Engineering - OP - Fri - 2 - 6****Orthopedic Tissue Biomechanics - I****Chairs:** Christopher Jacobs, Johnna Temenoff

Convention Center – Room 16

1:30PM Fri - 2-6 - A**Mechanical Role of Glycosaminoglycans in the Knee Meniscus**J. SANCHEZ-ADAMS¹, AND K. A. ATHANASIOU²¹Rice University, Davis, CA, ²UC Davis, Davis, CA**1:45PM Fri - 2-6 - B****Collagen Crosslinking Contributes Significantly to the Mechanical Properties of Developing Tendon**J. E. MARTURANO¹, AND C. K. KUO¹¹Tufts University, Medford, MA**2:00PM Fri - 2-6 - C****The Role of Lubricin and Boundary Lubrication in the Prevention of Chondrocyte Apoptosis**K. WALLER¹, L. X. ZHANG², K. A. ELSAID², B. FLEMING^{2,4}, K. ASLANI², AND G. D. JAY^{2,4}¹Brown University, Providence, RI, ²RI Hospital/Lifespan, Providence, RI, ³Massachusetts College of Pharmacy, Boston, MA, ⁴Brown University, Providence, RI**2:15PM Fri - 2-6 - D****Evaluation of the Mechanical Role of Non-Fibrillar Matrix in Collagen Gel Tissue Analogs Using a Coupled Fiber-Matrix Microscale Model**S. P. LAKE¹, M. F. HADI¹, AND V. H. BAROCAS¹¹University of Minnesota, Minneapolis, MN

2:30PM Fri - 2-6 - E**Prevention of Early Articular Cartilage Surface Damage and Frictional Changes in a Rat Model of OA**

N. GALLEY¹, M. RIVERA-BERMEUDEZ², T. BLANCHET², C. FLANNERY², AND L. BONASSAR¹
¹Cornell University, Ithaca, NY, ²Pfizer, Cambridge, MA

2:45PM Fri - 2-6 - F**Dynamic Properties of Infected Tissue - Round Window Membrane of Guinea Pig Otitis Media Model**

R. Z. GAN¹, D. NAKMALI¹, X. ZHANG¹, AND X. GUAN¹
¹University of Oklahoma, Norman, OK

Track: Biomedical Imaging and Optics - OP - Fri - 2 - 7

Nanotechnology for Biomedical Optics

Chairs: Heather Clark, Luca Dal Negro
 Convention Center - Room 17

1:30PM Fri - 2-7 - A**Imaging Single Molecule Dynamics Inside Living Cells with Semiconductor Quantum Dots**

A. M. SMITH¹, M. C. MANCINI², AND S. NIE^{1,2}
¹Emory University, Atlanta, GA, ²Georgia Tech, Atlanta, GA

2:00PM Fri - 2-7 - B**Silica-Coated Gold Nanorods as Contrast Agents for Multiplex Photoacoustic Imaging of Cancer**

C. L. BAYER¹, Y-S. CHEN¹, I. M. GRAF¹, G. LUKE¹, K. SOKOLOV², AND S. Y. EMELIANOV¹
¹The University of Texas at Austin, Austin, TX, ²M.D. Anderson Cancer Center, Houston, TX

2:15PM Fri - 2-7 - C**Targeted Gold Nanorods as Probes for EGFR-overexpression in Squamous Cell Carcinomas**

P. PUVANAKRISHNAN¹, P. DIAGARADJANE², J. SCHWARTZ³, S. KRISHNAN², AND J. W. TUNNELL¹
¹The University of Texas at Austin, Austin, TX, ²The UT MD Anderson Cancer Center, Houston, TX, ³Nanospectra Biosciences Inc, Houston, TX

2:30PM Fri - 2-7 - D**Using the Design of Nature's Own Nanoparticles as a Template to Create Multifunctional Probes - Invited**

W. MULDER¹
¹Mount Sinai School of Medicine, New York, NY

Track: New Frontiers in Biomedical Engineering - OP - Fri - 2 - 8

Integrated Cellular Systems - II

Chairs: Robert Nerem, Krystyn Van Vliet
 Convention Center - Room 21

1:30PM Fri - 2-8 - A**Probing the Morphogenetic Response of a Xenopus Tissue to Dynamic Stimulation of Extracellular ATP**

Y. KIM¹, P. R. LEDUC¹, W. C. MESSNER¹, AND L. A. DAVIDSON²
¹Carnegie Mellon University, Pittsburgh, PA, ²University of Pittsburgh, Pittsburgh, PA

1:45PM Fri - 2-8 - B**Engineering the 3D Microenvironment of Pluripotent Stem Cells**

A. BRATT-LEAL¹, M. KINNEY¹, K. HAMMERSMITH¹, K. KEPPEL¹, AND T. C. MCDEVITT^{1,2}
¹Georgia Tech/Emory, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA

2:00PM Fri - 2-8 - C**A Microfluidic Bioreactor for Formation of Cell Monolayer and the Resistance Measurement**

Z. HUANG¹, V. PONGRAKHANANON¹, Y. ROJANASAKUL¹, AND Y. LIU¹
¹West Virginia University, Morgantown, WV

2:15PM Fri - 2-8 - D**Upconversion Luminescent Nanoparticles for Traceable Gene Delivery**

A. KUTIKOV¹, J. SHEN¹, AND G. HAN¹
¹University of Massachusetts-Medical School, Worcester, MA

2:30PM Fri - 2-8 - E**Engineering Vaccines to Coordinate the Immune Response**

D. J. IRVINE^{1,2}
¹MIT, Cambridge, MA, ²Howard Hughes Medical Institute, Chevy Chase, MD

2:45PM Fri - 2-8 - F**Mechanical Compression Alters Normal Mammary Acinus Morphology and Promotes Invasion in 3D Cultures**

T. SODUNKE^{1,2}, J. TSE^{1,3}, AND L. MUNN^{1,2}
¹Mass General Hospital, Charlestown, MA, ²Harvard Medical School, Boston, ³MIT, Cambridge, MA

Track: Tissue Engineering - OP - Fri - 2 - 9

Novel Biomaterials and Scaffolds - I

Chairs: Christopher Bettinger, Jian Yang
 Convention Center - Room 22

1:30PM Fri - 2-9 - A**Pore Forming Injectable Hydrogels for Therapeutic Stem Cell Deployment**

N. HUEBSCH^{1,2}, K. LEE¹, C. MADL¹, M. XU¹, X. ZHAO¹, O. CHAUDHURI¹, AND D. J. MOONEY^{1,3}
¹Harvard University, Cambridge, MA, ²Harvard-MIT Division of Health Sciences and Technology, Cambridge, ³Wyss Institute for Biologically Inspired Engineering, Boston, MA

1:45PM Fri - 2-9 - B**Independent control Stiffness and Permeability of a Cell-Encapsulating Hydrogel for Tissue Engineering; Integration of bio-inspired Material Chemistry and Microfabrication**

J. JEONG¹, V. CHAN¹, C. CHA¹, P. ZORLUTUNA¹, C. SUKOTJO², R. BASHIR¹, AND H. KONG¹
¹University of California at Urbana-Champaign, Urbana, IL, ²University of Illinois at Chicago, Chicago, IL

2:00PM Fri - 2-9 - C**Electrospun Chitosan Nanofibers for Growth Factor Delivery and Mesenchymal Stem Cell Activation**

J. ALMODOVAR¹, S. BACON¹, F. ZOMER VOLPATO², C. MIGLIARESI², J. KISIDAY¹, AND M. KIPPER¹
¹Colorado State University, Fort Collins, CO, ²University of Trento, Trento, Italy

2:15PM Fri - 2-9 - D**Removal of Polyglycolic-acid Fibers in Co-electrospun Composite Scaffolds Enhances Cell Infiltration**

B. L-P. LEE^{1,2}, Z. YAN¹, AND S. LI^{1,2}
¹University of California at Berkeley, Berkeley, CA, ²University of California at San Francisco, San Francisco, CA

2:30PM Fri - 2-9 - E**Novel Elastin-Based Peptides as ECM Templates Within Biomimetic Hydrogels**

D. PATEL¹, R. MENON¹, AND L. TAITE¹
¹Georgia Institute of Technology, Atlanta, GA

2:45PM Fri - 2-9 - F**In Vivo Application of Dynamic Hyaluronic Acid Material for Myocardial Infarction Therapy**J. L. YOUNG¹, J. SCHAEFER¹, J. TULER¹, P. SCHUP-MAGOFFIN¹, K. CHRISTMAN¹, AND A. J. ENGLER¹¹University of California, San Diego, La Jolla, CA**Track: Tissue Engineering - OP - Fri - 2 - 10****Cell-Biomaterial Interface****Chairs:** Ehsan Jabbarzadeh, Shiva Kotha

Convention Center – Room 23

1:30PM Fri - 2-10 - A**Characterization of RPE Cells on Hydrogel Mimic of Bruch's Membrane**Z. CLEMANS¹, A. GOBIN¹, AND T. TEZEL^{1,2}¹University of Louisville, Louisville, KY, ²Lion's Eye Center, Louisville, KY**1:45PM Fri - 2-10 - B****Electrospun Scaffold Architecture Controls Insulinoma Clustering, Viability and Insulin Production**B. N. BLACKSTONE¹, A. F. PALMER¹, H. R. RILO², AND H. M. POWELL¹¹The Ohio State University, Columbus, OH, ²University of Arizona, Tucson, AZ**2:00PM Fri - 2-10 - C****Dynamics of Circulating Tumor Microemboli Adhesion to E-selectin Surfaces under Flow: Effect of Fibrin Polymerization**A. M. DE GUILLEBON¹, Y. GENG¹, AND M. R. KING¹¹Cornell University, Ithaca, NY**2:15PM Fri - 2-10 - D****Colonization of Electrospun Scaffolds with Progenitor Cells for Tissue Engineering of Peri-Implant Space**P. LU¹, J. THOMAS¹, M. ANGHELINA¹, D. JONES¹, L. MOLDOVAN¹, J. GUAN², J. LANNUTTI², AND N. I. MOLDOVAN¹¹Davis Heart and Lung Research Institute, Ohio State University, Columbus, OH, ²Department of Materials Sciences, College of Engineering, Ohio State University, Columbus, OH**2:30PM Fri - 2-10 - E****Tunable Brain-Mimetic Matrices for Studying Tumor Mechanobiology and Invasion**Y. KIM^{1,2}, B. ANANTHANARAYANAN¹, AND S. KUMAR^{1,2}¹University of California, Berkeley, CA, ²UC Berkeley - UCSF Graduate Program in Bioengineering, Berkeley, CA**2:45PM Fri - 2-10 - F****Controlling the Fibrillar Architecture of 3D Collagen Gels: Effects on Cell Morphology and Migration**S. P. CAREY¹, C. M. KRANING-RUSH¹, AND C. A. REINHART-KING¹¹Cornell University, Ithaca, NY**Track: Devices: Nano to Micro - OP - Fri - 2 - 11*****Emerging Concept of Medical Micro Devices****Chairs:** Christopher Love

Convention Center – Room 24

1:30PM Fri - 2-11 - A**Label-free, Cardiomyocyte Enrichment: A Biochemical and Microfabricated Approach**A. HSIEH¹, A. SOFLA¹, AND M. RADISIC¹¹University of Toronto, Toronto, ON, Canada**1:45PM Fri - 2-11 - B****Saline Washing Improves the Ability of Stored RBCs to Perfuse an Artificial Microvascular Network**J. M. BURNS¹, J. M. SOSA¹, O. FOROUZAN¹, AND S. S. SHEVKOPLYAS¹¹Tulane University, New Orleans, LA**2:00PM Fri - 2-11 - C****Effects of Geometry on Motility of Microstructures Under Bacterial Propulsion**A. SAHARI¹, D. HEADEN¹, M. CANTER¹, AND B. BEHKAM¹¹Virginia Tech, Blacksburg, VA**2:15PM Fri - 2-11 - D****Aptamer-Functionalized Surface for Cell Separation**Z. ZHANG¹, N. CHEN¹, L. LI¹, AND Y. WANG¹¹University of Connecticut, Storrs, CT**2:30PM Fri - 2-11 - E****Fabrication of Multi-Functional Micro/Nanoparticles for Drug Delivery and Biomedical Imaging**P. ZHANG¹, AND J. GUAN¹¹Florida State University, Tallahassee, FL**2:45PM Fri - 2-11 - F****Single Cell Manipulation by a Magnetic Micro Robot**D. KEUM¹, H. LIM¹, C. MOON¹, AND S. MOON¹¹DGIST, Daegu, Korea, Republic of

*Supported by an unrestricted educational grant from

**Track: Cardiovascular Engineering - OP - Fri - 2 - 12****Valve Mechanics****Chairs:** Craig Simmons, Wei Sun

Convention Center – Room 25

1:30PM Fri - 2-12 - A**Biomechanical Interaction in Transcatheter Aortic Valve**Q. WANG¹, AND W. SUN¹¹University of Connecticut, Storrs, CT**1:45PM Fri - 2-12 - B****Mitral Valve Leaflets Coaptation Mechanism**B. GAO¹, AND Z. HE¹¹Texas Tech Univ., Lubbock, TX**2:00PM Fri - 2-12 - C****Prediction of the Degree of Hemodynamic Abnormality through a Calcifying Bicuspid Aortic Valve**S. CHANDRA¹, N. RAJAMANNAN², AND P. SUCOSKY¹¹University of Notre Dame, Notre Dame, IN, ²Feinberg School of Medicine, Chicago, IL**2:15PM Fri - 2-12 - D****Efficacy in Papillary Muscle Relocation in Relieving Mitral Leaflet Tethering**B. G. CHISM¹, J-P. RABBAH¹, A. SIEFERT¹, N. SAIKRISHNAN¹, AND A. YOGANATHAN¹¹Georgia Institute of Technology, Atlanta, GA**2:30PM Fri - 2-12 - E****Structure and Thermal Stability of Heart Valve Chordae Tendinae: Association with Physiological Loading Conditions**S. M. WELLS¹, S. P. VERES¹, C. M. PIERLOT¹, P. L. ILES¹, K. M. PERRYMAN¹, J. J. SHANAHAN¹, B. N. WILKES¹, AND R. A. LESLIE¹¹Dalhousie University, Halifax, NS, Canada**2:45PM Fri - 2-12 - F****Towards the Development of Meso and Micro-scale High Fidelity Models of the Mitral Valve**R. AMINI¹, K. KOOMALSINGH², C. CARRUTHERS¹, T. SHUTO², R. C. GORMAN², J. H. GORMAN², AND M. S. SACKS¹¹University of Pittsburgh, Pittsburgh, PA, ²Gorman Cardiovascular Research Group, Glenolden, PA

Track: Cardiovascular Engineering - OP - Fri - 2 - 13**Vascular Permeability, Microvasculature, and Angiogenesis - II**

Chairs: Rob Peattie, Laura Suggs
Convention Center – Room 26

1:30PM Fri - 2-13 - A**Matrix-bound vs Diffusible VEGF Alters Endothelial VEGF-Receptor Expression and Cell-Cell Contact**

E. A. LOGSDON¹, AND F. MAC GABHANN¹
¹Johns Hopkins University, Baltimore, MD

1:45PM Fri - 2- 13 - B**Non-viral Engineered Adipose-derived Stem Cells for Therapeutic Angiogenesis**

L. R. DEVEZA¹, G. IMANBAYEV¹, J. LEE¹, J. CHOI¹, J. COOKE¹, AND F. YANG¹
¹Stanford University School of Medicine, Stanford, CA

2:00PM Fri - 2-13 - C**Active Transport Across Lymphatic Endothelium is Modulated by Transmural Flow**

V. TRIACCA¹, S. RAGHUNATHAN¹, AND M. A. SWARTZ¹
¹École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

2:15PM Fri - 2-13 - D**Using *In Vivo* Phage Display to Identify Non-VEGF Mediated Tumor Angiogenic Proteins**

M. E. SEAMAN¹, AND K. A. KELLY¹
¹University of Virginia, Charlottesville, VA

2:30PM Fri - 2-13 - E**Preservation of the Microvascular Glycocalyx in Chronic Hyperglycemia**


M. D. SAVERY¹, J. JIANG¹, AND E. R. DAMIANO¹
¹Boston University, Boston, MA

2:45PM Fri - 2-13 - F**Syndecan-1 is Not an Essential Anchoring Protein for the Microvascular Glycocalyx**

M. D. SAVERY¹, AND E. R. DAMIANO¹
¹Boston University, Boston, MA

Track: Respiratory Engineering - OP - Fri - 2 - 14**Mechanobiology in the Lung**


Chairs: Daniel Tschumperlin, Christopher Waters
Convention Center – Room 27

1:30PM Fri - 2-14 - A**miR-146a Regulates Mechanotransduction and Inflammation in Primary Lung Epithelial Cells** 


Y. HUANG¹, M. CRAWFORD², N. HIGUITA-CASTRO¹, P. NANA-SINKAM², AND S. N. GHADIALI¹
¹The Ohio State University, Columbus, OH, ²Ohio State University Medical Center, Columbus, OH

1:45PM Fri - 2- 14 - B**Inhibition of Cytoskeletal Tension Promotes Lung Fibroblast Proliferation and Spreading on Matrices of Physiological Compliance** 

A. MARINKOVIC¹, J. MIH¹, AND D. J. TSCHUMPERLIN¹
¹Harvard School of Public Health, Boston, MA

2:00PM Fri - 2-14 - C**Vimentin is Required and Sufficient for Wound Repair of Alveolar Epithelial Cells** 


M. R. ROGEL^{1,2}, P. N. SONI¹, A. SITIKOV¹, AND K. M. RIDGE¹
¹Northwestern University, Chicago, IL, ²Northwestern University, Evanston, IL

2:15PM Fri - 2-14 - D**Changes in Alveolar Epithelial Cell Stiffness at the Onset of Migration** 

K. WILHELM¹, E. ROAN², A. BADA², AND C. M. WATERS¹
¹University of Tennessee Health Science Center, Memphis, TN, ²University of Memphis, Memphis, TN

2:30PM Fri - 2-14 - E**Focal Adhesion Interactions of Smooth Muscle in Intact Airways Mimicking Tidal Breathing** 

E. BARTOLAK-SUKI¹, A. S. LAPRADE¹, B. SUKI¹, AND K. R. LUTCHEN¹
¹Boston University, Boston, MA

2:45PM Fri - 2-14 - F**Mechanotransduction in the Lung: Rho-Rac Crosstalk as a Paradigm for Novel Barrier Protective Strategies** 

K. G. BIRUKOV¹, T. WU¹, Y. TIAN¹, AND A. A. BIRUKOVA¹
¹The University of Chicago, Chicago, IL

Track: Translational Biomedical Engineering - OP - Fri - 2- 15**Translational Biomedical Engineering: Research to Practice (R2P) II**

Chair: Michael Gara
Marriott – Ballroom B

Sponsored by Coulter Foundation – This session will feature three invited Principle Investigators, or BME Program Heads, from three of the ten institutions that received the Coulter Foundation Translational Partnership Award. Presenters will describe work done towards Program development, translational research, and all the lessons learned along the way. There will be ample time allowed for a Question/Answer period with the three panelists.

- Panelists – TBD

Friday, October 14, 2011

4:00PM - 5:30PM

PLATFORM SESSION – FRI – 3

**Track: Cellular and Molecular Engineering
- OP - Fri - 3 - I****Mechanotransduction & Mechanobiology - III****Chairs:** Wei Tan, Sihong Wang
*Convention Center – Room 11***4:00PM Fri - 3-I - A****Primary Cilia Modulate Induction of Osteogenic Differentiation in Adipose-derived Stem Cells**J. C. BODLE¹, M. E. PHILLIPS², C. D. RUBENSTEIN², A. CHAROEPANICH¹, S. H. BERNACKI¹, AND E. G. LOBOA¹¹North Carolina State University and University of North Carolina-Chapel Hill, Raleigh, NC, ²North Carolina State University, Raleigh, NC**4:15PM Fri - 3-I - B****MLO-Y4 Osteocytes Respond to picoNewton Level Forces in a Polarized Manner**M. M. THI¹, S. O. SUADICANI¹, S. WEINBAUM², AND D. C. SPRAY¹¹Albert Einstein College of Medicine, Bronx, NY, ²City College of New York, New York, NY**4:30PM Fri - 3-I - C****Vascular Smooth Muscle Cell Behavior is Jointly Regulated by Substrate Stiffness and Cell Cell Interactions**O. V. SAZONOVA¹, K. LEE¹, B. ISENBERG¹, C. RICH¹, M. NUGENT¹, AND J. WONG¹¹Boston University, Boston, MA**4:45PM Fri - 3-I - D****Dynamic Biomechanical Responses of Single Smooth Muscle Cells to Cell Stretch**J. MANN¹, R. LAM¹, S. WENG¹, Y. SUN¹, AND J. FU¹¹University of Michigan, Ann Arbor, MI**5:00PM Fri - 3-I - E****Tumor-Mediated Extracellular Matrix Stiffening at the Molecular and Cellular Scales**R. C. ANDRESEN EGUILUZ¹, K. C. WANG¹, B. SEO¹, E. BROOKS¹, C. FISCHBACH-TESCHL¹, AND D. GOURDON¹¹Cornell University, Ithaca, NY**5:15PM Fri - 3-I - F****Physical Sciences Approach for Identifying Aggressiveness and Malignant Potential of Gliomas**Y. A. MIROSHNIKOVA¹, I. ACERBI¹, A. PERSSON¹, M. J. PASZEK¹, G. BERGERS¹, W. A. WEISS¹, AND V. M. WEAVER¹¹UCSF, San Francisco, CA**Track: Cellular and Molecular Engineering
- OP - Fri - 3 - 2****Cellular Engineering & Modeling****Chairs:** Danny Bluestein, Pam Kreeger
*Convention Center – Room 12***4:00PM Fri - 3-2 - A****Heterogeneity in Induced Lineage Commitment: A Single-Cell Perspective**T. M. GIBSON¹, AND C. A. GERSBACH¹¹Duke University, Durham, NC**4:15PM Fri - 3-2 - B****Development of a Platelet Activation Model Incorporating Shear Loading Rates**J. SHERIFF¹, M. XENOS¹, G. GIRDHAR¹, J. JESTY², AND D. BLUESTEIN¹¹Department of Biomedical Engineering, Stony Brook University, Stony Brook, NY,²Division of Hematology, School of Medicine, Stony Brook University, Stony Brook, NY**4:30PM Fri - 3-2 - C****Glycated Collagen Alters Endothelial Cell Plasminogen System Balance**A. M. CLYNE¹¹Drexel University, Philadelphia, PA**4:45PM Fri - 3-2 - D****Biomechanical Remodeling of Stem Cells: A Computational Approach to Elucidate Adipogenic Differentiation**A. PAUL¹, S. YAHYA², S. SUN², AND M. CHO³¹University of Illinois at Chicago, Chicago, IL, ²University of Illinois at Chicago, Chicago, IL,³University of Illinois, Chicago, IL**5:00PM Fri - 3-2 - E****Identification of a Multivariate ErbB Network Signature in Epithelial Ovarian Cancer**R. PRASASYA¹, AND P. K. KREEGER¹¹University of Wisconsin-Madison, Madison, WI**5:15PM Fri - 3-2 - F****Model Predictions of X-Ray Diffraction Patterns During Force Development in Skeletal Muscle**S. M. MIJAILOVICH¹, B. STOJANOVIC², I. STOJANOVIC³, R. J. GILBERT¹, AND T. IRVING⁴¹St. Elizabeth Med. Center, Boston, MA, ²University of Kragujevac, Kragujevac, Serbia,³Boston University, Boston, MA, ⁴Illinois Institute of Technology, Chicago, IL**Track: Drug Delivery Systems - OP - Fri - 3 - 3****Nucleic Acid Delivery - II****Chairs:** Samir Mitragotri, Millicent O. Sullivan
*Convention Center – Room 13***4:00PM Fri - 3-3 - A****Nanoparticle-Mediated Delivery of Anti-miRs to Inhibit Oncogenic MicroRNA in Solid Tumors**C. J. CHENG¹, AND W. M. SALTZMAN¹¹Yale University, New Haven, CT**4:15PM Fri - 3-3 - B****Polyelectrolyte-Gold Nanorod Assemblies for Transgene Delivery**J. RAMOS¹, AND K. REGE¹¹Arizona State University, Tempe, AZ**4:30PM Fri - 3-3 - C****Structure and Application of Nucleic Acid-Surfactant Films for Transfection in Human Cells**S. L. PERRY¹, S. GAJRIA², T. NEUMANN¹, J. WEINSTEIN¹, J. NI¹, D. V. SCHAEFFER¹, AND M. V. TIRRELL¹¹University of California at Berkeley, Berkeley, CA, ²University of California at Santa Barbara, Santa Barbara, CA**4:45PM Fri - 3-3 - D****Multifunctional Graft Copolymers Aid Liposomal Delivery of Antisense Oligonucleotides**L. PEDDADA¹, A. JOY¹, M. COSTACHE¹, D. DEVORE², O. GARBUZENKO¹, T. MINKO¹, AND C. ROTH¹¹Rutgers University, Piscataway, NJ, ²U.S. Army Institute for Surgical Research, San Antonio, TXPLATFORM
SESSIONS

Fri-3

5:00PM Fri - 3-3 - E**Directed Evolution of Virus Nanoparticles for Enhanced Nucleic Acid Delivery to Ovarian Carcinoma**K. MCCONNELL¹, C. DEMPSEY¹, J. JUDD¹, F. WEI¹, A. SOOD², AND J. SUH¹¹Rice University, Houston, TX, ²MD Anderson Cancer Center, Houston, TX**5:15PM Fri - 3-3 - F****Systematic Methodologies for Rational Identification of Peptide Ligands for the Delivery of Small Interfering RNAs**E. D. KARAGIANNIS¹, A. M. URBANSKA¹, R. S. LANGER¹, AND D. G. ANDERSON¹¹Massachusetts Institute of Technology, Cambridge, MA**Track: Systems Biology, Bioinformatics and Computational Bioengineering - OP - Fri - 3 - 4****Modeling, Simulation and Control in Personalized Medicine****Chairs:** John F. LaDisa, Sandra Rugonyi
*Convention Center - Room 14***4:00PM Fri - 3-4 - A****Engineering Transferrin-based Cancer Therapeutics Using Cell-Level Kinetic Modeling**D. J. YOON¹, T. P. NICOLAIDES², D. YIN², A. B. MASON³, W. A. WEISS², K. BANKIEWICZ², AND D. T. KAMEI¹¹UCLA, Los Angeles, CA, ²UCSF, San Francisco, CA, ³University of Vermont, Burlington, VT**4:15PM Fri - 3-4 - B****Computational Algorithm for Derivation of Unstressed Vascular Geometry from CT Image Based Models**S. CHANDRA¹, J. F. RODRIGUEZ², AND E. FINOL³¹University of Notre Dame, Notre Dame, IN, ²Universidad de Zaragoza, Zaragoza, Spain, ³Carnegie Mellon University, Pittsburgh, PA**4:30PM Fri - 3-4 - C****A Platform for Dynamic Simulation and Control of Human Movement**M. B. MANSOURI¹, AND J. A. REINBOLT¹¹University of Tennessee, Knoxville, TN**4:45PM Fri - 3-4 - D****Genetic Algorithm-Based Optimization of HIV-1 Treatment Using Elite Selection Strategy Variant**J. WHITE¹, AND R. SRIVASTAVA¹¹University of Connecticut, Storrs, CT**5:00PM Fri - 3-4 - E****Computational Engineering of Recombinogenic Donor DNA for Genomic Reprogramming**F. REZA¹, AND P. M. GLAZER¹¹Yale University, New Haven, CT**5:15PM Fri - 3-4 - F****Gender Classification From Fingerprint Using White Lines and Ridge Density**R. TADROSS¹, M. MAHFOUZ¹, B. CALDWELL¹, A. BADAWI¹, AND R. JANTZ¹¹University of Tennessee, Knoxville, TN**Track: Neural Engineering - OP - Fri - 3 - 5****Neural Tissue Engineering****Chairs:** Deanna Thompson, Dustin Tyler
*Convention Center - Room 15***4:00PM Fri - 3-5 - A****Initial Electric Stimulation of Schwann Cells Promotes Sustained Increases in Neurite Outgrowth**A. N. KOPPEL¹, AND D. M. THOMPSON¹¹Rensselaer Polytechnic Institute and Center for Biotechnology and Interdisciplinary Studies, Troy, NY**4:15PM Fri - 3-5 - B****The Role of Electrospun Fiber Density and YIGSR Fiber Doping in Axon Motility and Cell Migration on Aligned Topography**N. W. ZACCOR¹, C. J. RIVET¹, AND R. J. GILBERT¹¹Rensselaer Polytechnic Institute, Troy, NY**4:30PM Fri - 3-5 - C****In Vitro Models of Neurodegenerative Diseases with Engineered Amyloid Beta Plaques**L. F. DERAVI¹, M. A. HEMPHILL¹, A. GROSBERG¹, B. E. DABIRI¹, AND K. K. PARKER¹¹Disease Biophysics Group, Harvard University, Cambridge, MA**4:45PM Fri - 3-5 - D****An In Vitro Transplant Model for Investigating Neural Stem Cell Engraftment**Y-T. LIU¹, L. LIVI¹, J. MORGAN¹, AND D. HOFFMAN-KIM¹¹Brown University, Providence, RI**5:00PM Fri - 3-5 - E****Tissue Engineered Model of the Inner Neural Retina**K. E. KADOR^{1,2}, R. MONTERO^{2,3}, J. HERTZ^{1,2}, E. LAVIK⁴, F. ANDREOPOULOS^{2,3}, AND J. L. GOLDBERG^{1,2}¹Bascom Palmer Eye Institute, Miami, FL, ²University of Miami Miller School of Medicine, Miami, FL, ³University of Miami, Coral Gables, FL, ⁴Case Western Reserve University, Cleveland, OH**5:15PM Fri - 3-5 - F****Optimized LI-Presenting Polymeric Scaffolds Enhance Neurite Outgrowth**J. F. CHERRY¹, A. L. CARLSON¹, J. KOHN¹, M. SCHACHNER¹, AND P. V. MOGHE¹¹Rutgers University, Piscataway, NJ**Track: Orthopedic and Rehabilitation Engineering - OP - Fri - 3 - 6****Orthopedic Tissue Biomechanics - II****Chairs:** Edward Botchwey, Elizabeth Lobo, Helen Lu
*Convention Center - Room 16***4:00PM Fri - 3-6 - A****Effects of Trabecular Level Glycation on Bone Fragility**L. KARIM¹, AND D. VASHISHTH¹¹Rensselaer Polytechnic Institute, Troy, NY**4:15PM Fri - 3-6 - B****Stress Normalization to Compare Two Techniques of Femoral Neck Core Decompression**P. J. BROWN^{1,2}, C. V. SIKES³, S. MANNAVA^{1,3}, J. E. LANG³, AND J. D. STITZEL^{1,2}¹Wake Forest University School of Medicine, Winston Salem, NC, ²Virginia Tech - Wake Forest University Center for Injury Biomechanics, Winston Salem, NC, ³Wake Forest University Department of Orthopedic Surgery, Winston Salem, NC

4:30PM Fri - 3-6 - C**Vitamin D Deficiency Disturbs the Shear Strain Profile of the Growth Plate**D. SEVENLER¹, M. BUCKLEY¹, G. KIM¹, L. BONASSAR¹, I. COHEN¹, AND M. VAN DER MEULEN¹¹Cornell University, Ithaca, NY**4:45PM Fri - 3-6 - D****Small Crack Matrix Damage Dominates Creep Process in Living Bone**Z. SEREF-FERLENCEZ¹, O. KENNEDY¹, J. BASTA-PLJAKIC¹, S. MORGAN¹, AND M. B. SCHAFFLER¹¹City College of New York, New York, NY**5:00PM Fri - 3-6 - E****Characterization of Bone Microcrack Local Strain Environment Using Digital Volume Correlation**S. A. WENTZELL¹, R. S. NESBITT¹, J. MACIONE¹, R. KNAPP², AND S. KOTHA¹¹Rensselaer Polytechnic Institute, Troy, NY, ²University of Connecticut, Storrs, CT**5:15PM Fri - 3-6 - F****Dynamic Fluid Flow Stimulation Promotes *In Vivo* Mesenchymal Stem Cell Proliferation**M. HU¹, R. YEH¹, M. LIEN¹, AND Y-X. QIN¹¹Stony Brook University, Stony Brook, NY**Track: Biomedical Imaging and Optics****- OP - Fri - 3 - 7****Optogenetics****Chairs:** Brian Chow, Xue Han*Convention Center - Room 17***4:00PM Fri - 3-7 - A****Single- and Multi-Unit Optoelectronic Devices for Optical Neuromodulation in Awake Behaving Animals from Rodents to Non-Human Primates- *Invited***J. WANG¹, I. OZDEN¹, F. WAGNER¹, D. BORTON¹, B. BRUSH¹, N. AGDA¹, M. DIAGNE², R. BURWELL¹, AND A. NURMIKKO¹¹Brown University, Providence, RI, ²Connecticut College, New London, CT**4:30PM Fri - 3-7 - B****Neuroreceptor Imaging of Awake and Anesthetized Nonhuman Primates with Positron Emission Tomography**C. M. SANDIEGO¹, X. JIN¹, T. MULNIX¹, K. FOWLES¹, D. LEE¹, L. A. WELLS², E. A. RABINER², G. V. WILLIAMS¹, K. COSGROVE¹, AND R. E. CARSON¹¹Yale University, New Haven, CT, ²GSK Imperial College, London, United Kingdom**4:45PM Fri - 3-7 - C****Optogenetic Circuit Mapping of Rhythmic Behaviors in *C. elegans***C. FANG-YEN¹¹University of Pennsylvania, Philadelphia, PA**5:00PM Fri - 3-7 - D****Engineering Molecular Technologies to Sense Neural Activity Non-invasively**M. G. SHAPIRO¹¹UC Berkeley, Boston, MA**Track: New Frontiers in Biomedical Engineering - OP - Fri - 3 - 8****Systems Biology****Chairs:** Manu Platt, Amina Qutub*Convention Center - Room 21***4:00PM Fri - 3-8 - A****Multiplicity of Feedback Loops in a Tuberculosis Stress-Response Network**A. TIWARI¹, G. BALAZSI², AND O. A. IGOSHIN¹¹Rice University, Houston, TX, ²The University of Texas MD Anderson Cancer Center, Houston, TX**4:15PM Fri - 3-8 - B****Chromatin Environment at the HIV-1 Promoter Sets the Threshold for Reactivation from Latency**K. MILLER-JENSON^{1,2}, S. S. DEY², N. PHAM², A. P. ARKIN^{2,3}, AND D. V. SCHAFER^{2,3}¹Yale University, New Haven, CT, ²University of California, Berkeley, CA, ³Lawrence Berkeley National Laboratory, Berkeley, CA**4:30PM Fri - 3-8 - C****Enzyme-targeted RNAi vs. Small-molecule Inhibition are Distinct Perturbations of Signaling Networks**K. J. HOLMBERG¹, C. B. MOYER¹, AND K. A. JANES¹¹University of Virginia, Charlottesville, VA**4:45PM Fri - 3-8 - D****Module-based Multiscale Simulation of Angiogenesis**G. LIU¹, A. A. QUTUB², P. VEMPATI¹, F. MAC GABHANN¹, AND A. S. POPEL¹¹Johns Hopkins University, Baltimore, MD, ²Rice University, Houston, TX**5:00PM Fri - 3-8 - E****Bactericidal Antibiotics Induce Oxidative Stress in Mammalian Cells via Mitochondrial Dysfunction**S. KALGHATGI¹, J. COSTELLO¹, C. SPINA², AND J. J. COLLINS¹¹Boston University, Boston, MA, ²Boston University School of Medicine, Boston, MA**5:15PM Fri - 3-8 - F****Characterizing Endothelial Cell Interactions by a Rule-Oriented Strategy Coupled to Experiments**B. LONG¹, R. REKHI¹, J. JUNG¹, AND A. QUTUB¹¹Rice University, Houston, TX**Track: Tissue Engineering - OP - Fri - 3 - 9****Novel Biomaterials and Scaffolds - II****Chairs:** Eben Alsberg, Donald Elbert*Convention Center - Room 22***4:00PM Fri - 3-9 - A****Spatio-temporal Control Over Cell Attachment to PEG Hydrogels Using Caged RGD Peptides**D. L. ALGE¹, AND K. S. ANSETH¹¹University of Colorado, Boulder, CO**4:15PM Fri - 3-9 - B*****In Vitro* and *In Vivo* Evaluation of Nerve Guidance Conduits Comprised of a Salicylic Acid Based Poly(anhydride-ester) and PLAA Blend**Y. S. LEE¹, J. GRIFFIN¹, S. MASAND¹, D. I. SHREIBER¹, AND K. E. UHRICH¹¹Rutgers University, Piscataway, NJ**4:30PM Fri - 3-9 - C****Environmentally-Sensitive Scaffolds for Reactive Oxygen Species-Mediated Controlled Degradation & Release**S. S. YU¹, R. L. KOBLIN¹, A. L. ZACHMAN¹, L. H. HOFMEISTER¹, T. D. GIORGIO¹, AND H.-J. SUNG¹¹Vanderbilt University, Nashville, TN

4:45PM Fri - 3-9 - D**Methylcellulose Hydrogels with Tunable Material Properties for Soft Tissue Filler Applications**D. M. VARMA¹, G. T. GOLD¹, M. S. GUPTA¹, E. S. COOPER¹, S. S. STALLING¹, A. T. REZA¹, P. J. TAUB², AND S. B. NICOLL¹¹The City College of New York, New York, NY, ²The Mount Sinai Medical Center, New York, NY**5:00PM Fri - 3-9 - E****Polydopamine Coating for Biointegration**K. JEONG¹, L. WANG², C. F. STEFANESCU¹, M. W. LAWLOR³, C. H. DOHLMAN², R. LANGER⁴, AND D. S. KOHANE³¹Massachusetts Institute of Technology, Cambridge, MA, ²Massachusetts Eye and Ear Infirmary, Boston, MA, ³Children's Hospital Boston, Boston, MA, ⁴Massachusetts Institute of Technology, Cambridge, MA**5:15PM Fri - 3-9 - F****A Degradable Poly(N-isopropyl acrylamide) Scaffold for Tissue Engineering Applications**A. GALPERIN¹, T. J. LONG¹, AND B. D. RATNER¹¹University of Washington, Seattle, WA**Track: Tissue Engineering - OP - Fri - 3 - 10****Engineered Tissue Models for Drug Discovery and Disease****Chairs:** Claudia Fischbach-Teschi, Hermann Frieboes

Convention Center - Room 23

4:00PM Fri - 3-10 - A**IL-8 Signaling in Breast Cancer Regulates Metastasis and is Modulated by Hydroxyapatite**S. P. PATHI¹, D. LIN¹, L. A. ESTROFF¹, AND C. FISCHBACH¹¹Cornell University, Ithaca, NY**4:15PM Fri - 3-10 - B****Neovascularization within PEG Porous Hydrogel**Y.-C. CHIU¹, S. KOCAGÖZ¹, H. ENGEL², S.-W. KAO³, J. C. LARSON¹, S. GUPTA¹, M.-H. CHENG³, AND E. M. BREY^{1,4}¹Illinois Institute of Technology, Chicago, IL, ²University of Heidelberg, Heidelberg, Germany, ³Chang Gung Memorial Hospital, Taoyuan, Taiwan, ⁴Hines Veterans Administration Hospital, Hines, IL**4:30PM Fri - 3-10 - C****A Novel *In Vitro* Model for Pathogen Detection Based on Organic Transistors Integrated With Living Cells**S. A. TRIA¹, E. LANZARINI¹, L. JIMISON¹, M. NIKOLOU², G. G. MALLIARAS¹, AND R. M. OWENS¹¹Ecole Nationale Supérieure des Mines de Saint Etienne, Gardanne, France, Metropolitan, ²Cornell University, Ithaca, NY**4:45PM Fri - 3-10 - D****MDA-MB-231 Co-Culture Mediates Microvascular Endothelial Cell Proliferation and Neovessel Formation**C. S. SZOT¹, C. F. BUCHANAN¹, J. W. FREEMAN¹, AND M. N. RYLANDER¹¹Virginia Tech-Wake Forest University, Blacksburg, VA**5:00PM Fri - 3-10 - E****RNAi-Mediated Knockdown of Metabolic Proteins in 3D Coculture of Adipocytes and Endothelial Cells**J. K. SIMS-WRIGHT¹, K. CHO², A. JAYARAMAN², AND K. LEE¹¹Tufts University, Medford, MA, ²Texas A&M University, College Station, TX**5:15PM Fri - 3-10 - F****3D Ossified Bone Tissue Model for Evaluation of Drug-eluting Micropatterns**J.-H. LEE^{1,2}, Y. GU¹, H. WANG¹, AND W. Y. LEE¹¹Stevens Institute of Technology, Hoboken, NJ, ²Columbia University, New York, NY**Track: Devices: Nano to Micro - OP - Fri - 3 - 11*****Drug Delivery Technologies: Nano to Micro Devices****Chairs:** Niren Murthy

Convention Center - Room 24

4:00PM Fri - 3-11 - A**HIV Mucosal Vaccination Through the Oral Cavity Using Microneedles**Y. MA¹, S. KREBS², B. SUTTON², N. L. HAIGWOOD², AND H. GILL¹¹Texas Tech University, Lubbock, TX, ²Oregon Health and Science University, Portland, OR**4:15PM Fri - 3-11 - B****Implantable Microfluidic Device for Reciprocating Drug Delivery to Closed Fluid Spaces**E. E. PARARAS¹, J. FIERING¹, M. J. MESCHER¹, E. S. KIM¹, M. J. MCKENNA², S. G. KUJAWA², W. F. SEWELL², AND J. T. BORENSTEIN¹¹Draper Laboratory, Cambridge, MA, ²Massachusetts Eye and Ear Infirmary, Boston, MA**4:30PM Fri - 3-11 - C****Integrating Microneedles with a Microfluidic System for High-throughput Gene Correction in HSCs**D. MYERS^{1,2}, Z. PENG^{1,2}, S.-J. PAIK², D. YUAN², V. ZARNITSYN², S. PARK², M. ALLEN², S. DAS², G. BAO², M. PRAUSNITZ², AND W. LAM^{1,2}¹Emory University, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA**4:45PM Fri - 3-11 - D****Synthesis of Biodegradable Micro and Nano (<100nm) Particles Using a Multiplexed Electrospray Process**B. ALMERIA¹, T. M. FAHMY¹, AND A. GOMEZ¹¹Yale University, New Haven, CT**5:00PM Fri - 3-11 - E****Fiberoptic Microneedle Device: Simultaneous Co-Delivery of Fluid Agents and Laser Light**R. L. HOOD¹, M. A. KOSOGLU¹, AND C. G. RYLANDER¹¹Virginia Tech, Blacksburg, VA**5:15PM Fri - 3-11 - F****Microneedles Carrying Self-Releasing Polymer Multilayer Coatings for Rapid Transcutaneous Delivery and Controlled Release of Genetic Vaccine Components**P. C. DEMUTH¹, Y. MIN¹, B. HUANG¹, P. T. HAMMOND^{1,2}, AND D. J. IRVINE^{1,2}¹Massachusetts Institute of Technology, Cambridge, MA, ²Koch Institute for Integrative Cancer Research, Cambridge, MA

*Supported by an unrestricted educational grant from

**Track: Cardiovascular Engineering - OP - Fri - 3 - 12****Vascular Structure and Function****Chairs:** Naomi Chesler, Anne Robertson

Convention Center - Room 25

4:00PM Fri - 3-12 - A**Spatial Distribution and Temporal Variation of the Endothelial Glycocalyx *In Vitro***K. BAI¹, AND W. WANG¹¹Queen Mary, University of London, London, United Kingdom**4:15PM Fri - 3-12 - B****Characterization of Pressure-Diameter Relations of Lymphatic Vessels**E. RAHBAR¹, J. E. WEIMER¹, C. D. BERTRAM^{2,3}, M. J. DAVIS⁴, AND J. E. MOORE JR.¹¹Texas A&M University, College Station, TX, ²University of Sydney, New South Wales, Australia, ³Ecole Polytechnique, 91128 Palaiseau cedex, France, ⁴University of Missouri, Columbia, MO

4:30PM Fri - 3-12 - C**Glycocalyx-like Coating of Decellularized Graphs**S. DIMITRIEVSKA¹, T. R. KYRIAKIDES¹, S. SUNDARAM¹, M. J. BOYLE¹, AND L. E. NIKLASON¹¹Yale University, New Haven, CT**4:45PM Fri - 3-12 - D****Role of Elastin in the Biaxial Mechanical Properties of Fibrillin-1 Deficient Carotid Arteries**J. FERRUZZI¹, AND J. D. HUMPHREY¹¹Yale University, New Haven, CT**5:00PM Fri - 3-12 - E****Flow Regulated Endothelial Glycocalyx Expression and Its Function as a Protective Barrier Against Leukocyte Adhesion**A. KOO¹, G. GARCÍA-CARDEÑA², AND C. DEWEY¹¹Massachusetts Institute of Technology, Cambridge, MA, ²Harvard Medical School, Boston, MA**5:15PM Fri - 3-12 - F****Effects of Collagen Content & Cross-Linking on Large Pulmonary Artery Stiffening in Chronic Hypoxia**Z. WANG¹, AND N. C. CHESLER¹¹University of Wisconsin - Madison, Madison, WI**Track: Cardiovascular Engineering - OP - Fri - 3 - 13****Cardiovascular Fluid Dynamics****Chairs:** Gilda Barabino, Alison Marsden

Convention Center - Room 26

4:00PM Fri - 3-13 - A**Computational Modeling of Intercardiac Flows in Normal and Diseased Hearts**X. ZHENG¹, V. VEDULA², T. ABRAHAM², AND R. MITTAL¹¹Johns Hopkins University, Baltimore, MD, ²Johns Hopkins University, Baltimore, MD**4:15PM Fri - 3-13 - B****Comparison of Normal and Pathological Hemodynamics in Coronary Artery Aneurysms Caused by Kawasaki Disease**A. MARSDEN¹, D. SENGUPTA¹, A. KAHN¹, AND J. C. BURNS¹¹UCSD, La Jolla, CA**4:30PM Fri - 3-13 - C****Microcalcifications and Fibrous Cap Anisotropy Amplify Coronary Vulnerable Plaque Rupture Potential: Patient Based Fluid-Structure Interaction Studies**S. H. RAMBHIA¹, X. LIANG¹, M. XENOS¹, Y. ALEMU¹, N. MALDONADO², A. KELLY², S. EINAV¹, S. WEINBAUM², L. CARDOSO², AND D. BLUESTEIN¹¹Stony Brook University, Stony Brook, NY, ²The City College of The City University of New York, New York, NY**4:45PM Fri - 3-13 - D****Biomechanical Factors in Coronary Vulnerable Plaques Risk of Rupture - IVUS Based Patient Specific Fluid Structure Interaction (FSI) Studies**X. LIANG¹, M. XENOS¹, Y. ALEMU¹, S. RAMBHIA¹, I. LAVI², S. EINAV¹, L. GRUBERG¹, AND D. BLUESTEIN¹¹Stony Brook University, Stony Brook, NY, ²Tel Aviv University, Tel Aviv, Israel**5:00PM Fri - 3-13 - E****Calcified Nodule Instability in Response to OxLDL and Monocytes under Shear Stress**R. LI¹, D. MITTELSTEIN¹, R. MAJUMDAR¹, K. FANG¹, Y. TINTUT², L. DEMER², AND T. HSIAI¹¹University of Southern California, Los Angeles, CA, ²University of California Los Angeles, Los Angeles, CA**5:15PM Fri - 3-13 - F****Development of a Novel Bioreactor to Apply Fluid Wall Shear Stress and Solid Stress With Variable Stress Phase Angle**R. A. AMAYA¹, A. PIERIDES¹, AND J. M. TARBELL¹¹The City College of New York, New York, NY**Track: Translational Biomedical Engineering - OP - Fri - 3 - 14****Translational Biomedical Engineering: Research to Practice (R2P) III****Chairs:** Larry McIntire, Donald R. Peterson

Convention Center - Room 27

4:00PM Fri - 3-14 - A**Effect of Hydrogen Sulfide Therapy on Neutrophil Adhesion and Tissue Infiltration During Ischemia-Reperfusion Injury**C. J. BALL¹, S. CHINTALAPANI¹, A. J. REIFFEL², J. A. SPECTOR², AND M. R. KING¹¹Cornell University, Ithaca, NY, ²Weill Cornell Medical College, New York, NY**4:15PM Fri - 3-14 - B****Translating Long Duration Human Movement Into Musculoskeletal Injury Prevention Strategies**M. J. QADRI¹, AND D. R. PETERSON¹¹University of Connecticut Health Center, Farmington, CT**4:30PM Fri - 3-14 - C****Engineered Peptide Linkers for Post-Formulation Nanoparticle Functionalization and Cellular Targeting**H. PAN¹, J. MYERSON¹, S. SAN ROMAN¹, L. HU¹, K. HUO¹, S. ALLEN¹, G. LANZA¹, P. SCHLESINGER¹, AND S. WICKLINE¹¹Washington University School of Medicine, St. Louis, MO**4:45PM Fri - 3-14 - D****caREMOTE: A Cancer Reporting and Monitoring Telemedicine System for Domestic Care Environment**C. CHENG¹, T. H. STOKES², AND M. D. WANG²¹Georgia Institute of Technology, Atlanta, GA, ²Georgia Institute of Technology and Emory University, Atlanta, GA**5:00PM Fri - 3-14 - E****8 Channel 3T Neonatal MRI Volume Phased Array Receiver Built with Non-overlapping Capacitive Decoupling**N. TIAN¹, S. MURPHY², F. ROBB³, J. BARKOVICH¹, AND D. XU¹¹UCSF, San Francisco, CA, ²CWRU, Cleveland, OH, ³General Electric, Aurora, OH**5:15PM Fri - 3-14 - F****Designing the Next Generation Adhesion Barrier: A Natural Polymer-based Film with Robust Handling Properties**S. MAYES¹, D. PETERSON², S. V. AGUILAR¹, J. SCOTT¹, J. DAVIS¹, C. BROWN³, B. COOPWOOD³, D. LOPEZ², AND C. SCHMIDT¹¹The University of Texas at Austin, Austin, TX, ²Austin Brain and Spine, Seton Family Hospital, Austin, TX, ³Seton Family Hospital, Austin, TX


SATURDAY, OCTOBER 15
TODAY'S HIGHLIGHTS

PLENARY SESSION

8:00am - 9:30am

Ballroom, Convention Center



BMES 2011 Rita Schaffer 
 Memorial Young
 Investigator Lecturer:
**POLYMERIC NANOPARTICLES
 FOR CELL-SPECIFIC
 INTRACELLULAR DELIVERY**

Jordan Green, PhD
 John Hopkins University



Diversity Lecture: 
**WHAT I TEACH WHEN I
 MENTOR, WHAT I'VE LEARNED
 WHEN I'VE BEEN TAUGHT**

Cato Laurencin, MD, PhD
 University of Connecticut Health Center

EXHIBIT HALL OPEN

9:30am - 1:30pm

Exhibit Hall, Convention Center

POSTER SESSION A and B

9:30am - 1:00pm

Exhibit Hall 4, Convention Center

PLATFORM SESSIONS Sat-1

10:30am - 12:00noon

See pages 148-152, Convention Center

PLATFORM SESSIONS Sat-2

1:30pm - 3:00pm

See pages 153-157, Convention Center

PLATFORM SESSIONS Sat-3

3:45pm - 5:15pm

See pages 158-161, Convention Center

Saturday, October 15, 2011

9:30AM – 1:00PM

POSTER – SAT – A & B

Track: Cardiovascular Engineering

Vascular Permeability, Microvasculature,
and Angiogenesis

PS – Sat – A – 1

Engineering Effective Revascularization Technologies
 for Ischemia in Diseased States

S. DAS¹, AND A. B. BAKER¹¹University of Texas, Austin, TX

PS – Sat – A – 2

A Quantitative Model Predicting Nascent Vessel Diameter in 3D
In Vitro Angiogenesis

L. WOOD¹, AND H. ASADA¹¹MIT, Cambridge, MA

PS – Sat – A – 3

Reduced Blood Flow Rate Due to Vessel Leakiness and Compliance
 During Tumor Angiogenesis

P. GUO¹, B. CHEN², AND B. FU¹

¹Department of Biomedical Engineering, The City College of New York, New York, NY, ²Global
 Clinical Pharmacology, Johnson & Johnson Pharmaceutical Research & Development LLC,
 San Diego, CA

PS – Sat – A – 4

Adhesion of Tumor Cells to the Microvessel Wall Increases Its Permeability
 by Degrading The Endothelial Surface Glycocalyx

B. CAI¹, J. FAN¹, M. ZENG¹, AND B. M. FU¹¹Department of Biomedical Engineering, City College of New York, New York, NY

PS – Sat – A – 5

Transport of Antibody and Nanoparticles across an *In Vitro*
 Blood-Brain Barrier

L. ZHANG¹, J. FAN¹, J. M. TARBELL¹, AND B. M. FU¹¹The City College of New York, New York, NY

PS – Sat – A – 6

Traffic of Leukocytes in Microfluidic Channels with Rectangular
 and Rounded Cross-Sections

X. YANG¹, O. FOROUZAN¹, J. M. BURNS¹, AND S. SHEVKOPLYAS¹¹Tulane University, New Orleans, LA

PS – Sat – A – 7

Transendothelial Transport: A Limiting Step in Adiponectin Action?

J. M. RUTKOWSKI¹, AND P. E. SCHERER¹¹UT Southwestern Medical Center, Dallas, TX

PS – Sat – A – 8

Paracrine Effects of VEGF-overexpressing Adipose-derived Stem Cells
 on Endothelial Cells

L. R. DEVEZA¹, J. CHOI¹, G. IMANBAYEV¹, AND F. YANG¹¹Stanford University School of Medicine, Stanford, CA

PS – Sat – A – 9


Intravascular Free Hemoglobin Reduces NO Bioavailability
 in Sickle Cell Disease

P. DEONIKAR¹, AND M. KAVDIA¹¹Wayne State University, Detroit, MIPOSTER
SESSION
SatAPS = Poster Session
OP = Oral Presentation = Credit approved

PS – Sat – A – 10**In Vitro Perfusion of Engineered Microvasculature**K. T. MORIN¹, AND R. T. TRANQUILLO¹¹University of Minnesota, Minneapolis, MN**PS – Sat – A – 11****Ensemble Analysis of Angiogenic Growth in Three-Dimensional Microfluidic Cell Cultures**W. A. FARAHAT¹, L. WOOD¹, I. ZERVANTONAKIS¹, A. SCHORE¹, S. ONG², D. NEAL¹, R. KAMM¹, AND H. ASADA¹¹MIT, Cambridge, MA, ²Singapore-MIT Alliance for Research and Technology, Singapore, Singapore**PS – Sat – A – 12****Development of an Automated Microfluidic Platform for Impedance Analysis of the Endothelium**V. VELASCO¹, K. J. KING¹, AND S. J. WILLIAMS¹¹University of Louisville, Louisville, KY**PS – Sat – A – 13****Coupling between Vascular Structural Remodeling and Local Hemodynamic and Metabolic Stimuli**G. GRUIONU¹¹Indiana University School of Medicine, Indianapolis, IN**Track: Cardiovascular Engineering****Vascular Structure and Function****PS – Sat – A – 14****The Inflammatory Potential of Triglyceride Rich Lipoproteins After a High-Fat Meal Correlates with subject Triglycerides and Waist Size**Y. I. WANG¹, J. SCHULZE¹, N. RAYMOND¹, T. TOMITA¹, K. TAM¹, S. I. SIMON¹, AND A. G. PASSERINI¹¹University of California at Davis, Davis, CA**PS – Sat – A – 15****A Cell-Free System for the Quantification of Platelet Aggregation on Histamine Stimulated Endothelial Cells**T. BROWN¹, AND D. B. KHISMATULLIN¹¹Tulane University, New Orleans, LA**PS – Sat – A – 16****Occurrence and Prevention of Vascular Desiccation During Endoscopic Vessel Harvesting for Coronary Artery Bypass Grafting**D. OTT¹, T. CULCLASURE¹, W. HARTZ², AND D. KAMEH²¹Mercer University, Macon, GA, ²Florida Hospital Nicholson Center for Surgical Advancement, Celebration, FL**PS – Sat – A – 17****Measurement of Vascular Conduit Bioelectrical Impedance of Used for Coronary Artery Bypass: A Comparison of Dry Cold Versus Humidified Warmed Carbon Dioxide.**D. OTT¹, T. CULCLASURE¹, W. HARTZ², AND D. KAMEH²¹Mercer University, Macon, GA, ²Florida Hospital Nicholson Center for Surgical Advancement, Celebration, FL**PS – Sat – A – 18****A Novel Tracing Method Applied to Visible Human Project Cryo Slice Data to Build an Aortic Model.**C. E. TAYLOR¹, AND G. E. MILLER¹¹Virginia Commonwealth University, Richmond, VA**PS – Sat – A – 19****Dietary Lipoproteins Modulate Endothelial VCAM-1 Expression via an IRF-1-Dependent Mechanism**K. ALKHOORY¹, K. TAM¹, C. E. RADECKE¹, A. G. PASSERINI¹, AND S. I. SIMON¹¹UC Davis, Davis, CA**PS – Sat – A – 20****Erythrocyte Flux Distribution is Protected with Microvascular Preconditioning**M. D. FRAME¹, AND A. M. DEWAR¹¹Stony Brook University, Stony Brook, NY**PS – Sat – A – 21****A Whole Field Method for Analyzing Regional Strain in a Murine Model of Vein Graft Intimal Hyperplasia**J. T. FAVREAU¹, P. YU², C. K. OZAKI², AND G. R. GAUDETTE¹¹Worcester Polytechnic Institute, Worcester, MA, ²Brigham and Women's Hospital/Harvard Medical School, Boston, MA**PS – Sat – A – 22****Biomechanical Characterization of Human Ascending Aorta Aneurysm**T. PHAM¹, C. MARTIN¹, L. ONDERE², J. ELEFTERIADES², AND W. SUN¹¹University of Connecticut, Storrs, CT, ²Yale University, New Haven, CT**PS – Sat – A – 23****Collagen Recruitment in the Rabbit Carotid Artery Wall**M. HILL¹, AND A. ROBERTSON¹¹University of Pittsburgh, Pittsburgh, PA**PS – Sat – A – 24****Infected Monocytes Modulate Vessel Wall Microenvironment in Atherosclerosis**S. J. EVANI¹, N. MAREEDU¹, A. K. MURTHY¹, B. P. ARULANANDAM¹, AND A. K. RAMASUBRAMANIAN¹¹University of Texas at San Antonio, San Antonio, TX**Track: Tissue Engineering****Printing and Patterning in Tissue Engineering****PS – Sat – A – 25****3D Multicellular Patterning by Tissue Origami**G. J. YE¹, J.-O. YOU¹, AND D. T. AUGUSTE¹¹Harvard University, Cambridge, MA**PS – Sat – A – 26****Three Dimensional Image Guided Patterning of Hydrogel Scaffolds via Two-Photon Laser Scanning Lithography**J. C. HOFFMANN¹, J. C. CULVER², R. A. POCHÉ², M. E. DICKINSON², AND J. L. WEST¹¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX**PS – Sat – A – 27****Fabrication of an Ex Vivo Hepatic Niche Through Photopatterning of Cell-Laden PEGDA Hydrogels**S. HIGBEE¹, M. CUCHIARA¹, AND J. WEST¹¹Rice University, Houston, TX**PS – Sat – A – 28****Layer-by-Layer Control of Complex Tissue Structure Using Patterned Cell Sheets**C. WILLIAMS¹, A. XIE², M. YAMATO³, T. OKANO³, AND J. Y. WONG²¹Tufts University, Medford, MA, ²Boston University, Boston, MA, ³Tokyo Women's Medical University, Tokyo, Japan**PS – Sat – A – 29****Spatially Printed Electrically Conductive Poly-Pyrrole (PPy) Ultra-Fine Fibers Embedded within 3D Poly-Caprolactone (PCL) Fiber Mesh Scaffolds**S. JAYARAMAN¹¹University of Oklahoma, Norman, OK

PS – Sat – A – 30**Design and Fabrication of Microstructural Heterogeneity in Engineered Tissues Using 3D Printing**K. H. KANG¹, K. YEH¹, L. A. HOCKADAY¹, J. AGARWAL¹, P. Y-C. CHEUNG¹, L. BONASSAR¹, C-C. CHU¹, AND J. T. BUTCHER¹¹Cornell University, Ithaca, NY**PS – Sat – A – 31****Rapid Printing of Vascular Channels for 3D Tissue Culture**J. S. MILLER¹, M. T. YANG¹, B. BAKER¹, D-H. T. NGUYEN¹, R. CHATURVEDI¹, E. TORO¹, D. M. COHEN¹, X. YU¹, AND C. S. CHEN¹¹University of Pennsylvania, Philadelphia, PA**PS – Sat – A – 32****Magnetic Printing for Tissue Engineering**F. XU¹, Y. SUNG¹, T. D. FINLEY¹, C-A. M. WU², AND U. DEMIRCI^{1,2}¹Harvard Medical School, Cambridge, MA, ²Harvard-MIT HST, Cambridge, MA**PS – Sat – A – 33****Engineering Anisotropic Myotubes Using Micropatterned Extracellular Matrix Proteins**Y. SUN^{1,2}, A. LEE¹, AND A. W. FEINBERG¹¹Carnegie Mellon University, Pittsburgh, PA, ²Beihang University, Beijing, China, People's Republic of**PS – Sat – A – 34****Computed Tomography Guided Tissue Engineering of Equine Upper Airway Cartilage**B. N. BROWN¹, N. J. SIEBENLIST¹, J. CHEETHAM¹, J. W. HERMANSON¹, N. G. DUCHARME¹, AND L. J. BONASSAR¹¹Cornell University, Ithaca, NY**PS – Sat – A – 35****Engineering of Multiphase Anisotropic Tissue Structures By Microdroplet Hydrogel Patterning**U. A. GURKAN¹, Y. SUNG¹, F. XU¹, AND U. DEMIRCI^{1,2}¹Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, ²Harvard-MIT Health Sciences and Technology, Cambridge, MA**PS – Sat – A – 36****Construction of Vascular Structure with Fluid Perfusion inside Three-Dimensional Hydrogels using Bio-Printing Technology**V. K. LEE¹, W. LEE², S-S. YOO³, AND G. DAI¹¹Rensselaer Polytechnic Institute, Troy, NY, ²KAIST, Daejeon, Korea, Republic of, ³Harvard Medical School, Boston, MA**PS – Sat – A – 37****Inkjet Printing of Self-Assembling Biopolymer Gels and Cells**P. CALVERT¹, S. LIMEM¹, M. IN HET PANHUIS², D. MCCALLUM², AND D. KAPLAN³¹UMass Dartmouth, N Dartmouth, MA, ²University of Wollongong, Wollongong, Australia, ³Tufts University, Medford, MA**PS – Sat – A – 38****Patterning Bone Formation With Mother of Pearl**R. M. OLABISI¹, M. ROWLAND¹, C. L. FRANCO¹, J. HOFFMANN¹, AND J. L. WEST¹¹Rice University, Houston, TX**PS – Sat – A – 39****Photocrosslinkable Collagen-based Hydrogels for In Situ Material Modification**I. D. GAUDET¹, AND D. I. SHREIBER¹¹Rutgers University, Piscataway, NJ**PS – Sat – A – 40****Three-Dimensional Printing of Collagen Hydrogels for Tissue Engineering**S. Y. RHEE¹, B. N. BROWN¹, AND L. J. BONASSAR¹¹Cornell University, Ithaca, NY**PS – Sat – A – 41****Viability of Microencapsulation of E. coli DHS for Urea Removal Using Inkjet Bio-Printing**Y. SHAN¹, M. MOBED-MIREMADI¹, AND G. SELVADURAY¹¹San Jose State University, San Jose, CA**PS – Sat – A – 42****Influence of Geometry on the Differentiation of C2C12 Myoblasts**P. BAJAJ¹, C. WEI¹, B. REDDY¹, AND R. BASHIR¹¹University of Illinois - Urbana Champaign, Urbana, IL**PS – Sat – A – 43****A Facile Model to Study the Effect of Cellular Microniches on Keratinocyte Localization and Function**A. L. CLEMENT¹, AND G. D. PINS¹¹Worcester Polytechnic Institute, Worcester, MA**PS – Sat – A – 44****Direct-Writing Patterns of Cells Encapsulated in Hydrogel Microbeads**T. B. PHAMDUY¹, N. ABDUL RAOUF², N. R. SCHIELE¹, D. T. CORR¹, Y. XIE², AND D. B. CHRISSEY¹¹Rensselaer Polytechnic Institute, Troy, NY, ²University at Albany, State University of New York, Albany, NY**PS – Sat – A – 45****Using Focused Ultrasound for the Spatiotemporal Control of Gene Expression in Engineered Tissues**C. G. WILSON¹, F. PADILLA², M. ZHANG², N. VILABOA³, O. KRIPFGANS², J. B. FOWLKES², AND R. T. FRANCESCHI¹¹University of Michigan School of Dentistry, Ann Arbor, MI, ²University of Michigan Medical School, Ann Arbor, MI, ³Hospital Universitario La Paz-IdiPAZ & CIBER-BBN, Madrid, Spain**PS – Sat – A – 46****Design of an Immunocompetent Human Skin Model**G. SINGH¹, V. LEE¹, J. TRASATTI¹, G. DAI¹, AND P. KARANDE¹¹RPI, Troy, NY**PS – Sat – A – 47****Optimisation of Polyethylene Glycol Diacrylate Concentration for Rapid Negative Dielectrophoretic Patterning on a Microarray Format**R. ABDALLAT^{1,2}, H. O. FATOYINBO¹, M. P. HUGHES¹, AND F. H. LABEED¹¹University of Surrey, Guildford, Surrey, United Kingdom, ²The Hashemite University, Zarqa, Jordan**PS – Sat – A – 48****Layer-by-Layer Biofabrication using Laser Printing and Electrospinning Enhances Cell Proliferation**S. CATROS¹, A. NANDAKUMAR², S. ZIANE³, L. MORONI², C. VAN BLITTERSWIJK², R. AMEED³, F. GUILLEMOT³, AND J-C. FRICAIN³¹University of Connecticut School of Dental Medicine, Farmington, CT, ²Department of Tissue Regeneration, Twente, Netherlands, ³INSERM, Bordeaux, France**PS – Sat – A – 49****Spatial Patterning of Multiple Cell Types in Multifunctional Hydrogel Environments using Stereolithography**P. ZORLUTUNA¹, J. JEONG¹, H. KONG¹, AND R. BASHIR¹¹University of Illinois at Urbana-Champaign, Urbana, IL**Track: Tissue Engineering****Stem Cells and Tissue Engineering****PS – Sat – A – 50****Effects of Surface Induced Alignment on Human Embryonic Stem Cells and Cardiomyocytes**A. CHEN¹, D. LIEU², R. LI^{3,4}, AND M. KHINE¹¹University of California, Irvine, Irvine, CA, ²University of California, Davis, Davis, CA, ³Mount Sinai School of Medicine, New York, NY, ⁴The University of Hong Kong, Hong Kong, Hong Kong**PS – Sat – A – 51****Engineering the Stem Cell Niche for Hematopoietic Differentiation**D. A-C. TSOUI¹, J. LIU², J. CHU², AND S. LI^{1,2}¹UC Berkeley - UCSF Graduate Program in Bioengineering, Berkeley, CA, ²UC Berkeley, Berkeley, CAPOSTER
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PS – Sat – A – 52**Mesenchymal Stem Cell Chondrogenesis and Coculture with Primary Zonal Chondrocytes**E. E. COATES¹, C. N. RIGGIN¹, AND J. P. FISHER¹¹University of Maryland, College Park, MD**PS – Sat – A – 53****Invasion of Human Adult Stem Cells into Decellularized Tissue Engineered Arteries**T. N. HUYNH¹, S. KREN¹, D. TAYLOR¹, AND R. TRANQUILLO¹¹University of Minnesota, Minneapolis, MN**PS – Sat – A – 54****Engineered Alginate Hydrogels for Selective Capture and Release of Endothelial Progenitor Cells from Blood for Tissue Engineering Applications**A. HATCH¹, AND S. MURTHY¹¹Northeastern University, Boston, MA**PS – Sat – A – 55****Low Oxygen Tension Enhances Endodermal Differentiation of Murine Embryonic Stem Cells**P. PIMTON¹, N. SHETH¹, A. CHOPRA¹, G. JOHANNES¹, A. KATSIR¹, AND P. LELKES¹¹Drexel University, Philadelphia, PA**PS – Sat – A – 56****Modulating Cytoskeletal Tension Regulates the Effects of Hypoxia on Adipogenesis of Mesenchymal Stem Cells**Z. A. SCHILLER¹, AND C. K. KUO¹¹Tufts University, Medford, MA**PS – Sat – A – 57****Induced Pluripotent Stem Cell Derived Functional Smooth Muscle Cells for Vascular Tissue Engineering**. K. BAJPAI¹, AND S. T. ANDREADIS¹¹State University of New York at Buffalo, Amherst, NY**PS – Sat – A – 58****Synthetic Hydrogels for a Feeder-Free Approach to Stem Cell Expansion**L. F. CHARLES¹, S. K. ATZET², T. I. ZAREMBINSKI², AND L. T. KUHN¹¹University of Connecticut Health Center, Farmington, CT, ²Glycosan BioSystems, Salt Lake City, UT**PS – Sat – A – 59****Scalable Production of Islet Cell Progeny From Human Pluripotent Stem Cells For Tissue Engineering**L. T. LOCK¹, Y. FAN¹, J. WU¹, S. G. LAYCHOCK¹, AND E. S. TZANAKAKIS¹¹SUNY-Buffalo, Buffalo, NY**PS – Sat – A – 60****Effects of Various Bone Morphogenetic Proteins on Human Mesenchymal Stem Cell Osteodifferentiation**C. M. CREECY¹, H. TALLA¹, R. GUPTA¹, A. K. MURTHY¹, B. P. ARULANANDAM¹, AND R. BIZIOS¹¹The University of Texas at San Antonio, San Antonio, TX**PS – Sat – A – 61****Effects of Cell Priming on Synovium Derived Stem Cells for Cartilage Tissue Engineering**E. ALEGRE-AGUARON¹, S. R. SAMPAT¹, J. C. BULINSKI¹, AND C. T. HUNG¹¹Columbia University, New York, NY**PS – Sat – A – 62****Effect of Cytokines Associated with Polarized Macrophages on Human Mesenchymal Stem Cells**J. W. KANG¹, D. O. FREYTES¹, AND G. VUNJAK-NOVAKOVIC¹¹Columbia University, New York, NY**PS – Sat – A – 63****Role of Hematopoietic Stem and Progenitor Cell Recruitment in the Resolution of Wound Infection**M-H. KIM¹, J. L. GRANICK¹, N. J. WALKER¹, D. L. BORJESSION¹, F-R. E. CURRY¹, L. S. MILLER², AND S. I. SIMON¹¹UC Davis, Davis, CA, ²UCLA, Los Angeles, CA**PS – Sat – A – 64****Effects of Inflammatory Cytokines on Osteogenesis of Mesenchymal Stem Cells During Mild Heating**K. SUNDERIC¹, J. CHEN¹, AND S. WANG¹¹City College of the City University of New York, New York, NY**PS – Sat – A – 65****Decellularization of Tissue-Engineered Valve Leaflets with Adult Stem Cell Recellularization**Z. SYEDAIN¹, A. BRADEE¹, AND R. TRANQUILLO¹¹University of Minnesota, Minneapolis, MN**PS – Sat – A – 66****Adenoviral Mediated Gene Delivery to Human Umbilical Cord Mesenchymal Stem Cells for Inner Ear Hair Cell Differentiation**K. DEVARAJAN¹, L. M. FORREST¹, H. STAECKER², AND M. S. DETAMORE¹¹University of Kansas, Lawrence, KS, ²University of Kansas, School of Medicine, Kansas City, KS**PS – Sat – A – 67****Real Time Imaging of Reporter Gene Expression in Differentiating Human Mesenchymal Stem Cells**J. F. WELTER¹, L. YUAN¹, S. LIM¹, J. MOLTER¹, L. DUESLER¹, A. I. CAPLAN¹, AND Z. LEE¹¹Case Western Reserve University, Cleveland, OH**PS – Sat – A – 68****Tissue Engineering by *In Situ* Manipulation of Endogenous Stem and Progenitor Cells**A. O. AWOJODOU¹, A. DAS¹, K. R. LYNCH¹, M. J. LAUGHLIN¹, AND E. A. BOTCHWEY¹¹University of Virginia, Charlottesville, VA**PS – Sat – A – 69****Mechanical Strain Modulates the Differentiation of Neural Crest Stem Cells into Smooth Muscle Lineage**X. LI^{1,2}, L. YANG¹, A. WANG², J. S. CHU², Y. ZHU², AND S. LI²¹Chongqing University, Chongqing, China, People's Republic of, ²University of California, Berkeley, Berkeley, CA**PS – Sat – A – 70****Addressing Cardiogenesis via a Multifactorial Strategy: Hypoxia, Extracellular Matrix Cues and Time**R. E. HORTON¹, AND D. T. AUGUSTE¹¹Harvard University, Cambridge, MA**PS – Sat – A – 71****Self-Assembling hADSC Sheets with TGFβ1-loaded Polymer Microspheres for Cartilage Tissue Engineering**P. N. DANG¹, L. D. SOLORIO¹, C. D. DHAMI¹, AND E. ALSBERG¹¹Case Western Reserve University, Cleveland, OH**PS – Sat – A – 72****Antimicrobial Biocompatible Bioscaffolds for Orthopedic Applications**A. T. QURESHI¹, L. TERRELL¹, W. T. MONROE¹, V. DASA², M. E. JANES³, J. GIMBLE⁴, AND D. J. HAYES¹¹Louisiana State University & Agricultural Center, Baton Rouge, LA, ²Louisiana State University Health Science Center, New Orleans, LA, ³Louisiana State University Agricultural Center, Baton Rouge, LA, ⁴Louisiana State University System, Baton Rouge, LA**PS – Sat – A – 73****Analysis of Mesenchymal Stem Cells Between Genders for Therapeutic Applications**O. S. BEANE¹ AND E. M. DARLING¹¹Brown University, Providence, RI

PS – Sat – A – 74**Smart Hydrogels for *In-Situ* Differentiation of Human Embryonic Stem cell into Fully Vascularized Tissue**J. ZOLDAN¹, H. EPSTEIN-BARASH², A. KUSANAGI³, B. CHERTOK¹, A. HAYWARD¹, D. ANDERSON¹, D. KOHANE⁴, AND R. LANGER¹¹MIT, Cambridge, MA, ²Alnylam Pharmaceuticals, Cambridge, MA, ³Shiga University, Otsu City, Japan, ⁴Children's Hospital, Boston, MA**PS – Sat – A – 75****Development of an *In Vitro* Model to Target HIF1-alpha protein in Pancreatic beta Cells to Improve Engraftment in Patients with Type I Diabetes Mellitus**N. I. NATIV¹, T. MAGUIRE¹, N. SHARMA¹, R. A. FOTY², R. SCHLOSS¹, AND M. L. YARMUSH¹¹Rutgers University, Piscataway, NJ, ²UMDNJ, New Brunswick, NJ**PS – Sat – A – 76****Biomimetic Thymic Niche: Controlling Notch and MHC Signaling for T Cell Differentiation**M. KIM¹, J. LIN², T. OOI¹, M. MENDOZA¹, AND K. ROY¹¹University of Texas at Austin, Austin, TX, ²XBiotech, Austin, TX**PS – Sat – A – 77****Prescribed Seeding Conditions Alter Mesenchymal Stem Cell Shape and Fate**J. ZIMMERMANN¹, AND M. KNOTHE TATE¹¹Case Western Reserve University, Cleveland, OH**PS – Sat – A – 78**

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PS – Sat – A – 79**Proliferation and Metabolism of Human Pluripotent Stem Cell Growth on Membrane Substrates**L. RAMEY¹, H. YAO¹, K. YE¹, AND S. JIN¹¹University of Arkansas, Fayetteville, AR**PS – Sat – A – 80****Cyclic Strain and Microtopography Differentially affect Human Mesenchymal Stem Cells**G. DOROUDIAN¹, A. GANG¹, M. CURTIS¹, AND B. RUSSELL¹¹UIC, Chicago, IL**PS – Sat – A – 81****Engineering Neural Tissue by Combining Induced Pluripotent Stem Cells with Fibrin Scaffolds**S. M. WILLERTH¹¹University of Victoria, Victoria, BC, Canada**PS – Sat – A – 82****Neonatal and Adult Mesenchymal Stem Cells for Vascular Tissue Engineering: Effects of Nanog Overexpression on Proliferation and Myogenic Differentiation**J. HAN¹, S. LIU², AND S. T. ANDREADIS^{1,3}¹University at Buffalo, The State University of New York, Amherst, NY, ²Roswell Park Cancer Institute, Buffalo, NY, ³Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY**PS – Sat – A – 83****Proteomic Analysis of Human Mesenchymal Stem Cell Aging during Serial Sub-culture**P. KC¹, J. CHEN¹, AND S. WANG¹¹City College of the City University of New York, New York, NY**PS – Sat – A – 84****Critical Dosage Delivery of Reprogramming Factors for Successful iPSCs Generation**X. WANG¹¹The Ohio State University, Columbus, OH**PS – Sat – A – 85****Study of Age-Dependent Metastatic Versus Normal Lineage Transition of Stem Cells Using Multiplex Polymer Matrix**S. W. CROWDER¹, A. PALMER¹, J. QIAO¹, D. CHUNG¹, AND H.-J. SUNG¹¹Vanderbilt University, Nashville, TN**PS – Sat – A – 86****Thermal Effects on Human Mesenchymal Stem Cell Osteogenesis via a Low-intensity Pulsed Ultrasound (LIPUS) System**J. CHEN¹, A. R. AHMED¹, AND S. WANG¹¹City College of the City University of New York, New York, NY**PS – Sat – A – 87****Retinoic Acid Inhibits BMP4-Induced C3H10T1/2 Cell Commitment to Adipocyte**J. LEE¹, J.-H. PARK¹, AND J. LIM¹¹University of Nebraska-Lincoln, Lincoln, NE**PS – Sat – A – 88****Single-cell Mechanical Properties as an Indicator of Stem Cell Differentiation Potential**V. C. FONSECA¹, R. D. GONZALEZ-CRUZ¹, AND E. M. DARLING¹¹Brown University, Providence, RI**PS – Sat – A – 89****Growth of Kidney Stem Cells on Tissue-Specific Extracellular Matrix**J. O'NEILL¹, D. O. FREYTES¹, J. A. OLIVER¹, AND G. VUNJAK-NOVAKOVIC¹¹Columbia University, New York, NY**PS – Sat – A – 90****Role of Hypoxia in Osteogenic Differentiation of Encapsulated Stem Cells**S. SAHAI¹, D. SULLIVAN¹, A. WILLIAMS¹, AND J. BLANCHETTE¹¹University of South Carolina, Columbia, SC**PS – Sat – A – 91****Selective Capture and Release of Intestinal Progenitor Cells from Digested Rat Tissue**S. H. KEVLAHAN¹, R. L. CARRIER¹, AND S. K. MURTHY¹¹Northeastern University, Boston, MA**PS – Sat – A – 92****Controlling Stem Cell Differentiation Using Micro/Nano-Structured Synthetic Matrices**A. K. JHA¹, Z. TONG¹, S. SANT², A. KHADEMHOSEINI², AND X. JIA¹¹University of Delaware, Newark, DE, ²Harvard Medical School, Boston, MA**PS – Sat – A – 93****Organoid Culture Reproducibly Expands Intestinal Crypts**D. M. FAULK^{1,2}, M. K. FULLER³, S. J. HENNING³, AND M. A. HELMRATH¹¹Cincinnati Children's Hospital Medical Center, Cincinnati, OH, ²University of Pittsburgh, Pittsburgh, ³University of North Carolina at Chapel Hill, Chapel Hill, NC**PS – Sat – A – 94****Engineering Tissue Scaffold Geometries to Deliver Mechanical Signals that Direct Cell Fate**M. SONG¹, D. DEAN¹, AND M. L. KNOTHE TATE¹¹Case Western Reserve University, Cleveland, OH**PS – Sat – A – 95****Evaluation of Non-Viral Gene Delivery Methods on Human Umbilical Cord Mesenchymal Stromal Cells**A. J. MELLOTT¹, Y. LOPEZ², E. TREVINO², K. DEVARAJAN¹, M. L. WEISS², AND M. S. DETAMORE¹¹University of Kansas, Lawrence, KS, ²Kansas State University, Manhattan, KS**PS – Sat – A – 96****A Novel PEG-Fibrin Composite Scaffold to Direct Stem Cell Differentiation**P. B. PATTERSON¹, R. K. KUNTZ WILLITS¹, AND G. ZHANG¹¹University of Akron, Akron, OH

Track:Tissue Engineering**Tissue Engineering and Mechanobiology****PS – Sat – A – 97**

The Enhancement of Lineage Specification of Human Embryonic Stem Cells by 3D Niches

W. WANG¹, S. JIN¹, AND K. YE¹

¹University of Arkansas, Fayetteville, AR

PS – Sat – A – 98

Differentiation and Tensile Elongation of Neural Stem Cells for Neural Tissue Engineering

A. E. WILKINSON¹, L. J. KOBELT¹, AND N. D. LEIPZIG¹

¹The University of Akron, Akron, OH

PS – Sat – A – 99

Biomimetic Boundary Lubricants for Articular Cartilage

K. J. SAMAROO¹, M. TAN¹, R. C. ANDRESEN-EGUILUZ¹, D. GOURDON¹, D. A. PUTNAM¹, AND L. J. BONASSAR¹

¹Cornell University, Ithaca, NY

PS – Sat – A – 100

Strain-stabilization—the Mechanochemistry of Individual Collagen Fibrils

B. P. FLYNN¹, AND J. W. RUBERTI¹

¹Northeastern University, Boston, MA

PS – Sat – A – 101

An Image-Guided Tissue Engineering For Ear Reconstruction Treatment of Pediatric Microtia

S. ZHOU¹, C. CHAN¹, B. BROWN¹, AND L. BONASSAR¹

¹Cornell University, Ithaca, NY

PS – Sat – A – 102

Live, Long-Term, Dynamic Observation of Primary Human Corneal Fibroblast Culture Subjected to Uniaxial Strain

R. ZAREIAN¹, J. A. PATEN¹, S. A. MELOTTI², N. SAEIDI², AND J. W. RUBERTI¹

¹Northeastern University, Boston, MA, ²Harvard Medical School, Boston, MA

PS – Sat – A – 103

In Vitro Simulation of Maternal-to-Fetal Glucose Transfer Using a Tissue Engineered Placental Barrier Model

R. LEVKOVITZ¹, A. JAFFA², Z. GORDON², U. ZARETZKY¹, AND D. ELAD¹

¹Tel Aviv University, Tel Aviv, Israel, ²Lis Maternity Hospital, Tel Aviv, Israel

PS – Sat – A – 104

Mechanotransduction of Osteoblast on Nanofibers:The Influence of Diameter on Zyxin Mechanosensing

D. JAISWAL¹, AND J. L. BROWN¹

¹The Pennsylvania State University, University Park, PA

PS – Sat – A – 105

Trabecular Meshwork Stiffness and Outflow Facility in Ex Vivo Perfused Porcine Eyes

L. J. CAMRAS¹, P. GONZALEZ¹, AND F. YUAN¹

¹Duke University, Durham, NC

PS – Sat – A – 106

Evaluation of Cell-Material Interactions in Response to In Vitro Physiological Shear

C. L. MEANEY^{1,2}, G. T. CARROLL^{1,2}, A. J. CLOONAN^{1,2}, AND T. M. MCGLOUGHLIN^{1,2}

¹Centre for Applied Biomedical Engineering Research (CABER), University of Limerick, Limerick, Ireland, ²Materials and Surface Science Institute, University of Limerick, Limerick, Ireland

PS – Sat – A – 107

Combining Image Analysis with Rheometry for Viscoelastic Characterization of Irregularly Shaped Gels

H. A. CIRKA¹, K. BILLIAR¹, S. A. KOEHLER¹, AND W. FARR²

¹Worcester Polytechnic Institute, Worcester, MA, ²Worcester Polytechnic Institute, Worcester, MD

PS – Sat – A – 108

A Tissue Engineered Model of the Arterial Lining for Shear Stress Studies

D. SHAV¹, R. GOTTLIEB¹, U. ZARETSKY¹, S. EINAV¹, AND D. ELAD¹

¹Tel-Aviv University, Tel Aviv, Israel

Track:Translational Biomedical Engineering**Clinical and Translational Research and Science in Biomedical Engineering****PS – Sat – A – 109**

Synthetic Platelets to Augment Hemostasis in Internal Hemorrhage

A. SHOFFSTALL¹, D. CAMPBELL¹, L. WU¹, K. KELLY², J. USTIN², AND E. LAVIK¹

¹Case Western Reserve University, Cleveland, OH, ²MetroHealth Medical Center, Cleveland, OH

PS – Sat – A – 110

Mammographic Density, ECM Stiffness and Risk to Malignancy in Human Breast

I. ACERBI^{1,2}, A. AU³, J. LOPEZ^{1,2}, Y-Y. CHEN¹, S. HWANG¹, AND V. M. WEAVER^{1,2}

¹University of California, San Francisco, San Francisco, CA, ²Center for Bioengineering and Tissue Regeneration, UCSF, San Francisco, CA, ³Cancer Center, University of California, San Francisco, San Francisco, CA

PS – Sat – A – 111

Biomechanical Characterization of the In Vivo Cornea using Dynamic Imaging during Air Puff Deformation

C. J. ROBERTS¹, A. S. LITSKY¹, A. M. MAHMOUD¹, I. RAMOS², D. CALDAS², R. SIQUEIRA DA SILVA², AND R. AMBRÓSIO, JR.²

¹The Ohio State University, Columbus, OH, ²Instituto de Olhos Renato Ambrósio, Rio de Janeiro, Brazil

PS – Sat – A – 112

Ultrasound Elasticity Measurements of the Brachial Artery for Determining AV Fistula Maturation

A. G. SORACE¹, K. HOYT¹, M. L. ROBBIN¹, C. ABTS¹, M. E. LOCKHART¹, AND M. ALLON¹

¹University of Alabama at Birmingham, Birmingham, AL

PS – Sat – A – 113

Improved Measurements of Autonomic Nerve Activity with a Novel Electrode

A. AKINGBA¹, A. MAHMOOD², M. J-C. SHEN¹, AND P-S. CHEN¹

¹IUPUI, Indianapolis, IN, ²Purdue University, West Lafayette, IN

PS – Sat – A – 114

Finite Element Analysis of Focused Ultrasound Induced Hyperthermia for Mediating Drug Delivery

S. WANG¹, V. ZDERIC¹, AND V. FRENKEL²

¹George Washington University, Washington, DC, ²Catholic University of America, Washington, DC

PS – Sat – A – 115

Bioimpedance Changes in Soft Tissue Under Compression:A Finite-Element Model of the Bipolar Electrosurgical Procedure

R. E. DODDE¹, AND A. J. SHIH¹

¹University of Michigan, Ann Arbor, MI

PS – Sat – A – 116

Modeling the Influence of Stomach Contents on Alcohol Elimination Rate

S. M. KUSANO¹, AND H. C. GABLER¹

¹Virginia Tech-Wake Forest University: School of Biomedical Engineering and Sciences, Blacksburg, VA

PS – Sat – A – 117

CANCELED BY AUTHOR

Track: Translational Biomedical Engineering**Translational Biomedical Engineering: Research to Practice (R2P)****PS – Sat – A – 118****Developing Animal Models to Investigate Pathophysiological Changes Following Burn and/or Sepsis**M. A. ORMAN¹, J. MATTICK¹, M. G. IERAPETRITOU¹, I. P. ANDROULAKIS¹, AND F. BERTHIAUME¹¹Rutgers University, Piscataway, NJ**PS – Sat – A – 119****Integrating Speech Enhancement with Active Hearing Protectors to Improve Communication**E. R. BERNSTEIN¹, A. J. BRAMMER¹, G. YU¹, M. G. CHERNIACK¹, AND D. R. PETERSON¹¹University of Connecticut Health Center, Farmington, CT**PS – Sat – A – 120****Facial Versus Inspiratory Muscles Activity During Breastfeeding**A. RATNOVSKY¹, Y. NADLIN CARMELI², U. ZARETZKY², D. MANDEL³, S. DOLBERG³, AND D. ELAD²¹Afeka, Academic College of Engineering, Tel Aviv, Israel, ²Tel Aviv University, Tel Aviv, Israel, ³Lis Maternity & Dana Children's Hospitals, Tel Aviv, Israel**PS – Sat – A – 121****Development of a Novel Device for the Direct Reversal and Treatment of Cerebral Edema: Enhancing the Survivability of Water Intoxicated Murine**D. W. MCBRIDE¹, M. S. HSU¹, B. H. PARK¹, D. K. BINDER^{1,2}, AND V. G. J. RODGERS¹¹University of California, Riverside, Riverside, CA, ²Southern California Center for Neuroscience and Spine, Chapman Medical Center, Orange County, CA**PS – Sat – A – 122****Using Psychophysical Techniques to Compare Vestibular and Visual Inputs in the Detection of Translational Moves by Seated Subjects**A. W. LAUZON¹, C. J. ROBINSON^{1,2}, X. DONG¹, AND L. L. HAMILTON¹¹Clarkson University, Potsdam, NY, ²Syracuse VA Medical Center, Syracuse, NY**PS – Sat – A – 123****Reducing Biomechanical Exposures to Dental Professionals by Translating Lab and Clinical Research into Practice**T. ASAKI¹, AND D. R. PETERSON¹¹University of Connecticut Health Center, Farmington, CT**PS – Sat – A – 124****Deflection Measurement System for the Hybrid III Six-Year-Old Biofidelic Abdomen**T. S. GREGORY¹, M. K. HOWES¹, W. N. HARDY¹, A. M. ELHAGEDIAB², AND S. W. ROUHANA³¹Virginia Tech, Blacksburg, VA, ²Safety Technology and Research Systems, Inc, Dearborn, MI, ³Ford Motor Company, Dearborn, MI**Track: Translational Biomedical Engineering****The Translational Triad: Clinical, Industrial, and Academic Collaboration****PS – Sat – A – 125****Co-localization of Her2/neu, ER, PR, Ki67, and Cytokeratin on a Triple Positive Breast Cancer Patient**Z. PANG¹, J. ZUBOVITS², K. SHAIKH¹, D. WANG², A. CORWIN¹, G. CLARKE², S. DINN¹, R. FILKINS¹, AND M. J. YAFFE^{2,3}¹GE Global Research, Niskayuna, NY, ²Sunnybrook Health Sciences Centre, Toronto, ON, Canada, ³University of Toronto, Toronto, ON, Canada**PS – Sat – A – 126****A Low-Cost 3D Ultrasound System for Imaging of the Brachial Plexus for Regional Anesthesia**O. BIGDELI¹, M. GOLDEN¹, K. B. MUNIR¹, T. AMAREL², J. YOST², AND J. H. MCISAAC³¹University of Connecticut, Storrs, CT, ²Hartford Hospital, Hartford, CT, ³Univ. of CT/Hartford Hospital, Avon, CT**Track: Biomedical Engineering Education and Outreach****UNDERGRADUATE POSTERS****Biomedical Engineering Education****PS – Sat – A – 126****Design of a Humidity Regulator System for X-ray Scattering**P. GHALI¹, AND L. YANG²¹New York Institute of Technology, New York, NY, ²Brookhaven National Laboratory, Upton, NY**PS – Sat – A – 127****Frequency Analysis of the Esophagus Motility**P. HAJHOSSEINI^{1,2}, A. HOSSEINI-SIANAKI³, M. NIKKHOO^{4,5}, AND S. JAFARIAN-KERMAN⁶¹Azad University Central Tehran Branch, Tehran, Iran, ²Central Tehran Society of Mechanical Engineers, Tehran, Iran, ³Islamic Azad University Central Tehran Branch, Tehran, Iran, ⁴Iran University of Science and Technology, Tehran, Iran, ⁵Islamic Azad University Central Tehran Branch, Tehran, Iran, ⁶Tehran University of Medical Sciences, Tehran, Iran**Track: Biomedical Imaging and Optics****UNDERGRADUATE POSTERS****Biomedical Imaging & Optics****PS – Sat – A – 128****Effect of Particle Diameter on Uptake of Polymeric ICG Loaded Nanocapsules by Human Spleen Macrophages In-Vitro**J. C. TANG¹, B. BAHMANI¹, J. T. CROVISIER¹, S. GUPTA¹, AND B. ANVARI¹¹UC Riverside, Riverside, CA**PS – Sat – A – 129****Volumetric Imaging of Epithelial Tissue via Chromatic Dispersion Confocal Microscopy**O. CARRASCO-ZEVALLOS¹, C. OLSOVSKY¹, R. SHELTON¹, M. SALDUA¹, K. MAITLAND¹, AND B. APPLGATE¹¹Texas A&M, College Station, TX**PS – Sat – A – 130****Multiphoton and Fluorescence Lifetime Imaging of Cleared Mouse Organs**S. VESUNA¹, S. PARRA¹, T. A. MURRAY¹, AND M. LEVENE¹¹Yale University, New Haven, CT**PS – Sat – A – 131****Quantifying Dynamic Changes of Ocular Surface Temperature in Dry Eye Patients**B. W. DIXON¹¹University of Rochester, Rochester, NYPOSTER
SESSION

SatA

PS = Poster Session
OP = Oral Presentation

CME = Credit approved

PS – Sat – A – 132**Fluorescence Imaging of Nanoparticles in Optical Confinement**M. A. GOLEB¹, AND M. LIM²¹Lehigh University, Bethlehem, PA, ²Carleton College, Northfield, MN**PS – Sat – A – 133****Effect of ICG Concentration on Fluorescence Quantum Yield of Polymeric Optical Nanoparticles**J. T. CROVISIER¹, B. BAHMANI¹, K. THENKONDAR¹, S. GUPTA¹, V. VULLEV¹, AND B. ANVARI¹¹University of California, Riverside, Riverside, CA**PS – Sat – A – 134****Trapping and Imaging of Ciliated Organisms in Mirrored Pyramidal Micro-wells**K. QIN¹, AND C. JANETOPOULOS¹¹Vanderbilt University, Nashville, TN**PS – Sat – A – 135****FCS Detection Sensitivity Improvement for Nanoparticle Counting**P. SOTO¹, Y. HU¹, AND X. CHENG¹¹Lehigh University, Bethlehem, PA**PS – Sat – A – 136****3T3 Fibroblasts Solving Mazes In Response To Growth Factor Concentration**A. DESAI¹, K. WALL¹, AND D. DEAN¹¹Clemson University, Clemson, SC**PS – Sat – A – 137****Developing Molecularly Targeted Fluorescent Contrast Agents for Microscopic Image-guided Resection of Medulloblastoma**Y. CHEN¹, D. WANG¹, S. Y. LEIGH¹, F. V. COCHRAN², H. HAEBERLE², C. H. CONTAG², AND J. T. LIU¹¹SUNY Stony Brook University, Stony Brook, NY, ²Stanford University, Stanford, CA**PS – Sat – A – 138****Use of Linear Motion Control to Increase the Scan Rate and Accuracy of a Hand-held Ultrasound Device**A. I. NAWROJ¹, AND S. SHRESTHA¹¹Lafayette College, Easton, PA**PS – Sat – A – 139****Imprinting Multilayer X-ray Grating Structures onto an Epoxy Substrate**L. WILES¹, S. K. LYNCH², N. Y. MORGAN³, AND H. H. WEN²¹Clemson University, Clemson, ²NIH/NHLBI, Bethesda, MD, ³NIH/NIBIB, Bethesda, MD**PS – Sat – A – 140****Algorithm for Determining the Length of Fluorescent Bead Movement Trails**J. S. ROTTMAN-YANG¹, C. MCNEW¹, AND E. LEBOEUF¹¹Vanderbilt University, Nashville, TN**PS – Sat – A – 141****Feasibility Evaluation of A Novel Ultrasonic Method For Prosthetic Control**I. A. HUNT¹, A. J. NELSON¹, A. AL-IMRAN¹, J. J. PANCRAZIO¹, AND S. SIKDAR¹¹George Mason University, Fairfax, VA**PS – Sat – A – 142****Effects of Drastic Changes in Hematocrit in Blood Velocity Profiles in Arterioles *In Vivo***C-Y. LEE¹, S. RANU¹, O. YALCIN¹, M. JIVANI¹, P. JOHNSON¹, AND P. CABRALES¹¹University of California, San Diego, La Jolla, CA**PS – Sat – A – 143****Understanding Dynamics of Oxygenation and Blood Flow in the Upper Trapezius Muscle During Exercise**K. N. MULPURI^{1,2}, N. S. HUSSEIN¹, A. ERANKI¹, AND S. SIKDAR¹¹George Mason University, Fairfax, VA, ²Dartmouth College, Hanover, NH**PS – Sat – A – 144****Waveguide-based Lensless Fluorescence Microscopy for Wide-Field On-Chip Imaging**D. G. HERMAN¹, Y. SUH¹, A. F. COSKUN¹, I. SENCAN¹, T-W. SU¹, AND A. OZCAN¹¹University of California, Los Angeles, Los Angeles, CA**PS – Sat – A – 145****Characterizing Light Polarization Effects Through Corneal Tissue Using Lasers**N. WOOLSEY¹, I. ILEV², AND W. CALHOUN²¹University of Connecticut, Storrs, CT, ²CDRH, FDA, Silver Spring, MD**PS – Sat – A – 146****Individualized Radiation Dose Calculation for PET and Current-Modulated CT**J. FAZIO¹, AND R. MAASS-MORENO²¹Western New England College, Springfield, MA, ²National Institutes of Health, Bethesda, MD**PS – Sat – A – 147****Effect of Sterculic Acid on Neovessel Regression in a Laser-Induced CNV Model**S. MATTESSICH^{1,2}, I. R. RODRIGUEZ³, AND J. AMARAL³¹Worcester Polytechnic Institute, Worcester, MA, ²National Institute of Biomedical Imaging and Bioengineering, Bethesda, MD, ³National Eye Institute, Bethesda, MD**PS – Sat – A – 148****Dye-Doped Silica Nanoparticles**M. M. SIDRAN¹, J. BLUMLING², AND G. A. SILVA²¹Carnegie Mellon University, Pittsburgh, PA, ²University of California, San Diego, La Jolla, CA**PS – Sat – A – 149****Design of Viral Based Optical Nanoparticles for Maximal Fluorescence Quantum Yield**G. ICO¹, P. MATSUMURA¹, S. GUPTA¹, A. RAO¹ AND B. ANVARI¹¹University of California, Riverside, Riverside, CA**PS – Sat – A – 150****Visualization of Functional Near Infrared Spectroscopy Data on 3D Brain Model**S. HANDA^{1,2}, H. AYAZI¹, A. CURTIN¹, P. A. SHEWOKIS¹, AND B. ONARAL¹¹Drexel University, Philadelphia, PA, ²Netaji Subhas Institute of Technology, New Delhi, India**PS – Sat – A – 151****Analysis of Mechanical Properties of Individual Cells Using Acousto-optical Methods**R. ISTFAN¹, O. A'AMAR¹, AND I. BIGIO¹¹Boston University, Boston, MA**Track: Cardiovascular Engineering****UNDERGRADUATE POSTERS****Cardiovascular Engineering****PS – Sat – A – 152****Microbioreactor for Controlled Oxygen and Shear Stress Environments in Endothelial Cell Cultures**R. SOMAN¹, E. ABACI¹, Q. SMITH^{1,2}, AND S. GERECHT¹¹Johns Hopkins University, Baltimore, MD, ²University of New Mexico, Albuquerque, NM**PS – Sat – A – 153****The Effects of Infarcted Cardiac Extracellular Environment on MSC Growth and Differentiation**K. M. TANG¹, J. I. RESNIKOFF¹, AND L. D. BLACK¹¹Tufts University, Medford, MA

PS – Sat – A – 154**Comparison of Morphological Characteristics Between Normal and Diseased Coronary Arteries**S. E. DEWITT¹, A. L. FRATINO¹, AND S. HYUN¹¹Mercer University, Macon, GA**PS – Sat – A – 155****A Dynamic Model of Calcific Atherosclerotic Plaque Destabilization in Response to Monocytes- and Oxidized Lipids-Induced Matrix Metalloproteinases**D. R. MITTELSTEIN¹¹University of Southern California, Los Angeles, CA**PS – Sat – A – 156****Biomechanics of Early S-Looping**K. T. CHICO¹, AND A. RAMASUBRAMANIAN¹¹Union College, Schenectady, NY**PS – Sat – A – 157****PLGA Density Effects on Carbon Nanofiber Composites for Myocardial Tissue Engineering Applications**A. N. SANTIAGO-MIRANDA¹, D. A. STOUT², AND T. J. WEBSTER²¹University of Puerto Rico, Mayagüez, PR, ²Brown University, Providence, RI**PS – Sat – A – 158****Spatial Variation in Cellular Composition of Intraluminal Thrombus from Abdominal Aortic Aneurysms**M. P. SCANLON¹, J. RAO¹, D. A. VORP¹, AND M. NAIR¹¹University of Pittsburgh, Pittsburgh, PA**PS – Sat – A – 159****Design, Fabrication, and Testing of a Microfluidic Device to Control Cell Culture Microenvironment**Q. B. SMITH¹, H. E. ABACI², G. DRAZER², AND S. GERECHT²¹University of New Mexico, Albuquerque, NM, ²Johns Hopkins, Baltimore, MD**PS – Sat – A – 160****Platelet Sensing of Microenvironmental Geometry Guides Adhesion and Spreading**A. KITA^{1,2}, R. ROUNDSEVELL², T. SEOK², K. YU², J. HUANG³, M. WU², D. FLETCHER², AND W. LAM^{1,4}¹Georgia Institute of Technology and Emory University, Atlanta, GA, ²University of California, Berkeley, Berkeley, CA, ³University of California, San Francisco, San Francisco, CA, ⁴Children's Healthcare of Atlanta and Emory University School of Medicine, Atlanta, GA**PS – Sat – A – 161****Murray's Law: Wildtype and Eln^{-/-} Mice**D. J. HAGEMAN¹, AND J. WAGENSEIL²¹Case Western Reserve University, Cleveland, OH, ²Saint Louis University, Saint Louis, MO**PS – Sat – A – 162****Proline Analog Limits Hypertension and Right Ventricular Hypertrophy in Response to Chronic Hypoxia**D. A. SCHREIER¹, N. CHESLER¹, AND T. HACKER¹¹University of Wisconsin - Madison, Madison, WI**PS – Sat – A – 163****Disturbed Flow Downregulates Endothelial Thrombomodulin**V. PRASAD¹, J. M. JIMÉNEZ¹, AND P. F. DAVIES¹¹University of Pennsylvania, Philadelphia, PA**PS – Sat – A – 164****Cardiovascular Responses to Cocaine are Mediated by the CNS in Conscious Rats**L. J. YOUNGS¹, AND M. M. KNUEPFER²¹Milwaukee School of Engineering, Milwaukee, WI, ²St. Louis University, St. Louis, MO**PS – Sat – A – 165****Thermomechanical Properties of Branching Chordae Tendinae**B. WILKES¹, AND S. M. WELLS¹¹Dalhousie University, Halifax, NS, Canada**PS – Sat – A – 166****Immunofluorescence to Locate alpha I- and beta2-adrenergic Receptors in Small Arterioles**M. BALL^{1,2}, A. BALDWIN¹, A. DEWAR¹, AND M. D. FRAME¹¹Stony Brook University, Stony Brook, NY, ²University of New Hampshire, Durham, NH**PS – Sat – A – 167****Generalized Pressure Model of the Rabbit Left Ventricle**A. MARCHIDAN¹, R. L. ZUKUS¹, AND J. L. PALLADINO¹¹Trinity College, Hartford, CT**PS – Sat – A – 168****Design of a Hydrodynamic Testing System for SPAC Technique-Based Valve Study**C. GAO¹, AND J. YEO²¹University of Virginia, Charlottesville, VA, ²Nanyang Technological University, Singapore, Singapore**PS – Sat – A – 169****Mouse Embryonic Stem Cell-Derived Vascular Cells Characteristics and Sub Phenotypes**R. HATANO¹, D. E. GLASER¹, AND K. E. MCCLOSKEY¹¹University of California Merced, Merced, CA**PS – Sat – A – 170****Development of a Novel Blood Analog with Physiological Shear-Thinning and Viscosity Characteristics**S. J. WARREN¹, C. E. TAYLOR¹, AND G. E. MILLER¹¹Virginia Commonwealth Univ, Richmond, VA**PS – Sat – A – 171****Tumor Cell Arrest at Blood Vessel Intersections in Rat Mesentery**D. SHIN¹, P. GUO², B. CAI², AND B. M. FU²¹The City College of New York, Jericho, NY, ²The City College of New York, New York, NY**PS – Sat – A – 172****Atmospheric Pressure Plasma Induced Cell Cycle Arrest in Human Aortic Endothelial Cells**B. GWEON¹, H. KIM¹, W. CHOE¹, AND J. H. SHIN¹¹Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of**Track: Cellular and Molecular Engineering****UNDERGRADUATE POSTERS****Cellular & Molecular Engineering****PS – Sat – A – 173****Cellular Remodeling Under Chronic Oxidative Stress via Long Term, Low Level Application of Reactive Oxygen Species**W. NI¹, AND M. L. KEMP¹¹Georgia Institute of Technology, Atlanta, GA**PS – Sat – A – 174****Investigating TNF- α Regulation of mTOR via IKK-dependent Pathways**D. MITRA¹, AND M. L. KEMP¹¹Georgia Institute of Technology, Atlanta, GA**PS – Sat – A – 175****Impact of Adhesion on Mesenchymal Stem Cell Retention in Lung Microvasculature following Systemic Infusion**J. P. RUIZ^{1,2}, J. PHILLIPS², D. SARKAR², R. SRIDHARAN², S. KUMAR², L. ZHANG², W. ZHAO², H. CHEN², A. CARLSON², C. LIN², AND J. KARP²¹University of Miami, Coral Gables, FL, ²Harvard Medical School, Cambridge, MA

PS – Sat – A – 176**Ultra-low Glucose, High Glucose, and Glycated Collagen Alters Endothelial Cell Adhesion**S. M. CICALESE¹, S. F. KEMENY¹, AND A. M. CLYNE¹¹Drexel University, Philadelphia, PA**PS – Sat – A – 177****Effects of Substoichiometric Taxol Concentrations on Microtubule Dynamics**A. K. GADOK¹, S. MCCUBBIN¹, AND A. J. HUNT¹¹University of Michigan, Ann Arbor, MI**PS – Sat – A – 178****Hydrogen Sulfide-releasing Aspirin Inhibits the Growth of Colon Cancer Cells and Induces the Phase II Enzyme NQO1**T. C. LE¹¹New York Institute of Technology, New York, NY**PS – Sat – A – 179****Investigating Breast Cancer Metastatic Site Preference Utilizing Engineered Metastatic Microenvironments**E. DANDLEY¹, S. RUDINA², S. ALFORD², AND S. PEYTON¹¹University of Massachusetts, Amherst, Amherst, MA, ²Massachusetts Institute of Technology, Boston, MA**PS – Sat – A – 180****The Effect of Nucleotide Binding Pocket Geometry and Rigidity on Nucleotide Selectivity of RB69 DNA Polymerase**O. ZAYYAD¹, AND W. KONIGSBERG¹¹Yale University, New Haven, CT**PS – Sat – A – 181****Biophysical Effects of Extracellular Matrix on Matrix Modeling and Microvascular Network Formation**R. LIU^{1,2}, L. K. PARK², AND A. L. SARANG-SIEMINSKI²¹University of Pennsylvania, Philadelphia, PA, ²Franklin W. Olin College of Engineering, Needham, MA**PS – Sat – A – 182****A Study on the Cytotoxicity of Silver Nanoparticles using a Supported Lipid Bilayer**S. L. BARRENA¹, S. M. D'ANGELO², AND T. A. CAMESANO²¹University of Rhode Island, Kingston, RI, ²Worcester Polytechnic Institute, Worcester, MA**PS – Sat – A – 183****Nano Surface Modification of Intraocular Lenses to Promote Mucin and Lubricin Adhesion**D. HALL¹, G. E. ANINWENE¹, AND T. J. WEBSTER¹¹Brown University, Providence, RI**PS – Sat – A – 184****Molecular Modification of Non-steroidal Anti-inflammatory Drug (NSAID) Structure for Enhanced Anti-cancer Activity**A. S. HAQ¹, K. MUNAWAR¹, N. NATH¹ AND M. CHATTOPADHYAY²¹New York Institute of Technology, New York, NY, ²City University of New York Medical School, New York, NY**PS – Sat – A – 185****STING Dimerization and Relocation is Critical for Innate Immune Sensing of Cyclic Dinucleotides**H. TAM¹, K. SOTELO-TROHA², D. L. BURDETTE², AND R. E. VANCE²¹Rose Hulman Institute of Technology, Terre Haute, IN, ²University of California, Berkeley, Berkeley, CA**PS – Sat – A – 186****A High-throughput Assay for Endogenous MAPK-specific Phosphatase Activity**A. K. BOSE¹, AND K. A. JANES¹¹University of Virginia, Charlottesville, VA**PS – Sat – A – 187****Atherosclerotic Plaque Rupture and Thrombosis Formation: An Investigation Using Agent-Based Modeling Approach**H. KARIM¹, AND L. ZHOU¹¹University of Pittsburgh, Pittsburgh, PA**PS – Sat – A – 188****Effect of Embryoid Body Size on Differentiation of iPS Cells into Neuroectodermal-Lineage Ocular Cells**O. A. CREASEY^{1,2}, A. MUNIZ³, M. L. PLAMPER³, AND H-C. H. WANG³¹Pittsburgh Tissue Engineering Initiative, Pittsburgh, PA, ²University of Pittsburgh, Pittsburgh, PA, ³US Army Institute of Surgical Research, San Antonio, TX**PS – Sat – A – 189****Assessment of Procoagulant Characteristics of THP-1 Derived Microparticles**M. CALT¹, R. LAMBA¹, AND C. L. HALL¹¹The College of New Jersey, Ewing, NJ**PS – Sat – A – 190****The Role of RASSF1A in Apoptosis of T Lymphocytes**J. BURGER¹, J. PERERA¹, S. AZNAVOORIAN-CHESHIRE¹, AND J. C. PRATT¹¹Franklin W. Olin College of Engineering, Needham, MA**PS – Sat – A – 191****Control of Stem Cell Differentiation using Small Molecule Drug**J. E. ANDERSON¹, J. A. OSTROWSKI¹, E. BORDT¹, J. D. PIGANELLI², AND B. M. DEASY¹¹University of Pittsburgh, Pittsburgh, PA, ²University of Pittsburgh School of Medicine, Pittsburgh, PA**PS – Sat – A – 192****Confidence Intervals in Fluorescence Fluctuation Analysis**X. RONG¹, K. M. PRYSE¹, J. WHISLER¹, A. MELNYKOV¹, W. B. MCCONNAUGHEY¹, G. M. GENIN¹, AND E. L. ELSON¹¹Washington University in St. Louis, St. Louis, MO**PS – Sat – A – 193****AFM Adhesion Mapping Suggests Human Erythrocytes to be More Hydrophobic than Chimpanzee Erythrocytes**S. S. SHROFF¹, L. DAVIES², F. T. ARCE², S. RAMACHANDRAN², A. VARKI², AND R. LAL²¹University of Pittsburgh, Pittsburgh, PA, ²University of California, San Diego, La Jolla, CA**PS – Sat – A – 194****Determining the Transient Electrostatic Properties of Endothelial and Mucosal Cells Using Normal Streaming Potential Measurements**N. BANSAL¹, P. VANDRANGI¹, P. JREIJ¹, T. RAJAPAKSA¹, D. D. LO¹, AND V. G. RODGERS¹¹University of California, Riverside, Riverside, CA**PS – Sat – A – 195****Effects of Various Collagen Concentrations on Hydrogel Mechanical Properties and Cell Functions**K. L. LOVELADY¹, J. D. RUIZ¹, T. T. YUAN¹, AND R. BIZIOS¹¹University of Texas at San Antonio, San Antonio, TX**PS – Sat – A – 196****Enhancing β Islet Engraftment in Type I Diabetes via Hypoxia-Mediated HIF1 α Pathway Regulation**M. TADDESSE¹, N. NATIV¹, R. SCHLOSS¹, AND M. YARMUSH¹¹Rutgers University, Piscataway, NJ**PS – Sat – A – 197****The Effects of Stiffness and TGF- β on Fibroblast Cells in a 3D Micro-Environment**K. FINDLEY¹, M. KURAL², AND K. BILLIAR²¹Vanderbilt University, Nashville, TN, ²Worcester Polytechnic Institute, Worcester, MA

Track: Devices: Nano to Micro UNDERGRADUATE POSTERS

Devices: Nano to Micro

PS – Sat – B – 1

Extending the Shelf-Life of PCR Mixtures for Lab-on-a-Chip Applications

S. E. HAYWOOD¹, AND N. CREWS¹

¹Louisiana Tech University, Ruston, LA

PS – Sat – B – 2

Study of the Fundamental Chemical and Physical Interactions Between Advanced Nanoparticles

A. WASHISPACK¹, A. SAMANT¹, AND A. MALSHE¹

¹University of Arkansas, Fayetteville, AR

PS – Sat – B – 3

"Proximity Activated" Smart Nanoparticle for the Delivery of siRNA to Metastatic Tumor Cells

T. WERFEL¹, H. LI², C. NELSON², AND C. DUVAL²

¹Murray State University, Murray, KY, ²Vanderbilt University, Nashville, TN

PS – Sat – B – 4

Synthesis of Oxidized Alginate Microbeads

J. UNGERLEIDER^{1,2}, O. KHANNA², AND E. M. BREY²

¹University of Virginia, Charlottesville, VA, ²Illinois Institute of Technology, Chicago, IL

PS – Sat – B – 5

Magnetic Nanoparticles Coated with Antibiotics to Treat Bacterial Infections on Medical Implants

T. TSENG¹, K. LEUBA², E. TAYLOR², AND T. WEBSTER²

¹Duke University, Durham, NC, ²Brown University, Providence, RI

PS – Sat – B – 6

Towards Designing a Muco-Specific Platform for the Treatment of *Helicobacter Pylori*

Y. CHAUHAN¹, E. QUIJANO¹, AND T. FAHMY²

¹Yale University, New Haven, CT, ²Yale School of Engineering and Applied Sciences, New Haven, CT

PS – Sat – B – 7

Capture of Circulating Tumor Cells Using a Microfluidic Chip with Wavy Surface

D. DEPIETRO¹, Y. LIU¹, S. YANG², C-M. CHEN², A. THOMAS¹, AND X. CHENG¹

¹Lehigh University, Bethlehem, PA, ²University of Pennsylvania, Philadelphia, PA

PS – Sat – B – 8

A Comparative Analysis of Quantum Dots to Fluorescent Dyes in a Microfluidic Immunoassay Device

I. JOHNSTON¹, R. GUPTA¹, AND J. ZAHN¹

¹Rutgers University, Piscataway, NJ

PS – Sat – B – 9

Analysis of 3D Bubble Dynamics Relevant to Cell Manipulation in Microfluidics

D. K. PIECH¹, G. N. SANKIN¹, AND P. ZHONG¹

¹Duke University, Durham, NC

PS – Sat – B – 10

Functionalization of Gold Nanorods with Thermoresponsive PolyNIPAAm to Improve Photothermal Ablation

T. A. MEYER¹, J. W. STONE², AND C. L. DUVAL¹

¹Vanderbilt University, Nashville, TN, ²Armstrong Atlantic State University, Savannah, GA

PS – Sat – B – 11

Design and Fabrication of a Continuous Microfluidic Formulator Device

W. J. MATLOFF¹, K. SEALE¹, AND J. WIKSWO¹

¹Vanderbilt University, Nashville, TN

PS – Sat – B – 12

Microwave Absorption and Surface Enhanced Raman Scattering in Silver Nanoparticles

S. SCHRAER¹, M. FIGUEROA², K. POURREZAEI², AND S. TYAGI²

¹Villanova University, Villanova, PA, ²Drexel University, Philadelphia, PA

PS – Sat – B – 13

Design and Calibration of a Microfluidics-Based Viscometer

S. BRAY¹, S. CHO¹, A. ZHANG¹, AND E. SALDIVAR¹

¹West Wireless Health Institute, La Jolla, CA

PS – Sat – B – 14

Microrocket-Enabled Capture and Isolation of Pancreatic Cancer Cells

D. KANG¹, D. KAGAN¹, S. BALASUBRAMANIAN¹, AND J. WANG¹

¹University of California, San Diego, La Jolla, CA

PS – Sat – B – 15

Ratiometric Optofluidic Device for Glucose Monitoring

A. VAN¹, AND D. HENTHORN²

¹Texas A&M, College Station, TX, ²Saint Louis University, Saint Louis, MO

PS – Sat – B – 16

Microdevice for the Examination of Cells at Varying Oxygen Tensions

J. STUKEL¹, L. VANDIVER¹, AND D. HENTHORN¹

¹Saint Louis University, Saint Louis, MO

PS – Sat – B – 17

Lab-On-A-Chip Detection of 1,5 Anhydroglucitol in Whole Blood

B. MINDEN-BIRKENMAIER¹, AND D. HENTHORN¹

¹Saint Louis University, Saint Louis, MO

PS – Sat – B – 18

A Modular, Portable and Electrically-Independent Flash Sterilizer

J. C-H. LIEN¹, H. CHIEN¹, J. M. SOSA¹, AND M. J. ALTENBERG¹

¹Tulane University, New Orleans, LA

PS – Sat – B – 19

Modification of PerMX Substrate Materials for Enhanced Biocompatibility

E. KREIENKAMP¹, G. ESPINOSA¹, M. TULLEY¹, AND D. HENTHORN¹

¹Saint Louis University, Saint Louis, MO

PS – Sat – B – 20

Quorum Sensing Based Actuation Regulation For Bacteria-Powered MicroRobots (BacteriaBots)

M. A. CANTER¹, A. SAHARI¹, C. GILBERT¹, B. SCHARF¹, AND B. BEHKAM¹

¹Virginia Tech, Blacksburg, VA

Track: Drug Delivery Systems

UNDERGRADUATE POSTERS

Drug Delivery Systems

PS – Sat – B – 21

Thermo-Sensitive Gels with Heatable Nanoparticles for Dual Hyperthermia and Drug Delivery Systems

D. Y. PENG¹, H. JANS², J. TREKKER², A. D'HOLLANDER², L. LAGAE², AND J. J. GREEN³

¹Johns Hopkins University, Baltimore, MD, ²IMEC, Leuven, Belgium, ³Johns Hopkins University School of Medicine, Baltimore, MD

PS – Sat – B – 22

Polymer Micelles for Combination Delivery of Iron Oxide and Doxorubicin to Cancer Tumors

Y. E. BEABOUT^{1,2}

¹University of Kentucky, Lexington, KY, ²University of Southern Indiana, Evansville, IN

PS – Sat – B –23**The Effect of the Application of Ultrasound on the Hydraulic Conductivity of a Porous Medium**R. KHULLAR¹, W. L. OLBRICHT¹, AND G. K. LEWIS¹¹Cornell University, Ithaca, NY**PS – Sat – B –24****Ultrasound Enhanced Transdermal Drug Delivery from Engineered Hydrogel Discs**J. S.-J. DENG¹, AND L. LAVROV¹¹Cornell University, Ithaca, NY**PS – Sat – B –25****Chitosan/Interleukin-12 Neoadjuvant Therapy for Control of Breast Cancer Metastasis**J. VO¹, AND D. A. ZAHAROFF¹¹University of Arkansas, Fayetteville, AR**PS – Sat – B –26****Thermally-Responsive Depots for Local Delivery of Anti-Inflammatory Drugs to Treat IVD Pathologies**D. QU¹, S. M. SINCLAIR¹, D. L. NETTLES¹, AND L. A. SETTON^{1,2}¹Duke University, Department of Biomedical Engineering, Durham, NC, ²Duke University, Department of Surgery, Division of Orthopaedic Surgery, Durham, NC**PS – Sat – B –27****Synergistic Drug Combinations for Cancer Therapy Research**K. KEITH¹, M. COLLIER¹, R. LEWIS¹, W. GORDON¹, T. MOORE¹, AND F. ALEXIS¹¹Clemson University, Clemson, SC**PS – Sat – B –28****Gold-decorated Vehicles for Application in Targeted Photo-triggered Drug Release**M. DZURICKY¹, A. SEN GUPTA¹, C. MODERY¹, G. KAUR², AND T. NAVRAN³¹Case Western Reserve University, Cleveland, OH, ²Hathaway Brown, Cleveland, OH, ³Solon High School, Solon, OH**PS – Sat – B –29****Bacteriophages and Magnetic Nanoparticles as a Therapy for Bacterial Infection on Implants**K. D. LEUBA¹, E. N. TAYLOR¹, AND T. J. WEBSTER¹¹Brown University, Providence, RI**PS – Sat – B –30****Cyclodextrin-based Delivery of Paclitaxel for AV Fistulae Failure**A. M. DEDE^{1,2}¹Worcester Polytechnic Institute, Worcester, MA, ²Case Western Reserve University, Cleveland, OH**PS – Sat – B –31****Polyelectrolyte Multilayer Mediated Gene Therapy for Modulating the Brain Foreign Body Response**A. J. SAWYER¹, S. CORREA¹, AND T. R. KYRIAKIDES¹¹Yale University, New Haven, CT**PS – Sat – B –32****Sustained Release of Moxifloxacin from PLGA-Based Microparticles Encapsulated in Bioadhesives**A. H. ALY¹, Q. GUO¹, O. SCHEIN¹, AND J. ELISSEFF¹¹Johns Hopkins University, Baltimore, MD**PS – Sat – B –33****Release of Antibiotics from Affinity-Based Cyclodextrin Hydrogels Using Molecular Imprinting**D. JURIC¹, T. THATIPARTI¹, AND H. VON RECUM¹¹Case Western Reserve University, Cleveland, OH**PS – Sat – B –34****Creation of a Mammalian Promoter Library for Identification of Cell-specific DNA Nuclear Targeting Sequences**T. KOBEE¹, L. GOTTFRIED¹, AND D. DEAN¹¹University of Rochester, Rochester, NY**PS – Sat – B –35****Efficient Encapsulation and Controlled Release of siRNA Using pH-Sensitive Nanocarriers**T. T. HO¹, J.-O. YOU¹, AND D. AUGUSTE¹¹Harvard University, Cambridge, MA**PS – Sat – B –36****Poly(lactone- ω -hydroxyaminoesters) as Potential Vectors for Gene Delivery**E. QUIJANO¹, R. J. FIELDS¹, Z. JIANG¹, AND M. W. SALTZMAN¹¹Yale University, New Haven, CT**PS – Sat – B –37****PLA/PGA as a Retinoid Delivery Device for Treatment of Leber's Congenital Amaurosis**C. PEARSON¹, M. BAUMANN¹, S. PETERSEN-JONES¹, AND D. THOMPSON²¹Michigan State University, East Lansing, MI, ²University of Michigan, Ann Arbor, MI**PS – Sat – B –38****Reduction of Amyloid- β Fibril Formation in Alzheimer's Disease by Green Tea Catechin**S. E. CHASTAIN¹, AND M. A. MOSS, PH. D²¹Newberry College, Newberry, SC, ²University of South Carolina, Columbia, SC**PS – Sat – B –39****Development of a Thermoresponsive Core-Shell Nanoparticle System for Targeted Drug Delivery**F. KNIGHT¹, J. BRUGNANO¹, A. KOSINSKI¹, AND A. PANITCH¹¹Purdue University, West Lafayette, IN**PS – Sat – B –40****Effects of Liposome Size and Surface Modification on Cancer Cell Targeting and Macrophage Association**M. K. SEMPKOWSKI^{1,2}, A. BANDEKAR¹, AND S. SOFOU¹¹Rutgers University, Piscataway, NJ, ²The College of New Jersey, Ewing, NJ**PS – Sat – B –41****Steroid Delivery From Functionalized Nanoparticles**R. OSITELU¹, A. SHOFFSTALL², K. ATKINS², R. GROYNOM², L. WU², AND E. LAVIK²¹Washington University in St. Louis, St. Louis, MO, ²Case Western Reserve University, Cleveland, OH**PS – Sat – B –42****Lipid Based Drug Delivery Vehicles for Delivering Unstable Proteins**T. HOWELL¹, X. LU¹, AND S. SAKIYAMA-ELBERT¹¹Washington University in St. Louis, St. Louis, MO**PS – Sat – B –43****RGD Conjugated Polyaminoamine Dendrimer Displays Targeted Delivery to V3 Integrin Positive Cells and Occurs via Caveolae-mediated Pathways**J. R. BECRAFT¹, M. E. HWANG¹, AND D. PACK¹¹University of Illinois at Urbana-Champaign, Urbana, IL**PS – Sat – B –44****Plasma Modified Microparticles for Delivery of Proteins**M. P. MENDOZA¹, E. DAWSON¹, AND K. ROY¹¹University of Texas at Austin, Austin, TX**PS – Sat – B –45****Biodegradable Tissue Scaffolds for Cell and siRNA Delivery**J. SHANNON¹, C. NELSON¹, S. GUELCHER¹, AND C. DUVAL¹¹Vanderbilt University, Nashville, TN**PS – Sat – B –46****Optimization of a PEI/DNA Microbubble System for Gene Delivery**D. SANTIESTEBAN¹, Y. WANG¹, AND M. LAWRENCE¹¹University of Virginia, Charlottesville, VA

PS – Sat – B –47**Drug Loading of Naproxen Sodium on the Degradation Characteristics of Polycaprolactone**J. M. BENJAMIN¹, B. FERRARO¹, AND J. A. COOPER JR.¹¹Rensselaer Polytechnic Institute, Troy, NY**Track: Neural Engineering****UNDERGRADUATE POSTERS****Neural Engineering****PS – Sat – B –48****Characterization of Cells Derived from Primary, Secondary, and Tertiary Neurospheres**M. R. NEWMAN¹, K. S. ELLISON², C. M. DUMONT², AND D. M. THOMPSON²¹Rensselaer Polytechnic Institute, Parish, NY, ²Rensselaer Polytechnic Institute, Troy, NY**PS – Sat – B –49****Behavioral Analysis of Rats During a Two Bit Learning Task**R. AUSTIN¹¹Arizona State University, Phoenix, AZ**PS – Sat – B –50****Processing and Angular Resolution of the Electro-Oculogram Derivative**S. CHOI¹, N. PEIXOTO¹, AND J. J. PANCAZIO¹¹George Mason University, Fairfax, VA**PS – Sat – B –51****An *In Vitro* Approach to Studying Blast Traumatic Brain Injury (bTBI)**C. F. RONDINELLI¹, M. A. HEMPHILL¹, J. A. GOSS¹, C. DITONNO², G. COLLINS², J. W. RUBERT², AND K. K. PARKER¹¹Harvard University, Cambridge, MA, ²Northeastern University, Boston, MA**PS – Sat – B –52****Haptic Size Discrimination**E. H. MOUGHARBEL¹, C. PIERCE¹, D. FREAR¹, AND S. HELMS TILLERY¹¹Arizona State University, Tempe, AZ**PS – Sat – B –53****The Effects of Saclofen Infusion within the Globus Pallidus on Rat Sleep Behavior**M. C. HARLESS¹, M. ROFFLER², D. BARNETT², AND A. M. ANCH²¹Northeastern University, Boston, MA, ²Saint Louis University, Saint Louis, MO**PS – Sat – B –54****Kainic Acid Induced Seizures in Rats: a Computational Model**J. M. SCOTT^{1,2}¹Washington State University, Pullman, WA, ²Illinois Institute of Technology, Chicago, IL**PS – Sat – B –55*****In Vitro* Blood-brain Barrier Model to Investigate Nano Ferrofluid Accumulation in the Brain**D. HOFF¹, D. STOUT¹, S. NAYAR², AND T. WEBSTER¹¹Brown University, Providence, RI, ²National Metallurgical Laboratory, Jamshedpur, India**PS – Sat – B –56****Novel Process to Fabricate Raised Polymer Electrodes for Electroencephalography**F. O'CONNELL¹, P. LELEUX¹, D. KHODAGHOLY¹, AND G. G. MALLIARAS¹¹Ecole Nationale Supérieure des Mines de Saint-Etienne, Gardanne, France**PS – Sat – B –57****Laser Generated Shock Wave Modification of Neural Networks**E. MILLER¹, B. RIGGS¹, C. RIVET¹, R. GILBERT¹, T. PHAMDUY¹, AND D. CHRRISEY¹¹Rensselaer Polytechnic Institute, Troy, NY**PS – Sat – B –58****Laser Patterned Neuronal Biochip or Developmental Neurotoxicity Study**A. M. STURGEON¹, L. WEI¹, AND B. Z. GAO¹¹Clemson University, Clemson, SC**PS – Sat – B –59****Experimental Design for P300-Based BCI Speller Implementation**C. F. ANGELONI¹, V. L. CORBIT¹, D. A. SALTER¹, AND T. P. LORENCE¹¹Lafayette College, Easton, PA**PS – Sat – B –60****The Effects of Non-homogeneous and Anisotropic Conductivity Properties on the Performance of ICA**T. HARVEY¹, D. DEAN¹, AND B. C. DEAN¹¹Clemson University, Clemson, SC**PS – Sat – B –61****Correcting Spatial Resolution of *In Vitro* Microelectrode Array Recordings with Calcium Fluorescent Imaging**S. DAMLE¹, M. KHRAICHE¹, F. BROCCARD¹, C. MACDONALD¹, AND G. SILVA¹¹University of California San Diego, La Jolla, CA**PS – Sat – B –62****The Effect of Working Memory Loads on Eye Blink Probability**A. CLAVEL¹, H-C. LEUNG², AND B. BLANKSON¹¹Stony Brook University, Stony Brook, NY, ²Stony Brook University, Stony Brook**PS – Sat – B –63****Imipramine Blue Reduces Invasion and Tumor Formation in Glioblastoma Neurospheres**S. A. ROWSON¹, J. MUNSON¹, R. BELLAMKONDA¹, AND J. ARBISER²¹Georgia Institute of Technology, Atlanta, GA, ²Emory, Atlanta, GA**PS – Sat – B –64****A Behavioral Approach to Neuron Modeling**F. G. HUTCHISON¹, AND Y. YUAN¹¹Lafayette College, Easton, PA**PS – Sat – B –65****The Role of Pulse Rate in lowering Detection Thresholds for Auditory Cortex Prosthesis**O. B. REGELE¹, A. KOIVUNEMI¹, AND K. OTTO¹¹Purdue University, West Lafayette, IN**PS – Sat – B –66****A Memory Game Using a Brain-Computer Interface with P300 Signal to Improve User Performance**D. A. SALTER¹, T. P. LORENCE¹, C. F. ANGELONI¹, AND V. L. CORBIT¹¹Lafayette College, Easton, PA**PS – Sat – B –67****P300 based EEG-BCI for Spatial Navigation**A. CURTIN¹, H. AYAZ¹, P. A. SHEWOKIS¹, AND B. ONARAL¹¹Drexel University, Philadelphia, PA**PS – Sat – B –68****Kainic Acid Induced Epileptic Seizures in a Network Model of the Hippocampus and Anterior Thalamus**J. M. SCOTT¹, AND D. J. MOGUL²¹Washington State University, Pullman, WA, ²Illinois Institute of Technology, Chicago, IL**PS – Sat – B –69****Characterizing the Mechanical Properties of Chicken Embryo Spinal Cord Tissue under Quasi-static and Stress-relaxation Conditions**V. PATEL¹, D. SHREIBER², AND J. GALARO¹¹Rutgers University, New Brunswick, NJ, ²Rutgers University, Piscataway, NJ**PS – Sat – B –70****Quantification of Tissue Response to a Novel Bimorphic Neural Probe**M. CONG¹, AND M. HAN²¹University of California, Los Angeles, Los Angeles, CA, ²Huntington Medical Research Institutes, Pasadena, CAPOSTER
SESSION

SatB

PS = Poster Session
OP = Oral Presentation

CME = Credit approved

PS – Sat – B –71**The Study of the Site of action of GDNF in Enhancing Regeneration After Injury Utilizing *In Vitro* Microfluidic Platforms**D. PAREDES¹, AND N. THAKOR²¹University of Puerto Rico-Mayaguez, Guaynabo, PR, Puerto Rico, ²Johns Hopkins School of Medicine, Baltimore, MD, United States Minor Outlying Islands**PS – Sat – B –72****ThinkTank: A Brain Computer Interface Game**M. N. BAYKAL^{1,2}, H. AYAZ¹, AND P. A. SHEWOKIS¹¹Drexel University, Philadelphia, PA, ²University of Illinois at Urbana-Champaign, Urbana, IL**PS – Sat – B –73****Synchronization in Coupled Neural Networks**B. WOOLEY¹, G. CAUWENBERGHS², AND F. BROCCARD²¹George Mason University, Fairfax, VA, ²University of California San Diego, La Jolla, CA**PS – Sat – B –74****Effects of Probe Tip Geometry on Insertion Force in Development of Implantable Microelectrode Arrays**C. X. WANG^{1,2}, AND M. HAN¹¹Huntington Medical Research Institute, Pasadena, CA, ²University of California, Berkeley, Berkeley**Track: New Frontiers in Biomedical Engineering UNDERGRADUATE POSTERS****New Frontiers in Biomedical Engineering****PS – Sat – B –75****Computer Aided Histological Analysis of Vasculature Proximal to an Implanted Oxygen Sensor**A. CHAUDHARI¹, L. KUMOSA¹, AND D. GOUGH¹¹University of California San Diego, La Jolla, CA**PS – Sat – B –76****Spontaneous Differentiation of Human Embryonic Stem Cells Using Biomimetic Multi-Scale Wrinkled Substrates**C. NGUYEN¹, A. CHEN¹, AND M. KHINE¹¹University of California, Irvine, Irvine, CA**PS – Sat – B –77****Immunization Regimen Plays a Critical Role in CD8 T Cell Response: Toward Improved Biomaterial-based Vaccination**S. C. BUSTAMANTE LOPEZ¹, C. M. JEWELL^{1,2}, AND D. J. IRVINE^{1,3}¹Massachusetts Institute of Technology, Cambridge, MA, ²Ragon Institute of MGH, MIT, and Harvard, Charlestown, MA, ³Howard Hughes Medical Institute, Chevy Chase, MD**PS – Sat – B –78****How Does Degradation of Magnesium Implants Affect Stem Cell Proliferation *In Vitro*?**S. GARCIA^{1,2}, C. G. LIEW², AND H. LIU²¹California State University San Bernardino, San Bernardino, CA, ²University of California Riverside, Riverside, CA**PS – Sat – B –79****Advancing Tissue Engineering Through a Mechanical Characterization of the Insect Tracheal System**W. R. BECKER¹, M. R. WEBSTER¹, AND R. DE VITA¹¹Virginia Tech, Blacksburg, VA**hPS – Sat – B –80****Antimicrobial Properties of Chrysothins-Immobilized on a Surface**C. FAHEY¹, A. MORRISON², I. IVANOV², AND T. A. CAMESANO²¹The George Washington University, Washington, DC, ²Worcester Polytechnic Institute, Worcester, MA**PS – Sat – B –81****Characterization of Complex Amine Polymer Systems Using Advanced Mass Spectrometry Techniques**N. W. KWIECIEN¹, A. K. CHAKRABORTY¹, C. GOODWIN¹, AND D. HERCULES¹¹Vanderbilt University, Nashville, TN**PS – Sat – B –82****CRISPR-mediated Control of Prokaryotic Gene Expression**M. GRADE¹, K. STANDAGE-BEIER¹, D. GARRY¹, N. PATEL¹, E. WARD¹, J. FLAY¹, K. DYSON¹, AND R. ACUNA¹¹Arizona State University, Tempe, AZ**PS – Sat – B –83****Influence of Water Content on Quasi-static Compressive Properties of Porcine Lungs Tissue**M. ROUGEAU¹, S. PATNAIK¹, R. GILBRECH¹, C. YOUNG¹, R. PRABHU¹, J. LIAO¹, AND L. N. WILLIAMS¹¹Mississippi State University, Mississippi State, MS**PS – Sat – B –84****The Optimization of Cardiac Differentiation from Human Embryonic Stem Cells Using the Design of Experiment Methodology**J. GO¹, A. CHEN¹, AND M. KHINE¹¹University of California-Irvine, Irvine, CA**PS – Sat – B –85****A Novel Ultrasound Treatment for Deep Vein Thrombosis Using Time Reversal Acoustics**S. KOLTZ¹¹Cornell University, Ithaca, NY**PS – Sat – B –86****A Low-cost and Unobtrusive System to Measure Emotional Arousal**N. RAHIMI¹, M. A. MASTRO¹, T. NAKRA¹, AND B. BUSHA¹¹The College of New Jersey, Ewing, NJ**PS – Sat – B –87****Microfluidic Bio-inspiration: How Cockroach Tracheal Tubes Collapse Under Pressure**D. BERINGER¹, AND J. SOCHA¹¹Virginia Tech, Blacksburg, VA**PS – Sat – B –88****Biomechanical Properties of the Decellularized Human Amnion**D. KOBACK¹, A. BORAZJANI¹, S. PATNAIK¹, K. KING¹, B. WANG¹, L. N. WILLIAMS¹, AND J. LIAO¹¹Mississippi State University, Mississippi State, MS**PS – Sat – B –89****Mouse Model for Dengue I - Induced Lethal Disease and Increased Viremia**A. ALVAREZ¹, AND S. SHRESTA¹¹La Jolla Institute for Allergy and Immunology, La Jolla, CA**PS – Sat – B –90****A Method for Assessing Biomechanical Properties and Failure Mechanisms of Various Suture Techniques**A. ARSHAD^{1,2}, A. BORAZJANI^{1,3}, S. PATNAIK¹, B. C. WEED¹, AND J. LIAO¹¹Mississippi State University, Mississippi State, MS, ²University of South Alabama, Mobile, AL, ³Cleveland Clinic Lerner Research Institute, Cleveland, OH**PS – Sat – B –91****Analysis of Evolved Neural Network Topologies with Lesions Through the Genealogy**C. G. SINKS¹, AND Y. CHOE²¹University of Missouri, Columbia, MO, ²Texas A & M, College Station, TX**PS – Sat – B –92****Immuno-DNA-Directed Cell Assembly: Towards de Novo Construction of Stem Cell Niches**A. SHOMORONY¹¹Yale University, New Haven, CT

Track: Orthopedic and Rehabilitation Engineering UNDERGRADUATE POSTERS

Orthopedic & Rehabilitation Engineering

PS – Sat – B – 93

Pacemaker Waveform for Rapid Entrainment of Smooth Oscillators

V. T. DAHLEN^{1,2}, AND I. Z. KISS²

¹University of Iowa, Iowa City, IA, ²Saint Louis University, St. Louis, MO

PS – Sat – B – 94

Electromyographic Responses to Rotational and Translational Perturbations

E. M. SCHNELLINGER¹, J. L. ROCHE², AND M. S. REDFERN²

¹University of Rochester, Rochester, NY, ²University of Pittsburgh, Pittsburgh, PA

PS – Sat – B – 95

Low Intensity Vibration Reduces Bone Loss in Obese Mice by Attenuating Osteoclast Development

M. CHEUNG¹, K. KAWATRA^{1,2}, A. H. TSOI¹, M. E. CHAN¹, AND C. T. RUBIN¹

¹Stony Brook University, Stony Brook, NY, ²University of Minnesota, Minneapolis, MN

PS – Sat – B – 96

Low Intensity Vibrations Attenuate Adverse Effects of Obesity on B-Cell Lymphopoiesis & Maturation

K. KAWATRA^{1,2}, M. CHEUNG¹, M. E. CHAN¹, D. GREEN¹, B. ADLER¹, AND C. T. RUBIN¹

¹Stony Brook University, Stony Brook, NY, ²University of Minnesota, Minneapolis, MN

PS – Sat – B – 97

Sensitivity of Wheelchair Propulsion Kinetics to Increased Physiological Demands.

J. H. BRYANT¹, M. S. NASH, PHD.¹, AND R. E. COWAN, PHD.¹

¹The Miami Project to Cure Paralysis, Miami, FL

PS – Sat – B – 98

Effect of Age and Exercise on the Viscoelastic Properties of Rat Tail Tendon

A. S. LACROIX¹, S. DUENWALD-KUEHL¹, S. BRICKSON¹, R. LAKES¹, AND R. VANDERBY JR.¹

¹University of Wisconsin-Madison, Madison, WI

PS – Sat – B – 99

Electrospun Thin Films for Biodegradable Magnesium Implants

C. A. GARDNER¹

¹NC State University, Raleigh, NC

PS – Sat – B – 100

Finite Element Analysis of Low Intensity Pulsed Ultrasound Treatment on Hind Limb Suspend Mice

D. HWANG¹, S. UDDIN¹, AND Y-X. QIN¹

¹Stony Brook University, Stony Brook, NY

PS – Sat – B – 101

Strain Dependence of Articular Cartilage Tensile Modulus Following GAG Depletion

B. BERG-JOHANSEN¹, Q. NGUYEN², A. CHEN², S. HAZELWOOD¹, S. KLISCH¹, AND R. SAH²

¹California Polytechnic State University, San Luis Obispo, CA, ²University of California, San Diego, La Jolla, CA

PS – Sat – B – 102

Improving Clinical Measures of Balance using Kinect for Xbox 360

E. BALABAN¹, AND K. BIERYLA¹

¹Bucknell University, Lewisburg, PA

PS – Sat – B – 103

Biomechanical Analysis of Blindfolded Human Response to Large Anterior Motion on a Sliding Platform

F. S. HEMSING¹, AND C. ROBINSON¹

¹Clarkson University, Potsdam, NY

PS – Sat – B – 104

Effect of Collagen Organization on Tensile Strength Loss in ACL Grafts Post-Reconstruction Surgery

A. CHANDRAMANJ¹, M. COSTALES¹, B. GARBUS¹, J. HARTSTEIN¹, K. HEFFNER¹, R. JAIN¹, K. KLEIN¹, A. MCDONNELL¹, P. PATEL¹, V. STEFANELLI¹, J. WANG¹, T. ZHANG¹, H. KIM¹, A. HSIEH¹, AND C. BENNETT¹

¹University of Maryland, College Park, MD

PS – Sat – B – 105

Increase in Bone Marrow Adiposity as Caused by Irradiation is Mitigated by Low Intensity Vibration

J. LENNON¹, D. GREEN², M. E. CHAN², AND C. T. RUBIN²

¹Stony Brook University, West Babylon, NY, ²Stony Brook University, Stony Brook, NY

PS – Sat – B – 106

Design Criteria for Preventing Friction-induced Squeak of Ceramic-on-Ceramic Hip Implants

M. A. SIDEBOTTOM¹, AND M. PALIWAL¹

¹The College of New Jersey, Ewing, NJ

PS – Sat – B – 107

In Vitro Biomechanical Analysis of Repeated Dislocation/Reduction in Constrained Hip Arthroplasty

J. C. IVESTER¹, M. FINN², F. R. VOSS², K. A. RUSAW¹, R. J. RUSLY¹, AND J. D. DESJARDINS¹

¹Clemson University, Clemson, SC, ²University of South Carolina, Columbia, SC

PS – Sat – B – 108

The Effects of Water Content on the Mechanics and Microstructure of Bone

A. O. OJE¹, N. LEE¹, S. PATNAIK¹, J. LIAO¹, AND L. N. WILLIAMS¹

¹Mississippi State University, Starkville, MS

PS – Sat – B – 109

Biomechanical Assessment of Tibial Component Slope in Unicompartmental Knee Arthroplasty

D. ARCHER¹, A. KINGMAN¹, K. HUGHES¹, S. SMALL², R. ROGGE^{1,2}, M. BEREND², AND M. RITTER²

¹Rose-Hulman Institute of Technology, Terre Haute, IN, ²JRSI Foundation, Inc., Mooresville, IN

PS – Sat – B – 110

Tensile Properties of the Extensor Hood in Support of a Finite Element Model

K. TRAYLOR¹, AND D. KAMPER^{1,2}

¹Illinois Institute of Technology, Chicago, IL, ²Rehabilitation Institute of Chicago, Chicago, IL

PS – Sat – B – 111

Implant Alignment Reproducibility in a Reverse Shoulder Arthroplasty Micromotion Study

W. D. SIMPSON III¹, A. D. BRIES², S. J. TOLAN², M. K. HARMAN¹, R. J. HAWKINS², AND J. D. DESJARDINS¹

¹Clemson University, Clemson, SC, ²Steadman Hawkins Clinic of the Carolinas, Greenville, SC

PS – Sat – B – 112

Design of an Anatomical Cervical Orthosis Testing Apparatus and Preliminary Results

R. M. HALSEY¹, K. M. HARFMANN¹, E. NUWASS², D. B. ELLEGALA³, J. S. NICHOLAS³, J. D. DESJARDINS¹, AND D. DEAN¹

¹Clemson University, Clemson, SC, ²Haydom Hospital, Haydom, Tanzania, ³Medical University of South Carolina, Charleston, SC

PS – Sat – B – 113

The Effect of Proton-Source Radiation on the Wear Properties of UHMWPE

J. H. BALL¹, K. NORASAK¹, E. LUCAS¹, AND J. D. DESJARDINS¹

¹Clemson University, Clemson, SC

PS – Sat – B – 114

Friction Testing of Stainless Steel Micropatterned Surfaces for Orthopaedic Bearing Surfaces

C. J. ELJACH¹, N. MITCHELL¹, B. LODGE¹, J. SHARP¹, M. KENNEDY¹, AND J. D. DESJARDINS¹

¹Clemson University, Clemson, SC

PS – Sat – B – 115**Biomechanical Testing of PRP Augmented Microfracture in Cartilage Regeneration in a Lapine Model**M. C. WARE¹, J. J. RODRIGO², S. A. BIELBY¹, A. B. ANDERSON³, D. WYLAND², AND J. D. DESJARDINS¹¹Clemson University, Clemson, SC, ²Steadman Hawkins Clinic of the Carolinas, Greenville, SC, ³The Hawkins Foundation, Greenville, SC**Track: Systems Biology, Bioinformatics and Computational Bioengineering****UNDERGRADUATE POSTERS****Systems Biology, Bioinformatics & Computational Bioengineering****PS – Sat – B – 116****Cardiac Cell Sensitivity to Optogenetic Stimulation: A Computer Modeling Study**J. C. WILLIAMS¹, X. CHEN¹, J. XU¹, AND E. ENTCHEVA¹¹Stony Brook University, Stony Brook, NY**PS – Sat – B – 117****Discrete Logic Models Discriminate Between Mechanisms of HIV Protein-Induced Dysregulation of the T Cell Signaling Network**R. AMEZQUITA¹, Q. XUE², AND K. MILLER-JENSEN²¹University of California, San Diego, La Jolla, CA, ²Yale University, New Haven, CT**PS – Sat – B – 118****Network Architectures of Antibiotic Resistance**P. JENSEN¹, K. E. ESTEP¹, AND J. PAPIN¹¹University of Virginia, Charlottesville, VA**PS – Sat – B – 119****Single-cell JunD and TGFBR3 Expression in Krt5-positive Basal-like Breast Cancer.**L. JAMAL¹, C-C. WANG¹, K. A. ATKINS¹, AND K. A. JANES¹¹University of Virginia, Charlottesville, VA**PS – Sat – B – 120****Structural Adaptation of Microvessels in Disease States**L. LITTLE¹, J. PARK¹, E. F. THREKELD¹, P. VARIN¹, J. B. GEDDES¹, AND A. SARANG-SIEMINSKI¹¹Franklin W. Olin College of Engineering, Needham, MA**PS – Sat – B – 121****A Microfluidic Platform for High Throughput Genealogy Tracking**E. M. WERNER¹, K. ECK², H. TIDWELL³, Y. ZHOU¹, I. NEMENMAN⁴, AND J. P. WIKSWO¹¹Vanderbilt University, Nashville, TN, ²Mercer University, Macon, GA, ³Montgomery Bell Academy, Nashville, TN, ⁴Emory University, Atlanta, GA**PS – Sat – B – 122****Computational Modeling of VEGF and sFlt-1 to Simulate Pre-eclampsia**M. S. SHAH¹, E. A. LOGSDON¹, AND F. MAC GABHANN¹¹Johns Hopkins University, Baltimore, MD**PS – Sat – B – 123****Quantitation of Single Cell Calcium Signaling During T-Cell Activation**R. HARVEY¹, C. MARASCO¹, K. SEALE¹, AND J. WIKSWO¹¹Vanderbilt University, Nashville, TN**PS – Sat – B – 124****Reconstructing Patient-Specific Models of the Dyssynchronous Failing Heart using CT and DTMR Images**J. A. MOJICA-SANTIAGO¹, C. A. VILLONGCO^{2,3}, M. J. GONZALES^{2,3}, D. E. KRUMMEN^{4,5}, L. R. FRANK⁶, AND A. D. MCCULLOCH^{2,4}¹University of Puerto Rico Mayaguez Campus, Mayaguez, PR, ²Department of Bioengineering, UCSD, La Jolla, CA, ³Cardiac Biomedical Science and Engineering Research Center, UCSD, La Jolla, CA, ⁴Department of Medicine, UCSD School of Medicine, La Jolla, CA, ⁵Veterans Administration San Diego Health Care System, San Diego, CA, ⁶Department of Radiology, UCSD School of Medicine, La Jolla, CA**PS – Sat – B – 125****Quantitative Dissection of Ras Signaling: The Contributions of Mutation, Isoform, Expression Level, Amplification, and Loss of Heterozygosity to Mutant Signaling**C. POLING¹, AND E. STITES¹¹Translational Genomics Research Institute, Scottsdale, AZ**PS – Sat – B – 126****Profiling Physiologic States of Peripheral Blood Mononuclear Cells to Determine Clinical Biomarkers**J. S. BRADY¹, K. SEALE¹, P. NORRIS², AND J. WIKSWO¹¹Vanderbilt University, Nashville, TN, ²Vanderbilt University School of Medicine, Nashville, TN**PS – Sat – B – 127****Control of the GAL Network in *S. cerevisiae* for Use in Biological Control Theory**K. ROTH¹¹Vanderbilt University, Nashville, TN**PS – Sat – B – 128****Towards Formation of Uniform Embryoid Bodies within Microdroplets**C. ALLAMNENI¹, S. FALEY¹, K. SEALE¹, AND A. HATZOPOULOS¹¹Vanderbilt University, Nashville, TN**PS – Sat – B – 129****PLX-4720 Induces Distinct Single Cell Responses within a Melanoma Cell Line Population**R. FERROZE^{1,2}, D. TYSON³, AND V. QUARANTA³¹University of Pittsburgh, Pittsburgh, PA, ²NCI-ICBP Summer Program, Vanderbilt University, Nashville, TN, ³Vanderbilt University, Nashville, TN**PS – Sat – B – 130****Non-destructive Methods for Monitoring Membrane-bound Molecules in *Saccharomyces cerevisiae***E. L. CURTIS¹, A. KOLE¹, C. MARASCO^{1,2}, C. GOODWIN^{1,2}, J. ENDERS^{1,2}, T. GRAHAM³, K. SEALE^{1,2}, J. MCLEAN^{2,4}, AND J. WIKSWO^{2,5}¹The Searle Systems Biology and Bioengineering Undergraduate Research Experience, Nashville, TN, ²Vanderbilt Institute for Integrative Biosystems Research, Nashville, TN, ³Department of Biological Sciences, Vanderbilt University, Nashville, TN, ⁴Department of Chemistry, Vanderbilt University, Nashville, TN, ⁵Department of Biomedical Engineering, Vanderbilt University, Nashville, TN**PS – Sat – B – 131****Normal and Shear Force Sensing for Human Finger Tips**L. KWIATKOWSKI¹, S. CONOVER¹, A. EID¹, AND M. KAGEHIRO¹¹Illinois Institute of Technology, Chicago, IL**PS – Sat – B – 132****DC Motor Enabled Rotary Planar Peristaltic Micropump**D. J. HALL^{1,2}, P. GOULD^{1,2}, L. HOANG^{1,2}, K. SEALE^{1,3}, AND J. WIKSWO^{1,3}¹Vanderbilt University, Nashville, TN, ²Systems Biology and Bioengineering Undergraduate Research Experience, Nashville, TN, ³Vanderbilt Institute for Integrative Biosystems Research and Education, Nashville, TN**PS – Sat – B – 133****Computational Efficiencies of Stochastic Algorithms**A. BROIDO^{1,2}, K. GAYVERT^{2,3}, AND K. G. LINK^{2,4}¹Boston College, Chestnut Hill, MA, ²North Carolina State University, Raleigh, NC, ³State University of New York at Geneseo, Geneseo, NY, ⁴Bryn Mawr College, Bryn Mawr, PA

PS – Sat – B – 134**Development of Sham Atherosclerotic Arteries for Verification of Computational Models**T. M. ERHARD¹, P. A. OSEI¹, D. M. EBENSTEIN¹, AND C. M. BUFFINTON¹¹Bucknell University, Lewisburg, PA**PS – Sat – B – 135****Using the Gene Expression Dynamics Investigator (GED) for Analysis of Time Series Metabolomics Data**K. OSBORNE¹, K. BRINSFIELD², K. DRAKE³, C. GOODWIN^{1,2}, K. SEALE¹, AND J. WIKSWO³¹Searle-Systems Biology and Bioengineering Undergraduate Research Experience, Vanderbilt University, Nashville, TN, ²Vanderbilt University, Nashville, TN, ³Vanderbilt Institute for Integrative Biosystems Research and Education, Vanderbilt University, Nashville, TN**PS – Sat – B – 136****A Network Driven Approach for Quantifying Clustering Variability of Experimental Data**N. D. JIMENEZ¹, K. NAEGLER¹, AND D. LAUFFENBURGER¹¹MIT, Cambridge, MA**Track: Tissue Engineering****UNDERGRADUATE POSTERS****Tissue Engineering****PS – Sat – B – 137****Effect of Chemically Crosslinked Fibrin Gel Substrate on the Differentiation of Mouse C2C12 Myoblasts**R. A. SHARPE¹, T. BAS¹, J. M. GRASMAN¹, G. D. PINS^{1,2}, AND R. L. PAGE^{1,2}¹Worcester Polytechnic Institute, Worcester, MA, ²Bioengineering Institute, Worcester, MA**PS – Sat – B – 138****Modifying Seeding Well Dimensions Reduces the Cell Number Required for Tissue Ring Aggregation**J. M. MANN¹, T. GWYTHYER¹, AND M. ROLLE²¹Worcester Polytechnic Institute, Worcester Polytechnic Institute, MA, ²Worcester Polytechnic Institute, Worcester, MA**PS – Sat – B – 139****Terminal Sterilization of Composite Alginate Hydrogels**S. HORAVA¹, W. L. STOPPEL¹, J. C. WHITE¹, S. R. BHATIA¹, AND S. C. ROBERTS¹¹University of Massachusetts Amherst, Amherst, MA**PS – Sat – B – 140****Coating of Electrospun Polyacrylonitrile Fibres with Collagens for Tissue Engineering**K. BRIGGS^{1,2}, Y. B. TRUONG², J. RAMSHAW², V. GLATTAUER², AND S. ZAPPE¹¹Carnegie Mellon University, Pittsburgh, ²CSIRO, Clayton, Australia**PS – Sat – B – 141****Magnetically Prepared SWCNT and Nano-hydroxyapatite Composite Hydrogels for Bone Tissue Engineering**O. IM¹, AND L. G. ZHANG²¹Duke University, Durham, NC, ²The George Washington University, Washington, DC**PS – Sat – B – 142****Tuning Recovery Kinetics of a Shape Memory Polymer for Active Cell Culture**D. L. JONES¹, R. M. BAKER¹, P. T. MATHER¹, AND J. H. HENDERSON¹¹Syracuse University, Syracuse, NY**PS – Sat – B – 143****Role of Hemorheological Parameters and Asymmetric Dimethylarginine (ADMA) in End Stage Renal Disease (ESRD) and Chronic Renal Disease (CRD) Patients**S. MENEZES¹, E. BELTRAN¹, L. R. GIRIJALA¹, AND P. DHAR¹¹Illinois Institute of Technology, Chicago, IL**PS – Sat – B – 144****The Influence of Hyaluronic Acid on Chondrogenic Differentiation of Primary Mesenchymal Stem Cells Embedded in Photocrosslinked Alginate**C. N. RIGGIN¹, E. E. COATES¹, AND J. P. FISHER¹¹University of Maryland, College Park, MD**PS – Sat – B – 145****Mechanical Properties of Tissue Engineered Vascular Grafts from the Amniotic Membrane**B. T. SMITH¹, J. BRENNAN¹, AND M. NOLLERT¹¹University of Oklahoma, Norman, OK**PS – Sat – B – 146****Characterization of Integrin Expression of DRGs in Laminin and Collagen**A. A. THROM¹, AND R. K. WILLITS²¹University of Evansville, Evansville, IN, ²The University of Akron, Akron, OH**PS – Sat – B – 147****Effects of Fibroblast Conditioned Media on Skeletal Myogenesis**D. P. STEWART¹, N. RAO¹, AND K. CHRISTMAN¹¹University of California - San Diego, La Jolla, CA**PS – Sat – B – 148****Investigation of Lamellar Unit Development in Mouse Arteries**V. MATHUR¹, C. BALL², V. LE¹, R. KNUTSEN², R. MECHAM², AND J. WAGENSEIL¹¹St. Louis University, St. Louis, MO, ²Washington University, St. Louis, MO**PS – Sat – B – 149****Patterning of siRNA cues Within Hydrogels to Spatially Control Mesenchymal Stem Cell Differentiation**D. S. REYNOLDS¹, AND D. S. BENOIT^{1,2}¹University of Rochester, Rochester, NY, ²University of Rochester Medical Center, Rochester, NY**PS – Sat – B – 150****The Role of Nanofiber Architecture in NF-kappa B Signaling**C. HONG¹, AND J. BROWN²¹Penn State University, State College, PA, ²Penn State University, University park, PA**PS – Sat – B – 151****Surface Modification of Magnesium based Implant Material with Chitosan Biopolymer**J. DELVA¹, C. MAHONEY¹, S. TURNER¹, AND N. BHATTARAI¹¹North Carolina A&T State University, Greensboro, NC**PS – Sat – B – 152****Effect of Verapamil and Atorvastatin on Endothelial Cell Viability**H. J. WARNER¹, G. J. YE², M. RAFAT², AND D. T. AUGUSTE²¹Clemson University, Clemson, SC, ²Harvard University, Cambridge, MA**PS – Sat – B – 153****Graphite Oxide Nanoparticles Larger than 20nm in Diameter are Biocompatible with Mouse Embryonic Stem Cells**G. Y. DO¹, I-N. E. WANG¹, J. ROBINSON¹, G. HONG¹, D. GOULD¹, H. DAI¹, AND P. C. YANG¹¹Stanford University, Stanford, CA**PS – Sat – B – 154****ZO-1 Expression of Retinal Pigment Epithelium on Poly(ethylene glycol)-diacrylate Hydrogels**K. HOLLEY¹, P. SOUCY¹, T. TEZEL¹, AND A. S. GOBIN¹¹University of Louisville, Louisville, KY**PS – Sat – B – 155****Quantitative Analysis of Motility of Human Pluripotent Stem Cells on Various Surfaces**K. PETERSON¹, H. YAO¹, W. WANG¹, Z. MELKOUMIAN¹, K. YE¹, AND S. JIN¹¹University of Arkansas, Fayetteville, AR

PS – Sat – B – 156**Effects of Three-Dimensional Dynamic Flow on Growth and Differentiation of Porcine Dental Pulp Stem Cells**J. WOOD¹, L. DATKO¹, M. KENNEDY¹, AND D. DEAN¹¹Clemson University, Clemson, SC**PS – Sat – B – 157****Quantification of FGF-2, VEGF, & GAGs in MatriStem MicroMatrix UBM Biomaterial**K. A. KENTNER¹, AND A. D. JANIS²¹University of Pittsburgh, Pittsburgh, PA, ²ACell Inc, Columbia, MD**PS – Sat – B – 158****Determining Mechanical Contributions of Elastin and Collagen in WT and Eln^{+/-} Mouse Arteries**K. SHAH¹, E. MARIN¹, AND J. WAGENSEIL¹¹Saint Louis University, St. Louis, MO**PS – Sat – B – 159****Soft Tissue Remodeling Following Digit Amputation and Treatment with ECM Degradation Products**B. F. SIU^{1,2}, V. AGRAWAL^{1,2}, H. CHAO^{3,4}, K. K. HIRSCHI^{3,4}, E. RABORN^{3,4}, S. A. JOHNSON^{1,2}, S. TOTTEY^{1,2}, C. J. MEDBERRY^{1,2}, AND S. F. BADYLAK^{1,2}¹McGowan Institute for Regenerative Medicine, Pittsburgh, PA, ²University of Pittsburgh, Pittsburgh, PA, ³Center for Cell and Gene Therapy, Houston, TX, ⁴Baylor College of Medicine, Houston, TX**PS – Sat – B – 160****Vessel Formation in an Extracellular Matrix Derived Scaffold in a Rat Hindlimb Ischemia Model**A. J. MONTEFORTE¹, J. A. DEQUACH¹, D. HU¹, AND K. L. CHRISTMAN¹¹University of California, San Diego, La Jolla, CA**PS – Sat – B – 161****The Effects of Substrate Stiffness Without Growth Factors on the Growth and Development of Rat Bone Marrow Stem Cells**H. T. VO¹, L. DATKO², M. D. CUPELLI², AND D. DEAN²¹Governor's School for Science and Mathematics, Hartsville, SC, ²Clemson University, Clemson, SC**PS – Sat – B – 162****Strain-To-Failure of Extracellular Matrix Protein Nanofibers**G. DIAMOND¹, W. LITTLEFIELD¹, J. SZYMANSKI¹, AND A. W. FEINBERG¹¹Carnegie Mellon University, Pittsburgh, PA**PS – Sat – B – 163****Methacrylation Methods of Hyaluronic Acid Based Biomaterials Alter Wound Healing Capabilities**J. J. DAVIS¹, S. MAYES² AND C. SCHMIDT²¹The University of Texas at Austin, Hutto, TX, ²The University of Texas at Austin, Austin, TX**PS – Sat – B – 164****The Effect of Surface Modifications on Apatite Formation on Aligned PLGA Nanofibers**L. PRUZINSKY^{1,2}, O. KARAMAN², AND E. JABBAR²¹University of Connecticut, Storrs, CT, ²University of South Carolina, Columbia, SC**PS – Sat – B – 165****In Vitro High Throughput Screening System for Defatting Steatotic Liver Cells**S. A. GHODBANE^{1,2}, A. J. SO², N. I. NATIV², G. YARMUSH², J. BARMINKO², T. MAGUIRE², F. BERTHIAUME², R. SCHLOSS², AND M. L. YARMUSH²¹The College of New Jersey, Ewing, NJ, ²Rutgers University, Piscataway, NJ**PS – Sat – B – 166****The Dependence of Tubulogenesis on Channel Pattern Geometry for the Application of Artificial Vasculature**M. KNIGHT¹, B. RIGGS², T. PHAMDUY², V. LEE², M. HORNE², D. CHRISSEY², G. DAI², AND R. GILBERT²¹Rensselaer Polytechnic Institute, Albany, NY, ²Rensselaer Polytechnic Institute, Troy, NY**PS – Sat – B – 167****3D Scaffolds with Various Pore Sizes for Co-culturing of Endothelial and Smooth Muscle Cells**B. YANG¹, J.-O. YOU², AND D. T. AUGUSTE²¹Simmons College, Boston, MA, ²Harvard University, Cambridge, MA**PS – Sat – B – 168****Male and Female Donor Variability of Mesenchymal Stem Cells Derived from Human Umbilical Cords**A. M. WITT¹, E. A. BORDT¹, R. C. SCHUGAR¹, A. USAS², AND B. M. DEASY^{1,3}¹Live Cell Imaging Lab, University of Pittsburgh, Pittsburgh, PA, ²University of Pittsburgh, Pittsburgh, PA, ³McGowan Institute of Regenerative Medicine, University of Pittsburgh, Pittsburgh**PS – Sat – B – 169****Determining Protein Expression in Unconditioned and Conditioned Cell Sheets of Cardiomyocytes**K. C. WATSON¹, E. L. LEE¹, AND H. A. VON RECUM¹¹Case Western Reserve University, Cleveland, OH**PS – Sat – B – 170****Fabrication of Stiffness Variant Thin Layer Substrate using Nanotopography Backbone for Cell Sensing**S. ROWLINSON¹, G. YE², AND D. AUGUSTE²¹UNIVERSITY OF MIAMI, CORAL GABLES, FL, ²HARVARD UNIVERSITY, CAMBRIDGE, MA**PS – Sat – B – 171****Human Mesenchymal Stem Cell Proliferation as a Function of Scaffold Position in a TPS Bioreactor**F. F. FEARS¹, E. M. GEIBEL², A. B. YEATTS², AND J. P. FISHER²¹Harvard University, Cambridge, MA, ²University of Maryland, College Park, MD**PS – Sat – B – 172****Hydrogel Model of Mechanically-Heterogeneous Tissue Layers**L. DLOUHY¹, G. KAUSHIK², AND A. ENGLER²¹Texas A&M University, College Station, TX, ²University of California, San Diego, La Jolla, CA**PS – Sat – B – 173****A Polymer-Based Approach to Stimulate Notch Signaling In Vitro**N. MEHTA¹, M. KIM¹, M. MENDOZA¹, AND K. ROY¹¹University of Texas at Austin, Austin, TX**PS – Sat – B – 174****Non-Enzymatic Glycation (of Collagen I rich tissues) Affects Enzymatic Digestion of Interstitial Collagenase (MMP-1) and Trypsin**H. F. MINGO¹, R. S. MADHURAPANTULA², J. ORGEL², AND O. A. ANTIPOVA²¹Prairie View A&M University, Prairie View, TX, ²Illinois Institute of Technology, Chicago, IL**PS – Sat – B – 175****The Effects Of Static Axial Stretching On The Structural Properties Of Fibrin Microthreads**M. DUNPHY^{1,2}, J. GRASMAN¹, AND G. PINS¹¹Worcester Polytechnic Institute, Worcester, MA, ²Clemson University, Clemson, SC**PS – Sat – B – 176****Microfluidic Flow Gradient Device for Studying Endothelial Mechanotransduction**I. BAIRD¹, L. HOFMEISTER¹, K. T. SEALE¹, AND H.-J. SUNG¹¹Vanderbilt University, Nashville, TN**PS – Sat – B – 177****Investigating Mechanical Gradients in Mussel Byssal Thread Fibers**N. KO¹, AND D. M. EBENSTEIN¹¹Bucknell University, Lewisburg, PA**PS – Sat – B – 178****Laminin Coats Collagen Fibers**J. A. HAMMER¹, J. B. PAPKE², R. K. WILLITS³, AND A. B. HARKINS²¹Arizona State University, Tempe, AZ, ²Saint Louis University, St. Louis, MO, ³University of Akron, Akron, OH

PS – Sat – B – 179**Evaluation of Vascular Cells Grown on Materials for Bi-layered Tissue-Engineered Vascular Grafts**

S. AGARWAL¹, J. BANIK¹, H. BAMAN¹, AND J. A. COOPER JR.¹
¹Rensselaer Polytechnic Institute, Troy, NY

PS – Sat – B – 180**Controlling Folding In A Three-Dimensional Biodegradable Scaffold By Patterning Thin Polymer Sheets For In Vivo Tissue Regeneration**

A. MANTZAVINO^{1,2}, J. G. YE¹, AND D. T. AUGUSTE¹
¹Harvard School of Engineering and Applied Sciences, Cambridge, MA, ²Harvard College, Cambridge, MA

PS – Sat – B – 181**Stem Cell Mediated Cardiac Myocyte Proliferation: The Effect of hMSC Number on Colony Formation**

K. J. HANSEN^{1,2}, E. J. BURFORD¹, AND G. R. GAUDETTE¹
¹Worcester Polytechnic Institute, Worcester, MA, ²Washington State University, Pullman, WA

PS – Sat – B – 182**Migration and Rolling of EPCs on PEG-peptide Copolymers**

Y. TIAN^{1,2}, W. SEETO², AND E. LIPKE²
¹Polytechnic Institute of NYU, Brooklyn, NY, ²Auburn University, Auburn, AL

PS – Sat – B – 183**Heart Valve Tissue Engineering: The Effects of Steady vs. Pulsatile Flow on Bone Marrow Derived Stem Cells**

S. VAN GULDEN¹, M. SALINAS², C. MARTINEZ², AND S. RAMASWAMY²
¹Florida International University, Pembroke Pines, FL, ²Florida International University, Miami, FL

PS – Sat – B – 184**Differentiation of Mesenchymal Stromal Cells in a 3-dimensional Alginate Culture System**

E. PLUDWINSKI¹, J. BARMINKO¹, A. CHAISE¹, R. BROWN¹, T. MAGUIRE¹, R. SCHLOSS¹, AND M. YARMUSH¹
¹Rutgers University, Piscataway, NJ

Track: Translational Biomedical Engineering UNDERGRADUATE POSTERS

Translational Biomedical Engineering

PS – Sat – B – 185**Wearable Therapeutic Ultrasound for Wound Healing of Venous Stasis Ulcers**

E. LIU¹
¹Cornell University, Ithaca, NY

PS – Sat – B – 186**Mobile Healthcare: Design and Evaluation of Hydrogel Coupling for Wearable Ultrasound Therapy**

L. LAVROV¹, AND J. DENG¹
¹Cornell University, Ithaca, NY

PS – Sat – B – 187**A Method for Assessing Biomechanical Properties and Failure Mechanisms of Various Suture Techniques**

A. ARSHAD¹, A. BORAZJANI², S. S. PATNAIK², B. WEED², AND J. LIAO²
¹University of South Alabama, Mobile, AL, ²Mississippi State University, Starkville, MS

PS – Sat – B – 188**Disentrainment of Brain Dynamics in PNEs**

A. ROTH¹, B. KRISHNAN¹, A. FAITH¹, L. TAPSELL², J. SIRVEN², AND L. IASEMIDIS^{1,2}
¹Arizona State University, Tempe, AZ, ²Mayo Clinic, Phoenix, AZ

PS – Sat – B – 189**Developing a Standardized CVC Procedure for Training to Reduce Complications**

E. A. THRILKILL¹, J. D. RIGGLE¹, M. C. WADMAN², B. MCCRORY¹, B. R. LOWNDES¹, P. K. CARSTENS², AND M. S. HALLBECK¹
¹University of Nebraska-Lincoln, Lincoln, NE, ²University of Nebraska Medical Center, Omaha, NE

PS – Sat – B – 190**Novel Device for Measuring Sub-Bandage Pressure**

K. DESHARNAIS¹, A. MACALISTER¹, E. KENNEDY¹, J. TRANQUILLO¹, D. CAVANAGH¹, AND M. RIEDHAMMER²
¹Bucknell University, Lewisburg, PA, ²Geisinger Medical Center, Danville, PA

PS – Sat – B – 191**A Novel Device to Collect Saliva from Children for DNA Analysis**

N. M. DOLD¹, N. J. BARNETT¹, J. W. BAISH¹, K. A. BIERYLA¹, D. P. CAVANAGH¹, G. S. GERHARD², AND D. H. LEDBETTER²
¹Bucknell University, Lewisburg, PA, ²Geisinger Clinic, Danville, PA

PS – Sat – B – 192**Urinary Biomarkers In Infants Undergoing Cardiac Surgery**

A. ABRAHAM¹, M. HAZLE¹, AND N. B. BLATT¹
¹University of Michigan, Ann Arbor, MI

PS – Sat – B – 193**Label-Acquired Magnetorotation as a Novel Application of Magnetic Beads for Protein Detection**

N. A. SHAH¹, A. HECHT², AND R. KOPELMAN²
¹University of Cincinnati, Cincinnati, OH, ²University of Michigan, Ann Arbor, MI

Track: Undergraduate Research

UNDERGRADUATE POSTERS

PS – Sat – B – 194**A New, Portable, Inexpensive, Bluetooth-Capable, Vital Signs Monitoring System**

A. D. HERMAN¹, M. J. BALLINTYN¹, D. KAPUTA¹, J. ENDERLE¹, AND C. GOLIBER¹
¹University of Connecticut, Storrs, CT

PS – Sat – B – 195**Engineering Viral Nanoparticles for Applications in Medicine: Therapeutic VNP Formulations for Applications in Photodynamic Cancer Therapy**

M. RYAN¹, AND N. F. STEINMETZ¹
¹Case Western Reserve University, Cleveland, OH

PS – Sat – B – 196**Coating Cortical Bone with Polyelectrolyte Multilayers Using the Polysaccharides Heparin and Chitosan**

J. MOWER¹, J. ALMODOVAR¹, AND M. KIPPER¹
¹Colorado State University, Fort Collins, CO

PS – Sat – B – 197**Human Center of Pressure Responses to Subtle Sinusoidal Visual or Base-of-Support Movements**

K. KEARNS¹, AND C. ROBINSON¹
¹Clarkson University, Potsdam, NY

PS – Sat – B – 198**Engineering Endothelial Cell Adhesion Using Cooperative Alginate Hydrogels**

J. HU¹, L. ROTENSTEIN¹, M. RAFAT¹, AND D. AUGUSTE¹
¹Harvard University, Cambridge, MA

PS – Sat – B – 199**A Model for Study of Structure-Function Relationships in Collagen/Fibrin Composites**

T. JONES¹, H. CIRKA¹, G. PINS¹, AND K. BILLIAR¹
¹Worcester Polytechnic Institute, Worcester, MA

PS – Sat – B – 200**Design of Peptide Nucleic Acids for Site-Specific Gene Editing in Cystic Fibrosis**K. K. ANANDALINGAM¹, N. A. MCNEER¹, M. E. EGAN², P. M. GLAZER², AND W. M. SALTZMAN¹¹Yale University, New Haven, CT, ²Yale University School of Medicine, New Haven, CT**PS – Sat – B – 201****The Effect of Mineral Microparticles on Dental Cell Differentiation**A. FARLEY¹, L. DATKO¹, AND D. DEAN¹¹Clemson University, Clemson, SC**PS – Sat – B – 202****Absorption of Citrate-Coated Gold Nanoparticles by 3T3 Fibroblast Cells**N. GILREATH¹, L. DATKO², D. DEAN², AND B. GLENN²¹Governer's School for Science and Mathematics, Hartsville, SC, ²Clemson University, Clemson, SC**PS – Sat – B – 203****U-Tube Device for Extracting Small Numbers of Cells from Bulk Samples for Microfluidic Studies**K. HOCKEMEYER^{1,2}, J. BRADY^{1,3}, K. SEALE^{1,3}, AND J. P. WIKSWO^{1,4}¹Vanderbilt University, Nashville, TN, ²Vanderbilt Institute for Integrative Biosystems Research and Education (VIBRE), Nashville, ³The Searle Systems Biology and Bioengineering Undergraduate Research Experience (SyBBURE), Nashville, TN, ⁴Vanderbilt Institute for Integrative Biosystems Research and Education (VIBRE), Nashville, TN**PS – Sat – B – 204****The Effect of Poly-a 2,8 Sialic Acid on the Morphologic and Genotypic Behaviors of Human Neural Stem Cells**C. L. YAMA¹, S. MASAND¹, AND D. SHREIBER¹¹Rutgers University, Piscataway, NJ**PS – Sat – B – 205****Micropatterned Surfaces for the Control of Localization of Dictyostelium discoideum**L. KOLSKI¹, AND C. JANETOPOULOS¹¹Vanderbilt University, Nashville, TN**PS – Sat – B – 206****Targeted-Enzyme Complementation to Image Cancer Receptors**A. VERMA¹, G. RAMAMURTHY¹, S. CHUNG¹, A-M. BROOME¹, AND J. P. BASILION¹¹Case Western Reserve University, Cleveland, OH**PS – Sat – B – 207****Fluorescent Staining and Image Analysis Optimization for Bone Marrow Stromal Cells Cultured on Magnesium Alloy**M. FOSTER¹, A. BROWN¹, AND C. SFEIR¹¹University of Pittsburgh, Pittsburgh, PA**PS – Sat – B – 208****Pure Uniaxial Stretch of Fibroblast-Populated Collagen gel**N-M. A. ANGLIN¹, M. H. KURAL¹, AND K. L. BILLIAR¹¹Worcester Polytechnic Institute, Worcester, MA**PS – Sat – B – 209****A System for Controlled Study of Strain Gradients *in Vitro***S. ROBB¹, H. CIRKA², AND K. BILLIAR²¹Robert Morris University, Moon Township, PA, ²Worcester Polytechnic Institute, Worcester, MA**PS – Sat – B – 210****Biomimetic Strategies in Hepatic Tissue Engineering**M. GREEN¹, S. HIGBEE², AND J. WEST²¹Morehouse College, Grovetown, GA, ²Rice University, Houston, TX**PS - Sat - B - 211****Effects of Electrical Stimulation on Functions of Bone Cells**M. E. WECHSLER¹, C. M. CREECY¹, AND R. BIZIOS¹¹The University of Texas at San Antonio, San Antonio, TX**PS - Sat B - 212****Design and Implementation of a Digital Microfluidic Device with an SU-8 Dielectric**SAMAT KABANI¹, JUNYU LEI¹, BRAD LUBBERS², AND FRANZ BAUDENBACHER²¹Systems Biology and Bioengineering Undergraduate Research Experience (SyBBURE), ²Vanderbilt University, Biomedical Engineering, Nashville, TN, USA

Saturday, October 15, 2011

10:30AM - 12:00PM

PLATFORM SESSION – SAT – I

**Track: Cellular and Molecular Engineering
- OP - Sat - I - I****Cell Motility - I****Chairs:** Jianping Fu, Andrea Gobin
*Convention Center – Room 11***10:30AM Sat - I - I – A****The Roles of N-cadherin in Three-Dimensional Cancer Cell Invasion**
W. SHIH¹, AND S. YAMADA¹¹University of California, Davis, CA**10:45AM Sat - I - I – B****Interstitial Flow and Fluid Shear Stress Affect Invasive and Metastatic Potentials of Tumor Cells**H. QAZI¹, AND J. M. TARBELL¹¹The City College of New York, New York, NY**11:00AM Sat - I - I – C****Dissecting the Chemotactic Behavior of Dendritic Cells for immunotherapy**J. TEO¹, C. NEMBRINI¹, U. HAESSLER¹, AND M. SWARTZ¹¹Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland**11:15AM Sat - I - I – D****Utilizing *In Vitro* Chemokine Gradients to Elucidate Lymphocyte Migration Mechanisms Within Lymph node Germinal Centers**C. S. WALLACE¹, J. CHAO¹, AND W. M. REICHERT¹¹Duke University, Durham, NC**11:30AM Sat - I - I – E****Cooperative Signaling in the Induction of Epithelial-Mesenchymal Transition**Q. K. CHEN¹, K. LEE¹, C. LUI¹, D. C. RADISKY², AND C. M. NELSON¹¹Princeton University, Princeton, NJ, ²Mayo Clinic, Jacksonville, FL**11:45AM Sat - I - I – F****Developing Nanofabricated Magnetic Field Concentrations for Biologically Inspired Directional Control of Swimming Magnetotactic Bacteria**L. M. GONZALEZ¹, E. ZENKOV¹, W. C. RUDER², S-Y. CHOU¹, W. C. MESSNER¹, AND P. R. LEDUC¹¹Carnegie Mellon University, Pittsburgh, PA, ²Boston University, Boston, MA**Track: Cellular and Molecular Engineering
- OP - Sat - I - 2****Molecular Engineering****Chairs:** Henry Hess, David Odde
*Convention Center – Room 12***10:30AM Sat - I - 2 – A****Directing Receptor Interactions via Protein Engineering: Towards Enhanced Cardioprotective Therapy**S. M. JAY^{1,2}, J. F. HAWKINS¹, E. KURTAGIC³, L. G. GRIFFITH³, AND R. T. LEE¹¹Brigham and Women's Hospital, Cambridge, MA, ²MIT, Cambridge, ³MIT, Cambridge, MA**10:45AM Sat - I - 2 – B****Lentiviral Arrays for Quantitative Assessment of Genetic Pathways Affecting Stem Cell Differentiation**S. ALIMPERTI¹, J. TIAN², P. LEI², AND S. ANDREADIS²¹SUNY at Buffalo, North Tonawanda, NY, ²SUNY at Buffalo, Amherst, NY**11:00AM Sat - I - 2 – C****Distinct Effects of Human and Salmon Thrombin on the Inflammatory Response of Mammalian Astrocytes**S. A. OAKE¹, J. R. SMITH¹, P. A. JANMEY¹, AND B. A. WINKELSTEIN¹¹University of Pennsylvania, Philadelphia, PA**11:15AM Sat - I - 2 – D****Study of Glutathione Redox from Brain and Blood Sample in Alzheimer's Transgenic Mouse Model**C. ZHANG¹, C. RODRIGUEZ², M. CIRCU², J. SPAULDING¹, T. AW², AND J. FENG¹¹Louisiana Tech University, Ruston, LA, ²Louisiana State University Health Sciences Center, Shreveport, LA**11:30AM Sat - I - 2 – E****Vector Construction for Genetic Manipulation of Biogenic Nanoparticle Producing Bacteria**E. ZENKOV¹, L. M. GONZALEZ¹, W. C. RUDER², AND P. R. LEDUC¹¹Carnegie Mellon University, Pittsburgh, PA, ²Boston University, Boston, MA**11:45AM Sat - I - 2 – F****ROCK Isoform Specific and Non-specific Regulation of Myofibroblast Phenotypes**B. G. KELSO¹, A. MCQUADE¹, AND T. WAKATSUKI¹¹Medical College of Wisconsin, Milwaukee, WI**Track: Drug Delivery Systems - OP - Sat - I - 3****Targeted Drug Delivery - I****Chairs:** James Cooper, Jordan Green
*Convention Center – Room 13***10:30AM Sat - I - 3 – A****Nanoimprint Lithography to Study Effect of Shape of Nanocarriers for Drug Delivery**R. AGARWAL¹, M. C. MOORE¹, V. SINGH¹, S. MARSHALL¹, P. JURNEY¹, L. SHI¹, S. V. SREENIVASAN¹, AND K. ROY¹¹University of Texas at Austin, Austin, TX**10:45AM Sat - I - 3 – B****A Novel Polyplex-Microbubble Hybrid for Improved Ultrasound-Mediated Plasmid DNA Delivery**S. R. SIRSI¹, S. L. HERNANDEZ², L. ZIELINSKI², H. BLOMBACK², A. KOUBAA², M. SYNDER², J. J. KANDEL², D. J. YAMASHIRO², AND M. A. BORDEN¹¹University of Colorado at Boulder, Boulder, CO, ²Columbia University, New York City, NY**11:00AM Sat - I - 3 – C****An Autocatalytic Drug Delivery Vehicle for Treating Cancer**N. MURTHY^{1,2}¹Georgia Tech, Atlanta, GA, ²Georgia Tech, Atlanta, GA**11:15AM Sat - I - 3 – D****Transferrin Mediated Drug Delivery to Brain**D. CHANDRA¹, AND P. KARANDE¹¹Rensselaer Polytechnic Institute, Troy, NY**11:30AM Sat - I - 3 – E****Ultrasound-Assisted Brain Drug Delivery**G. K. LEWIS¹, S. GUARION¹, A. SARVAZYAN², AND W. OLBRIGHT¹¹Cornell University, Ithaca, NY, ²Atrann Labs, West Trenton, NJ

11:45AM Sat - I -3 - F

Skeletal Muscle Transfection via the Ultrasound-Microbubble-Targeted Delivery of Polyethyleneglycol (PEG)-Polyethylenimine (PEI) Nanocarriers: Influence of Microbubble Diameter and Acoustic Pressure

C. W. BURKE¹, J. S. SUK², A. J. KIM², E. I. ALEXANDER¹, A. L. KLIBANOV¹, J. HANES², AND R. J. PRICE¹

¹University of Virginia, Charlottesville, VA, ²John Hopkins University, Baltimore, MD

Track: Systems Biology, Bioinformatics and Computational Bioengineering - OP - Sat - I - 4

Multi-Scale and Multiphysics Modeling

Chairs: Mohammad R. Mofrad, Ravi Radhakrishnan

Convention Center - Room 14

10:30AM Sat - I -4 - A

Multiscale Damage Model for Collagen Gels

M. HADI¹, E. SANDER², AND V. BAROCAS¹

¹University of Minnesota, Minneapolis, MN, ²University of Iowa, Iowa City, IA

10:45AM Sat - I -4 - B

Biomechanical Characterization of Acute Otitis Media in Guinea Pig: Experimental Measurement and Finite Element Analysis

X. ZHANG¹, X. GUAN¹, C. MOWDER¹, W. YOUNG², AND R. Z. GAN

¹University of Oklahoma, Norman, OK, ²University of Texas at Dallas, Richardson, TX

11:00AM Sat - I -4 - C

Multiscale Systems Biology for Patient-Specific Simulations of Thrombosis

M. H. FLAMM¹, M. S. CHATTERJEE¹, T. COLACE¹, AND S. L. DIAMOND¹

¹University of Pennsylvania, Philadelphia, PA

11:15AM Sat - I -4 - D

Investigating the Presence of Diffusion Barriers During Macropinocytosis Using Computational Methods

S-W. L. CHANG¹, T. P. WELLIVER¹, J. A. SWANSON¹, AND J. J. LINDERMAN¹

¹University of Michigan, Ann Arbor, MI

11:30AM Sat - I -4 - E

Computational Benchmarking of a State-of-the-Art Full Body Finite Element Model

D. P. MORENO^{1,2}, N. A. VAVALLE^{1,2}, F. S. GAYZIK^{1,2}, AND J. D. STITZEL^{1,2}

¹Virginia Tech - Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC, ²Wake Forest University School of Medicine, Winston-Salem, NC

11:45AM Sat - I -4 - F

Finite Element Analysis of the Medial Meniscus During Rear End Low-Speed Collisions

D. J. TICHON¹, AND D. R. PETERSON¹

¹University of Connecticut Health Center, Farmington, CT

Track: Neural Engineering - OP - Sat - I - 5

Neural Trauma and Repair - I

Chairs: Dale Bass, Kacy Cullen

Convention Center - Room 15

10:30AM Sat - I -5 - A

Spinal PARI mRNA Expression Decreases Early After Painful Nerve Root Injury With Inflammation

J. SMITH¹, S. ROTHMAN¹, J. BLACK¹, AND B. A. WINKELSTEIN¹

¹University of Pennsylvania, Philadelphia, PA

**10:45AM Sat - I -5 - B**

Lumbar Puncture Delivery of Encapsulated Mesenchymal Stromal Cells Promotes Type II Immunotherapy in an Acute Model of Spinal Cord Injury

J. BARMINKO¹, J. H. KIM¹, X. DONG¹, A. GRAY¹, R. SCHLOSS¹, M. GRUMET¹, AND M. L. YARMUSH¹

¹Rutgers University, Piscataway, NJ

**11:00AM Sat - I -5 - C**

Development of Injectable, Electrospun Fiber Hybrid Scaffolds for Directed Neural Regeneration

C. J. RIVET¹, AND R. J. GILBERT¹

¹Rensselaer Polytechnic Institute, Troy, NY

**11:15AM Sat - I -5 - D**

Variation in Temperature Affects Material Properties in *In Vivo* and *In Vitro* Porcine Brain:ARFI Imaging Study

C. A. URBANCZYK¹, M. L. PALMERI¹, N. M. KLOPPENBORG¹, N. C. ROUZE¹, AND C. R. BASS¹

¹Duke University, Durham, NC

**11:30AM Sat - I -5 - E**

Rotational Head Acceleration and Velocity Associated with Concussion in Humans

S. ROWSON¹, AND S. M. DUMA¹

¹Virginia Tech, Blacksburg, VA

**11:45AM Sat - I -5 - F**

Memantine and Estrogen Combination Therapy for Traumatic Brain Injury

M. R. LAMPRECHT¹, B. S. ELKIN¹, AND B. MORRISON, III¹

¹Columbia University, New York, NY



Track: Orthopedic and Rehabilitation Engineering - OP - Sat - I - 6

Rehabilitation Engineering

Chairs: Hani Awad, Robert Mauck, Sarah Wilson

Convention Center - Room 16

10:30AM Sat - I -6 - A

Kinematic and Dynamic Gait Compensations in a Rat Joint Instability Model of Knee Osteoarthritis

K. D. ALLEN^{1,2}, B. A. MATA³, M. A. GABR³, J. L. HUEBNER³, V. B. KRAUS³, AND L. A. SETTON³

¹University of Florida, Gainesville, FL, ²Duke University, Durham, NC, ³Duke University, Durham, NC

10:45AM Sat - I -6 - B

A Kinematic and Kinetic Assessment of Multiple Baseball Pitching Techniques in College Aged Pitchers

M. J. SOLOMITO¹, C. W. NISSEN¹, AND S. OUNPUU¹

¹Connecticut Children's Medical Center, Farmington, CT

**11:00AM Sat - I -6 - C**

In Vivo Biomechanics of Neural Mechanisms Influencing Stretching of the Muscle-Tendon Unit

T. L. SMITH¹, P. HAUBRUCK², K. R. SAUL³, W. F. WIGGINS¹, J. D. STITZEL³, B. P. SMITH¹, C. J. TUOHY¹, AND S. MANNAVA¹

¹Wake Forest University School of Medicine, Winston-Salem, NC, ²University of Heidelberg School of Medicine, Heidelberg, Germany, ³VT-WFU School of Biomedical Engineering and Sciences, Winston-Salem, NC

11:15AM Sat - I -6 - D

Wrist Kinetics and Ultrasound Measures of the Median Nerve during Computer Keyboarding

K. TOOSI¹, AND M. BONINGER¹

¹University of Pittsburgh, Pittsburgh, PA

11:30AM Sat - I -6- E**Step Kinematics of Rats Trained with Robotic Position Based Functional Electrical Stimulation**T. CHAO¹, S. ASKARI², E. PARTIDA¹, L. CONN¹, T. LAZZARETTO¹, P. A. SEE¹, C. CHOW¹, R. D. DELEON¹, AND D. S. WON¹¹California State University, Los Angeles, CA, ²University of Southern California, Los Angeles, CA**11:45AM Sat - I -6 - F****Biomechanical Assessment of the Rotational Aspect of the Spine in Patients with Scoliosis**M. J. SOLOMITO^{1,2}, M. C. LEE¹, AND D. R. PETERSON²¹Connecticut Children's Medical Center, Farmington, CT, ²University of Connecticut, Farmington, CT**Track: Biomedical Imaging and Optics
- OP - Sat - I - 7****Optical Diagnostics, Sensing and Devices****Chairs:** Erik Shapiro, Vo Van Toi
*Convention Center - Room 17***10:30AM Sat - I -7 - A****Portable Lensless Pixel Super-Resolution Microscope for Telemedicine Applications**W. BISHARA¹, U. SIKORA¹, O. MUDANYALI¹, T-W. SU¹, O. YAGLIDERE¹, S. LUCKHART², AND A. OZCAN^{1,3}¹University of California, Los Angeles, CA, ²University of California, Davis, CA, ³California NanoSystems Institute, Los Angeles, CA**10:45AM Sat - I -7 - B****Lensfree Pixel-Super Resolution Microscopy using Wetting-films On a Chip**O. MUDANYALI¹, W. BISHARA¹, AND A. OZCAN¹¹UCLA, Los Angeles, CA**11:00AM Sat - I -7 - C****The Viability of Microprisms for Chronic In-Vivo Imaging**N. GILFOY¹, R. N. SACHDEV¹, AND M. J. LEVENE¹¹Yale University, New Haven, CT**11:15AM Sat - I -7 - D****Second Harmonic Holographic Imaging of Thick Fixed Muscle Tissue Slices**D. SMITH¹, AND R. BARTELS¹¹Colorado State University, Fort Collins, CO**11:30AM Sat - I -7- E****Near-IR Image-Guided Automated Venipuncture Device for Difficult Venous Access**A. I. CHEN¹¹Rutgers University, Holmdel, NJ**11:45AM Sat - I -7 - F****Clinical, Non-invasive In Vivo Diagnosis of Melanoma Skin Cancer using Multimodal Spectral Diagnosis (SD)**L. LIM¹, B. NICHOLS¹, N. RAJARAM¹, J. S. REICHENBERG², M. R. MIGDEN³, AND J. W. TUNNELL¹¹University of Texas at Austin, Austin, TX, ²University of Texas Southwestern Austin, Austin, TX, ³University of Texas MD Anderson Cancer Center, Houston, TX**Track: New Frontiers in Biomedical Engineering -
OP - Sat - I - 8****Cellular Mechanics & Computational
Bioengineering- I****Chairs:** Jeffrey Fredberg, Dhananjay Tambe
*Convention Center - Room 21***10:30AM Sat - I -8 - A****Polymer Physics of Cytoskeletal and Extracellular Networks and Their Role in Mechanosensing**Q. WEN¹, F. J. BYFIELD¹, S-Y. TEE¹, AND P. A. JANMEY¹¹University of Pennsylvania, Philadelphia, PA**11:00AM Sat - I -8 - B****Mechanoselective Intercellular Adhesion**D. LECKBAND¹, H. TABDILI¹, M. LANGER¹, Q. SHI¹, AND N. WANG¹¹University of Illinois, Urbana, IL**11:15AM Sat - I -8 - C****Integration of Mechanical Signals Uncovers Non-linear Cell Structural Response**R. STEWARD JR.¹, C-M. CHENG², AND P. LEDUC¹¹Carnegie Mellon University, Pittsburgh, PA, ²Harvard University, Cambridge, MA**11:30AM Sat - I -8 - D****Mapping Large-Scale Protein Conformational Changes with Cysteine Shotgun-Mass Spectrometry**B. CHASE¹, J. D. PAJEROWSKI², J. SWIFT¹, D. SPEICHER³, AND D. DISCHER¹¹University of Pennsylvania, Philadelphia, PA, ²Merck, Whitehouse Station, NJ, ³Wistar Institute, Philadelphia, PA**11:45AM Sat - I -8- E****Effect of Disease-causing Lamin A/C Mutations on Nuclear Structure and Mechanics**M. ZWERGER¹, D. E. JAALOUK¹, M. L. LOMBARDI¹, P. ISERMANN^{1,2}, L. WALLRATH³, AND J. LAMMERDING¹¹Brigham and Women's Hospital/Harvard Medical School, Cambridge, MA, ²Westfälische Wilhelms-Universität Münster, Münster, Germany, ³University of Iowa, Iowa City, IA**Track: Tissue Engineering - OP - Sat - I - 9****Stem Cells and Tissue Engineering - I****Chairs:** Todd McDevitt, Shelly Payton
*Convention Center - Room 22***10:30AM Sat - I -9 - A****ECM Production by hESCs in Synthetic Fibrous Scaffolds Supports Self-Renewal and Differentiation**A. CARLSON¹, C. A. FLOREK¹, J. J. KIM¹, J. KOHN¹, AND P. V. MOGHE¹¹Rutgers, The State University of New Jersey, Piscataway, NJ**10:45AM Sat - I -9 - B****VEGF Induces Endothelial Differentiation of Amniotic Fluid Derived Stem Cells**O. M. BENAVIDES¹, J. J. PETSCHER¹, K. J. MOISE^{2,3}, A. JOHNSON^{2,3}, AND J. G. JACOT^{1,2}¹Rice University, Houston, TX, ²Texas Children's Hospital, Houston, TX, ³Baylor College of Medicine, Houston, TX**11:00AM Sat - I -9 - C****Neural Crest Stem Cells Undergo Specific Differentiation in Vascular and Neural Microenvironment During Regeneration**A. WANG¹, Z. TANG¹, Y. ZHU¹, Y. LI¹, AND S. LI¹¹UC Berkeley, Berkeley, CA

11:15AM Sat - I -9 - D**Perfusion-decellularization of Pancreatic Matrix- A Scaffold for Bio-engineered Pancreas**S. GOH¹, S. BERTERA², AND I. BANERJEE³¹University of Pittsburgh, Pittsburgh, PA, ²University of Pittsburgh School of Medicine, Pittsburgh, PA, ³McGowan Institute for Regenerative Medicine, Pittsburgh, PA**11:30AM Sat - I -9- E****Utilizing siRNA to Direct Mesenchymal Stem Cell Differentiation**M. BOUTIN¹, AND D. S. BENOIT¹¹University of Rochester, Rochester, NY**11:45AM Sat - I -9 - F****Matrix Microarrays for Investigating Liver and Pancreas Specification of Stem Cells**D. BRAGA-MALTA^{1,2}, N. E. RETICKER-FLYNN¹, E. LEHTOLA¹, C. LOBATO DA SILVA², J. SAMPAIO CABRAL², S. N. BHATIA^{1,3}, AND G. H. UNDERHILL¹¹Massachusetts Institute of Technology, Cambridge, MA, ²Instituto Superior Técnico, Lisboa, Portugal, ³The Howard Hughes Medical Institute, Cambridge, MA**Track: Devices: Nano to Micro - OP - Sat - I - 10*****Biomaterial Immunoengineering****Chairs:** Tarek Fahmy, Darrel Irvine*Convention Center - Room 23***10:30AM Sat - I -10 - A****Novel Malaria Vaccine Nanoparticles Elicit Robust Humoral Responses Mediated by CD4 Helper T Cells**J. J. MOON¹, H. SUH¹, A. YADAVA², AND D. IRVINE^{1,3}¹Massachusetts Institute of Technology, Cambridge, MA, ²Walter Reed Army Institute of Research, Silver Spring, MD, ³Howard Hughes Medical Institute, Chevy Chase, MD**10:45AM Sat - I -10 - B****Force Generation and Invasion of T Cells Into Micro Pillar Arrays**K. T. BASHOUR¹, S. GHASSEMI¹, J. HONE¹, AND L. KAM¹¹Columbia University, New York, NY**11:00AM Sat - I -10 - C****Effects of Material Properties and Antigen Release Rate on Vaccination Efficacy**A. L. SIEFERT¹, S. L. DEMENTO², A. TRIVELLAS¹, AND T. M. FAHMY¹¹Yale University, New Haven, CT, ²Unilever, Trumbull, CT**11:15AM Sat - I -10 - D****Immunostimulatory Effects of Gold Nanoparticle Mediated Photothermal Ablation**L. KENNEDY¹, A. BEAR^{2,3}, J. YOUNG¹, J. MATTOS ALMEIDA¹, A. FOSTER^{2,3}, AND R. DREZEK¹¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX, ³The Methodist Hospital and Texas Children's Hospital, Houston**11:30AM Sat - I -10 - E****Nanotopography Guided Migration of T Cells**K. KWON¹, K-Y. SUH², AND J. DOH¹¹POSTECH, Pohang, Gyeongbuk, Korea, Republic of, ²Seoul National University, Seoul, Korea, Republic of**11:45AM Sat - I -10 - F****Nanoparticle-based Cytokine Delivery to CD4T Cells Induces TFHDifferentiation and Increased Antibody Responses**D. A. CHRISTIAN¹, J. S. SILVER¹, J. PARK², T. M. FAHMY², AND C. A. HUNTER¹¹University of Pennsylvania, Philadelphia, PA, ²Yale University, New Haven, CT

*Supported by an unrestricted educational grant from

**Track: Devices: Nano to Micro - OP - Sat - I - 11*****Biosensors, Bio-Interfaces and Implantable Devices - I****Chairs:** Shyamsunder Erramilli*Convention Center - Room 24***10:30AM Sat - I -11 - A****Amperometric Biosensor for Direct Ventricular CSF Lactate Detection**C. LI¹, AND R. NARAYAN²¹Feinstein Institute for Medical Research, Manhasset, NY, ²Hofstra North Shore LIJ School of Medicine, Manhasset, NY**10:45AM Sat - I -11 - B****Needle-Implantable Biosensing Platform Using Photovoltaic Powering and Optical Communication Links**R. CROCE JR.¹, S. VADDIRAJU^{1,2}, L. ZUO³, M. ROKNSHARIKI³, K. ZHU³, M. GOGNA¹, P. GOGNA¹, F. PAPADIMITRAKOPOULOS¹, S. ISLAM³, AND F. JAIN¹¹University of Connecticut, Storrs, CT, ²Biorasis Inc, Storrs, CT, ³University of Tennessee, Knoxville, TN**11:00AM Sat - I -11 - C****Fabrication and Integration of Biomimetic Tactile Sensor Arrays with Force, Microvibration and Thermal Modalities**C-H. LIN^{1,2}, J. FISHEL^{1,2}, Z. SU¹, AND G. E. LOEB^{1,2}¹USC, Los Angeles, CA, ²Syntouch LLC, Los Angeles, CA**11:15AM Sat - I -11 - D****Simultaneous Detection of Two Cell-secreted Cytokines Using Electrochemical Microfluidic Aptamer-based Biosensor**Y. LIU¹, AND A. REVZIN¹¹UC Davis, Davis, CA**11:30AM Sat - I -11 - E****Spatial Feature Extraction for a Biomimetic Tactile Sensor**Z. SU¹, C-H. LIN^{1,2}, Y. LI¹, AND G. E. LOEB^{1,2}¹University of Southern California, Los Angeles, CA, ²Syntouch LLC, Los Angeles, CA**11:45AM Sat - I -11 - F****Highly Sensitive Continuous Flow Micro-calorimeter for Biological Applications**V. L. KOPPARTHY^{1,2}, S. M. TANGUTOORU^{1,2}, G. G. NESTOROVA^{1,2}, R. GUMMA^{1,2}, AND E. J. GUILBEAU^{1,2}¹Louisiana Tech University, Ruston, LA, ²Center for Biomedical Engineering and Rehabilitation Science, Ruston, LA

*Supported by an unrestricted educational grant from

**Track: Cardiovascular Engineering - OP - Sat - I - 12****Cardiovascular Stents and Devices - I****Chairs:** Danny Bluestein, Barry Lieber*Convention Center - Room 25***10:30AM Sat - I -12 - A****Influence of the Perfusion Technique on Performance Characteristics of a Machine Perfusion Device for Long-Term Preservation of Human Hearts**M. L. COBERT¹, M. PELTZ¹, L. M. WEST¹, M. E. MERRITT², AND M. E. JESSEN¹¹University of Texas Southwestern Medical Center, Dallas, TX, ²University of Texas Southwestern Medical Center Advanced Imaging Research Center, Dallas, TX**10:45AM Sat - I -12 - B****Minimally Invasive Delivery of a Conditioned Urinary Bladder Matrix Stent Device**T. M. MCGLOUGHLIN^{1,2}, A. J. CLOONAN^{1,2}, B. J. DOYLE^{1,2}, AND A. CALLANAN^{1,2}¹Centre for Applied Biomedical Engineering Research, Limerick, Ireland, ²Materials and Surface Science Institute, Limerick, Ireland

11:00AM Sat - I -12 - C**Computer Modeling for the Prediction of Thoracic Aortic Stent Graft Collapse**S. PASTA^{1,2}, O. DUR³, J-S. CHO⁴, K. PEKKAN³, AND D. A. VORP¹¹University of Pittsburgh, Pittsburgh, PA, ²Fondazione RiMED, Palermo, Italy, ³Carnegie Mellon University, Pittsburgh, PA, ⁴University of Pittsburgh, Pittsburgh, PA**11:15AM Sat - I -12 - D****Post-Deployment Geometry of Braided Stents**C. SADASIVAN¹, L. PEELING¹, D. J. FIORELLA¹, H. H. WOO¹, AND B. B. LIEBER¹¹Stony Brook University, Stony Brook, NY**11:30AM Sat - I -12 - E****Blood Derived Endothelial Progenitor Cells Prevent Thrombosis in a Large Animal Model**A. JANTZEN¹, H. E. ACHNECK¹, F-H. LIN¹, W. O. LANE¹, AND G. A. TRUSKEY¹¹Duke University, Durham, NC**11:45AM Sat - I -12 - F****Thrombogenicity Comparison of Rotary Blood Pumps: Micromed Heartassist 5 and Thoratec Heartmate II**W-C. CHIU¹, G. GIRDHAR¹, M. XENOS¹, Y. ALEMU¹, J. SHERIFF¹, B. LYNCH², J. JESTY³, M. SLEPIAN⁴, S. EINAV¹, AND D. BLUESTEIN¹¹Dept. of Biomedical Engineering, Stony Brook University, Stony Brook, NY, ²MicroMed Cardiovascular Inc., Houston, TX, ³Division of Hematology, School of Medicine, Stony Brook University, Stony Brook, NY, ⁴Sarver Heart Center, University of Arizona, Tucson, AZ**Track: Translational Biomedical Engineering - OP - Sat - I - 13****Clinical and Translational Research and Science in Biomedical Engineering III****Chair:** Davood Tashayyod*Convention Center – Room 26*

Sponsored by Coulter Foundation – This session will serve as a companion to the previous Coulter Foundation session (on Friday) and will consist of another three invited Principle Investigators who have participated in the Coulter Translational Research Award program. This is a national competition which provides “gap” funding to reduce the risks in the technology and make it market ready. Awardees will make presentations on their projects and lessons learned about translational research. There will be ample time allowed for a Question/Answer period with the three panelists.

- Panelists – TBD

Track: Respiratory Engineering - OP - Sat - I - 14**Microfluidics and Tissue Engineering Constructs for the Lung****Chairs:** Donald Gaver, Samir Ghadiali*Convention Center – Room 27***10:30AM Sat - I -14 - A****Development and Characterization of a 3D Microtissue Culture Model of Airway Smooth Muscle**A. R. WEST¹, N. ZAMAN¹, D. COLE¹, M. WALKER¹, W. LEGANT², C. CHEN², E. COWLEY¹, AND G. MAKSYM¹¹Dalhousie University, Halifax, NS, Canada, ²University of Pennsylvania, Philadelphia, PA**10:45AM Sat - I -14 - B****Development of Simultaneous μ -PIV/Shadowgraph Technique for Flow-field Analysis Near the Unsteady Pulsating Semi-infinite Bubble Tip Under the Influence of Pulmonary Surfactant**E. YAMAGUCHI¹, B. J. SMITH¹, AND D. P. GAVER¹¹Tulane University, New Orleans, LA**11:00AM Sat - I -14 - C****Variable Stretch Increases mRNA Expression of Collagen and LOX in Lung Fibroblasts in a 3D Matrix**J. IMSIROVIC¹, C. RICH², J. BUCZEK-THOMAS², M. NUGENT^{1,2}, AND B. SUKI¹¹Boston University College of Engineering, Boston, MA, ²Boston University School of Medicine, Boston, MA**11:15AM Sat - I -14 - D****Mucus Clearance on a Chip: Clearance vs. Gravity**J. CARPENTER¹, S. LYNCH¹, S. KLYSTRA¹, M. MILLARD², AND R. SUPERFINE¹¹UNC, Chapel Hill, NC, ²St Louis University, St Louis, MO**11:30AM Sat - I -14 - E****Effects of Decellularized Lung Matrix on a Type II Epithelium-Enriched Cell Population**E. A. CALLE¹, K. C. DARWIN¹, T. H. PETERSEN², AND L. E. NIKLASON¹¹Yale University, New Haven, CT, ²Duke University, Durham, NC**11:45AM Sat - I -14 - F****A Microfluidics-Based Artificial Lung Device with High Oxygen Transfer Rates**T. KNIAZEVA¹, J. HSIAO¹, J. L. CHAREST¹, AND J. T. BORENSTEIN¹¹Draper Laboratory, Cambridge, MA

Saturday, October 15, 2011**1:30PM - 3:00PM****PLATFORM SESSION – SAT – 2****Track: Cellular and Molecular Engineering
- OP - Sat - 2 - I****Cell Motility - II****Chairs:** Sanjay Kumar, Maribel Vazquez
*Convention Center – Room 11***1:30PM Sat - 2-I – A****Endothelial Cells Enhance Migration of Meniscus Cells
in a Three-Dimensional Hydrogel System**X. YUAN¹, G. M. ENG¹, D. E. ARKONAC¹, C. T. HUNG¹, AND G. VUNJAK-NOVAKOVIC¹¹Columbia University, New York, NY**1:45PM Sat - 2-I – B****Cell Motility is Required for the Stabilization of Microtubules**A. D. RAPE¹, W. GUO¹, AND Y-L. WANG¹¹Carnegie Mellon University, Pittsburgh, PA**2:00PM Sat - 2-I – C****Simultaneous Investigation of Biophysical & Biochemical Cues
on Directional Cell Motility**J. H. SLATER¹, AND J. L. WEST¹¹Rice University, Houston, TX**2:15PM Sat - 2-I – D****Transforming Growth Factor Enhances the Chemotactic
Migration of Neonatal Cells of Glial Lineage**R. A. ABLE¹, C. NGNABEUYE¹, E. C. HOLLAND², AND M. VAZQUEZ¹¹The City College of New York, New York, NY, ²Memorial Sloan Kettering Cancer Center, New York, NY**2:30PM Sat - 2-I – E****Stiffness of the Nucleoskeleton Limits Cell Migration Through
Tight Spaces**E. A. BOOTH-GAUTHIER¹, B. LADOUX², AND K. DAHL¹¹Carnegie Mellon University, Pittsburgh, PA, ²Université Paris Diderot and CNRS, Paris, France**2:45PM Sat - 2-I – F****Collective Cell Guidance by Cooperative Intercellular Forces**D. T. TAMBE¹, C. C. HARDIN², T. E. ANGELINI³, K. RAJENDRAN¹, C. Y. PARK¹, X. SERRA-PICAMAL⁴, E. H. ZHOU¹, M. ZAMAN⁵, D. A. WEITZ³, J. P. BUTLER¹, J. J. FREDBERG¹, AND X. TREPAT⁴¹Harvard School of Public Health, Boston, MA, ²Massachusetts General Hospital, Boston, MA, ³Harvard University, Cambridge, MA, ⁴University of Barcelona, Barcelona, Spain, ⁵Boston University, Boston, MA**Track: Cellular and Molecular Engineering
- OP - Sat - 2 - 2****Cell Mechanics - II****Chairs:** Kevin Costa, Hayden Huang
*Convention Center – Room 12***1:30PM Sat - 2-2 – A****Multiple Methods for Measuring Cell Mechanical Properties**J. MICHAELSON¹, AND H. HUANG¹¹Columbia University, New York, NY**1:45PM Sat - 2-2 – B****De-homogenized Elastic Properties of Heterogeneous Materials
in AFM Indentation Experiments**J-J. LEE^{1,2}, E. U. AZELOGLU¹, AND K. D. COSTA¹¹Mount Sinai School of Medicine, New York, NY, ²The City College of New York, New York, NY**2:00PM Sat - 2-2 – C****Indentation Analysis Method of Soft Bilayers Permits *In Situ*
Measurements of Drosophila Myocardial Stiffness**G. KAUSHIK¹, A. FUHRMANN¹, A. CAMMARATO², AND A. J. ENGLER¹¹University of California, San Diego, La Jolla, CA, ²Sanford-Burnham Medical Research Institute, La Jolla, CA**2:15PM Sat - 2-2 – D****Characterizing Mechanical Heterogeneity in Vascular Smooth
Muscle Cells**S. DEITCH¹, AND D. DEAN¹¹Clemson University, Clemson, SC**2:30PM Sat - 2-2 – E****AFM Characterization of Endothelial Cell Cortex Stiffness**M. JOHNSON¹, R. VARGAS-PINTO¹, AND H. GONG²¹Northwestern University, Evanston, IL, ²Boston University School of Medicine, Boston, MA**2:45PM Sat - 2-2 – F****Cellular Mechanics in Response to Varying PLGA Scaffold Geometries**C. NG¹, AND A. S. NAIN¹¹Virginia Tech, Blacksburg, VA**Track: Drug Delivery Systems - OP - Sat - 2 - 3****Targeted Drug Delivery - II****Chairs:** Edward Botchway, Eric Grovender*Convention Center – Room 13***1:30PM Sat - 2-3 – A****Implication of Particle-Cell Dynamics in Physiological Blood Flow
on the Efficacy of Vascular-Targeted Drug Carriers**P. CHAROENPHOL¹, AND O. ENIOLA-ADEFESO²¹University of Michigan, Ann Arbor, MI, ²University of Michigan, Ann Arbor, MI**1:45PM Sat - 2-3 – B****Synthesis and Characterization of Biodegradable Photostable
Flourescent Polymer-Coated Magnetic Nanoparticles
for Prostate Cancer Detection and Treatment**T. D. KADAPURE^{1,2}, A. S. WADAJKAR^{1,2}, Y. ZHANG^{1,2}, W. CUI², J. YANG^{1,2}, AND K. T. NGUYEN^{1,2}¹University of Texas, Arlington, TX, ²University of Texas Southwestern Medical Center, Dallas, TX**2:00PM Sat - 2-3 – C****Investigation of Systemic Drug Delivery Applications
for a Transferrin Variant**R. Y. CHIU¹, T. TSUJI², C. T. LIU¹, A. B. MASON³, AND D. T. KAMEI¹¹University of California, Los Angeles, Los Angeles, CA, ²Nagoya University, Nagoya, Japan, ³University of Vermont College of Medicine, Burlington, VT**2:15PM Sat - 2-3 – D****Targeted Nucleic Acid Delivery to Neuronal Cells Using
Tet I-modified HPMA-oligolysine Copolymers**D. S. CHU¹, R. N. JOHNSON¹, AND S. H. PUN¹¹University of Washington, Seattle, WA**2:30PM Sat - 2-3 – E****A New Platform to Investigate Nanoparticle Targeting to the Endothelium**B. ZERN¹, A-M. CHACKO¹, E. SIMONE¹, AND V. MUZYKANTOV¹¹University Of Pennsylvania, Philadelphia, PA

2:45PM Sat - 2-3 - F**Bioinspired Drug Delivery: Cooperative Adhesion via Temperature Responsive Antibody Organization**D. ALMEDA¹, J.-O. YOU¹, AND D. AUGUSTE¹¹Harvard University, Cambridge, MA**Track: Systems Biology, Bioinformatics and Computational Bioengineering - OP - Sat - 2 - 4****Engineering Therapeutics Through Simulation and Computation****Chairs:** Sarah Noble, Ann Rundell, Jonathan Sachs
*Convention Center - Room 14***1:30PM Sat - 2-4 - A****A New Method for Detection of Central Apnea in Premature Infants**H. LEE¹, B. VERGALES², A. PAGET-BROWN², C. RUSIN², J. R. MOORMAN², J. KATTWINKEL², AND J. DELOS¹¹College of William and Mary, Williamsburg, VA, ²University of Virginia, Charlottesville, VA**1:45PM Sat - 2-4 - B****A Computational Approach to Estimating Brain Microvascular Blood Flows from Partial Two-Photon Microscopy Data**N. CORNELIUS¹, J. SUNWOO¹, P. DOERSCHUK¹, AND C. SCHAFER¹¹Cornell University, Ithaca, NY**2:00PM Sat - 2-4 - C****Identification of a Novel Target for Breast Cancer by Exploring Gene Switches on a Genome Scale**M. WU¹, L. LIU¹, AND C. CHAN¹¹Michigan State University, East Lansing, MI**2:15PM Sat - 2-4 - D****Inter-cellular Signaling Network in Tumor Microenvironment: An Evolutionary Dynamics Modeling**Y. WU¹, AND R. FAN^{1,2}¹Yale University, New Haven, CT, ²Yale Cancer Center, New Haven, CT**2:30PM Sat - 2-4 - E****The Relationship Between Oscillator Model Parameters and Experimental Magnesium Concentration in Hippocampal Seizure Networks: A Preliminary Spike Train Analysis**W. CHEN¹, D. O. CAHOY¹, J. G. TASKER², D. F. BARKARD¹, AND A. W. CHIU¹¹Louisiana Tech University, Ruston, LA, ²Tulane University, New Orleans, LA**2:45PM Sat - 2-4 - F****Modeling of Heterogeneous Populations of Self-Renewing Embryonic Stem Cells**J. WU¹, AND E. S. TZANAKAKIS¹¹SUNY-Buffalo, Buffalo, NY**Track: Neural Engineering - OP - Sat - 2 - 5****Neural Trauma and Repair - II****Chairs:** Kit Parker, Beth Winkelstein
*Convention Center - Room 15***1:30PM Sat - 2-5 - A****Blast-Induced Traumatic Brain Injury Model using Submerged Acute Rat Brain Tissue Slices**M. SARTINORANONT¹, S. J. LEE¹, J. KWON¹, Y. HONG¹, M. A. KING¹, D. F. MOORE², AND G. SUBHASH¹¹University of Florida, Gainesville, FL, ²Tulane University, New Orleans, LA**1:45PM Sat - 2-5 - B****Response of Organotypic Brain Slice Cultures Following Exposure to Short-Duration Overpressure**A. KEPSEL¹, AND P. J. VANDEVORD^{1,2}¹Wayne State University, Detroit, MI, ²Detroit VAMC, Detroit, MI**2:00PM Sat - 2-5 - C****Neural Cell Biophysical Responses in Blast-Induced Traumatic Brain Injury**C. J. MIETUS¹, K. D. BROWNE¹, X. MENG², J. A. WOLF¹, D. H. SMITH¹, S. ADEEB³, U. KAWOOS³, A. ROSEN², M. CHAVKO³, AND D. CULLEN¹¹University of Pennsylvania, Philadelphia, PA, ²Drexel University, Philadelphia, PA, ³Naval Medical Research Center, Silver Spring, MD**2:15PM Sat - 2-5 - D****A Novel Method for Exposing Tissue Cultures to Blast Overpressure for Determining Injury Criteria**M. B. PANZER¹, C. R. BASS¹, B. P. CAPEHART^{2,3}, B. MORRISON⁴, AND D. F. MEANEY⁵¹Duke University, Durham, NC, ²Duke University School of Medicine, Durham, NC, ³Durham VA Medical Center, Durham, NC, ⁴Columbia University, New York, NY, ⁵University of Pennsylvania, Philadelphia, PA**2:30PM Sat - 2-5 - E****Blast Overpressure Induces Disruption of Brain Endothelial Monolayer Integrity**C. D. HUE¹, M. B. PANZER², C. R. BASS², D. F. MEANEY³, AND B. MORRISON III¹¹Columbia University, New York, NY, ²Duke University, Durham, NC, ³University of Pennsylvania, Philadelphia, PA**2:45PM Sat - 2-5 - F****Brain Injury Risk From Primary Blast**K. A. RAFAELS¹, C. R. BASS², M. B. PANZER², R. S. SALZAR³, W. A. WOODS³, S. FELDMAN³, T. WALILKO⁴, R. KENT³, B. P. CAPEHART⁵, J. K. SHRIDHARAN², AND A. TOMAN⁶¹Army Research Laboratory, APG, MD, ²Duke University, Durham, NC, ³University of Virginia, Charlottesville, VA, ⁴Applied Research Associates, Littleton, CO, ⁵Durham VA Medical Center, Durham, NC, ⁶Technical Support Working Group, Washington, DC**Track: Biomedical Engineering Education* and Outreach - OP - Sat - 2 - 6****K-12 Outreach****Chairs:** Robert Gettens, Suzanne Olds
*Convention Center - Room 16***1:30PM Sat - 2-6 - A****A Content/Design Model for K-12 Education: First Results with Bioengineering**C. M. ZWART¹, J. R. RYAN¹, J. E. HOUSTON¹, M. K. BRENN², S. MULHERN², C. K. PIERCE¹, W. WANG¹, D. H. FRANKS¹, AND T. G. GANESH¹¹Arizona State University, Tempe, AZ, ²Kyrene School District, Phoenix, AZ**1:45PM Sat - 2-6 - B****Teaching K-12 STEM with Bioengineering Design**K. L. BILLIAR¹, T. OLIVA², J. HUBELBANK³, AND T. CAMESANO¹¹Worcester Polytechnic Institute, Worcester, MA, ²Forest Grove Middle School, Worcester, MA, ³EvalConsult, Sudbury, MA**2:00PM Sat - 2-6 - C****An Engineering Outreach Activity for K-12 Students Involving Robotic Surgery**M. RUST¹, R. GETTENS¹, R. BEACH¹, AND J. CEZEAX¹¹Western New England College, Springfield, MA**2:15PM Sat - 2-6 - D****Novel High School Inquiry Exercise on Ionic Bonding and Tissue Engineering using Alginate Hydrogels**R. D. BOWLES¹, J. SAROKA², S. ARCHER¹, AND L. J. BONASSAR¹¹Cornell University, Ithaca, NY, ²Lansing High School, Ithaca, NY

2:30PM Sat - 2-6 - E**Altered Micro-Environmental Conditions Lead to Congenital Defects**R. A. GOULD¹, P. R. BUSKOHL¹, AND J. T. BUTCHER¹¹Cornell University, Ithaca, NY**2:45PM Sat - 2-6 - F****Promoting Vehicle Safety and Science Initiative in Outreach Events with CIREN**K. L. LOFTIS^{1,2}, K. M. KENNEDY², D. JOYNER², AND J. D. STITZEL^{1,2}¹VT-WFU Center for Injury Biomechanics, Winston-Salem, NC, ²WF-VT Crash Injury Research and Engineering Network, Winston-Salem, NC*Supported by  WHITAKER
International Fellows and Scholars
Program**Track: Biomedical Imaging and Optics****- OP - Sat - 2 - 7****Visualization Strategies at the Interface****Chairs:** Sergio Fantini, Fiorenzo Omenetto*Convention Center - Room 17***1:30PM Sat - 2-7 - A****3D Computational Imaging for Cell Dynamics Visualization and Cell Identification- Invited**B. JAVIDI¹, AND A. ANAND²¹University of Connecticut, Storrs, CT, ²MS University of Baroda, Vadodra, India

CME

2:00PM Sat - 2-7 - B**Engineering Protein Beacons for Live-cell Imaging of HIV-1 CA Protein**H. SHEN¹, P. SPEARMAN², AND G. BAO¹¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA

CME

2:15PM Sat - 2-7 - C**In Vivo Imaging of Stimulus-evoked Fast Intrinsic Optical Signals in Frog Retina**Q. ZHANG¹, Y. LI¹, AND X. YAO¹¹University of Alabama Birmingham, Birmingham, AL

CME

2:30PM Sat - 2-7 - D**Multispectral Imaging of Cutaneous Tissue Oxygen**J. HUANG¹, E. QIN¹, J. XU¹, C. SEN¹, R. XU¹, D. ALLEN², AND J. HWANG²¹The Ohio State University, Columbus, OH, ²National Institute of Standards and Technology, Gaithersburg, MD

CME

2:45PM Sat - 2-7 - E**Micro-Optic Lenses for In Vivo Mouse Brain Imaging: A Short, High-NA, Versatile Alternative**T. A. MURRAY¹, AND M. J. LEVENE¹¹Yale University, New Haven, CT

CME

Track: New Frontiers in Biomedical Engineering -**OP - Sat - 2 - 8****Cellular Mechanics & Computational Bioengineering- II****Chairs:** Kris Dahl, Mohammed Mofrad*Convention Center - Room 21***1:30PM Sat - 2-8 - A****Nuclear Pore Complex: A Mysterious Gateway to the Nucleus**R. MOUSSAVI-BAYGI¹, R. KARIMI¹, AND M. R. MOFRAD¹¹University of California, Berkeley, CA**1:45PM Sat - 2-8 - B****How Dynein and Microtubules Rotate the Nucleus**J. WU¹, K. C. LEE¹, R. B. DICKINSON¹, AND T. P. LELE¹¹University of Florida, Gainesville, FL**2:00PM Sat - 2-8 - C****Dissecting the Active Gel Dynamics of the Microtubule Cytoskeleton in Living Cells**B. D. HOFFMAN¹, K. M. VAN CIITTERS², A. W. LAU³, AND J. C. CROCKER²¹University of Virginia, Charlottesville, VA, ²University of Pennsylvania, Philadelphia, PA, ³Florida Atlantic University, Boca Raton, FL**2:15PM Sat - 2-8 - D****A Motor-Clutch Model for Substrate Stiffness Sensing: Parametric Analysis and Application to Glioma Cell Force Transmission**B. BANGASSER¹, K. OPOKU¹, E. TUZEL², C. CHAN¹, B. BLANK¹, S. ROSENFELD³, AND D. ODDE¹¹University of Minnesota, Minneapolis, MN, ²Worcester Polytechnic Inst, Worcester, MA, ³Columbia University, New York, NY**2:30PM Sat - 2-8 - E****Quantification of Membrane Stress and Stress Fluctuations Using the Fluorescence Lifetime of an Embedded Lipophilic Molecular Rotor**P. J. BUTLER¹, H. S. MUDDANA², AND T. TABOUILLO³¹Penn State University, University Park, PA, ²University of California San Diego, La Jolla, CA, ³University of Michigan, Ann Arbor, MI**2:45PM Sat - 2-8 - F****CD82 Tetraspanins Regulate IL-8 Secretion via Downstream NF-kappa B Signaling**P. KHANNA¹, C-Y. CHUNG², G. P. ROBERTSON², AND C. DONG¹¹Pennsylvania State University, University Park, PA, ²Pennsylvania State University Medical Center, Hershey, PA**Track: Tissue Engineering - OP - Sat - 2 - 9****Stem Cells and Tissue Engineering - II****Chairs:** Hojae Bae, Michelle Khine*Convention Center - Room 22***1:30PM Sat - 2-9 - A****IL-8 Signaling by Endothelial Cells Enhances Glioblastoma Stem Cell Migration and Growth**D. W. INFANGER¹, B. S. LOPEZ², I. EKLADIOUS¹, D. GURSEL³, J. A. BOOCKVAR³, AND C. FISCHBACH¹¹Cornell University, Ithaca, NY, ²Colorado State University, Fort Collins, CO, ³Welll Cornell Medical College of Cornell University, New York City, NY**1:45PM Sat - 2-9 - B****In Vitro and In Vivo Characterization of Bioactive Osteogenic Sponges with Mesenchymal Stem Cells, Nanoporous Silicon Enclosures, Peptide Amphiphiles and Platelet-rich Plasma for Accelerated Fracture Repair**M. B. MURPHY¹, D. BLASHKI², R. M. BUCHANAN^{1,3}, D. FAN¹, E. DEROSA¹, R. SHAH⁴, S. I. STUPP⁴, B. K. WEINER¹, P. J. SIMMONS², M. FERRARI¹, AND E. TASCOTTI¹¹The Methodist Hospital Research Institute, Houston, TX, ²The University of Texas Health Science Center at Houston, Houston, TX, ³The University of Texas at Austin, Austin, TX, ⁴Northwestern University, Chicago, IL**2:00PM Sat - 2-9 - C****Endothelial Cell ECM Produced Under Dynamic Conditions Promotes Neural Stem Cell Proliferation**K. S. ELLISON¹, C. M. ZWOLINSKI¹, M. R. NEWMAN¹, N. DEPAOLA², AND D. M. THOMPSON¹¹Rensselaer Polytechnic Institute, Troy, NY, ²Illinois Institute of Technology, Chicago, IL**2:15PM Sat - 2-9 - D****Role of Cell Microenvironment in Non-viral Gene Delivery**A. DHALIWAL¹, M. MALDONADO¹, C. LIN¹, AND T. SEGURA¹¹University of California, Los Angeles, Los Angeles, CA

2:30PM Sat - 2-9 - E**Characterization and Design of Hydrodynamic Culture Formats for Scalable Bioprocessing of Embryonic Stem Cells**M. A. KINNEY¹, J. L. WILSON¹, R. SAEED¹, B. ZAKHARIN², A. GLEZER², AND T. C. MCDEVITT^{1,2}¹Georgia Institute of Technology & Emory University, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA**2:45PM Sat - 2-9- F****Nanostructured Scaffolds For Regulating Osteogenic Differentiation Of Induced Pluripotent Stem Cells**K. E. HAMMERICK¹, F. K. KASPER¹, AND A. G. MIKOS¹¹Rice University, Houston, TX**Track: Devices: Nano to Micro - OP - Sat - 2 - 10***
Nano to Micro Fluidic Technologies - I**Chairs:** Rong Fan, Christopher Love*Convention Center - Room 23***1:30PM Sat - 2-10 - A****Clinical Microchips to Assess Multifunctionality of Single T Cells**R. FAN¹, C. MA², Y. LU¹, H. AHMAD², AND J. R. HEATH²¹Yale University, New Haven, CT, ²California Institute of Technology, Pasadena, CA**1:45PM Sat - 2-10 - B****Two-dimensional Paper Network Format for Amplified Lateral Flow Assays**E. FU¹, T. LIANG¹, J. HOUGHTALING¹, S. RAMACHANDRAN¹, S. RAMSEY², B. LUTZ¹, AND P. YAGER¹¹University of Washington, Seattle, WA, ²Seattle BioMed, Seattle, WA**2:00PM Sat - 2-10 - C****Cancer Cell Isolation from Blood Using a High Throughput Contactless Dielectrophoresis (cDEP) Microfluidic Device**A. SALMANZADEH¹, H. SHAFIEE¹, M. A. STREMLER¹, AND R. V. DAVALOS¹¹Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA**2:15PM Sat - 2-10 - D****Inertial Focusing Streak Behavior In Alternating Dean Flows**J. MARTEL¹, AND M. TONER²¹Harvard University, Cambridge, MA, ²Massachusetts General Hospital, Boston, MA**2:30PM Sat - 2-10 - E****A Microfabricated Device to Study Lymphatic-Mediated Tumor Metastasis**M. PISANO¹, G. MERNIER¹, K. BARBEE², P. RENAUD¹, AND M. A. SWARTZ¹¹École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland, ²Drexel University, Philadelphia, PA**2:45PM Sat - 2-10- F****Resonant Fluidic Circuits for Sound-controlled Point-of-Care Diagnostics**R. H. PHILLIPS¹, R. SHAH¹, J. BROWNING¹, AND B. R. LUTZ¹¹University of Washington, Seattle, WA

*Supported by an unrestricted educational grant from

**Track: Devices: Nano to Micro - OP - Sat - 2 - 11****Biosensors, Bio-Interfaces and Implantable Devices - II****Chairs:** Shyamsunder Erramilli*Convention Center - Room 24***1:30PM Sat - 2-11 - A****A Strain Sensor for Monitoring Bladder Volume**S. K. THAKAR¹, H. CAO¹, M. SHETH¹, M. OSENG¹, T. FU², AND J.-C. CHIAO¹¹University of Texas at Arlington, Arlington, TX, ²Centennial High School, Frisco, TX**1:45PM Sat - 2-11 - B****Development of immunoFET Sensitive in Physiologic Salt for Monitoring Transplant Rejection Status**P. CASAL¹, X. WEN¹, S. GUPTA¹, T. NICHOLSON III¹, Y. WANG¹, W. LU¹, AND S. C. LEE¹¹The Ohio State University, Columbus, OH**2:00PM Sat - 2-11 - C****Silk Based Stabilization and Immobilization of FRET Protein Glucose Nano Sensors**K. TSIORIS¹, D. KAPLAN¹, AND F. OMENETTO¹¹Tufts University, Medford, MA**2:15PM Sat - 2-11 - D****Transcutaneous Energy Transfer by an Electric Field**Z. ABZUG¹, T. JOCHUM¹, AND P. WOLF¹¹Duke University, Durham, NC**2:30PM Sat - 2-11 - E****Control of Cell Phenotype with Sub-Micron Level Vibrations**H. R. HOLMES¹, E. L. TAN¹, E. VLAISAVLJEVICH¹, W. PACES¹, K. G. ONG¹, AND R. M. RAJACHAR¹¹Michigan Technological University, Houghton, MI**2:45PM Sat - 2-11 - F****Evaluating The Effect of Antigen-Presenting Surface Charge on CD8+ T cell Response Using Biofunctionalized Carbon Nanotube Substrates**T. R. FADEL¹, N. LI¹, E. HONG¹, F. SHARP¹, M. LOOK¹, G. HALLER¹, L. PFEFFERLE¹, S. JUSTESEN², AND T. M. FAHMY¹¹Yale University, New Haven, CT, ²University of Copenhagen, Copenhagen, Denmark**Track: Cardiovascular Engineering - OP - Sat - 2 - 12****Cardiovascular Stents and Devices - II****Chairs:** Danny Bluestein, Barry Lieber*Convention Center - Room 25***1:30PM Sat - 2-12 - A****In Vitro Quantification of Pore Spaces Left After Endovascular Coiling of Intracranial Aneurysms**C. SADASIVAN¹, R. DHOLAKIA¹, B. PATEL¹, J. BROWNSTEIN¹, M. S. ELHAMMADY², H. FARHAT², M. A. AZIZ-SULTAN², D. J. FIORELLA¹, H. H. WOO¹, AND B. B. LIEBER¹¹Stony Brook University, Stony Brook, NY, ²University of Miami, Miami, FL**1:45PM Sat - 2-12 - B****Drug Eluting Fully Bioresorbable Vascular Scaffold Development for the Treatment of Coronary Artery Disease**Y. WANG¹, AND X. MA¹¹Abbott Vascular, Santa Clara, CA**2:00PM Sat - 2-12 - C****An Electrospun Biodegradable, Elastic Wrap With Paclitaxel Release for Arterial Vein Graft Applications**Y. HONG¹, Q. WANG¹, W. HE¹, L. SOLETTI¹, D. A. VORP¹, AND W. R. WAGNER¹¹University of Pittsburgh, Pittsburgh, PAPLATFORM
SESSIONS

Sat-2

PS = Poster Session
OP = Oral Presentation

CME = Credit approved

2:15PM Sat - 2-12 - D**Novel *In Vitro* Model to Elucidate Mechanisms of Acquired von Willebrand's Disease with LVAD Support**S. DASSANAYAKA¹, M. A. SOBIESKI¹, S. C. KOENIG¹, S. C. D'SOUZA¹, AND C. R. BARTOLI¹¹University of Louisville, Louisville, KY**2:30PM Sat - 2-12 - E****Acute Hemodynamic Responses to Partial vs. Full Unloading of the Heart with a Continuous-Flow LVAD**C. R. BARTOLI¹, K. R. BRITTAIN¹, M. SOBIESKI¹, G. A. GIRIDHARAN¹, W. WEAD¹, R. D. DOWLING², M. S. SLAUGHTER¹, S. D. PRABHU¹, AND S. C. KOENIG¹¹University of Louisville, Louisville, KY, ²SCR Inc., Louisville, KY**2:45PM Sat - 2-12- F****Alterations in von Willebrand Factor and Platelets with Mechanical Circulatory Support**T. A. SNYDER¹, D. A. HORSTMANSHOFF¹, A. GHULOOM¹, K. E. NELSON¹, AND J. W. LONG¹¹Integrus Baptist Medical Center, Oklahoma City, OK**Track: Undergraduate Research - OP - Sat - 2 - 13****Undergraduate Research - I****Chairs:** Delphine Dean, Jiro Nagatomi

Convention Center - Room 26

1:30PM Sat - 2-13 - A**Tissue Phantom Testing of Fluorocoxib for Topical Delivery Using a Dual-Axis Confocal Microscope**A. BALASUBRAMANIAN¹, H. RA², C. H. CONTAG², L. J. MARNETT³, AND M. J. UDDIN³¹Rice University, Houston, TX, ²Stanford University School of Medicine, Stanford, CA, ³Vanderbilt University School of Medicine, Nashville, TN**1:40PM Sat - 2-13 - B****Detection of Dendritic Activity Using MRI**W. JAY¹, R. WIJESINGHE¹, AND B. ROTH²¹Ball State University, Muncie, IN, ²Oakland University, Rochester, MI**1:50PM Sat - 2-13 - C****Field Portable Reflection and Transmission Microscopy**O. YAGLIDERE¹, M. LEE¹, AND A. OZCAN¹¹UCLA, Los Angeles, CA**2:00PM Sat - 2-13 - D****Portable Lens-free Tomographic Microscope**U. SIKORA¹, S. O. ISIKMAN¹, W. BISHARA¹, O. YAGLIDERE¹, J. YEAH¹, AND A. OZCAN¹¹UCLA, Los Angeles, CA**2:10PM Sat - 2-13 - E****OCTivat: Optical Coherence Tomography Image Visualization and Analysis Toolkit**G. C. LINDERMAN¹, Z. WANG¹, H. G. BEZERRA², M. A. COSTA², AND A. M. ROLLINS¹¹Case Western Reserve University, Cleveland, OH, ²Harrington-McLaughlin Heart & Vascular Institute, University Hospitals Case Medical Center, Cleveland, OH**2:20PM Sat - 2-13 - F****Nanofibrous Texturizing for Prevention of Bacterial Infection on Biomedical Implants**H. BARBER¹, M. KARGAR¹, J. HAUGHT¹, A. NAIN¹, AND B. BEHKAM¹¹Virginia Tech, Blacksburg, VA**2:30PM Sat - 2-13 - G****Detection of Waterborne Pathogens Using Electrochemical DNA Sensors for Resource Limited Settings**

Saturday, October 15, 2011

3:15PM - 4:45PM

PLATFORM SESSION – SAT – 3

Track: Cellular and Molecular Engineering
- OP - Sat - 3 - I

Cell Adhesion

Chairs: Dennis Discher, Eda Yildirim-Ayan
Convention Center – Room 11

3:15PM Sat - 3-I – A

Role of Microtubules in Focal Adhesion Turnover in Vascular Endothelial Cells Exposed to Shear Stress

S. CHUBACHI¹, N. SAKAMOTO¹, AND M. SATO¹¹Tohoku University, Sendai, Miyagi, Japan

3:30PM Sat - 3-I – B

Nano-Manipulation of a Nascent Focal Adhesion Reveals Dynamic Mechanical Coupling to Membrane Rafts

D. E. FUENTES¹, AND P. J. BUTLER¹¹The Pennsylvania State University, University Park, PA

3:45PM Sat - 3-I – C

High-throughput Analysis of Cell Adhesion via Parallel Manipulation of Individual Microbeads

Z. PENG^{1,2}, D. MYERS^{1,2}, W. CHEN², T. SULCHEK², P. HESKETH², AND W. LAM^{1,2}¹Emory University, Atlanta, GA, ²Georgia Institute of Technology, Atlanta, GA

4:00PM Sat - 3-I – D

Control of Fibronectin Conformation and Stiffness with a Conducting Polymer Surface

A. M. WAN¹, E. M. CHANDLER¹, D. GOURDON¹, C. FISCHBACH¹, G. G. MALLIARAS², AND C. K. OBER¹¹Cornell University, Ithaca, NY, ²École Nationale Supérieure des Mines de Saint-Étienne, Gardanne, France

4:15PM Sat - 3-I – E

Characterization of E-selectin Ligands on HNSCC cells

M. M. BURDICK¹, J. R. MARSHALL¹, N. M. REYNOLDS¹, V. S. SHIRURE¹, J. V. HAWES¹, AND S. M. WOOD¹¹Ohio University, Athens, OH

4:30PM Sat - 3-I – F

Diacylglycerol Kinase Zeta Negatively Regulates CXCR4-Stimulated T Lymphocyte Firm Arrest to ICAM-1 under Shear Flow

D. LEE¹, J. KIM¹, M. T. BESTE², M. J. RIESE¹, G. A. KORETZKY¹, AND D. A. HAMMER¹¹University of Pennsylvania, Philadelphia, PA, ²Massachusetts Institute of Technology, Cambridge, MATrack: Cellular and Molecular Engineering
- OP - Sat - 3 - 2

Cell Mechanics - III

Chairs: Eric Darling, Alexander Spector
Convention Center – Room 12

3:15PM Sat - 3-2 – A

Stretch-Induced Cytoskeletal Remodeling in Three Dimensional Tissue Constructs

S.-L. LEE¹, A. NEKOZADEH¹, K. M. PRYSE¹, G. GENIN¹, AND E. ELSON¹¹Washington University in Saint Louis, Saint Louis, MO

3:30PM Sat - 3-2 – B

Cancer Cell Force Evolves Throughout the *In Vitro* Cancer MetastasisX. TANG¹, T. B. KUHLENSCHMIDT¹, M. S. KUHLENSCHMIDT², AND T. A. SAIF³¹University of Illinois at Urbana-Champaign, Urbana, IL, ²College of Veterinary Medicine, Urbana, IL, ³College of Engineering, Urbana, IL

3:45PM Sat - 3-2 – C

Confocal Reflectance Microscopy: An Accessible and Adaptable Method to Examine 3D Cell Force Generation From Matrix Remodeling

S. P. CAREY¹, C. M. KRANING-RUSH¹, J. P. CALIFANO¹, B. N. MASON¹, AND C. A. REINHART-KING¹¹Cornell University, Ithaca, NY

4:00PM Sat - 3-2 – D

Glycated Collagen Impairs Endothelial Cell Response To Cyclic Stretch

D. S. FIGUEROA¹, S. F. KEMENY¹, AND A. M. CLYNE¹¹Drexel University, Philadelphia, PA

4:15PM Sat - 3-2 – E

Collagen IV and Mechanical Property of Human Cord Blood-Derived Endothelial Cells in Coculture with Mesenchymal Stem Cells

L. CAO¹, J. LI¹, AND G. A. TRUSKEY¹¹Duke University, Durham, NC

4:30PM Sat - 3-2 – F

Fully Three-dimensional Traction Force Microscopy: Quantification of Forces Exerted by Cells Encapsulated Within Three-dimensional Matrices

W. R. LEGANT¹, J. S. MILLER¹, B. L. BLAKELY¹, D. M. COHEN¹, G. M. GENIN², AND C. S. CHEN¹¹University of Pennsylvania, Philadelphia, PA, ²Washington University in St. Louis, St. Louis, MO

Track: Neural Engineering - OP - Sat - 3 - 3

Prosthetics Engineering

Chairs: Todd Coleman, Robert Kirsch, Kevin Otto

Convention Center – Room 15


3:15PM Sat - 3-3 – A

On the Use of Pigs for Neuroprosthetic Device Development D. A. BORTON¹, N. AGHA¹, M. YIN¹, J. ACEROS¹, C. BULL¹, W. PATTERSON¹, A. NURMIKKO¹, AND J. DONOGHUE¹¹Brown University, Providence, RI


3:30PM Sat - 3-3 – B

Development of Optically Communicated Intracortical Neural Recording System with Fiber Optics S. PARK¹, Y. K. SONG², D. BORTON¹, W. PATTERSON¹, M. YIN¹, J. ACEROS¹, C. BULL¹, AND A. V. NURMIKKO¹¹Brown University, Providence, RI, ²Seoul National University, Suwon, Korea, Republic of


3:45PM Sat - 3-3 – C

Reach Direction and Orientation are Not Separately Controlled Channels in Macaque Cortex G. BODEEN¹, J. AGUAYO¹, AND J. HE¹¹Arizona State University, Tempe, AZ

4:00PM Sat - 3-3 – D

BrainGate2 Desktop: Towards the Development of Viable Cortically-Controlled Communication Interfaces for Individuals with Locked-in Syndrome D. BACHER¹, N. Y. MASSE², B. JAROSIEWICZ^{2,3}, K. TRINGALE¹, J. D. SIMERAL^{3,4}, J. P. DONOGHUE^{2,3}, AND L. R. HOCHBERG^{5,6}¹Engineering, Brown University, Providence, RI, ²Neuroscience, Brown University, Providence, RI, ³Rehab R&D Service, Dept Veterans Affairs Med. Ctr., Providence, RI, ⁴Engineering, Neuroscience, Brown University, Providence, RI, ⁵Rehab R&D Service, Dept Veterans Affairs Med. Ctr.; Engineering, Brown University, Providence, RI, ⁶Neurol., Massachusetts Gen. Hosp.; Neurol., Brigham & Women's, Spaulding Rehabil. Hosp., Harvard Med, Boston, MAPLATFORM
SESSIONS

Sat-3

PS = Poster Session
OP = Oral Presentation = Credit approved

4:15PM Sat - 3-3 - E**EEG Correlates of the Zwicker Tone**P. DEGUZMAN¹, AND L. C. PARRA¹¹City College of New York, New York, NY**4:30PM Sat - 3-3- F****EEG and Eye Tracking During Free-Viewing Visual Search**J. F. DIAS¹, AND L. C. PARRA¹¹City College of New York, New York, NY**Track: Biomedical Engineering Education* and Outreach - OP - Sat - 3 - 4****Pedagogical Innovations in Biomedical Engineering****Chairs:** Shivaun Archer, Eric Kennedy

Convention Center – Room 16

3:15PM Sat - 3-4 - A**Assessing the Impact of Cross-Disciplinary Biomedical Engineering Laboratories on Student Learning**J. D. GASSERT¹, O. IMAS¹, J. LAMACK¹, AND L. FENNIGKOH¹¹Milwaukee School of Engineering, Milwaukee, WI**3:30PM Sat - 3-4 - B****Using Problem-Based Learning to Enhance Experimental Design Skills in a Biotransport Laboratory**M. POOL¹, T. EUSTAQUIO¹, S. JEWETT¹, R. MADANGOPAL¹, K. STUART¹, A. E. RUNDELL¹, AND A. PANITCH¹¹Purdue University, West Lafayette, IN**3:45PM Sat - 3-4 - C****Sequenced Technical Writing Assignments Aid Problem Solving and Conceptual Learning in BME Labs**K. L. BILLIAR¹, AND L. D. HIGGINS¹¹Worcester Polytechnic Institute, Worcester, MA**4:00PM Sat - 3-4 - D****A Tissue Engineering Interactive Workshop: Measuring Conceptual Knowledge and Interest**E. MCCAVE^{1,2}, AND K. BURG^{1,2}¹Clemson University, Clemson, SC, ²Institute for Biological Interfaces of Engineering, Clemson, SC**4:15PM Sat - 3-4 - E****Biomedical Equipment Technician (BMET) and Biomedical Technician's Assistant (BTA) curriculum in Rwanda**J. P. COOPER¹, M. FINLEY², AND R. MALKIN²¹Engineering World Health, Durham, NC, ²Duke University, Durham, NC**4:30PM Sat - 3- 4 - F****Implementation of a One-Semester Graduate Course in BioDesign**C. K. DRUMMOND¹, S. BASU², G. VNEK¹, AND A. HDEIB³¹Case Western Reserve University, Cleveland, OH, ²Cleveland Clinic Foundation, Cleveland, OH, ³University Hospitals Case Medical Center, Cleveland, OH*Supported by  **WHITAKER**
International Fellow and Scholars Program**Track: Biomedical Imaging and Optics - OP - Sat - 3 - 5****Biomedical Optics Frontiers****Chairs:** Sergio Fantini, Fiorenzo Omenetto

Convention Center – Room 17

3:15PM Sat - 3-5 - A**Myocardial Strain by Speckle Tracking Echocardiography: Current Applications and Future Directions- Invited**B. A. LIN¹¹Yale University, New Haven, CT**3:45PM Sat - 3-5 - B****Two-photon Imaging Reveals Multiple Autofluorescence Sources in the Outer and Inner Retina**R. LU¹, Y. LI¹, AND X. YAO¹¹UNIVERSITY OF ALABAMA BIRMINGHAM, BIRMINGHAM, AL**4:00PM Sat - 3-5 - C****Wide-field Lensless Fluorescent Microscopy**A. F. COSKUN¹, T-W. SU¹, I. SENCAN¹, AND A. OZCAN^{1,2}¹Univ of California Los Angeles, Los Angeles, CA, ²California NanoSystems Institute, Los Angeles, CA**4:15PM Sat - 3-5 - D****Novel Biomedical and Biological Applications using Lab-based Multi-scale CT System**K. SEN SHARMA¹, D. M. VASILESCU², A. S. KIZHAKKE PULIYAKOTE², E. A. HOFFMAN², T. ANDRIC¹, J. W. FREEMAN¹, C. MARKERT³, J. D. SCHIFFBAUER¹, S. XIAO¹, H. YU¹, AND G. WANG¹¹Virginia Polytechnic Institute and State University, Blacksburg, VA, ²University of Iowa, Iowa City, IA, ³Wake Forest University Health Sciences, Winston-Salem, NC**4:30PM Sat - 3-5 - E****Visualization of Cardiac and Respiration-dependent Pulsatile Hemodynamics in Cerebral Microvessels**T. P. SANTISAKULTARM¹, N. R. CORNELIUS¹, N. NISHIMURA¹, P. C. DOERSCHUK¹, W. L. OLBRICHT¹, AND C. B. SCHAFFER¹¹Cornell University, Ithaca, NY**Track:Tissue Engineering - OP - Sat - 3 - 6****Tissue Engineering and Mechanobiology****Chairs:** Kaiming Ye, Jun Liao

Convention Center – Room 22

3:15PM Sat - 3-6 - A**Controlling Cardiac Differentiation of Stem Cells Via Changes in Stiffness and Composition of ECM**J. I. RESNIKOFF¹, C. WILLIAMS¹, AND L. D. BLACK¹¹Tufts University, Medford, MA**3:30PM Sat - 3-6 - B****Fibronectin Assembly and Composite Matrix Remodeling Within a Micropatterned Model of Tissue Morphogenesis**W. R. LEGANT^{1,2}, C. S. CHEN¹, AND V. VOGEL²¹University of Pennsylvania, Philadelphia, PA, ²Swiss Federal Institute of Technology Zurich (ETHZ), Zurich, Switzerland**3:45PM Sat - 3-6 - C****AFM Characterization of Adhesive and Structural Properties of Thin Films of Mussel Foot Protein-I**R. SCHUR¹, H. SCHOPPER¹, AND D. GOURDON¹¹Cornell University, Ithaca, NY

4:00PM Sat - 3-6 - D**Regeneration of Cartilage and Mineralized Tissue During Healing of Critically Sized Defects Following Treatment with Artificial Periosteum**S. R. MOORE¹, U. KNOTHE², S. MILZ³ AND M. KNOTHE TATE¹¹Case Western Reserve University, Cleveland, OH, ²Cleveland Clinic, Cleveland, OH, ³Ludwig Maximilian University, Munich, Germany**4:15PM Sat - 3-6 - E****hMSCs Change Pattern of Mechanically Induced ATP Release During Chondrogenesis**I. I. GADJANSKI¹, AND G. VUNJAK-NOVAKOVIC¹¹Columbia University, NY, NY**4:30PM Sat - 3-6 - F****Embryonic Ligament and Tendon Cell Response to Mechanical Loading Varies with Developmental Stage**J. P. BROWN¹, V. FINLEY¹, AND C. KUO¹¹Tufts University, Medford, MA**Track: Devices: Nano to Micro - OP - Sat - 3 - 7*****Nano to Micro Fluidic Technologies - II****Chairs:** Rong Fan, Christopher Love*Convention Center - Room 23***3:15PM Sat - 3-7 - A****Three Dimensional Microfluidic System for Screening Anti-Metastatic Cancer Drugs**Y. K. PARK^{1,2}, C. S. KHOON³, T-Y. TU¹, I. J. CLEMENT³, AND R. D. KAMM^{1,2}¹Singapore-MIT Alliance for Research and Technology Center, Singapore, Singapore,²Massachusetts Institute of Technology, Cambridge, MA, ³National University of Singapore, Singapore, Singapore**3:30PM Sat - 3-7 - B****Microfluidic Separation of Viruses from Blood Cells Based on Intrinsic Transport Processes**C. ZHAO¹, AND X. CHENG¹¹Department of Materials Science and Engineering and Program of Bioengineering, Lehigh University, Bethlehem, PA**3:45PM Sat - 3-7 - C****Capture Amplification of Rare Circulating Tumor Cells**A. N. HOANG^{1,2}, A. SHAH^{3,4}, S. L. STOTT^{1,2}, AND M. TONER^{1,2}¹Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Charlestown, MA, ²Shriners Hospital for Children, Boston, MA, ³Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA, ⁴Harvard-MIT Health Science Technology, Boston, MA**4:00PM Sat - 3-7 - D****Pluronic Additives: Advancing Droplets in Digital Microfluidics**S. AU^{1,2}, P. KUMAR³, AND A. WHEELER^{1,4}¹University of Toronto, Toronto, ON, Canada, ²Donnelly Centre for Cellular and Biomolecular Research, Toronto, Canada, ³Indian Institute of Technology Madras, Chennai, India,⁴University of Toronto, Toronto, Canada**4:15PM Sat - 3-7 - E****Nanoliter Droplet System for Cell Vitrification**X. ZHANG¹, I. KHIMJI¹, L. SHAO¹, H. SAFAEI¹, K. DESAI¹, H. O. KELES¹, U. A. GURKAN¹, E. KAYAALP², A. NUREDDIN¹, R. M. ANCHAN³, R. L. MAAS³, AND U. DEMIRCI^{1,4}¹Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, ²Jamaica Hospital Medical Center, Queens, NY, ³Brigham and Women's Hospital, Harvard Medical School, Boston, MA, ⁴Harvard-Massachusetts Institute of Technology Health Sciences and Technology, Cambridge, MA**w4:30PM Sat - 3-7 - F****Magnetic Separation of CD4+ T Lymphocyte by Streptavidin Functionalized NiSi NWs**D. KIM¹, G. KIM¹, J. SEOL¹, S. LEE¹, J. HYUNG¹, M. LEE¹, AND S. LEE¹¹SPRC, Jeonju, Korea, Republic of

*Supported by an unrestricted educational grant from

**Track: Devices: Nano to Micro - OP - Sat - 3 - 8****Biomems and Nanotech for Cellular Engineering****Chairs:** Utkan Demirci, Anjelica Gonzalez*Convention Center - Room 24***3:15PM Sat - 3-8 - A****Synergistic Regulation of Cell Function by Matrix Rigidity and Adhesive Pattern**S. WENG¹, AND J. FU¹¹University of Michigan, Ann Arbor, MI**3:30PM Sat - 3-8 - B****Microfluidic Device for the Controlled Loading of Cryoprotectants to Oocyte with Linear and Complex Profiles**Y. HEO¹, H-J. LEE², B. A. HASSELL¹, D. IRIMIA¹, T. L. TOTH³, H. ELMOAZZEN¹, AND M. TONER¹¹Center for Engineering in Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, MA, ²Vincent Center for Reproductive Biology, Massachusetts General Hospital, Harvard Medical School, Boston, MA, ³Vincent Obstetrics and Gynecology Services, Massachusetts General Hospital, Harvard Medical School, Boston, MA**3:45PM Sat - 3-8 - C****Investigating Dendritic Filopodial Dynamics in Highly Controlled Microenvironments**A. JAIN¹, L. J. MILLET¹, AND M. U. GILLETTE¹¹University of Illinois at Urbana-Champaign, Urbana, IL**4:00PM Sat - 3-8 - D****Microfluidic Based Random Cell Docking System for Planar Type Patch Clamp**H. LIM¹, D. KEUM¹, B-C. SUH¹, AND S. MOON¹¹DGIST, Daegu, Korea, Republic of**4:15PM Sat - 3-8 - E****A Microfluidic - Layered Device for High Throughput Drug Screening**Z. DERELI KORKUT¹, AND S. WANG¹¹City College of New York, New York, NY**4:30PM Sat - 3-8 - F****Sorting of Cells from Micropatterned Surfaces Using Photochemical Reaction**D-S. SHIN¹, J. SEO¹, AND A. REVZIN¹¹University of California, Davis, CA

Track: Cardiovascular Engineering - OP - Sat - 3 - 9**Cardiac Electrophysiology, Structure, Function**

Chairs: Jeff Jacot, Kara McKloskey, Kit Parker
Convention Center – Room 25

3:15PM Sat - 3-9 – A**The Influence of Microscale Heterogeneity in the Collagen Network of Rabbit Ventricular Subepicardium on Action Potential Propagation**

C. E. BOURGEOIS¹, AND A. E. POLLARD¹

¹*University of Alabama at Birmingham, Birmingham, AL*

3:30PM Sat - 3-9 – B**Retrieval Analysis of Implantable Pacemakers and Cardioverter-defibrillators**

J. HANZLIK¹, J. D. PATEL^{1,2}, J. OCHOA³, B. B. PAVRI⁴, A. GREENSPON⁴, AND S. M. KURTZ^{1,2}

¹*Drexel University, Philadelphia, PA*, ²*Exponent Inc, Philadelphia*, ³*Exponent Inc, Seattle, WA*, ⁴*Thomas Jefferson University Hospital, Philadelphia, PA*

3:45PM Sat - 3-9 – C**Stereo Optical Mapping of Membrane Potential and Epicardial Deformation in Isolated Swine Hearts**

G. S. WAITS¹, AND J. M. ROGERS¹

¹*University of Alabama at Birmingham, Birmingham, AL*

4:00PM Sat - 3-9 – D**Direct Mechanical Ventricular Actuation Support in Severe Heart Failure and Fibrillation**

B. A. SCHMITT¹, K. M. SWARTZMILLER¹, D. B. REYNOLDS¹, R. J. DARNER¹, AND M. P. ANSTADT¹

¹*Wright State University, Dayton, OH*

4:15PM Sat - 3-9 – E**Relaxin Reverses Cardiac Fibrosis in Aged Spontaneously Hypertensive Rats**

J. L. HANEY¹, W. XIANG¹, W. G. WITHAM¹, C. MCTIERNAN¹, K. MCGAFFIN¹, D. S. SCHWARTZMAN¹, AND S. G. SHROFF¹

¹*University of Pittsburgh, Pittsburgh, PA*

4:30PM Sat - 3-9 – F**Heart on a Chip: Measuring Structure-Function Relationships of Cardiac Tissues**

A. GROSBERG¹, P. W. ALFORD¹, M. L. MCCAIN¹, A. P. NESMITH¹, AND K. K. PARKER¹

¹*Disease Biophysics Group, Harvard University, Cambridge, MA*

Track: Undergraduate Research - OP - Sat - 3 - 10**Undergraduate Research - II**

Chairs: Delphine Dean, Jiro Nagatomi
Convention Center – Room 26

3:15PM Sat - 3-10 – A**Do Age and Sex-Related Variations in Material Properties Predict Prevalence of Knee Osteoarthritis?**

A. E. MORRELL¹, J. INZANA¹, P. D. FUNKENBUSCH¹, AND A. L. LERNER¹

¹*University of Rochester, Rochester, NY*

3:25PM Sat - 3-10 – B**Spinal Metabotropic Glutamate Receptor-3 Increases Immediately Following Painful Facet Joint Injury**

J. BLACK¹, C. WEISSHAAR¹, J. ELLIOTT², AND B. A. WINKELSTEIN¹

¹*University of Pennsylvania, Philadelphia, PA*, ²*Northwestern University, Chicago, IL*

3:35PM Sat - 3-10 – C**Osteoblast and Fibroblast Response to Zirconia and Titania Polymer Hybrids**

N. P. THOMAS¹, N. TRAN^{1,2}, J. JARRELL^{2,3}, R. HAYDA^{1,2}, AND C. T. BORN^{1,2}

¹*Department of Orthopaedics, Rhode Island Hospital, Alpert Medical School of Brown University, Providence, RI*, ²*Rhode Island Hospital, Providence, RI*, ³*BiolIntraface, Providence, RI*

3:45PM Sat - 3-10 – D**Engineering Viral Nanoparticles for Applications in Medicine: Developing CPMV as a Platform for Efficient Intracellular Delivery of Therapeutics**

K. CHEN¹, AND N. F. STEINMETZ¹

¹*Case Western Reserve University, Cleveland, OH*

3:55PM Sat - 3-10 – E**Engineering Viral Nanoparticles for Applications in Medicine: Bioconjugation of TMV and Its *In Vivo* Properties**

N. AYAT¹, AND N. F. STEINMETZ¹

¹*Case Western Reserve University, Cleveland, OH*

4:05PM Sat - 3-10 – F**High-throughput Quantification of Angiogenic Receptors for Cancer Models**

P. C. LI¹, P. IMOUKHUEDE¹, AND A. S. POPEL¹

¹*Johns Hopkins University, Baltimore, MD*

4:15PM Sat - 3-10 – G**Enhancing Host Stem Cell Recruitment for *In Situ* Muscle Regeneration**

J. T. DELEON^{1,2}, I. K. KO¹, S. J. LEE¹, J. J. YOO¹, AND A. ATALA¹

¹*Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC*, ²*Wake Forest University, Winston-Salem, NC*

4:25PM Sat - 3-10 – H**Direct Differentiation of Mouse Induced Pluripotent Stem Cells into Nucleus Pulposus-Like Cells**

E. J. LEE¹, L. JING¹, N. CHRISTOFOROU¹, Y. MOU¹, K. W. LEONG¹, L. A. SETTON¹, AND J. CHEN¹

¹*Duke University, Durham, NC*

4:35PM Sat - 3-10 – I**Porous PDMS Anchor Design for Cell-Derived Vascular Tissue Tubes**

K. S. BURNETTE¹, A. Z. REIDINGER², AND M. W. ROLLE²

¹*Mercer University, Lithonia, GA*, ²*Worcester Polytechnic Institute, Worcester, MA*

KEY TO PROGRAM CODES:

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OP – Oral Presentation

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 Thurs-3 Thursday Platform Session 3 – 4:00pm – 5:30pm
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 Fri-2 Friday Platform Session 2 – 1:30pm – 3:00pm
 Fri-3 Friday Platform Session 3 – 4:00pm – 5:30pm
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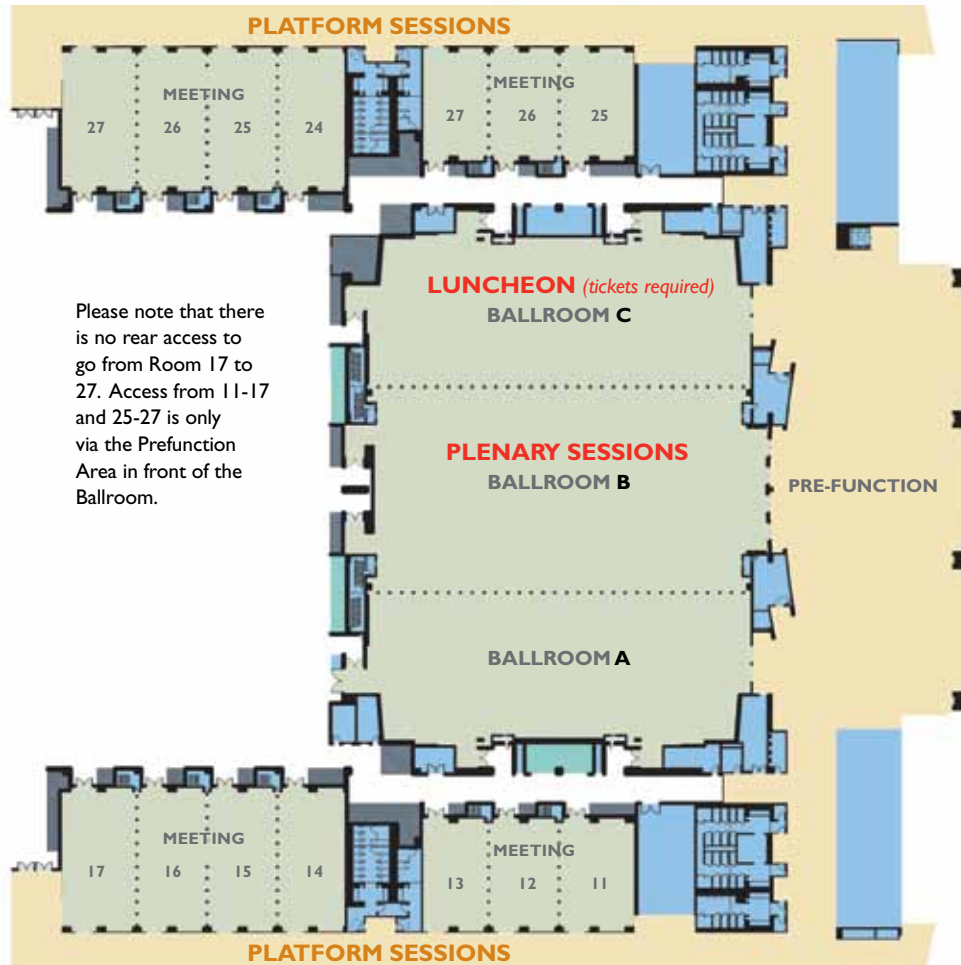
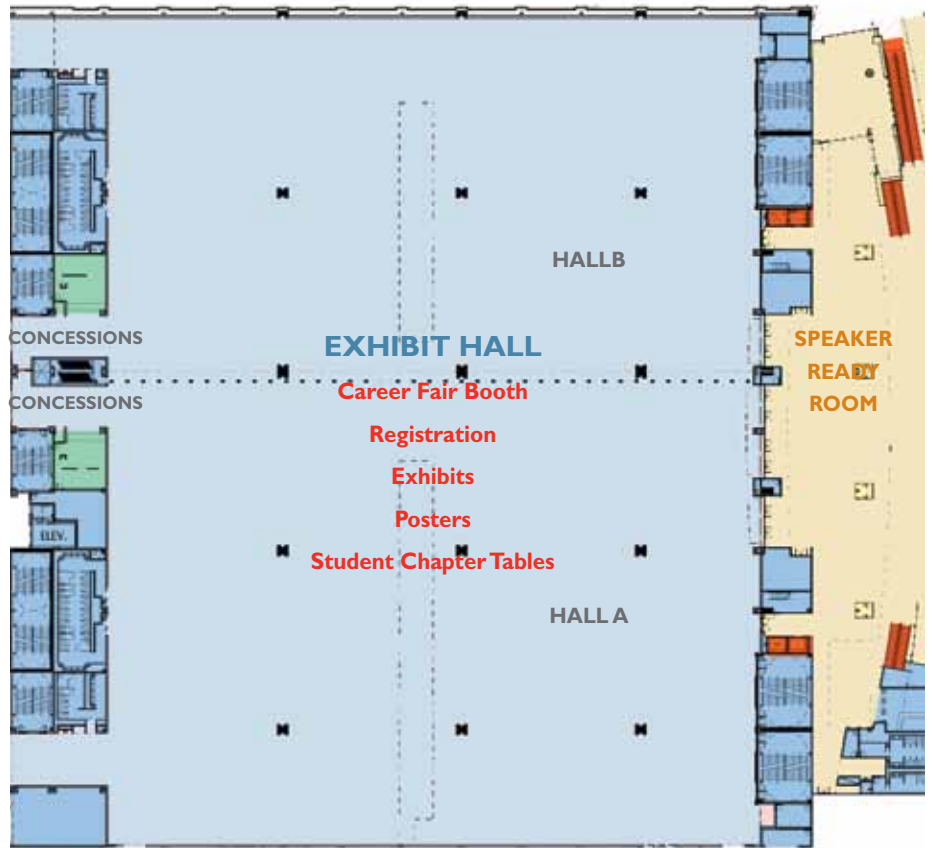
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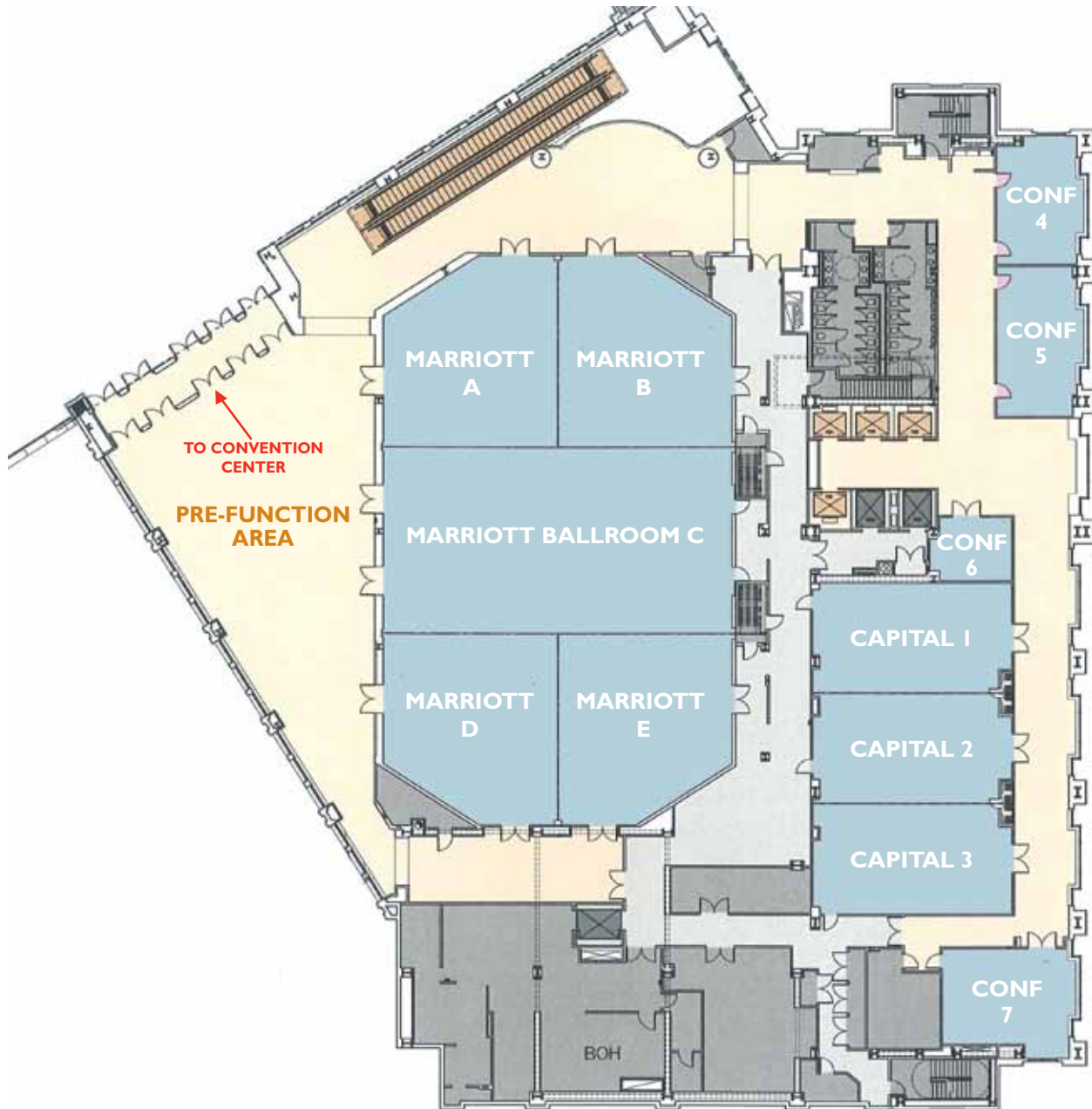
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Biomedical Imaging & Optics	Novel Biomedical Imaging and Microscopy Room 17	Imaging in the Enhancement or Assessment of Therapeutic Delivery Room 17 Bridging Medicine and Materials and Biomedical Imaging Room 21 Orthopedic Imaging Room 16	Imaging with Applications in Cardiovascular Medicine, Regenerative Medicine, Cancer, and Neuroimaging Room 17
Cardiovascular Engineering	Cardiovascular Tissue Engineering – I Room 23 Cardiovascular Mechanotransduction – I Room 25 Cardiovascular Modeling and Measurement - I Room 26	Cardiovascular Tissue Engineering – II Room 23 Cardiovascular Mechanotransduction - II Room 25 Cardiovascular Modeling and Measurement - II Room 26	Cardiovascular Tissue Engineering - III Room 25 Cardiovascular Growth and Remodeling Room 26
Cellular & Molecular Engineering	Symposium in Honor of Shu Chien's Birthday – I Marriott – Ballroom B	Symposium in Honor of Shu Chien's Birthday – II Marriott – Ballroom B	Cell Mechanics - I Room 11
Devices: Nano to Micro	Micro and Nanostructured Biomaterials – I Room 24	Micro and Nanostructured Biomaterials – II Room 24	Medical Diagnostics: Nano to Micro Devices – I Room 24
Drug Delivery Systems	New Concepts and Applications in Drug Delivery Room 12 Nanotechnology Solutions to Drug Delivery – I Room 13	Drug Delivery in Tissue Engineering Room 12 Nanotechnology Solutions to Drug Delivery – II Room 13	Novel Materials and Self Assembly: Cancer Applications Room 13
Neural Engineering	Cellular and Molecular Neurophysiology Room 14	Engineering the Neural Environment Room 15	Neural Electrode Tissue Interface Room 15
New Frontiers in Bioengineering	Immunonobioengineering and Regenerative Medicine Room 21	Bridging Medicine and Materials and Biomedical Imaging Room 21	Bioengineering and Physical Sciences of Cancer Room 21
Orthopedic & Rehabilitation Engineering	Orthopedic Bioengineering Room 16	Orthopedic Imaging Room 16	Orthopedic Biomaterials Room 16
Respiratory Engineering	Multiscale Behavior in the Lung Room 27	Computational Modeling in the Lung Room 27	
Systems Biology, Bioinformatics & Computational Biology	High Throughput Genomics and Computational Proteomics Room 14	Image-based Modeling and Characterization for Biomedicine Room 14	Mathematical and Computational Models of Cellular and Molecular Processes Room 14
Tissue Engineering	Host Response to Biomaterials Room 22 Cardiovascular Tissue Engineering – I Room 23	Drug Delivery in Tissue Engineering Room 12 Musculoskeletal Tissue Engineering – I Room 22 Cardiovascular Tissue Engineering – II Room 23	Musculoskeletal Tissue Engineering – II Room 22 Bioinspired Materials Room 23 Cardiovascular Tissue Engineering - III Room 25
Translational Engineering	Education and Promotion of Translational Biomedical Engineering I Room 11	Education and Promotion of Translational Biomedical Engineering II Room 11	Clinical and Translational Research and Science in Biomedical Engineering Room 27
Other			Whitaker International Fellows and Scholars Program: Funding Opportunity for Young Biomedical Engineers Room 12 International Journal of Nanomedicine Symposium Marriott – Ballroom B

PROGRAM AT A GLANCE

FRIDAY | OCTOBER 14 | 2011

Track	10:30am - 12:00noon	1:30pm - 3:00pm	4:00pm - 5:30pm
Clinician <i>Approved for American Medical Association (AMA) PRA Category I Credit. Please note that single talks within the platform sessions are also ACCME approved and are noted in the main program</i>	Lasers in Medicine Room 17 Models and Practices of Commercialization and Entrepreneurship Marriott – Ballroom A Translational Biomedical Engineering: Research to Practice (R2P) - Personalized Medicine in Real Time: A system engineering approach to enable gene-guided healthcare Marriott - Ballroom B	Mechanobiology in the Lung Room 27	Translational Biomedical Engineering: Research to Practice (R2P) - II Room 27
Biomedical Imaging & Optics	Lasers in Medicine Room 17	Nanotechnology for Biomedical Optics Room 17 Cellular and Subcellular Imaging Room 12	Optogenetics Room 17
Cardiovascular Engineering	Valve Mechanobiology/Tissue Engineering Room 25 Vascular Permeability, Microvasculature, and Angiogenesis - I Room 26	Valve Mechanics Room 25 Vascular Permeability, Microvasculature, and Angiogenesis - II Room 26	Vascular Structure and Function Room 25 Cardiovascular Fluid Dynamics Room 26
Cellular & Molecular Engineering	Mechanotransduction & Mechanobiology – I Room 11 Cell-Cell Interactions Room 12	Mechanotransduction & Mechanobiology – II Room 11 Cellular and Subcellular Imaging Room 12	Mechanotransduction & Mechanobiology – III Room 11 Cellular Engineering & Modeling Room 12
Devices: Nano to Micro	Medical Diagnostics: Nano to Micro Devices – II Room 24	Emerging Concept of Medical Micro Devices Room 24	Drug Delivery Technologies: Nano to Micro Devices Room 24
Drug Delivery Systems	Novel Materials and Self Assembling Systems Room 13	Nucleic Acid Delivery - I Room 13	Nucleic Acid Delivery – II Room 13 Drug Delivery Technologies: Nano to Micro Devices Room 24
Neural Engineering	Neural Engineering Technology – I Room 15	Neural Engineering Technology – II Room 15	Neural Tissue Engineering Room 15
New Frontiers in Bioengineering	Integrated Cellular Systems - I Room 21	Integrated Cellular Systems – II Room 21	Systems Biology Room 21
Orthopedic & Rehabilitation Engineering	Orthopedic Tissue Kinematics and Biomechanics Room 16	Orthopedic Tissue Biomechanics – I Room 16	Orthopedic Tissue Biomechanics – II Room 16
Respiratory Engineering	Mechanistic Bases of Lung Disease from Cells to System Room 27	Mechanobiology in the Lung Room 27	
Systems Biology, Bioinformatics & Computational Biology	Methodology and Applications in Computational Bioengineering and Bioinformatics Room 14	Model-based Experiment Design and Computer Model Validation Room 14	Modeling, Simulation and Control in Personalized Medicine Room 14 Systems Biology Room 21
Tissue Engineering	Nano- and Micro- Engineering in Tissue Engineering Room 22 Bioreactors and Bioprocessing in Tissue Engineering Room 23 Valve Mechanobiology/Tissue Engineering Room 25	Novel Biomaterials and Scaffolds – I Room 22 Cell-Biomaterial Interface Room 23	Neural Tissue Engineering Room 15 Novel Biomaterials and Scaffolds – II Room 22 Engineered Tissue Models for Drug Discovery and Disease Room 23
Translational Engineering	Models and Practices of Commercialization and Entrepreneurship Marriott – Ballroom A Translational Biomedical Engineering: Research to Practice (R2P) - Personalized Medicine in Real Time: A system engineering approach to enable gene-guided healthcare Marriott - Ballroom B	Translational Biomedical Engineering: Research to Practice (R2P) I - Coulter Marriott – Ballroom B	Translational Biomedical Engineering: Research to Practice (R2P) - II Room 27

Track	10:30am - 12:00noon	1:30pm - 3:00pm	3:15pm - 4:45pm
Clinician <i>Approved for American Medical Association (AMA) PRA Category I Credit. Please note that single talks within the platform sessions are also ACCME approved and are noted in the main program</i>	Neural Trauma and Repair - I Room 15	Visualization Strategies at the Interface Room 17	Prosthetics Engineering Room 15
Biomedical Engineering Education & Outreach		K-12 Outreach Room 16	Pedagogical Innovations in Biomedical Engineering Room 16
Biomedical Imaging & Optics	Optical Diagnostics, Sensing and Devices Room 17	Visualization Strategies at the Interface Room 17	Biomedical Optics Frontiers Room 17
Cardiovascular Engineering	Cardiovascular Stents and Devices - I Room 25	Cardiovascular Stents and Devices - II Room 25	Cardiac Electrophysiology, Structure, Function Room 25
Cellular & Molecular Engineering	Cell Motility - I Room 11 Molecular Engineering Room 12 Cellular Mechanics & Computational Bioengineering- I Room 21	Cell Motility - II Room 11 Cell Mechanics - II Room 12	Cell Adhesion Room 11 Cell Mechanics - III Room 12 Biomems and Nanotech for Cellular Engineering Room 24 Tissue Engineering and Mechanobiology Room 22
Devices: Nano to Micro	Biomaterial Immunoengineering Room 23 Biosensors, Bio-Interfaces and Implantable Devices - I Room 24 Optical Diagnostics, Sensing and Devices Room 17	Nano to Micro Fluidic Technologies - I Room 23 Biosensors, Bio-Interfaces and Implantable Devices - II Room 24	Nano to Micro Fluidic Technologies - II Room 23 Biomems and Nanotech for Cellular Engineering Room 24
Drug Delivery Systems	Targeted Drug Delivery - I Room 13	Targeted Drug Delivery - II Room 13	
Neural Engineering	Neural Trauma and Repair - I Room 15	Neural Trauma and Repair - II Room 15	Prosthetics Engineering Room 15
New Frontiers in Bioengineering	Cellular Mechanics & Computational Bioengineering- I Room 21	Cellular Mechanics & Computational Bioengineering- II Room 21	Biomedical Optics Frontiers Room 17
Orthopedic & Rehabilitation Engineering	Rehabilitation Engineering Room 16		
Respiratory Engineering	Microfluidics and Tissue Engineering Constructs for the Lung Room 27		
Systems Biology, Bioinformatics & Computational Biology	Multi-Scale and Multiphysics Modeling Room 14 Cellular Mechanics & Computational Bioengineering- I Room 21	Engineering Therapeutics Through Simulation and Computation Room 14 Cellular Mechanics & Computational Bioengineering- II Room 21	
Tissue Engineering	Stem Cells and Tissue Engineering - I Room 22 Microfluidics and Tissue Engineering Constructs for the Lung Room 27	Stem Cells and Tissue Engineering - II Room 22	Tissue Engineering and Mechanobiology Room 22
Translational Engineering	Clinical and Translational Research and Science in Biomedical Engineering III Room 11		
Undergraduate		Undergraduate Research - I Room 26	Undergraduate Research - II Room 26

SCHEDULE AT A GLANCE 2011 | OCTOBER 12 | WEDNESDAY

**Wednesday,
October 12, 2011**

7am 8am 9am 10am 11am 12pm 1pm 2pm 3pm 4pm 5pm 6pm 7pm 8pm 9pm 10pm

**Pre-conference
Workshop**

pre-registration required
Marriott, Ballroom DE

8:30am - 5:00pm
BME Idea

**Exhibits & Posters
Set-Up**

Convention Center, Exhibit Hall

10:00am - 5:00pm

**Meet the
Faculty Candidate
Poster Session**

Convention Center, Exhibit Hall

3:00pm - 5:00pm

Welcome Reception

Convention Center, Exhibit
Hall Foyer

5:00pm - 6:00pm

Registration
Convention Center,
Exhibit Hall
10:00am - 5:00pm

Speaker Ready Room
Hall B Office

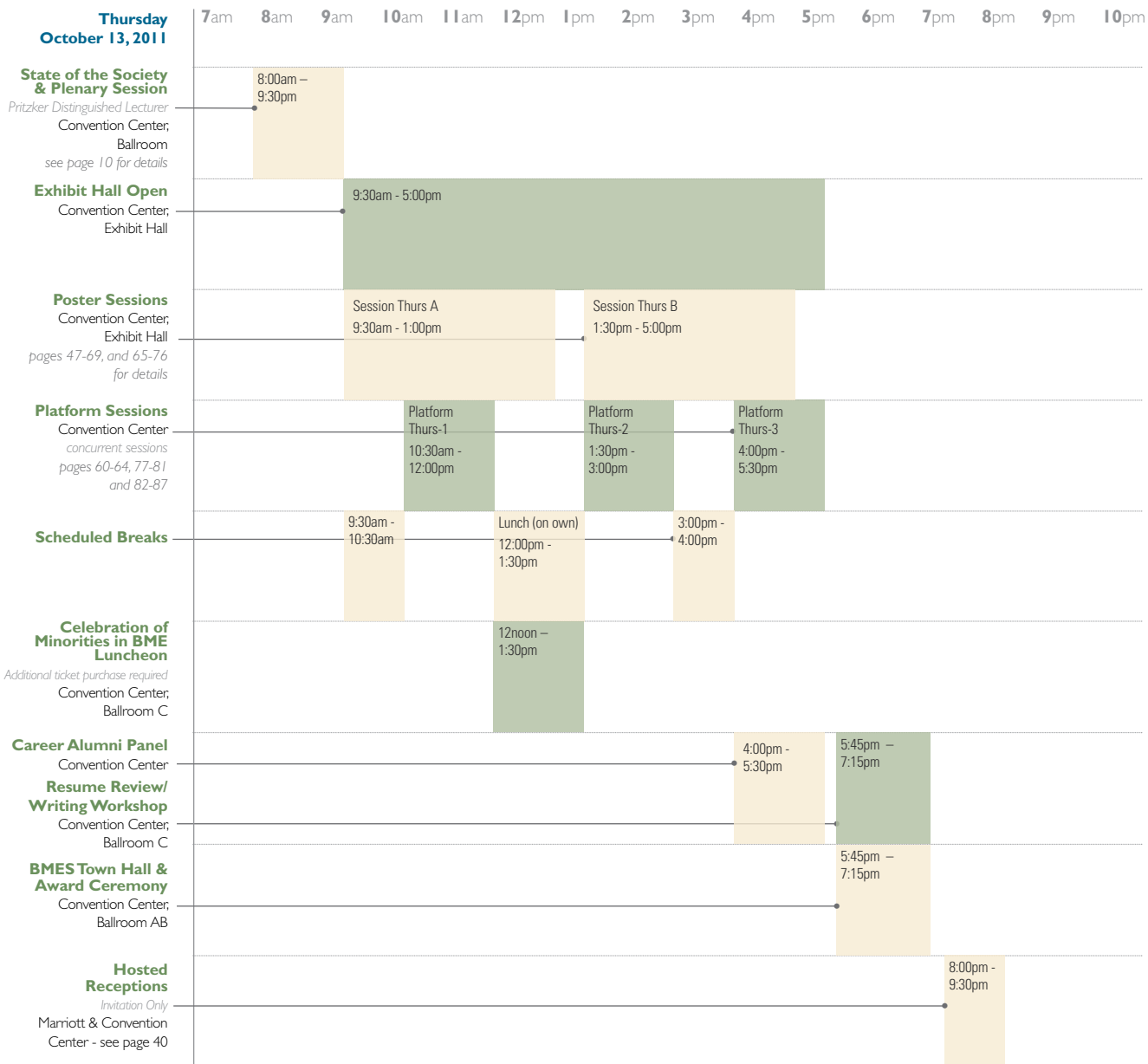
**BMES Board of
Directors Meeting**
Marriott, Ballroom A
8:30am - 4:30pm

**AIBME Board of
Directors Meeting**
Marriott, Capital I Room
12:00noon - 5:00pm

**Council of Chairs
Meeting**
Marriott, Ballroom B
5:30pm - 7:30pm

**Annals of BME
Editorial Board
Meeting**
Marriott, Capital 2 Room
7:30pm - 10:30pm

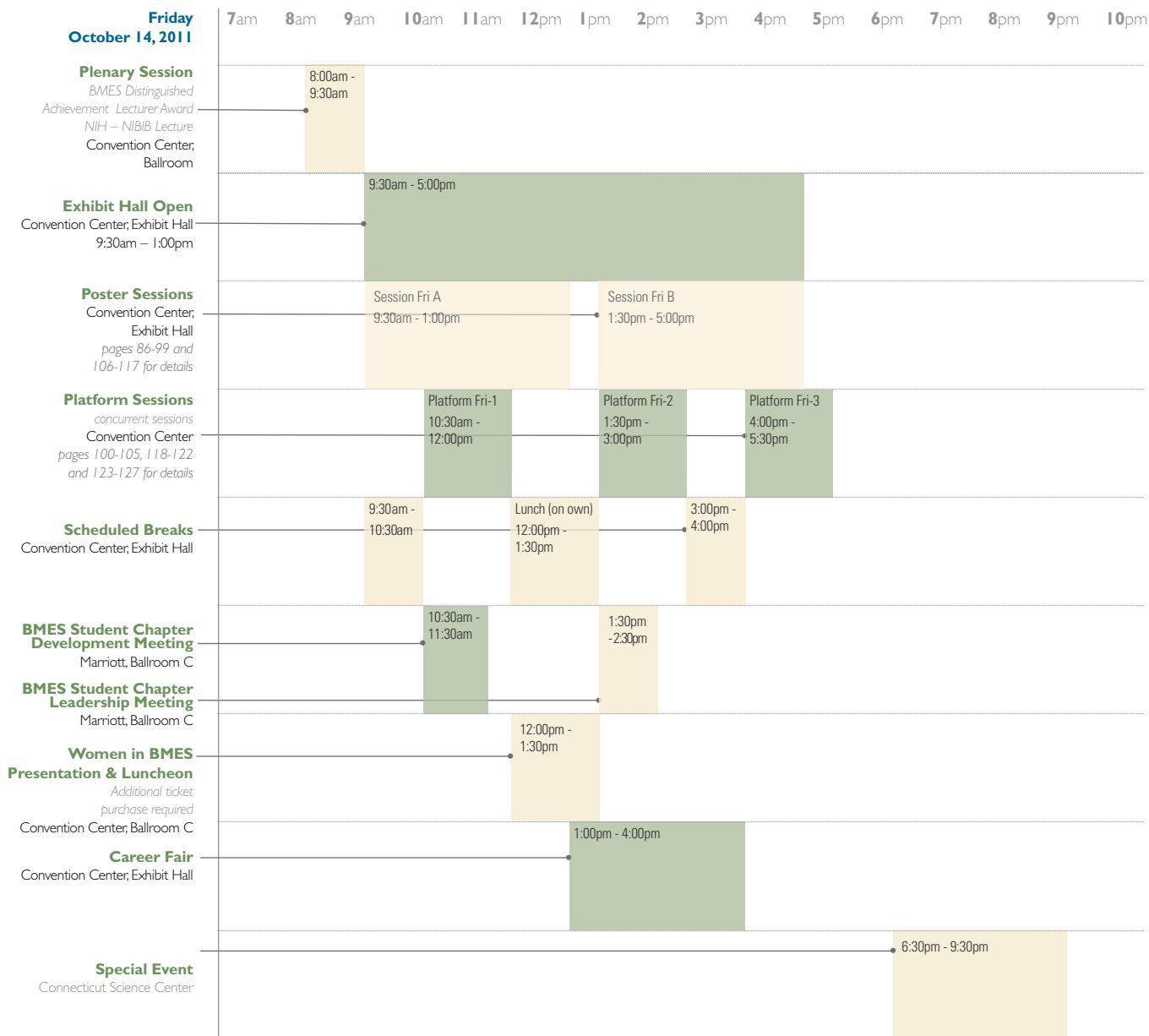
SCHEDULE AT-A-GLANCE



<p>Registration Convention Center, Exhibit Hall 7:00am – 6:00pm</p> <p>Speaker Ready Room Hall B Office</p>	<p>Whitaker International Fellows and Scholars Program Convention Center, Room 12 4:00pm – 5:30pm</p>	<p>CVET Editorial Board Lunch <i>Invitation Only</i> Marriott, Conference Room 5 12:00noon – 2:00pm</p>	<p>BMES National Meetings Committee Meeting Convention Center Hall A Office 10:00am – 12:00noon</p>	<p>AEMB Annual Grand Meeting Marriott, Capital I Room 10:30am – 12:00noon</p> <p>AIMBE Academic Council Meeting <i>Invitation Only</i> Marriott, Capital 3 Room 1:30pm – 4:30pm</p>	<p>AEMB Special Session Marriott, Capital I Room 2:30pm – 4:00pm</p>
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SCHEDULE AT A GLANCE

FIRDAY | OCTOBER 14 | 2011



Registration

Convention Center;
Exhibit Hall
7:00am – 6:00pm

Speaker Ready Room

Hall B Office

AEMB Special Session

Marriott, Capital I Room
11:00am - 12noon

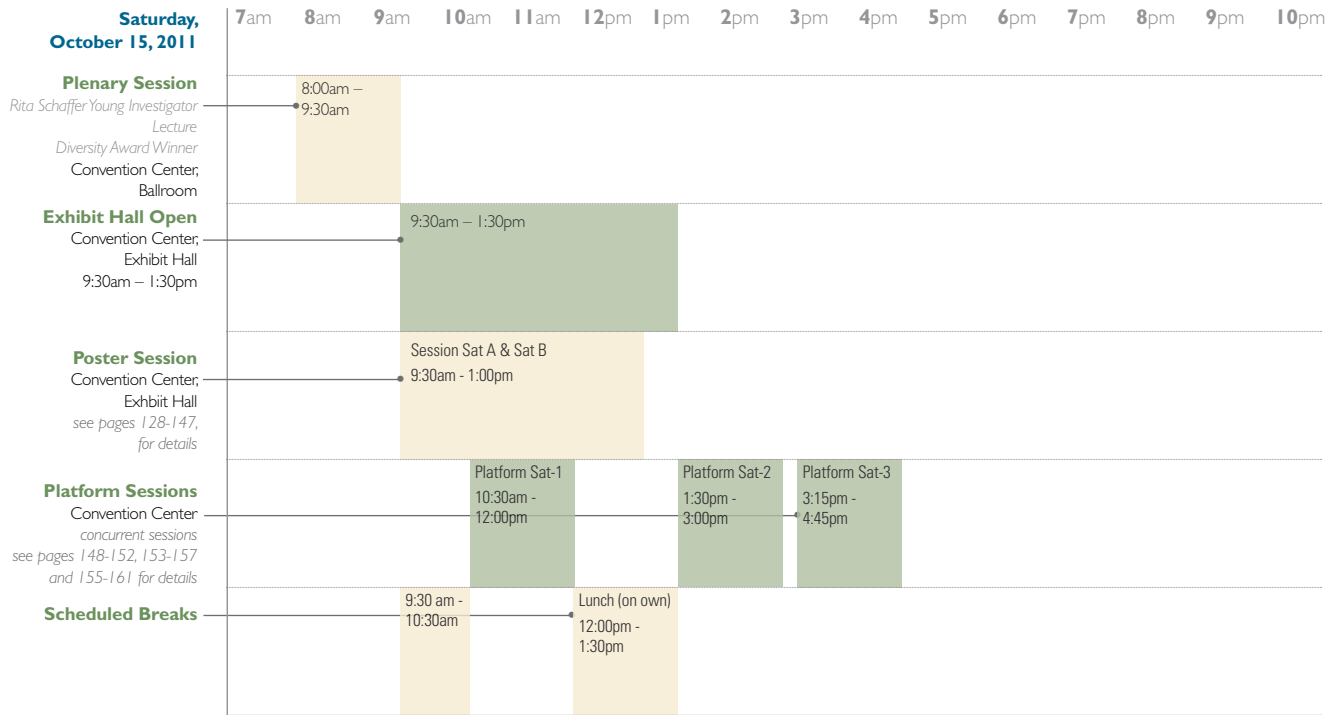
2011 BMES Annual Meeting Committee Meeting

9:30am - 11:00am
Convention Center;
Hall A Office

AEMB Public Policy Forum

Marriott, Capital I Room
2:00pm - 3:00pm

SCHEDULE AT A GLANCE



Registration
Convention Center, Exhibit Hall
7:00am – 2:00pm

Speaker Ready Room
Hall B Office

BMES Board of Directors Meeting
Marriott, Ballroom A
10:00am – 2:30pm

Welcome to our town....and world-class care.



Congratulations, BMES, on a successful conference. The academic, corporate, and healthcare leadership assembled here today represent the bright future of tomorrow's medicine.



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