BMES

BIOMEDICAL ENGINEERING SOCIETY
Advancing Human Health and Well Being

2010 ANNUAL MEETING

ENGINEERING NEW FRONTIERS IN MEDICINE AND BIOLOGY

October 6–9, 2010
Austin Convention Center
Austin, TX

2010 Austin

BMES

BIOMEDICAL ENGINEERING SOCIETY

Advancing Human Health and Well Being

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Future BMES Annual Meetings

October 13-15, 2011
Hartford, Connecticut
Thomas Webster, Chair
Host: Brown University

October 24-27, 2012
Atlanta, Georgia
Hanjoong Jo, Chair
Host: Georgia Institute of Technology & Emory University

September 25-28, 2013
Seattle, Washington

October 22-25, 2014
San Antonio, Texas

October 7-10, 2015
Tampa, Florida

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George A. Truskey, PhD
BMES President

Professor and Chair, Biomedical Engineering, Duke University

WELCOME TO THE 2010 Annual Meeting of the Biomedical Engineering Society! The theme this year is "Engineering New Frontiers in Medicine and Biology" and the Conference Chair, Professor Christine Schmidt, and the Program Chair, Professor Krishnendu Roy, have assembled an exciting meeting. I want to thank all of the track chairs and session chairs for their important role in assembling an interesting program that highlights the latest advances in both basic and translational research. Our plenary lectures highlight the range of achievement in the field. Rebecca Richards Kortum of Rice University will deliver the 2010 Robert A. Pritzker Distinguished Award Lecture. Professor Nicholas Peppas of the University of Texas at Austin will deliver the BMES Distinguished Achievement Award Lecture. Cynthia Reinhardt-King, Assistant Professor at Cornell University, was selected as this year's BMES Rita Schaffer Memorial Award winner. This year's winner of the BMES Diversity Award is Professor Gilda Barabino of Georgia Tech, who has actively promoted diversity both at Georgia Tech and BMES.

There are several new features to the program this year. On Wednesday afternoon, October 6, we will 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. In the afternoon of Friday October 8 leaders in the field discuss new frontiers as part of the Distinguished Speakers Session. In addition to the Women in BMES Luncheon, we've added a Diversity Luncheon to celebrate achievements of various groups and to examine ways to broaden the involvement in our field.

The student program includes several career related activities including an alumni panel, a resume review and writing workshop, and career fair. We have paid particular attention to ensuring that these activities better meet the needs of student members. There are undergraduate technical sessions and design project sessions and special sessions for BMES student chapters.

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.

The meeting organizers have also assembled a special social event for Friday evening, October 8 at the Bob Bullock History Museum. You'll get to sample local food and culture and gain a true appreciation for the spirit of Texas.

I hope that you have an enjoyable time at the meeting,

George Truskey, PhD
BMES President

Christine Schmidt, PhD

Annual Meeting Chair

THE DEPARTMENT OF BIOMEDICAL ENGINEERING at The University of Texas at Austin is honored to be hosting the 2010 Biomedical Engineering Society (BMES) Annual Meeting on October 6–9, 2010 at the Austin Convention Center in downtown Austin. We hope that this meeting will be one of the largest and most memorable meetings in the history of BMES.

This year's meeting theme is "Engineering New Frontiers in Medicine and Biology," which reflects our goal to create a meeting that highlights the future of Biomedical Engineering. In line with our theme, we have added new features at the 2010 meeting, including a "Meet-the-Faculty-Candidates" poster session on Wednesday October 6 from 3–5 pm, and an additional plenary session, "Future Frontiers of Biomedical Engineering," on Friday October 8 from 4–6 pm, just preceding the Friday night event. This session is hosted by the University of Texas at Austin's Biomedical Engineering Department, and will feature four key leaders in the field who will speculate on the future of Biomedical Engineering.

Technical Program Chair Krishnendu Roy has assembled a diverse technical program featuring presentations focusing on the future of biomedical engineering in areas such as: cardiovascular, cellular and molecular, neural, respiratory, tissue, translational, and orthopedic and rehabilitation engineering; biomedical imaging and optics; systems biology; bioinformatics and computational biology; education; medical devices; and drug delivery, among other topics.

We hope that BMES attendees will also take an opportunity to experience Austin. Austin boasts many exciting points of interest, including the LBJ Presidential Library, the Harry Ransom Center (home to the Gutenberg Bible and the first ever photograph), the Blanton Art Museum, the Congress Avenue Bat Bridge, Austin's famous 6th Street and Warehouse District, South Congress ("SoCo"), the Austin Children's Museum, Barton Springs, Zilker Park, and many more attractions! The Austin City Limits (ACL) Music Festival, which brings together more than 130 bands on eight stages, will also be held from October 8–10, at nearby Zilker Park; thus, music-loving BMES participants have the opportunity to listen to a variety of music including rock, country, folk, hip-hop, reggae, and bluegrass at the festival as well as at Austin's many other live music venues.

The Friday night event is sure to be memorable! The event will take place at the Bob Bullock Texas State History Museum, located near the Texas State Capitol Building and The University of Texas at Austin. The museum houses 33,000 square feet of interactive exhibits that detail the history of this unique state. All attendees at the event are encouraged to also visit the Texas Spirit Theater—the largest multimedia special effects theater of its kind in Texas—to experience a thrilling journey as Texas history comes to life. We plan to have Texas-style fajitas and BBQ, Austin's famous Amy's ice cream, live Austin music, and some special surprises.

Many thanks to the entire Austin programming team (Krish Roy, Jack Hart, James Tunnell, Stanislav Emelianov, Mauro Ferrari, Laura Suggs, Andy Dunn, Mia Markey and Randi Voss), our BME Department Chair, Nicholas Peppas for valuable input and financial support, and to our dedicated staff (Sophia Bixby, Valerie Nies). I also thank all of the Track Chairs and Session Chairs for their time and efforts. Finally, a special thanks to Debby Tucker for her invaluable assistance and organizational skills and to Ed Schilling who was supportive of our many ideas and requests.

Welcome to Austin and enjoy BMES 2010!

Christine Schmidt, PhD

Annual Fall Meeting Chair

Krishnendu Roy, PhD

Technical Program Chair

WELCOME TO AUSTIN AND to BMES 2010! On behalf of the Technical Program Committee I would like to extend my warmest welcome to you all. This promises to be one of the largest BMES conferences ever and we have tried to put together a diverse and exciting program for you all. I hope that you will enjoy the excellent scientific content of the meeting and also get a chance to experience Austin.

This year we received 2181 abstract submissions, a 23% increase over last year's, which itself was a record year. In addition we had 228 undergraduate research submissions and a whopping 160 submissions for our first ever "meet the faculty candidate" session. The technical program includes 780 platform presentations and 1373 posters over the three days. Thanks to the significantly larger convention center space we were able to easily accommodate all the accepted oral and poster presentations.

We have increased the number of technical tracks to 14 and have added several focused sessions including a session on "Translational Biomedical Engineering", a special session on the "Acta Biomaterialia Gold Medal Award" and a plenary session on Friday afternoon on "Future Frontiers of Biomedical Engineering." Each track also has significantly more number of platform sessions this year. The focus on undergraduate research has also been extended with two platform sessions and 198 posters.

None of these would have been possible without the enormous dedication of the Track Chairs who volunteered their precious time despite the tight deadlines and my constant pestering! I have tried my best to stay out of their way on deciding the technical content of the meeting. Thanks also to the volunteer reviewers who were given a large load of abstracts with a short time frame. This superb group of members pulled through and organized an excellent set of talks and posters that I am sure you all will find intellectually rewarding.

I would also like to thank my co-chairs for the technical program, James Tunnell, Stas Emelianov and Mauro Ferrari. A very special thanks to Ms. Debby Tucker of BMES, who kept me sane throughout this process and single handedly managed abstract submission, acceptance, notification and program organization. Thanks also to Ed Schilling and the rest of the BMES team for their great support and dedication.

I hope to hear from you about what's good and what's not in the meeting. I will be around as a colleague and participant and please let me know what you would like to see improved. The meetings committee of BMES will value your opinion immensely. I wish you all a great meeting and hope you will have a memorable stay in Austin!

With warm regards

Krishnendu Roy, PhD
Technical Program Chair

2010 ANNUAL MEETING COMMITTEE

Annual Meeting Chair

Christine E. Schmidt
University of Texas, Austin

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Ohio State University

Elizabeth Cosgriff Hernandez
Texas A&M University

Rebecca Carrier
Northeastern University

Pritzker Distinguished Lecturer:

Rebecca Richards-Kortum, PhD

Department of Bioengineering, Rice University

THURSDAY, OCTOBER 7, 2010
8:00AM
BALLROOM D, CONVENTION CENTER

From Cell Phones to Cell Biology: High Tech, Low Cost Solutions for Global Health

ADVANCES IN THE BIOSCIENCES and public health are responsible for dramatic gains in life expectancy achieved over the last century. Yet, the majority of the world has not benefited from this progress. Sustainable and scalable innovations to prevent disease are needed. This talk will describe efforts of bioengineering faculty and students to develop new diagnostic and therapeutic tools which can be used at the point-of-care (POC) to improve health in low resource settings.

Advances in MEMS technologies, molecular recognition, and low power sensors now offer the ability to design low-cost, reusable platforms for POC diagnostics. Efforts to integrate molecular imaging together with miniature microscopes are now yielding new POC diagnostics for infectious and chronic diseases. Driven by advances in consumer electronics, high resolution imaging can be obtained with low cost devices; advances in digital signal processing provide the ability to automate analysis.

In parallel, multidisciplinary educational programs are engaging undergraduate students to address POC design problems in developing countries. In creating solutions to real world challenges, students are challenged to think beyond traditional disciplinary and geographic boundaries.

REBECCA RICHARDS-KORTUM is the Stanley C. Moore Professor of Bioengineering at Rice University. Previously, she held the Cockrell Family Chair in Engineering #10 and was a Professor of Biomedical Engineering at the University of Texas at Austin, where she was also a Distinguished Teaching Professor. After receiving a B.S. in Physics and Mathematics from the University of Nebraska-Lincoln in 1985, she continued her graduate work at the Massachusetts Institute of Technology, where she received a PhD in Medical Physics in 1990. She joined the faculty in Bioengineering at Rice University in 2005 and served as Chair of Bioengineering from 2005-2008.

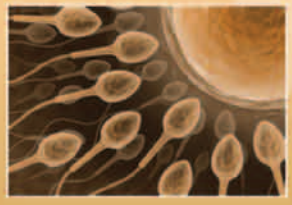
She was named a Howard Hughes Medical Institute Professor in 2002 and 2006, and was elected to the US National Academy of Engineering (2008). She was elected fellow of AAAS and of BMES in 2008, and received the IEEE Educational Activities Board Vice-President Recognition Award (2008).

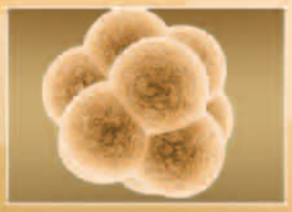
Dr. Richards-Kortum's research group is developing miniature imaging systems to enable better screening for oral, esophageal, and cervical cancer and their precursors at the point-of-care. In collaboration with faculty at the UT MD Anderson Cancer Center, her group has carried out clinical trials of this technique involving over 2,000 patients in the US, India and Nigeria. Her group is developing contrast agents for in vivo molecular imaging of changes associated with precancer including expression of epidermal growth factor reception. More recently, her group has worked to integrate advances in nanotechnology and microfabrication to develop novel, low-cost sensors to detect infectious diseases at the point-of-care, including cryptosporidium, malaria, and Tuberculosis.

At Rice University, Dr. Richards-Kortum has worked to establish new educational programs in global health technologies, including a new undergraduate minor in global health technologies at Rice. Students in the minor engage in project based courses to solve problems contributed by partners in developing countries. Students in the program have designed over 28 new technologies which have been used by healthcare providers in 15 international healthcare settings and have impacted the lives of over 19,000 people.

FoundAnimals *is proud to announce:*

The Michelson Prize & Grants in Reproductive Biology






The Michelson Prize in Reproductive Biology:

A **$25 million Prize** will be awarded to the first entity to provide a non-surgical sterilant that is safe, effective, and practical for use in cats and dogs.

Winning entry must meet the following criteria:

- Single dose, non-surgical sterilant
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- Viable pathway to regulatory approval
- Feasible manufacturing process and cost
- Suitable for administration in a field setting

The Michelson Grants in Reproductive Biology:

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The first step in the Grant process is submitting a Letter of Intent.

For more information about submitting a Letter of Intent, visit: www.foundanimals.org.

For more information about the Prize and Grants, visit: www.foundanimals.org

Join the mailing list to receive the latest news and updates.

The Alliance for Contraception in Cats and Dogs (ACC&D) is a strategic partner in the Michelson Prize and Grants in Reproductive Biology. Visit www.acc-d.org for information on non-surgical approaches to pet overpopulation.

About Found Animals

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BMES Distinguished Achievement Lecture Award:

Nicholas A Peppas, ScD

Fletcher Stuckey Pratt Chair in Engineering

Professor of Chemical Engineering, Biomedical Engineering and Pharmacy

Chair, Department of Biomedical Engineering

Director, Center on Biomaterials, Drug Delivery, Bionanotechnology and Molecular Recognition

University of Texas, Austin

FRIDAY, OCTOBER 8, 2010
8:30AM
BALLROOM D, CONVENTION CENTER

From Drug Delivery and Targeted Therapeutics to Advanced Intelligent Biomedical Devices for Improved Health Care

DURING THE EARLY DAYS of drug delivery studies, forty years ago, the field was considered outside of the main scope of biomedical engineering. Yet, major successes in health care and disease treatment through careful engineering design of advanced drug delivery systems led to maturity of the field, where biomedical transport phenomena and biopolymer development merged to create a generation of general and targeted drug delivery systems for the treatment of a wide range of diseases. These days, successful targeted delivery systems are designed to allow delivery of therapeutic or diagnostic agents to a preferential site. As targeted nanodelivery involves local delivery of therapeutics and diagnostics at disease sites, this method has received considerable attention and is poised to have a significant impact on medicine. Efficient targeted delivery systems allow for a reduced systemic dosage while resulting in relatively higher or more efficient dosing at the target site. Targeted delivery has become a rich field of drug delivery and nanomaterials. Nanoscale materials are a necessity for most targeted delivery systems as they must be allowed to transport through different tissue spaces in order to localize at the target site. The ability of nanoparticles to localize at a target site is dependent on chemical properties, the presence of a targeting ligand, or size. Even with targeted delivery, only a fraction of the administered dose localizes at the target site while the remaining nanoparticles distribute throughout the body. Pharmacokinetics pertaining to the nanodelivery system determine the dose in non-targeted tissues. Understanding of nanoparticle biodistribution and pharmacokinetics is significant in the successful development and translation of targeted delivery systems. The design of optimized targeted delivery systems is based on the drug or agent of interest, the nanoparticle type that allows sufficient loading of the drug, and the physicochemical properties that allow for targeting. We highlight some of this recent work on targeted delivery systems and focus on in vivo performance, localization, and the incorporation of diagnostic and therapeutic agents in targeted delivery systems.

NICHOLAS A. PEPPAS is the Fletcher Stuckey Pratt Chair in Engineering, Professor of Biomedical Engineering, Chemical Engineering and Pharmacy, and Chair of the Department of Biomedical Engineering at the University of Texas at Austin. He is a member of the Institute of Medicine of the National Academies, the National Academy of Engineering, the National Academy of Pharmacy of France, and the Texas Academy of Medicine, Engineering and Sciences. Peppas has been a leader in biomaterials, drug delivery and pharmaceutical bioengineering. The multidisciplinary approach of his research blends modern molecular and cellular biology with engineering to generate the next-generation of medical systems and devices for patient treatment. He has been recognized with the Pierre Galletti Award from AIMBE, several awards from AIChE (Founders Award, William Walker Award, Institute Lecture, Bailey Award, Bioengineering Award, Materials Award), Society for Biomaterials (Founders, Clemson and Hall Awards), Controlled Release Society (Founders, Heller and Eurand Awards) and other Societies. He is a fellow of BMES, AIMBE, AIChE, APS, MRS, SFB, CRS, AAPS, AAAS and ASEE. He is the President of the International Union of Societies of Biomaterials Science and Engineering, the Chair-elect of the BME Chairs Council, and a member of the Board of BMES. Peppas has served as President of the Society for Biomaterials and the Controlled Release Society, as Chair of the College of Fellows of AIMBE, and as Director of AIChE. He was the Editor of Biomaterials from 1982 to 2002. Presently, he is Editor-in-Chief of the SFB/Wiley Biomaterials Book Series and Associate Editor of the Cambridge University Press Biomedical Engineering Series, the AIChE Journal and Biomedical Microdevices. He has published 1100 papers and 45 patents and has supervised the research of numerous postdoctoral and graduate students including 88 PhDs, 37 of them presently professors in other Universities. Dr. Peppas holds a Dipl. Eng. from the National Technical University of Athens (1971), a Sc.D. from the Massachusetts Institute of Technology (1973), and honorary doctorates from the University of Ghent, Belgium, the University of Parma, Italy, and the University of Athens, Greece.

FUTURE FRONTIERS OF BIOMEDICAL ENGINEERING

Distinguished Speakers Session:

FRIDAY, OCTOBER 8, 2010
4:00PM - 6:00PM
BALLROOM D, CONVENTION CENTER

"Engineering The Next Generation of Cancer Therapeutic Enzymes and Antibodies"

George Georgiou, Ph.D.

Cockrell Family Regents Chair in Engineering #9
Institute for Cell and Molecular Biology
Departments of Biomedical and Chemical Engineering
The University of Texas at Austin

"Stem Cells, Tissue Engineering, and Regenerative Medicine: Challenges Ahead"

Gordana Vunjak-Novakovic, Ph.D.

Professor and Director of the Laboratory for Stem Cells and Tissue Engineering Department of Biomedical Engineering , Columbia University

"Bioengineering in Drug Discovery: Predictive Understanding of Cell Regulatory Network Operation"

Douglas Lauffenburger, Ph.D.

Ford Professor of Bioengineering and
Head of the Department of Biological Engineering
Massachusetts Institute of Technology

"Photoacoustic Tomography: Breaking Through the Optical Diffusion Limit"

Lihong Wang, Ph.D.

Gene K. Beare Distinguished Professor Department of Biomedical Engineering, Washington University in St. Louis

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Step into the future

RITA SCHAFFER MEMORIAL LECTURE

BMES 2010 Rita Schaffer Memorial - Young Investigator Lecturer:

Cynthia Reinhart-King, PhD

Assistant Professor, Cornell University

SATURDAY, OCTOBER 9, 2010
8:00AM
BALLROOM D, CONVENTION CENTER

How Matrix Properties Control the Self-assembly and Maintenance of Tissues

THE MECHANISM BY which cells organize into tissues is fundamental to developmental biology and tissue engineering. Likewise, disruption of cellular order within tissues is a hallmark of many diseases including cancer and atherosclerosis. Tissue formation is regulated, in part, by a balance between cell-cell cohesion and cell-matrix adhesion. In this lecture, I will discuss my laboratory's investigation into the role of this balance in the formation of vasculature. Specifically, we have found that by decreasing cell-matrix adhesion by either reducing matrix stiffness or matrix ligand density, endothelial cells self-assemble into network-like structures, resembling capillaries. These structures are stabilized by increased localization of VE-cadherin to the cell membrane and the polymerization of the extracellular matrix protein fibronectin. When fibronectin polymerization is inhibited, network formation does not occur. Interestingly this interplay between substrate mechanics, ECM assembly and tissue self-assembly is not limited to endothelial cells, as we have observed it in other cell types as well. These results suggest novel approaches to foster stable cell-cell adhesion and engineer tissues.

CYNTHIA REINHART-KING is an Assistant Professor in the Department of Biomedical Engineering at Cornell University, and a member of the graduate faculty in Mechanical and Aerospace Engineering and the Cornell Nanobiotechnology Center. She obtained undergraduate degrees in chemical engineering and biology at MIT. While there, she was awarded the Randolph G. Wei Award for "research at the interface of the life sciences and engineering." As a graduate student at the University of Pennsylvania in the Department of Bioengineering, she received a Whitaker Foundation Graduate Fellowship to support her thesis work on endothelial cell mechanobiology. She then completed postdoctoral training as an Individual NIH NRSA postdoctoral fellow in the Cardiovascular Research Institute at the University of Rochester. Dr. Reinhart-King's current research interests are in the areas of cell-biomaterial interactions, cell mechanics, and vascular cell signaling. Her lab uses a multidisciplinary approach, drawing from cell and molecular biology, biophysics, and biomechanics to quantitatively examine the mechanisms of tissue formation and disease progression. Her lab is funded by the American Heart Association, the National Institutes of Health, and the American Federation of Aging Research, and her recent independent work received a Silver Medal at the 6th World Congress on Biomechanics. She has also received the 2010 Sonny Yau '72 Excellence in Teaching Award, the highest award for teaching in College of Engineering.

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:

Gilda Barabino, PhD

Associate Chair for Graduate Students & Professor,
Wallace H. Coulter Dept. of Biomedical Engineering
Georgia Institute of Technology and Emory University

SATURDAY, OCTOBER 9, 2010
8:45AM
BALLROOM D, CONVENTION CENTER

Identity Formation and Career Progression: Differential Experiences for Underrepresented Minorities

THE PERSISTENT underrepresentation of racial and ethnic minorities in the sciences and engineering threatens the nation's welfare and has evaded full elucidation of causative factors and effective solutions. One basic factor that remains largely unexplored is identity formation. The ability of an individual to form an identity as a scientist or engineer and to be socialized into the profession evolves over time and plays a crucial role in academic and professional career progression. Differential identity and socialization experiences for racial and ethnic minorities in comparison with majority individuals are documented and can be attributed to a complex array of interrelated individual, institutional, and structural (policy) factors. Earlier stage events in life and in a career path can impact transitions and have lasting effects on later stages. This lecture will address the topic through the author's experience, touch on the social science literature that can inform much needed discourse, and provide suggestions for potential strategies.

GILDA BARABINO is a Professor and Associate Chair for Graduate Studies in the Wallace H. Coulter Department of Biomedical Engineering at Georgia Institute of Technology and Emory University. She recently served as the inaugural Vice Provost for Academic Diversity and is credited with establishing a legacy to strengthen diversity and inclusion at Georgia Tech. Dr. Barabino received her B.S. degree in Chemistry from Xavier University of Louisiana and her Ph.D. in Chemical Engineering from Rice University. After earning her doctorate, she served as a Research Process Engineer at Rohm and Haas Company. Professor Barabino then joined the chemical engineering faculty at Northeastern University where she rose to the rank of Professor and served as Vice Provost for Undergraduate Education. Her research interests include investigation of the influence of fluid mechanical forces on cell and tissue behavior, growth and development in the context of sickle cell disease and orthopedic tissue engineering. Dr. Barabino has an extensive record of leadership and service in the engineering and medical communities.She is a member of the National Institutes of Health (NIH) National Advisory Dental and Craniofacial Research Council, former Treasurer and member of the Board of Directors of the Biomedical Engineering Society (BMES) and member of the Advisory Board of the Committee on the Advancement of Women Chemists. She recently served as a member of the congressionally appointed NIH Sickle Cell Disease Advisory Committee. She is a Fellow of the American Institute for Medical and Biological Engineering and BMES. Dr. Barabino is a recognized innovator, researcher and consultant on faculty development and diversity in science and engineering. She currently directs the NSF Minority Faculty Development Workshop and serves as Principal Investigator on the NSF ADVANCE Leadership Award, "Cross-Disciplinary Initiative for Minority Women Faculty," an initiative designed to enhance the socialization of tenure-track minority women into academic careers in engineering.

Announcing the 2011

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Now open to all BME faculty

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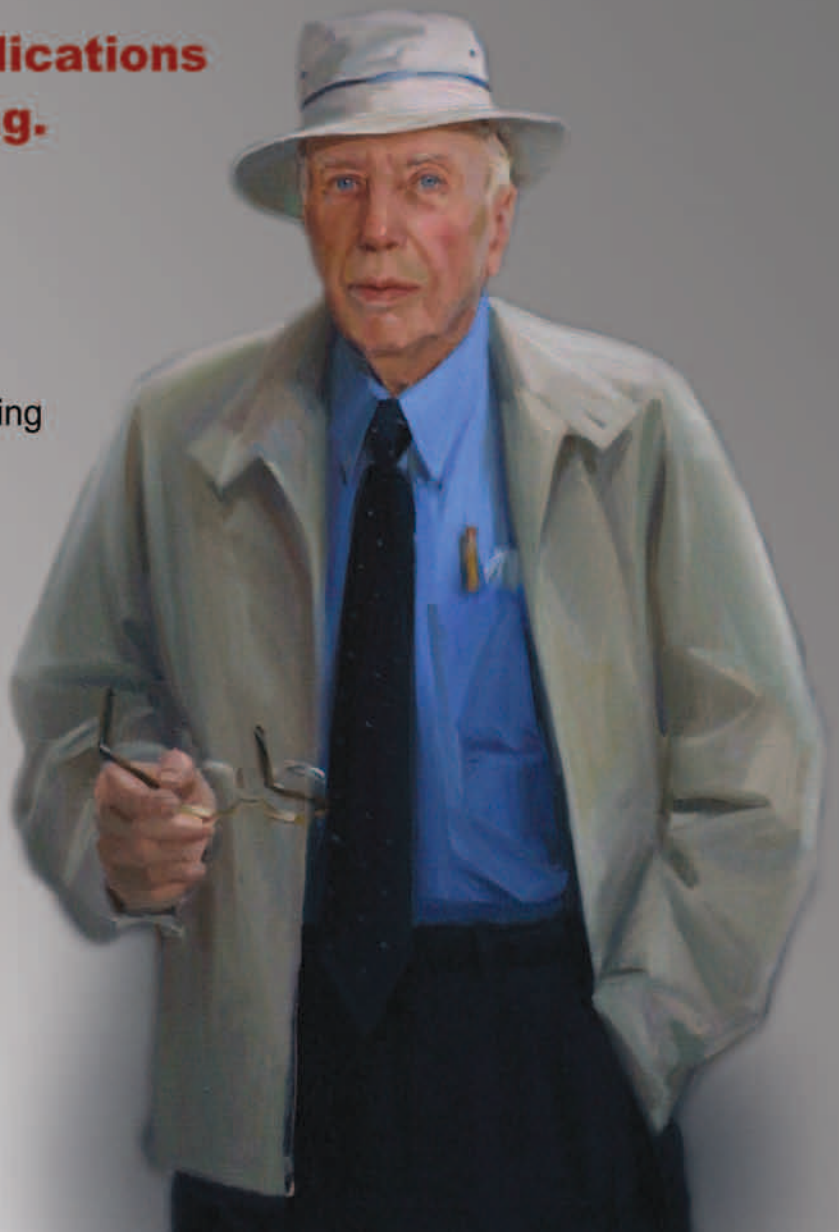
- Primary or secondary appointment in Biomedical Engineering / Bioengineering Departments in the United States

On-line pre-application process open

December 1, 2010 - January 8, 2011.

For more details, visit www.whcf.org.



WALLACE H. COULTER Foundation

Congratulations

2010 Coulter Fellows

For successfully completing the requirements of the Coulter Translational Research Award in Biomedical Engineering.

- **Xudong Fan** - University of Michigan
- **Erin Lavik** - Case Western Reserve University
- **Anant Madabhushi** - Rutgers University
- **Samuel Sia** - Columbia University
- **James Tunnell** - University of Texas at Austin
- **Yingxiao Wang** - University of Illinois, Urbana-Champaign
- **Changhuei Yang** - California Institute of Technology

Top left: Anant Madabhushi, James Tunnell, Samuel Sia, Changhuei Yang
Lower Left: Erin Lavik, Yingxiao Wang, Xudong Fan

WALLACE H. COULTER Foundation

GENERAL INFORMATION & PRESENTER INFORMATION

Meeting Location

Austin Convention Center
500 East Cesar Chavez Street
Austin, TX 78701
512-404-4000

Hilton Austin - Headquarters
500 East 4th Street
Austin, Texas 78701
512-482-8000

Registration

Paid registration is required for admission to all meeting functions including scientific sessions, posters, exhibits, breaks and the Special Event at the Bullock 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. Pre-conference workshop fees, 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 6	7:00am – 6:00pm
Thursday, October 7	7:00am – 6:00pm
Friday, October 8	7:00am – 6:00pm
Saturday, October 9	7:00am – 2:00pm

Refreshment Breaks

Please note that your meeting registration includes morning and afternoon refreshments breaks and the Special Event at the Bullock Museum. All refreshment breaks will be in Exhibit Hall 4.

Exhibits

Hall 4, Convention Center

Exhibits are located in the Hall 4 on the first level of the Convention Center. Exhibits will be open:

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

Poster Sessions

Hall 4, Convention Center

Posters are located in Hall 4 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. There will not be internet connections in the presentation rooms.

Sessions chairs should keep sessions on the listed schedule so that attendees can move back and forth among sessions. In most cases, presentation 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 Hall 4 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

Room 13A (Level 4), 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 6	1:00pm – 5:00pm
Thursday, October 7	7:00am – 5:00pm
Friday, October 8	7:00am – 5:00pm
Saturday, October 9	7:00am – 3:30pm

Program Highlights

Don't Miss These Events

THURSDAY, October 7

Celebration of Minorities in BME Luncheon*

12:00noon - 1:30pm

Hilton Austin, Salon G

New 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 from student to professor, intern to product manager, and beyond. Everyone is invited to attend, as diversity only increases when all groups play a part. This luncheon complements the Diversity Award lecture to be delivered on Saturday and the Women in BMES Networking Luncheon on Friday.

Speaker: Raphael C. Lee, *MD, ScD, DSc (Hon)*,
Paul and Allene Russell P*rofessor of Surgery, University of Chicago*

*** additional registration and $20 ticket required**

BMES Business Meeting, Fellows Induction & Awards Ceremony

5:30pm – 7:00pm

Convention Center, Ballroom D

A full report to the society at large on administrative, financial, membership and strategic initiatives will be reported by BMES President George Truskey. The BMES Awards will also be presented. See page 22 for the award winners.

Welcome Reception

7:30pm - 8:30pm

Hilton Austin, Salon JK

Light refreshments will be served.

FRIDAY, October 8

Women in BMES Luncheon*

12:00noon - 1:30pm

Hilton Austin, Salon AB

Featuring a panel discussion titled "Juggling Motherhood and a Career in Bioengineering." 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.

*** additional registration and $20 ticket required**

SPECIAL EVENT

Bob Bullock Texas State History Museum

Round trip bus transportation will run from the Hilton to the Bullock Museum from 6-10pm.

6:30pm - 9:30pm

1800 N. Congress Avenue at the intersection of Martin Luther King, Jr. Blvd., Austin, Texas.

Buses will run continuously from the Hilton Hotel to the Bullock Museum from 6pm to 10pm. 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.

BMES Career Development

Wednesday, October 6

3:00pm - 5:00pm

Convention Center, Exhibit Hall 4

Meet the Faculty Candidate Poster Session NEW THIS YEAR!

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 150 faculty candidates will be presenting.

Thursday, October 7

4:00pm – 5:30pm

Convention Center, Ballroom E

BME Alumni Panel

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

5:45pm – 7:15pm

Convention Center, Ballroom E

Resume Writing Workshop

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

Friday, October 8

1:00pm – 4:00pm

Convention Center, Exhibit Hall 4

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.

BMES Student Chapter Development Meeting

Friday, October 8

10:00am – 11:30am

Convention Center, Ballroom E

BMES Student Leadership Meeting

Friday, October 8

1:30pm – 2:30pm

Convention Center, Ballroom E

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.

REU / Summer Undergraduate Technical Sessions

Saturday, October 9

Convention Center, Room 13B

There will be two Undergraduate Research platform sessions on Saturday, October 9 featuring eleven oral presentations. See pages 131 and 137 for details. The presentations in these sessions were chosen from submissions of undergraduates during the summer of 2010. Almost 200 posters will also be presented on Saturday morning from 9:30am to 1:00pm. See pages 118 to 125.

Whitaker International Fellows and Scholars Program

Thursday, October 7

10:30am - 12:00noon

Hilton Austin, Room 602

This session will present the Whitaker International Fellows and Scholars Program which provides funding opportunities to emerging U.S.-based leaders in biomedical engineering, with a goal of building international bridges. Grant projects – including research, coursework, public policy work – are intended to enhance both the recipient's career and the BME field.

Alpha Eta Mu Beta (AEMB) Programs

Alpha Eta Mu Beta Annual Grand Meeting

Thursday, October 7
1:00pm - 3:00pm
Hilton Austin, Room 602

Session Chair: Melodie Benford

Alpha Eta Mu Beta (AEMB), the national biomedical engineering honors society, will host its annual grand meeting at the 2010 BMES conference. During this time, we will undergo strategic planning for the year as well as provide leadership training and opportunities for the student leaders of local chapters to become involved in outlining the direction of the Society. We also brainstorm and discuss prospective events and fundraising ideas for local chapters, such as hosting local ethics seminars and selling AEMB apparel. This year we will hold national elections for the executive board of Alpha Eta Mu Beta. Attendance is mandatory for all AEMB members.

AEMB Ethics Session

Friday, October 8
10:00am - 11:00am
Hilton Austin, Room 602

Ethical Considerations of Animal Use in Biomedical Engineering Research

Session Co-Chairs: C. Polito, MS, D.E. Nathan, MS and B.L. Vernon, PhD

Animal research is an important aspect of biomedical engineering that presents a robust platform to understand normal function and disease in living organisms. The utilization of animal models that represent specific human physiological systems and pathologies, have provided critical insight for the development of effective therapeutic solutions. Although animals are used extensively in biomedical research, ethical considerations are often not adequately addressed in education and training curriculums. This session will provide students and researchers with a frame work for understanding the scientific considerations, ethical limits, risk factors and costs associated with animal use in biomedical engineering research. In addition, community views and concerns pertaining to animal research are explored through the use of case studies and interactive discussions. A summary report of this session will be disseminated through Alpha Eta Mu Beta, the National Biomedical Engineering Honor Society and BMES newsletters. This report will encourage AEMB members to develop bioengineering ethics sessions at their respective institutions and, to inculcate and encourage continued awareness of the importance of ethics and Biomedical Engineering at their AEMB chapter meetings.

How Public Policy Affects You (Sponsored by AIMBE and AEMB)

Friday, October 8
2:30pm - 3:30pm
Hilton Austin, Room 602

Session Co-Chairs: Jennifer Ayers and Teresa Murray

What government entities impact, or will shortly impact, your work as a biomedical engineer? How does this affect public health? Moreover, how can you influence policy? 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 advocacy and how you can be involved.

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. It plays 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.

AEMB members represent the top BME students across the US. Starting in 2006, they have sponsored the Student Ethics Session training future BMEs to evaluate the broader impacts of emerging biomedical innovations.

2010 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.

BMES Robert A. Pritkzer Distinguished

Rebecca Richards-Kortum, PhD
Rice University

BMES Distinguished Lecture

Nicholas A. Peppas, ScD
University of Texas at Austin

BMES-Rita Schaffer Young Investigator Lecture

Cynthia Reinhart-King, PhD
Cornell University

BMES Diversity Lecture

Gilda Barabino, PhD
Georgia Institute of Technology

BMES Distinguished Services

Frank Yin, PhD
Washington University at St. Louis

BMES Extended Abstract Awards for:

Graduate Student

Mira Amiram
Duke University

Alice A. Chen
Massachusetts Institute of Technology

Stephan Kontos
Ecole Polytechnique Fédérale de Lausanne (EPFL)

Casey M. Kraming-Rush
Cornell University

Kristen Marie Lorentz
Ecole Polytechnique Fédérale de Lausanne (EPFL)

Sri R. Madabhushi
State University of New York at Buffalo

Nikhil N. Mutyal
Northwestern University

Joseph O'Doherty
Duke University

Undergraduate Students

Alex Lindburg
Clemson University

Sonia G. Parra
Yale University

Melissa Tsang
Brown University

Justin R. Tse
University of California at San Diego

Additional Meetings

BMES Board of Directors Meeting
Wednesday, October 6
8:30am – 4:30pm
Hilton Austin, Salon AB
Organizer: George Truskey

Council of Chairs of Biomedical Engineering and Bioengineering Meeting & Dinner
Wednesday, October 6
5:30pm - 9:30pm
University of Texas, BME Building
Organizer: Nicholas Peppas

BMES Meetings Committee Luncheon
Thursday, October 7
12:00noon – 1:30pm
Convention Center, Room 13B
Organizer: David Vorp

AIMBE Industry Tech Transfer Meeting
Thursday, October 7
1:30pm – 4:30pm
Hilton Austin, Room 401
Organizer: Matthew Houliston

CVET Editorial Board Lunch
Thursday, October 7
12noon - 1:30pm
Marriott Austin Downtown Courtyard, Rio Grande A
Organizer: Michael Weston

ABME Editorial Board Dinner
Thursday, October 7
7:30pm – 10:00pm
Marriott Austin Downtown Courtyard, Rio Grande A
Organizer: Michael Weston

2011 BMES Annual Meeting Committee Meeting
Friday, October 8
9:30am - 11:00am
Convention Center, Room 13B
Organizer: Tom Webster

AIMBE Academic Council Meeting
Friday, October 8
10:00am –12noon
Hilton Austin, Room 406
Organizer: Matthew Houliston

CMBE Editorial Board Lunch
Friday, October 8
12noon - 1:30pm
Marriott Austin Downtown Courtyard, Rio Grande A
Organizer: Michael Weston

2011-2013 BMES Orientation & Board of Directors Meeting
Saturday, October 9
10:00am – 2:30pm
Hilton Austin, Salon AB
Organizer: George Truskey

COME SEE YOUR FAVORITE BIOENGINEERING PROFESSORS ROCK OUT! ***Not an official BMES event***

BEDrock – Live at Red 7

Thursday, October 7 at 10pm

611 East 7th St. (near the intersection with Red River)
Austin, TX 78701
(512) 476-8100
www.red7austin.com

Info, Jimmy Moore
jmoorejr@bme.tamu.edu

HOSTED RECEPTIONS & STUDENT CHAPTERS

Hosted Receptions

(by invitation only)

Thursday, October 7

Hilton Austin

8:00pm - 9:30pm

Boston University
Liberty Tavern

Case Western Reserve University
Room 412

Cornell University Biomedical Engineering
Salon D

Marquette University
Room 410

MIT/Translational Health Science & Technology Institute
Room 415

Rensselaer Polytechnic Institute
Room 408

Rice University
Room 602

University of California, Berkeley
Room 402

University of California, San Diego
Salon B

University of Illinois at Urbana-Champaign
Salon A

University of Michigan
Room 404

University of Pittsburgh
Room 400

University of Texas, Austin
Salon E

University of Washington
Please note hotel - Marriott Courtyard, Brazos Room

Vanderbilt University
Room 406

Student Chapter Tables

NEW THIS YEAR!

Convention Center, Exhibit Hall 4

Stop by to see BMES Student Chapters showcase their activities and materials.

Carnegie Mellon University

Cornell University

Georgia Institute of Technology

Johns Hopkins University

Louisiana Tech University

Michigan State University

Michigan Technological University

Pennsylvania State University

Purdue University

Rice University

San Jose State University

The College of New Jersey

University of Arizona

University of California at San Diego

University of California, Davis

University of California, Riverside

University of Michigan

University of Pittsburgh

University of Rochester

University of Southern California

University of Tennessee Health Science Center

University of Virginia

University of Wisconsin - Madison

Virginia Tech – Wake Forest University

Worcester Polytechnic Institute

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 activites to pursue overseas include:

- conducting research at an academic institution
- interning at a policy institute
- establishing ties between home and host institutions
- pursuing post-doctoral work

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

DEADLINE:
January 24, 2011

www.whitaker.org

INSTITUTE OF INTERNATIONAL EDUCATION
Institute of International Education
809 United Nations Plaza
New York, NY 10017

Pre-Conference Workshops

Wednesday, October 6

Additional registration required

8:00am - 5:00pm

Convention Center, Room 12A

Industry-Academia-Clinician Collaboration for Medical Innovation: Reinventing the Wheel

The workshop will be organized as a full-day panel with six to eight key opinion leaders from industry, academia and clinical medicine (IAC). Each panelist will present a 20 minute talk. The speakers will present several case studies of IAC relationships that work(ed) and then answer questions from the audience on how to overcome their current challenges. Some examples of the specific topics to be covered are: intellectual property protection and sharing, prototype design and execution, and patent licensing/company formation. An area of focus for this workshop will be the experienced and anticipated implications of new conflict of interest measures which may result in significant limitation of clinician's involvement in the development process.

8:00am - 2:30pm

Convention Center, Room 12B

BME Council of Chairs Educational Workshop

Historically there has been a great deal of interest in the biomedical engineering education community in developing consensus on what the content of undergraduate curricula should look like. This interest has been largely motivated by the concern that industry does not appreciate what a B.S. graduate of a biomedical engineering program can do for them. There is continued frustration in some segments of the community that in spite numerous educational summit meetings and workshops over the past decade that this problem still persists. This workshop will take a different approach to addressing this problem. Rather than addressing the topical content of the curriculum, which typically limits discussion to the lowest levels of Bloom's taxonomy, this workshop will focus on the educational outcomes for undergraduate biomedical engineering programs. These outcomes generally emphasize the higher levels of Bloom's taxonomy that are more easily translated into language that industry can relate to. To help facilitate this process, workshop participants will include industry representatives from a broad spectrum of companies that employ biomedical engineers. The workshop will concentrate on examining the integration of life and engineering sciences within the curriculum in the following areas to develop statements of outcomes the participants believe should be demonstrated by all graduates of B.S. biomedical engineering programs:

Laboratories: conducting experiments, developing experimental protocols and analyzing/interpreting data

Problem solving: identifying, formulating and solving

Modeling: applying knowledge of mathematics, applying knowledge of life sciences and utilizing computational tools

2010 TRACK CHAIRS

Biomedical Engineering Education

Melissa Micou
University of California San Diego

Monty Reichert
Duke University

Biomedical Imaging & Optics

Rebekah Drezek
Rice University

Katherine Ferrara
University of California, Davis

Cardiovascular Engineering

Jane Grande-Allen
Rice University

Michael Sacks
University of Pittsburgh

Cellular and Molecular Engineering

Andres Garcia
Georgia Tech

Laura Segatori
Rice University

Devices: Nano to Micro

Tejal Desai
University of San Francisco

John Zhang
University of Texas at Austin

Drug Delivery and Intelligent Systems

Justin Hanes
Johns Hopkins/University of North Carolina

Suzie Pun
University of Washington

Neural Engineering

Warren Grill
Duke University

Erin Lavik
Case Western University

New Frontiers in Bioengineering

Christina Smolke
Stanford University

Melody Swartz
EPFL

Orthopedic and Rehabilitation Engineering

Rena Bizios
University of San Antonio

John Fisher
University of Maryland College Park

Respiratory Engineering

Jim Grotberg
University of Michigan

Geoffrey Maksym
Dalhousie University

Systems Biology, Bionformatics and Computational Biology

Orly Alter
University of Utah

Jeremy Gunawardena
Harvard University

Pengyu Ren
University of Texas at Austin

Tissue Engineering

Jennie Leach
University of Maryland

Tony Mikos
Rice University

Translational Biomedical Engineering

Dan Anderson
MIT

Undergraduate Research (REU)

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Florida GCU

Rebecca Kuntz Willits
St. Louis University

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Thank you to our reviewers for their time and effort.

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BME planet

the global bioengineering network

Powering Web 2.0 solutions that accelerate bioengineering discovery, innovation, and learning.

@BMEplanet.org

- **ideas**
  open innovation
- **workspaces**
  global collaboration
- **opportunities**
  next-generation workforce
- **networking**
  online contact book
- **messaging**
  real-time communication

Contact

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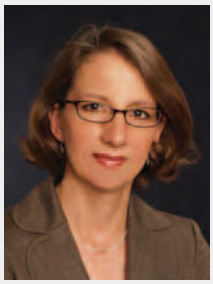
THURSDAY, OCTOBER 7
TODAY'S HIGHLIGHTS



PLENARY SESSION
8:00am - 9:30am
Ballroom D, Convention Center

Robert A. Pritzker Distinguished Lecture
Rebecca Richards-Kortum, PhD
Rice University

EXHIBIT HALL OPEN 9:30am - 5:00pm
Exhibit Hall 4, Convention Center

POSTER SESSION 7A 9:30am - 1:00pm
Exhibit Hall 4, Convention Center

PLATFORM SESSIONS 7-1 10:30am - 12:00noon
See pages 45-50, Convention Center

Celebration of Minorities in BME Luncheon 12:00noon - 1:30pm
Additional ticket purchase required
Salon G, Hilton

PLATFORM SESSIONS 7-2 1:30pm - 3:00pm
See pages 63-68
Convention Center

POSTER SESSION 7B 1:30pm - 5:00pm
Exhibit Hall 4, Convention Center

PLATFORM SESSIONS 7-3 4:00pm - 5:30pm
See pages 69-73
Convention Center

CAREER ALUMNI PANEL 4:00pm - 5:30pm
Ballroom E, Convention Center

RESUME WRITING WORKSHOP 5:45pm - 7:15pm
Ballroom E, Convention Center

BMES Business Meeting & Award Ceremony 5:45pm - 7:15pm
Ballroom D, Convention Center

WELCOME RECEPTION 7:30pm - 8:30pm
Salon JK, Hilton

PS = Poster Session
OP = Oral Presentation

Track: Biomedical Engineering Education – PS-7A-1

Community Partnerships: Innovation in Engineering Education

PS-7A-1-1 Low Cost Seizure Simulation Bed for Medical Training
J. H. McIsaac[1], J. Palladino[2], W. Sisson[3,4], B. Lawler[3,5], M. Ebraheem[2], M. Powers[2], and S. Zerbini[3,6]
[1]Univ. of CT/Hartford Hospital, Avon, CT, [2]Trinity College, Hartford, CT, [3]Hartford Hospital, Hartford, CT, [4]Resselaer Polytechnic Institute, Troy, NY, [5]Duke University, Durham, NC, [6]Wheaton College, Norton, MA

PS-7A-1-2 The Advantages of a Teaching Partnership between a Science Expert and Teachers in the GK-12 Classroom
L. H. Nguyen[1], C. Ellard[2], and A. Lyon[3]
[1]University of Texas at Austin, Austin, TX, [2]Pillow Elementary, Austin, TX, [3]Burnet Middle School, Austin, TX

PS-7A-1-3 Student Involvement in Engineering Education: A Case Study of the Student Platform for Engineering Education Development (SPEED)
D. Delaine[1], S. B. Seif-Naraghi[2], S. Al-Haque[3], N. Wojewoda[4], Y. Meninato[5], and J. DeBoer[6]
[1]Drexel, Philadelphia, PA, [2]University of California, San Diego, La Jolla, CA, [3]University of Toronto, Toronto, Ontario, Canada, [4]Student Platform for Engineering Education Development, Spoleto, Italy, [5]Technische Universiteit Eindhoven, Eindhoven, Netherlands, [6]Vanderbilt University, Nashville, TN

PS-7A-1-4 Micro-CT Scanner Training in a 3D Virtual World: Second Life Aided Training and Education (SLATE)
S. J. Lee[1], K. S. Sharma[1], E. A. Fox[1], and G. Wang[1]
[1]Virginia Tech, Blacksburg, VA

PS-7A-1-5 An Outreach Experience: Developing Scientific Minds through Lessons in Embryonic Development
P. Buskohl[1], A. Brittenham[2], and J. T. Butcher[1]
[1]Cornell University, Ithaca, NY, [2]Elmcrest Children's Center, Syracuse, NY

PS-7A-1-6 Using Team-based Design to Improve Surgical Safety in the Operating Room (OR)
J. J. Kang-Mieler[1], D. W. Gatchell[1], and J. White[2]
[1]Illinois Institute of Technology, Chicago, IL, [2]Advocate Lutheran General Hospital, Park Ridge, IL

PS-7A-1-7 Partnering with K-12 Teachers to Produce Tissue Engineering Class Modules
C. Cass[1], C. Gomillion[1], B. Hungerford[2], and K. Burg[1]
[1]Clemson University, Clemson, SC, [2]TL Hanna High School, Anderson, SC

Track: Biomedical Engineering Education – PS-7A-2

Graduate Education

PS-7A-2-8 Clinical Engineering at the University of Toronto: 25 Years in the Making
T. Chau[1], and P. Staszuk[1]
[1]University of Toronto, Toronto, Ontario, Canada

Track: Biomedical Engineering Education – PS-7A-3

Instructional Strategies in Global Health

PS-7A-3-9 Impact of International Service Learning on Engineering Students
C. B. Paschal[1]
[1]Vanderbilt University, Nashville, TN

PS-7A-3-10 Engineering World Health: A World of Opportunity for Engineering Students

M. D. Beard[1], and J. P. Cooper[1]

[1]Engineering World Health, Durham, NC

Track: Biomedical Imaging and Optics – PS-7A-4

Imaging in Cancer

PS-7A-4-11 Fluorescent Deoxyglucose to Improve Breast Cancer Visualization in Breast Conservation Therapy

R. J. Langsner[1,2], L. Middleton[2], R. Drezek[1], and T-K. Yu[2]

[1]Rice University, Houston, TX, [2]University of Texas, MD Anderson Center, Houston, TX

PS-7A-4-12 Multimodal Optical Coherence Tomography and Fluorescence Lifetime Imaging combined system for diagnosis of oral cancer

S. Shrestha[1], J. Park[1], B. E. Applegate[1], P. Pande[1], and J. A. Jo[1]

[1]Texas A&M University, College Station, TX

PS-7A-4-13 Automated Calculation of Ptosis on Clinical Photographs

E. Kim[1], J. Lee[2], E. K. Beahm[3], M. A. Crosby[3], G. P. Reece[3], and M. K. Markey[1]

[1]The University of Texas Department of Biomedical Engineering, Austin, TX, [2]Department of Electrical and Computer Engineering, The University of Texas at Austin, Austin, TX, [3]Department of Plastic Surgery, The University of Texas M. D. Anderson Cancer Center, Houston, TX

PS-7A-4-14 Spatiotemporal Temporal Temperature and Cell Viability Measurement Analysis of Nanohorn Photoabsorbers for Use in Photothermal Therapy

J. Whitney[1], B. Will[1], C. Zawaski[1], H. Dorn[1], D. Geohegan[2], and M. N. Rylander[1]

[1]Virginia Tech, Blacksburg, VA, [2]Oak Ridge National Laboratory, Oak Ridge, TN

PS-7A-4-15 Human Breast Tumor Co-registration of Optical Coherence Tomography and Biomedical Imaging Modalities

J. Sun[1], S. G. Adie[1], and S. A. Boppart[1]

[1]University of Illinois at Urbana-Champaign, Champaign, IL

PS-7A-4-16 Gadolinium-Conjugated Dendrimer Nanoclusters as a Tumor-Targeted T1 Magnetic Resonance Imaging Contrast Agent

Z. Cheng[1]

[1]University of Pennsylvania, Philadelphia, PA

PS-7A-4-17 Size-tunable Fluorescent Probes: Encapsulation of Quantum Dots Within Polymeric Micelles

L. Chou[1], and W. Chan[1]

[1]Donnelly Centre for Cellular and Biomolecular Research, University of Toronto, Toronto, Ontario, Canada

PS-7A-4-18 Computer-aided Detection of Spiculated Masses

A. K. Hu[1], G. S. Muralidhar[1], A. C. Bovik[1], and M. K. Markey[1]

[1]The University of Texas at Austin, Austin, TX

PS-7A-4-19 Mid-Infrared Imaging as a Label-Free Alternative to Immunohistochemistry for Breast Cancer Pathology

M. J. Walsh[1], A. Kajdacsy-Balla[2], and R. Bhargava[1]

[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]University of Illinois at Chicago, Chicago, IL

PS-7A-4-20 Confocal Microscope for Imaging Inflammation in the Mouse Colon

M. A. Saldua[1], and K. C. Maitland[1]

[1]Texas A&M University, College Station, TX

PS-7A-4-21 A Throughput-Optimized Detector for Multiple-Mouse Dynamic Contrast-Enhanced MRI

M. S. Ramirez[1], and J. A. Bankson[1]

[1]The University of Texas M. D. Anderson Cancer Center, Houston, TX

PS-7A-4-22 Multimodal Nanoparticles Targeting ICAM-1 in Tumor and Its Inflamed Milieu for Diagnosis and Therapy

X. Chen[1], J. Leelawattanachai[1], R. Wong[1,2], A. Wang[3], A. Nikitin[1], Y. Wang[1,2], and M. Jin[1]

[1]Cornell University, Ithaca, NY, [2]Weill Cornell Medical College, New York, NY, [3]Ocean Nanotech, Springdale, AR

PS-7A-4-23 A Comparison of Gold Nanoplates and Nanorods for Photoacoustic Image-Guided Photothermal Therapy

G. P. Luke[1], K. Homan[1], Y-S. Chen[1], W. Frey[1], and S. Emelianov[1]

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

PS-7A-4-24 Targeted Delivery of Gold Coated Iron Oxide Nanoclusters for Near Infrared Cancer Imaging and MRI Contrast Enhancement

L. L. Ma[1], J. Tam[1], A. Borwankar[1], B. W. Willsey[1], D. Rigdon[1], K. Sokolov[1,2], R. Ramesh[2], and K. P. Johnston[1]

[1]University of Texas at Austin, Austin, TX, [2]M.D. Anderson Cancer Center, Houston, TX

PS-7A-4-25 Depth Discrimination and Quantitative Oximetry in Spectrally-resolved Optical Mammography

Y. Yu[1], A. Sassaroli[1], M. J. Homer[2], R. A. Graham[2], and S. Fantini[1]

[1]Tufts University, Medford, MA, [2]Tufts Medical Center, Boston, MA

PS-7A-4-26 A New Hybrid Tomosynthesis Reconstruction Method for Breast Cancer Imaging

M. A. Barrera[1], and W. Qian[1]

[1]University of Texas at El Paso, El Paso, TX

PS-7A-4-27 Beveled Multifiber Probes for Polarized Reflectance Spectroscopy in Tissue

R. Karnik[1], L. T. Nieman[2], and K. Sokolov[1,2]

[1]University of Texas at Austin, Austin, TX, [2]University of Texas M.D. Anderson Cancer Center, Houston, TX

PS-7A-4-28 Intraoperative Imaging for Cancer Resection - Requirements for Real Time Imaging

G. M. Thurber[1], J-L. Figueiredo[1], and R. Weissleder[1]

[1]Harvard Medical School/Mass General Hospital, Boston, MA

PS-7A-4-29 Electromagnetically Tracking System and Forceps for Transbronchial Biopsy

L. Gruionu[1], G. Gruionu[2], and J. Choi[3]

[1]University of Craiova, Severin, MH, Romania, [2]Indiana University School of Medicine, Indianapolis, IN, [3]Catholic University of America, Washington, DC

PS-7A-4-30 Biodegradable Near-Infrared Plasmonic Nanoclusters for Biomedical Applications

J. O. Tam[1], J. M. Tam[1], A. Murthy[1], D. Ingram[1], L. L. Ma[1], K. A. Travis[1], K. Johnston[1], and K. V. Sokolov[1]

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

PS-7A-4-31 Uptake of Polymer Coated Silicon Nanocrystals in Cancer Cells

P. Puvanakrishnan[1], M. Bosch[1], C. Hessel[1], M. Rasch[1], B. A. Korgel[1], and J. W. Tunnell[1]

[1]The University of Texas at Austin, Austin, TX

PS-7A-4-32 Simultaneous Measurement of RBC Velocity, Flux, Hematocrit and Shear Rate in Vascular Networks

W. S. Kamoun[1], R. K. Jain[1], and L. L. Munn[1]

[1]MGH/HMS, Boston, MA

PS-7A-4-33 Effective Shape Feature Extraction Algorithms for Prostate Cancer Image Analysis

D. Stockton[1], F. Yuan[2], and Y. Feng[2]

[1]UTSA/UTHSCSA, San Antonio, TX, [2]UTSA, San Antonio, TX

PS-7A-4-34 Computer Aided Diagnosis (CAD) of Squamous Cell Carcinoma (SCC) of Head and Neck (H&N)

Y. Sharma[1], R. M. Parry[1], S. H. Raza[1], Q. Chaudry[1], T. H. Stokes[1], X. Wang[2], S. Muller[2], G. Z. Chen[2], and M. D. Wang[1,2]

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

See page 182 for Poster floor plan

PS-7A-4-35 Automated Renal Cell Carcinoma Subtype Classification using Cellular Features of Elliptical Models of Segmented Nuclear Clusters
Q. Chaudry[1], S. H. Raza[1], Y. Sharma[1], S. Kothari[2], A. N. Young[4], and M. D. Wang[1]
[1]Georgia Institute of Technology, Atlanta, GA, IEmory University, Atlanta, GA

PS-7A-4-36 Biodistribution and Reticuloendothelial System Uptake of ICG-loaded Nanocapsules in Mice
B. Bahmani[1], B. Jung[1], S. Gupta[1], and B. Anvari[1]
[1]University of California, Riverside, CA

PS-7A-4-37 Development of Tumor-Targeted MRI Contrast Agent for Imaging
L. Cui[1], C. Karmonik[2], B. Lorenz[1], and M. Bikram[1]
[1]University of Houston, Houston, TX, [2]Methodist Hospital, Houston, TX

PS-7A-4-38 A Dual-modality Optical Probe for Improving Prostate Cancer Diagnosis
V. Sharma[1], N. Patel[1], and H. Liu[1]
[1]The University of Texas at Arlington, Arlington, TX

PS-7A-4-39 Analysis of Transit Time Tomography of Microwave Breast Imaging Data with Curvelets
A. S. Pai[1], V. S. Potunuru[1], and W. Qian[1]
[1]University of Texas at El Paso, El Paso, TX

Track: Biomedical Imaging and Optics – PS-7A-5

Imaging in Cardiovascular Medicine

PS-7A-5-40 *Ex Vivo* Imaging of Vulnerable Atherosclerotic Plaques Using MMP-9-Dependent Macrophage-Binding Iron Oxide Nanoparticles
S. S. Yu[1,2], W. G. Jerome[3], D. J. Maron[4], J. H. Dickerson II[1,2], and T. D. Giorgio[1,2]
[1]Vanderbilt University, Nashville, TN, [2]Vanderbilt Institute of Nanoscale Science & Engineering, Nashville, TN, [3]Vanderbilt University Medical Center, Nashville, TN, [4]Vanderbilt Heart & Vascular Institute, Nashville, TN

PS-7A-5-41 Deep Tissue Optical Imaging of Decubitus Ulcers
R. Moza[1], J. M. DiMaio[1], and J. Melendez[2]
[1]UTSouthwestern Medical Center, Dallas, TX, [2]Spectral MD Inc., Lakeway, TX

PS-7A-5-42 Directional Interpolation of Fluid Velocity Fields
C. M. Zwart[1], H. M. Babiker[1], and D. H. Frakes[1]
[1]Arizona State University, Tempe, AZ

PS-7A-5-43 A Novel Method to Quantify Late Gadolinium Enhancement in Cardiac MRI using Rician PDFs
J. H. Jordan[1], W. G. Hundley[2], and C. A. Hamilton[1,2]
[1]VT-WFU School of Biomedical Engineering and Sciences, Winston-Salem, NC, [2]Wake Forest University School of Medicine, Winston-Salem, NC

PS-7A-5-44 Automatic Measurement of CT Phantoms in Major Cardiovascular Population Studies
M. Zheng[1,2], and Y. Ge[1,2]
[1]Wake Forest University Health Sciences, Winston-Salem, NC, [2]VT-WFU School of Biomedical Engineering & Sciences, Winston-Salem, NC

PS-7A-5-45 Analysis of MSC Homing in a Myocardial Infarct Model with Cryo-Imaging and Monte Carlo Modeling
K. E. Sullivant[1], G. J. Steyer[1], L. Kanodia[1], D. Roy[1], M. Penn[2], and D. L. Wilson[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Cleveland Clinic, Cleveland, OH

PS-7A-5-46 Imaging Tools to Study the Lymphatic System
T. J. Akl[1], E. Rahbar[1], Z. V. Nepiyushchikh[2], J. E. Moore[1], A. A. Gashev[2], D. C. Zawieja[2], and G. L. Coté[1]
[1]Texas A&M University, College Station, TX, [2]Texas A&M Health Science Center, Temple, TX

PS-7A-5-47 Design of Molecular Imaging Agent for Atherosclerosis-Targeting to Activated Macrophages
A. L. Doiron[1], L. Andersen[1], A-L. Aulanier[1], R. Shepherd[1], K. D. Rinker[1], and R. Frayne[1]
[1]University of Calgary, Calgary, Alberta, Canada

PS-7A-5-48 Echocardiographic Characterization of the Postnatal Development of Elastin-Insufficient Mice
V. Le[1], and J. Wagenseil[1]
[1]Saint Louis University, Saint Louis, MO

PS-7A-5-49 Depolarizing the Mitochondrial Network is Not Cardioprotective During Global Ischemia
R. M. Smith[1], S. S. Velamakanni[1], and E. G. Tolkacheva[1]
[1]University of Minnesota, Minneapolis, MN

PS-7A-5-50 Design and Build of Left Ventricular Motion Phantom for Cardiac MRI
M. Ersoy[1], M. Kotys[2], X. Zhou[3], and R. M. Setser[1,3]
[1]Cleveland State University, Cleveland, OH, [2]Philips Healthcare, Cleveland, OH, [3]Cleveland Clinic, Cleveland, OH

PS-7A-5-51 Automatic Cardiac & Respiratory Cycle Detection of Self-gated Cardiac Cine MRI Navigator Projections
D. N. Mhembere[1,2], L. Guo[1], J. A. Deryshire[3], E. R. McVeigh[1], and D. A. Herzka[1]
[1]Johns Hopkins School of Medicine, Baltimore, MD, [2]Morgan State University, Baltimore, MD, [3]DIR, NHLBI, NIH, DHHS, Bethesda, MD

PS-7A-5-52 Biophysical Properties of Vascular Endothelial Cells Upon Drug-loaded Nanoparticle Delivery
Y. Wu[1], G. D. McEwen[1], S. Kona[2], H. Xu[2], K. T. Nguyen[2], and A. Zhou[1]
[1]Utah State University, Logan, UT, [2]University of Texas at Arlington, Arlington, TX

PS-7A-5-53 Imaging the Endothelial Glycocalyx Response to Flow and Role in Mechanotransduction
E. E. Ebong[1,2], D. C. Spray[2], and J. M. Tarbell[1]
[1]The City College of New York, New York, NY, [2]Albert Einstein College of Medicine, Bronx, NY

PS-7A-5-54 Predicting the Local Onset of Alternans in Heart
A. R. Cram[1], H. Rao[1], and E. G. Tolkacheva[1]
[1]University of Minnesota, Minneapolis, MN

PS-7A-5-55 Multi Channel Phased Array Coils for Small Animal Cardiac Imaging
C-W. Chang[1], K. Feng[1], J. Bosshard[1], K. L. Moody[1], S. M. Wright[1], and M. P. McDougall[1]
[1]Texas A&M University, College Station, TX

PS-7A-5-56 Trial of Carotid Intima-Media Thickness (IMT) in the Evaluation of Patients with Acute Chest Pain
L. A. Melniker[1], and D. J. Orbach[1]
[1]NY Methodist Hospital, Brooklyn, NY

PS-7A-5-57 A Blood Pool Contrast Agent for Cardiovascular Computed Tomography Imaging
K. B. Ghaghada[1], O. Kravchuk[2], S. Haynes[2], A. Halaweish[2], A. Diveka[2], E. Van Beek[3], E. Hoffman[2], and A. Annapragada[1]
[1]The University of Texas Health Science Center, Houston, TX, [2]The University of Iowa, Iowa City, IA, [3]The University of Edinburgh, Edinburgh, Edinburgh, United Kingdom

PS-7A-5-58 High Speed Doppler Fourier Domain Optical Coherence Tomography
R. Wang[1], R. Goodwin[2], R. R. Markwald[3], and B. Z. Gao[1]
[1]Clemson Univ., Clemson, SC, [2]University of South Carolina, Columbia, SC, [3]Medical University of South Carolina, Charleston, SC

PS = Poster Session
OP = Oral Presentation

Track: Cardiovascular Engineering – PS-7A-6

Cardiac Electrical Structure and Contraction

PS-7A-6-59 Cardiac Mechanoenergetic Changes Due to Plasma Viscosity During Hemodilution
S. Chapung[1], and P. Cabrales[1]
[1]*University of California, San Diego, La Jolla, CA*

PS-7A-6-60 Cardiac Systolic Function Recovery After Hemorrhage Determines Survivability During Shock
S. Chapung[1], and P. Cabrales[1]
[1]*University of California, San Diego, La Jolla, CA*

PS-7A-6-61 Micro-ECG to Monitor Susceptibility of Regenerated Zebrafish Heart to a Potassium Channel Blocker
F. Yu[1], N. Chi[2], and T. K. Hsiai[1]
[1]*University of Southern California, Los Angeles, CA,* [2]*University of California, San Diego, San Diego, CA*

PS-7A-6-62 Pulsed Infrared (IR) Radiation Evoked Calcium Release in Neonatal Cardiac Myocytes
G. M. Dittami[1], S. M. Rajguru[2], R. A. Lasher[1], R. W. Hitchcock[1], S. S. Dharia[1], and R. D. Rabbitt[1]
[1]*University of Utah, Salt Lake City, UT,* [2]*Northwestern University, Chicago, IL*

PS-7A-6-63 The Effect of Substrate Stiffness on Cardiomyocyte Action Potential Decay Time
J. D. Myers[1], and J. G. Jacot[1,2]
[1]*Rice University, Houston, TX,* [2]*Texas Children's Hospital, Houston, TX*

PS-7A-6-64 Hysteresis of Transition between 1:1 and 2:2 Rhythms in Restitution-independent Activation in pigs
L. Jing[1], and A. Patwardhan[1]
[1]*University of Kentucky, Lexington, KY*

PS-7A-6-65 Single Probe, Fiber Optic System for Whole Heart Intracellular Calcium Transient Measurement
C. Evans[1], S. Woodruff[2], B. Chorpening[2], J. Hensel[2], and S. Shroff[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*National Energy Technology Lab, Morgantown, WV*

PS-7A-6-66 The FFT Estimates Epicardial Activation Rate in Pigs but Not Dogs in Late Ventricular Fibrillation
J. Huang[1], D. J. Dosdall[1], L. Li[1], and R. E. Ideker[1]
[1]*University of Alabama at Birmingham, Birmingham, AL*

PS-7A-6-67 Frequency Domain Analysis of Heart Rate Variability Using Interpolation and Resampling
N. Nadvar[1], B. E. Dunne[1], J. Heisner[2], A. K. Camara[2], D. F. Stowe[2], and S. S. Rhodes[1,2]
[1]*Grand Valley State University, Grand Rapids, MI,* [2]*Medical College of Wisconsin, Milwaukee, WI*

PS-7A-6-68 Excitability and Stimulation Thresholds for Nanosecond Pulses in Fish Hearts
S. Knisley[1], H. R. Phadke[1], J. Kolb[1], K. Schoenbach[1], and J. Pratt[1]
[1]*Old Dominion University, Norfolk, VA*

PS-7A-6-69 Noninvasively Pacing the Embryonic Heart with a Pulsed Laser
M. W. Jenkins[1], A. R. Duke[2], S. Gu[1], H. J. Chiel[1], H. Fujioka[1], M. Watanabe[1], E. D. Jansen[2], and A. M. Rollins[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Vanderbilt University, Nashville, TN*

PS-7A-6-70 Electrophysiological Changes of Differentiating Bone Marrow Stem Cells Laser Patterned with Cardiomyocytes
Z. Ma[1], H. Liu[1], X. J. Yun[1], T. K. Borg[2], R. R. Markwald[2], and Z. B. Gao[1]
[1]*Clemson University, Clemson, SC,* [2]*Medical University of South Carolina, Charleston, SC*

PS-7A-6-71 Effects of Micropatterned Obstacles on Propagation in the Cardiac Monolayer
H. Himel IV[1], and N. Bursac[1]
[1]*Duke University, Durham, NC*

Track: Cardiovascular Engineering – PS-7A-7

Cardiovascular Devices

PS-7A-7-72 Modulation of Diastolic Filling Using a Cardiac Support Device With a Diastolic Recoil Component
S. Biswas[1], T. Snowden[1], and J. Criscione[1]
[1]*Texas A&M University, College Station, TX*

PS-7A-7-73 The Admittance Method for the Measurement of Left Ventricular Volume in Large Animals
E. R. Larson[1], J. E. Porterfield[1], J. W. Valvano[1], M. D. Feldman[2], and J. A. Pearce[1]
[1]*The University of Texas at Austin, Austin, TX,* [2]*The University of Texas Health Science Center at San Antonio, San Antonio, TX*

PS-7A-7-74 A Successful Design of Stent Suitable for Patient's Condition
D. Yoshino[1], M. Sato[1,2], and K. Inoue[3]
[1]*Graduate School of Engineering, Tohoku University, Sendai, Japan,* [2]*Graduate School of Biomedical Engineering, Tohoku University, Sendai, Japan,* [3]*Emeritus professor of Tohoku University, Sendai, Japan*

PS-7A-7-75 Design Considerations for a New Device for a Single-Stage Hybrid Aortic Arch Replacement Procedure
H. M. Sherif[1]
[1]*Cardiac Surgery, Newark, DE*

PS-7A-7-76 Minimally Invasive Cardiac Support and Assist Therapy for the Treatment of Congestive Heart Failure
M. R. Moreno[1,2], and J. C. Criscione[1,2]
[1]*Texas A&M University, College Station, TX,* [2]*CorInnova Incorporated, College Station, TX*

PS-7A-7-77 Left Ventricular Volume for Heart Failure Monitoring Using Admittance
J. E. Porterfield[1], E. R. Larson[1], J. T. Jenkins[2,3], D. Escobedo[2,3], M. D. Feldman[2,3], J. W. Valvano[1], and J. A. Pearce[1]
[1]*The University of Texas at Austin, Austin, TX,* [2]*The University of Texas Health Science Center, San Antonio, TX,* [3]*South Texas Veterans Health Care System, San Antonio, TX*

PS-7A-7-78 Frictional Load of Shape Memory Polymer Devices Delivered via Catheter
W. Hwang[1], T. S. Wilson[2], and D. J. Maitland[1]
[1]*Texas A&M University, College Station, TX,* [2]*Lawrence Livermore National Laboratory, Livermore, CA*

PS-7A-7-79 Finite Element Simulation of Pacemaker Lead Dislodgement in Left Marginal Vein: Potential Risk Factors
X. Zhao[1], M. Burger[2], Y. Liu[1], and G. S. Kassab[1]
[1]*Indiana University-Purdue University, Indianapolis, IN,* [2]*Livermore Software Technology Corporation, Livermore, CA*

PS-7A-7-80 Assessment of Hemodynamic Parameters Using Esophageal Doppler Monitor
P. Thakore[1], A. Ritter[2], and G. Atlas[3]
[1]*Stevens Institute of Technology, Jersey City, NJ,* [2]*Stevens Institute of Technology, Hoboken, NJ,* [3]*UMDNJ, Livingston, NJ*

PS-7A-7-81 FEA Analysis of a Biodegradable Alginate Stent
H. Zeid[1], and M. Mobed Miremadi[2]
[1]*San Jose State University, Campbell, CA,* [2]*San Jose State University, San Jose, CA*

PS-7A-7-82 *In Vitro* Fluid Dynamic Effects of a New Coil Design for Cerebral Aneurysm Embolization
H. Babiker[1], F. Gonzalez[2], F. Albuquerque[2], D. Collins[1], A. Elvikis[1], and D. Frakes[1]
[1]*Arizona State University, Tempe, AZ,* [2]*St. Joseph's Hospital and Medical Center, Phoenix, AZ*

Track: Cardiovascular Engineering – PS-7A-8

Cardiovascular Fluid Mechanics

PS-7A-8-83 Flow Characterization of an Arterial Flow Bioreactor using Particle Image Velocimetry
E. E. VOIGT[1], C. F. BUCHANAN[1], J. SCHMIEG[1], M. N. RYLANDER[1], AND P. P. VLACHOS[1]
[1]Virginia Tech, Blacksburg, VA

PS-7A-8-84 Using Computational Fluid Dynamics Model to Predict Changes in Velocity properties in Stented Carotid Artery
V. B. SHETH[1], AND A. B. RITTER[1]
[1]Stevens Institute of Technology, Hoboken, NJ

PS-7A-8-85 Anatomical Analysis of Optiflo on Patient Specific Geometries
K. DESAI[1], C. HAGGERTY[1], D. ZELICOURT[1], M. FOGEL[2], K. KANTER[3], AND A. YOGANATHAN[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Children's Hospital of Philadelphia, Philadelphia, PA, [3]Emory University, Atlanta, GA

PS-7A-8-86 Study of the Hemodynamics in Dialysis Access Fistulae
P. M. MCGAH[1], J. J. RILEY[1], AND A. ALISEDA[1]
[1]University of Washington, Seattle, WA

PS-7A-8-87 Calculation of Coronary Wall Shear Stress Using Angiographic 3-Dimensional Reconstruction and Doppler Derived Velocity Measurements: A Novel Streamlined Technique for Clinical Assessment of Coronary Plaque Progression
L. H. TIMMINS[1,2], J. SUO[1,2], P. ESHTEHARDI[3], S. S. DHAWAN[3], A. R. KING[1,2], M. C. MCDANIEL[3], H. SAMADY[3], AND D. P. GIDDENS[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA, [3]Emory University School of Medicine, Atlanta, GA

PS-7A-8-88 Comparison of Inlet Flow Profiles in Patient-Specific Computational Fluid Dynamics
I. CAMPBELL[1], J. RIES[2], W. TAYLOR[1,3], AND J. OSHINSKI[1,3]
[1]Georgia Institute of Technology/Emory University, Atlanta, GA, [2]Georgia Institute of Technology, Atlanta, GA, [3]Emory University, Atlanta, GA

PS-7A-8-89 Flow Reduction in an Intracranial Aneurysm by Multiple Stent Deployment
M. IONESCU[1], AND R. W. METCALFE[1]
[1]University of Houston, Houston, TX

PS-7A-8-90 Hematocrit-Dependent Red Blood Cell Exclusion and Restriction Zones are Present at the Wall of Arterioles
O. YALCIN[1], M. JIVANI[1], M. INTAGLIETTA[1], AND P. JOHNSON[1]
[1]UC San Diego, La Jolla, CA

PS-7A-8-91 Quantitative Variation Of Blood Pressure Dynamics During Simulated Sleep Apnea
R. M. ALEX[1], D. E. WATENPAUGH[2], R. ZHANG[3], A. BASHABOYINA[1], G. BHAVE[1], M. AL-ABED[1], S. IYER[1], E. ALTUWAIJRI[1], AND K. BEHBEHANI[1]
[1]University of Texas At Arlington, Arlington, TX, [2]Sleep Consultants, Inc., Fort Worth, TX, [3]Presbyterian Medical Center of Dallas Institute for Exercise and Environmental Medicine, Dallas, TX

PS-7A-8-92 Uncertainty Quantification and Robust Design of Hemodynamics in Bypass Graft Surgeries
S. SANKARAN[1], AND A. MARSDEN[2]
[1]University of California San Diego, San Diego, CA, [2]University of California San Diego, La Jolla, CA

PS-7A-8-93 Hemodynamics in a Patient Specific Stented Artery
M. IONESCU[1], AND R. W. METCALFE[1]
[1]University of Houston, Houston, TX

PS-7A-8-94 Measured Flow in Compliant AAA Models with Iliac Bifurcation
C. A. MEYER[1], C. GUIVIER-CURIEN[1], E. BERTRAND[1], AND V. DEPLANO[1]
[1]IRPHE UMR [6594] CNRS, Marseille, France

PS-7A-8-95 Large Eddy Simulations Of Blood Flow In A Patient-Specific Aneurysmatic Carotid Artery Geometry
H. RADHAKRISHNAN[1], D. GRIGORIADIS[1], AND S. C. KASSINOS[1]
[1]University of Cyprus, Nicosia, Nicosia, Cyprus

PS-7A-8-96 The Effect of Imaging Parameters and Geometry on the Ability of MRI to Quantify Turbulent Flow
S. PIDAPARTHI[1], N. LAKKADI[1], R. SETSER[2], S. FLAMM[2], AND C. GEORGE[1]
[1]Cleveland State University, Cleveland, OH, [2]Cleveland Clinic, Cleveland, OH

PS-7A-8-97 Using CFD to Model Effects of Aortic Compliance Changes Related to Treatments for Aortic Coarctation
J. S. COOGAN[1], F. P. CHAN[1], C. A. TAYLOR[1], AND J. A. FEINSTEIN[1]
[1]Stanford University, Stanford, CA

PS-7A-8-98 Longitudinal MRI-based CFD Analysis of Hemodynamics in a Porcine Model of Dialysis Graft Stenosis
R. J. CHRISTOPHERSON[1], C. M. TERRY[2], H. LI[2], I. ZHUPLATOV[2], A. K. CHEUNG[2,3], AND Y-T. E. SHIU[1,2]
[1]Department of Bioengineering, University of Utah, Salt Lake City, UT, [2]Department of Medicine, University of Utah, Salt Lake City, UT, [3]The VA Salt Lake City Health Care System, Salt Lake City, UT

PS-7A-8-99 A Global Reduced-order Distributed Model for Physiological Fluid Dynamics
O. SAN[1], AND A. E. STAPLES[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

PS-7A-8-100 Shear Stress Determination in an Orbiting Culture Dish Using CFD and Validation with PIV
J. M. THOMAS[1], M. SHAKERI[1], R. E. BERSON[1], AND M. K. SHARP[1]
[1]University of Louisville, Louisville, KY

PS-7A-8-101 Stent Deployment at Bifurcations with Plaque Structures: Effects on Fluid Shear Stress and Solid Wall Stress
H. Y. CHEN[1], M. STUREK[2], D. BHATT[3], AND G. KASSAB[4]
[1]Purdue University, West Lafayette, IN, [2]Indiana University, Indianapolis, IN, [3]Harvard Medical School, Boston, MA, [4]Indiana University Purdue University Indianapolis, Indianapolis, IN

Track: Cellular and Molecular Engineering – PS-7A-9

Cell Mechanics, Adhesion, and Motility

PS-7A-9-102 Geometrical Constraints on Thin Film Substrates Affecting Active Mechanosensing and Cell Morphology
S. C. HUNLEY[1], S. MEHROTRA[1], K. M. PAWELEC[1], L. ZHANG[1], C. CHAN[1], AND S. BAEK[1]
[1]Michigan State University, East Lansing, MI

PS-7A-9-103 Oligomeric Amyloid Beta Peptide on Sialylic LewisX-selectin Bonding at Cerebral Endothelial Surface
S. ASKAROVA[1], AND J. C-M. LEE[1]
[1]University of Missouri, Columbia, MO

PS-7A-9-104 Quantifying ECM Signaling in Tumor Invasion: Covalent Links Influence Cell Dynamics
J. SRIVASTAVA[1], AND M. ZAMAN[2]
[1]University of Texas at Austin, Austin, TX, [2]Boston University, Boston, MA

PS-7A-9-105 Lymphocyte Dynamics on Aligned Endothelial Cells
K. SONG[1], K. KWON[2], J-C. CHOI[3], K. SUH[2], AND J. DOH[3]
[1]POSTECH, Pohang, Gyeongbuk, Korea, Republic of, [2]Seoul National University, Seoul, Korea, Republic of, [3]POSTECH, Pohang, Korea, Republic of

PS = Poster Session
OP = Oral Presentation

PS-7A-9-106 Human Fibroblasts Generate Ten Times More Power in Mixed Hepatocyte/Fibroblast Microtissues than in Pure Fibroblast Microtissues.
J. Youssef[1], and J. R. Morgan[1]
[1]*Brown University, Providence, RI*

PS-7A-9-107 Forward Ray Tracing for High-Throughput Cell Deformation Cytometry with Diode Bar Optical Stretchers
I. Sraj[1], D. W. Marr[2], and C. D. Eggleton[1]
[1]*UMBC, Baltimore, MD,* [2]*Colorado School of Mines, Golden, CO*

PS-7A-9-108 Biomechanical Effects of Flow and Coculture Environment on Endothelial Progenitor Cells
L. Cao[1], and G. A. Truskey[1]
[1]*Duke University, Durham, NC*

PS-7A-9-109 The Effect of Mechanoregulation on Myotube Alignment During Myogensis
M. Junkin[1], and P. K. Wong[1]
[1]*University of Arizona, Tucson, AZ*

PS-7A-9-110 Assembly of Human Umbilical Vein Endothelial Cells on Compliant Hydrogels
R. Saunders[1], and D. Hammer[1]
[1]*University of Pennsylvania, Philadelphia, PA*

PS-7A-9-111 sPLA2-III Enhances sAPPalpha Secretion Through Alterations in Membrane Fluidity
X. Yang[1], W. Sheng[1], Y. He[1], J. Cui[1], M. Haidekker[2], G. Sun[1], and J. Lee[1]
[1]*University of Missouri, Columbia, MO,* [2]*University of Georgia, Athens, GA*

PS-7A-9-112 Effects of Fatty Acid Unsaturation Numbers on Membrane Fluidity and APP pProcessing
X. Yang[1], W. Sheng[1], G. Sun[1], and J. Lee[1]
[1]*University of Missouri, Columbia, MO*

PS-7A-9-113 System-Level Analysis of Collective Cell Migration in Cancer
D. Harjanto[1], and M. H. Zaman[1]
[1]*Boston University, Boston, MA*

PS-7A-9-114 Endothelial Sarcomere Fluctuations Arise from Actin Polymerization at Focal Adhesions
R. J. Russell[1], S. Mangroo[1], S. Nakasone[1], R. Dickinson[1], and T. Lele[1]
[1]*University of Florida, Gainesville, FL*

PS-7A-9-115 Computational Analysis of Tensile Stress Propagation During the Migration of a Cohesive Cell Sheet
R. E. Zielinski[1], C. Mihai[1,2], D. L. Knoell[1,2], and S. N. Ghadiali[1,2]
[1]*The Ohio State University, Columbus, OH,* [2]*Dorothy M. Davis Heart and Lung Research Institute, Columbus, OH*

PS-7A-9-116 Directing Dendritic Cell Migration: Using Microfluidics to Uncover Chemotactic Heirarchies
B. G. Ricart[1], B. John[1], C. A. Hunter[1], and D. A. Hammer[1]
[1]*University of Pennsylvania, Philadelphia, PA*

PS-7A-9-117 Proteolytic Activity Disturbs the Responses of Endothelial Cells to Fluid Shear Stress
A. E. Altshuler[1], S. Chien[1], and G. W. Schmid-Schonbein[1]
[1]*University of California, San Diego, La Jolla, CA*

PS-7A-9-118 Effects of EGF on the Migration of Prostate Cancer Cell Line PC3-ML
U. Tata[1], S. M. N. Rao[1], K. Nguyen[1], and J-C. Chiao[1]
[1]*University of Texas at Arlington, Arlington, TX*

PS-7A-9-119 Motor-Clutch Motility Model for U251 Glioblastoma Migration
B. L. Bangasser[1], C. Chan[1], S. S. Rosenfeld[2], and D. J. Odde[1]
[1]*University of Minnesota, Minneapolis, MN,* [2]*Columbia University, New York, NY*

PS-7A-9-120 The Pyrophosphate Transporter ANKH Is Necessary For Mechanotransduction In The MC3T3 Cell Line
K. L. Lee[1], and C. R. Jacobs[1]
[1]*Columbia University, New York, NY*

PS-7A-9-121 Biomimetic Gel Material to Modulate Branching Morphogenesis of Submandibular Gland
H. Miyajima[1], S. An[1], K. Lee[2], T. Sakai[1], and T. Matsumoto[1]
[1]*Osaka University, Suita, Japan,* [2]*Hanyang University, Seoul, Korea, Republic of*

PS-7A-9-122 Observation of Podosome Assembly and Disassembly in Real Time *in Vitro*
N. Kim[1], J. Huynh[1], and C. A. Reinhart-King[1]
[1]*Cornell University, Ithaca, NY*

PS-7A-9-123 Dissecting the Active Gel Dynamics of the Microtubule Cytoskeleton in Living Epithelial Cells
B. D. Hoffman[1], K. M. Van Citters[2], A. W. Lau[3], and J. C. Crocker[2]
[1]*University of Virginia, Charlottesville, VA,* [2]*University of Pensylvania, Philadelphia, PA,* [3]*Florida Atlantic University, Boca Raton, FL*

PS-7A-9-124 Microrheological Assessment of the Viscoelastic Properties of Cardiac Myocytes
J. Michaelson[1], H. Choi[2], P. So[2], S. Wasserman[2], and H. Huang[1]
[1]*Columbia University, New York, NY,* [2]*Massachusetts Institute of Technology, Boston, MA*

PS-7A-9-125 Extracellular Matrix Binding Protein (Embp) and Its Role in Bacterial Adhesion to Catheter Materials
J. A. Callihan[1], K. Mikhova[1], and J. D. Bryers[1]
[1]*University of Washington, Seattle, WA*

PS-7A-9-126 Effect of Cell and Microvillus Elasticity on Intermolecular Bond Rupture
V. K. Gupta[1], and C. D. Eggleton[1]
[1]*University of Maryland at Baltimore County, Baltimore, MD*

PS-7A-9-127 Force Scanning: A High Resolution Modulus Mapping Approach for Atomic Force Microscopy
E. M. Darling[1]
[1]*Brown University, Providence, RI*

PS-7A-9-128 A Microfluidic Shear Reactor to Study Biofilm Formation and Development
W. M. Weaver[1], V. Milisavljevic[2], and D. Di Carlo[1,3]
[1]*University of California, Los Angeles, Los Angeles, CA,* [2]*David Geffen School of Medicine, UCLA, Los Angeles, CA,* [3]*California NanoSystems Institute, Los Angeles, CA*

PS-7A-9-129 Effect of Substrate Stiffness on U251 Glioblastoma Morphology and Motility
K. Opoku[1], C. Chan[1], E. Tuzel[1], S. Rosenfeld[2], and D. Odde[1]
[1]*University of Minnesota, Minneapolis, MN,* [2]*Columbia University, New York, NY*

PS-7A-9-130 Stokesian Fluid Stimulus Probe for Delivering Localized pN Level Forces to Cultured MLO-Y4 Cells
D. Wu[1,2], P. Ganatos[1], D. C. Spray[2], and S. Weinbaum[1]
[1]*The City College of New York, New York, NY,* [2]*Albert Einstein College of Medicine, Bronx, NY*

PS-7A-9-131 Osteocyte Characterization on Polydimethylsiloxane Substrates: Quantification of Communication
L. Simmerman[1], P. Sethu[2], and M. Saunders[1]
[1]*University of Kentucky, Lexington, KY,* [2]*University of Louisville, Louisville, KY*

PS-7A-9-132 Osteocyte Characterization on Polydimethylsiloxane Substrates: Viability, Growth and Sclerostin
L. Simmerman[1], J. Martin[1], P. Sethu[2], and M. Saunders[1]
[1]*University of Kentucky, Lexington, KY,* [2]*University of Louisville, Louisville, KY*

PS-7A-9-133 *In Vitro* Focal Adhesion Complex Manipulation in Single Neurons: A Model for Traumatic Brain Injury
B. E. Dabiri[1,2], L. Kerscher[1,2], C. Franck[1,2], M. A. Hemphill[1,2], J. A. Goss[1,2], P. W. Alford[1,2], and K. K. Parker[1,2]
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PS-7A-9-134 Analysis of Primary Cilia Deflection Under Laminar Fluid Flow with 3D Imaging and Advanced Modeling

M. E. Downs[1], D. Hooey[1], F. Herzog[2], and C. R. Jacobs[1]

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PS-7A-9-135 Nanotopology Guided Migration of T Cells in 2D and 3D

K. Kwon[1], W. Jeong[2], J. Choi[2], K. Song[2], K-Y. Suh[1], and J. Doh[2]

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PS-7A-9-136 The Importance of Protein N-Terminal Acetylation in Actin Cytoskeleton on Cellular Function

A. Elósegui[1], C. Gázquez[2], A. Oregi[1], A. Gil[1], R. Aldabe[2], and E. De Juan-Pardo[1]

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PS-7A-9-137 Molecular Clues to Aberrant Nuclear Structure in Human Aging and Disease

A. Kalinowski[1], S. Shenoy[1], M. Loesche[1], and K. N. Dahl[1]

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PS-7A-9-138 Endothelial Cell Phenotyping Using Receptor Expression Changes in Microfluidic Channels

D. Vickers[1], and S. Murthy[1]

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PS-7A-9-139 Impedance Analysis of Cellular Activities of Oral Cancer Cells and Normal Epithelial Cells

L. Yang[1]

[1]North Carolina Central University, Durham, NC

PS-7A-9-140 Interaction of Dendritic Cells with Different Matrices and VEGF Biology

L. Sprague[1], E. Meles[1], A. Venkatesh[1], M. Pate[1], and F. Benencia[1,2]

[1]Ohio University, Athens, OH, [2]Russ College of Engineering, Ohio University, Athens, OH

PS-7A-9-141 Cancer Stem Cells and Adhesion Molecules: New Insights for Breast Cancer Metastasis

V. S. Shirure[1], K. A. Henson[1], and M. M. Burdick[1]

[1]Ohio University, Athens, OH

PS-7A-9-142 Upregulation of Wnt5a Transcripts in Human Monocytes Treated with oxLDL

P. M. Bhatt[1], C. J. Lewis[1], D. L. House[1], D. J. Goetz[1], and R. Malgor[1]

[1]Ohio University, Athens, OH

PS-7A-9-143 *In Vitro* Elongation of Porcine Embryos Using Alginate Hydrogels as a Three-Dimensional Extracellular Matrix

C. N. Sargus[1], S. A. Plautz[1], J. R. Miles[2], J. Vallet[2], and A. K. Pannier[1]

[1]University of Nebraska-Lincoln, Lincoln, NE, [2]USDA-ARS U.S. Meat Animal Research Center, Clay Center, NE

PS-7A-9-144 Parametric Analysis of Cyclic Strain Effects on Cell-cell Adhesions

J. Sim[1], C. Simmons[1], P. Baechtold[1], N. Borghi[1], and B. L. Pruitt[1]

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PS-7A-9-145 Massively Parallel, High Force Interrogation of Single Cell Mechanics via Localized Magnetic Nanoparticles

P. Tseng[1], J. Judy[1], and D. Di Carlo[1]

[1]UCLA, Los Angeles, CA

PS-7A-9-146 Chemomechanical Mapping of Lutheran/B-CAM Interaction in Erythrocytes of Hemoglobin Genotype AS

J. L. Maciaszek[1], and G. Lykotrafitis[1]

[1]University of Connecticut, Storrs, CT

PS-7A-9-147 The Effect of Metallic Nanoparticles on Vascular Smooth Muscle Cell Mechanics

W. McAllister[1], L. Wiles[1], J. Turbeville[1], P. Kersher[1], C. Kitchens[1], and D. Dean[1]

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PS-7A-9-148 Human a(1,3) Fucosyltransferases Regulating Selectin-Mediated Leukocyte Adhesion

A. Buffone, Jr.[1], K. P. McHugh[1], and S. Neelamegham[1]

[1]State University of New York at Buffalo, Buffalo, NY

PS-7A-9-149 Guided Schwann Cell Motility on Cellular Scale Anisotropic Topography

J. A. Mitchel[1], T. Ramchal[1], and D. Hoffman-Kim[1]

[1]Brown University, Providence, RI

PS-7A-9-150 Differential Roles of Stretch and Shortening on Cyclic Stretch-induced Stress Fiber Alignment

C-F. Lee[1], H-J. Hsu[1], and R. Kaunas[1]

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PS-7A-9-151 Incorporating Cellular Mechanical Heterogeneity in a Multicellular Mechanical Model

S. Deitch[1], and D. Dean[1]

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PS-7A-9-152 Digital Microfluidic Techniques for Single-Cell *In Vitro* Developmental Neurotoxicity Screening

A. J. Sweeney[1], K. J. Burg[1], T. K. Borg[2], and B. Z. Gao[1]

[1]Clemson University, Clemson, SC, [2]Medical University of South Carolina, Charleston, SC

PS-7A-9-153 A Biomimetic ECM Reveals Independent Effects of Adhesion and Stiffness on Cells in 3D Gels

R. Reen[1], A. L. Sieminski[2], M. D. Stevenson[1], M. Boehm[1], B. Joddar[1], K. W. Koelling[1], and K. J. Gooch[1]

[1]Ohio State University, Columbus, OH, [2]Franklin W. Olin College of Engineering, Needham, MA

PS-7A-9-154 Quantitative Comparison of Cellular Traction Forces and Cell Motility in 2D and 3D Hydrogel Scaffolds

H. Lee[1], and C. Franck[1]

[1]Brown University, Providence, RI

PS-7A-9-155 Myofibrillogenesis in Single Myocytes Cultured on Aligned-collagen

H. Liu[1], J. Yun[1], T. Borg[2], and B. Gao[1]

[1]Clemson University, Clemson, SC, [2]Medical University of South Carolina, Charleston, SC

PS-7A-9-156 Microtubule Depolymerization Induces Traction Force Increase in Two Distinct Pathways

A. D. Rape[1], W. Guo[1], and Y-L. Wang[1]

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PS-7A-9-157 Integrin Mediated Injury in Neurons: A Role for Mechanotransduction in Mild Traumatic Brain Injury

M. A. Hemphill[1,2], B. E. Dabiri[1,2], J. A. Goss[1,2], P. W. Alford[1,2], and K. K. Parker[1,2]

[1]Disease Biophysics Group, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, [2]Wyss Institute for Biologically Inspired Engineering, Harvard University, Boston, MA

PS-7A-9-158 Characterizing Multiple Biomolecular Interactions of Single Cells Using Bead Arrays on Elastic Beams

C. Ounkomol[1], T. N. Nguyen[1], S. Yamada[1], and V. Heinrich[1]

[1]University of California, Davis, Davis, CA

PS-7A-9-159 Differential Talin and Vinculin Expression During Vascular Smooth Muscle Cell Mechanotransduction

O. V. Sazonova[1], K. L. Lee[1], J. Y. Wong[1], and M. A. Nugent[1,2]

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PS = Poster Session
OP = Oral Presentation

PS-7A-9-160 Contribution of Vimentin Intermediate Filament to Cell Strength and Mechanotransduction
M. E. Murray[1], and P. A. Janmey[1]
[1]University of Pennsylvania, Philadelphia, PA

PS-7A-9-161 Dynamic Stretching of Single Live Cells on an Elastomeric Micropost Array
J. Mann[1], and J. Fu[1]
[1]University of Michigan, Ann Arbor, MI

PS-7A-9-162 Mechanically-Induced Remodeling of Fibrolast Cytoskeletal in 3D Cultures
S-L. Lee[1], K. Pryse[2], and E. Elson[2]
[1]Washington University, Saint Louis, MO, [2]Washington University School of Medicine, St. Louis, MO

PS-7A-9-163 Study Cancer Cell Migration Phenomenon Utilizing a Microfluidic Device Consisting Microgaps with Different Gap Size
Z. Tong[1], M. Dallas[1], W-C. Hung[1], K. Stebe[2], and K. Konstantopoulos[1]
[1]Johns Hopkins University, Baltimore, MD, [2]University of Pennsylvania, Philadelphia, PA

PS-7A-9-164 Rigidity-dependent Costimulation of CD4+ T cells
E. Judokusumo[1], E. Tabdanov[1], and L. C. Kam[1]
[1]Columbia University, New York, NY

PS-7A-9-165 The Cytoskeleton Modifies the Hyperosmotic Response of the Cell Membrane
V. Ragoonanan[1], and A. Aksan[1]
[1]University of Minnesota, Minneapolis, MN

PS-7A-9-166 Characterization of Notch Ligand Endocytosis Using Laser Tweezers
E. Botvinick[1], B. S. Shergill[1], G. Weinmaster[2], L. Meloty-Kapella[2] and A. Musse[2]
[1]UC Irvine, Irvine, CA, [2]UC LA, Los Angeles, CA

PS-7A-9-167 Blocking Agent Effects on Motor Protein Motility in the *In Vitro* Motility Assay
K. N. Miller-Jaster[1], and W. Guilford[1]
[1]University of Virginia, Charlottesville, VA

PS-7A-9-168 Nanofibrous Engineered Surfaces for Study of Bacterial Adhesion and Biofilm Formation
M. Kargar[1], J. Wnag[1], A. S. Nain[1], and B. Behkam[1]
[1]Virginia Tech, Blacksburg, VA

PS-7A-9-169 Transforming Growth Factor-α Enhances the Chemotactic Migration of Platelet-Derived Growth Factor Induced Anaplastic Oligodendrogliomas
R. A. Able[1,2], C. Nyabeo[2], E. Holland[3], and M. Vazquez[2]
[1]The Graduate Center of CUNY, New York, NY, [2]City College of New York, New York, NY, [3]Memorial Sloan Kettering Cancer Center, New York, NY

PS-7A-9-170 The Role of Ligand Spacing on Platelet Adhesion to Fibrinogen Under Flow.
A. G. Van de Walle[1], T. Spain[1], and D. W. Schmidtke[1]
[1]University of Oklahoma, Norman, OK

PS-7A-9-171 Influence of Cell Deformation, Tether Formation and Catch/slip Bond Behavior on Leukocyte Rolling
D. B. Khismatullin[1], M. K. Pospieszalska[2], and K. Ley[2]
[1]Tulane University, New Orleans, LA, [2]La Jolla Institute for Allergy & Immunology, La Jolla, CA

PS-7A-9-172 A Single-shot Microfluidic Device for Investigating the Effects of Shear Stress Magnitude and Spatial Gradients on Endothelial Cells
H. Muddana[1], D. Ahmed[1], T. J. Huang[1], and P. J. Butler[1]
[1]Penn State University, University Park, PA

PS-7A-9-173 Evaluation of Elasticity Analyses of Non-Malignant and Malignant Breast Cells Using AFM
M. Nikkhah[1], J. Strobl[1], E. M. Schmelz[1], and M. Agah[1]
[1]Virginia Tech, Blacksburg, VA

PS-7A-9-174 Strain and Ligand Dependent Activation of TGF-beta1 by 3T3 Fibroblasts
M. K. Sewell[1], J. D. Hutcheson[1], and W. D. Merryman[1]
[1]Vanderbilt University, Nashville, TN

PS-7A-9-175 Regulation of Focal Adhesion Maturation and Cell Edge Dynamics by Epidermal Growth Factor
I. Schneider[1], and Y. Hou[1]
[1]Iowa State University, Ames, IA

PS-7A-9-176 Mapping the Interactions among Arrayed Biomaterials, Adsorbed Proteins and Human Embryonic Stem Cells
Y. Mei[1], S. Gerecht[2], M. Taylor[3], A. Urquhart[4], S. R. Bogatyrev[1], S-W. Cho[1], M. C. Davies[5], M. R. Alexander[5], R. Langer[1], and D. Anderson[1]
[1]MIT, Cambridge, MA, [2]Johns Hopkins University, Baltimore, MD, [3]University of Central Lancashire, Lancashire, United Kingdom, [4]University of Strathclyde, Glasgow, United Kingdom, [5]The University of Nottingham, Nottingham, United Kingdom

Track: Devices: Nano to Micro – PS-7A-10

Biomems and Nanotech for Cellular Engineering

PS-7A-10-177 Sorting of Microtubules by Length Using Micro-grooves Fabricated on a Chip
S. Sugita[1,2], T. Murase[1], N. Sakamoto[1], T. Ohashi[1,3], and M. Sato[1]
[1]Tohoku University, Sendai, Japan, [2]Present: Nagoya Institute of Technology, Nagoya, Japan, [3]Present: Hokkaido University, Sapporo, Japan

PS-7A-10-178 A Microfabricated Insert for Precise Control Over the Oxygen Concentration within the Boyden Chamber
S. C. Oppegard[1], A. J. Blake[1], J. C. Williams[2], and D. T. Eddington[1]
[1]University of Illinois at Chicago, Chicago, IL, [2]University of Wisconsin - Madison, Madison, WI

PS-7A-10-179 A High-throughput Microfluidic Platform for Separating Particles By Size
G. Wang[1]
[1]Georgia Insititute of Technology, Atlanta, GA

PS-7A-10-180 Addressable Micropatterning of Multiple Proteins and Cells with an Aqueous-processible Photoresist
J-C. Choi[1], K. Song[1], M. Kim[1], H-R. Jung[1], and J. Doh[1]
[1]POSTECH, Pohang, Gyeongbuk, Korea, Republic of

PS-7A-10-181 High-Throughput Screening Platform for the Simultaneous Chemical Stimulation and Optical Imaging of Dissociated Cells
A. K. Au[1], W. C. Watt[1], D. R. Storm[1], and A. Folch[1]
[1]University of Washington, Seattle, WA

PS-7A-10-182 Parallel Microfluidic Gradient Generator Array for Studying the Response of Individually Isolated Neurons to Biochemical Gradients
N. Bhattacharjee[1], and A. Folch[1]
[1]University of Washington, Seattle, WA

PS-7A-10-183 Development of a Physiologically Relevant *In Vitro* Model of the Blood-Brain Barrier
J. D. Wang[1], N. Douville[1], S. Takayama[1], and M. E. El-Sayed[1]
[1]University of Michigan, Ann Arbor, MI

PS-7A-10-184 Using an Organotypic Model for Simulating Axonal Strain During Traumatic Brain Injury Events
J-P. Dolle[1], R. Schloss[1], and M. L. Yarmush[1]
[1]Rutgers University, Piscataway, NJ

PS-7A-10-185 An Open-Surface Micro-Dispenser Valve for the Local Stimulation of Conventional Tissue Cultures
C. G. Sip[1], and A. Folch[1]
[1]*University of Washington, Seattle, WA*

PS-7A-10-186 A Microfluidic Device Using a Permeation-Based Pump for Bacterial Cell Entrapment, Alignment and Growth
D. Kim[1], P. Cullen[2], P. Wiggins[2], and S. Fraden[1]
[1]*Brandeis University, Waltham, MA,* [2]*MIT, Cambridge, MA*

PS-7A-10-187 A Mechanical Device for Long-Duration Immobilization and Microscopy of Cells and Small Organisms
L. Jiang[1], J. B. Robertson[1], and C. Janetopoulos[1]
[1]*Vanderbilt University, Nashville, TN*

Track: Devices: Nano to Micro – PS-7A-11

Drug Delivery Technologies: Nano to Micro Devices

PS-7A-11-188 Biocompatibilty and Enhanced MRI Contrast Efficiency of Multistage Nanovector
B. Godin[1], J. Ananta[2], R. Sethi[2], S. Ferrati[1], R. E. Serda[1], X. Liu[1], R. Krishnamurthy[3], R. Muthupillai[3], M. Ferrari[1,4], L. J. Wilson[2], and P. Decuzzi[1]
[1]*The University of Texas Health Science Center- Houston, Houston, TX,* [2]*Rice University, Houston, TX,* [3]*St. Luke's Episcopal Hospital, Houston, TX,* [4]*MD Anderson Cancer Center, Houston, TX*

PS-7A-11-189 Colon Cancer Stem Cell Microarrays for Screening Signaling Pathway Inhibitors
M. R. Carstens[1], A. Acharya[1], E. Huang[1], and B. G. Keselowsky[1]
[1]*University of Florida, Gainesville, FL*

PS-7A-11-190 Stabilization of Trivalent Inactivated Polio Vaccine for Microneedle Vaccination
W. C. Edens[1], N. Dybdahl-Sissoko[2], M. A. Pallansch[2], S. Oberste[2], and M. R. Prausnitz[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Centers for Disease Control and Prevention, Atlanta, GA*

PS-7A-11-191 Synthesis of Size-tunable Protein-gold Nanoparticle Aggregates
A. Albanese[1], and W. C. Chan[1]
[1]*University of Toronto, Toronto, Ontario, Canada*

PS-7A-11-192 Decreasing Biofilm Formation Through the Use of Magnetic Nanoparticles
E. N. Taylor[1], and T. J. Webster[1]
[1]*Brown University, Providence, RI*

PS-7A-11-193 CANCELED

PS-7A-11-194 Cavitational Forces in Cell Suspension: Application to Drug Delivery
J. Lautz[1], G. Sankin[1], F. Yuan[1], and P. Zhong[1]
[1]*Duke University, Durham, NC*

PS-7A-11-195 High Transition Temperature Hyperbranched and Dendritic pNIPAAm Synthesis for Targeted Drug Delivery
K. Chang[1], L. A. Bergman[1], and L. J. Taite[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS-7A-11-196 Daily Liquid Antiretroviral Pouch for PMTCT in Resource-Constrained Settings
C. Gamache[1], and R. Malkin[1]
[1]*Duke University, Durham, NC*

PS-7A-11-197 Characterization of Nanoimprinted Shape-specific, Disease-responsive Drug Carriers
M. E. Caldorera-Moore[1], M. Kang[1], V. Singh[1], Z. Moore[1], R. Agarwal[1], P. Jurney[1], R. Huang[1], S. Sreenivasan[1], L. Shi[1], and K. Roy[1]
[1]*University of Texas at Austin, Austin, TX*

PS-7A-11-198 Thermally-responsive Polymer-nanoshells Composites for Controlled Drug Delivery
L. Strong[1], S. Sershen[1], and J. West[1]
[1]*Rice University, Houston, TX*

PS-7A-11-199 Polyvinyl Alcohol-coated Nanoparticles are Extensively Trapped in Fresh Human Mucus *Ex Vivo*
M. Yang[1], S. K. Lai[1], Y-Y. Wang[1], C. Happe[1], C. So[1], M. Zhang[1], and J. S. Hanes[1]
[1]*The Johns Hopkins University, Baltimore, MD*

PS-7A-11-200 A Study of Drug Release from Homogeneous PLGA Microstructures
K. S. Hansen[1]
[1]*Purdue University, West Lafayette, IN*

PS-7A-11-201 Bioegradable Nanoparticles Decorated with Folate as a Targeted Anticancer Therapeutic
A. J. Ditto[1], N. K. Robbishaw[1], M. J. Panzner[1], W. J. Youngs[1], and Y. H. Yun[1]
[1]*University of Akron, Akron, OH*

PS-7A-11-202 Novel Photovoltaic Device-Based Drug Delivery System for Targeted Cancer Chemotherapy
S. Ambure[1], D. Terreros[2], and T. Xu[1,2]
[1]*University of Texas at El Paso, El Paso, TX,* [2]*Texas Tech University Health Sciences Center, El Paso, TX*

PS-7A-11-203 Kinetic Swelling Responses of Iron Oxide/Hydrogel Nanocomposites
B. V. Slaughter[1]
[1]*The University of Texas at Austin, Austin, TX*

PS-7A-11-204 Fabrication of PEGylated Double-Walled Nanospheres By Solvent Evaporation
D. Y. Cho[1], L. D. Patel[1], and E. Mathiowitz[1]
[1]*Brown University, Providence, RI*

PS-7A-11-205 Size Effects of Polymer-nanoparticles Systems in Magnetic Hyperthermia
O. T. Mefford[1], S. L. Saville[1], B. Qi[1], and R. Wadhwa[1]
[1]*Clemson University, Clemson, SC*

Track: Neural Engineering – PS-7A-12

Brain-Computer Interfaces

PS-7A-12-206 Desflurane Anesthesia Reduces Extracellular Spike Transmission Probabilities in Rat Visual Cortex
J. A. Vizuete[1], S. Pillay[2], B. J. McCallum[2], K. M. Ropella[1], and A. G. Hudetz[2]
[1]*Marquette University, Milwaukee, WI,* [2]*Medical College of Wisconsin, Milwaukee, WI*

PS-7A-12-207 An Implantable Intracortical Neural Recording Microsystem with All-Optical Means for Both Transcutaneous Telemetry and Power Delivery
S. Park[1], Y-K. Song[2], D. A. Borton[1], W. R. Patterson[1], M. Yin[1], J. Aceros[1], and A. V. Nurmikko[1]
[1]*Brown University, Providence, RI,* [2]*Seoul National University, Suwon-si, Gyeonggi-do, Korea, Republic of*

PS-7A-12-208 An Integrated Low-power and Low-noise Preamplifier for a High-density Neural Recording Interface
J. Kim[1], and H. C. Kim[1]
[1]*UC Santa Cruz, Santa Cruz, CA*

PS = Poster Session
OP = Oral Presentation

PS-7A-12-209 Evaluation of a Neural Spike Sorting Package Implemented in MATLAB
N. B. Langhals[1], K. A. Ludwig[1], and D. R. Kipke[1]
[1]*University of Michigan, Ann Arbor, MI*

PS-7A-12-210 Development of a Custom Artificial Intelligence Model for Functional Upper Extremity Neuroprosthetic Control
D. E. Nathan[1], and D. C. Jeutter[1]
[1]*Marquette University, Milwaukee, WI*

Track: Neural Engineering – PS-7A-13

Circuit Models of The Nervous System: Chips that Learn

PS-7A-13-211 Validation of Granger Causality Using Unidirectional Neuronal Networks
S. Alagapan[1], L. Pan[1], B. Wheeler[1], and T. DeMarse[1]
[1]*University of Florida, Gainesville, FL*

Track: New Frontiers in Bioengineering – PS-7A-14

Biological Engineering in Cancer

PS-7A-14-212 Real Time Detection of Malignant Breast Mammary Epithelial Cells Using Ultrasonic Spectral Analysis
T. E. Doyle[1], H. Patel[1], J. B. Goodrich[1], S. Kwon[1], and B. J. Ambrose[1]
[1]*Utah State University, Logan, UT*

PS-7A-14-213 The Effect of a Three Dimensional Environment on Stress Protein Expression and Thermal Cell Death Kinetics *In Vitro*
A. S. Song[1], and K. R. Diller[1]
[1]*The University of Texas at Austin, Austin, TX*

PS-7A-14-214 *In Vitro* Models for High-throughput Molecular Analysis of Stromal-epithelial Interactions in Cancer
S. Holton[1], M. Walsh[1], and R. Bhargava[1]
[1]*University of Illinois, Urbana, IL*

PS-7A-14-215 Directing the Angiogenic Shift in Cancer Cells *In Vitro* Using a Tissue Engineering Approach
C. S. Szot[1], C. F. Buchanan[1], M. N. Rylander[1], and J. W. Freeman[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

PS-7A-14-216 Gold Nanoparticles With Chitosan Coatings for Laser Ablation of Hepatocellular Carcinoma Cells
G. Zhang[1], and A. M. Gobin[1]
[1]*University of Louisville, Louisville, KY*

PS-7A-14-217 Regulation of Growth Factor-Dependent Tumor Cell Proliferation by Extracellular Matrix Mechanics
T. A. Ulrich[1,2], V. Umesh[1], and S. Kumar[1,2]
[1]*University of California, Berkeley, Berkeley, CA,* [2]*UCSF/UC Berkeley Joint Graduate Group in Bioengineering, Berkeley, CA*

PS-7A-14-218 Comparative Evaluation of Transitional Cell Carcinoma Treatments
X. Zhang[1], and W. T. Godbey[1]
[1]*Tulane University, New Orleans, LA*

PS-7A-14-219 Evaluation of CTC Transfection with Ab-Conjugated Nanoliposomes Under Microvascular Flow Conditions
R. Harouaka[1], C-Y. Chung[2], G. Robertson[2,3], and S. Zheng[1,2]
[1]*The Pennsylvania State University, University Park, PA,* [2]*The Pennsylvania State University Cancer Institute, Hershey, PA,* [3]*The Pennsylvania State University College of Medicine, Hershey, PA*

PS-7A-14-220 Role of ß-catenin Gene Expression in Colon Cancer Cell Adhesion and Growth
S. Agastin[1], and M. King[1]
[1]*Cornell University, Ithaca, NY*

PS-7A-14-221 Nitric Oxide Synthases Regulate Mouse Collecting Lymphatic Vessel Contraction
S. Liao[1], G. Cheng[1], L. L. Munn[1], D. Fukumura[1], R. K. Jain[1], and T. P. Padera[1]
[1]*Massachusetts General Hospital, Boston, MA*

PS-7A-14-222 The Thermal Dose Concept and Quantitative Predictions of Thermal Damage
J. A. Pearce[1]
[1]*The University of Texas at Austin, Austin, TX*

PS-7A-14-223 Protease-Activated Quantum Dot Probes to Assess Invasiveness of Cancer Cells
N. J. Rohani[1], H. Zhu[1], R. A. Drezek[1], V. L. Colvin[1], and J. L. West[1]
[1]*Rice University, Houston, TX*

PS-7A-14-224 Naturally Derived Ivy Nanoparticles as an Alternative to Metal-based Nanoparticles for UV Protection in Cancer Prevention
L. Xia[1], S. Lenaghan[1], M. Zhang[1], Z. Zhang[1], and Q. Li[1]
[1]*University of Tennessee, Knoxville, TN*

PS-7A-14-225 Divergent Roles for CD44 and Carcinoembryonic Antigen in Colon Carcinoma Metastasis
M. Dallas[1], G. Liu[2], S. Thomas[3], D. Huso[2], and K. Konstantopoulos[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Johns Hopkins Medical Institutions, Baltimore, MD,* [3]*École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland*

PS-7A-14-226 Poly(ethylene glycol) Based Hydrogels for Isolation of Metastatic Cues in a Cancer Metastasis Model
J. E. Saik[1], B. J. Gill[2,3], D. L. Gibbons[4], J. M. Kurie[4], and J. L. West[2]
[1]*Rice University, Houston, TX,* [2]*Rice University, Houston, TX,* [3]*Baylor College of Medicine, Houston, TX,* [4]*MD Anderson Cancer Center, Houston, TX*

PS-7A-14-227 Engineering 3D Microscale Niches for Studies of Oxygen-Dependent Tumor Angiogenesis
S. S. Verbridge[1], N. Choi[1], Y. Zheng[1], D. Brooks[1], R. Williams[1], A. Stroock[1], and C. Fischbach[1]
[1]*Cornell University, Ithaca, NY*

PS-7A-14-228 Treatment Planning of Irreversible Electroporation for Intracranial Disorders
P. A. Garcia[1], J. H. Rossmeisl, Jr.[2], and R. V. Davalos[1]
[1]*Virginia Tech - Wake Forest, Blacksburg, VA,* [2]*Virginia Tech, Blacksburg, VA*

PS-7A-14-229 Engineering Non-immunogenic Second Generation L-Asparaginase for Acute Lymphoblastic Leukemia Therapy
J. Cantor[1], T. Yoo[1], E. Stone[1], and G. Georgiou[1]
[1]*University of Texas at Austin, Austin, TX*

PS-7A-14-230 Using an Adaptive-predictive Model of Colorectal Cancer Development to Design Patient–specific Colonoscopy Follow-up Intervals
E. A. Sherer[1], S. Ambedkar[2], S. Perng[2], Y. Yih[2], and T. F. Imperiale[1,3]
[1]*Roudebush VAMC, Indianapolis, IN,* [2]*Purdue University, West Lafayette, IN,* [3]*Indiana University School of Medicine, Indianapolis, IN*

PS-7A-14-231 Physical and Thermal Properties of Functionalized Fe-Pt Magnetic Nanoparticles Used for Intracellular Cancer Treatment
A. T. Shank[1], G. Kozlowski[1], I. E. Pavel[1], D. P. Wooley[1], A. O. Sheets[1], K. Weaver[1], and A. M. Berenguer[2]
[1]*Wright State University, Dayton, OH,* [2]*University of Alicante, Alicante, Alicante, Spain*

Track: Orthopedic and Rehabilitation Engineering - PS-7A-15

Musculoskeletal Cell Mechanotransduction

PS-7A-15-232 In Vitro Study of Confined and Unconfined Compression on Nucleus Pulposus Cells
P. Wang[1,2], L. Yang[2], and A. H. Hsieh[1,3]
[1]University of Maryland, College Park, MD, [2]Chongqing University, Chongqing, Chongqing, China, People's Republic of, [3]University of Maryland, Baltimore, MD

Track: Orthopedic and Rehabilitation Engineering - PS-7A-16

Orthopaedic Applications of Noninvasive Assessment and Imaging

PS-7A-16-233 Method for Noninvasive Assessment of Joint Motion over Long Durations
M. Qadri[1], E. Bernstein[1], and D. Peterson[1]
[1]University of Connecticut Health Center, Farmington, CT

PS-7A-16-234 Intra-articular Delivery of an Interleukin-1 Antagonist Partly Reverses Altered Effects of Rat Knee Instability
K. D. Allen[1], S. B. Adams[1], B. A. Mata[1], M. Gabr[1], P. Y. Hwang[1], and L. A. Setton[1]
[1]Duke University, Durham, NC

PS-7A-16-235 Cortical and Compact Bone Models From Clinical CT: Methods for Cortical Thickness Reconstruction
D. P. Moreno[1,2], D. L. Crouch[1,2], F. S. Gayzik[1,2], and J. D. Stitzel[1,2]
[1]Wake Forest University School of Medicine, Winston-Salem, NC, [2]Virginia Tech - Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC

PS-7A-16-236 The Influence of Tortuosity in Bone Ultrasonic Wave Propagation
M. F. Souzanchi[1], L. Cardoso[1], and S. C. Cowin[1]
[1]City College of The City University of New York, New York, NY

Track: Respiratory Engineering - PS-7A-17

Acute Lung Injury from Cell to System

PS-7A-17-237 Protective Effects of Surfacant During Pulsatile Flow in a Biomimetic Airway
H. W. Glindmeyer IV[1], and D. P. Gaver III[1]
[1]Tulane University, New Orleans, LA

PS-7A-17-238 Inhibitory Effects of Albumin on Dynamic Surface Tension Characteristics of Pulmonary Surfactant
B. D. Fowler[1], E. Yamaguchi[1], and D. P. Gaver[1]
[1]Tulane University, New Orleans, LA

PS-7A-17-239 Alveolar Inflation Mechanics Following Elastase Degradation
C. E. Perlman[1]
[1]Stevens Institute of Technology, Hoboken, NJ

PS-7A-17-240 Quantitative Histology of Contused Lung Tissue with Comparison to Computed Tomography
F. S. Gayzik[1,2], J. J. Hoth[1], and J. D. Stitzel[1,2]
[1]Wake Forest University School of Medicine, Winston-Salem, NC, [2]Virginia Tech - Wake Forest Center for Injury Biomechanics, Winston-Salem, NC

PS-7A-17-241 Two Distinct Mechanisms of Polymer-enhanced Lung Surfactant Adsorption for ARDS
I. C. Shieh[1], and J. A. Zasadzinski[1]
[1]University of California, Santa Barbara, CA

PS-7A-17-242 The Correlation Between Rib Fractures and Pulmonary Contusions
B. Fry[1], E. S. Kim[2], W. Fry[1], and H. C. Gabler[2]
[1]Carilion Clinic, Roanoke, VA, [2]Virginia Tech, Blacksburg, VA

Track: Respiratory Engineering – PS-7A-18

Microfluidics and Tissue Engineering Constructs for the Lung

PS-7A-18-243 Micro-flow Visualization to Evaluate Effects of Lung Surfactant Surrounding a Semi-infinite Bubble
E. Yamaguchi[1], B. J. Smith[1], B. D. Fowler[1], and D. P. Gaver[1]
[1]Tulane University, New Orleans, LA

PS-7A-18-244 Design of a Device for Mechanical Stimulation of Tissue-Engineered Constructs
J. Imsirovic[1], K. Vo[1], K. Derricks[2], C. Rich[2], M. Nugent[1,2], and B. Suki[1]
[1]Boston University, Boston, MA, [2]Boston University School of Medicine, Boston, MA

Track: Systems Biology, Bioinformatics and Computational Biology – PS-7A-19

Molecular and Cellular Design and Evolution

PS-7A-19-245 Computational Analysis of Lignin Biosynthesis in Transgenic Alfalfa: From Steady-State to Dynamics
Y. Lee[1], and E. O. Voit[1]
[1]Georgia Institute of Technology, Atlanta, GA

PS-7A-19-246 *In Vitro* Evolution of Streptavidin in the Presence of an Unnatural Amino Acid
A. Singh[1]
[1]University of Texas at Austin, Austin, TX

Track: Systems Biology, Bioinformatics and Computational Biology – PS-7A-20

Systems Neuroscience

PS-7A-20-247 Implementation of an EMG-Based Measure of Rigidity in a PD Symptom Quantification System
S. Askari[1], and D. Won[1]
[1]California State University Los Angeles, Los Angeles, CA

PS-7A-20-248 MOVED TO PS-8B-16-202 (Friday afternoon)

PS-7A-20-249 Epileptic Seizure Detection System for Neural Implantable Device
H. C. Kim[1], and J. S. Kim[1]
[1]University of California Santa Cruz, Santa Cruz, CA

PS-7A-20-250 A Synaptic Model of Dopamine Dynamics in Parkinson's Disease, Schizophrenia, and Addiction
Z. Qi[1,2], G. W. Miller[2], and E. O. Voit[1,2]
[1]GIT, Atlanta, GA, [2]Emory, Atlanta, GA

PS = Poster Session
OP = Oral Presentation

PS-7A-20-251 Ankle Stiffness Control During Quiet Standing versus Active Sensory Feedback Control with Delay
A. Mahboobin[1], M. Cenciarini[1], M. Redfern[1], and P. Loughlin[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

PS-7A-20-252 Computational Study of RF Effect of Mobile Phones and Its Biological Effect on Brain Cancer
S. Gogineni[1], A. Nordquist[1], and Y. Feng[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

PS-7A-20-253 The Role of Cholesterol in Alzheimer's disease Pathogenesis: Preliminary Report
C. Kyrtsos[1], and J. S. Baras[1]
[1]*University of Maryland, College Park, MD*

PS-7A-20-254 Effects of a HIFU-Simulated Blast Pulse Train on a Simple Neural Model
R. Abdul Wahab[1,2], M. Choi[2], V. Zderic[2], and M. R. Myers[3]
[1]*US FDA, Silver Spring, MD,* [2]*George Washington University, Washington, DC,* [3]*US FDA, Silver Spring, MD*

Track: Tissue Engineering – PS-7A-21

Cell Delivery and Cell-Based Therapeutics

PS-7A-21-255 Pathogen Mimetics to Better Understand the Kinetics of Phagocytosis in Non-phagocytic Cell Types
C. Blanchette[1], P. Pacheco[2], Y. Woo[3], N. Shen[1], A. Hiddessen[1], and T. Sulchek[2]
[1]*Lawrence Livermore National Lab, Livermore, CA,* [2]*Georgia Tech, Atlanta, GA,* [3]*Lawrence Berkeley National Lab, Berkeley, CA*

PS-7A-21-256 Ultra-Rapid Purification of Type I Collagen for Bioengineering Applications
C. A. Pacak[1], J. M. Powers[1], and D. B. Cowan[1]
[1]*Children's Hospital Boston and Harvard Medical School, Boston, MA*

PS-7A-21-257 Detecting Hypoxia in Encapsulated Cells: Characterization of a Fluorescent Hypoxia Detection System
M. L. Skiles[1], J. Blanchette[1], R. Fancy[1], and N. Wilder[1]
[1]*University of South Carolina, Columbia, SC*

PS-7A-21-258 Differentiation of Mouse Embryonic Stem Cells into Neuron-like or Schwann Cell-like Cells for Functional Repair of the Inner Ear
P. Ramamurthy[1], T. Roth[1], F. Ebisu[1], and K. Barald[1]
[1]*University of Michigan, Ann Arbor, MI*

PS-7A-21-259 13C NMR and Isotopomeric Analysis for Metabolic Studies of Cryopreserved Pancreatic Substitutes
H. Ahmad[1,2], A. Lawson[1,2], N. Simpson[3], and A. Sambanis[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Georgia Tech/Emory Center for the Engineering of Living Tissues, Atlanta, GA,* [3]*University of Florida, Gainesville, FL*

PS-7A-21-260 The Use of Perfluorocarbons to Noninvasively Monitor the Microenvironment of Engineered Tissues
F. Goh[1,2], R. Long[2,3], N. Simpson[4], and A. Sambanis[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Georgia Tech-Emory Center for the Engineering of Living Tissues, Atlanta, GA,* [3]*Emory University School of Medicine, Atlanta, GA,* [4]*University of Florida, Gainesville, FL*

PS-7A-21-261 Effect of Endothelial Cell and Osteoblast Co-culture Ratios on Angiogenesis and Mineralization
A. R. Shah[1,2], J. C. Wenke[2], and C. M. Agrawal[1]
[1]*University of Texas at San Antonio, San Antonio, TX,* [2]*US Army Institute of Surgical Research, San Antonio, TX*

PS-7A-21-262 CANCELED

PS-7A-21-263 Restoration of Skeletal Muscle Defects Using Dedifferentiated Fibroblasts and Fibrin Microthreads
C. Malcuit[1,2], G. Pins[1], T. Dominko[1], and R. Page[1,2]
[1]*Worcester Polytechnic Institute, Worcester, MA,* [2]*Cellthera, Inc, Southbridge, MA*

PS-7A-21-264 Derivation of Cardiac Progenitors from Induced Pluripotent Stem Cells for Cardiac Tissue Engineering
S. Chakraborty[1], N. Christoforou[1], and K. Leong[1]
[1]*Duke University, Durham, NC*

Track: Tissue Engineering – PS-7A-22

Engineered Models of Tissue Disease

PS-7A-22-265 Tissue Engineering a Three-Dimensional Model of Osteoporosis with PTH and GIP
R. S. Hayden[1], and D. L. Kaplan[1]
[1]*Tufts University, Medford, MA*

PS-7A-22-266 FE Modeling of MRE
M. Haghpanahi[1]
[1]*Iran University of Science and Technology, Tehran, Tehran, Iran*

PS-7A-22-267 Modifications in the Pericellular Matrix Assembly of Chondrocytes Deficient in Collagen Type VI
M. Baron[1], K. D. Allen[1], P. Bonaldo[2], F. Guilak[1], and L. A. Setton[1]
[1]*Duke University, Durham, NC,* [2]*Universita degli Studi di Padova, Padova, Padova, Italy*

PS-7A-22-268 Investigating Glioblastoma Behavior in 3D Culture Using Hydrogel Biomaterials
S. S. Rao[1], S. Bentil[1], J. DeJesus[1], J. Larison[1], R. Dupaix[1], A. Sarkar[1], and J. O. Winter[1]
[1]*The Ohio State University, Columbus, OH*

PS-7A-22-269 Modeling of Brain White Matter under Blast Loading
A. Sundaramurthy[1], and N. Chandra[1]
[1]*University of Nebraska Lincoln, Lincoln, NE*

PS-7A-22-270 A Numerical and Experimental Study of Magnetic Fluid Hyperthermia Near a Blood Vessel with Pulsed Application of AC Magnetic Field
M. Haghpanahi[1]
[1]*Iran University of Science and Technology, Tehran, Tehran, Iran*

PS-7A-22-271 Varying Assay Geometry to Emulate Connective Tissue Planes in an *In Vitro* Model of Acupuncture
D. I. Shreiber[1], M. Julias[1], and H. M. Buettner[1]
[1]*Rutgers, the State University of New Jersey, Piscataway, NJ*

PS-7A-22-272 CANCELED

PS-7A-22-273 Reverse of Myosin Isoform Conversion by Insulin Therapy in Engineered Heart Tissue.
H. Song[1], P. Zandstra[1], and M. Radisic[1]
[1]*University of Toronto, Toronto, ON, Canada*

PS-7A-22-274 Apoptosis Resistance of Multicellular Spheroids in Three-Dimensional Polymeric Scaffolds
J. W. Kim[1], W. J. Ho[1], and B. Wu[1]
[1]*University of California Los Angeles, Los Angeles, CA*

PS-7A-22-275 Towards an *Ex Vivo* Model of Lesion Formation in Endometriosis
N. Doyle[1,2], M. T. Beste[1,2], B. A. Joughin[1,3], D. A. Lauffenburger[1,2], K. B. Isaacson[2,4], and L. G. Griffith[1,2]
[1]*Department for Biological Engineering, MA Institute of Technology, Cambridge, MA,* [2]*Center for Gynepathology Research, Massachusetts Institute of Technology, Cambridge, MA,* [3]*David H. Koch Institute for Integrative Cancer Research, Massachusetts Institute of Technology, Cambridge, MA,* [4]*Minimally Invasive Gynecologic Surgery Center, Newton-Wellesley Hospital, Newton, MA*

Track: Tissue Engineering – PS-7A-23

Skin and Adipose Tissue Engineering

PS-7A-23-276 Effects of the Cellular Microenvironment on Adipocyte Metabolism
N. Lai[1], and K. Lee[1]
[1]*Tufts University, Medford, MA*

PS-7A-23-277 Effect of Dynamic Culture on 3D Co-Culture of Adipose Derived Stem Cells and Endothelial Cells on Silk Scaffolds for Sustained Soft Tissue Regeneration
E. Bellas[1], B. Panilailitis[1], K. Marra[2], J. Rubin[2], J. J. Yoo[3], and D. L. Kaplan[1]
[1]*Tufts University, Medford, MA,* [2]*University Of Pittsburgh, Pittsburgh, PA,* [3]*WFIRM, Winston-Salem, NC*

PS-7A-23-278 Determination of Diffusion Coefficients in Calcium Alginate Phantoms
Z. Montgomery[1], R. Hood[1], and C. Rylander[1]
[1]*Virginia Tech, Blacksburg, VA*

PS-7A-23-279 Development of a Vascularized Dermal Equivalent using Adipose Derived Stem Cells
S. Natesan[1], G. Zhang[2], T. J. Walters[1], L. J. Suggs[3], and R. J. Christy[1]
[1]*USAISR, Fort Sam Houston, TX,* [2]*University of Akron, Akron, OH,* [3]*University of Texas at Austin, Austin, TX*

PS-7A-23-280 Epidermal Differentiation Governs Engineered Skin Biomechanics
G. C. Ebersole[1], P. M. Anderson[1], and H. M. Powell[1]
[1]*Ohio State University, Columbus, OH*

Track: Tissue Engineering – PS-7A-24

Tissue Engineered Models for Drug Discovery

PS-7A-24-281 A Tissue Scale, *In Vitro*, Combination Contractility and Electrophysiological Assay
A. Grosberg[1,2], M. D. Brigham[1,2], and K. K. Parker[1,2]
[1]*Disease Biophysics Group, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA,* [2]*Wyss Institute for Biologically Inspired Engineering, Harvard University, Boston, MA*

PS-7A-24-282 Use of a Thermoresponsive Polymer to Fabricate Uniform Tumor Models
J. A. Reed[1], J. P. Freyer[1], and H. E. Canavan[1]
[1]*University of New Mexico, Albuquerque, NM*

PS-7A-24-283 3D *In Vitro* Liver Tissue Model System: HEPG2 Liver cells in 3D Alginate Hydrogels
S-F. Lan[1], and B. Starly[2]
[1]*University of Oklahoma, Norman, OK,* [2]*University of Oklahoma, Norman, OK*

Track: Translational Biomedical Engineering – PS-7A-25

Islet Generation/Transplantation: A Translational Perspective

PS-7A-25-284 Promoting Islet Engraftment using Locally Released S1P Pharmacological Modulators
D. T. Bowers[1], S. Tanner[1], P. Chhabra[2], K. L. Brayman[2], and E. A. Botchwey[1]
[1]*University of Virginia, Charlottesville, VA,* [2]*University of Virgina, Charlottesville, VA*

PS-7A-25-285 Evaluation of Macroporous Silicone Scaffolds for Islet Transplantation within an Alternative Site
E. Pedraza[1], A-C. Brady[1], A. Pileggi[1], and C. L. Stabler[1]
[1]*University of Miami, Miami, FL*

PS-7A-25-286 A Red Blood Cell Aggregometer Using an Air-Pressure Driven Disaggregation Method
J. Park[1], Y. Kang[1], M. Kim[1], and S. Yang[1]
[1]*GIST, Gwangju, Jeonla, Korea, Republic of*

PS-7A-25-287 Improvement of Hematocrit Measurement Accuracy in a Microfluidic Impedance System
M. Son[1], M. Kim[1], and S. Yang[1]
[1]*GIST, Gwangju, Jeonnam, Korea, Republic of*

PS-7A-25-288 Synergistic Interaction between Stress Waves and Cavitation in Stone Comminution during Shock Wave Lithotripsy
J. Lautz[1], S. Reiss[1], G. Sankin[1], W. N. Simmons[1], and P. Zhong[1]
[1]*Duke University, Durham, NC*

PS = Poster Session
OP = Oral Presentation

Track: Tissue Engineering * – 7-1-1

Novel Biomaterials and Scaffolds – I

Chairs: Adam Engler, Padma Rajagopalan

Room 12A

10:30AM OP-7-1-1A Engineering Cell Adhesive PEG Hydrogels by Michael Addition and Photopolymerization

D. R. Jones[1], J. Zhu[1], and R. E. Marchant[1]

[1]Case Western Reserve University, Cleveland, OH

10:45AM OP-7-1-1B Radiation Crosslinked Polyurethane Shape Memory Polymers with Tunable Mechanical Properties for Biomedical Device Applications

K. Hearon[1], T. S. Wilson[2], and D. J. Maitland[1]

[1]Texas A&M University, College Station, TX, [2]Lawrence Livermore National Laboratory, Livermore, CA

11:00AM OP-7-1-1C New Biodegradable Fumerate and Maleate-Based Polymers for Bone Tissue Engineering

K. N. Cicotte[1,2], S. M. Dirk[1], and E. L. Hedberg-Dirk[2]

[1]Sandia National Laboratories, Albuquerque, NM, [2]University of New Mexico, Albuquerque, NM

11:15AM OP-7-1-1D Evaluation of the Osteointegration Potential of a Biphasic Scaffold for Tendon-Bone Healing

X. Zhang[1], K. L. Moffat[1], X. S. Liu[1], B. Zhou[1], X. Guo[1], and H. H. Lu[1]

[1]Columbia University, New York, NY

11:30AM OP-7-1-1E Dual Scaffolding System For The Engineering Of Muscle-Tendon Junctions

M. R. Ladd[1,2], S. Lee[2], A. Atala[2], and J. J. Yoo[1,2]

[1]Wake Forest/Virginia Tech, Winston Salem, NC, [2]Wake Forest Institute for Regenerative Medicine, Winston Salem, NC

11:45AM OP-7-1-1F Surface Functionalization of Hydrogels by Polyelectrolyte Multilayer Films for Tissue Engineering

S. Yamanlar[1,2], S. Sant[1,2], and A. Khademhosseini[1,2]

[1]Center for Biomedical Engineering, Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA, [2]Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

Track: Biomedical Imaging and Optics – 7-1-2

Molecular Imaging I – New Approaches and Technologies

Chairs: Mark Borden, Jinyi Qi

Room 12B

10:30AM OP-7-1-2A Imaging the Inflammation-Driven Neurodegeneration Associated with Alzheimer's Disease

E. Andreozzi[1], and A. Louie[1]

[1]University of California, Davis, Davis, CA

10:45AM OP-7-1-2B Exploring the Benefit of Time-of-Flight PET

N. Cao[1], R. H. Huesman[2], W. W. Moses[2], and J. Qi[1]

[1]University of California at Davis, Davis, CA, [2]Lawrence Berkeley National Lab, Berkeley, CA

11:00AM OP-7-1-2C Syntheses and T1 Relaxivity of Block Copolymers Based Gadolinium Encapsulated Nanoparticles

S. Hou[1], S. Tong[1], and G. Bao[1]

[1]Georgia Institute of Technology, Atlanta, GA

11:15AM OP-7-1-2D Lanthanide-doped SPIO Nanoparticles as a Non-Radiative, Multiplex Approach to Quantify Tumor Targeting

A. Elias[1], and A. Tsourkas[1]

[1]University of Pennsylvania, Philadelphia, PA

11:30AM OP-7-1-2E Ultrasound Molecular Imaging of $\alpha v \beta 3$ Integrin in Mouse Tumors

X. Hu[1], C. Anderson[2], J. Rychak[2], and K. Ferrara[1]

[1]University of California, Davis, Davis, CA, [2]Targeson, Inc, San Diego, CA

11:45AM OP-7-1-2F Bioorthogonal Chemistry Enhances Nanosensor Targeting to Cancer Cells

J. B. Haun[1], N. K. Devaraj[1], H. Lee[1], and R. Weissleder[1]

[1]Massachusetts General Hospital, Boston, MA

Track: Biomedical Imaging and Optics – 7-1-3

Imaging in Cancer Using Nanotechnology – I

Chairs: Nichole Rylander , James Tunnell

Room 19A

10:30AM OP-7-1-3A An Intein-mediated Click Conjugation Strategy for Improved Targeting of Nanoparticle Systems

A. Elias[1], and A. Tsourkas[1]

[1]University of Pennsylvania, Philadelphia, PA

10:45AM OP-7-1-3B Synthesis of a Hybrid Plasmonic-Superparamagnetic Contrast Agent for Magneto-Photo-Acoustic Imaging

R. L. Truby[1], K. A. Homan[1], M. Qu[1], M. Mehrmohammadi[1], and S. Emelianov[1]

[1]The University of Texas at Austin, Austin, TX

11:00AM OP-7-1-3C Imaging of Molecular Interactions Between Therapeutic Gold/Iron Nanoparticles and Lung Cancer Cells

J. O. Tam[1], T. Yokoyama[2], T. Larson[1], A. Scott[2], S. Kondo[2], J. A. Roth[2], R. Ramesh[2], and K. V. Sokolov[1]

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

11:15AM OP-7-1-3D Tumor Imaging With a Multifunctional Targeted-Reporter Complex via Reporter Enzyme Complementation

A-M. Broome[1], G. Ramamurthy[1], K. Lavik[1], L. A. Liggett[1], and J. P. Basilion[1]

[1]Case Western Reserve University, Cleveland, OH

11:30AM OP-7-1-3E Wide-Field Near-Infrared Narrow Band Imaging of Gold Nanoparticles' Distribution in Tumors

P. Puvanakrishnan[1], J. Park[1], P. Diagaradjane[2], G. P. Goodrich[3], S. Krishnan[2], and J. W. Tunnell[1]

[1]The University of Texas at Austin, Austin, TX, [2]The University of Texas M.D Anderson Cancer Center, Houston, TX, [3]Nanospectra Biosciences Inc, Houston, TX

11:45AM OP-7-1-3F Gold Nanoshells as Potential Contrast Agents for Rapid Intraoperative Breast Cancer Detection

L. R. Bickford[1], and R. A. Drezek[1]

[1]Rice University, Houston, TX

Track: Neural Engineering – 7-1-4

Brain-Computer Interfaces

Chairs: Dan Moran, Patrick Wolf

Room 19B

10:30AM OP-7-1-4A Spinal Cord Recordings from Descending Motor Tracts Using Multi-Wires for Command Signal Generation

A. Prasad[1], and M. Sahin[1]

[1]New Jersey Institute of Technology, Newark, NJ

10:45AM OP-7-1-4B A Bidirectional Brain-Machine Interface with Motor Recordings and Sensory Microstimulation Feedback
J. E. O'Doherty[1], P. J. Ifft[1], K. Z. Zhuang[1], M. A. Lebedev[1], and M. A. Nicolelis[1]
[1]Duke University, Durham, NC

11:00AM OP-7-1-4C Decoding Functional Intention Using Near-infrared Spectroscopy
T. Chau[1,2], S. Power[1], K. Tai[2], S. Liddle[3], and T. Falk[2]
[1]University of Toronto, Toronto, Ontario, Canada, [2]Bloorview Research Institute, Toronto, Ontario, Canada, [3]Massachusetts General Hospital, Boston, MA

11:15AM OP-7-1-4D Toward Artificial Proprioception: Closing the Loop Through Cortical Stimulation
B. M. London[1], R. Ruiz Torres[1], and L. E. Miller[1]
[1]Northwestern University, Chicago, IL

11:30AM OP-7-1-4E Optimizing Intracortical Microstimulation Via Asymmetric Pulses
A. Koivuniemi[1], and K. Otto[2]
[1]Purdue University, Indianapolis, IN, [2]Purdue University, West Lafayette, IN

11:45AM OP-7-1-4F A Model of the M1 Neuron During Movements of Fingers and the Wrist in Macaque Monkeys
S. Acharya[1], M. H. Schieber[2], and N. V. Thakor[1]
[1]Johns Hopkins University, Baltimore, MD, [2]University of Rochester, Rochester, NY

Track: Cellular and Molecular Engineering – 7-1-5

Cellular and Subcellular Imaging

Chairs: Kristen Carlson Maitland, Prabhas Moghe
Room 18A

10:30AM OP-7-1-5A Parsing Stem Cell Behaviors in Complex Microenvironments via High Content Imaging and Modeling
E. Liu[1], S. Vega[1], S. Gordonov[1], J. Kim[1], and P. V. Moghe[1]
[1]Rutgers University, Piscataway, NJ

10:45AM OP-7-1-5B Anisotropically Patterned Cardiac Tissue Displays Mature Ca2+ Handling *In Vitro*
H. Jin[1], H. Lee[1], B. Dabiri[1], A. W. Feinberg[1], and K. K. Parker[1]
[1]Wyss Institute for Biologically Inspired Engineering, SEAS,Harvard University, Cambridge, MA

11:00AM OP-7-1-5C In Situ Analyses of mRNA Splicing via DNA Logic Gates
R. Schweller[1], and M. Diehl[1]
[1]Rice University, Houston, TX

11:15AM OP-7-1-5D Membrane Remodeling in the Footprint of Arrested Neutrophils Revealed Using DTIRF Microscopy
P. Sundd[1], E. Gutierrez[2], A. Groisman[2], and K. Ley[2,3]
[1]La Jolla Institute for Allergy and Immunology, La Jolla, CA, [2]University of California San Diego, La Jolla, CA, [3]La Jolla Institute for Allergy and Immunology, La Jolla, CA

11:30AM OP-7-1-5E Digitizing Cell Lineage and Morphogenesis With Specgtral Two-Photon Microscopy
H. C. Gibbs[1], A. C. Lekven[1], and A. T. Yeh[1]
[1]Texas A&M University, College Station, TX

11:45AM OP-7-1-5F CANCELED

Track: Cellular and Molecular Engineering – 7-1-6

Cell Adhesion – I

Chairs: Julie Ji, Benjamin Keselowsky
Room 18B

10:30AM OP-7-1-6A CD11c/CD18 Expression is Upregulated on Blood Monocytes During Hypertriglyceridemia and Enhances Adhesion to VCAM-1
R. M. Gower[1], H. Wu[2], C. M. Ballantyne[2], A. A. Knowlton[1], and S. I. Simon[1]
[1]University of California Davis, Davis, CA, [2]Baylor College of Medicine, Houston, TX

10:45AM OP-7-1-6B Mutating FimH of E. coli to Allosterically Affect Catch-bond Behavior as a Force-activated Adhesive
V. B. Rodriguez[1]
[1]University of Washington, Seattle, WA

11:00AM OP-7-1-6C Membrane Cholesterol and Ethanol Together Differentially Regulate Neutrophil Tethering and Rolling
M. Furlow[1], and S. Diamond[1]
[1]University of Pennsylvania, Philadelphia, PA

11:15AM OP-7-1-6D Neutrophil Shear-Induced Resistance to Activation via the Formyl Peptide Receptor
M. J. Mitchell[1], and M. R. King[1]
[1]Cornell University, Ithaca, NY

11:30AM OP-7-1-6E Determination Of Threshold Forces For Tether Formation In Vesicles
D. J. Stark[1], T. C. Killian[1], and R. M. Raphael[1]
[1]Rice University, Houston, TX

11:45AM OP-7-1-6F Characterization of Selectin-mediated Cell Binding Using the Micropatterning Technology and Modeling
L. Cheung[1], Z. Tong[1], K. J. Stebe[2], and K. Konstantopoulos[1]
[1]Johns Hopkins University, Baltimore, MD, [2]University of Pennsylvania, Philadelphia, PA

Track: Cardiovascular Engineering — 7-1-7

Innovations in Cardiovascular Bioengineering I: Cardiac

Chairs: Nenad Bursac, Jeff Holmes
Room 18C

10:30AM OP-7-1-7A Morphomechanics of Embryonic Heart Tube Formation
V. D. Varner[1], and L. A. Taber[1]
[1]Washington University, Saint Louis, MO

10:45AM OP-7-1-7B Computational Modeling of Eccentric and Concentric Cardiac Growth through Sarcomerogenesis
S. Goktepe[1], O. J. Abilez[1], K. K. Parker[2], and E. Kuhl[1]
[1]Stanford University, Stanford, CA, [2]Harvard University, Cambridge, MA

11:00AM OP-7-1-7C Systems Analysis of the Cardiac Hypertrophy Signaling Network Using Automated Imaging
K. A. Ryall[1], and J. J. Saucerman[1]
[1]University of Virginia, Charlottesville, VA

11:15AM OP-7-1-7D Left Ventricular Wall Mechanics Improve During Endocardial Pacing In the Dyssynchronous Canine Heart
E. J. Howard[1], J. W. Covell[1], L. J. Mulligan[2], A. D. McCulloch[1], J. H. Omens[1], and R. C. Kerckhoffs[1]
[1]University of California, San Diego, La Jolla, CA, [2]Medtronic Inc., Mounds View, MN

PS = Poster Session
OP = Oral Presentation

11:30AM OP-7-1-7E Diffusion Tensor MRI Mapping of Two Local Myocardial Sheet Orientations with Histological Validation
G. L. Kung[1], T. C. Nguyen[2], A. Itoh[2], S. Skare[2], N. B. Ingels Jr.[2], D. C. Miller[2], and D. B. Ennis[1]
[1]University of California, Los Angeles, CA, [2]Stanford University, Stanford, CA

11:45AM OP-7-1-7F Novel Papillary Muscle Force Transducer: Tests and Results
J. B. Askov[1,2], J. L. Honge[1], M. O. Jensen[1,2], H. Nygaard[1,2], J. M. Hasenkam[1], and S. L. Nielsen[1]
[1]Aarhus University Hospital, Aarhus N, Aarhus, Denmark, [2]Engineering College of Aarhus, Aarhus C, Aarhus, Denmark

Track: Cardiovascular Engineering – 7-1-8

Cardiovascular Fluid Dynamics – I

Chairs: Alberto Aliseda, Wei Yin
Room 18D

10:30AM OP-7-1-8A A Hemodynamic Comparison at Intracranial Bifurcations with Different Propensities for Aneurysms
J. M. Alfano[1], S. K. Natarajan[1], and H. Meng[1]
[1]State University of New York at Buffalo, Buffalo, NY

10:45AM OP-7-1-8B Relationship of E and A Wave Pressure Distribution to Diastolic Dysfunction
C. Niebel[1], K. Stewart[1], R. Kumar[2], T. Ohara[2], P. Vlachos[1], and W. Little[2]
[1]Virginia Tech, Blacksburg, VA, [2]Wake Forest University Baptist Medical Center, Winston Salem, NC

11:00AM OP-7-1-8C A New Insight into the Mechanism of Atrial Fibrillation Induced Endothelial Dysfunction: The Detrimental Effects of Irregular Shear Stress
N. Jen[1], T. Hsiai[1], and H. Mohamed[2]
[1]University of Southern California, Los Angeles, CA, [2]University of Utah, Salt Lake City, UT

11:15AM OP-7-1-8D The Relationship Between Shear and Mass Transport in the Carotid Artery Bifurcation
R. Gorder[1], and A. Aliseda[1]
[1]University of Washington, Seattle, WA

11:30AM OP-7-1-8E Characterization of Pulsatile Flow in the Human Carotid Bifurcation with Age
W. Jeong[1], and J. Seong[1]
[1]University of Central Oklahoma, Edmond, OK

11:45AM OP-7-1-8F Pathological Shear Condition Alters Platelet Complement Activation
S. Shanmugavelayudam[1], D. A. Rubenstein[1], and W. Yin[1]
[1]Oklahoma State University, Stillwater, OK

Track: Orthopedic and Rehabilitation Engineering – 7-1-9

Orthopedic Bioengineering & Imaging

Chairs: Luis Cardoso, Yu Chen, Ron Mauck
Room 17A

10:30AM OP-7-1-9A An Ultrasonic Method for Determining the Mechanical Properties of Ovine Tibia under Cyclic Loading
L. Lin[1], F. Serra-Hsu[1], S. Ferreri[1], J. Cheng[1], and Y-X. Qin[1]
[1]State University of New York at Stony Brook, Stony Brook, NY

10:45AM OP-7-1-9B Using Ultrasound Elastography to Characterize Aging Induced Muscle Degradation
M. J. Leineweber[1], A. Cochran[1], and Y. Gao[1]
[1]Cornell University, Ithaca, NY

11:00AM OP-7-1-9C The Application of Micro-CT Arthrography in 3D Geometric Reconstruction of Soft and Hard Tissues in Small Animal Joint Model
X. I. Gu[1], D. J. Leong[1,2], N. Maldonado[3], E. Williams[3], H. B. Sun[1,2], and L. Cardoso[1]
[1]The Graduate Center and The City College of The City University of New York, New York, NY, [2]Mount Sinai School of Medicine, New York, NY, [3]City College of New York, New York, NY

11:15AM OP-7-1-9AD Local Delivery of Sphingosine 1-Phosphate Receptor-Specific Drugs Enhances Allograft Incorporation
C. S. Huang[1], and E. A. Botchwey[1]
[1]University of Virginia, Charlottesville, VA

11:30AM OP-7-1-9E Perineural Delivery of sTNFRII Attenuates Symptoms Associated with Lumbar Radiculopathy in the Rat
K. D. Allen[1], M. F. Shamji[2], B. A. Mata[1], M. Gabr[1], S. M. Sinclair[1], P. Y. Hwang[1], W. J. Richardson[1], and L. A. Setton[1]
[1]Duke University, Durham, NC, [2]Ottawa Hospital, Ottawa, Ontario, Canada

11:45AM OP-7-1-9F Response of Pain Receptors in the Midbrain due to Painful Radiculopathy
P. Y. Hwang[1], M. F. Shamji[2], L. Jing[1], M. Gabr[3], B. A. Mata[3], K. D. Allen[3], J. Chen[1], W. J. Richardson[3], and L. A. Setton[1,3]
[1]Duke University Department of Biomedical Engineering, Durham, NC, [2]Division of Neurosurgery, Ottawa Hospital, Ottawa, ON, Canada, [3]Duke University Department of Orthopaedic Surgery, Durham, NC

Track: Systems Biology, Bioinformatics and Computational Biology – 7-1-10

High-throughput Computational Biology

Chairs: May Wang
Room 17B

10:30AM OP-7-1-10A Rewirable Gene Regulatory Networks in Mammalian Preimplantation Embryonic Development
D. Xie[1], C-C. Chen[1], L. Ptaszek[2], S. Xiao[1], X. Cao[1], L. Harris[1], C. Cowan[2], and S. Zhong[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]Massachusetts General Hospital, Boston, MA

10:45AM OP-7-1-10B Ablation of HSV-1 Replication by Drug Combinations Developed through Feedback System Control
X. Ding[1], D. J. Sanchez[1], A. Shahangian[1], G. Cheng[1], and C-M. Ho[1]
[1]University of California, Los Angeles, Los Angeles, CA

11:00AM OP-7-1-10C Data-Driven Modeling Enhances Oncolytic Adenovirus Therapy
N. Bagheri[1], M. Shiina[2], W. M. Korn[2], and D. Lauffenburger[1]
[1]MIT, Cambridge, MA, [2]UCSF, San Francisco, CA

11:15AM OP-7-1-10D Adaptive Model Predictive Control of Human Promyelocytic Leukemia Cell Differentiation
S. L. Noble[1], and A. E. Rundell[1]
[1]Purdue University, West Lafayette, IN

11:30AM OP-7-1-10E Mutagenic HIV Promoter Library Uncovers Core Constitutive Transcription Factor Binding Sites That Modify Gene Expression Noise
K. Miller-Jensen[1,2], and D. V. Schaffer[2]
[1]Yale University, New Haven, CT, [2]UC Berkeley, Berkeley, CA

11:45AM OP-7-1-10F Measurements and Computational Modeling of Cerebrospinal Fluid Flow in Humans
B. J. Sweetman[1], A. A. Linninger[1], and R. Penn[1]
[1]*University of Illinois at Chicago, Chicago, IL*

Track: AIMBE – 7-1-11

AIMBE Session

Room 16A

The pace of innovation, and the costs associated with getting approval for cutting edge biomedical engineering advancements in pharmaceuticals and medical devices, can pose a threat to American innovation. AIMBE will host a panel discussing the federal policies that impact innovation and how innovation affects the livelihood of the American population and economy. Panelists will discuss the need for transformative policies to overcome barriers to innovation. Panelists will include industry, researchers, and representatives of patients in need of cutting edge treatments.

The purpose of this panel is to communicate the following goals:

1. Highlight the role that biomedical innovation plays in improving the quality of life and wellbeing of patients, as well as strengthening the economy.

2. Identify federal policies aimed at improving the pace of innovation, and discuss how those policies were developed, and how inputs from advocates helped to advance policies forward.

3. Discuss the role that biomedical engineers can play in improving the pace of innovation, specifically in the expanding field of regulatory science.

4. Provide an industry perspective on barriers to innovation, and solutions identify by industry to overcome barriers.

5. Raise awareness of AIMBE's role as leading advocacy organization for the field of biomedical engineering.

Track: Devices: Nano to Micro – 7-1-12

Biomems and Nanotech for Cellular Engineering

Chairs: Xuanhong Chen, Tejal Desai

Room 16B

10:30AM OP-7-1-12A Detecting Cell-Adhesive Sites in Extracellular Matrix using Force Spectroscopy Mapping
S. Chirasatitsin[1], and A. J. Engler[1]
[1]*University of California, San Diego, La Jolla, CA*

10:45AM OP-7-1-12B Oxygen Gradients for Open Well Cellular Cultures via Microfluidic Substrates
J. Lo[1], and D. T. Eddington[1]
[1]*University of Illinois, Chicago, IL*

11:00AM OP-7-1-12C Patterning Cells Over Diamond-Like Carbon Electrochemical Electrodes Using Parylene C Microwells
J. Yao[1,2], C. J. Mathai[1], S. Gangopadhyay[1], and K. D. Gillis[1,2]
[1]University of Missouri, Columbia, MO, [2]Dalton Cardiovascular Research Center, Columbia, MO

11:15AM OP-7-1-12D Real-time Live Cell Array for Monitoring Gene Expression in Mesenchymal Stem Cell Differentiation
P. Lei[1], J. Tian[1], J. Moharil[1], P. Xu[1], C. P. Schaffer[1], and S. T. Andreadis[1,2]
[1]University at Buffalo-SUNY, Amherst, NY, [22]Center of Excellence in Bioinformatics and Life Sciences, Buffalo, NY

11:30AM OP-7-1-12E A Single Cell Trapping Microarray and Automated Tracking of Clonal Expansion
A. J. Rettie[1], T. Chang[1], W. C. Watt[1], and A. Folch[1]
[1]*University of Washington, Seattle, WA*

11:45AM OP-7-1-12F Identification of Angiogenic Factors Through Reconfigurable Co-Cultures
M. Y. Kim[1], A. C. Newman[1], K. M. Spencer[1], P. H. Chao[1], K. L. Dooley[1], C. C. Hughes[1], and E. E. Hui[1]
[1]*University of California, Irvine, Irvine, CA*

Track: Drug Delivery Systems * – 7-1-13

Nucleic Acid Delivery – I

Chairs: Michelle Dawson, Craig Duvall

Room 14

10:30AM OP-7-1-13A Mediators of Intracellular Trafficking Enhance Transgene Expression Efficacy of Polymer-Plasmid DNA Complexes
S. Barua[1], J. Ramos[1], J. Lehrman[1], and K. Rege[1]
[1]*Arizona State University, Tempe, AZ*

10:45AM OP-7-1-13B Intracellular Transport of Linear-Dendritic Block Copolymer DNA Polyplexes: Characterization and Modulation
D. Bonner[1], C. Leung[1], R. Langer[1], and P. Hammond[1]
[1]*MIT, Cambridge, MA*

11:00AM OP-7-1-13C Self-Assembling DNA Nanostructures: Novel Carriers for Drug Delivery
H. Li[1], Y-P. Ho[1], T. LaBean[2], and K. Leong[1]
[1]Department of Biomedical Engineering, Duke University, Durham, NC, [2]Department of Chemistry, Duke University, Durham, NC

11:15AM OP-7-1-13D - Novel Polymeric Nanoparticles as Gene Delivery Vectors for Treatment of Cystic Fibrosis
R. J. Fields[1], C. Cheng[1], C. Hoimes[1], T. Patel[1], M. Egan[1], and W. M. Saltzman[1]
[1]*Yale University, New Haven, CT*

11:30AM OP-7-1-13E Fibrin-conjugated VSV-g pseudotyped lentiviruses for localized gene delivery and live cell microarray applications
R. M. Padmashali[1], and S. Andreadis[1]
[1]*University of Buffalo, Buffalo, NY*

11:45AM OP-7-1-13F Directed Evolution Yields Novel Adeno-Associated Virus Variants that Cross the Blood-Brain Barrier
J. M. Bergen[1], and D. V. Schaffer[1]
[1]*UC Berkeley, Berkeley, CA*

*** Drug Delivery Systems Track is sponsored by Acta Biomaterialia**

PS = Poster Session
OP = Oral Presentation

Track: New Frontiers in Bioengineering – 7-1-14

Immunobioengineering – I

Chairs: George Georgiou, Jennifer Maynard

Room 15

10:30AM OP-7-1-14A Rapid Generation of Monoclonal Antibodies Without Screening by Exploiting High-throughput DNA Sequencing of Immunized Repertoires

S. T. Reddy[1], X. Ge[1], and G. Georgiou[1]

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

10:45AM OP-7-1-14B Palmitoylation Regulates Raft Affinity for the Majority of Cell Surface Proteins

I. Levental[1], D. Lingwood[1], and K. Simons[1]

[1]*Max Planck Institute for Cell Biology and Genetics, Dresden, Germany*

11:00AM OP-7-1-14C Designing Synthetic, Modular Peptide Antigen Delivery Systems Using Self-Assembling Peptide Amphiphiles

A. Trent[1], M. Black[1], and M. Tirrell[2]

[1]*University of California, Santa Barbara, Berkeley, CA,* [2]*University of California, Berkeley, Berkeley, CA*

11:15AM OP-7-1-14D High-Throughput Sequencing: Antibody Repertoire Development in Zebrafish

N. Jiang[1], J. Weinstein[1], L. Penland[1], R. White III[1], D. Fisher[1], and S. Quake[1]

[1]*Stanford University, Stanford, CA*

11:30AM OP-7-1-14E Controlled Antigen Release in Mucosa for Oral Vaccination

T. A. Khan[1], and J. A. Maynard[1]

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

11:45AM OP-7-1-14F Novel Methods for the Discovery of Highly Potent Therapeutic Antibodies

X. Ge[1], and G. Georgiou[1]

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

Track: Tissue Engineering * – 7-1-15

Nano- and Micro-Engineering in Tissue Engineering – I

Chairs: Ketul Popat, Jessica Winter

Ballroom E

10:30AM OP-7-1-15A Multivalent Ephrin-B2 Bioconjugates Enhance Neuronal Differentiation of Neural Stem Cells

A. Conway[1], R. Ashton[1], and D. V. Schaffer[1]

[1]*University of California, Berkeley, Berkeley, CA*

10:45AM OP-7-1-15B Multivalency Enhances the Potency of Sonic Hedgehog in Dopaminergic Differentiation of hESCs

R. S. Ashton[1], J. Pollock[1], K. Healy[1], R. S. Kane[2], and D. V. Schaffer[1]

[1]*University of California Berkeley, Berkeley, CA,* [2]*Rensselaer Polytechnic Institute, Troy, NY*

11:00AM OP-7-1-15C Bioactive and Protein-like Synthetic Nanostructures From Peptide Amphiphiles

W. Suh[1], G. D. Stucky[2], and M. V. Tirrell[1]

[1]*University of California, Berkeley, Berkeley, CA,* [2]*University of California, Santa Barbara, Santa Barbara, CA*

11:15AM OP-7-1-15D Synergistic Effect of Anisotropic Adhesive Cues on Neurite Outgrowth

S. N. Masand[1], H. Sundararaghavan[2], and D. Shreiber[1]

[1]*Rutgers, The State University of New Jersey, Piscataway, NJ,* [2]*The University of Pennsylvania, Philadelphia, PA*

11:30AM OP-7-1-15E Guided Assembly of Insulin-Expressing Islet-Like Cell Clusters on Polymeric Micro/Nanowells

D. Gallego-Perez[1], N. Higuita-Castro[1], R. Reen[1], M. Palacio Ochoa[1,2], S. Sharma[1], L. Lee[1], J. Lannutti[1], D. Hansford[1], and K. Gooch[1]

[1]*The Ohio State University, Columbus, OH,* [2]*Antioquia School of Engineering, Envigado, Antioquia, Colombia*

11:45AM OP-7-1-15F Optimization of Nano-scale Perfluorocarbon Emulsions for use in Cellular Encapsulation

C. Fraker[1], and C. L. Stabler[1]

[1]*University of Miami, Miami, FL*

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

Track: Tissue Engineering * – 7-1-16

Neural Tissue Engineering – I

Chairs: Kacy Cullen, Jennie Leach

Ballroom F

10:30AM OP-7-1-16A Attention to Materials and Pore Structure Leads to Regeneration of Dura Mater

P. B. Snowhill[1], R. D. Hubbard[1], P. K. Alkema[1], and G. J. Pomrink[1]

[1]*Integra LifeSciences, Plainsboro, NJ*

10:45AM OP-7-1-16AB Glycomimetic Functionalized Scaffolds for Peripheral Nerve Regeneration

S. N. Masand[1], B. Hammerling[1], I. Perron[2], J. Chen[1], M. Schachner[1], and D. Shreiber[1]

[1]*Rutgers, The State University of New Jersey, Piscataway, NJ,* [2]*Rutgers, The State University of New Jersey, Philadelphia, NJ*

11:00AM OP-7-1-16C Injection of Schwann Cells into Acellular Cold-Preserved Nerve Grafts to Enhance Nerve Regeneration

N. Jesuraj[1], K. Santosa[2], M. MacEwan[1,2], A. Moore[2], R. Kasukurthi[2], W. Ray[2], E. Flagg[2], D. Hunter[2], G. Borschel[2,3], P. Johnson[2], S. MacKinnon[2], and S. Sakiyama-Elbert[1]

[1]*Washington University in St.Louis, St.Louis, MO,* [2]*Washington University School of Medicine, St.Louis, MO,* [3]*University of Toronto, Toronto, Ontario, Canada*

11:15AM OP-7-1-16AD Hydrolytically Degradable Poly(ethylene glycol) Hydrogel as a Tunable Scaffold for Neural Tissue Engineering

S. P. Zustiak[1], and J. B. Leach[1]

[1]*UMBC, Chemical & Biochemical Engineering, Baltimore, MD*

11:30AM OP-7-1-16E Hyaluronic Acid Scaffolds for Repair Strategies after Cervical Spinal Cord Injury

Z. Z. Khaing[1], S. Geissler[1], S. V. Aguilar[1], T. Schallert[1], and C. E. Schmidt

[1]*UT Austin, Austin, TX*

11:45AM OP-7-1-16F Mouse Embryonic Stem Cell-derived Progenitor Motor Neurons for Transplantation After Spinal Cord Injury

D. McCreedy[1], and S. Sakiyama-Elbert[1]

[1]*Washington University in St. Louis, St. Louis, MO*

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

PLATFORM SESSIONS 7-1

Track: Tissue Engineering * – 7-1-17

Musculoskeletal Tissue Engineering – I

Chairs: Jeffrey Jacot, Johnna Temenoff

Ballroom G

10:30AM OP-7-1-17A Co-regulation of Tendon and Muscle Progenitor Cells Via ParacrineSsignaling in a 3D Culture System

A. H. Thomas[1], A. G. Burbank[1], and C. K. Kuo[1]

[1]*Tufts University, Medford, MA*

10:45AM OP-7-1-17B Selective Activation of Phospholipid Receptors Affects Progenitor Cell Recruitment

M. R. Tinius[1], and E. A. Botchwey[1]

[1]*University of Virginia, Charlottesville, VA*

11:00AM OP-7-1-17C Bone Marrow Stromal Cell Recruitment Enhances Local S1P Receptor-Initiated Vascular Remodeling

A. O. Awojoodu[1], L. S. Sefcik[1], B. R. Wamhoff[2], S. M. Peirce-Cottler[1], and E. A. Botchwey[1]

[1]*University of Virginia - Department of Biomedical Engineering, Charlottesville, VA,* [2]*University of Virginia - Department of Cardiovascular Medicine, Charlottesville, VA*

11:15AM OP-7-1-17D Comparison of C2C12 Myoblast Line and Primary Human Skeletal Myoblasts for Muscle Tissue-Engineering

C. S. Cheng[1], R. Harbuck[1], Y. El-Abd[1], W. E. Kraus[2], and G. A. Truskey[1]

[1]*Duke University, Durham, NC,* [2]*Duke University Medical Center, Durham, NC*

11:30AM OP-7-1-17E Contractile Force of Engineered Skeletal Muscle Depends on Myofiber Density and Local Alignment

W. Bian[1], and N. Bursac[1]

[1]*Duke University, Durham, NC*

11:45AM OP-7-1-17F Functional Restoration of Skeletal Muscle Defects Using Bioengineered Skeletal Muscle in Rodents

M. Machingal[1,2], B. T. Corona[1], V. Kesireddy[1], W. Zhao[1], J. J. Yoo[1], and G. J. Christ[1]

[1]*Wake Forest Institute for Regenerative Medicine, Winston Salem, NC,* [2]*VT-WFU School of Biomedical Engineering and Sciences, Winston Salem, NC*

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

Whitaker International Fellows and Scholars Program

10:30am - 12:00noon

Hilton Austin, Room 602

PS = Poster Session
OP = Oral Presentation

See page 182 for Poster floor plan

Track: Biomedical Engineering Education – PS-7B-1

Teaching Tools and Strategies

PS-7B-1-1 MU Biodesign & Innovation Program
M. JAHNSEN[1], P. DALE[1], AND G. SCHELLER[1]
[1]University of Missouri, Columbia, MO

PS-7B-1-2 MOVED TO OP-9-3-5F

PS-7B-1-3 Fellowships in Research and Science Teaching (FIRST): A Unique Comprehensive Postdoctoral Experience
S. E. STABENFELDT[1], A. EISEN[2], AND D. C. EATON[2]
[1]Georgia Institute of Technology / Emory University, Atlanta, GA, [2]Emory University, Atlanta, GA

Track: Biomedical Imaging and Optics – PS-7B-2

Teaching Tools and Strategies

PS-7B-2-4 Multiple Materials Density Callibration of Subject-specific Jaw and Vertebrae Bones for Mechanical Behavior Prediction by FEM Modelling
J. A. RAMOS[1], A. VARGAS[1], F. ALISTER[1], F. SAHLI[1], AND M. CAMPOS[1]
[1]Pontificia Universidad Catolica de Chile, Santiago, RM, Chile

Track: Cardiovascular Engineering – PS-7B-3

In Vitro and Multi-scale Models of Cardiovascular Disease

PS-7B-3-5 Cyclic Stretch Induces Endothelial to Mesenchymal Transdifferentiation in Mitral Valve Endothelial Cells
K. BALACHANDRAN[1,2], J. WYLIE-SEARS[3], J. BISCHOFF[3,4], E. AIKAWA[4,5], R. A. LEVINE[4,6], AND K. K. PARKER[1,2]
[1]Disease Biophysics Group, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA, [2]Wyss Institute for Biologically Inspired Engineering, Harvard University, Boston, MA, [3]Children's Hospital Boston, Boston, MA, [4]Harvard Medical School, Boston, MA, [5]Brigham and Women's Hospital, Boston, MA, [6]Massachusetts General Hospital, Boston, MA

PS-7B-3-6 High Contrast MicroCT Imaging of Coronary Arteries with Vulnerable Plaque for Biomechanical Modeling
A. A. KELLY[1], N. MALDONADO[1], S. CHAKRABORTI[1], Y. VENGRENYUK[2], L. CARDOSO[1], AND S. WEINBAUM[1]
[1]City College of New York, New York, NY, [2]New York University, New York, NY

PS-7B-3-7 Postprandial Triglyceride-Rich Lipoproteins Differentially Modulate Vascular Endothelial Cell Inflammatory Responses
Y. I. WANG[1], J. SCHULZE[1], S. I. SIMON[1], AND A. G. PASSERINI[1]
[1]University of California, Davis, Davis, CA

Track: Cardiovascular Engineering – PS-7B-4

Microvasculature, Angiogenesis, and Capillary Patches

PS-7B-4-8 Highly Permeable Silicon Nanomembranes Promote Endothelial Vacuolization and Tube Formation
B. J. NEHILLA[1], N. PETUKHOV[2], AND J. L. MCGRATH[1]
[1]University of Rochester, Rochester, NY, [2]Webster High School, Webster, NY

PS-7B-4-9 Image-based Quantification of Vascular Network Development Within a Perfusion Circuit
J. A. RYTLEWSKI[1], L. GEUSS[1], AND L. J. SUGGS[1]
[1]UT Austin, Austin, TX

PS-7B-4-10 Fibronectin Polymerization and Actin Polarization Drive Vasculogenesis
J. P. CALIFANO[1], AND C. A. REINHART-KING[1]
[1]Cornell University, Ithaca, NY

PS-7B-4-11 Modeling the Angiogenic Response of the Neurovasculature in Ischemia
R. REKHI[1], A. AREVALOS[1], J. JUNG[1], B. LONG[1], AND A. A. QUTUB[1]
[1]Rice University, Houston, TX

PS-7B-4-12 Fibril Alignment Improves Microvasculature Formation by Human Blood Outgrowth Endothelial Cells in Fibrin Gel
K. T. MORIN[1], AND R. T. TRANQUILLO[1]
[1]University of Minnesota, Minneapolis, MN

PS-7B-4-13 - Impact of Extracellular Matrix Stiffness on Angiogenic Patterning
P-F. LEE[1], K. J. BAYLESS[1], AND A. T. YEH[1]
[1]Texas A&M University, College Station, TX

PS-7B-4-14 Tissue Stiffness and Microvascularized Tissue Development
A-C. LIN[1], AND C. MILLER[1]
[1]Saint Louis University, St Louis, MO

PS-7B-4-15 Gradient Deposition of Growth Factors Via Electrospinning for Precise Spatiotemporal Angiogenic Therapies
R. B. MONTERO[1], AND F. M. ANDREOPOULOS[1]
[1]University of Miami, Coral Gables, FL

PS-7B-4-16 Modulation of NO Bioavailability by Red Blood Cells in Microcirculation
P. DEONIKAR[1], AND M. KAVDIA[1]
[1]University of Arkansas, Fayetteville, AR

PS-7B-4-17 Shear Stress Controls Capillary Sprouting in a Microfluidic Device
J. W. SONG[1], AND L. L. MUNN[1]
[1]Massachusetts General Hospital/Harvard Medical School, Charlestown, MA

PS-7B-4-18 Bio-CAD for Tissue Scaffolding for Transplant Therapy of Congenital Hypoplasia of the Left Ventricle
W. L. MONDY[1], J. G. JACOT[2,3], AND C. CASTELEYN[4]
[1]Baylor College of Medicine, Houston, TX, [2]Rice University, Houston, TX, [3]Texas Children's Hospital, Houston, TX, [4]Ghent University, Ghent, East Flanders, Belgium

PS-7B-4-19 CANCELED

PS-7B-4-20 Influence of Permeability on Shear Stress Distribution Along Capillary Sprouts
W. WANG[1], P. C. STAPOR[1], W. L. MURFEE[1], AND D. B. KHISMATULLIN[1]
[1]Tulane University, New Orleans, LA

PS-7B-4-21 Effect of Antiangiogenic Agents on Tumor Vasculature and Microenvironment in Orthotopic Tumor Models
D. A. LACORRE[1], W. S. KAMOUN[1], J. Y. PERENTES[1], S. V. KOZIN[1], E. DI TOMASO[1], D. G. DUDA[1], R. K. JAIN[1], AND L. L. MUNN[1]
[1]Edwin L. Steele Laboratory, Massachusetts General Hospital, Boston, MA

PS-7B-4-22 Novel Reducible L-Lysine Copolymers as a Nonviral Gene Carrier for Ischemic Heart Disease
M. ISMAIL NOUNOU[1], S. CHUNG[1], K. EMMANOUIL[1], T. PHAM[1], Z. LU[1], B. MCCONNELL[1], AND M. BIKRAM[1]
[1]University of Houston, Houston, TX

PS-7B-4-23 The Interplay of Cyclic Strain and Vascular Endothelial Growth Factor in rRgulating Angiogenesis
J. WILKINS[1], A. KUBOTA[1], AND Y-T. E. SHIU[1,2]
[1]Department of Bioengineering, University of Utah, Salt Lake City, UT, [2]Department of Medicine, University of Utah, Salt Lake City, UT

PS-7B-4-24 A Mathematical Framework for Predicting Oxygen Transport and Vessel Remodeling in Tumors
J. A. TYRRELL[1], W. S. KAMOUN[2], AND L. L. MUNN[3]
[1]Thomson Reuters, New York, NY, [2]Massachusetts General Hospital, Boston, MA, [3]Harvard Medical School, Charlestown, MA

PS-7B-4-25 A Bottom-Up Approach To Vascular Tissue Engineering
S. COLLINS[1], AND Y-J. GENG[1]
[1]UT Health Science Center-Houston, Houston, TX

Track: Cellular and Molecular Engineering – PS-7B-5

Cellular and Sub-cellular Imaging

PS-7B-5-26 Visualizing Calcium Signaling in Live Endothelial Cells Under Mechanical Vibration
W. S. NISHITANI[1], T. A. SAIF[1], AND Y. WANG[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

PS-7B-5-27 Molecular Engineering and Live Cell Imaging
Y. WANG[1]
[1]University of Illinois at Urbana Champaign, Urbana, IL

PS-7B-5-28 Deriving Volume-based Mass Profiles Using Confocal Microscopy and Time-lapse Dark Field Imaging
L. MILLET[1], K. PARK[1], AND R. BASHIR[1]
[1]University of Illinois at Urbana Champaign, Urbana, IL

PS-7B-5-29 Strategies to Modulate Calcium Signals and Induce Calcium Influx
E. PHAM[1], AND K. TRUONG[1]
[1]University of Toronto, Toronto, Ontario, Canada

PS-7B-5-30 Using X-ray Tomography to Get a Three-Dimensional Representation of Cell Growth in Scaffolds
J. CARTER[1], AND C. AGRAWAL[1]
[1]University of Texas San Antonio, San Antonio, TX

PS-7B-5-31 Quantitative Analysis of Glucocorticoid Receptor Sub-Cellular Movement in Sheared Endothelial Cells
A. NAYEBOSADRI[1], AND J. Y. JI[2]
[1]Purdue University, West Lafayette, IN, [2]Indiana University Purdue University Indianapolis, Indianapolis, IN

PS-7B-5-32 Ligand Binding Effects on Lateral Diffusion of Host Cell Receptors at HIV-1 Virological Synapse
R. KALYANA SUNDARAM[1], A. BASTIAN[1], G. ENG[2], K. MCFADDEN[3], M. CONTARINO[3], I. M. CHAIKEN[3], AND E. S. PAPAZOGLOU[1]
[1]Drexel University, Philadelphia, PA, [2]Duke University, Durham, NC, [3]Drexel University College of Medicine, Philadelphia, PA

PS-7B-5-33 SIRT1 Inhibition Induces Oxidative Stress in Endothelial Cells
D. T. NGUYEN[1], AND M. KAVDIA[1]
[1]University of Arkansas, Fayetteville, AR

Track: Devices: Nano to Micro – PS-7B-6

Biosensors, Bio-Interfaces and Implantable Devices

PS-7B-6-34 Non-labeled, Real-time Detection of H1N1 DNA Hybridization Using Combined QCM-D and EIS System
S. P. PRIETO[1], AND H. J. KWON[1]
[1]Andrews University, Berrien Springs, MI

PS-7B-6-35 Recharging Implanted Electronics With an Electric Field
T. JOCHUM[1], Z. ABZUG[1], AND P. WOLF[1]
[1]Duke University, Durham, NC

PS-7B-6-36 Imaging Analysis of Carbohydrate Microarray: ToF-SIMS, SPRi and Multivariate Analysis
F. CHENG[1], K. BOLLES[2], AND D. M. RATNER[1]
[1]University of Washington, Seattle, WA, [2]Whitman College, Walla Walla, WA

PS-7B-6-37 DNA Dehybridization Photolithography
S. B. RAJEWALE[1], L. HUANG[1], S-W. TAM-CHANG[1], AND N. G. PUBLICOVER[1]
[1]University of Nevada-Reno, Reno, NV

PS-7B-6-38 Oxygen Sensitive Microwells
E. SINKALA[1], AND D. T. EDDINGTON[1]
[1]University of Illinois at Chicago, Chicago, IL

PS-7B-6-39 TNF Capture Dynamics within Hemoadsorption Beads Used to Treat Sepsis
J. KIMMEL[1,2], C. LACKO[3], R. DELUDE[1], AND W. FEDERSPIEL[1,2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]McGowan Institute for Regenerative Medicine, Pittsburgh, PA, [3]Carnegie Mellon University, Pittsburgh, PA

PS-7B-6-40 Simulation of Label-free Biosensors With a Photonic Crystal Open Cavity
S. XIAO[1], S. HUSSAIN[1], R. PETERSON[1], AND J. YE[1]
[1]UTSA, San Antonio, TX

PS-7B-6-41 Photonic Crystal Biosensor Label-Free Imaging to Screen for Natural Products that are Cytotoxic to Pancreatic Cancer Cells
S. GEORGE[1]
[1]University of Illinois at Urbana Champagin, Urbana, IL

PS-7B-6-42 Label-Free Prehybridization Imaging of Printed DNA Microarrays for Spot Quality Analysis
S. GEORGE[1]
[1]University of Illinois at Urbana Champagin, Urbana, IL

PS-7B-6-43 Development of a Food Quality Monitor Based on Miniature Flexible pH Sensors
W-D. HUANG[1], S. DEB[1], Y. SEO[1], AND J-C. CHIAO[1]
[1]University of Texas at Arlington, Arlington, TX

PS-7B-6-44 An Integrated Circuit for Wireless Load-Modulation Transponders
Y-S. SEO[1], W-D. HUANG[1], AND J-C. CHIAO[1]
[1]University of Texas at Arlington, Arlington, TX

PS-7B-6-45 Novel Double Lumen Catheter for Delivery of Materials at the Tissue-implant Interface
A. PERAMO[1], AND C. MARCELO[1]
[1]University of Michigan, Ann Arbor, MI

PS-7B-6-46 Conducting Polymer Devices for Control of Cell Adhesion
A. M. WAN[1], E. ISMAILOVA[2], D. J. BROOKS[1], C. K. OBER[1], D. GOURDON[1], C. FISCHBACH[1], AND G. G. MALLIARAS[1,2]
[1]Cornell University, Ithaca, NY, [2]Ecole Nationale Supérieure des Mines de Saint-Etienne, Gardanne, France

PS-7B-6-47 Single-Biomolecule Detection using Polymer-based Photonic Crystal Biosensors
B. HAMZA[1], Y. LIU[1], AND J. DAWSON[1]
[1]West Virginia University, Morgantown, WV

PS-7B-6-48 Influence of Recognition Element Conformation and Conjugation Parameters on FET Protein Sensors
T. R. NICHOLSON III[1,2], S. K. GUPTA[1,2], P. CASAL[1,2], X. WEN[1], H-H. WU[1], W. LU[1], L. BRILLSON[1], AND S. C. LEE[1,2]
[1]The Ohio State University, Columbus, OH, [2]Dorothy Davis Heart and Lung Institute, Columbus, OH

PS = Poster Session
OP = Oral Presentation

PS-7B-6-49 Detection of Picomolar Levels of Protein Analyte in Physiologic Buffer Using a Planar BioFET
S. K. Gupta[1], X. Wen[1], P. Casal[1], M. Palacio[1], H. H. Wu[1], W. Lu[1], L. Brillson[1], B. Bhushan[1], and S. C. Lee[1]
[1]*The Ohio State University, Columbus, OH*

PS-7B-6-50 Receptor Conjugation Strategies and FET Protein Sensor Performance
P. Casal[1], S. K. Gupta[1], T. R. Nicholson III[1], X. R. Wen[1], M. L. Palacio[1], H. H. Wu[1], W. L. Lu[1], B. L. Bhushan[1], L. J. Brillson[1], and S. C. Lee[1]
[1]*Ohio State University, Columbus, OH*

PS-7B-6-51 Tuning Adhesion Failure Strength For Tissue-Specific Applications
N. Artzi[1,2], A. Zeiger[1], F. Boehning[3], A. B. Ramos[1,4], K. V. Vliet[1], and E. Edelman[1,2]
[1]*MIT, Cambridge, MA,* [2]*Brigham and Women Hospital, Harvard Medical School, Boston, MA,* [3]*MIT, Concord, MA,* [4]*Institut Quiimic de Sarria, Barcelona, Spain, Spain*

PS-7B-6-52 Design of a Tissue Implantable Lactate Sensor for Continuous *In Vivo* Monitoring
D. A. Baker[1]
[1]*University of California, San Diego, La Jolla, CA*

PS-7B-6-53 Interferometric Imaging Biosensor for Single Pathogen Detection
G. Daaboul[1]
[1]*Boston University, Boston, MA*

PS-7B-6-54 A Novel Sensor for Continuous Glucose Monitoring
J. V. Veetil[1], S. Jin[1], and K. Ye[1]
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PS-7B-6-55 Encapsulation of a Con-A/Glycodendrimer Glucose Sensing Assay using Microporated Hydrogel Spheres
B. M. Cummins[1], M. Pishko[1], E. Simanek[1], and G. Coté[1]
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PS-7B-6-56 Electrokinetic Sample Preparation for Electrochemical Assays: Towards Point-Of-Care Diagnosis of Urinary Tract Infections
L. M. Sin[1], V. Gau[2], J. Liao[3], and P. Wong[1]
[1]*University of Arizona, Tucson, AZ,* [2]*GeneFluidics Inc, Monterey Park, CA,* [3]*University of Stanford, Palo Alto, CA*

PS-7B-6-57 Effect of Protein-Affinity Ligands in Molecular Imprinting of Proteins in Thin Films of Hydrogel
A. Avalos[1], and A. Nadarajah[1]
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PS-7B-6-58 Measuring Dynamic Properties of Round Window Membrane by Electromagnetic Force Stimulation
D. Nakmali[1], X. Zhang[1], and R. Z. Gan[1]
[1]*University of Oklahoma, Norman, OK*

PS-7B-6-59 Shape Memory Polymers with Silicon-Containing Segments
D. Zhang[1], S. L. Prukop[1], M. L. Giese[1], and M. A. Grunlan[1]
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PS-7B-6-60 Impedimetric Characterization of Biomimetic Hydrogels Coated on Interdigitated Microsensor Electrode Arrays (IMEs)
L. Yang[1], A. Guiseppi-Wilson[2], and A. Guiseppi-Elie[3]
[1]*North Carolina Central University, Durham, NC,* [2]*ABTECH Scientific, Inc., Richmond, VA,* [3]*Clemson University, Clemson, SC*

PS-7B-6-61 Optical Biosensor based on Protein â " Nanoparticle Composite Biomaterials
R. Majithia[1], J. A. Jamison[2], J. Patterson[2], S. E. Bondos[2], and K. E. Meissner[1]
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PS-7B-6-62 Compact Interferometric Reflectance Imaging Biosensor
A. Reddington[1], and R. Vedula[2]
[1]*Boston University, Boston, MA,* [2]*Tuffs University, Boston, MA*

PS-7B-6-63 Multicolor Microcontact Printing of Proteins on Porous Silica for Patterned Immunoassay
E. Ng[1], E. Blinka[1], K. Loeffler[1], Y. Hu[1], A. Gopal[1], K. Hoshino[1], X. Liu[2], M. Ferrari[2], and X. Zhang[1]
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PS-7B-6-64 A Phantom That Mimics Optical and Flow Properties of Liver for Developing a Perfusion Sensor
T. J. King[1], T. J. Akl[1], R. Long[1], M. J. McShane[1], M. N. Ericson[2], M. Wilson[3,4], and G. L. Coté[1]
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PS-7B-6-65 Photonic Polymers for Chemical and Biological Sensing
O. B. Ayyub[1], J. Sekowski[2], and P. Kofinas[1]
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PS-7B-6-66 Effects of Nanoscale Topography and Charge on Endothelial Cell Spreading and Proliferation
J. S. Silverstein[1], E. Paryavi[1], H. Aranda-Espinoza[1], B. J. Dair[2], and P. Kofinas[1]
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PS-7B-6-67 Miniature Biosensor for Detecting Hydrogen Peroxide Release from a Small Cell Population
J. Yan[1], V. Perdosa[2], J. Enomoto[1], A. Simonian[2], and A. Revzin[1]
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PS-7B-6-68 Response and Stability Optimization of Microsphere Glucose Sensors Utilizing Catalase and Nanofilms
B. Collier[1], and M. J. McShane[1]
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PS-7B-6-69 Activity of Layer-by-Layer Immobilized Glutamate Oxidase
S. M. Tangutooru[1], V. L. Kopparthy[1], H. T. Alshakhouri[1], M. A. DeCoster[1], and E. J. Guilbeau[1]
[1]*Louisiana Tech University, Ruston, LA*

PS-7B-6-70 Microfluidic Devices to Monitor Single Cardiac Physiology Under Hypoxic Conditions
I. A. Ges[1], and F. Baudenbacher[1]
[1]*Vanderbilt University, Nashville, TN*

PS-7B-6-71 Optimizing Protein Recognitive Hydrogel Systems for Biosensor Applications
D. Kryscio[1], and N. Peppas[1]
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PS-7B-6-72 A Novel Cancer Therapeutic Device for Circulating Tumor Cell Elimination From Blood
M. Zhou[1], R. Harouaka[1], and S. Zheng[1]
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Track: Drug Delivery Systems – PS-7B-7

Targeted Drug Delivery

PS-7B-7-73 Design And *In Vitro* Performance Of A Novel Theranostic System
S. Srinivasan[1], B. G. Vilentchouk[1], W. Driessen[2], B. Proneth[2], P. Decuzzi[3], W. Arap[2], R. Pasqualini[2], and M. Ferrari[1]
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PS-7B-7-74 Bioimpedance Tuning Electroporation for Optimizing Targeted Intradermal DNA Delivery
J. Medrano[1], R. Connolly[1], J. I. Rey[1], A. Anderson[1], R. Gitlin[1], and M. Jaroszeski[1]
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PS-7B-7-75 EphrinA1-conjugated Liposomes for Targeted Delivery of Chemotherapeutic Agents to Glioblastoma Cells

H. Cho[1], W. Lee[1], J. M. Saul[2], and Y. W. Lee[1]

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PS-7B-7-76 Swellable Microparticles for Sustained Release Drug Delivery to The Lung Using Propellant Driven Metered Dose Inhalers

P. Selvam[1], I. M. El-Sherbiny[1], and H. D. Smyth[1]

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PS-7B-7-77 Logic-Embedded Vectors for Intracellular Partitioning and Exocytosis of Nanoparticles

R. E. Serda[1], A. Mack[1], A. Van de Ven[1], S. Ferrati[1], B. Godin[1], and M. Ferrari[1,2]

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PS-7B-7-78 Multi-functional Hydrogel Nanocomposite for Drug Delivery Applications

A. Qureshi[1], and D. Hayes[1]

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PS-7B-7-79 Integrated and Multiplexed Fabrication of Micro and Nano Biodegradable Particles Using a Novel Electrospray Process

B. Almeria[1], T. M. Fahmy[1], and A. Gomez[1]

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PS-7B-7-80 N-acetylgalactosamine Functionalized Dendrimers as Liver-Targeted Drug Carriers

S. H. Medina[1], V. Tekumalla[1], M. Chevliakov[1], D. S. Shewach[1], W. D. Ensminger[1], and M. E. El-Sayed[1]

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PS-7B-7-81 Use of the Angular Spectrum Approach for Estimating the 3-D Acoustic Field Transmitted Through Skull

J. L. Raymond[1], S. M. Chrzanowski[1], C. K. Holland[1], and G. J. Shaw[1]

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PS-7B-7-82 Uptake and Clearance of Spherical Gold Nanoparticles in 3D Liver Mimics

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PS-7B-7-83 Molecular Probes for Visualization of HIV Protease Inhibition

H. Yao[1], J. V. Velichamthotu[1], K. Ye[1], and S. Jin[1]

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PS-7B-7-84 Effect of Formulation Factors on Chitosan Particle Properties

B. Koppolu[1], and D. A. Zaharoff[1]

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PS-7B-7-85 Significance of Electrostatic Properties of M cells with Respect to Microparticle Uptake

P. Jreij[1], T. Rajapaksa[1], D. Lo[1], and V. G. J. Rodgers[1]

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PS-7B-7-86 Theranostic Nanoparticles for Cancer Diagnosis and Treatment

A. Wadajkar[1,2], P. Rajan[1,2], Z. Bhavsar[1,2], B. Koppolu[1,2], Y. Zhang[1,2], W. Cui[2], L. Tang[1,2], J. Yang[1,2], and K. T. Nguyen[1,2]

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PS-7B-7-87 Electrostatic Contribution of Poly (Lactic-co-Glycolic) Acid Nanoparticles for Immunization of the Mucosal System

K. M. Bennett[1], T. E. Rajapaksa[1], V. G. Rodgers[1], and D. D. Lo[1]

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PS-7B-7-88 Triggering Drug Release from Temperature Sensitive Liposomes via Photothermal Heating of Hollow Gold Nanoshells

N. Forbes[1], and J. Zasadzinski[1]

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PS-7B-7-89 Targeted Therapeutic Gene Delivery by Sonoporation in Inflammatory Bowel Disease

J. L. Tlaxca[1], C. R. Anderson[2], J. J. Rychak[2], A. L. Klibanov[1], and M. B. Lawrence[1]

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PS-7B-7-90 Infusion-Pressure Transducer System to Determine Hydraulic Conductivity in Soft Tissues

T. Nobrega[1], J. H. Kim[1], and M. Sarntinoranont[1]

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PS-7B-7-91 Effect of Plasticizers on the Properties of Drug Delivery Films

C. L. Rabek[1], D. Puleo[1], and T. Dziubla[1]

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PS-7B-7-92 *In Situ* Composite Hydrogel System for Treatment of Complex Wounds

N. V. Aphale[1,2], H. Xu[1,2], D. Gyawali[1,2], A. Wadajkar[1,2], L. Tang[1,2], J. Yang[1,2], and K. Nguyen[1,2]

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PS-7B-7-93 Aptamer-Functionalized Biomaterials for Pulsatile Proteins Release

B. Soontornworajit[1], J. Zhou[1], and Y. Wang[1]

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PS-7B-7-94 Size-dependent Biodistribution and Retention of Nanoparticles After Intravenous Administration in Mice

W-Y. Liao[1], C-W. Tang[1], A. Tang[1], M-Y. Chang[2], and P. Hsieh[2]

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PS-7B-7-95 Photochemical Sensitization of Liposomes for Controlled Drug Release

R. T. Kozikowski[1], B. Weber[1], G. Hochhaus[1], and B. S. Sorg[1]

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PS-7B-7-96 Vascular Targeting of Multistage Vectors

A. Mack[1], S. Ferrati[1], M. Ferrari[1,2], and R. Serda[1]

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PS-7B-7-97 Cylindrical Micelles Targeted to B-cell Lymphomas

B. Harris[1], and P. Dalhaimer[1]

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PS-7B-7-98 Dynamic Dockng Method in Virtual Screening

T. Yang[1]

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PS-7B-7-99 Magnetic Multilayer Nanoparticles for Targeted and Controlled Drug Delivery and Skin Cancer Imaging

Z. Bhavsar[1,2], B. Koppolu[1,2], A. Wadajkar[1,2], W. Cui[2], and K. T. Nguyen[1,2]

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PS-7B-7-100 Virus-Inspired Design Principles of Nanoparticles as Therapeutic Agents

S. Zhang[1], H. Yuan[1], J. Li[2], and G. Bao[3]

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PS-7B-7-101 Microsphere-based Delivery of Betamethasone to Differentiating Human Mesenchymal Stem Cells

T. Richey[1], M. Smith[1], B. Thanoo[1], K. J. Penick[2], and J. F. Welter[2]

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PS-7B-7-102 Cylinders vs. Spheres: Biofluid Shear Thinning in Driven Nanoparticle Transport

J. A. Cribb[1], T. Meehan[2], S. M. Shah[3], K. Skinner[1], and R. Superfine[1]

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PS = Poster Session
OP = Oral Presentation

PS-7B-7-103 Ultrasound-enabled Non-invasive Transdermal Transport of Liposomes as Drug Delivery Vehicles
A. Nguyen[1], Y. Sunny[1], E. Papazoglou[1], and P. Lewin[1]
[1]*Drexel University, Philadelphia, PA*

PS-7B-7-104 Potency Enhancement of gp120-targeted HIV-1 Entry Inhibitors Conjugated to Gold Nanoparticles.
A. Rosemary Bastian[1], R. K. Sundaram[1], S. Rajagopal[1], K. McFadden[1], K. Kantharaju[1], E. Papazoglou[1], and I. Chaiken[1]
[1]*Drexel University, Philadelphia, PA*

PS-7B-7-105 Antibody Presentation Localized to Lipid Microdomains for Enhanced Liposome Binding to Endothelium
D. Almeda[1], and D. T. Auguste[1]
[1]*Harvard University, Cambridge, MA*

PS-7B-7-106 Stealth-Targeted Liposomes for Invasive Mould Infections
N. L. Chavan[1]
[1]*University of Houston, Houston, TX*

PS-7B-7-107 Characterization of Nanoparticle Targeted Delivery in Microcirculation
Y. Liu[1], J. Tan[1], and K. Ngyuen[1]
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Track: Drug Delivery Systems – PS-7B-8

Translation Drug Delivery and Clinical Trials

PS-7B-8-108 Deep Sequencing Analysis of Clinical HIV Samples
S. M. Willerth[1], H. Pedro[1], A. P. Arkin[1], and D. V. Schaffer[1]
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PS-7B-8-109 Improving Ethacrynic Acid Delivery Based on Cellular Pharmacokinetic and Pharmacodynamic Analyses
F. Yuan[1], and C-W. Lin[1]
[1]*Duke University, Durham, NC*

PS-7B-8-110 Development of Microspheres for Controlled Release of Thymosin -4 in the Ischemic Myocardium
J. E. Thatcher[1], K. Nguyen[2], Z. Schelly[2], I. Bock-Marquette[1], R. Eberhart[1], and J. M. DiMaio[1]
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PS-7B-8-111 Cell Type Specific Nano-Toxicology
S. Ferrati[1], A. Mack[1], M. Ferrari[1,2], and R. Serda[1]
[1]*University of Texas Health Science Center, Houston, TX,* [2]*Rice University, Houston, TX*

PS-7B-8-112 Confinement and Concentration Effects on Glucose Transport in Nanochannels
A. Ziemys[1], A. Grattoni[1], D. Fine[1], F. Hussain[2], and M. Ferrari[1,3]
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Track: Neural Engineering – PS-7B-9

Sensory Neural Prosthetics

PS-7B-9-113 Afferent Stimulation of Sacral Dermatomes Suppresses Urethral Reflexes After Chronic SCI
J. L. McCoin[1,2], N. Bhadra[1,2], and K. J. Gustafson[1,2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Louis Stokes VA Medical Center, Cleveland, OH*

PS-7B-9-114 High Frequency Electric Stimulation of Retinal Neurons Elicits Physiological Signaling Patterns
S. Fried[1,2], C. Cai[1,3], J. Rizzo[1,4], and Q. Ren[3]
[1]*Boston VA Healthcare System, Boston, MA,* [2]*Mass General Hospital / Harvard Medical School, Boston, MA,* [3]*Shanghai Jiao-Tong University, Shanghai, Shanghai, China, People's Republic of,* [4]*Mass. Eye and Ear Infirmary, Boston, MA*

PS-7B-9-115 Selective Activation of Retinal Neurons with Sinusoidal Electric Stimulation
D. K. Freeman [1,2], J. F. Rizzo III[1,3], and S. I. Fried[1,2]
[1]*Boston VA Healthcare System, Boston, MA,* [2]*Massachusetts General Hospital, Harvard Medical School, Boston, MA,* [3]*Massachusetts Eye and Ear Infirmary, Harvard Medical Schol, Boston, MA*

PS-7B-9-116 Three-Dimensional 160-Site Microelectrode Array for Cochlear Nucleus Mapping Studies
Sr. M-E. Merriam[1], S. Dehmel[1], O. Srivannavit[1], S. E. Shore[1], and K. D. Wise[1]
[1]*University of Michigan, Ann Arbor, MI*

PS-7B-9-117 Ultra-High Photosensitivity Vertical Nanowire Arrays for Retinal Prosthesis
M. L. Khraiche[1], G. Silva[1], G. Cauwenberghs[1], D. Wang[1], Y. Lo[1], and W. Freeman[2]
[1]*UCSD, San Diego, CA,* [2]*Jacobs Retina Center, San Diego, CA*

PS-7B-9-118 Two Classes of Action Potentials are Initiated by Electric Stimulation of Retinal Ganglion Cells
C. Cai[1,2], Q. Ren[2], and S. Fried[1,3]
[1]*Mass General Hospital / Harvard Medical School, Boston, MA,* [2]*Shanghai Jiao-Tong University, Shanghai, Shanghai, China, People's Republic of,* [3]*Boston VA Healthcare System, Jamaica Plain, MA*

PS-7B-9-119 Activation of Inner-Ear Hair Cells and Afferent Neurons by Pulsed Infrared Radiation
S. M. Rajguru[1], G. M. Dittami[2], R. D. Rabbitt[2,3], C-P. Richter[1,4], and S. M. Highstein[3]
[1]*Northwestern University, Chicago, IL,* [2]*University of Utah, Salt lake City, UT,* [3]*Marine Biological Laboratory, Woods Hole, MA,* [4]*Northwestern University, Evanston, IL*

PS-7B-9-120 Effects of Stimulus Pulse Parameters on Eye Movement Responses to Stimulation Delivered by a Vestibular Prosthesis
N. S. Davidovics[1], G. Y. Fridman[2], B. S. Chiang[1], and C. Della Santina[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Johns Hopkins University, Pikesville, MD*

Track: Neural Engineering – PS-7B-10

Translational Neural Engineering

PS-7B-10-121 Electromagnetic Interference on Intraoperative Neurophysiological Monitoring Signals
A. Farajidavar[1], J. Seifert[1], J. Stearns[1], M. Romero[1], and J-C. Chiao[1]
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Track: New Frontiers in Bioengineering – PS-7B-11

Cell and Subcellular Mechanics

PS-7B-11-122 Suppressing Non-specific Interactions Between Solid Surfaces Used for Single-molecule Force Measurements
S. Upadhyayula[1], S. Bishop[1], N. Johnson[1], T. Quinata[1], P. Nallagatla[1], S. Gupta[1], and V. Vullev[1]
[1]*University of California, Riverside, Riverside, CA*

PS-7B-11-123 Compression Instrument for Meso-Scale Tissue Experiments (CITE)
D. W. Evans[1,2], and J. L. Sparks[1,2]
[1]*Virgina Tech - Wake Forest Center for Injury Biomechanics, Winston Salem, NC,* [2]*Virgina Tech - Wake Forest University School of Biomedical Engineering and Sciences, Winston Salem, NC*

PS-7B-11-124 Microparticle Motion Control by Microbeam Ultrasound: A Potential Single Cell Manipulator

J. Lee[1], S-Y. Teh[2], A. Lee[2], H. Kim[1], C. Lee[1], and K. K. Shung[1]

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PS-7B-11-125 The Stress-State and Strain-Rate Dependency of Human Placenta Tissue

B. Weed[1], A. Borazjani[1], S. Patnaik[1], R. Prabhu[1], M. Horstemeyer[1], L. Williams[1], and J. Liao[1]

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PS-7B-11-126 Exploring Cellular Mechanotransduction, One Molecule at a Time

M. R. Mofrad[1]

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PS-7B-11-127 Mechanical Modeling of Morphology and Morphogenetic Events in the Drosophila Eye

S. Hilgenfeldt[1,2], I. M. Gemp[2], and R. A. Carthew[2]

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PS-7B-11-128 Modeling the Coherent and Autonomous Biomechanical Behavior of Cells Using an Agent-Based Approach

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PS-7B-11-129 *In Situ* Force Mapping of Mammary Gland Transformation

J. I. Lopez[1], and V. Weaver[1]

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PS-7B-11-130 Inhibition of Hsp90 for Enhanced *In Vitro* Photothermal Ablation of Cancer Cells

S. K. Shimp III[1], J. Whitney[1], B. Will[1], C. Zawaski[1], and M. N. Rylander[1]

[1]Virginia Tech, Blacksburg, VA

PS-7B-11-131 Probing Mechanisms of Mechano-sensitive Differentiation in Mesenchymal Stem Cells

A. W. Holle[1], N. S. Joshi[1], D. Vijayraghavan[1], and A. J. Engler[1]

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PS-7B-11-132 Molecular Mechanics of Filamin: FLNA Repeats 16-17 Response to Applied Force

H. Pezeshki[1], and M. R. Mofrad[1]

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PS-7B-11-133 Mechanosensitivity of Cardiac Cells and Its Implication on Myocardiac Infarction

X. Tang[1], P. Bajaj[1], R. Bashir[1], and T. A. Saif[1]

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PS-7B-11-134 Lamins & Granulopoiesis – How Altered Nuclear Mechanics Can Improve Passage Through Narrow Spaces

A. Rowat[1], D. E. Jaalouk[2], D. A. Weitz[1], and J. Lammerding[2]

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Track: Orthopedic and Rehabilitation Engineering – PS-7B-12

Orthopaedic Bioengineering

PS-7B-12-135 Developing Active Ankle Foot Orthosis by Using SMA Wires

M. Bhadane[1], and M. Elahinia[1]

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PS-7B-12-136 Quantitative Analysis of an AFO Cut-Line Measurement Technique

T. J. Warrick[1], S. Bielby[1], E. Skewes[2], R. Brooks[2], D. Benson[2], C. Dunning[1], and J. D. Desjardins[1]

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PS-7B-12-137 An FE Model for Stress Reduction at the Skin-Implant Interface of Osseointegrated Prostheses

S. Yerneni[1,2], and T. A. Kuiken[1,2]

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PS-7B-12-138 Characterization of Goat Adipose and Bone Marrow Derived Stem Cells For Orthopaedic Therapies

D. B. Neidre[1], A. Sarathy[1], J. Treff[1], Z. Garza[2], A. Neidre[3], J. Poser[4], and R. P. Farrar[1]

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PS-7B-12-139 Shear-Plane Motion in Unicondylar Knee Replacements with Change to Simulated Soft-Tissue Constraint

J. B. Matheny[1], B. L. Roach[1], M. Spinelli[1], and J. D. Desjardins[1]

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PS-7B-12-140 Comparative Analysis of Retrieved Genesis II UHMWPE Articulating Against OxZr vs. CoCr Femoral Components

H. M. Cash[1], E. Alvarez[1], M. E. Elpers[1], M. E. Wabler[1], F. R. Voss[2], and J. D. Desjardins[1]

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PS-7B-12-141 Analysis and Damage Characterization of PS Total Knee Joint Replacement Posts

E. E. Sloan[1], E. Alvarez[1], M. E. Elpers[1], H. M. Cash[1], M. E. Wabler[1], and J. D. Desjardins[1]

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PS-7B-12-142 Modeling Variations in Varus-Valgus Laxity in the Healthy Knee Joint

B. Morse[1], C. Clary[2], A. J. Cyr[3], P. D. Funkenbush[1], L. Maletsky[3], and A. L. Lerner[1]

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PS-7B-12-143 Cervical Endplates are Affected by Incomplete Length of Annular Fibers: A Finite Analysis

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PS-7B-12-144 Inner Trabaecular Bone is More Affected Than Outer Cortical Bone Due to Incomplete Annular Fibers

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PS-7B-12-145 Evaluation of a Novel Battery-Powered Spinal Instrument

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PS-7B-12-146 A Thermal Model for Bone Drilling with Application to Orthopaedic Surgery

J. Lee[1], Y. Rabin[1], and B. Ozdoganlar[1]

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PS-7B-12-147 Characterization of High Precision Experimental Model of Graded Bilateral Distraction Spinal Injury

M. Romero[1], J. Stearns[1], B. Elmer[1], J. Seifert[1], and D. Sucato[2]

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PS = Poster Session
OP = Oral Presentation

Track: Orthopedic and Rehabilitation Engineering – PS-7B-13

Orthopaedic Biomaterials

PS-7B-13-148 Orthopedic Wear-debris-particulates Elicit a Size and Dose Dependent Response by RAW 264.7 Cells
S. SAHA[1], AND M. MUSIB[1]
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PS-7B-13-149 Active Functional Scaffold for Bone Regeneration
D. S. OH[1], J. SON[1], C. BAE[1,2], A. MARK[1], AND S. CHOI[1,3]
[1]The University of Texas at San Antonio, San Antonio, TX, [2]Chonnam National University, Gwangju, Gwangju, Korea, Republic of, [3]Chungbuk National University, Cheongju, Chungbuk, Korea, Republic of

PS-7B-13-150 Damage Scoring and Surface Roughness Analysis to Assess Oxinium and Standard CoCr Femoral Component Scratching in Total Knee Replacements
M. E. WABLER[1], E. ALVAREZ[1], M. E. ELPERS[1], H. M. CASH[1], H. A. DEMOS[2], H. D. SCHUTTE JR.[2], AND J. D. DESJARDINS[1]
[1]Clemson University, Clemson, SC, [2]Medical University of South Carolina, Charleston, SC

PS-7B-13-151 The Incorporation of Organic Polymers Into Bone Cements Based on Glass Polyalkenoate Chemistry
M. R. TOWLER[1], A. W. WREN[1], A. COUGHLAN[1], AND N. M. CUMMINS[2]
[1]Alfred University, Alfred, NY, [2]University of Limerick, Limerick, Limerick, Ireland

PS-7B-13-152 Microencapsulation of Cyanoacrylate for Development of Self-Healing Bone Cement
A. B. BROCHU[1], AND W. M. REICHERT[1]
[1]Duke University, Durham, NC

PS-7B-13-153 Effects of Hydroxyapatite Coated Iron Oxide Nanoparticles on Osteoblast Functions
N. L. TRAN[1], AND T. J. WEBSTER[1]
[1]Brown University, Providence, RI

PS-7B-13-154 Mechanical Characterization of Polydimethylsiloxane for Microsystems Applications
J. MARTIN[1], S. SRIPADA[2], P. SETHU[2], AND M. SAUNDERS[1]
[1]University of Kentucky, Lexington, KY, [2]University of Louisville, Louisville, KY

PS-7B-13-155 Comparative Analysis of Damage to Retrieved Femoral and Tibial NexGen PS Components
M. E. ELPERS[1], E. ALVAREZ[1], H. M. CASH[1], M. E. WABLER[1], B. BURNIKEL[2], J. RODRIGO[2], AND J. D. DESJARDINS[1]
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PS-7B-13-156 Histomorphometry of Varying Hydroxyapatite Scaffold Architectures *In Vivo*
B. M. SINGLETON[1], J. W. HERNANDEZ[1], M. R. APPLEFORD[1], J. WALKER[2], T. GUDA[2], M. PILIA[1], J-S. SON[1], D. S. OH[1], J. L. ONG[1], AND J. WENKE[2]
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PS-7B-13-157 Fatigue Resistant Surface Crosslinked UHMWPE for Total Joints
E. ORAL[1,2], S. L. ROWELL[1], A. L. NEILS[1], AND O. K. MURATOGLU[1,2]
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PS-7B-13-158 Assessment of New Damage Scoring Methodology for Total Knee Replacement Retrieval Analysis
E. ALVAREZ[1], M. E. ELPERS[1], H. M. CASH[1], M. E. WABLER[1], AND J. D. DESJARDINS[1]
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PS-7B-13-159 Multi-release Model of Resorbable Bilayer Membranes for Bone Regeneration
A. SATSANGI[1,2], B. XIAO[1,2], AND J. ONG[1]
[1]University of Texas at San Antonio, San Antonio, TX, [2]University of Texas Health Science Center at San Antonio, San Antonio, TX

PS-7B-13-160 Coralline Calcium Phosphate Analysis for Bone Graft Applications
B. E. POLLOT[1], T. GUDA[1,2], S. OH[1], AND J. ONG[1]
[1]University of Texas at San Antonio, San Antonio, TX, [2]Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC

PS-7B-13-161 Effects of Curvature on Varying Silk Fibroin/Hydroxypatite on Stromal Cells *In Vitro*
M. PILIA[1,2], B. M. SINGLETON[1,2], S. M. CRUMLETT[1,2], AND M. R. APPLEFORD[1]
[1]University of Texas at San Antonio, San Antonio, TX, [2]University of Texas Health Science Center at San Antonio, San Antonio, TX

PS-7B-13-162 BMP-2 - Bound Hydroxyapatite Implants
S. SHIELS[1], D. OH[1], AND J. L. ONG[1]
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Track: Orthopedic and Rehabilitation Engineering – PS-7B-14

Orthopaedic Cellular Engineering

PS-7B-14-163 AGEs Promote *In Vitro* Bone Resorption Activities of Human Cortical Bone
D. BHATTACHARYA[1], X. N. DONG[1], X. WANG[1], Q. AN[2], AND J. XU[2]
[1]University of Texas at San Antonio, San Antonio, TX, [2]University of Western Australia, perth, Western Australia, Australia

Track: Respiratory Engineering – PS-7B-15

Lung Computational Fluid Dynamics and Particle Deposition

PS-7B-15-164 Semi-infinite Gas Bubble Propagation in a 2D Channel with a Mucus Layer
C-F. TAI[1], AND J. B. GROTBERG[1]
[1]University of Michigan, Ann Arbor, MI

PS-7B-15-165 Oxygenation of Blood Flowing in a Porous-Walled Microchannel
J. WRIGHT[1], R. C. EBERHART[2], AND C-J. CHUONG[1]
[1]University of Texas at Arlington, Arlington, TX, [2]UT Southwestern Medical Ceter, Dallas, TX

PS-7B-15-166 Large Eddy Simulations Of Turbulent Flow And Particle Transport In A Human Airway Model
H. RADHAKRISHNAN[1], AND S. C. KASSINOS[1]
[1]University of Cyprus, Nicosia, Nicosia, Cyprus

PS-7B-15-167 A Computational Study of Surfactant Biophysical Interactions During Pulsatile Airway Reopening
J. E. PILLERT[1], H. FUJIOKA[1], D. HALPERN[2], AND D. P. GAVER[1]
[1]Tulane University, New Orleans, LA, [2]University of Alabama, Tuscaloosa, Alabama

PS-7B-15-168 The Development of DSP Techniques to Estimate Stress Fields in Biological Two-phase Flows
J. W. THIEMAN[1], B. J. SMITH[1], AND D. P. GAVER[1]
[1]Tulane University, New Orleans, LA

PS-7B-15-169 Multiscale Modeling of the Rodent Respiratory System
S. KABILAN[1], A. P. KUPRAT[2], R. A. CORLEY[2], J. P. CARSON[2], K. R. MINARD[2], R. E. JACOB[2], M. P. HLASTALA[1], AND D. R. EINSTEIN[2]
[1]University of Washington, Seattle, WA, [2]Pacific Northwest National Laboratory, Richland, WA

PS-7B-15-170 Transient Displacement of a Gas Finger in a Channel Filled by a Bingham Fluid

P. ZAMANKHAN[1], S. TAKAYAMA[1], AND J. GROTBERG[1]

[1]University of Michigan, Ann Arbor, MI

PS-7B-15-171 Flow and Particle Dispersion in Prototypical and Strain-driven CT-based Acinar Models

H. KUMAR[1], Y. YIN[1], D. VASILESCU[1,2], M. TAWHAI[3], E. A. HOFFMAN[1], AND C-L. LIN[1]

[1]The University of Iowa, Iowa Cty, IA, [2]Philipps University, Marburg, Germany, [3]The University of Auckland, Auckland, New Zealand

PS-7B-15-172 Developing a MDCT-based Breathing Lung Model for CFD Simulation of Air Flow

Y. YIN[1], J. CHOI[1], E. A. HOFFMAN[1], AND C-L. LIN[1]

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PS-7B-15-173 Multiscale Subject Specific Breathing Lung Simulation

J. CHOI[1], Y. YIN[1], M. H. TAWHAI[2], E. A. HOFFMAN[1], AND C-L. LIN[1]

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Track: Respiratory Engineering – PS-7B-16

Mechanobiology in the Lung

PS-7B-16-174 Optimization of the Geometry of the Unrestrained Acoustic Plethysmograph

J. REYNOLDS[1], AND D. FRAZER[1]

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PS-7B-16-175 Interpreting H of the Constant Phase Model in Terms of the Recruitment – De-recruitment (R-D) Model for Excised Lungs

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PS-7B-16-176 The Effects of Mechanotransduction on Airway Smooth Muscle Protein Expression

C. MILLER[1]

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PS-7B-16-177 Evaluation of Cellular Damage Near Bifurcations n a Model of Atelectrauma

D. MARTIN[1], A-M. JACOB[1], AND D. P. GAVER[1]

[1]Tulane University, New Orleans, LA

PS-7B-16-178 Effects of Static Stretch on the Deterioration of Lung Parenchyma by Interstitial Collagenase

E. YI[1], E. BARTOLAK-SUKI[1], S. SATO[1], T. BLUTE[1], AND B. SUKI[1]

[1]Boston University, Boston, MA

PS-7B-16-179 Probing Softness of Parietal Pleural Surface by Atomic Force Microscopy

J. KIM[1], J. P. BUTLER[1,2], AND S. H. LORING[1]

[1]Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, [2]Harvard School of Public Health, Boston, MA

PS-7B-16-180 Effects of Cyclic Stretch on Collagen Secretion and Integrin β1 in Cultured Mouse Fibroblasts

E. BARTOLAK-SUKI[1,2], R. SUKI[1], AND B. SUKI[1]

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Track: Systems Biology, Bioinformatics and Computational Biology – PS-7B-17

Multiscale Modeling

PS-7B-17-181 Utility of Simple Algorithms in Heart Rate Signal Quality Assessments

K. M. LEE[1], M. J. BULLER[1], W. J. THARION[1], J. PISANI[2], S. R. GORDON[2], AND B. A. BEIDLEMAN[1]

[1]US Army Research Institute of Environmental Medicine, Natick, MA, [2]Hidalgo, Ltd, Swavesey, United Kingdom

PS-7B-17-182 The Value of Biomedical Simulation Environments to Future Human Space Flight Missions

L. MULUGETA[1], J. G. MYERS[2], N. G. SKYTLAND[3], AND S. H. PLATTS[3]

[1]Universities Space Research Association, Houston, TX, [2]NASA - Glenn Research Center, Cleveland, OH, [3]NASA - Johnson Space Center, Houston, TX

PS-7B-17-183 Multi-scale Modeling of Tumor Necrosis Factor-regulated Granuloma Formation in Tuberculosis

M. FALLAHI-SICHANI[1], M. EL-KEBIR[2,3], S. MARINO[2], D. E. KIRSCHNER[2], AND J. J. LINDERMAN[1]

[1]University of Michigan, Ann Arbor, MI, [2]University of Michigan Medical School, Ann Arbor, MI, [3]VU University Amsterdam, Amsterdam, Netherlands

PS-7B-17-184 3D Finite Element Modeling of Human Ear from Ear Canal to Cochlea in Otitis Media with Effusion

R. Z. GAN[1], F. YANG[1], AND X. ZHANG[1]

[1]University of Oklahoma, Norman, OK

PS-7B-17-185 Common Gene Network Motifs for Multistability and Cell Differentiation

X. WANG[1], AND J. J. COLLINS[2]

[1]Arizona State University, Tempe, AZ, [2]Boston University, Boston, MA

PS-7B-17-186 Biomechanical Modeling of Eye Trauma for Different Orbit Anthropometries

A. A. WEAVER[1,2], K. L. LOFTIS[1,2], S. M. DUMA[1,3], AND J. D. STITZEL[1,2]

[1]Virginia Tech-Wake Forest University Center for Injury Biomechanics, Winston-Salem, NC, [2]Wake Forest University School of Medicine, Winston-Salem, NC, [3]Virginia Polytechnic Institute and State University, Blacksburg, VA

PS-7B-17-187 Evaluation of Different Projectiles in Matched Experimental Eye Impact Simulations

A. A. WEAVER[1,2], E. A. KENNEDY[3], S. M. DUMA[1,4], AND J. D. STITZEL[1,2]

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PS-7B-17-188 Quantitative Analysis of Damage Evolution in Porcine Liver via Interruption Testing Approach

J. CHEN[1], B. BRAZILE[1], L. PRIDDY[1], M. HORSTEMEYER[1], L. WILLIAMS[1], AND J. LIAO[1]

[1]Mississippi State University, Mississippi State, MS

PS-7B-17-189 Collagen Fiber Damage Assessed With Multiscale Mechanical Models

E. A. SANDER[1], M. F. HADI[1], AND V. H. BAROCAS[1]

[1]University of Minnesota, Minneapolis, MN

PS-7B-17-190 High Rate Stress-strain Behavior: A Comparative Study of Brain, Liver, and Tendon

J. CLEMMER[1], J. CHEN[1], J. LIAO[1], L. WILLIAMS[1], L. PRIDDY[1], R. PRABHU[2], AND M. HORSTEMEYER[1,2]

[1]Mississippi State University, Mississippi State University, MS, [2]Center for Advanced Vehicular Systems, Starkville, MS

PS-7B-17-191 Humans Exploit Redundancy to Control Step Variability in Treadmill Walking

J. B. DINGWELL[1], J. JOHN[2], AND J. P. CUSUMANO[3]

[1]University of Texas, Austin, TX, [2]Penn State University, University Park, PA, [3]Pennsylvania State University, University Park, PA

PS = Poster Session
OP = Oral Presentation

PS-7B-17-192 Rule-Based Simulation of Vein Graft Remodeling
M. Hwang[1], S. A. Berceli[1,2], M. Garbey[3], and R. Tran-Son-Tay[1]
[1]*University of Florida, Gainesville, FL,* [2]*Malcom Randall VAMC, Gainesville, FL,* [3]*University of Houston, Houston, TX*

PS-7B-17-193 Computational Analysis of Endothelial Dysfunction on Free Radical Transport in Microcirculation
S. Kar[1], and M. Kavdia[1]
[1]*University of Arkansas, Fayetteville, AR*

PS-7B-17-194 Predicting the Dynamics of Arbitrarily Shaped Mirco/Nanoparticles in a Capillary Flow
M. D. de Tullio[1], G. Adriani[1], P. Decuzzi[2], P. De Palma[1], and G. Pascazio[1]
[1]*Politecnico di Bari, Bari, Bari, Italy,* [2]*The University of Texas Medical School at Houston, Houston, TX*

PS-7B-17-195 Modeling Circadian Rhythms in Human Endotoxemia
J. D. Scheff[1], S. E. Calvano[2], S. F. Lowry[2], and I. P. Androulakis[1]
[1]*Rutgers University, Piscataway, NJ,* [2]*UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ*

PS-7B-17-196 Modeling of Bioheat Transfer in Human Kidney and Experimental Validation *In Vivo*
Y. Feng[1], D. Parekh[2], J. A. Long[1], R. Canty[1], and L. Davila[1]
[1]*UTSA, San Antonio, TX,* [2]*UTHSCSA, San Antonio, TX*

PS-7B-17-197 New Tools for Multiscale Cell-to-Organ Modeling Using Deformable 3D Atlases
J. P. Carson[1], T. Ju[2], and I. A. Kakadiaris[3]
[1]*Pacific Northwest National Lab, Richland, WA,* [2]*Washington University in St. Louis, St. Louis, MO,* [3]*University of Houston, Houston, TX*

PS-7B-17-198 Promoting Behavioral Rules to Agents in Modeling Angiogenesis
B. Long[1], and A. Qutub[1]
[1]*Rice University, Houston, TX*

PS-7B-17-199 Application of a Novel Soft Tissue Modulus Evaluation Assay to Breast Tumor Tissue
S. Barnes[1], and M. Miga[1]
[1]*Vanderbilt University, Nashville, TN*

PS-7B-17-200 Multi-scale Agent-based Modeling of Human Endotoxemia
T. T. Nguyen[1], S. S. Calvano[2], S. F. Lowry[2], and I. P. Androulakis[1]
[1]*Rutgers University, Piscataway, NJ,* [2]*UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ*

PS-7B-17-201 Multiscale Disease Model of Heart Failure and Renal Disease with Therapeutic Application in Drug R&D
A. Sarkar[1], M. K. Hallow[1], A. Soubret[1], G. Helmlinger[1], R. Sarangapani[1], S. Ermakov[2], A. Lo[2], M. Rodrigo[2], J. Beh[2], H. D. Leon[2], and A. Georgieva[1]
[1]*Novartis Pharmaceuticals, East Hanover, NJ,* [2]*Entelos Inc., Foster City, CA*

PS-7B-17-202 Combination of Top-Down and Bottom-Up Tumor Modeling Including Chemotherapeutic Drug Treatment
B. M. Fox[1], R. A. Moffitt[1], and M. D. Wang[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

Track: Systems Biology, Bioinformatics and Computational Biology – PS-7B-18

Signals and Networks in Cancer and Disease

PS-7B-18-203 Olive: A Software Tool for Identifying Fusion Transcripts in Cancer Using RNA-Seq
C. Beitel[1], and J. Ma[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

PS-7B-18-204 Modeling the Kinetics of Hsp90 Inhibition to Reduce Immune Mediated Inflammation
S. K. Shimp[1], E. M. Courtney[1], C. M. Reilly[2,3], and M. N. Rylander[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*Virginia College of Osteopathic Medicine, Blacksburg, VA,* [3]*Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA*

PS-7B-18-205 Mathematical Model of Hematopoietic Stem Cell Differentiation after Transplantation
S. M. Pearce[1], and A. E. Rundell[1]
[1]*Purdue University, West Lafayette, IN*

PS-7B-18-206 Analysis of ErbB Inhibitor Sensitivity and ErbB Network Patterns in Epithelial Ovarian Cancer
R. D. Prasasya[1], K. L. Pollock[1], and P. K. Kreeger[1]
[1]*University of Wisconsin - Madison, Madison, WI*

Track: Tissue Engineering – PS-7B-19

Neural Tissue Engineering

PS-7B-18-207 Autonomic Function of Assessement in Patients with Kidney Failure Before and After Hemodialysis Using Kernel Method and Entrainment Techniwques
A. K. Kamal[1]
[1]*Tennesse Tech University, Cookeville, TN*

PS-7B-18-208 Short and Long-Term Changes in Circulatory protein and cytokine profiles Following Burn and CLP Treatments
M. A. Orman[1], I. Androulakis[1], M. Ierapetritou[1], and F. Berthiaume[1]
[1]*Rutgers University, Piscataway, NJ*

PS-7B-18-209 Gene Expression Profiling of Short- and Long-Term Changes in Rat Liver Following Burn Injury and CLP Treatment
Q. Qian Yang[1], M. A. Orman[1], I. Androulakis[1], F. Berthiaume[1], and M. Ierapetritou[1]
[1]*Rutgers University, Piscataway, NJ*

PS-7B-18-210 Phosphorylation of Alanine-Directed Substrates by MAP-Kinases: an Over-looked Specificity?
T. S. Kaoud[1], M. A. Rainey[2], L. Liu[3], and K. N. Dalby[1]
[1]*Division of Medicinal Chemistry, College of Pharmacy, University of Texas at Austin, TX, Austin, TX,* [2]*Graduate Program in Molecular Biology, University of Texas at Austin, Austin, TX,* [3]*Graduate Program in Biochemistry, University of Texas at Austin, Austin, TX*

PS-7B-18-211 Optimizing Alignment Algorithms to Quantify Cancer Signals in Next-Generation Sequencing Data
J. H. Phan[1], J. Dale[1], C. F. Quo[1], R. M. Parry[1], T. H. Stokes[1], and M. D. Wang[1]
[1]*Georgia Tech and Emory University, Atlanta, GA*

PS-7B-18-212 Computational Studies of the Effects of Interpersonal Variability on Cancer Drug Efficacy
L. Chu[1], and F. Mac Gabhann[1]
[1]*Johns Hopkins University, Baltimore, MD*

PS-7B-18-213 Modeling Insulin-mediated Growth Factor Signaling and Its Role in Diabetes
A. Chakrabarti[1], S. Nayak[1], J. P. Lequieu[1], and J. D. Varner[1]
[1]*Cornell University, Ithaca, NY*

PS-7B-19-214 Neurite Growth in PEG-Fibronectin Conjugate Hydrogels
W. Zhou[1,2], and R. K. Willits[1,2]
[1]*Saint Louis University, St. Louis, MO,* [2]*University of Akron, Akron, OH*

PS-7B-19-215 Guidance of Dorsal Root Ganglion Neurites and Schwann Cells by Biomimetic Schwann Cell Topography
J. A. Richardson[1], C. W. Rementer[1], and D. Hoffman-Kim[1]
[1]*Brown University, Providence, RI*

PS-7B-19-216 Neural Tissue Engineering Scaffolds with Simultaneous Nanofibrous, Electrical, and Neurotrophic Cues
C. A. Milroy[1], J. Y. Lee[1], and C. E. Schmidt[1]
[1]*University of Texas, Austin, TX*

PS-7B-19-217 Neurite Growth in PEG Gels: Effect of Mechanical Stiffness and Laminin Concentration
L. M. Marquardt[1], and R. K. Willits[1]
[1]*Saint Louis University, St. Louis, MO*

PS-7B-19-218 Effect of Additives on Neurite Growth in Collagen Gels
S. Sahu[1], K. E. Swindle-Reilly[1], and R. K. Willits[1]
[1]*Saint Louis University, Saint Louis, MO*

PS-7B-19-219 Controlled Release of Neurotrophic Factors from Silk Films for Nerve Cell Function
A. R. Nectow[1], E. M. Pritchard[1], and D. L. Kaplan[1]
[1]*Tufts University, Medford, MA*

PS-7B-19-220 Alignment of Basal Lamina Protein Extract Nanofibers and Its Effect on Schwann Cell Orientation.
B. J. Mundo[1,2], R. L. Miller[1,2], and P. J. VandeVord[1,2]
[1]*Wayne State University, Detroit, MI,* [2]*John D. Dingell Veterans Affairs Medical Center, Detroit, MI*

PS-7B-19-221 A Novel Plant Derived Scaffold for Tissue Engineering and Regenerative Medicine
S. Lenaghan[1], K. Serpersu[1], L. Xia[1], W. He[1], and M. Zhang[2]
[1]*UTK, Knoxville, TN,* [2]*University of Tennessee, Knoxville, TN*

PS-7B-19-222 Directing Neurite Outgrowth with Coaxial Electrospun Nanofibers Incorporating Nerve Growth Factor Concentration Gradient
.. Handarmin[1], and S. Chew[1]
[1]*Nanyang Technological University, Singapore, Singapore, Singapore*

PS-7B-19-223 Long Term Evaluation of Axonal Guidance Conduits Implanted into the Completely Transected Adult Rat Spinal Cord
A. Hurtado[1,2], J. M. Cregg[3], H. B. Wang[4], D. F. Wendell[1], J. W. McDonald[1,2], and R. J. Gilbert[3]
[1]*Hugo W. Moser Research Institute at Kennedy Krieger, Baltimore, MD,* [2]*Johns Hopkins University, Baltimore, MD,* [3]*Michigan Technological University, Houghton, MI,* [4]*Syracuse University, Syracuse, NY*

PS-7B-19-224 Significant stimulation of Glioblastoma Multiforme derived Conditioned Medium on Neuronal Growth
S. Vasudevan[1], N. Hall[1], and Y-T. Kim[1]
[1]*University of Texas at Arlington, Arlington, TX*

PS-7B-19-225 Guiding Neuronal Cells in 3-Dimensions Using a Composite Scaffold System
D. S. Hernandez[1], S. K. Seidlits[1], C. E. Schmidt[1], and J. B. Shear[1]
[1]*The University of Texas at Austin, Austin, TX*

PS-7B-19-226 The Effect of Cell Viability on the Mechanical Properties of Acute Rat Brain Tissue Slices
S. J. Lee[1], J. Sun[2], H. Xie[2], M. King[3], and M. Sarntinoranont[1]
[1]*Department of Mechanical and Aerospace Engineering, Gainesville, FL,* [2]*Electrical and Computer Engineering, Gainesville, FL,* [3]*Pharmacology and Therapeutics, Gainesville, FL*

PS-7B-19-227 Tissue Engineered Microconduits for Targeted Restoration of Axonal Tracts
D. Cullen[1], M. Tang-Schomer[1], V. E. Johnson[1], A. R. Patel[1], K. D. Browne[1], and D. H. Smith[1]
[1]*University of Pennsylvania, Philadelphia, PA*

Track: Tissue Engineering – PS-7B-20

Novel Biomaterials and Scaffolds

PS-7B-20-228 Development of a Transplantable Liver Graft Using Decellularized Liver Matrix
B. Uygun[1], A. Soto-Gutierrez[2], H. Yagi[3], M-L. Izamis[1], M. Guzzardi[1], F. Berthiaume[1], Y. Nahmias[1], M. Yarmush[1], and K. Uygun[1]
[1]*Massachusetts General Hospital, Harvard Medical School, Shriners Hospitals for Children, Boston, MA,* [2]*Children's Hospital of Pittsburgh, McGowan Institute for Regenerative Medicine and University of Pit, Pittsburgh, PA,* [3]*Keio University School of Medicine, Tokyo, Japan*

PS-7B-20-229 Engineering Compliant Polymeric Substrata for Myocardial Contractility
C. LeBlon[1], and S. Jedlicka[1]
[1]*Lehigh University, Bethlehem, PA*

PS-7B-20-230 Mechanical Properties and In Vitro Cytocompatibility of Nanocomposite Polymer Hydrogels
P. Schexnailder[1], A. Gaharwar[1], C-J. Wu[1], and G. Schmidt[1]
[1]*Purdue University, West Lafayette, IN*

PS-7B-20-231 Rotary Jet-Spinning: A Novel Technique of Nanofibrous Scaffold Fabrication
M. R. Badrossamay[1,2], H. A. McIlwee[1,2], J. A. Goss[1,2], and K. K. Parker[1,2]
[1]*Disease Biophysics Group, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA,* [2]*Wyss Institute for Biologically Inspired Engineering, Harvard University, Boston, MA*

PS-7B-20-232 Chondroprogenitor Cells Differentiation on 3D DBM Scaffold
S. Cai [1], K. Kuwahara[1], Z. Yang[1], and B. Han[1]
[1]*University of Southern California, Los Angeles, CA*

PS-7B-20-233 Tunable Degradation in Protein/Synthetic Electrospun Composites
J. Kluge[1], E. Gil[2], D. L. Kaplan[2], and R. L. Mauck[1]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*Tufts University, Medford, MA*

PS-7B-20-234 Silk-Human Tropoelastin Blend Biomaterials
X. Hu[1], X. Wang[1], J. Rnjak[2], A. S. Weiss[2], and D. L. Kaplan[1]
[1]*Tufts University, Medford, MA,* [2]*The University of Sydney, Sydney, NSW, Australia*

PS-7B-20-235 Influencing Elastin Production *In Vitro* Using an Elastin Mimetic Peptide
D. Patel[1], R. Menon[1], and L. Taite[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS-7B-20-236 Fabrication of Functional Hydrogel Nano-structures for Biomolecule Conjugations
R. T-S. Lam[1], J-W. Jang[1], P. L. Stiles[1], and S. R. Nettikadan[1]
[1]*NanoInk, Inc., Skokie, IL*

PS-7B-20-237 Assessment of Using Laponite Cross-linked Poly(ethylene oxide) as Biomaterial for Bone Repair
A. K. Gaharwar[1], P. J. Schexnailder[1], C-J. Wu[1], B. Kline[1], and G. Schmidt[1]
[1]*Purdue University, West Lafayette, IN*

PS-7B-20-238 Predicting and Improving Gaseous Exchange in Composite Biomaterial Constructs
J. C. White[1], W. L. Stoppel[1], S. C. Roberts[1], and S. R. Bhatia[1]
[1]*University of Massachusetts Amherst, Amherst, MA*

PS = Poster Session
OP = Oral Presentation

PS-7B-20-239 Novel Methacrylated Gellan Gum Hydrogels with Tunable Mechanical Properties
D. F. Coutinho[1,2], S. Sant[2,3], H. Shin[3,4], J. T. Oliveira[1,5], M. E. Gomes[1,5], N. Neves[1,5], A. Khademhosseini[2,3], and R. Reis[1,6]
[13]Bs Research Group, Biomaterials Biodegradables and Biomimetics, Guimaraes, Portugal, [2]Harvard MIT Division of Health Sciences and Technology, Cambridge, MA, [3]Center for Biomedical Engineering, Department of Medicine, Brigham and Womens Hospital, Cambridge, MA, [4]Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, [5]IBB, Institute for Biotechnology and Bioengineering, PT Government Associated Laboratory, Braga, Portugal, [6]IBB Institute for Biotechnology and Bioengineering, PT Government Associated Laboratory, Braga, Portugal

PS-7B-20-240 PC12 Behavior in Modular PEG Scaffolds: Effects of Stiffness and Protein Concentration
R. A. Scott[1], and R. K. Willits[1]
[1]Saint Louis University, St. Louis, MO

PS-7B-20-241 Novel Polyurethane/Carbon Nanofiber Composites for Bladder Cancer Applications
M. Tsang1, Y. W. Chun1, and T. J. Webster1
[1]Brown University, Providence, RI

PS-7B-20-242 Elastin Mimetic Hybrid Polymers as Conducive Scaffolds for Tissue Engineering
S. E. Grieshaber[1], A. J. Farran[1], K. L. Kiick[1], and X. Jia[1]
[1]University of Delaware, Newark, DE

PS-7B-20-243 Unique Electrochemically Synthesized Polypyrrole:poly (lactic-co-glycolic acid) Blends for Biomedical Applications
L. Forciniti[1], N. K. Guimard[1], S. Lee[1], and C. E. Schmidt[1]
[1]The University of Texas at Austin, Austin, TX

PS-7B-20-244 Biocompatible Detachable Polyelectrolyte Multilayer Films for Applications in Tissue Engineering
A. L. Larkin[1], R. M. Davis[1], and P. Rajagopalan[1]
[1]Virginia Tech, Blacksburg, VA

PS-7B-20-245 Development of Gold Nanoparticle Entrapped Polyethylene Terephthalate for Soft Tissue Repair
O. E. Whelove[1], and S. A. Grant[1]
[1]University of Missouri, Columbia, MO

PS-7B-20-246 Characterization of Salt Templated Hyaluronic Acid Hydrogels for Neural Wound Healing
R. C. Thomas[1], and C. E. Schmidt[1]
[1]University of Texas at Austin, Austin, TX

PS-7B-20-247 Use of PNIPAAm-PEG, an Injectable Scaffold for Spinal Cord Repair, in an In Vivo Rodent Model of Spinal Cord Injury
L. Conova[1,2], J. Vernengo[3], Y. Jin[2], I. Fischer[2], B. Neuhuber[2], and A. Lowman[1]
[1]Drexel University, Philadelphia, PA, [2]Drexel University College of Medicine, Philadelphia, PA, [3]Rowan University, Glassboro, NJ

PS-7B-20-248 Bile Acid and Cholesterol Metabolism in 3D Liver Mimics
C. J. Detzel[1], Y. Kim[1], and P. Rajagopalan[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

PS-7B-20-249 Characterizing an Agarose-PEG Interpenetrating Network Hydrogel for Cartilage Tissue Engineering
B. J. DeKosky[1], N. H. Dormer[1], G. C. Ingavle[1], M. S. Detamore[1], and S. H. Gehrke[1]
[1]University of Kansas, Lawrence, KS

PS-7B-20-250 PDMSstar-PEG Hydrogel Scaffolds with Tunable Properties
B. M. Bailey[1], K. Hui[1], and M. A. Grunlan[2]
[1]Texas A&M University, College Station, TX, [2]Texas A&M University, College Station, TX

PS-7B-20-251 Mechanical and Structural Characteristics of Multi-Component Biopolymer Networks
L. Hyland[1], M. Taraban[1], and Y. Yu[1]
[1]University of Maryland-College Park, College Park, MD

PS-7B-20-252 Modular PEG Scaffolds: Examination of Microgel Fabrication Conditions and Scaffold Properties
L. Vandiver[1], J. Stukel[1], and R. K. Willits[1,2]
[1]Saint Louis University, St. Louis, MO, [2]University of Akron, Akron, OH

PS-7B-20-253 Double-Gelling Hydrogels for Endovascular Embolization of Aneurysms
H. H. Bearat[1], C. Pauken[1], and B. L. Vernon[1]
[1]Arizona State University, Tempe, AZ

PS-7B-20-254 Controlling Morphology of Blown Shape Memory Polyurethane Foams
P. Singhal[1], T. S. Wilson[2], and D. J. Maitland[1]
[1]Texas A&M University, College Station, TX, [2]Lawrence Livermore National Laboratory, Livermore, CA

PS-7B-20-255 Synthetic Substrates for the Study of the Impact of Material Mechanics on Cellular Functions
A. T. Leonard[1], J. R. Funston[1], K. N. Cicotte[1,2], and E. L. Hedberg-Dirk[1]
[1]University of New Mexico, Albuquerque, NM, [2]Sandia National Laboratories, Albuquerque, NM

PS-7B-20-256 Controlled Deposition of Electrospun Silk Fiber Meshes with Anisotrpoic Mechanical Properties
R. R. Jose[1], R. Elia[1], and R. A. Peattie[1]
[1]Tufts University, Medford, MA

PS-7B-20-257 Effects of Carbon Nanotube-Collagen Scaffolds on Cell Proliferation, Differentiation, and Inflammatory Response in Mesenchymal Stem Cells
R. Baktur[1], and S. Kwon[1]
[1]Utah State University, Logan, UT

PS-7B-20-258 Self-assembled Three-dimensional Conductive Scaffolds for Stimulated Cell Culture
J-O. You[1], M. Rafat[1], G. Ye[1], and D. T. Auguste[1]
[1]Harvard University, Cambridge, MA

PS-7B-20-259 Novel Bioactive Hydrogels for Aneurysm Treatment
M. Rafat[1], and D. T. Auguste[1]
[1]Harvard University, Cambridge, MA

PS-7B-20-260 A Plant (Chinese Yam) Derived Scaffold for Tissue Engineering
L. Xia[1], S. Lenaghan[1], A. Wills[1], and M. Zhang[2]
[1]UTK, Knoxville, TN, [2]University of Tennessee, Knoxville, TN

PS-7B-20-261 Development of an *In Vitro* Model for Studying Corneal Epithelial-Stromal Interactions
W. M. Petroll[1], L. Ma[1], and D. M. Robertson[1]
[1]Southwestern Medical Center, Dallas, TX

PS-7B-20-262 Engineered Matrix Mimetics Support Assembly of a Growth-Promoting Fibronectin Matrix
D. C. Roy[1], and D. C. Hocking[1]
[1]University of Rochester, Rochester, NY

PS-7B-20-263 Thermomechanical Characterization and Model Predictions of a Polyurethane Shape Memory Polymer
B. L. Volk[1], D. C. Lagoudas[1], and D. J. Maitland[1]
[1]Texas A&M University, College Station, TX

PS-7B-20-264 Selective improvement of TNF Capture in a Cytokine Hemoadsorption Device Using Immobilized anti-TNF
M. V. DiLeo[1], and W. J. Federspiel[1]
[1]University of Pittsburgh, Pittsburgh, PA

PS-7B-20-265 Micro-Computed Tomography Characterization of Shape Memory Polymer Foams
J. N. Rodriguez[1], A. Muschenborn[1], F. J. Clubb[1], T. S. Wilson[2], and D. J. Maitland[1]
[1]Texas A&M University, College Station, TX, [2]Lawrence Livermore National Laboratory, Livermore, CA

PS-7B-20-266 Keratin Biomaterials for Tissue Engineering and Regenerative Medicine Applications
J. Rouse[1], and M. Van Dyke[1]
[1]*Wake Forest University School of Medicine, Winston Salem, NC*

PS-7B-20-267 Water Absorption Influence on the Properties of Shape Memory Polymer
Y-J. Yu[1], P. Singhal[1], T. S. Wilson[2], and D. J. Maitland[1]
[1]*Texas A&M University, College Station, TX,* [2]*Lawrence Livermore National Laboratory, Livermore, CA*

PS-7B-20-268 Investigation of Polycaprolactone and Hydroxyapatite Whiskers Scaffold
G. B. Camargo Cardoso[1], P. B. Rego[1], S. L. Ramos[1], C. A. Zavaglia[1], and A. F. Arruda[1]
[1]*Unicamp, Campinas, São Paulo, Brazil*

PS-7B-20-269 Designing Fibrin Microthread-Based Scaffolds for Skeletal Muscle Regeneration
J. Grasman[1,2], C. Malcuit[2,3], R. Page[1,3], T. Dominko[1,3], and G. Pins[1,2]
[1]*Worcester Polytechnic Institute, Worcester, MA,* [2]*Bioengineering Institute, Worcester, MA,* [3]*CellThera Inc., Worcester, MA*

PS-7B-20-270 Preparation and Characterization of a Skeletal Muscle ECM Scaffold
M. T. Wolf[1], K. A. Daly[1], and S. F. Badylak[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

PS-7B-20-271 Hybrid Biomaterials for Biomedical Applications
E. Reategui[1], L. Kasinkas[1], and A. Aksan[1]
[1]*University of Minnesota, Minneapolis, MN*

PS-7B-20-272 Redox-Initiated Crosslinking of Cellulosic Hydrogels or Soft Tissue Augmentation
M. S. Gupta[1], E. S. Cooper[1], A. T. Reza[1], and S. B. Nicoll[1]
[1]*The City College of New York, New York, NY*

PS-7B-20-273 Evaluation of Electrospun Scaffolds for the Expansion of Precursors of Insulin-producing Cells
M. Palacio-Ochoa[1,2], D. Gallego-Perez[1], N. Higuita-Castro[1], J. Johnson[1], J. J. Lannutti[1], K. J. Gooch[1], and D. J. Hansford[1]
[1]*The Ohio State University, Columbus, OH,* [2]*Antioquia School of Engineering, Envigado, Antioquia, Colombia*

PS-7B-20-274 Role of Ascorbic Acid in S-transnitrosation Reaction - A kinetic Analysis
J. Gu[1], V. Muthuvijayan[2], and R. Lewis[3]
[1]*Oklahoma State University, Stillwater, OK,* [2]*Johns Hopkins University, Baltimore, MD,* [3]*Brigham Young University, Provo, UT*

PS-7B-20-275 Photo-polymerizable Nitric Oxide-releasing Elastomers
Y. Wang[1], and G. A. Ameer[1,2]
[1]*Northwestern University, Evanston, IL,* [2]*Northwestern University, Chicago, IL*

PS-7B-20-276 Mimicking the Extracellular Matrix via Controlled Multiple Thickness Deposition of Electrospun Mats
R. Elia[1], R. R. Jose[1], and R. A. Peattie[1]
[1]*Tufts University, Medford, MA*

PS-7B-20-277 Bactericidal Effect of Iron Oxide Nanoparticles on *Staphylococcus aureus*
N. L. Tran[1], A. Mir[2], D. Mallik[2], A. Sinha[2], S. Nayar[2], and T. J. Webster[1]
[1]*Brown University, Providence, RI,* [2]*National Metallurgical Laboratory, Jamshedpur, Jharkhand, India*

PS-7B-20-278 Engineering Enabled Biomimetic Corneal Stroma
S. Banda[1], and Y-T. Kim[1]
[1]*University of Texas at Arlington, Arlington, TX*

PS-7B-20-279 Synthesis and Characterization of Crosslinked Urethane-doped Block Polyester Elastomers
A. Kolasnikov[1], R. T. Tran[1], and J. Yang[1]
[1]*The University of Texas at Arlington, Arlington, TX*

PS-7B-20-280 Design and Implementation of a Novel Nanofiber Dural Substitute
M. R. MacEwan[1], J. Xie[1], W. Z. Ray[1], D. Siewe[1], and Y. Xia[1]
[1]*Washington University, Saint Louis, MO*

PS-7B-20-281 Adjustment of Hydrogel Scaffold Properties to Induce Responses of Corneal Epithelial Cells
L. Reis[1], and P. Sit[1]
[1]*Louisiana Tech University, Ruston, LA*

PS-7B-20-282 Laser Microfabricated Poly(glycerol Sebacate) Scaffolds for Heart Valve Tissue Engineering
N. Masoumi[1], A. Jean[1], A. Parkar[1], and G. C. Engelmayr[1]
[1]*The Pennsylvania State University, University Park, PA*

PS-7B-20-283 Engineered Basal Lamina: Fabrication and Its Biomedical Applications
S. Banda[1], S. Vasudevan[1], D. Tamuly[1], and Y-T. Kim[1]
[1]*University of Texas at Arlington, Arlington, TX*

PS-7B-20-284 Studies on Silicon Stabilized Nano-sized alpha-Tricalcium Phosphate Based Cements
P. Kumta[1], and A. Roy[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

PS-7B-20-285 The Role of Magnesium Substitution on the Properties and *In Vitro* Bioactivity of Brushite Cements
P. Kumta[1], S. Singh[1], and A. Roy[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

PS-7B-20-286 Mechanical and Cellular Response to Biomineralization of Ovalbumin Scaffolds for Bone Tissue Engineering
K. T. Sheets[1], and A. W. Morgan[1]
[1]*Virginia Tech, Blacksburg, VA*

PS-7B-20-287 Structural Transition Induced by Mechanical Shear in a Novel Peptide-Amphiphile System
K. Megley[1], W. Suh[1], and M. Tirrell[1]
[1]*UC Berkeley, Berkeley, CA*

PS-7B-20-288 Tissue Density Culture in a GAG-based Microcapsules as a Foundation for Modular Tissue Engineering
R. T. Annamalai[1], D. R. Armant[1], and H. W. Matthew[1]
[1]*Wayne State University, Detroit, MI*

PS-7B-20-289 Vapor-Phase Nano-Textured Coating of Biocompatible Organic Films on Solid State Surfaces
S. Vidyala[1], S. Goyal[2], Y-T. Kim[1], and S. M. Iqbal[1]
[1]*University of Texas Arlington, Arlington, TX,* [2]*Life Technologies Corporation, Carlsbad, CA*

PS = Poster Session
OP = Oral Presentation

Track: Tissue Engineering * – 7-2-1

Novel Biomaterials and Scaffolds – II

Chairs: Jason Burdick, Seda Kizilel

Room 12A

1:30PM OP-7-2-1A Cellular Behavior on a Novel Continuously Graded Scaffold That Mimics an Orthopaedic Interface

S. Samavedi[1], A. S. Goldstein[1], S. A. Guelcher[2], and A. W. Morgan[1]

[1]*Virginia Polytechnic Institute & State University, Blacksburg, VA,* [2]*Vanderbilt University, Nashville, TN*

1:45PM OP-7-2-1B Electrospun Scaffolds with Depth-wise Chemical and Mechanical Gradients to Increase Cell Infiltration

H. G. Sundararaghavan[1], and J. A. Burdick[1]

[1]*University of Pennsylvania, Philadelphia, PA*

2:00PM OP-7-2-1C Oxygen Generating Biomaterials for Ischemic Tissue Salvage and Function

C. L. Ward[1,2], B. T. Corona[1], J. J. Yoo[1], B. S. Harrison[1,2], and G. J. Christ[1,2]

[1]*Wake Forest University Health Sciences, Winston-Salem, NC,* [2]*School of Biomedical Engineering and Sciences, Winston-Salem, NC*

2:15PM OP-7-2-1D Development of Fully Biodegradable Polymeric "Quantum Dots"

Y. Zhang[1], R. Tran[1], D. Gyawali[1], and J. Yang[1]

[1]*University of Texas at Arlington, Arlington, TX*

2:30PM OP-7-2-1E Ruthenium Catalyzed Cross-Linking of Engineered Arterial Tissue

J. W. Bjork[1], and R. T. Tranquillo[1]

[1]*University of Minnesota, Minneapolis, MN*

2:45PM OP-7-2-1F Development of Synthetic Viruses for Tissue Regenerating Materials

S-W. Lee[1,2], W. Chung[1], and S. Yoo[1]

[1]*University of California, Berkeley, Berkeley, CA,* [2]*Lawrence Berkeley National Laboratory, Berkeley, CA*

***Tissue** Engineering Track sponsored by Kinetic Concepts, Inc.

Track: Biomedical Imaging and Optics – 7-2-2

Molecular Imaging II – Synthesis and *In Vitro* Imaging

Chairs: Anne Marie Broome, Andrew Tsourkas

Room 12B

1:30PM OP-7-2-2A A Genetically Engineered Ratiometric Bioluminescent Sensor for Oxidative Stress

J. Czupryna[1], and A. Tsourkas[1]

[1]*University of Pennsylvania, Philadelphia, PA*

1:45PM OP-7-2-2B Ratiometric BiMolecular Beacons for the Sensitive Detection of RNA in Single Living Cells

X. Zhang[1], A. K. Chen[1], A. Shah[1], M. A. Behlke[2], and A. Tsourkas[1]

[1]*University of Pennsylvania, Philadelphia, PA,* [2]*Integrated DNA Technologies, Inc., Coralville, IA*

2:00PM OP-7-2-2C A Novel Fluorogenic Probe for Imaging Endogenous Proteins in Living Cells

S. Dublin[1], Y. Zhang[1], Z. Zheng[1], and G. Bao[1]

[1]*Georgia Institute of Technology, Atlanta, GA*

2:15PM OP-7-2-2D Design of Reactive Fluorogenic Probes for Imaging Small Molecules

N. K. Devaraj[1], S. Hilderbrand[1], and R. Weissleder[1]

[1]*Massachusetts General Hospital, Boston, MA*

2:30PM OP-7-2-2E Imaging Multiple Fluorophore Lifetimes with Diffuse Optical Tomography

R. Nothdurft[1], M. Berezin[1], S. Achilefu[1], and J. Culver[1]

[1]*Washington University School of Medicine, St. Louis, MO*

2:45PM OP-7-2-2F Static SIMS Imaging Identification of Individual Cells in Mixed Phenotype Cultures

C. A. Barnes[1], J. Brison[1], D. G. Castner[1], and B. D. Ratner[1]

[1]*University of Washington, Seattle, WA*

Track: Biomedical Imaging and Optics – 7-2-3

Imaging in Cancer Using Nanotechnology – II

Chairs: Bahram Anvari, James Basilion

Room 19A

1:30PM OP-7-2-3A MRI Tracking of Intracellular Delivery of Tumor-Targeting Nanoparticles Triggered by Molecular Interactions With ICAM-1

R. Wong[1,2], X. Chen[1], T. Liu[1,2], Y. A. Yang[3], Y. Wang[1,2], and M. M. Jin[1,2]

[1]*Cornell University, Ithaca, NY,* [2]*Cornell University - Weill Medical College, New York, NY,* [32]*Ocean Nanotech, LLC, Springdale, AR*

1:45PM OP-7-2-3B Ultrasonic Evaluation of Tumor Response to VEGF Blockade using Size-Selected Microbubbles

S. R. Sirsi[1], C. C. Chen[1], S. L. Hernandez[2], J. Huang[2], T. B. Johung[2], D. J. Yamashiro[2], J. J. Kandel[2], S. Homma[2], and M. A. Borden[2]

[1]*Columbia University, New York, NY,* [2]*Columbia University Medical Center, New York, NY*

2:00PM OP-7-2-3C An Iodinated Nanoparticle Contract Agent for Evaluating the Efficacy of Nano-Therapeutics

K. B. Ghaghada[1], R. Bhavane[1], M. Srivastava[1], G. Espinosa[1], and A. Annapragada[1]

[1]*The University of Texas Health Science Center, Houston, TX*

2:15PM OP-7-2-3D Development of Cancer Enzyme Triggered Fluorescent Nano-Contrast Agent

J. Wang[1], S. Biswas[1], M. Nantz[1], S. Achilefu[2], and K. A. Kang[1]

[1]*University of Louisville, Louisville, KY,* [2]*Washington University, St. Louis, MO*

2:30PM OP-7-2-3E *In Vitro* Optical Imaging of HeLa Cancer Cells with BSA-coated Polymeric Nanocapsules Containing ICG

B. Jung[1], and B. Anvari[1]

[1]*University of California, Riverside, Riverside, CA*

2:45PM OP-7-2-3F Mesoporous Silicon Magnetic Nanoconstructs as superior MRI Contrast Agents

R. Sethi[1], J. Ananta[1], X. Liu[2], J. Bankson[3], M. Ferrari[2], L. Wilson[1], and P. Decuzzi[2]

[1]*Rice University, Houston, TX,* [2]*University of Texas - HSCH, Houston, TX,* [3]*MD Anderson Cancer Center, Houston, TX*

Track: Neural Engineering – 7-2-4

Motor Neural Prosthetics

Chairs: Kenneth Gustafson, Paul Yoo

Room 19B

1:30PM OP-7-2-4A A Neuroprosthesis for Restoring Arm and Hand Function in Individuals with C1-C4 Spinal Cord Injury

R. Kirsch[1]

[1]*Case Western Reserve University, Cleveland, OH*

1:45PM OP-7-2-4B Decoding Simple Grasp Movements from the Human Subdural Electrocorticogram
S. Acharya[1], M. S. Fifer[1], H. L. Benz[1], N. E. Crone[1], and N. V. Thakor[1]
[1]*Johns Hopkins University, Baltimore, MD*

2:00PM OP-7-2-4C The Target Achievement Control Test: Evaluating real-time myoelectric pattern recognition control
A. M. Simon[1], L. J. Hargrove[1,2], B. A. Lock[1], and T. A. Kuiken[1,2]
[1]*Rehabilitation Institute of Chicago, Chicago, IL,* [2]*Northwestern University, Chicago, IL*

2:15PM OP-7-2-4D Peripheral Nerve Electrodes in Clinical Applications
D. J. Tyler[1]
[1]*Case Western Reserve University, Cleveland, OH*

PLATFORM SESSIONS **7-2**

2:30PM OP-7-2-4E Differential Activity of Pudendal Nerve Afferents During Micturition
P. B. Yoo[1], and W. M. Grill[1]
[1]*Duke University, Durham, NC*

2:45PM OP-7-2-4F Functional Stimulation of Peripheral Motor Axons Via Neuroregenerative Sieve Microelectrodes
M. R. MacEwan[1], E. Zellmer[1], D. Siewe[1], J. Wheeler[1], S. Sakiyama-Elbert[1], and D. Moran[1]
[1]*Washington University, Saint Louis, MO*

Track: Cellular and Molecular Engineering – 7-2-5

Molecular Engineering – I

Chairs: Helim Aranda-Espinoza, Laura Segatori
Room 18A

1:30PM OP-7-2-5A Characterization and Informed Design of Downregulating Epidermal Growth Factor Receptor Antibodies
J. B. Spangler[1], and K. D. Wittrup[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

1:45PM OP-7-2-5B Engineering Human Arginase as a Novel Chemotherapeutic Agent for the Treatment of Hepatocellular Carcinoma
E. Stone[1], L. Chantranupong[1], C. Gonzales[1], and G. Georgiou[1]
[1]*University of Texas at Austin, Austin, TX*

2:00PM OP-7-2-5C Investigating the Aggregation, Structure, and Activity of DNA Binding bZip Peptide Amphiphiles
R. Marullo[1], and M. Tirrell[2]
[1]*University of California, Santa Barbara, Berkeley, CA,* [2]*University of California, Berkeley, Berkeley, CA*

2:15PM OP-7-2-5D Engineering High Affinity Knottin Peptides Targeting Tumor Marker CAIX for Cancer Imaging
S. J. Moore[1], and J. R. Cochran[1]
[1]*Stanford University, Stanford, CA*

2:30PM OP-7-2-5E Modification of Adeno-Associated Virus Capsid Conformational Change Behavior Using Error-Prone PCR
M. A. Musick[1,2], K. I. McConnell[1], C. Chen[1], and J. Suh[1]
[1]*Rice University, Houston, TX,* [2]*Baylor College of Medicine, Houston, TX*

2:45PM OP-7-2-5F Micropatterning of Aptamer Beacons to Create Cytokine-Sensing Surfaces
N. Tuleuova[1,2], J. Seo[1], E. Ramanculov[2], and A. Revzin[1]
[1]*University of California, Davis, CA,* [2]*National Center for Biotechnology, Astana, Kazakhstan*

Track: Cellular and Molecular Engineering – 7-2-6

Cell Mechanics

Chairs: William Hancock, David Odde
Room 18B

1:30PM OP-7-2-6A Adipose Progenitor Cells Promote Mammary Tumor Stiffness by Altering Fibronectin Mechanics
E. M. Chandler[1], M. Saunders[1], D. Gourdon[1], and C. Fischbach[1]
[1]*Cornell University, Ithaca, NY*

1:45PM OP-7-2-6B Cytoskeletal Fluidization Potentiates cell Realignment During Uniaxial Cyclic Cell Stretching
A. L. Iordan[1], R. Krishnan[2], N. Mizrahi[2], K. Rajendran[2], A. Marinkovic[2], J. P. Butler[2], J. J. Fredberg[2], and D. Stamenovic[1]
[1]*Boston University, Boston, MA,* [2]*Harvard School of Public Health, Boston, MA*

2:00PM OP-7-2-6C Effect of DDR Receptors on Mechanical Properties of Extracellular Matrix
S. M. Tabbaa[1], A. Blissett[1], L. Sivakumar[1], M. Stevenson[1], A. Morss[1], G. P. Lafyatis[1], K. Gooch[1], and G. Agarwal[1]
[1]*The Ohio State University, Columbus, OH*

2:15PM OP-7-2-6AD Quantized Velocities of Microtubule-Based Motors in a Living Cell and the Effect of Cargo Size
J. A. Laib[1], B. Dhamankar[1], and W. Guilford[1]
[1]*University of Virginia, Charlottesville, VA*

2:30PM OP-7-2-6E The Role of Nuclear-Cytoskeletal Coupling in Intracellular Force Transmission
M. L. Lombardi[1], D. Jaalouk[1], C. Shanahan[2], K. Roux[3], and J. Lammerding[1]
[1]*Brigham and Women's Hospital/Harvard Medical School, Cambridge, MA,* [2]*King's College London, London, United Kingdom,* [3]*University of Florida, Gainesville, FL*

2:45PM OP-7-2-6F 3D Multiscale Molecular Model of Muscle Contraction and Relaxation
S. M. Mijailovich[1,2], O. Kayser-Herald[1], R. J. Gilbert[2], and M. A. Geeves[3]
[1]*Harvard School of Public Helath, Boston, MA,* [2]*Caritas St. Elizabeth's Medical Center, Boston, MA,* [3]*University of Kent, Canterbury, Kent, United Kingdom*

Track: Cardiovascular Engineering - 7-2-7

Cardiac Electrophysiology

Chairs: Elizabeth Lipke, Abhijit Patwardhan
Room 18C

1:30PM OP-7-2-7A Electrical Coupling of Ventricular Myocytes is Dependent on Cx43 Density and Myofibril Organization
M. L. McCain[1,2], T. Desplantez[2], N. A. Geisse[1], H. Hinnen[2], A. G. Kleber[2], and K. K. Parker[1,3]
[1]*Disease Biophysics Group, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA,* [2]*Department of Physiology, University of Bern, Bern, Switzerland,* [3]*Wyss Institute for Biologically Inspired Engineering, Harvard University, Boston, MA*

1:45PM OP-7-2-7B Engineering Cardiac Form and Function through Cyclic Stretch and Extracellular Matrix Patterning
M. L. McCain[1,2], M. D. Brigham[1,2], A. W. Feinberg[1,2], P. W. Alford[1,2], S. P. Sheehy[1,2], A. Grosberg[1,2], J. A. Goss[1,2], and K. K. Parker[1,2]
[1]*Disease Biophysics Group, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA,* [2]*Wyss Institute for Biologically Inspired Engineering, Harvard University, Boston, MA*

2:00PM OP-7-2-7C- Embryonic Stem Cell-Derived Cardiomyocytes Require Supporting Cells to Form 3D Functional Myocardium
B. Liau[1], N. Christoforou[1], K. Leong[1], and N. Bursac[1]
[1]*Duke University, Durham, NC*

PS = Poster Session
OP = Oral Presentation

2:15PM OP-7-2-7D Optogenetic Control of Human Pluripotent Stem Cell-Derived Cardiomyocytes
O. Abilez[1], J. J. Baugh[1], M. L. Gorrepati[1], C. Lee-Messer[1], M. Huang[1], R. Prakash[1], K. D. Wilson[1], F. Jia[1], J. Yu[1], J. C. Wu[1], K. Deisseroth[1], and C. K. Zarins[1]
[1]*Stanford University, Stanford, CA*

2:30PM OP-7-2-7E Simultaneous Optical Mapping of Transmembrane Potential and Wall Motion in Isolated, Perfused Hearts
E. B. Bourgeois[1], A. D. Bachtel[1], G. P. Walcott[1], and J. M. Rogers[1]
[1]*University of Alabama at Birmingham, Birmingham, AL*

2:45PM OP-7-2-7F Role of iPLA2 Activation in the Response of the Diabetic Rat Heart to Acute Ischemia
P. Rahnema[1], Y. Shimoni[1], and A. Nygren[1]
[1]*University of Calgary, Calgary, Alberta, Canada*

Track: Cardiovascular Engineering - 7-2-8

Cardiovascular Fluid Dynamics - II

Chairs: Jonathan Butcher, Alison Marsden
Room 18D

1:30PM OP-7-2-8A Lymph Transport in Rat Mesenteric Lymphatics Experiencing Edemagenic Stress
E. Rahbar[1], T. Akl[1], D. C. Zawieja[2], G. L. Cote[1], and J. E. Moore Jr.[1]
[1]*Texas A&M University, College Station, TX,* [2]*Texas A&M Health Science Center, Temple, TX*

1:45PM OP-7-2-8B Changes in Wall Shear Stress Generated by Outflow Tract Banding in the Hearts of Chick Embryos
A. Liu[1], A. Troyer[1], X. Yin[1], Z. Ma[1], A. Nickerson[1], R. Wang[1], K. Thornburg[1], and S. Rugonyi[1]
[1]*Oregon Health & Science University, Portland, OR*

2:00PM OP-7-2-8C Hemodynamic Patterning of Avian Embryonic Heart
H. C. Yalcin[1], A. Shekhar[1], K. Bharadwaj[1], and J. T. Butcher[1]
[1]*Cornell University, Ithaca, NY*

2:15PM OP-7-2-8D Characterization of the Outflow Tract-Aortic Arch Angle During Embryonic Development in the Chick
W. J. Kowalski[1], N. C. Teslovich[1], O. Dur[1], B. B. Keller[2], and K. Pekkan[1]
[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*Cardiovascular Innovation Institute, University of Louisville, Louisville, KY*

2:30PM OP-7-2-8E Achieving an Optimal Hepatic Flow Distribution Via a Customized Y-graft Design for the Fontan Surgery
A. L. Marsden[1], W. Yang[1], I. Vignon-Clementel[2], and J. A. Feinstein[3]
[1]*UCSD, La Jolla, CA,* [2]*INRIA, Cedex, France,* [3]*Stanford University, Palo Alto, CA*

2:45PM OP-7-2-8F A Lumped Parameter Model for the Measurement of O2 and CO2 Concentration in Congenital Heart Defects
W. J. Kowalski[1], O. Dur[1], and K. Pekkan[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

Track: Orthopedic and Rehabilitation Engineering – 7-2-9

Orthopedic Biomaterials

Chairs: Ed Botchwey, Kurt Kasper, Helen Lu
Room 17A

1:30PM OP-7-2-9A Bacteriocidal Ultrasound Therapy is Enhanced with Antibacterial Nanomaterials
J. T. Seil[1], and T. J. Webster[1]
[1]*Brown University, Providence, RI*

1:45PM OP-7-2-9B Development and Optimization of a Biodegradable Bone Cement for Clinical Applications
A. Henslee[1], D-H. Gwak[1], A. Mikos[1], and F. Kasper[1]
[1]*Rice University, Houston, TX*

2:00PM OP-7-2-9C Keratin Biomaterials with BMPs Promote Bone Regeneration and Gap Bridging in a Critical-size Defect
R. de Guzman[1], J. Saul[1,2], M. Ellenburg[1], T. Smith[1], and M. Van Dyke[1]
[1]*Wake Forest University Health Sciences, Winston-Salem, NC,* [2]*Virginia Tech - Wake Forest University, Winston-Salem, NC*

2:15PM OP-7-2-9D A Novel Injectable Porous Hydrogel Composite Scaffold for Bone Tissue Engineering
P. Nair[1], D. Gyawali[1], R. Tran[1], and J. Yang[1]
[1]*University of Texas at Arlington, Arlington, TX*

2:30PM OP-7-2-9E Development of Hybrid Scaffolds for Bone Tissue Engineering
Y. Kang[1], A. Scully[2], D. Young[1], S. Kim[1], H. Tsao[1], and Y. Yang[1,2]
[1]*University of Texas Health Science Center at Houston, Houston, TX,* [2]*Rice University, Houston, TX*

2:45PM OP-7-2-9F Chondrocyte Response in Hydrogel-Ceramic Scaffolds for Osteochondral Interface Regeneration
M. K. Boushell[1], N. T. Khanarian[1], and H. H. Lu[1]
[1]*Columbia University, New York, NY*

Track: Systems Biology, Bioinformatics and Computational Biology – 7-2-10

Signals and Networks in Cancer and Disease – I

Chairs: Markus Covert, Melissa Kemp
Room 17B

1:30PM OP-7-2-10A Global Transcriptomics Analysis Reveals Gene-pair Decision Rules to Differentiate Major Brain Diseases
J. Sung[1], P-J. Kim[1], D. Geman[2], and N. Price[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL,* [2]*Johns Hopkins University, Baltimore, MD*

1:45PM OP-7-2-10B Bcl-2 and XIAP Inhibit Apoptosis by Modulating Intrinsic Variations in the Mitochondrial Pathway
S. Raychaudhuri[1], A. Nair[1], J. Skommer[2], and T. Brittain[2]
[1]*University of California Davis, Davis, CA,* [2]*The University of Auckland, Auckland, New Zealand*

2:00PM OP-7-2-10C Multiplexed Cell Signaling Data for Constrained Fuzzy Logic Modeling
D. C. Clarke[1], and D. A. Lauffenburger[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

2:15PM OP-7-2-10D A Single-Cell TGF R-JUND Dichotomy and Its Role in Basal-like Breast Cancer
C-C. Wang[1], and K. Janes[1]
[1]*University of Virginia, Charlottesville, VA*

2:30PM OP-7-2-10E Coupled Signaling Loops are Responsible for Generating Synchronized Oscillations in BMP/TGFβ Axes
B. Grabias[1], and K. Konstantopoulos[1]
[1]*Johns Hopkins University, Baltimore, MD*

2:45PM OP-7-2-10F Simulations of Competing Neuroprotective and Vascular Effects of VEGF in ALS
Y. L. Hashambhoy[1], and F. Mac Gabhann[1]
[1]*Johns Hopkins University, Baltimore, MD*

Track: Devices: Nano to Micro – 7-2-11

Medical Diagnostics: Nano to Micro Devices – I

Chairs: Michelle Khine, John Zhang

Room 16A

1:30PM OP-7-2-11A Microfluidic ELISA and Cell Immunophenotyping for Ocular Diagnostics

J. V. Green[1], D. Sun[2], A. Hafezi-Moghadam[2], K. Lashkari[3], and S. K. Murthy[1]

[1]Northeastern University, Boston, MA, [2]Massachusetts Eye and Ear Infirmary and Harvard Medical School, Boston, MA, [3]Schepens Eye Research Institute, Boston, MA

1:45PM OP-7-2-11B Functionalized Ultra-Nanocrystalline Diamond (UNCD) Films for Biosensing

A. D. Radadia[1], Y-S. Liu[1], N. Privorotskaya[1], C. Stavis[2], H. Zeng[3], J. A. Carlisle[3], R. J. Hamers[2], W. P. King[1], and R. Bashir[1]

[1]University of Illinois, Urbana, IL, [2]University of Wisconsin - Madison, Madison, WI, [3]Advanced Diamond Technologies, Inc., Romeoville, IL

2:00PM OP-7-2-11C Phosphopeptides Enrichment on Functionalized Nanoporous Silica Thin Films for Cancer Early Diagnostics

Y. Hu[1], Y. Peng[1], L. Brousseau[1], and M. Ferrari[1]

[1]The University of Texas Health Science Center at Houston, Houston, TX

2:15PM OP-7-2-11D An Optofluidic Platform for Characterizing Mechanical Properties of Metastatic Cancer Cells

M. Mak[1], C. Reinhart-King[1], and D. Erickson[1]

[1]Cornell University, Ithaca, NY

2:30PM OP-7-2-11E Parylene Peel-Strips for Multiplexed Aptamers Separation and Recovery

C. P. Tan[1], K. E. Ceniccola[1], K. Szeto[1], D. M. Lin[1], and H. G. Craighead[1]

[1]Cornell University, Ithaca, NY

2:45PM OP-7-2-11F Paper-based ELISA

C-M. Cheng[1], X. Liu[1], K. Mirica[1], C. Mace[1], and G. Whitesides[1]

[1]Harvard University, Cambridge, MA

Track: Devices: Nano to Micro – 7-2-12

Nano to Micro: Fluidic Technologies - I

Chairs: Samir Iqbal, Christine Trinkle

Room 16B

1:30PM OP-7-2-12A - Electrical Measurement and Characterization of PBS-in-ionic Liquid Droplets in a Microfluidic Device

W-J. Chang[1], E. Salm[1,2], N. N. Watkins[1,2], Y-S. Jin[2,3], and R. Bashir[1,2]

[1]Micro and Nanotechnology Laboratory, Urbana, IL, [2]University of Illinois at Urbana-Champaign, Urbana, IL, [3]Institute for Genomic Biology, Urbana, IL

1:45PM OP-7-2-12B - Study of Surface Roughness on Affinity-Based Cell Capture in Microfluidic Devices

B. Wang[1], P. Kumnorkaew[1], M. Wolfe[1], A. Weldon[1], C. Tibaldi[1], J. Gilchrist[2], and X. Cheng[1]

[1]Lehigh University, Bethlehem, PA, [2]Lehigh Univeristy, Bethlehem, PA

2:00PM OP-7-2-12C - Micofluidic Zone Refining for Biosample Preparation

P. Kashani[1], and P. Kavehpour[1]

[1]UCLA, Los Angeles, CA

2:15PM OP-7-2-12D - Isolation of Circulating Cancer Cells From Dilute Whole Blood Samples Using Contactless Dielectrophoresis

M. B. Sano[1], E. Henslee[1], H. Shafiee[1], and R. V. Davalos[1]

[1]Virginia Tech, Blacksburg, VA

2:30PM OP-7-2-12E Simple Particle-Induced Transverse Mass Transport at High Flow Rates

H. Amini[1,2], E. Sollier[1,2], and D. Di Carlo[1,2]

[1]University of California, Los Angeles, Los Angeles, CA, [2]California NanoSystems Institute, Los Angeles, CA

2:45PM OP-7-2-12F 3D Tumor Spheroid Model Using a Perfused Array of Spherical Microcavities

S. Agastin[1], U-B. T. Giang[2], L. DeLouise[2], and M. King[1]

[1]Cornell University, Ithaca, NY, [2]University of Rochester, Rochester, NY

Track: Drug Delivery Systems* – 7-2-13

Nucleic Acid Delivery – II

Chairs: Michelle Dawson, Craig Duvall

Room 14

1:30PM OP-7-2-13A Nanoparticle-mediated p53 Gene Delivery for Tumor Inhibition

B. Sharma[1], W. Ma[2], J. Panyam[3], I. Adjei[1], S. Dimitrijevic[1], and V. Labhasetwar[1]

[1]Lerner Research Institute, Cleveland Clinic, Cleveland, OH, [2]Moores Cancer Center, University of California San Diego, La Jolla, CA, [3]University of Minnesota, College of Pharmacy, Minneapolis, MN

1:45PM OP-7-2-13B Treatment of Ovarian Cancer With Tumor-homing siRNA Nanocomplexes

Y. Ren[1], A. Agrawal[1], G. von Maltzahn[1], V. Fogal[2], H. Cheung[3], E. Ruoslahti[2], W. C. Hahn[3], and S. N. Bhatia[4,5]

[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Burnham Institute for Medical Research, Santa Barbara, CA, [3]Dana-Farber Cancer Institute/Broad Institute/BWH, Cambridge, MA, [4]MIT/HST/BWH, Cambridge, MA, [5]HHMI, Cambridge, MA

2:00PM OP-7-2-13C Effect of Nanoparticle Conjugation on Gene Silencing by RNA Interference

N. Singh[1], A. Agrawal[1], A. K. Leung[1], P. A. Sharp[1], and S. N. Bhatia[1,2]

[1]MIT, Cambridge, MA, [2]Howard Hughes Medical Institute, Cambridge, MA

2:15PM OP-7-2-13D Antisense Silver Nanocomposites for Photoactivated Gene Silencing

P. K. Brown[1], A. T. Qureshi[1], D. J. Hayes[1], and W. T. Monroe[1]

[1]Louisiana State University, Baton Rouge, LA

2:30PM OP-7-2-13E Polybasic 2-(diethylaminoethyl) Methacrylate Nanogels and Their Application in Oral siRNA dDlivery

W. B. Liechty[1], and N. A. Peppas[1]

[1]The University of Texas at Austin, Austin, TX

2:45PM OP-7-2-13F Orally Delivered Thioketal-nanoparticles Loaded With siRNA Target Reactive Oxygen Species and Inhibit Gene Expression in the Intestines

D. S. Wilson[1], G. Dalmasso[2], D. Merlin[2], and N. Murthy[3]

[1]Georgia Tech, Atlatna, GA, [2]Emory University, Atlanta, GA, [3]Georgia Tech, Atlanta, GA

*** Drug Delivery Systems Track is sponsored by Acta Biomaterialia**

Track: New Frontiers in Bioengineering - 7-2-14

Biological Engineering in Cancer

Chairs: Celeste Nelson, Cynthia Reinhardt-King

Room 15

1:30PM OP-7-2-14A Slimy Forces: The Glycocalyx Controls Integrin Perception of the Extracellular Matrix

M. J. Paszek[1], C. Dufort[1], J. Lakins[1], J. Hudak[2], C. R. Bertozzi[2,3], D. A. Hammer[4], and V. M. Weaver[1]

[1]University of California, San Francisco, San Francisco, CA, [2]University of California, Berkeley, Berkeley, CA, [3]Lawrence Berkeley National Laboratory, Berkeley, CA, [4]University of Pennsylvania, Philadelphia, PA

PS = Poster Session
OP = Oral Presentation

1:45PM OP-7-2-14B Spatial Regulation of Host-tumor Cell Interactions
E. Boghaert[1], and C. M. Nelson[1]
[1]*Princeton University, Princeton, NJ*

2:00PM OP-7-2-14C - Invading Tumor Cells Take Advantage of Interstitial Flow-induced Matrix Priming by Fibroblasts
A. C. Shieh[1], H. A. Rozansky[1], M. Seneviratne[1], and M. A. Swartz[1]
[1]*Ecole Polytechnique Federale de Lausanne, Lausanne, Vaud, Switzerland*

2:15PM OP-7-2-14D The Role of Mena Invasive Isoforms in Escape from EGFR Inhibition
S. K. Alford[1], E. Batchelder[2], D. Yarar[2], F. B. Gertler[1], and D. A. Lauffenburger[1]
[1]*MIT, Cambridge, MA,* [2]*Whitehead Institute, Cambridge, MA*

2:30PM OP-7-2-14E Isolation of Circulating Tumor Cells from Cancer Patients using a Microfluidic Vortex Generator
S. L. Stott[1], C-H. Hsu[1], D. T. Miyamoto[1], S. M. Rothenberg[1], S. Nagrath[1], R. J. Lee[1], L. V. Sequist[1], S. Maheswaran[1], D. A. Haber[1], and M. Toner[1]
[1]*Massachusetts General Hospital, Charlestown, MA*

2:45PM OP-7-2-14F Engineering Growth Factor Ligands as Cancer Diagnostics and Therapeutics
N. Papo[1], D. S. Jones[1], A. P. Silverman[1], and J. R. Cochran[1]
[1]*Stanford University, Stanford, CA*

Track: Tissue Engineering * – 7-2-15

Nano- and Micro-Engineering in Tissue Engineering – II

Chairs: Zach Hilt, Sihong Wang
Ballroom E

1:30PM OP-7-2-15A - 3D *In Vitro* Perfused Human Capillaries for Tissue Engineering
M. L. Moya[1], Y-H. Hsu[1], C. C. Hughes[1], A. P. Lee[1], and S. C. George[1]
[1]*University of California, Irvine, Irvine, CA*

1:45PM OP-7-2-15B - Micro-patterned Substrates for Cardiac Tissue Engineering
S-K. Park[1], H-D. Park[1], K. Na[1], S. Yang[1], E-S. Yoon[1], and J. Kim[1]
[1]*Nano-Bio Center, Korea Institute of Science and Technology, Seoul, Korea, Republic of*

2:00PM OP-7-2-15C - Capillary Network Formation and Integration within Perfused Microfluidic Poly(ethylene glycol) hydrogels
M. P. Cuchiara[1], and J. L. West[1]
[1]*Rice University, Houston, TX*

2:15PM OP-7-2-15D - Endothelial Progenitor Cell Migration is Directed by Gradients of SDF and VEGF
E. M. Anderson[1,2], D. Huh[2], and D. J. Mooney[1,2]
[1]*Harvard University, Cambridge, MA,* [2]*Wyss Institute, Boston, MA*

2:30PM OP-7-2-15E - Tuning Directed Cell Motility on Micropatterns through Pattern Geometry and Signal Alterations
K. Kushiro[1], S. Chang[1], and A. R. Asthagiri[1]
[1]*California Institute of Technology, Pasadena, CA*

2:45PM OP-7-2-15F - Efficient Myogenic Commitment of hESC-derived Mesenchymal Cells on Biomimetic Materials Replicating Myoblast Topography
N. S-Y. Hwang[1], S-G. Im[1], R. S. Langer[1], and D. G. Anderson[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

Track: Tissue Engineering * – 7-2-16

Cardiovascular Tissue Engineering – I

Chairs: Andrea Gobin, Jianjun Guan
Ballroom F

1:30PM OP-7-2-16A Mimicry of Endogenous Microvascular Structures in Poly(ethylene glycol) Hydrogels
J. Hoffmann[1], J. Culver[2], M. Dickinson[2], and J. West[1]
[1]*Rice University, Houston, TX,* [2]*Baylor College of Medicine, Houston, TX*

1:45PM OP-7-2-16B *In Vivo* Imaging of Microvascular Network Development in a Tissue Engineered Construct
G. Gruionu[1], Z. Galis[1], T. Secomb[2], and J. B. Hoying[3]
[1]*Indiana University School of Medicine, Indianapolis, IN,* [2]*University of Arizona, Tucson, AZ,* [3]*University of Louisville, Louisville, KY*

2:00PM OP-7-2-16C Engineering the Synergy Between Growth Factors and Integrins for Angiogenesis
M. M. Martino[1], and J. A. Hubbell[1]
[1]*Swiss Federal Institute of Engineering, Lausanne, VD, Switzerland*

2:15PM OP-7-2-16D Compliance-Matched Arterial Vein Grafts via an External, Electrospun, Biodegradable Elastomeric Wrap
Q. Wang[1,2], Y. Hong[1,2], W. He[1,2], D. W. Chew[1,2], J. Rendemonti[1,2], W. R. Wagner[1,2], and D. A. Vorp[1,2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA*

2:30PM OP-7-2-16E Engineered Arteries Developed in a Multi-graft Flow-stretch Bioreactor with Noninvasive Monitoring
Z. Syedain[1], L. Meier[1], A. Lee[1], and R. Tranquillo[1]
[1]*University of Minnesota, Minneapolis, MN*

2:45PM OP-7-2-16F Cellular and Biomechanical Analysis of an *In Vitro* Cultured Small Diameter Blood Vessel
P. S. McFetridge[1]
[1]*University of Florida, Gainesville, FL*

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

Track: Tissue Engineering – 7-2-17

Musculoskeletal Tissue Engineering – II

Chairs: Elizabeth Cosgriff-Hernandez, Robert Mauck
Ballroom G

1:30PM OP-7-2-17A Xenogenic Biologic Scaffold as a Temporomandibular Joint Disc in a Canine Model
A. Almarza[1], B. Brown[1], W. Chung[1], C. Kunkle[1], S. Henderson[1], and S. Badylak[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

1:45PM OP-7-2-17B Histologic and Mechanical Analysis of Engineered Bone-Ligament-Bone Constructs After 6-Month ACL Reconstruction in Sheep
J. Ma[1], M. Smietana[1], L. Larkin[1], T. Kostrominova[2], E. Wojtys[1], and E. Arruda[1]
[1]*University of Michigan, Ann Arbor, MI,* [2]*Indiana University School of Medicine Northwest, Gary, IN*

2:00PM OP-7-2-17C Biodegradable, Anti-inflammatory Polymer to Aid Bone Defect Repair and Prevent Soft Tissue Ingrowth
S. Snyder[1], J. O'Connor[2], J. Ricci[3], and K. Uhrich[1]
[1]*Rutgers University, Piscataway, NJ,* [2]*University of Medicine and Dentistry of New Jersey, Newark, NJ,* [3]*New York University, New York, NY*

PLATFORM SESSIONS 7-2 1:30PM-3:00PM

2:15PM OP-7-2-17D Zonal Chondrocyte Response to Growth Factor Delivery and Matrix Molecules
E. E. COATES[1], AND J. P. FISHER[1]
[1]*University of Maryland, College Park, MD*

2:30PM OP-7-2-17E Phenotype Retention and Cell Migration From Minced Cartilage in Chondroitin Sulfate-Bone Marrow Gels
J. SIMSON[1], AND J. ELISSEEFF[1]
[1]*Johns Hopkins University, Baltimore, MD*

2:45PM OP-7-2-17F Poroelastic Material Properties of Hydrogels and Cartilage Evaluated Using Ultrasound
J. WALKER[1], J. M. MANSOUR[1], A. I. CAPLAN[1], V. M. GOLDBERG[1], AND J. F. WELTER[1]
[1]*Case Western Reserve University, Cleveland, OH*

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

PS = Poster Session
OP = Oral Presentation

Track: Respiratory Engineering – 7-3-1

Complex and Multiscale Behavior in the Lung

Chairs: Jason H.T. Bates, Tilo Winkler

Room 12A

4:00PM OP-7-3-1A Multi-scale Manifestations of Airway Smooth Muscle Mechanics

J. H. Bates[1]

[1]*University of Vermont, Burlington, VT*

4:15PM OP-7-3-1B Effects of Intratidal Overdisention and Derecruitment on Global Lung Mechanics: A Simulation Study

R. Amini[1], and D. W. Kaczka[1]

[1]*Beth Israel Deaconess Medical Center, Boston, MA*

4:30PM OP-7-3-1C Computational Model of Pulmonary Small Airways Interdependence

H. Fujioka[1], D. Halpern[2], and D. P. Gaver III[1]

[1]*Tulane University, New Orleans, LA,* [2]*University of Alabama, Tuscaloosa, AL*

4:45PM OP-7-3-1D A Multi-scale Model of Regional Perfusion in the Human Pulmonary Circulation

M. Tawhai[1], A. Clark[1], and K. Burrowes[2]

[1]*University of Auckland, Auckland, Auckland, New Zealand,* [2]*Oxford University, Oxford, Oxfordshire, United Kingdom*

5:00PM OP-7-3-1E Long-range Elastic Interactions Due to Gravity in a Network Model of Co-existent Pulmonary Emphysema and Fibrosis

B. Suki[1], H. Parameswaran[1], A. Majumdar[1], V. Cottin[2], J-F. Cordier[3], and J. H. Bates[4]

[1]*Boston University, Boston, MA,* [2]*Lyon University, Lyon, France,* [3]*Université Claude Bernard, Lyon, France,* [4]*University of Vermont, Burlington, VT*

5:15PM OP-7-3-1F Dynamic Length Scale Behavior of Ventilation in a Model of Bronchoconstriction

T. Winkler[1,2], A. Braune[1], and J. G. Venegas[1]

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

Track: Biomedical Imaging and Optics – 7-3-2

Optical and Ultrasound Imaging of Cancer

Chairs: Laura Marcu, Kathy Nightingale

Room 12B

4:00PM OP-7-3-2A *In Vivo* Measurements of the Mechano-environment of Rat Mammary Tumors

Y. Wang[1,2], M. Orescanin[1,2], and M. Insana[1,2]

[1]*University of Illinois at Urbana-Champaign, Urbana, IL,* [2]*Beckman Institute of Advanced Science and Technology, Urbana, IL*

4:15PM OP-7-3-2B Real-Time Hyperspectral Endoscope for Early Cancer Diagnostics

R. T. Kester[1], N. Bedard[1], and T. S. Tkaczyk[1]

[1]*Rice University, Houston, TX*

4:30PM OP-7-3-2C Optical Imaging of Ovarian Carcinogenesis

J. Barton[1]

[1]*The University of Arizona, Tucson, AZ*

4:45PM OP-7-3-2D In Vivo Detection of Oral Cancer Based on OCT-derived Morphological and FLIM-derived Biochemical Features of the Oral Mucosa

P. Pande[1], S. Shresta[1], J. Park[1], B. E. Applegate[1], and J. A. Jo[1]

[1]*Texas A&M University, College Station, TX*

5:00PM OP-7-3-2E A Hand-held Imaging and Spectroscopy Device for Intraoperative, Contrast-enhanced Tumor Detection

A. M. Mohs[1], M. C. Mancini[1], J. M. Provenzale[1,2], S. Singhal[3], M. D. Wang[1], and S. Nie[1]

[1]*Emory - Georgia Tech, Atlanta, GA,* [2]*Duke University, Durham, NC,* [3]*University of Pennsylvania, Philadelphia, PA*

5:15PM OP-7-3-2F How Multiphoton Imaging Will Revolutionize Intra-operative Surgical Decisions

W. Zipfel[1], and R. Williams[1]

[1]*Cornell University, Ithaca, NY*

Track: Biomedical Imaging and Optics – 7-3-3

CV Imaging

Chairs: Gang Bao, Angie Louie

Room 19A

4:00PM OP-7-3-3A Three-dimensional Photothermal Wave Imaging of Lipids in Atherosclerotic Plaque

T. Wang[1], J. Mancuso[2], B. Willsey[1], X. Li[2], L. Ma[1], K. P. Johnston[1], M. D. Feldman[2], and T. E. Milner[1]

[1]*University of Texas at Austin, Austin, TX,* [2]*University of Texas Health Science Center at San Antonio, San Antonio, TX*

4:15PM OP-7-3-3B Time Resolved Spectroscopy Differentiates Matrix Metalloproteinase Levels in Atherosclerotic Plaque

J. E. Phipps[1], N. Hatami[1], J. Jo[1], M. C. Fishbein[2], T. Papaioannou[3], Q. Fang[3], J. Baker[2], and L. Marcu[1]

[1]*University of California, Davis, Davis, CA,* [2]*University of California, Los Angeles, Los Angeles, CA,* [3]*Cedars Sinai Medical Center, Los Angeles, CA*

4:30PM OP-7-3-3C Multifunctional Nanoclusters for Imaging Plaque-Based Macrophages

B. W. Willsey[1], L. L. Ma[1], T. Wang[1], V. Sapozhnikova[2], J. Mancuso[2,3], J. T. Jenkins[2], A. Borwankar[1], D. Rigdon[1], M. Feldman[2,3], T. Milner[1], and K. Johnston[1]

[1]*University of Texas at Austin, Austin, TX,* [2]*University of Texas Health Science Center San Antonio, San Antonio, TX,* [3]*South Texas Veteran Affairs Hospital System, San Antonio, TX*

4:45PM OP-7-3-3D High Resolution Cardiac Wall Motion Analysis Using 320-detector CT: A First Study

A. Pourmorteza[1], A. C. Lardo[1], D. Herzka[1], J. L. Prince[1], and E. R. McVeigh[1]

[1]*Johns Hopkins University School of Medicine, Baltimore, MD*

5:00PM OP-7-3-3E Guiding Transcatheter Cardiac Radiofrequency Ablation with Acoustic Radiation Force Impulse Imaging

S. A. Eyerly[1], T. D. Bahnson[2], S. J. Hsu[3], D. P. Bradway[1], G. E. Trahey[1,2], and P. D. Wolf[1]

[1]*Duke University, Durham, NC,* [2]*Duke University Medical Center, Durham, NC,* [3]*Siemens Healthcare, Issaquah, WA*

5:15PM OP-7-3-3F A Semi-automated Approach to Mitral Valve Morphometry Using Real-time 3D Echocardiography

A. M. Pouch[1], P. A. Yushkevich[1], B. M. Jackson[1], J. H. Gorman[1], R. C. Gorman[1], and C. M. Sehgal[1]

[1]*University of Pennsylvania, Philadelphia, PA*

Track: Neural Engineering – 7-3-4

Engineering the Neural Environment

Chairs: Jeffrey Capadona, Shelly Sakiyama-Elbert

Room 19B

4:00PM OP-7-3-4A A Novel Optically Transparent Biochip for Site-Specific Transfection of Cells in a Culture

C. Patel[1], A. Sridharan[1], and J. Muthuswamy[1]

[1]*Arizona State University, Tempe, AZ*

4:15PM OP-7-3-4B Electrical Activity Promotes Neuronal Survival and Regeneration
J. GOLDBERG[1], AND R. G. CORREDOR[1]
[1]University of Miami, Miami, FL

4:30PM OP-7-3-4C Three-Dimensional Gradients of Immobilized Factors
S. SEIDLITS[1], E. RITSCHDORFF[1], D. HERNANDEZ[1], E. SPIVEY[1], C. SCHMIDT[1], AND J. SHEAR[1]
[1]University of Texas at Austin, Austin, TX

4:45PM OP-7-3-4D The Formation of Nerve Functional Units by Embryonic Stem Cells in the Novel Microfluidic Platform
I. YANG[1], S. LIU[2], AND N. THAKOR[1]
[1]Johns Hopkins University, Baltimore, MD, [2]Kennedy Krieger Institute, Baltimore, MD

5:00PM OP-7-3-4E Novel Partially-biodegradable Neural Probe and Biocompatible Tissue Response
M. HAN[1], D. B. MCCREERY[1], AND P. S. MANOONKITIWONGSA[1]
[1]Huntington Medical Research Institutes, Pasadena, CA

5:15PM OP-7-3-4F Laminin Modified Hyaluronic Acid Hydrogels Promote Axonal Regeneration Following Spinal Cord Injury in Rats
B. D. MILMAN[1], Z. Z. KHAING[1], S. A. GEISSLER[1], AND C. E. SCHMIDT[1]
[1]University of Texas at Austin, Austin, TX

PLATFORM SESSIONS **7-3**

Track: Cellular and Molecular Engineering – 7-3-5

Molecular Engineering – II

Chairs: Craig Duvall, Junghae Suh
Room 18A

4:00PM OP-7-3-5A Engineering Aglycosylated Antibodies with Improved Circulation Half-life
T. KANG[1], S. JUNG[1], AND G. GEORGIOU[1]
[1]The University of Texas at Austin, Austin, TX

4:15PM OP-7-3-5B Toward Novel Molecular Sensors: Incorporating Unnatural Amino Acids in Stem Cells
K. MONCIVAIS[1], L. XIANG[1], AND Z. J. ZHANG[1]
[1]University of Texas at Austin, Austin, TX

4:30PM OP-7-3-5C Development of a Novel Fibrin Binding Peptide for Incorporation Into Biomatrices
J. J. RICE[1], M. MARTINO[1], S. KONTOS[1], AND J. HUBBELL[1]
[1]EPFL, Lausanne, Switzerland

4:45PM OP-7-3-5D Influence on Pertussis Toxin Intracellular Trafficking by Antibodies
J. N. SUTHERLAND[1], AND J. A. MAYNARD[1]
[1]The University of Texas at Austin, Austin, TX

5:00PM OP-7-3-5E Determining the Disassociation Constant of Protein-Protein Interaction Using FRET-based Method
Y. SONG[1], AND J. LIAO[1]
[1]University of California, Riverside, Riverside, CA

5:15PM OP-7-3-5F Determining Self-Assembly Mechanism of a Protein Nanocage
T. PENG[1], AND S. LIM[1]
[1]Nanyang Technological University, Nanyang, Singapore

Track: Cellular and Molecular Engineering – 7-3-6

Mechanotransduction – I

Chairs: Chris Jacobs, Jeff Jacot
Room 18B

4:00PM OP-7-3-6A Regulation of Stretch-induced JNK, p38, and ERK Activities by Stress Fiber Tension
H-J. HSU[1], C-F. LEE[1], A. LOCKE[1], S. Q. VANDERZYL[1], AND R. R. KAUNAS[1]
[1]Texas A&M, College Station, TX

4:15PM OP-7-3-6B Glycated Substrate Altering Endothelial Cell Response to Fluid Shear Stress
S. F. KEMENY[1], AND A. M. CLYNE[1]
[1]Drexel University, Philadelphia, PA

4:30PM OP-7-3-6C Defining the Gene Expression Changes Required for Morphogenesis of Engineered Tissues
K. LEE[1], AND C. M. NELSON[1]
[1]Princeton University, Princeton, NJ

4:45PM OP-7-3-6D Tissue Assembly Requires Sensitivity to Matrix Mechanics and Differential ECM Assembly
J. P. CALIFANO[1], AND C. A. REINHART-KING[1]
[1]Cornell University, Ithaca, NY

5:00PM OP-7-3-6E A Genetic Strategy for Graded, Dynamic Control of Cell-matrix Mechanobiology
J. MACKAY[1], A. KEUNG[1], AND S. KUMAR[1]
[1]University of California, Berkeley, CA

5:15PM OP-7-3-6F Effects of Fluid Flow on TGF-Beta1 Signaling in Human Mesenchymal Stem Cells
R. DIOP[1], AND S. LI[1]
[1]University of California, Berkeley, CA

Track: Cardiovascular Engineering – 7-3-7

Innovations in Cardiovascular Bioengineering II: Vascular

Chairs: Hai-Chao Han, Amina Qutub
Room 18C

4:00PM OP-7-3-7A Effects of Aortic Wave Dynamics on Left Ventricular Power Requirement
N. M. PAHLEVAN[1], AND M. GHARIB[1]
[1]California Institute of Technology, Pasadena, CA

4:15PM OP-7-3-7B *In Vitro* Vasospasms: Acute Traumatic Injury and Vascular Hypercontractility
P. W. ALFORD[1,2], J. A. GOSS[1,2], M. D. BRIGHAM[1,2], A. W. FEINBERG[1,2], AND K. K. PARKER[1,2]
[1]Disease Biophysics Group, Harvard University, Cambridge, MA, [2]Wyss Institute for Biologically Inspired Engineering, Boston, MA

4:30PM OP-7-3-7C The Effect of Aneurysm on the Delamination Strength in Human Ascending Thoracic Aorta
S. PASTA[1,2], J. A. PHILLIPPI[1,3], S. C. WATKINS[1,3], T. G. GLEASON[1,3], AND D. A. VORP[1,3]
[1]University of Pittsburgh, Pittsburgh, PA, [2]RiMED Foundation, Palermo, Italy, Italy, [3]McGowan Institute for Regenerative Medicine, Pittsburgh, PA

4:45PM OP-7-3-7D Fluid-structure Interaction (FSI) Modeling in Patient Based Vulnerable Plaques and Carotid Arteries
M. XENOS[1], D. PETER[1], X. LIANG[1], I. LAVI[2], Y. ALEMU[1], S. EINAV[1], AND D. BLUESTEIN[1]
[1]Stony Brook University, Stony Brook, NY, [2]Tel Aviv University, Tel Aviv, Israel

PS = Poster Session
OP = Oral Presentation

5:00PM OP-7-3-7E Cerebral Artery Blood Flow As Source of Outer Ear Canal Acoustic Emissions
P. RICHARDSON[1], R. LEVINE[2], AND Y. YU[1]
[1]Brown University, Providence, RI, [2]Mass Eye & Ear Inst, Boston, MA

5:15PM OP-7-3-7F Effect of Isoflurane on Brain Oxygen Autoregulation in Rabbits
J. EASSA[1], J. LAKHOO[1], P. HAN[1], D. AKSENOV[2,3], A. WYRWICZ[2,3], AND R. A. LINSENMEIER[1]
[1]Northwestern University, Evanston, IL, [2]NorthShore University HealthSystem, Evanston, IL, [3]University of Chicago, Chicago, IL

Track: Cardiovascular Engineering – 7-3-8

Microvasculature, Angiogenesis, and Capillary Patches

Chairs: Shayn Peirce-Cottler, Mariah Hahn
Room 18D

4:00PM OP-7-3-8A Spatial Regulation and Temporal Coordination of Angiogenesis by Notch
W. W. YUEN[1], N. R. DU[1], AND D. J. MOONEY[1]
[1]Harvard University, Cambridge, MA

4:15PM OP-7-3-8B 3D Angiogenic Sprouting Controlled by Adhesive Ligands and MMP-susceptibility in PEG-Peptide Hydrogels
J. S. MILLER[1], C. J. SHEN[1], W. R. LEGANT[1], J. D. BARANSKI[1], B. L. BLAKELY[1], AND C. S. CHEN[1]
[1]University of Pennsylvania, Philadelphia, PA

4:30PM OP-7-3-8C MMP-9 of Bone Marrow-Derived Cell Origin Regulates Arteriogenesis and Ischemic Skeletal Muscle Regeneration
J. K. MEISNER[1], S. S. BAJIKAR[1], AND R. J. PRICE[1]
[1]University of Virginia, Charlottesville, VA

4:45PM OP-7-3-8D Barrier Properties and Endothelial Cells – Pericytes Interactions within Microvascular Scaffolds
Y. ZHENG[1], N. W. CHOI[1], A. DIAZ-SANTANA[1], M. CRAVEN[1], S. S. VERBRIDGE[1], C. FISCHBACH-TESCHL[1], AND A. D. STROOCK[1]
[1]Cornell University, Ithaca, NY

5:00PM OP-7-3-8E Wrapping-and-Tapping Anastomosis between Implanted Endothelial Networks and Host Vasculature
G. CHENG[1], S. LIAO[1], H-K. WONG[1], D. LACORRE[1], E. DI TOMASO[2], P. AU[3], R. K. JAIN[1], D. FUKUMURA[1], AND L. L. MUNN[4]
[1]Massachusetts General Hospital, Boston, MA, [2]Novartis, Cambridge, MA, [3]FDA, Boston, MA, [4]Harvard Medical School, Charlestown, MA

5:15PM OP-7-3-8F Hemodynamic Systems Analysis of Capillary Network Remodeling During the Progression Type 2 Diabetes
K. F. BENEDICT[1], G. COFFIN[1], E. J. BARRETT[1], AND T. C. SKALAK[1]
[1]University of Virginia, Charlottesville, VA

Track: Orthopedic and Rehabilitation Engineering – 7-3-9

Musculoskeletal Cell Mechanotransduction

Chairs: Adam Hsieh, Vassilios Sikavitsas
Room 17A

4:00PM OP-7-3-9A Tenocytic Differentiation by Wharton's Jelly and Mesenchymal Stem Cells under Cyclical Stretching
V. I. SIKAVITSAS[1], B. ENGEBRETSON[1], W. YATES[1], AND R. ABOUSLEIMAN[2]
[1]University of Oklahoma, Norman, OK, [2]Oklahoma Medical Research Foundation, Norman, OK

4:15PM OP-7-3-9B Changes in Gene Expression of Nucleus Pulposus Cells Subjected to Distinct Load Histories *In Vivo*
D. HWANG[1], AND A. H. HSIEH[1,2]
[1]University of Maryland, College Park, MD, [2]University of Maryland, Baltimore, MD

4:30PM OP-7-3-9C Development of 3D Culture Conditions for Bone Marrow Mesenchymal Stem Cells
B. MCGOWAN[1], AND J. NAGATOMI[1]
[1]Clemson University, Clemson, SC

4:45PM OP-7-3-9D Distraction Osteogenesis in Organ Culture
M. SAUNDERS[1], J. VAN SICKELS[1], B. HEIL[1], AND K. GURLEY[1]
[1]University of Kentucky, Lexington, KY

5:00PM OP-7-3-9E Tensile Stretch Inhibits BMP4 Mediated Mesenchymal Stem Cell Adipogenesis
J. LEE[1], AND J. LIM[1]
[1]University of Nebraska, Lincoln, NE

5:15PM OP-7-3-9F Effect of Estrogen Deficiency on Osteocyte Lacunar Density and Canalicular Number
D. SHARMA[1], J. D. LEVY[1], S. B. DOTY[2], AND S. P. FRITTON[1]
[1]City College of New York, New York, NY, [2]Hospital for Special Surgery, New York, NY

Track: Systems Biology, Bioinformatics and Computational Biology – 7-3-10

Molecular and Cellular Design and Evolution

Chairs: Casim Sarkar, Mike Shuler
Room 17B

4:00PM OP-7-3-10A Spatio-temporal Character of Selection and Diversity over the H3 Influenza Hemagglutinin
K. PAN[1], AND M. W. DEEM[1]
[1]Rice University, Houston, TX

4:15PM OP-7-3-10B A Forward-Genetic Screen and Dynamic Analysis of Lambda Phage Host-Dependencies Reveals an Extensive Interaction Network and a New Anti-Viral Strategy
N. D. MAYNARD[1], E. BIRCH[1], M. GUTSSHOW[1], AND M. COVERT[1]
[1]Stanford University, Palo Alto, CA

4:30PM OP-7-3-10C Interplay of Lineage-Specific Receptor and Transcription Factor during Erythropoiesis
S. PALANI[1], AND C. A. SARKAR[1]
[1]University of Pennsylvania, Philadelphia, PA

4:45PM OP-7-3-10D Robust Network Topologies for Generating Switch-like Cellular Responses
N. A. SHAH[1], AND C. A. SARKAR[2]
[1]University of Pennsylvania School of Medicine, Philadelphia, PA, [2]University of Pennsylvania, Philadelphia, PA

5:00PM OP-7-3-10E Cross Reactive Aptamer Microarrays, a New Approach to Differential Sensing
S. STEWART[1], A. SYRETT[1], A. ELLINGTON[1], AND E. ANSLYN[1]
[1]University of Texas, Austin, TX

5:15PM OP-7-3-10F Quantifying Metabolic Diversity: Environmental Constraints on Metabolic Production
P. A. JENSEN[1], AND J. A. PAPIN[1]
[1]University of Virginia, Charlottesville, VA

Track: Devices: Nano to Micro – 7-3-11

Medical Diagnostics: Nano to Micro Devices – II

Chairs: Chang Liu, Sihong Wang

Room 16A

4:00PM OP-7-3-11A Cardiac Marker Detection Using a Nanofluidics, a Competitive Immunoassay, and Whole Blood Filtering Device

M. E. Benford[1], M. Wang[1], B. Reinemund[1], T. Good[2], J. Kameoka[1], and G. Coté[1]

[1]Texas A&M University, College Station, TX, [2]University of Maryland-Baltimore County, Baltimore, MD

4:15PM OP-7-3-11B Quantum Dot Light Emitting Diodes on Silicon as Multicolor Excitation Sources for On-Chip Multispectral Sensor

A. Gopal[1], L. D'Amico[2], K. Hoshino[1], P. R. Gascoyne[2], and X. J. Zhang[1]

[1]The University of Texas at Austin, Austin, TX, [2]University of Texas M D Anderson Cancer Center, Houston, TX

4:30PM OP-7-3-11C Cancer Cell Assays Using Immunocapture, Subcellular Imaging, And Cell Release In GEDI Microdevices

J. P. Gleghorn[1], S. M. Santana[1], E. D. Pratt[1], M. S. Loftus[2], M. Jodari-Karimi[2], N. H. Bander[2], D. M. Nanus[2], P. Giannakakou[2], and B. J. Kirby[1]

[1]Cornell University, Ithaca, NY, [2]Weill Cornell Medical College, New York, NY

4:45PM OP-7-3-11D Precision Microfluidic Oscillators for On-Chip Timing and Control

P. Duncan[1], T. Nguyen[1], and E. Hui[1]

[1]University of California, Irvine, Irvine, CA

5:00PM OP-7-3-11E Label-free Microarray Imaging for Screening Infectious Diseases

S. Ahn[1], G. Daaboul[1], Q. Cao[1], E. Ozkumur[2], C. M. Klapperich[1], M. Cabodi[1], and S. Unlu[1]

[1]Boston University, Boston, MA, [2]Massachusetts General Hospital, Charlestown, MA

5:15PM OP-7-3-11F Screening of Low-mass Proteins as Biomarkers for Early Detection of Ovarian Cancer Using Nanoporous Silica Chips

Y. Peng[1], A. Carroll[2], Y. Hu[1], Y. Flores[1], T. Tanaka[1], A. Bouamrani[1], A. Sood[2], and M. Ferrari[1,2]

[1]The University of Texas Health Science Center at Houston, Houston, TX, [2]The University of Texas, M.D Anderson Cancer Center, Houston, TX

Track: Devices: Nano to Micro – 7-3-12

Nano to Micro: Fluidic Technologies – II

Chairs: Tony Huang, Ketul Popat

Room 16B

4:00PM OP-7-3-12A Hollow-Core Fiberoptic Fiber Flow Characterization and Diffusion Analysis in Dermal Tissue

R. L. Hood[1], M. A. Kosoglu[1], Y. Chen[1], Z. Montgomery[1], and C. G. Rylander[1]

[1]Virginia Tech, Blacksburg, VA

4:15PM OP-7-3-12B Engineering Two-dimensional Paper Networks For Improved Paper-based Assay Performance

E. Fu[1], B. Lutz[1], P. Kauffman[1], and P. Yager[1]

[1]University of Washington, Seattle, WA

4:30PM OP-7-3-12C Microfluidic Screening Chip for Detection of Circulating Tumor Cell

Y-Y. Huang[1], K. Hoshino[1], A. Horton[1], D. Malik[1], J. Tam[1], K. Sokolov[1], E. Frenkel[2], J. Uhr[2], N. Lane[2], and X. Zhang[1]

[1]The University of Texas at Austin, Austin, TX, [2]The University of Texas Southwestern Medical Center, Dallas, TX

4:45PM OP-7-3-12D A Novel, High-throughput, Single-cell Deformability Measurement Technique for Diagnostics and Therapeutics

H. T. Tse[1], D. R. Gossett[1], S. Lee[1], A. T. Clark[1], and D. Di Carlo[1]

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

5:00PM OP-7-3-12E Measuring Oxygen Concentration Under *Staphylococcus aureus* Biofilms in Response to Chemical Gradients in a Microfludic Device

A. Dhummakupt[1], P. Samson[1], D. Markov[1], J. Wikswo[1], and L. Shor[2]

[1]Vanderbilt University, Nashville, TN, [2]University of Connecticut, Storrs, CT

5:15PM OP-7-3-12F Investigating Bacterial Chemotaxis Toward Human Neuroendoctrinal Hormone in a Microfluidics Model

D. N. Kim[1], M. Hegde[1], D. Englert[1], and A. Jayaraman[1]

[1]Texas A&M University, College Station, TX

Track: Biomedical Engineering Education – 7-3-13

Community Partnerships: Innovation in Engineering Education

Chairs: Adrianne Noe

Room 14

4:00PM OP-7-3-13A Implementing Scientific Methods and Problem-Based Learning in Elementary School Classrooms

Y-T. Liu[1], S. Hollen[1], J. Toney[1], T. Herbert[1], and K. M. Haberstroh[1]

[1]Brown University, Providence, RI

4:15PM OP-7-3-13B CLIMB GK-12 Fellows: Bringing BME to the K-12 Classroom

J. R. Weiser[1], L. Austen[2], and D. Putnam[1]

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

4:30PM OP-7-3-13C Middle School Students Explore Biomedical Engineering within the Context of Diabetes

S. M. Pearce[1], V. Fitzpatrick[1], J. Bazil[1], J. Groh[1], and A. E. Rundell[1]

[1]Purdue University, West Lafayette, IN

4:45PM OP-7-3-13D Museum as Mechanism and Model

A. Hawk[1]

[1]National Museum of Health and Medicine, Washington, DC

5:00PM OP-7-3-13E The Possibilities Beyond

J. V. Curley[1]

[1]National Museum of Health and Medicine, Washington, DC

5:15PM OP-7-3-13F Synergistic Educational Endeavors with the National Museum of Health and Medicine

P. Fagette[1]

[1]BMES, Ewing, NJ

Track: New Frontiers in Bioengineering – 7-3-14

Synthetic Biology in Health and Medicine

Chairs: J. Christopher Anderson, Christina Smolke

Room 15

4:00PM OP-7-3-14A High-throughput Screening Strategy for Protein Optimization and Virus Genome Reprogramming Using Synthetic Biology Approaches

J. Quan[1], Z. Chen[1], and J. Tian[1]

[1]Duke University, Durham, NC

4:15PM OP-7-3-14B Development of a Constitutive Promoter Library to Evaluate and Optimize Gene Expression Levels

J. Ferreira[1], R. Peacock[1], and C. Wang[1]

[1]Stanford University, Stanford, CA

PLATFORM SESSIONS 7-3

PS = Poster Session
OP = Oral Presentation

4:30PM **OP-7-3-14C** Programming Gene Regulation: from Synthetic Gene Networks to Cell Differentiation
X. WANG[1]
[1]Arizona State University, Tempe, AZ

4:45PM **OP-7-3-14D** Engineering a Functional Genetic Approach for Small Molecule Characterization
J. R. PRITCHARD[1], H. JIANG[2], L. GILBERT[1], D. LAUFFENBURGER[1], AND M. HEMANN[1,2]
[1]M.I.T., Cambridge, MA, [2]Koch Institute, Cambridge, MA

5:00PM **OP-7-3-14E** Design of Anti-Cancer Bacterial Therapeutics
J. C. ANDERSON[1]
[1]UC Berkeley, Berkeley, CA

5:15PM **OP-7-3-14F** Tunable Signal Processing in Synthetic MAP Kinase Modules
E. C. O'SHAUGHNESSY[1], S. PALANI[2], J. J. COLLINS[1], AND C. A. SARKAR[2]
[1]Howard Hughes Medical Institute and Boston University, Boston, MA, [2]University of Pennsylvania, Philadelphia, PA

Tracks: Drug Delivery, Tissue Engineering and Cellular and Molecular Engineering – 7-3-15

Acta Biomaterialia Gold Medal Award Session

Ballroom G

4:00PM Advancing Biomaterial Strategies for Bone Tissue Engineering
PROF. ANTONIOS G. MIKOS
Louis Calder Professor of Bioengineering and Chemical and Biomolecular Engineering, Director of John W. Cox Laboratory of Biomedical Engineering, Director of Center for Excellence in Tissue Engineering, Rice University

4:30PM Hydrogel Matrices: Studying Biology in the Fourth Dimension
PROF. KRISTI ANSETH
Distinguished Professor and HHMI Investigator, Department of Chemical & Biological Engineering, University of Colorado

5:00PM Acta Biomaterialia Award Presentation: Advances in Hydrogels as Intelligent Biomaterials
PROF. NICHOLAS PEPPAS
Fletcher Stuckey Pratt Chair in Engineering, Professor of Biomedical Engineering, Chemical Engineering and Pharmacy, Chai, Department of Biomedical Engineering, The University of Texas at Austin

5:20PM Award Presentation
DR. ART COURY

Track: Tissue Engineering * – 7-3-16

Printing and Patterning in Tissue Engineering

Chairs: Shashi Murthy, Celeste Nelson
Ballroom F

4:00PM **OP-7-3-16A** Ultrasound-Based Cell Patterning for the Vascularization of Three-Dimensional Engineered Tissue
K. A. Garvin1, D. C. Hocking1, and D. Dalecki1
[1]University of Rochester, Rochester, NY

4:15PM **OP-7-3-16B** Engineering Epithelial/Stromal Interactions to Study Branching Morphogenesis
S. MANIVANNAN[1], A. PAVLOVICH[1], AND C. NELSON[1]
[1]Princeton University, Princeton, NJ

4:30PM **OP-7-3-16C** Spatially Patterning Cell Adhesion Ligands in Biodegradable, Photocrosslinked Alginate Hydrogels
O. JEON[1], C. POWELL[1], AND E. ALSBERG[1]
[1]Case Western Reserve University, Cleveland, OH

4:45PM **OP-7-3-16D** Rapid, Versatile Printing of Vascular Networks for Perfused 3D Tissue Culture
J. S. MILLER[1], M. T. YANG[1], D-H. NGUYEN[1], AND C. S. CHEN[1]
[1]University of Pennsylvania, Philadelphia, PA

5:00PM **OP-7-3-16E** Tissue Origami
G. YE[1], J-O. YOU[1], AND D. T. AUGUSTE[1]
[1]Harvard University, Cambridge, MA

5:15PM **OP-7-3-16F** Long-term Viability of Cells Encapsulated in 3D Photopatterned Hydrogels Fabricated using Stereolithography
P. ZORLUTUNA[1], V. CHAN[1], J. JEONG[1], H. KONG[1], AND R. BASHIR[1]
[1]University of Illinois, Urbana-Champaign, Urbana, IL

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

ALUMNI PANEL

4:00PM - 5:30PM **Ballroom E**

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

CAREER WORKSHOP

5:45PM - 7:15PM **Ballroom E**

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

POSTER SESSION 8A 9:30AM – 1:00PM

FRIDAY, OCTOBER **8**
TODAY'S HIGHLIGHTS

PLENARY SESSION
8:30am - 9:30am
Ballroom D, Convention Center
Distinguished Achievement Lecture
FROM DRUG DELIVERY AND TARGETED THERAPEUTICS TO ADVANCED INTELLIGENT BIOMEDICAL DEVICES FOR IMPROVED HEALTH CARE
Nicholas A Peppas, ScD
University of Texas, Austin

EXHIBIT HALL OPEN 9:30am - 5:00pm
Exhibit Hall 4, Convention Center

POSTER SESSION 8A 9:30am - 1:00pm
Exhibit Hall 4, Convention Center

PLATFORM SESSIONS 8-1 10:30am - 12:00noon
See pages 86-90, Convention Center

WOMEN IN BMES Luncheon 12:00noon - 1:30pm
Salon AB, Hilton

CAREER FAIR 1:00pm - 5:00pm
Additional ticket purchase required
Exhibit Hall 4, Convention Center

PLATFORM SESSIONS 8-2 1:30pm - 3:00pm
See pages 103-107, Convention Center

POSTER SESSION 8B 1:30pm - 5:00pm
Exhibit Hall 4, Convention Center

PLENARY SESSION 4:00pm - 6:00pm
Ballroom D, Convention Center
Distinguished Speakers Session
FUTURE FRONTIERS OF BIOMEDICAL ENGINEERING
"Engineering The Next Generation of Cancer Therapeutic Enzymes and Antibodies"
George Georgiou, Ph.D, The University of Texas at Austin
"Bioengineering in Drug Discovery: Predictive Understanding of Cell Regulatory Network Operation"
Douglas Lauffenburger, Ph.D., Massachusetts Institute of Technology
"Stem Cells, Tissue Engineering, and Regenerative Medicine: Challenges Ahead"
Gordana Vunjak-Novakovic, Ph.D., Columbia University
"Photoacoustic Tomography: Breaking Through the Optical Diffusion Limit"
Lihong Wang, Ph.D., Washington University in St. Louis

SPECIAL EVENT 6:30pm - 9:30pm
Bullock Museum

POSTER SESSION **8A**

PS = Poster Session
OP = Oral Presentation

Track: Biomedical Imaging and Optics – PS-8A-1

Molecular Imaging

PS-8A-1-1 Engineering a Small Molecule-Activatable Bioluminescence Reporter
R. Warden[1], and A. Tsourkas[1]
[1]University of Pennsylvania, Philadelphia, PA

PS-8A-1-2 Transient Absorption Ultrasonic Microscopy
R. L. Shelton[1], and B. E. Applegate[1]
[1]Texas A&M University, College Station, TX

PS-8A-1-3 Multiplex Photoacoustic Imaging for Molecular Imaging of Cancerous Tumors Using Targeted Nanorods
C. L. Bayer[1], Y-S. Chen[1], S. Kim[1], S. Mallidi[1], K. Sokolov[1,2], and S. Y. Emelianov[1]
[1]The University of Texas at Austin, Austin, TX, [2]The University of Texas M.D. Anderson Cancer Center, Houston, TX

PS-8A-1-4 Synthesis of Transition-Metal Doped Zinc Selenide Quantum Dots for Bioimaging
C-H. Quek[1]
[1]Duke University, Durham, NC

PS-8A-1-5 Applications of Potential Dependent DNA Orientation on Indium Tin Oxide Surface by Fluorescent-self Interference Microscopy
P. Spuhler[1], L. Sola[2], M. Monroe[1], M. Chiari[2], and M. Unlu[1]
[1]Boston University, Boston, MA, [2]CNR, Milan, Milan, Italy

PS-8A-1-6 Real-Time Observation of Rad51 Nucleoprotein Filament Formation
Y. Qiu[1], and S. Myong[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

PS-8A-1-7 Alternating-color Nanoparticles for Particle Tracking
G. Ruan[1], and J. O. Winter[1]
[1]The Ohio State University, Columbus, OH

PS-8A-1-8 Characterization of Solid State Photomultipliers in PET Detector Designs
J. Schmall[1], E. Roncali[1], J. Christian[2], P. Dokhale[2], K. Shah[2], and S. Cherry[1]
[1]UC Davis, Davis, CA, [2]Radiation Monitoring Devices, Inc., Watertown, MA

PS-8A-1-9 Image Analysis Methods for Whole Cell cryo-Electron Tomography Data
K. Wang[1], C-Y. Fu[2], P. C. Doerschuk[1], and J. E. Johnson[2]
[1]Cornell University, Ithaca, NY, [2]The Scripps Research Institute, La Jolla, CA

PS-8A-1-10 Design of pH Sensitive MR Contrast Agents for Tumor Imaging
S. Crayton[1], and A. Tsourkas[1]
[1]University of Pennsylvania, Philadelphia, PA

PS-8A-1-11 Molecular Specific Biocompatible Gold Nanorods for Non-invasive Imaging and Therapy
P. P. Joshi[1], Y-S. Chen[1], S. J. Yoon[1], S. Emelianov[1], and K. Sokolov[1,2]
[1]University of Texas at Austin, Austin, TX, [2]MD Anderson Cancer Center, Houston, TX

PS-8A-1-12 Effects of Temperature on the Fluorescence Quantum Yield of Nano-Encapsulated ICG
S. Gupta[1], K. Thenkondar[1], H. Mehta[1], B. Bahmani[1], V. Vullev[1], and B. Anvari[1]
[1]University of California, Riverside, CA

PS-8A-1-13 Quantum Dot-Fluorescent Protein Fluorescence Resonance Energy Transfer Probe for Chloride Sensing
D. Sotto[1], and G. Bao[1]
[1]Georgia Institute of Technology, Atlanta, GA

PS-8A-1-14 MRI Contrast Agents: Nanoparticle Contrast Agent Enhancement Through Control of Particle Geometry
S. A. Khan1, L. Sun1, and A. Capitano1
[1]University of Houston, Houston, TX

PS-8A-1-15 Enhanced Excitation of Multiple Fluorophores by Sub-10fs Laser Pulses for Two-photon Microscopy
C. Wang[1]
[1]Texas A&M University at College Station, College Station, TX

PS-8A-1-16 Longitudinal Imaging With Single Cell Resolution in Mice With a LED-based Confocal Microendoscope
S. F. Elahi[1], Z. Liu[1], K. Luker[1], G. Luker[1], and T. Wang[1]
[1]University of Michigan, Ann Arbor, MI

PS-8A-1-17 Immunoliposomes- Vehicles for Molecular Imaging of Inflamed Endothelium
D. Danila[1], M. Lackey[2], S. Casscells[1], and J. L. Conyers[1]
[1]UTHealth, Houston, TX, [2]Howrey LLP, Houston, TX

PS-8A-1-18 Sensitivity of Detection of Biological AFM for Gold-Labeled Liposomes at HCAEC Membranes
J. L. Conyers[1], A. Zaske[1], D. Danila[1], and E. B. Golunski[1]
[1]UTHealth, Houston, TX

Track: Cardiovascular Engineering – PS-8A-2

Cardiovascular Modeling

PS-8A-2-19 CANCELED

PS-8A-2-20 Lattice Kinetic Monte Carlo Simulations of Convectively-Driven Particle and Platelet Aggregation
M. H. Flamm[1], T. Sinno[1], and S. L. Diamond[1]
[1]University of Pennsylvania, Philadelphia, PA

PS-8A-2-21 Cardiac Cell Culture Model to Study Cardiomyocytes under Physiological Loads
M-D. T. Nguyen[1], R. Estrada[1], G. Giridharan[1], S. D. Prabhu[1], and P. Sethu[1]
[1]University of Louisville, Louisville, KY

PS-8A-2-22 Modeling Mechanical Heart Function
J. L. Palladino[1], and A. Noordergraaf[2]
[1]Trinity College, Hartford, CT, [2]University of Pennsylvania, Philadelphia, PA

PS-8A-2-23 Effects of Geometric Variations on the Buckling of Arteries
P. Datir[1], A. Northcutt[1], and H-C. Han[1]
[1]University of Texas at San Antonio, San Antonio, TX

PS-8A-2-24 Discrete Phase Modeling of Platelet Aggregation and Adhesion in the Left Coronary Artery
W. Yin[1], R. Hariharan[1], F. Rouf[1], S. Shanmugavelayudam[1], and D. A. Rubenstein[1]
[1]Oklahoma State University, Stillwater, OK

PS-8A-2-25 Computational Geometric Analysis of the Normal and Hypertensive Human Right Ventricle
J. Wu[1], J. C. Brigham[1], M. A. Simon[1], S. Tripathy[1], K. Kim[1], and M. Sacks[1]
[1]University of Pittsburgh, Pittsburgh, PA

PS-8A-2-26 Model Simulated Impacts of Elevated Cytosolic Na+ on Ca2+ Handling, Mitochondrial Energetics and Reactive Oxygen Species in Guinea Pig Myocytes
L. Zhou[1], A-C. Wei[1], T. Liu[1], S. Cortassa[1], R. Winslow[1], and B. O'Rourke[1]
[1]Johns Hopkins University, Baltimore, MD

PS-8A-2-27 Microfluidic Devices to Study the Effect of Atherogenic Flow Pattern on Cultured Endothelial Cells
R. Estrada[1], V. Parichehreh[1], M-D. Nguyen[1], and P. Sethu[1]
[1]University of Louisville, Louisville, KY

PS-8A-2-28 Calibration of Abdominal Aoritc Aneurism Models Using In Vivo Velocimetry Measurements
M. A. McElroy[1], G. Mihai[2], Y. Ding[2], S. Rajagopalan[2,3], O. P. Simonetti[2,3], and S. N. Ghadiali[1,2]
[1]The Ohio State University, Columbus, OH, [2]Davis Heart and Lung Research Institute, Columbus, OH, [3]Richard M. Ross Heart Hospital, Columbus, OH

PS-8A-2-29 Microstructurally Motivated Constitutive Modeling of the Developing Mouse Aorta
J. K. Cheng[1], J. E. Wagenseil[2], and R. P. Mecham[1]
[1]Washington University, St. Louis, MO, [2]Saint Louis University, St. Louis, MO

PS-8A-2-30 Characterization of Microcalcifications in Coronary Artery Disease
N. Maldonado Martinez[1], A. Kelly[1], S. Chakraborti[1], Y. Vengrenyuk[2], L. Cardoso[1], and S. Weinbaum[1]
[1]City College of New York, New York, NY, [2]New York University, New York, NY

PS-8A-2-31 Numerical Study of Fluid-Structure Interaction in a Developing Chick Heart
A. Falahatpisheh[1], H. Alavi[1], S. J. Stinson[1], L. Junor[1], R. L. Goodwin[1], and A. Kheradvar[1]
[1]University of South Carolina, Columbia, SC

PS-8A-2-32 Pumping During Fetal Cardiac Development: Peristaltic or Impedance?
J. Moraveji[1], S. Biechler[1], J. W. Weidner[1], R. L. Goodwin[1], L. Junor[1], and A. Kheradvar[1]
[1]University of South Carolina, Columbia, SC

PS-8A-2-33 Multiscale Modeling of Blood Rheology in a Developing Heart: When Granularity Matters
J. Moraveji[1], S. Biechler[1], J. W. Weidner[1], R. L. Goodwin[1], and A. Kheradvar[1]
[1]University of South Carolina, Columbia, SC

Track: Cardiovascular Engineering – PS-8A-3

Myocardial Mechanics

PS-8A-3-34 Infrared Spectroscopy to Quantify Collagen in Infarcted Myocardium after Targeted VEGF Treatment
R. Cheheltani[1], J. M. Rosano[1], N. E. D'Souza[1], B. Wang[1], N. Pleshko[1], and M. F. Kiani[1]
[1]Temple University, Philadelphia, PA

PS-8A-3-35 Molecular Electrophysiological Differences Between Genders in the Nonfailing Human Heart
C. M. Ambrosi[1], N. Moazami[2], J. M. Nerbonne[2], and I. R. Efimov[1]
[1]Washington University in St. Louis, St. Louis, MO, [2]Washington University School of Medicine, St. Louis, MO

PS-8A-3-36 Method for *Ex Vivo* Assessment of Functional Myocardial Mechanics
O. M. Benavides[1], and J. G. Jacot[1,2]
[1]Rice University, Houston, TX, [2]Texas Children's Hospital, Houston, TX

PS-8A-3-37 Comparison of Cardiac Wall Motion and Strain Patterns During Dobutamine Stress-Induced Ischemia
K. M. Parker[1], and J. W. Holmes[1]
[1]University of Virginia, Charlottesville, VA

PS-8A-3-38 Characterization of Dyssynchrony in Contraction Strain Pattern
C. M. Nazzal[1], J. C. Criscione[2], and L. Mulligan[3]
[1]Texas A&M University, College Station, TX, [2]Texas A&M University, College Station, TX, [3]Medtronic, Inc., Mounds View, MN

PS-8A-3-39 A Micromechanics Model for Myocardium-Vessel Interaction in Perfused Myocardium
Y. Liu[1], H. Chen[1], X. Zhao[1], and G. S. Kassab[1]
[1]Indiana University-Purdue University, Indianapolis, IN

POSTER SESSION **8A**

See page 182 for Poster floor plan

PS-8A-3-40 The Structural and Biomechanical Properties of Porcine Myocardial Extracellular Matrix

B. WANG[1], D. MCCOLLUM[1], M. E. TEDDER[2], D. T. SIMIONESCU[2], F. TO[1], A. L. CURRY[3], L. WILLIAMS[1], AND J. LIAO[1]

[1]Mississippi State University, Mississippi State, MS, [2]Clemson University, Clemson, SC, [3]University of Memphis, Memphis, TN

PS-8A-3-41 Cardiac Myocyte Response to Engineered Extracellular Matrix

V. LIN[1], A. CHOPRA[2], P. JAMNEY[3], AND J. KRESH[1]

[1]Drexel University College of Medicine, Philadelphia, PA, [2]Drexel University, Philadelphia, PA, [3]University of Pennsylvania, Philadelphia, PA

Track: Cardiovascular Engineering – PS-8A-4

Vascular Mechanosignal Transduction

PS-8A-4-42 Red Blood Cell Dynamics and ATP Release – Implications for the Vasculature

A. M. FORSYTH[1], P. D. OWRUTSKY[1], J. WAN[2], AND H. A. STONE[2]

[1]Harvard University, Cambridge, MA, [2]Princeton University, Princeton, NJ

PS-8A-4-43 Tyrosine Phosphorylation of Endothelial Cell–Cell Adhesion Proteins Induced by Shear Stress Gradient

N. SAKAMOTO[1], H. XIAOBO[1], AND M. SATO[1]

[1]Tohoku University, Sendai, Miyagi, Japan

PS-8A-4-44 Mitochondrial Network Morphology in Postischemic Vascular Endothelial Cells

R. J. GIEDT[1], M. PRAETORIUS-IBBA[1], A. MATZAVINOS[2], AND B. R. ALEVRIADOU[1]

[1]The Ohio State University, Columbus, OH, [2]Iowa State University, Ames, IA

PS-8A-4-45 Differential Endothelial Cell Response to Simultaneous Shear and Cytokine Stimulation

R. B. HUANG[1], AND O. ENIOLA-ADEFESO[2]

[1]University of Michigan, Ann Arbor, MI, [2]Unversity of Michigan, Ann Arbor, MI

PS-8A-4-46 Fluid Flow Modulates SMC Marker Gene Expression in 2-D and 3-D via HSPG-Mediated ERK1/2 Activation

Z-D. SHI[1], AND J. M. TARBELL[1]

[1]City Colllege and Graduate Center of City University of New York, New York, NY

PS-8A-4-47 High Glucose Attenuates Shear-induced Changes in Endothelial Hydraulic Conductivity

S. V. LOPEZ[1], AND J. M. TARBELL[1]

[1]The City College of New York -The Graduate Center of CUNY, New York, NY

PS-8A-4-48 Substrate Stretch-induced Actin Edge Ruffling Dynamics in Endothelial Cells

L. HUANG[1], AND B. P. HELMKE[1]

[1]University of Virginia, Charlottesville, VA

PS-8A-4-49 Biochemical and Biophysical Factors Regulate Inflammation Due to Systemic Infection

S. J. EVANI[1], N. MAREEDU[1], A. MURTHY[1], B. P. ARULANANDAM[1], AND A. K. RAMASUBRAMANIAN[1]

[1]University of Texas at San Antonio, San Antonio, TX

PS-8A-4-50 Smooth Muscle Cell Behavior in Non-uniform Stretch Environments

W. J. RICHARDSON[1], R. P. METZ[2], E. M. WILSON[2], AND J. E. MOORE JR.[1]

[1]Texas A&M University, College Station, TX, [2]Texas A&M Health Science Center, College Station, TX

PS-8A-4-51 Extracellular Matrix Control of Flow-Induced Structural Dynamics

R. E. EVANS[1], AND B. P. HELMKE[1]

[1]University of Virginia, Charlottesville, VA

PS-8A-4-52 Shear Stress Modulates RAGE Expression and Activation in Human Aortic Endothelial Cells

J. S. DEVERSE[1], AND A. G. PASSERINI[1]

[1]University of California, Davis, Davis, CA

Track: Cellular and Molecular Engineering – PS-8A-5

Molecular Engineering

PS-8A-5-53 Quantum Dot Barcodes Expedite Genetic Screening of Infectious Diseases

E. SYKES[1], S. GIRI[1], AND W. CHAN[1]

[1]University of Toronto, Toronto, ON, Canada

PS-8A-5-54 Cholesterol-dependent Phase Separation in Cell Derived Giant Plasma Membrane Vesicles

I. LEVENTAL[1], F. J. BYFIELD[2], T. BAUMGART[2], AND P. JANMEY[2]

[1]Max Planck Institute for Cell Biology and Genetics, Dresden, Germany, [2]University of Pennsylvania, Philadelphia, PA

PS-8A-5-55 Cooperative Effects in the Ordered Assembly of Collagen Layers on Mica

W. LEOW[1], AND W. HWANG[1]

[1]Texas A&M University, College Station, TX

PS-8A-5-56 Adeno-associated Virus (AAV) Engineering for Enhanced Specificity of Disease-Targeted Viral Gene Vectors

J. JUDD[1], P. NGUYEN[1], J. SILBERG[1], AND J. SUH[1]

[1]Rice University, Houston, TX

PS-8A-5-57 Real-time Detection of the TRAIL-DR4 Activation Using FRET in a DR4 Reporter Cell Line

Z. DERELI-KORKUT[1], H. GANDHOK[1], X. JIANG[2], AND S. WANG[1]

[1]City College of New York, New York, NY, [2]Memorial Sloan Kettering Cancer Center, New York, NY

PS-8A-5-58 Investigation of a New Method to Improve Dialysis Therapy Using Microencapsulated Biological Agents

R. G. DUQUE[1], AND M. MOBED-MIREMADI[2]

[1]San Jose State University, San Jose, CA, [2]San Jose State University, San Jose, CA

PS-8A-5-59 CNT-Oxidoreductase Enzyme Conjugates for Biosensors and Biofuel Cells

O. A. KARUNWI[1], AND A. GUISEPPI-ELIE[2]

[1]Clemson University, Anderson, SC, Afghanistan, [2]Clemson University, Clemson, SC

PS-8A-5-60 Molecular Biomechanics of the Kinesin Neck Linker Domain

S. SHASTRY[1], AND W. O. HANCOCK[1]

[1]Penn State University, University Park, PA

PS-8A-5-61 Load-dependent Transport of Sub-Cellular Commodities by Multiple Motor Proteins

D. K. JAMISON[1], J. W. DRIVER[1], A. R. ROGERS[1], P. E. CONSTANTINOU[1], AND M. R. DIEHL[1]

[1]Rice University, Houston, TX

PS-8A-5-62 Engineered Peptide Binding ScFv to Chaperone Membrane Protein Crystallization

J. C. PAI[1], AND J. A. MAYNARD[1]

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

PS-8A-5-63 What Governs the Interaction Between Warfarin and Cyclodextrins?

J. M. VASQUEZ[1], S. BAE[2], B. KIM[2], G. UPADHYAYULA[1], S. GUPTA[1], A. VU[1], A. HASHEMI[1], J. S. SCHULTZ[1], AND V. I. VULLEV[1]

[1]University of California, Riverside, Riverside, CA, [2]Kyung Hee University, Suwon, Seoul, Korea, Democratic People's Republic of

PS-8A-5-64 A Solvent Exchange Method forSsolubilizing and Functionalizing Nanoparticles for *In Vivo* Imaging and Drug Deliver Applications

S. TONG[1], S. HOU[1], AND G. BAO[1]

[1]Georgia Institute of Technology, Atlanta, GA

POSTER SESSION 8A

PS = Poster Session
OP = Oral Presentation

PS-8A-5-65 Exhaustive Sampling of Ribosome Binding Sites for Fast Translation by Ribosome Display
P. A. Barendt[1], and C. A. Sarkar[1]
[1]*University of Pennsylvania, Philadelphia, PA*

PS-8A-5-66 Programming Enzyme-free DNA Reaction Circuits for Ultra Low-cost Molecular Diagnosis
X. Chen[1], G. Eckhoff[1], and B. Li[1]
[1]*University of Texas at Austin, Austin, TX*

PS-8A-5-67 A Versatile Thermally-directed Cross-linking Platform for Facile Modification of Tissue Scaffolds
S. Y. Kwan[1], L. A. Ernst[1], S. K. Andreko[1], B. T. Ballou[1], and P. G. Campbell[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

PS-8A-5-68 Quantifying the Tension-lipid Packing Relationship Using Fluorescence Lifetime of DiI
H. Muddana[1], T. Tabouillot[1], H. Chiang[1], and P. J. Butler[1]
[1]*Penn State University, University Park, PA*

PS-8A-5-69 Design and Implementation of a FRET-based High-Throughput Screening Technology in Sumoylation
R. L. Mello[1], R. Lauhead[1], Y. Song[1], V. Madahar[1], Y. Liu[1], and J. Liao[1]
[1]*University of California Riverside, Riverside, CA*

PS-8A-5-70 Coarse-Grained Molecular Dynamics of Myosin II and Structural Dynamics of Nucleotide Pocket
E. A. Khatiblou[1], S. Kreuzer[1], C-C. Liu[1], J. marquez[1], J. Zhou[1], and T. J. Moon[1]
[1]*UT-Austin, Austin, TX*

PS-8A-5-71 Mapping Foldome Changes with Cysteine Labeling Kinetics Measured by Mass Spectrometry
B. Chase[1], D. Pantano[2], J. Pajerowski[3], H-Y. Tang[4], D. Speicher[4], and D. Discher[2]
[1]*University of Pennsylvania, Philadelphia, PA,* [2]*University of Pennsylvania, Philadelphia, PA,* [3]*Merck, Whitehouse Station, NJ,* [4]*Wistar Institute, Philadelphia, PA*

Track: Devices: Nano to Micro – PS-8A-6

Nano to Micro: Fluidic Technologies

PS-8A-6-72 Benchtop Fabrication of Microfluidic Devices by Soft-Lithographic Replication of Patterned Tape
A. B. Shrirao[1], and R. Perez-Castillejos[1]
[1]*NJIT, Newark, NJ*

PS-8A-6-73 Nanofluidic Flow Proteometry for the Determination of Biomarker Concentration
J. Kameoka[1]
[1]*Texas A&M University, College Station, TX*

PS-8A-6-74 Computational and Experimental Techniques to Optimize a Micromixer for an Antibody-based Sensor
K. L. Hamlington[1], H. Fujioka[1], D. A. Blake[1], R. Cortez[1], and D. P. Gaver[1]
[1]*Tulane University, New Orleans, LA*

PS-8A-6-75 Push Valve for Microfluidic Devices
M-E. Brett[1], S. Zhao[1], J. L. Stoia[1], G. Mittal[1], and D. T. Eddington[1]
[1]*University of Illinois at Chicago, Chicago, IL*

PS-8A-6-76 The Effects of RLIP76 on the Migration of CaKi-2 and HMC Cells in Response to HNE and HNESG
S. Rao[1], U. Tata[1], P. Singhal[2], S. Singhal[3], S. Awasthi[4], K. T. Nguyen[1], and J-C. Chiao[5]
[1]*The Univ. of Texas at Arlington, Arlington, TX,* [2]*Arlington High School, Arlington, TX,* [3]*UNT Health Science Center, Fort Worth, TX,* [4]*UNT Health Science Center, Fort Worth, TX,* [5]*The Univ. of Texas at Arlington, Arlington, TX*

PS-8A-6-77 Migration of PC-3 Cells Under the Influence of Various EGF Concentrations
S. Salodkar[1], U. Tata[1], S. Rao[1], K. T. Nguyen[1], and J-C. Chiao[1]
[1]*The Univ. of Texas at Arlington, Arlington, TX*

PS-8A-6-78 Microfluidics Made Easy
V. Nuñez[1], B. Millare[2], S. Shin[1], K. Chau[1], A. Lin[1], and V. I. Vullev[1]
[1]*University of California, Riverside, Riverside, CA,* [2]*Johns Hopkins University, Baltimore, MD*

PS-8A-6-79 Optimizing Microfluidic Devices for Immobilization of C. elegans for High-Throughput Screens
I. D. Caceres[1], and H. Lu[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS-8A-6-80 Lateral Cavity Acoustic Transducers (LCATs) for Cell and Particle Sorting Applications
M. V. Patel[1], A. R. Tovar[1], R. Lin[1], S-Y. Teh[1], and A. P. Lee[1]
[1]*University of California at Irvine, Irvine, CA*

PS-8A-6-81 A Microfluidic Device for Visualization of *E. coli* Transport in a 3-D Tumor Model
N. Elliott[1], L. You[1], and F. Yuan[1]
[1]*Duke University, Durham, NC*

PS-8A-6-82 Exploiting Osmosis for Size-based Separation of Blood Cells into Subpopulations using Microfluidics
V. Parichehreh[1], K. K. Bhavanam[1], and P. Sethu[1]
[1]*University of Louisville, Louisville, KY*

PS-8A-6-83 A Novel, High-Throughput, Single-Cell Deformability Measurement Technique For Diagnostics And Therapeutics
H. T. Tse[1], D. R. Gossett[1], S. Lee[1], A. T. Clark[1], and D. Di Carlo[1]
[1]*University of California, Los Angeles, Los Angeles, CA*

PS-8A-6-84 What Determines the Quality of Adhesion between Poly(Dimethylsiloxane) and Glass Surfaces?
K. Chau[1], B. Millare[2], A. P. Lin[1], V. Nuñez[1], and V. I. Vullev[1]
[1]*University of California, Riverside, Riverside, CA,* [2]*Johns Hopkins University, Baltimore, MD*

PS-8A-6-85 A Switchable Microfluidic Serial Dilution Circuit for Constant Flow Rate Tissue Perfusion
A. K. Au[1], H. A. Arnson[2], C. G. Sip[1], T. E. Holy[2], and A. Folch[1]
[1]*University of Washington, Seattle, WA,* [2]*Washington University in St. Louis, St. Louis, MO*

PS-8A-6-86 Nanoscale Diffusivity Measurement Device
J. S. Gill[1], A. Grattoni[1], A. Ziemys[1], and M. Ferrari[1,2]
[1]*University of Texas at Houston Medical School, Houston, TX,* [2]*University of Texas M.D. Anderson Cancer Center, Houston, TX*

PS-8A-6-87 Increased Viscosity for Decreased Settling in Microfluidic Circulating Tumor Cell Diagnostics
C. Launiere[1], S. Hong[1], and D. Eddington[1]
[1]*University of Illinois at Chicago, Chicago, IL*

PS-8A-6-88 Automated Dielectrophoretic Characterization of Mycobacteria
C. Huang[1], B. G. Hawkins[1], S. Arasanipalai[1], and B. J. Kirby[1]
[1]*Cornell University, Ithaca, NY*

PS-8A-6-89 Cell Dosing on Subsecond Time Scales Using a Laminar-Flow Device
M. M. Robinson[1], S. Moorjani[1], T. Hoppe[1], and J. B. Shear[1]
[1]*University of Texas at Austin, Austin, TX*

PS-8A-6-90 Measurement and Regulation of On-Chip Oxygen Partial Pressure
P. C. Thomas[1,2], S. R. Raghavan[2], and S. P. Forry[1]
[1]*National Institute of Standard and Technology, Gaithersburg, MD,* [2]*University of Maryland, College Park, MD*

PS-8A-6-91 Characterization of Microfluidic Calorimeter for Measuring Small Dynamic Temperature Changes
V. L. Kopparthy[1], S. M. Tangutooru[1], R. Gumma[1], G. G. Nestorova[1], and E. J. Guilbeau[1]
[1]*Louisiana Tech University, Ruston, LA*

PS-8A-6-92 Fluid Flow Characterization of Micro- and Nanochanneled Silicon Membranes
E. Zabre[1], J. Gill[1], A. Grattoni[1], A. Ziemys[1], and M. Ferrari[1,2]
[1]*University of Texas Health Science Center at Houston, Houston, TX,* [2]*University of Texas MD Anderson Cancer Center, Houston, TX*

PS-8A-6-93 Towards an Order-of-magnitude Increase in Throughput of Small Artery Investigation
S. Pinto[1], S. Yasotharan[1], J. Voigtländer-Bolz[2], S-S. Bolz[1], and A. Günther[1]
[1]*University of Toronto, Toronto, Ontario, Canada,* [2]*St. Michael's Hospital, Toronto, Ontario, Canada*

PS-8A-6-94 A Novel Microfluidic Assay for Study of Chemotaxis Response
M. A. Traore[1], and B. Behkam[1]
[1]*Virginia Tech, Blacksburg, VA*

POSTER SESSION **8A**

PS-8A-6-95 Droplet Microfluidic System for Biodetection and Cell Growth Studies Using a Hydrodynamic Sensor
I. Sinn[1], P. Kinnunen[1], B. H. McNaughton[1], M. A. Burns[1], and R. Kopelman[1]
[1]*University of Michigan, Ann Arbor, MI*

PS-8A-6-96 A Miniaturized Device for Non-Destructive Detection of Radiation Damaged Cells
B. Prabhakarpandian[1], K. Bhatt[1], M. Achary[2], M. F. Kiani[2], and K. Pant[1]
[1]*CFD Research Corporation, Huntsville, AL,* [2]*Temple University, Philadelphia, PA*

PS-8A-6-97 Micro-Sandwich in Microfluidics: 3D Biopolymer Membranes for Cell Assembly
X. Luo[1], H-C. Wu[1], C-Y. Tsao[1], Y. Cheng[1], R. Ghodssi[1], G. F. Payne[1], G. Rubloff[1], and W. E. Bentley[1]
[1]*University of Maryland, College Park, MD*

PS-8A-6-98 Mixing Enhancement in Microfluidic Devices Utilizing Contactless Dielectrophoresis (cDEP)
A. Salmanzadeh-Dozdabi[1], H. Shafiee[1], R. V. Davalos[1], and M. A. Stremler[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

PS-8A-6-99 3-D Numerical Simulation of Lateral Migration of Cells and Deformable Particles in Shear Flow
H. Lan[1], and D. B. Khismatullin[1]
[1]*Tulane University, New Orleans, LA*

PS-8A-6-100 A Planar Peristaltic Pump for Microfluidics
P. Gould[1], L. Hoang[1], K. Seale[1], S. Darby[1], M. Moore[2], and J. Wikswo[1]
[1]*Vanderbilt University, Nashville, TN,* [2]*Sewanee: The University of the South, Sewanee, TN*

PS-8A-6-101 Enlarging from Microscale: A Milli-scale Device for Blood and Plasma Fractionation
V. Bhal[1], and E. C. Eckstein[1]
[1]*University of Memphis, Memphis, TN*

PS-8A-6-102 The Influence of Microfluidic Channel Height on Leukocyte Adhesion and Rolling Under Flow
P. W. Coghill[1], E. A. Shimp[1], E. K. Kesselhuth[1], and D. W. Schmidtke[1]
[1]*University of Oklahoma, Norman, OK*

PS-8A-6-103 Integrated Nanofluidic Channel Device for Biomimic Applications
Y-T. T. Yeh[1], and S. Zheng[1]
[1]*Pennsylvania State University, University Park, PA*

PS-8A-6-104 Investigation of Multivalent Ion Solution Flow Reversal under Travelling Wave Electroosmosis
Z. Wang[1], X. Liu[2], L. Brousseau[2], and M. Ferrari[2]
[1]*the University of Texas at Austin, Austin, TX,* [2]*University of Texas Health Science Center at Houston, Houston, TX*

PS-8A-6-105 High-Throughput Sheathless Flow Cytometry Using Inertial Microfluidics
A. S. Bhagat[1], S. S. Kuntaegowdanahalli[1], and I. Papautsky[1]
[1]*University of Cincinnati, Cincinnati, OH*

PS-8A-6-106 Thermoelectric Sensing for Microfluidic DNA Melting Analysis
N. Crews[1], and A. Ganveer[1]
[1]*Louisianan Tech, Ruston, LA*

PS-8A-6-107 Modeling of a Microfluidic Magnetic Particle Fractionation Device
T. O. Tasci[1], and B. Gale[1]
[1]*University of Utah, Salt Lake City, UT*

Track: Drug Delivery Systems – PS-8A-7

Novel Biomaterials and Scaffolds

PS-8A-7-108 Structure and Application of DNA-Surfactant Films for Stem Cell Transfection
S. Gajria[1], T. Neumann[2], J. Weinstein[2], D. Schaffer[2], and M. Tirrell[2]
[1]*UC Santa Barbara, Berkeley, CA,* [2]*UC Berkeley, Berkeley, CA*

PS-8A-7-109 Independent Control of Elasticity and Drug Release Rate of an Injectable Poly(ethyleyene glycol) Hydrogel for Stem Cell Mobilization
Y. Liang[1], T. W. Jensen[1], E. J. Roy[1], R. J. DeVolder[1], L. A. Rund[1], K. B. Textor[1], L. B. Schook[1], Y. Tong[2], and H. Kong[1]
[1]*University of Illinois Urbana-Champaign, Urbana, IL,* [2]*National University of Singapore, Singapore, Singapore*

PS-8A-7-110 A Novel Oral Drug Delivery Carrier: The Effect of Cellulose Nanocrystals on Caco-2 Cell Monolayers
K. R. Colacino[1], H. Wang[2], S. Dong[2], M. Roman[2], and Y. W. Lee[1]
[1]*Virginia Tech-Wake Forest University, Blacksburg, VA,* [2]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

PS-8A-7-111 Polymeric Platform for Oral Drug Delivery of Chemotherapeutics
C. A. Schoener[1]
[1]*University of Texas at Austin, Austin, TX*

PS-8A-7-112 Giant Amphiphiles Toward Monodispersed, Stable Nanoparticles for Drug Delivery and Imaging
H. Dong[1], J. Y. Shu[1], S. Liu[1], and T. Xu[1]
[1]*University of California at Berkeley, Berkeley, CA*

PS-8A-7-113 Modification of Porous Silicon Particles for Enhanced Protein Stability
E. U. De Rosa[1], D. Fan[1], C. Chiappini[2], X. Liu[1,3], M. Ferrari[1,4], and E. Tasciotti[1]
[1]*University of Texas HSCH, Houston, TX,* [2]*University of Texas Austin, Austin, tx,* [3]*University of Texas Austin, Austin, TX,* [4]*Rice University, Houston, TX*

PS-8A-7-114 Use of Phosphonic Acid Self-assembled Monolayers for Attachment of Vascular Endothelial Growth Factor to Hydroxyapatite Surfaces
K. D. Argen[1], G. Mani[1], N. Torres[1], and J. L. Ong[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

PS-8A-7-115 Novel IR820-PEG-Diamine Nanoparticles for Combined Imaging and Therapy: *In Vitro* Studies
A. Fernandez-Fernandez[1], R. Manchanda[1], T. Lei[1], D. A. Carvajal[1], and A. J. McGoron[1]
[1]*Florida International University, Miami, FL*

PS = Poster Session
OP = Oral Presentation

PS-8A-7-116 Examination of Folate-Targeted Liposomes With Encapsulated Poly(2-propylacrylic acid) as a pH-responsive Nanoplatform for Cytosolic Drug Delivery
Z. CHENG[1]
[1]*University of Pennsylvania, Philadelphia, PA*

PS-8A-7-117 Chitosan Microparticles for Drug Delivery Applications
L. RODRIGUEZ[1], A. NADARAJAH[1], AND N. CHIAIA[1]
[1]*The University of Toledo, Toledo, OH*

PS-8A-7-118 Mesoporous Silicon Microparticles for the Sustained Delivery of Antibiotics
I. YAZDI[1], C. CHIAPPINI[2], B. WEINER[3], E. TASCIOTTI[1], AND M. FERRARI[1,2]
[1]*The University of Texas Health Science Center at Houston, Houston, TX,* [2]*The University of Texas at Austin, Austin, TX,* [3]*The Methodist Hospital Research Institute, Houston, TX*

PS-8A-7-119 Ultrasonic Nebulization as a Tool for Creating Multilayered, Multicomponent Nanoassemblies
D. MILLS[1], Y. LVOV[1], K. MCNAMARA[1], AND M. THANGARAJ[1]
[1]*Louisiana Tech University, Ruston, LA*

PS-8A-7-120 A Novel Dual-agent Loaded PLGA Nanoparticle for the Simultaneous Delivery of Chemotherapy and Hyperthermia
Y. TANG[1], T. LEI[1], R. MANCHANDA[1], A. NAGESETTI[1], A. FERNANDEZ-FERNANDEZ[1], AND A. J. MCGORON[1]
[1]*Florida International University, Miami, FL*

PS-8A-7-121 Synthesis of a Thermally Responsive Curcumin Conjugate for Treating Intervertebral Disc Pathologies
S. M. SINCLAIR[1], D. QU[1], X. CHEN[1], E. J. TOONE[1], A. CHILKOTI[1], AND L. A. SETTON[1]
[1]*Duke University, Durham, NC*

PS-8A-7-122 Model Analysis of Implant Formation and Drug Release from *In Situ* Forming Implants
R. B. PATEL[1], G. M. SAIDEL[1], AND A. A. EXNER[1]
[1]*Case Western Reserve University, Cleveland, OH*

PS-8A-7-123 Drug Delivery Potential of Self-Assembled Monolayers on Electropolished L605 Cobalt Chromium Alloy
C. R. KAUFMANN[1,2], G. MANI[2], AND C. M. AGRAWAL[2]
[1]*University of Texas Health Science Center at San Antonio, San Antonio, TX,* [2]*University of Texas at San Antonio, San Antonio, TX*

PS-8A-7-124 Effect of the Assembling Processes on the Formation of Lipid-protein Complexes
W. HUANG[1], AND C. ZHANG[1]
[1]*Virginia Tech, Blacksburg, VA*

PS-8A-7-125 Dual Functional Thin Film Coating: Microbidal With Controlled Release of A Therapeutic Agent
S. Y. WONG[1], J. S. MOSKOWITZ[1], R. C. SMITH[1], J. VESELINOVIC[1], R. A. ROSARIO[1], K. TIMACHOVA[1], M. R. BLAISSE[1], A. M. KLIBANOV[1], AND P. T. HAMMOND[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA*

PS-8A-7-126 Nano-micro Carrier Systems for Sustained Pulmonary Drug Delivery
I. M. EL-SHERBINY[1], AND H. D. SMYTH[2]
[1]*University of Texas, Austin, TX,* [2]*University of Texas at Austin, Austin, TX*

PS-8A-7-127 The Effect of Hydrophobic Chain Length on the Toxicity of Block Copolypeptide Vesicles
U-J. CHOE[1], A. R. RODRIGUEZ[1], J-K. Y. TAN[1], W. LOU[1], T. J. DEMING[1], AND D. T. KAMEI[1]
[1]*UCLA, Los Angeles, CA*

PS-8A-7-128 Dexamethasone Modified Self Assembled Monolayers on Smooth and Rough CoCr: An In Vitro Study for Drug Delivery
W. FAN[1], G. MANI[1], J. LUO[2], D. MARTON[1,2], E. A. SPRAGUE[1,2], M. D. FELDMAN[1,2], AND M. AGRAWAL[1]
[1]*University of Texas at San Antonio, San Antonio, TX,* [2]*University of Texas Health Science Center at San Antonio, San Antonio, TX*

PS-8A-7-129 Boronic Acid Based Microparticulate Insulin Delivery System
I. DASGUPTA[1], M. SRIVASTAVA[1], E. TANIFUM[1], AND A. ANNAPRAGADA[1]
[1]*The University of Texas Health Science Centre at Houston, Houston, TX*

PS-8A-7-130 Multistage Delivery of PI3K/mTOR Inhibitor-containing Nanoparticles for Breast Cancer Treatment
E. BLANCO[1], J. O. MARTINEZ[1], T. SANGAI[2], F. MERIC-BERNSTAM[2], AND M. FERRARI[1]
[1]*University of Texas Health Science Center at Houston, Houston, TX,* [2]*University of Texas MD Anderson Cancer Center, Houston, TX*

PS-8A-7-131 Nanoporous Silicon Particles With Tailored Features for Controlled Biodegradation
J. O. MARTINEZ[1], C. CHIAPPINI[2], X. LIU[1], M. FERRARI[1,3], AND E. TASCIOTTI[1]
[1]*The University of Texas Health Science Center, Houston, TX,* [2]*The University of Texas - Austin, Austin, TX,* [3]*The University of Texas MD Anderson Cancer Center, Houston, TX*

PS-8A-7-132 Development and Characterization of Fast-acting Microspheres for Thrombolytic Therapy
H. X. NGUYEN[1], AND E. A. O'REAR[1]
[1]*University of Oklahoma, Norman, OK*

PS-8A-7-133 Pertussis Toxin Stability within a Nanofibrous Whooping Cough Vaccine Patch
A. SHTEYMAN[1], K. SAWICKA[2], AND S. SIMON[2]
[1]*Stony Brook University, Brooklyn, NY,* [2]*Stony Brook University, Stony Brook, NY*

PS-8A-7-134 Calcium Carbonate Coprecipitation for Ibl Nanocapsule Drug Delivery System
M-M. KELLEY[1], S. M. SHIELS[1], AND M. R. APPLEFORD[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

PS-8A-7-135 Creation of Multifunctional Nanoparticle Systems for Cancer Therapy using Layer-by-layer Assembly
Z. POON[1], AND P. T. HAMMOND[1]
[1]*MIT, Cambridge, MA*

POSTER SESSION **8A**

Track: Neural Engineering – PS-8A-8

Motor Neural Prosthetics

PS-8A-8-136 Smart Floating Light Activated Micro-Electrical Stimulators with Independent Channel Selection
D. S. FREEDMAN[1], P. S. SPUHLER[1], E. CEVIK[1], M. SAHIN[2], AND M. S. UNLU[1]
[1]*Boston University, Boston, MA,* [2]*New Jersey Institute of Technology, Newark, NJ*

PS-8A-8-137 A 64-Site Three-Dimensional Folded Electrode Array Using Planar Fabrication
SR. M-E. MERRIAM[1], O. SRIVANNAVIT[1], AND K. D. WISE[1]
[1]*University of Michigan, Ann Arbor, MI*

PS-8A-8-138 A Biodegradable Regenerative Peripheral Neural Interface
D. LEWITUS[1], J. R. VOGELSTEIN[2], Z. GEHUA[3], C. YOUNGSEOK[3], J. KOHN[1], S. HARSHBARGER[2], AND X. JIA[3]
[1]*Rutgers University, Piscataway, NJ,* [2]*The Johns Hopkins University Applied Physics Laboratory, Laurel, MD,* [3]*Johns Hopkins University School of Medicine, Baltimore, MD*

PS-8A-8-139 Wavelength Selective Floating Light Activated Micro-Electrical Neurostimulators (FLAMES)
E. CEVIK[1], D. S. FREEDMAN[1], P. S. SPUHLER[1], M. SAHIN[2], AND M. S. UNLU[1]
[1]*Boston University, Boston, MA,* [2]*New Jersey Institute of Technology, Newark, NJ*

PS-8A-8-140 EMG-Based Neural Network Control of Prosthetic Limbs
C. PULLIAM[1], AND R. KIRSCH[1]
[1]*Case Western Reserve University, Cleveland, OH*

PS-8A-8-141 Development of an Osseo-Magnetic Link for Intuitive Rotational Control of Upper Limb Prostheses
E. J. ROUSE[1], D. C. NAHLIK[1], M. A. PESHKIN[2], AND T. A. KUIKEN[1,3]
[1]*Northwestern University, Chicago, IL,* [2]*Northwestern University, Evanston, IL,* [3]*Rehabilitation Institute of Chicago, Chicago, IL*

PS-8A-8-142 Data Fusion for Lower Limb Prosthesis Locomotion Mode Detection

E. J. Rouse[1], A. J. Young[1], C. Shirota[1,2], C. J. Griffith[1], and L. J. Hargrove[1,3]

[1]Northwestern University, Chicago, IL, [2]Ministry of Education of Brazil, Brasília, DF, Brazil, [3]Rehabilitation Institute of Chicago, Chicago, IL

PS-8A-8-143 An Impulse-Based Virtual Prosthesis (IVP) for Neural-Machine Control Development

N. Bunderson[1], and T. Kuiken[1]

[1]Rehabilitation Institute of Chicago, Chicago, IL

Track: Neural Engineering – PS-8A-9

Neural Control of Movement

PS-8A-9-144 The Effects of Electrode Misalignment on Myoelectric Pattern Recognition

A. J. Young[1], and L. Hargrove[2,3]

[1]Northwestern University, Evanston, IL, [2]Northwestern University, Chicago, IL, [3]Rehabilitation Institute of Chicago, Chicago, IL

PS-8A-9-145 The Effect of Increased Inertia on Standing Balance and Balance Recovery

K. E. Costello[1], S. L. Matrangola[1], and M. L. Madigan[2]

[1]Virginia Tech-Wake Forest, Blacksburg, VA, [2]Virginia Tech, Blacksburg, VA

PS-8A-9-146 An EMG Based Continuous Adaptive Controller for Upper Extremity Neuroprostheses

M. Iorio[1], and R. Kirsch[1]

[1]Case Western Reserve University, Cleveland, OH

PS-8A-9-147 Human Postural Control System Responses When Perturbed With Frequencies Near That of Normal Sway

V. Bhatkar[1]

[1]Clarkson University, Potsdam, NY

PS-8A-9-148 Empirical Mode Decomposition/ Hilbert Transform Analysis of Induced Postural Oscillations

R. B. Pilkar[1], E. M. Bollt[1], and C. J. Robinson[1,2]

[1]Clarkson University, Potsdam, NY, [2]Syracuse VA Medical Center, Syracuse, NY

PS-8A-9-149 Dimensionality Reduction in Primate Motor Cortex During Dexterous Grasps

V. Aggarwal[1], M. Mollazadeh[1], A. Davidson[2], A. Cheng[1], M. H. Schieber[2], and N. Thakor[1]

[1]Johns Hopkins University, Baltimore, MD, [2]University of Rochester, Rochester, NY

Track: Neural Engineering – PS-8A-10

Neural Electrode Tissue Interface

PS-8A-10-150 2-D and 3-D Lattice Probes for Mitigating Chronic Reaction in Brain Tissue

Sr. M-E. Merriam[1], J. Skousen[2], O. Srivannavit[1], P. A. Tresco[2], and K. D. Wise[1]

[1]University of Michigan, Ann Arbor, MI, [2]University of Utah, Salt Lake City, UT

PS-8A-10-151 Real-Time Imaging of Intracortical Inflammation at the Device-Tissue Interface

B. Gui[1], J. R. Capadona[1,2], and J. P. Basilion[1,3]

[1]Case Western Reserve University, Cleveland, OH, [2]Cleveland Veteran Affairs Medical Center, Cleveland, OH, [3]National Foundation for Cancer Research, Cleveland, OH

PS-8A-10-152 Novel Degradable Polymer Carrier for Cortical Neural Probes

D. Lewitus[1], K. Smith[2], W. Shain[2], and J. Kohn[1]

[1]Rutgers University, Piscataway, NJ, [2]Wadsworth Center, Albany, NY

PS-8A-10-153 CNT-Modified Electrode Sites for *In Vitro* and *In Vivo* Silicon Probe Studies

Sr. M-E. Merriam[1], O. Srivannavit[1], M. J. Roberts[1], Y. Zhang[1], N. K. Dhingra[1], A. J. Hart[1], and K. D. Wise[1]

[1]University of Michigan, Ann Arbor, MI

PS-8A-10-154 Targeted Electrical Stimulation for Excitation of Selective Neuronal Populations

M. L. Kuykendal[1], G. S. Guvanasen[1], M. A. Grover[1], S. M. Potter[1], and S. P. DeWeerth[1]

[1]Georgia Institute of Technology, Atlanta, GA

PS-8A-10-155 Mechanical Properties of Brain Structures; Implications for Compliant Electrodes

B. Morrison[1], and B. S. Elkin[1]

[1]Columbia University, New York, NY

PS-8A-10-156 Assessment of Tissue Response in Push Pull Perfusion for Neurochemical/Electrophysiological Sensing

D. E. Cepeda[1], L. H. Hains[2], K. L. Smith[2], W. Shain[2], and R. T. Kennedy[1]

[1]University of Michigan, Ann Arbor, MI, [2]Wadsworth Center, Albany, NY

PS-8A-10-157 Macrostimulation through the Microelectrode Guide Cannula During DBS Implantation

J. Rakkar[1], K. Mewes[2], C. D. Esper[2], M. R. DeLong[2], and R. E. Gross[2]

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

PS-8A-10-158 Characterization of Tissue at Intracortical Microelectrode Interfaces Using *In Vitro*, *In Situ* and *In Vivo* Imaging Strategies.

A. J. Woolley[1], H. Desai[1], M. A. Steckbeck[1], N. Onunkwo[1], N. Patel[1], S. Sommakia[1], and K. J. Otto[1]

[1]Purdue University, West Lafayette, IN

Track: New Frontiers in Bioengineering – PS-8A-11

Immunobioengineering

PS-8A-11-159 Effects of Fc Density on Phagocytosis of Functionalized Microparticles for Use in Immunotherapies

P. M. Pacheco[1], N. O. Enemchukwu[1], T. A. Sulchek[1], D. White[2], and A. J. Garcia[1]

[1]Georgia Institute of Technology, Atlanta, GA, [2]Centers for Disease Control and Prevention, Atlanta, GA

PS-8A-11-160 Enhancing Transfection Efficiency of Lipopolyplexes via a "Soft-Core" Approach

K. Phua[1], C. Grigsby[1], and K. Leong[1]

[1]Duke University, Durham, NC

PS-8A-11-161 Design Algorithm for making Non-Immunogenic Proteins

S. C. Lee[1]

[1]The Ohio State University, Columbus, OH

PS-8A-11-162 Antibody Responses to Nanodevices and a Design Algorithm for Their Mitigation

S. C. Lee[1]

[1]The Ohio State University, Columbus, OH

PS-8A-11-163 Clustering of Stimuli on Single-Walled Carbon Nanotube Bundles Enhances Cellular Activation

T. R. Fadel[1], M. Look[2], G. Haller[2], L. Pfefferle[2], and T. Fahmy[2]

[1]Yale Univ, New Havem, CT, [2]Yale University, New Haven, CT

PS-8A-11-164 High-throughput Particle Production & Antigen Presenting Cell Arrays for Particle Vaccine Optimization

A. P. Acharya[1], N. Dolgova[1], J. S. Lewis[1], T. Zaveri[1], M. R. Carstens[1], C-Q. Xia[2], M. J. Clare-Salzler[2], and B. G. Keselowksy[1]

[1]Pruitt Family Department of Biomedical Engineering, University of Florida, Gainesville, FL, [2]Department of Pathology, University of Florida, Gainesville, FL

POSTER SESSION 8A

PS = Poster Session
OP = Oral Presentation

PS-8A-11-165 Design of Potent Complement Inhibitors of the Compstatin Family

D. Morikis[1], A. Lopez De Victoria[1], R. Gorham[1], M. L. Bellows[2], P. Tamamis[3], G. Archontis[3], D. D. Lo[1], and C. A. Floudas[2]

[1]University of California, Riverside, Riverside, CA, [2]Princeton University, Princeton, NJ, [3]University of Cyprus, Nicosia, Cyprus

PS-8A-11-166 Control of Inflammation Using Spatially Immobilized Cytokines

S. Y. Kwan[1], S. K. Andreko[1], L. L. Schultz[1], L. E. Weiss[1], B. T. Ballou[1], X. X. Zheng[2], and P. G. Campbell[1]

[1]Carnegie Mellon University, Pittsburgh, PA, [2]University of Pittsburgh Medical Center, Pittsburgh, PA

PS-8A-11-167 Targeted, Immuno-suppressive Microparticles Modify Dendritic Cell Behavior and Induce Foxp3+ Tregs.

J. Lewis[1], N. Dolgova[1], C. Xia[1], M. Clare-Salzler[1], and B. Keselowsky[1]

[1]University of Florida, Gainesville, FL

PS-8A-11-168 Relationship Between Antigen Binding Affinity and Neutralization Potency of Antibodies Against SARS-COV Strains

M. Rani[1], R. Baric[2], B. Iverson[1], and G. Georgiou[1]

[1]UT Austin, Austin, TX, [2]UNC, Chapel hill, NC

PS-8A-11-169 Distinct Mechanics of Neutrophil Phagocytosis of Fungal Particles and Antibody-coated Targets

C-Y. Lee[1], M. Herant[2], S. M. Johnson[1], D. Pappagianis[1], and V. Heinrich[1]

[1]University of California, Davis, CA, [2]Boston University, Boston, MA

PS-8A-11-170 Inducing Immune Tolerance Using a Material to Program Dendritic Cells

C. Verbeke[1], and D. Mooney[1,2]

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Track: Orthopedic and Rehabilitation Engineering – PS-8A-12

Rehabilitation Engineering

PS-8A-12-171 Evaluation of an Optimized Control Strategy for a Low-Cost Prosthetic Hand

C. F. Pasluosta[1], and A. W. Chiu[1]

[1]Louisiana Tech University, Ruston, LA

PS-8A-12-172 Closed Loop Non-Invasive Human-Robot Interaction: Temperature Sensitive Bionic Finger

B. Teplitzky[1], V. J. Santos[1], and S. Helms Tillery[1]

[1]Arizona State University, Tempe, AZ

PS-8A-12-173 Quantification of Maximum Neck Range of Motion in Assessment of Patient Peripheral Vision

B. L. Roach[1], J. McKee[1], R. R. Goodenough[1], J. O. Brooks[1], and J. D. Desjardins[1]

[1]Clemson University, Clemson, SC

PS-8A-12-174 The Design and Evaluation of a Three-Variable Vibrotactile Feedback System for a Myoelectric Arm

E. D. Sellers[1], and A. W. Chiu[1]

[1]Louisiana Tech University, Ruston, LA

PS-8A-12-175 The Effects of Noise and Inertia Distribution During a Planar Reaching Task

H. P. Nguyen[1], and J. Dingwell[1]

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

PS-8A-12-176 A Dynamic Walking Model Predicts how Neuromuscular Noise Affects Movement Variability and Fall Risk

J. B. Dingwell[1], and P. E. Roos[2]

[1]Universtiy of Texas, Austin, TX, [2]University of Texas, Austin, TX

PS-8A-12-177 The Design of Cost Efficient Prosthetic Gripper Spring Powered Rotary (SPR) Prosthetics

K. Seyedmadani[1], V. B. Pizziconi[2], J. Muthuswamy[2], and S. I. Helms Tillery [2]

[1]Arizona State University, Paradise Valley, AZ, [2]Arizona State University, Tempe, AZ

PS-8A-12-178 Analysis of Amputee Gait Using Virtual Reality Rehabilitation Techniques

M. S. DAngelo[1], S. Kotowski[2], D. Reynolds[1], and S. Narayanan[1]

[1]Wright State University, Dayton, OH, [2]University of Cincinnati, Cincinnati, OH

Track: Orthopedic and Rehabilitation Engineering – PS-8A-13

Skeletal Biomechanics

PS-8A-13-179 Running Stresses in Humans and Ostriches: Reciprocal Insights Into High-performance Bipedality

E. Snively[1], J. Cotton[1], M. Gilbert[2], and R. Sissons[3]

[1]Ohio University, Athens, OH, [2]University of Saskatchewan, Saskatoon, SK, Canada, [3]University of Alberta, Edmonton, AB, Canada

PS-8A-13-180 Dynamic Properties of Soft Tissues in Human Ear at Auditory Frequencies

X. Zhang[1], D. Nakmali[1], and R. Z. Gan[1]

[1]University of Oklahoma, Norman, OK

PS-8A-13-181 High-Speed 3D Motion Analysis System for Quantifying Human Subject Kinematics During Frontal Sled Tests

S. Beeman[1], A. Kemper[1], M. Madigan[2], and S. Duma[1]

[1]Virginia Tech - Wake Forest, Blacksburg, VA, [2]Virginia Tech, Blacksburg, VA

PS-8A-13-182 An Objective Assessment Device For Quantifying Ankle Plantarflexion Muscle Performance During Dialysis

R. Soangra[1], and T. E. Lockhart[1]

[1]Virginia Tech, Blacksburg, VA

PS-8A-13-183 The Influence of Screw Thread and Tapping on the Fatigue Performance of Pedicle Screws

A. Valdevit[1], S. Lewis[2], J. Turner[3], and A. Ritter[1]

[1]The Stevens Institute of Technology, Hoboken, NJ, [2]UHN Orthopaedics, Toronto, Ontario, Canada, [33]Medtonic Spinal and Biologics Business, Memphis, TN

PS-8A-13-184 Rib Fracture Timing in Dynamic Belt Tests with Human Cadavers

A. R. Kemper[1], J. D. Stitzel[1], C. McNally[1], E. A. Kennedy[1], and S. M. Duma[1]

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

PS-8A-13-185 Dynamic Tensile Material Properties of Human Pelvic Cortical Bone

A. R. Kemper[1], C. McNally[1], and S. Duma[1]

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

PS-8A-13-186 Dynamic Hydraulic Pressure Stimulation-induced Intramedullary Pressure and its Adaptation Potential

Y-X. Qin[1], M. Hu[1], F. Serra-Hsu[1], S. Ferreri[1], J. Cheng[1], Z. Zhang[1], Y. Huang[1], and D. Evangelista[1]

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PS-8A-13-187 Relationships between Linear and Angular Head Acceleration from Impact to Human Volunteers

S. Rowson[1], and S. M. Duma[1]

[1]Virginia Tech, Blacksburg, VA

PS-8A-13-188 Head Accelerations from Baseballs Impacting Catcher's Masks and Implication on Injury

S. Rowson[1], K. Shain[1], M. Madigan[1], and S. M. Duma[1]

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PS-8A-13-189 Variances in the Blast-Induced Intracranial Pressure Response Due to Subject Orientation

B. A. Mathie[1], and P. J. VandeVord[1,2]

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Track: Respiratory Engineering – PS-8A-14

Imaging the Lung – The New Frontier

PS-8A-14-190 Automated Segmentation of Asthma Ventilation Defects using Helium-3 Magnetic Resonance Imaging

M. HEYDARIAN[1], S. CHOY[1], A. WHEATLEY[1], R. ETEMAD-REZAI[2], D. G. MCCORMACK[2], AND G. PARRAGA[1,2]

[1]Robarts Research Institute, London, ON, Canada, [2]University of Western Ontario, London, ON, Canada

PS-8A-14-191 Development of a Pulmonary Surrogate for Blunt to Blast Loading Applications.

K. A. DANELSON[1], F. S. GAYZIK[1], J. J. HOTH[2], AND J. D. STITZEL[1]

[1]Virginia Tech/Wake Forest University SBES, Winston-Salem, NC, [2]Wake Forest University School of Medicine, Winston-Salem, NC

PS-8A-14-192 Challenges Associated with Quantitative Assessment of the Lung with Dual Energy Xe-MDCT

M. K. FULD[1], S. MOBBERLEY[1], J. MORGAN[1], J. SIEREN[1], M. HUDSON[1], AND E. HOFFMAN[1]

[1]University of Iowa, Iowa City, IA

Track: Respiratory Engineering – PS-8A-15

Multi-scale Behavior and the Lung

PS-8A-15-193 Coupling of Scales in a Comprehensive Continuum Mechanics Based Computational Lung Model

L. WIECHERT[1], AND W. WALL[1]

[1]Technische Universität München, Garching bei München, Bavaria, Germany

PS-8A-15-194 A Study of Artefacts and Their Removal During Forced Oscillation

S. A. BHATAWADEKAR[1], Y. CHEN[1], J. OHISHI[2], P. HERNANDEZ[1], T. BROWN[1], C. MCPARLAND[1], AND G. N. MAKSYM[1]

[1]Dalhousie University, Halifax, Nova Scotia, Canada, [2]Tohoku University, Sendai, Miyagi, Japan

PS-8A-15-195 Model-Based Prediction of Exacerbations in Asthma

A. MAJUMDAR[1], AND B. SUKI[1]

[1]Boston University, Boston, MA

PS-8A-15-196 Assessment of Metabolic Variation In Sleep Apnea

A. BASHABOYINA[1], D. E. WATENPAUGH[2], R. ZHANG[3], G. BHAVE[1], M. AL-ABED[1], S. IYER[1], E. ALTUWAIJRI[1], AND K. . BEHBEHANI[1]

[1]The University of Texas, Arlington, TX, [2]Sleep Consultants Inc., Ft. Worth, TX, [3]Presbytarian Hospital, Institute for Excercise and Environmental Medicine, Dallas, TX

Track: Systems Biology, Bioinformatics and Computational Biology – PS-8A-16

Modeling of Biomolecules and Their Interactions

PS-8A-16-197 Intra Microfluidic Calcium Cycling and Balance in T Cells

S. E. ARNDT[1], K. T. SEALE[1], AND C. C. MARASCO[1]

[1]Vanderbilt University, Nashville, TN

PS-8A-16-198 Calculations of Thermodynamic Effects of Conformational Constraints in Protein-Ligand Interactions

Y. SHI[1], AND P. REN[1]

[1]The University of Texas at Austin, Austin, TX

PS-8A-16-199 Protein-ligand Binding Free Energy Calculation with the AMOEBA Polarizable Force Field

J. ZHANG[1], AND P. REN[1]

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PS-8A-16-200 Selective Binding of Peptides on Conducting Polymers

J. FONNER[1], C. E. SCHMIDT[1], AND P. REN[1]

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PS-8A-16-201 Steered Molecular Dynamics Parameters to Study Shear Between Collagen Molecules

A. L. KWANSA[1], AND J. W. FREEMAN[1]

[1]Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA

PS-8A-16-202 Simplifying Rule-based Reaction Networks using Timescale Analysis: The Interleukin-12 Signaling Pathway as an Illustrative Example

B. DOLLY[1], AND D. J. KLINKE[1]

[1]West Virginia University, Morgantown, WV

PS-8A-16-203 Release of Nitric Oxide From Hemoglobin Solution Due to Reaction With Nitrite – A Quantitative Analysis

V. MUTHUVIJAYAN[1], B. PIKNOVA[2], R. N. PITTMAN[3], A. N. SCHECHTER[2], AND A. S. POPEL[1]

[1]Johns Hopkins University, Baltimore, MD, [2]National Institutes of Health, Bethesda, MD, [3]Virginia Commonwealth University, Richmond, VA

PS-8A-16-204 Shape-Based Virtual Screening: The Discovery of a Potent Inhibitor Targeting JNK1-JIP1 Interaction

C. YAN[1], K. N. DALBY[1], AND P. REN[1]

[1]the University of texas at austin, Austin, TX

PS-8A-16-205 Using the Free-Solvent Model to Predict the Solvent Accessible Surface Area for Globular Proteins

D. W. MCBRIDE[1], AND V. G. J. RODGERS[1]

[1]University of California, Riverside, CA

PS-8A-16-206 Modeling of the Effects of Protein Alignment & Orientation on Actin Myosin Interaction

C-C. LIU[1], S. M. KREUZER[1], E. A. KHATIBLOU[1], J. D. MARQUEZ[1], J. ZHOU[1], AND T. J. MOON[1,2]

[1]The University of Texas at Austin, Austin, TX, [2]Texas Materials Institute, Austin, TX

PS-8A-16-207 Understanding Protein Preservation in Sugar Glasses via Simulation Study of Fast Dynamics

D. S. SIMMONS[1], M. T. CICERONE[1], AND J. F. DOUGLAS[1]

[1]National Institute of Standards and Technology, Gaithersburg, MD

PS-8A-16-208 Modeling of Sustained Protein Release from an Aptamer-Functionalized Hydrogel

B. SOONTORNWORAJIT[1], M. KARZAR-JEDDI[1], Y. WANG[1], AND T-H. FAN[1]

[1]University of Connecticut, Storrs, CT

PS-8A-16-209 A Coarse-Grained Model for RNA Molecular Dynamics Simulation

Z. XIA[1], AND P. REN[1]

[1]The University of Texas at Austin, Austin, TX

PS-8A-16-210 Using Simulation to Study the Effect of Microtubule Dynamics Parameters Categorization

K. Y. KONG[1], R. MOFFITT[1], H. KHAN[1], A. I. MARCUS[2], AND M. D. WANG[1]

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

PS-8A-16-211 Discrete and Stochastic Spatiotemporal Models of Reaction-Diffusion using Agent Based Modeling

M. AZIMI[1], Y. JAMALI[1], AND M. MOFRAD[1]

[1]UC Berkeley, Berkeley, CA

PS = Poster Session
OP = Oral Presentation

PS-8A-16-212 Discrimination of Collagen Denaturation Models Using Parameter Estimation
N. T. Wright[1]
[1]Michigan State University, East Lansing, MI

PS-8A-16-213 Continuum Modeling of Myosin II Subfragment-2 Coiled-coil
J. Zhou[1], S. M. Kreuzer[1], E. Khatiblou[1], C-C. Liu[1], J. D. Marquez[1], and T. J. Moon[1]
[1]University of Texas at Austin, Austin, TX

PS-8A-16-214 Comparative Study of Reranking Methods for Fast Fourier Transform-Based Protein-Protein Docking Programs
M. Moussalem[1], R. Chowdhury[1], D. Keidel[2], A. Olson[2], M. Sanner[2], and C. Bajaj[1]
[1]The University of Texas at Austin, Austin, TX, [2]The Scripps Research Institute, La Jolla, CA

PS-8A-16-215 Scalable Integration of Multiple Molecular Pathway Models
V. Ayyadurai[1], and C. F. Dewey[1]
[1]M.I.T., Cambridge, MA

PS-8A-16-216 Modified Elastic Network Model Finite Element Analysis of Actin Filament to Study Protein Mechanical Response to Load
J. D. Marquez[1], S. Kreuzer[1], E. Khatiblou[1], D. Liu[1], J. Zhou[1], and T. Moon[1,2]
[1]The University of Texas at Austin, Austin, TX, [2]Texas Materials Institute, Austin, TX

PS-8A-16-217 Integrative Model of Interferon (IFN) Response to Viral Infection
S. Ayyadurai[1]
[1]M.I.T., Cambridge, MA

Track: Tissue Engineering - PS-8A-17

Bioinspired Materials

PS-8A-17-218 Analysis of Cellularity and ECM Composition in a Decellularized Vascular Construct
R. J. Nagao[1], and C. E. Schmidt[1]
[1]University of Texas at Austin, Austin, TX

PS-8A-17-219 Independent Tuning of Enzymatically Cleavable starPEG-heparin Hydrogels to Direct Tissue Regeneration
K. R. Levental[1], M. S. Grieb[1], M. V. Tsurkan[1], K. Chwalek[1], U. Freudenberg[1], and C. Werner[1]
[1]Leibniz Institute of Polymer Research Dresden, Dresden, Germany

PS-8A-17-220 Investigation of Biomimetic Folding within Polydepsipeptides
M. M. Nguyen[1], J. Zhang[1], P. Ren[1], and L. Suggs[1]
[1]University of Texas at Austin, Austin, TX

PS-8A-17-221 Sequential Immobilization of TM and EPCR to create a Biomimetic Vascular Surface
M. Schneider[1], A. Subramanian[1], K. Kador[1], and T. Mammedov[1]
[1]University of Nebraska, Lincoln, NE

PS-8A-17-222 The Insect Tracheal System As a Microfluidic Pump: A Test Of The Hemolymph Pressure Hypothesis
L. M. Cox[1], and J. J. Socha[2]
[1]Virginia Tech, Blacksburg, VA, [2]Virginia Tech, Blacksburg, VA

PS-8A-17-223 Selectable, Tunable Naturally Occurring Nano-materials for Tissue Engineering
L. Xia[1], S. Lenaghan[1], A. Wills[1], and M. Zhang[1]
[1]University of Tennessee, Knoxville, TN

PS-8A-17-224 What Makes a Nerve Guidance Feature?-Novel Materials Inspired by Schwann Cells
C. Y. Lopez-Fagundo[1], and D. Hoffman-Kim, Ph.D.[1]
[1]Brown University, Providence, RI

PS-8A-17-225 Biomimetic Surface Functionalized Poly(Lactic Acid) Fibers for Musculoskeletal Tissue Regeneration
J. D. Murray[1], S. B. VanGordon[1], T. B. Blue[1], R. L. Shambaugh[1], P. L. DeAngelis[2], and V. I. Sikavitsas[1]
[1]University of Oklahoma, Norman, OK, [2]University of Oklahoma Health Science Center, Oklahoma City, OK

PS-8A-17-226 Bio-inspired Functionalization and Crosslinking of Hyaluronic Acid via HA-binding Peptide
S-Y. Choh[1], and C. Wang[1]
[1]University of Minnesota, Minneapolis, MN

Track: Tissue Engineering - PS-8A-18

Bioreactors and Bioprocessing

PS-8A-18-227 Elucidation of the Bioeffects of Ultrasound on Cells Seeded on Scaffolds
S. Noriega[1], S. Guha Thakurta[1], M. Schneider[1], G. Buddiraja[1], and A. Subramanian[1]
[1]University of Nebraska, Lincoln, NE

PS-8A-18-228 CANCELED

PS-8A-18-229 Bioreactor Expansion and Differentiation of Adult Side Population Stem Cells
D. B. Cowan[1], I. V. Alpatov[1], and K-R. Wang[1]
[1]Children's Hospital Boston and Harvard Medical School, Boston, MA

PS-8A-18-230 A Novel Mechano-Active Biaxial Stretcher for Engineering Planar Tissues
J-J. Hu[1], and Y-C. Liu[2]
[1]Institute of Biomedical Engineering, National Cheng Kung University, Tainan, Taiwan, Taiwan, [2]Department of Mechanical Engineering, National Chiao Tung University, Hsinchu, Taiwan, Taiwan

PS-8A-18-231 Measuring Glucose Consumption by Chondrogenically Differentiating Mesenchymal Stem Cells
K. J. Penick[1], H. Baskaran[1], J. A. Berilla[1], and J. F. Welter[1]
[1]Case Western Reserve University, Cleveland, OH

PS-8A-18-232 A Bioreactor to Mechanically Stimulate and Evaluate Tissue-engineered Constructs During Culture
T. J. Lujan[1], K. Wirtz[1], S. Madey[1], and M. Bottlang[1]
[1]Legacy Research, Portland, OR

PS-8A-18-233 Influence of Scaffold Structure and Flow Perfusion Shear Stress on MSC Osteoblastic Differentiation
S. B. VanGordon[1], R. S. Voronov[1], T. B. Blue[1], R. L. Shambaugh[1], D. V. Papavassiliou[1], and V. I. Sikavitsas[1]
[1]University of Oklahoma, Norman, OK

PS-8A-18-234 High-Throughput Antibody-Independent Method For Sorting Stem Cells
K. M. Lynch[1], and T. Ahsan[1]
[1]Tulane University, New Orleans, LA

PS-8A-18-235 CANCELED

Track: Tissue Engineering – PS-8A-19

Stem Cells and Tissue Engineering

PS-8A-19-236 Self-Renewal and Cardiac Specification of Human Pluripotent Stem Cells via Intercellular Interactions
S. M. Azarin[1], J. Zhang[1], C. Hsiao[1], X. Lian[1], T. J. Kamp[1], and S. P. Palecek[1]
[1]University of Wisconsin - Madison, Madison, WI

PS-8A-19-237 Long-Term Quantitative In Vivo Characterization of Alginate Microcapsules in Balb/c Mice
C. Yong1, A. Lawson1, and A. Sambanis1
[1]Georgia Institute of Technology, Atlanta, GA

PS-8A-19-238 Tissue Engineered 3-Dimenssional Bone Autografts Using the Wharton's Jelly
R. I. Abousleiman[1,2], and V. Sikavitsas[2]
[1]Oklahoma Medical Research Foundation, Oklahoma City, OK, [2]University of Oklahoma, Norman, OK

POSTER SESSION 8A

PS-8A-19-239 Sonic Hedgehog Presentation on Dynabeads Directs Mesodermal Commitment of Mouse Embryonic Stem Cells
L. Geuss[1], G. Zhang[2], and L. J. Suggs[1]
[1]The University of Texas at Austin, Austin, TX, [2]The University of Akron, Akron, OH

PS-8A-19-240 Reprogramming of Gastric Cancer Line MKN-28
C. X. Cai[1], A. Q. Lu[1], and J-C. Liao[1]
[1]Columbia University, New York, NY

PS-8A-19-241 Dynamic Tracking of Induced Pluripotent Stem Cell Reprogramming Process
P. J. Hampilos[1], C. X. Cai[1], and J-C. Liao[1]
[1]Columbia University, New York, NY

PS-8A-19-242 Unique Technique for Growing Progenitor Epithelial Keratinocyte Strains
A. Peramo[1], and C. Marcelo[1]
[1]University of Michigan, Ann Arbor, MI

PS-8A-19-243 Mesenchymal Stem Cell (MSC) Response to Growth Factors is Enhanced When They are Delivered from Polysaccharide-based Polyelectrolyte Multilayers
J. L. Almodovar[1], S. Bacon[1], J. Gogolski[1], J. Kisiday[1], and M. Kipper[1]
[1]Colorado State University, Fort Collins, CO

PS-8A-19-244 Optmization of Intermediate Steps of the Beta-Islet Differentiation Program for Human Embryonic Stem Cells
M. Jaramillo[1], and I. Banerjee[1]
[1]University of Pittsburgh, Pittsburgh, PA

PS-8A-19-245 Microstructures and Growth Factors Alter Stem Cell Proliferation and Migration for Regenerative Therapy
J. M. Collins[1], P. Ayala[2], T. A. Desai[2], P. H. Goldspink[1], and B. Russell[1]
[1]University of Illinois at Chicago, Chicago, IL, [2]University of California, San Francisco, San Francisco, CA

PS-8A-19-246 Hydrogel Microspheres for Support and Delivery of Neural Stem Cells in a Rodent Model for Stroke
C. L. Franco[1], N. Gorenkova[2], Z. Hassani[2], G. El Akabawy[2], R. Poche[3], M. Modo[2], M. Dickinson[3], and J. West[1]
[1]Rice University, Houston, TX, [2]King's College, London, United Kingdom, [3]Baylor College of Medicine, Houston, TX

PS-8A-19-247 Biomaterial Implant Recruits and Differentiates Autologous Stem Cells
A. M. Nair[1,2], J. Shen[1,2], M-W. Sun[1,2], C. Zhang[2], and L. Tang[1,2]
[1]The University of Texas at Arlington, Arlington, TX, [2]The University of Texas-Southwestern Medical Center at Dallas, Dallas, TX

PS-8A-19-248 Differentiation of mESCs into Osteoblasts using Chitosan-Alginate Based Polyelectrolyte Complexes
M. Desai[1], N. Kulkarni[1], D. Verma[1], M. L. Previtera[1], R. Schloss[1], and N. Langrana[1]
[1]Rutgers University, Piscataway, NJ

PS-8A-19-249 Spontaneous Fusion of Mesenchymal Stem Cells with Endothelial Cells
Q. A. Tran[1], and B. Ogle[1]
[1]University of Wisconsin-Madison, Madison, WI

PS-8A-19-250 Controlled Differentiation of hMSCs into Fibroblast-Like Cells via the Combination of Fibrous Scaffolds and Connective Tissue Growth Factor
Z. Tong[1], S. Sant[2,3], A. Khademhosseini[2,3], and X. Jia[1]
[1]Delaware Biotechnology Institute,University of Delaware, Newark, DE, [2]Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, [3]Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA

PS-8A-19-251 Effect of Shear Stress Parameters on Endothelial and Hematopoietic Differentiation in ESCs.
R. P. Wolfe[1], J. Leleux[1], and T. Ahsan[1]
[1]Tulane University, New Orleans, LA

PS-8A-19-252 Outcomes of Pre-differentiated Mesenchymal Stem Cell-seeded Hydrogel Implants in Cartilage Lesions
R. M. Schulz[1,2], J. S. Somerson[1,3], M. Zscharnack[1,2], P. Hepp[4], R. Richter[4], C. Josten[4], A. Bader[2], and B. Marquass[1,4]
[1]University of Leipzig Translational Centre for Regenerative Medicine, Leipzig, Germany, [2]University of Leipzig Center of Biotechnology and Biomedicine, Leipzig, Germany, [3]University of Texas Health Science Center San Antonio, San Antonio, TX, [4]University of Leipzig, Department of Trauma and Reconstructive Surgery, Leipzig, Germany

PS-8A-19-253 Propagation of Human Embryonic and Induced Pluripotent Stem Cells on Defined Substrates
R. R. Rao[1]
[1]Virginia Commonwealth University, Richmond, VA

PS-8A-19-254 An Implantable Immuno-Modulatory Bioreactor for Spinal Cord Injury Repair
J. Barminko[1], J. H. Kim[1], S. Otsuka[1], R. Schloss[1], M. Grumet[1], and M. L. Yarmush[1]
[1]Rutgers University, Piscataway, NJ

PS-8A-19-255 A Small-scale Assay for Optimizing Differentiation Protocols of Human Embryonic Stem Cells
J. T. Outten[1], X. Cheng[2], P. Gadue[2], D. L. French[2], and S. L. Diamond[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Children's Hospital of Philadelphia, Philadelphia, PA

PS-8A-19-256 Effect of Three Dimensional Culture of Mouse Embryonic Stem Cells on Cytoskeletal Protein Expression
E. Pineda Fortin[1], and T. Ahsan[1]
[1]Tulane University, New Orleans, LA

PS-8A-19-257 Engineering the Pericellular Matrix: Silencing Type VI Collagen and Decorin in Differentiating hMSCs
J. D. Twomey[1], P. I. Thakore[1], and A. H. Hsieh[1,2]
[1]University of Maryland, College Park, MD, [2]University of Maryland, Baltimore, MD

PS-8A-19-258 Donor-age Dependent Changes in Mesenchymal Stem Cell Functions
C. Buckspan[1], and S. Varghese[1]
[1]Uc San Diego, La Jolla, CA

PS-8A-19-259 Combinatorial Effects of Matrix Elasticity and Cell Shape on Mesenchymal Stem Cell Differentiation
B. J. Gill[1,2], S. Nemir[1,2], and J. L. West[1]
[1]Rice University, Houston, TX, [2]Baylor College of Medicine, Houston, TX

PS-8A-19-260 Biomaterial Systems to Assess the Influence of Cell-matrix Interactions on Hematopoietic Stem Cells
J. Choi[1], and B. Harley[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

PS = Poster Session
OP = Oral Presentation

PS-8A-19-261 Use of Chemical Gradients to Facilitate the Development of Structurally Oriented Cartilage
A. L. Rivera[1], R. T. Li[2], J. F. Welter[1], and H. Baskaran[1]
[1]Case Western Reserve University, Cleveland, OH, [2]University of Pittsburgh School of Medicine, Pittsburgh, PA

PS-8A-19-262 *In Vivo* Tracking of Nanoparticle Labeled Mesenchymal Stem Cells Using Photoacoustic Imaging
L. M. Ricles[1], S. Nam[1], K. Sokolov[1,2], S. Emelianov[1], and L. J. Suggs[1]
[1]University of Texas at Austin, Austin, TX, [2]University of Texas M.D. Anderson Cancer Center, Houston, TX

PS-8A-19-263 Hematopoietic Stem and Progenitor Cells Proliferation Promote the Resolution of Wound Infection
M-H. Kim[1], J. Granick[1], C. Kwok[1], D. Borjesson[1], F-R. Curry[1], L. Miller[2], and S. Simon[1]
[1]UC Davis, Davis, CA, [2]UCLA, Los Angeles, CA

PS-8A-19-264 Impact of Extracellular Matrix Composition on Cardiomyogenic Differentiation of hESCs
A. Laperle[1], S. Palecek[1], and K. Masters[1]
[1]University of Wisconsin-Madison, Madison, WI

PS-8A-19-265 Connexon-mediated Cell Adhesion Drives Microtissue Self-Assembly
B. A. Bao[1], and J. Morgan[1]
[1]Brown University, Providence, RI

PS-8A-19-266 Donor Variability in Cord Blood Derived Endothelial Progenitor Cells within 3-D Fibrin Gels Co-cultured with Fibroblasts
L. Tian[1]
[1]University of California, Irvine, Irvine, CA

PS-8A-19-267 Effect of Patterned TNF- Delivery On In Vitro Osteogenic Differentiation of Mesenchymal Stem Cells
P. M. Mountziaris[1], E. D. Lehman[1], F. K. Kasper[1], and A. G. Mikos[1]
[1]Rice University, Houston, TX

PS-8A-19-268 Biomaterial Systems to Assess Cell-cell Interactions on Hematopoietic Progenitor Cells
B. Mahadik[1], J. Lin[1], G. Timp[1], M. Sivaguru[1], and B. Harley[1]
[1]University of Illinois at Urbana Champaign, Urbana, IL

PS-8A-19-269 Biomechanical Control of Stem Cell Behavior and Fate
I. Titushkin[1], J. Shin[2], and M. Cho[1]
[1]University of Illinois, Chicago, IL, [2]Korea Advanced Institute of Science and Technology, Daejeon, Korea, Republic of

PS-8A-19-270 Hypoxia-mediated Adipogenesis of Mesenchymal Stem Cells May Be Regulated via the Cytoskeleton
Z. A. Schiller[1], and C. K. Kuo[1]
[1]Tufts University, Medford, MA

PS-8A-19-271 Three-Dimensional Differentiation of Human Embryonic Stem Cells into Definitive Endoderm
W. Wang[1], Y. Zhu[1], S. Jin[1], and K. Ye[1]
[1]University of Arkansas, Fayetteville, AR

PS-8A-19-272 The Effects of Microenvironment on the Growth and Differentiation of Human Pulpal-derived Stem Cells
L. Datko[1], M. Cupelli[1], S. Alapati[2], and D. Dean[1]
[1]Clemson University, Clemson, SC, [2]University of Illinois at Chicago, Chicago, IL

PS-8A-19-273 Applying Multiple, Independent Chemical Gradients to Human Stem Cells In 3D Culture Environments
S. Sandock[1], J. White[2], and T. M. Keenan[1]
[1]University of Wisconsin, Madison, WI, [2]University of Michigan, Ann Arbor, MI

PS-8A-19-274 Cell Secreted Matrices Influence the Differentiation of Adipose Derived Stem Cells
H. B. Coan[1], C. Booth[1], M. Lively[1], and M. Van Dyke[1]
[1]Wake Forest School of Medicine, Winston-Salem, NC

PS-8A-19-275 Use of Mesenchymal Stem Cells in the Treatment of Ischemia-reperfusion Injured Skeletal Muscle
D. W. Hammers[1], M. Cannon[1], B. A. Bunnell[2], and R. P. Farrar[1]
[1]The University of Texas at Austin, Austin, TX, [2]Tulane University Health Sciences Center, New Orleans, LA

PS-8A-19-276 Mapping the Mechanical Milieu of Stem Cells In Situ within Tissue Engineering Scaffolds
M. Song[1], D. Dean[1], and M. L. Knothe Tate[1]
[1]Case Western Reserve University, Cleveland, OH

Track: Tissue Engineering * – 8-1-1

Cell-Biomaterial Interfaces

Chairs: Shelly Peyton, Alisha Sieminski

Room 12A

10:30AM OP-8-1-1A Generating Functional T Cells From Stem Cells: Controlling Notch and MHC Signaling in 3D Scaffolds
M. Kim[1], J. Lin[1], M. Mendoza[1], and K. Roy[1]
[1]University of Texas at Austin, Austin, TX

10:45AM OP-8-1-1B Combinatorial Development of Biomaterials for Stem Cell Engineering
Y. Mei[1], K. Saha[2], S. R. Bogatyrev[1], J. Yang[3], A. L. Hook[3], Z. I. Kalcioglu[1], S-W. Cho[1], M. Mitalipova[2], N. Pyzocha[2], F. Rojas[1], K. J. Van Vliet[1], M. C. Davies[3], M. R. Alexander[3], R. Langer[1], R. Jaenisch[2], and D. Anderson[1]
[1]MIT, Cambridge, MA, [2]Whitehead Institute for Biomedical Research, Cambridge, MA, [3]The University of Nottingham, Nottingham, United Kingdom

11:00AM OP-8-1-1C Morphological Change of Epithelial Cells Cultured on Substrates with Different Stiffness
M. Yamamoto[1], Y. Murakami[1], and Y. Tabata[1]
[1]Institute for Frontier Medical Sciences, Kyoto University, Kyoto, Kyoto, Japan

11:15AM OP-8-1-1D Quantifying Endothelial Cell-Mediated Deformation of the ECM During Capillary Morphogenesis in 3D
E. Kniazeva[1], M. Digman[1], E. Gratton[1], and A. Putnam[2]
[1]University of California, Irvine, Irvine, CA, [2]University of Michigan, Ann Arbor, MI

11:30AM OP-8-1-1E Growth Factor Binding is Regulated by Extracellular Matrix Deposition From Human Calvarial Osteoblasts
A. Bhat[1]
[1]University of California-Davis, Woodland, CA

11:45AM OP-8-1-1F Fibronectin Matrix Conformation Defines Regions of Cell Proliferation and Stress Fiber Formation
C. Sevilla[1], D. Dalecki[1], and D. Hocking[1]
[1]University of Rochester, Rochester, NY

*** Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

Track: Biomedical Imaging and Optics – 8-1-2

Neuroimaging

Chairs: Simon Cherry, Kris Ropella
Room 12B

10:30AM OP-8-1-2A Longitudinal White Matter Changes in Pediatric Traumatic Brain Injury
K. Ayoub[1,2], E. A. Wilde[2], Z. Chu[2,3], T. C. Wu[4], J. V. Hunter[2,3], A. C. Vasquez[2], E. D. Bigler[4], and H. S. Levin[2]
[1]Rice University, Houston, TX, [2]Baylor College of Medicine, Houston, TX, [3]Texas Children's Hospital, Houston, TX, [4]Brigham Young University, Provo, UT

10:45AM OP-8-1-2B Microvascular Functional Imaging with FENSI: Flow-Enhanced Signal Intensity
C. Ouyang[1], and B. Sutton[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

11:00AM OP-8-1-2C New Encoding Schemes for ASL 3D GRASE to Improve Slice Coverage and Reduce Through Plane Blurring
H. Tan[1], W. S. Hoge[2], and R. A. Kraft[1]
[1]Virginia Tech - Wake Forest School of Biomedical Engineering and Sciences, Winston-Salem, NC, [2]Brigham and Women's Hospital and Harvard Medical School, Boston, MA

11:15AM OP-8-1-2D High Spatial Resolution Neurovascular Models for the Analysis of Optical Spectroscopy Data
N. R. Cornelius[1], and P. C. Doerschuk[1]
[1]Cornell University, Ithaca, NY

11:30AM OP-8-1-2E A Random Visual Cortex Mapping Technique for Clinical Use
Y. Ma[1], E. DeYoe[2], and K. Ropella[1]
[1]Marquette University, Milwaukee, WI, [2]Medical College of Wisconsin, Milwaukee, WI

11:45AM OP-8-1-2F Quantification of Posture-dependent CSF Distribution Via Analysis of CT, MRI, and Upright MRI
F. S. Gayzik[1,2], D. P. Moreno[1,2], C. P. Geer[1], and J. D. Stitzel[1,2]
[1]Wake Forest University School of Medicine, Winston-Salem, NC, [2]Virginia Tech - Wake Forest Center for Injury Biomechanics, Winston-Salem, NC

Track: Biomedical Imaging and Optics – 8-1-3

Imaging in Therapeutics – I

Chairs: Richard Price, Michaelann Tartis
Room 19A

10:30AM OP-8-1-3A Photoacoustic Image-Guided Drug Delivery
K. A. Homan[1], J. Chen[1], L. Brannon-Peppas[2], and S. Emelianov[1]
[1]University of Texas at Austin, Austin, TX, [2]PeppChem Consulting, Austin, TX

10:45AM OP-8-1-3B Redefining In-Sight: Effective MRI Contrast Agents in Biodegradable Polymeric Drug Delivery Vehicles
R. Ragheb[1], H. Chahboune[1], J. Criscione[1], and T. Fahmy[1]
[1]Yale University, New Haven, CT

11:00AM OP-8-1-3C A Platform for Enhanced Contrast Ultrasound Targeted Delivery of Therapeutics
C. W. Burke[1], A. L. Kilbanov[1], J. Sheehan[1], and R. J. Price[1]
[1]University of Virginia, Charlottesville, VA

11:15AM OP-8-1-3D MR-based Pharmacokinetics of the Focused-Ultrasound-induced Blood-Brain Barrier Opening
F. Vlachos[1], Y-S. Tung[2], and E. Konofagou[2]
[1]Columbia Universtiy, New York, NY, [2]Columbia University, New York, NY

11:30AM OP-8-1-3E Electromagnetically Tracked Ultrasound for Combined CT+US Therapy in Small Animals
C. F. Caskey[1], M. Hlawitschka[1], S. Qin[1], and K. W. Ferrara[1]
[1]University of California at Davis, Davis, CA

11:45AM OP-8-1-3F Real-Time Model Assisted MR Temperature Imaging for Monitoring LITT Procedures
D. Fuentes[1], J. Yung[1], A. Elliott[1], J. Hazle[1], and R. J. Stafford[1]
[1]The University of Texas MD Anderson Cancer Center, Houston, TX

Track: Neural Engineering - 8-1-4

Neural Modeling

Chairs: Christopher Butson, John White
Room 19B

10:30AM OP-8-1-4A Rapid, Anatomic Computational Modeling for Design of Clinical Peripheral Nerve Electrodes
D. J. Tyler[1]
[1]Case Western Reserve University, Cleveland, OH

10:45AM OP-8-1-4B A Dual Resonance Model of Cochlear Tuning
D. C. Mountain[1]
[1]Boston University, Boston, MA

PS = Poster Session
OP = Oral Presentation

11:00AM OP-8-1-4C State Dependence of Cortical Optogenetic Perturbations during Active Touch

J. T. Ritt[1], J. H. Siegle[2], M. Carlen[3], K. Meletis[3], L-H. Tsai[2], and C. I. Moore[2]

[1]*Boston University, Boston, MA,* [2]*Massachusetts Institute of Technology, Boston, MA,* [3]*Karolinska Institutet, Stockholm, Sweden*

11:30AM OP-8-1-4D Computational & Evidence Based Methods in Neuromodulation

C. R. Butson[1,2], B. H. Kopell[1], S. Baillet[1], W. Gaggl[1], R. R. Ramirez[1], K. Driesslein[1], and S. Jain[1]

[1]*Medical College of Wisconsin, Milwaukee, WI,* [2]*Marquette University, Milwaukee, WI*

Track: Cellular and Molecular Engineering – 8-1-5

Cellular Engineering and Modeling

Chairs: Alexander Spector, Fan Yang

Room 18A

10:30AM OP-8-1-5A Self-Organization of a Two Cell Muscle Tissue: Theory and Experiment

A. Grosberg[1,2], M. L. McCain[1,2], and K. K. Parker[1,2]

[1]*Disease Biophysics Group, School of Engineering and Applied Sciences, Harvard University, Cambridge, MA,* [2]*Wyss Institute for Biologically Inspired Engineering, Harvard University, Boston, MA*

10:45AM OP-8-1-5B Modulation of Ca2+ Homeostasis and Proteostasis for Lysosomal Storage Disease Therapeutics

F. Wang[1], and L. Segatori[1]

[1]*Rice University, Houston, TX*

11:00AM OP-8-1-5C Frequency Response Detection and Prediction of First-order Spatiotemporal Dynamics in a Xenopus Embryonic Tissue Using Microfluidics

Y. Kim[1], S. D. Joshi[2], L. A. Davidson[2], W. C. Messner[1], and P. R. LeDuc[1]

[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*University of Pittsburgh, Pittsburgh, PA*

11:15AM OP-8-1-5D Decision Tree Analysis of Microfluidic Angiogenesis Studies: Determining Cell Fate Transition Probabilities to VEGF/Angl Levels

A. Das[1], H. Asada[1], D. Lauffenburger[1], and R. Kamm[1]

[1]*MIT, Cambridge, MA*

11:30AM OP-8-1-5E Modeling Biological Membranes as Self-assembled Two-Dimensional Particle Fluids

S. Zhang[1], H. Yuan[1], C. Huang[1], and J. Li[2]

[1]*Penn State University, University Park, PA,* [2]*Univ. Pennsylvania, Philadelphia, PA*

11:45AM OP-8-1-5F The Effects of Nuclear Pre-stress on Passive and Facilitated Nuclear Transport

T. Chancellor[1], and T. Lele[1]

[1]*University of Florida, Gainesville, FL*

Track: Cellular and Molecular Engineering – 8-1-6

Cell-Cell Interactions

Chairs: Lance Kam, Todd Sulchek

Room 18B

10:30AM OP-8-1-6A JNK-mediated Regulation of Adherens Junctions

M. Lee[1], and S. Andreadis[1]

[1]*SUNY Buffalo, Buffalo, NY*

10:45AM OP-8-1-6B Mechanotransduction at Cell-Cell Junctions

D. Leckband[1], Q. Shi[2], Q. le Duc[3], J. de Rooij[3], and N. Wang[2]

[1]*University of Illinois, Champaign, IL,* [2]*University of Illinois, Urbana, IL,* [3]*Hubrecht Institute, Utrecht, Utrecht, Netherlands*

11:00AM OP-8-1-6C Measurement of Adhesion Strengthening in Homophilic Cadherin-Based Cell-Cell Interactions

C. C. Esimai[1], R. Oas[2], A. P. Kowalczyk[2], and A. J. Garcia[1]

[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

11:15AM OP-8-1-6D Multicellular Aggregation Dynamics is Consistent With a Two-step Transport-reaction Model

M. D. Pope[1], and A. R. Asthagiri[1]

[1]*Caltech, Pasadena, CA*

11:30AM OP-8-1-6E Probing the Microrheology of Mesenchymal Stem Cell Migration to Tumors

M. Dawson[1], D. McGrail[1], and D. Zuelke[1]

[1]*Georgia Institute of Technology, Atlanta, GA*

11:45AM OP-8-1-6F Substratum Compliance Modulates the Quantitative Interplay Between EGF and Cell-Cell Contact and Affects Contact-inhibition of Proliferation in Epithelial Cell Clusters

J. Kim[1], and A. Asthagiri[2] John Tarbell

[1]*California Institute of Technology, Engineering and Applied Science, Pasadena, CA,* [2]*California Institute of Technology, Division of Chemistry and Chemical Engineering, Pasadena, CA*

Track: Cardiovascular Engineering – 8-1-7

Vascular Permeability

Chairs: Kenneth Barbee, John Tarbell

Room 18C

10:30AM OP-8-1-7A Endothelial Cell Apoptosis Controls Permeability to Low Density Lipoprotein in Arterial Disease

L. M. Cancel[1], F. Piraino[2], and J. M. Tarbell[1]

[1]*The City College of New York, New York, NY,* [2]*Politecnico di Milano, Milano, Milano, Italy*

10:45AM OP-8-1-7B Transendothelial Transport May Determine Adiponectin Oligomer Functions

J. M. Rutkowski[1], and P. E. Scherer[1]

[1]*UT Southwestern Medical Center, Dallas, TX*

11:00AM OP-8-1-7C Bioengineered Tools for Quantifying Lymphatic Function in Lipid Transport

J. Dixon[1], J. A. Kornuta[1], and T. Kassis[1]

[1]*Georgia Institute of Technology, Atlanta, GA*

11:15AM OP-8-1-7D Assessing the Permeability of Engineered Capillary Networks in a 3D Culture

S. J. Grainger[1], and A. J. Putnam[1]

[1]*University of Michigan, Ann Arbor, MI*

11:30AM OP-8-1-7E Arginine Vasopressin Increases Aquaporin-1 Expression and Hydraulic Conductivity in Bovine Aortic Endothelium Monolayers

C. B. Raval[1], J. M. Tarbell[2], K-M. Jan[3], and D. S. Rumschitzki[2]

[1]*Graduate Center at The City Univeristy New York, New York, NY,* [2]*The City College of New York, NY, NY,* [3]*Columbia University, New York, NY*

11:45AM OP-8-1-7F Cholesterol Enrichment Inhibits Endothelial Capacitative Calcium Entry (CCE)

A. M. Andrews[1], and K. A. Barbee[1]

[1]*Drexel University, Philadelphia, PA*

Track: Cardiovascular Engineering – 8-1-8

Heart Valve I: Mechanobiology and Pathology

Chairs: Richard Goodwin, James Warnock

Room 18D

10:30AM OP-8-1-8A Raman Spectroscopy Characterization to Compare In Vitro and In Situ Aortic Valve Calcification

K. L. Cloyd[1], I. El-Hamamsy[1], P. Sarathchandra[1], E. Gentleman[1], M. H. Yacoub[1], A. H. Chester[1], and M. M. Stevens[1]

[1]*Imperial College London, London, UK, United Kingdom*

10:45AM OP-8-1-8B Interaction of Serotonin and TGFb Signaling in Embryonic Atrioventricular Valve Remodeling
P. Buskohl[1], M. Sun[1], and J. T. Butcher[1]
[1]Cornell University, Ithaca, NY

11:00AM OP-8-1-8C Elevated Pressure Modulates Osteogenic De-Differentiation of Aortic Valve Interstitial Cells
C. A. Pregonero-Gamez[1], A. E. Ruhl[1], and J. N. Warnock[1]
[1]Mississippi State University, Mississippi State, MS

11:15AM OP-8-1-8D Fluid Flow Regulates ECM Protein Expression and Deposition During Cardiac Valve Development
H. Tan[1], S. Biechler[1], L. Junor[1], M. J. Yost[1], J. D. Potts[1], and R. L. Goodwin[1]
[1]University of South Carolina, School of Medicine, Columbia, SC

11:30AM OP-8-1-8E The Effects of Cyclic Stretch and Serotonin on Aortic Valve Remodeling
S. Hussain[1], C. H. Yap[1], K. Balachandran[2], and A. Yoganathan[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Harvard University, Cambridge, MA

11:45AM OP-8-1-8F Calcium Accumulation in Strained Aortic Valve Interstitial Cells
J. D. Hutcheson[1], and W. D. Merryman[1]
[1]Vanderbilt University, Nashville, TN

PLATFORM SESSIONS **8-1**

Track: Respiratory Engineering – 8-1-9

Microfluidics and Tissue Engineering Constructs for the Lung

Chairs: Samir Ghadiali, Hossein Tavana
Room 17A

10:30AM OP-8-1-9A A Human Breathing Lung-on-a-Chip
D. Huh[1,2], B. D. Matthews[2], A. Mammoto[2], M. Montoya-Zavala[1,2], H. Hsin[2], and D. E. Ingber[1,2]
[1]Wyss Institute for Biologically Inspired Engineering at Harvard University, Boston, MA, [2]Harvard Medical School and Children's Hospital Boston, Boston, MA

10:45AM OP-8-1-9B Challenging Clearance: A Mucus Clearance Assay to Study the Effect of External Forces on Clearance
J. Carpenter[1], M. Millard[1], V. Parikh[1], E. T. O'Brien[1], M. R. Falvo[1], and R. R. Superfine[1]
[1]UNC Chapel Hill, Chapel Hill, NC

11:00AM OP-8-1-9C The Role of Fluid Mechanical Stresses in the Development of Ventilator-Induced Lung Injury
N. J. Douville[1], Y-C. Tung[1], P. Zamankhan[1], J. B. Grotberg[1], and S. Takayama[1]
[1]University of Michigan, Ann Arbor, MI

11:15AM OP-8-1-9D Shadowgraphic and -PIV Measurements of Bubble Shape and Flow Felds During Pulsatile Propagation
B. J. Smith[1], E. Yamaguchi[1], J. W. Thieman[1], and D. P. Gaver III[1]
[1]Tulane University, New Orleans, LA

11:30AM OP-8-1-9E A Biomimetic System to Investigate the Effect of Wall Compliance on Microbubble-induced Cell Injury
N. Higuita-Castro[1], X. Chen[1], C. Mihai[1], D. J. Hansford[1], and S. N. Ghadiali[1]
[1]The Ohio State University, Columbus, OH

11:45AM OP-8-1-9F Predicting Cellular Strains Throughout the Airway Tree with a Computational Model of Airway Mechanics
A. S. LaPrad[1], B. Suki[1], and K. R. Lutchen[1]
[1]Boston University, Boston, MA

Track: Systems Biology, Bioinformatics and Computational Biology - 8-1-10

Multiscale Modeling

Chairs: Andre Levchenko, Jeffrey Saucerman
Room 17B

10:30AM OP-8-1-10A Multiscale Modeling of the ErbB Tyrosine Kinase Signaling Networks Through Theory and Experiment
S. E. Telesco[1], R. Vadigepalli[2], and R. Radhakrishnan[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]Thomas Jefferson University, Philadelphia, PA

10:45AM OP-8-1-10B Probabilistic Integrative Modeling of Genome-scale Metabolic and Regulatory Networks
S. Chandrasekaran[1], and N. D. Price[1]
[1]Institute for Genomic Biology, University of Illinois, Urbana-Champaign, Urbana, IL

11:00AM OP-8-1-10C A New Computational and Conceptual Framework for Linking Multi-cell to Tissue-Level Modeling
B. C. Thorne[1], H. Hayenga[2], J. Humphrey[2], and S. M. Peirce[1]
[1]University of Virginia, Charlottesville, VA, [2]Texas A&M University, College Station, TX

11:15AM OP-8-1-10D Tumor Targeting Across the Size Spectrum – Common Physiology, Divergent Pharmacokinetics
G. M. Thurber[1], and R. Weissleder[1]
[1]Harvard Medical School/Mass General Hospital, Boston, MA

11:30AM OP-8-1-10E Elastic Network & Finite Element Model vs. SMD to Simulate Structural Protein Mechanics
S. Kreuzer[1], E. Khatiblou[1], D. Liu[1], J. Zhou[1], J. Marquez[1], and T. Moon[1,2]
[1]University of Texas at Austin, Austin, TX, [2]Texas Materials Institute, Austin, TX

11:45AM OP-8-1-10F Computational Models of Embryonic Wound Healing
M. A. Wyczalkowski[1], and L. A. Taber[1]
[1]Washington University in St. Louis, St. Louis, MO

Track: Devices: Nano to Micro - 8-1-11

Medical Diagnostics: Nano to Micro Devices – III

Chairs: Phil LeDuc, John McDevitt
Room 16A

10:30AM OP-8-1-11A Improvement in Low Concentration Assays Using VCATs Coupled with SPRI
Y. Okabe[1], Y. Chen[1], R. Corn[1], and A. Lee[1]
[1]University of California, Irvine, Irvine, CA

10:45AM OP-8-1-11B Identification of Cancer Staging in Human Patients Using Nanoporous Silica Chips for Protein Profiling
E. Tasciotti[1], M. Agostini[2], A. Bouamrani[1], T. Hu[3], D. Nitti[5], and M. Ferrari[1]
[1]University of Texas Health Science Center at Houston, Houston, TX, [2]Universita' di Padova, Padova, Italy, [3]University Of Texas at Austin, Austin, TX, United States Minor Outlying Islands,

11:00AM OP-8-1-11C Aptamer-based Nanoplasmonic VEGF165 Sensor for Breast Cancer Diagnostics
E-C. Yeh[1], H. Cho[1], R. Sinha[2], and L. P. Lee[1]
[1]University of California, Berkeley, Berkeley, CA, [2]Pennsylvania State University, Hershey, PA

11:15AM OP-8-1-11D Detection of Cancer Related DNA Nanoparticulate Biomarkers in Whole Blood
M. J. Heller[1], and A. Sonnenberg[1]
[1]University of California San Diego, La Jolla, CA

PS = Poster Session
OP = Oral Presentation

11:30AM OP-8-1-11E Molecular Profiling of Tumors from Fine-Needle Aspirate Biopsies using a Miniaturized NMR Device
J. B. Haun[1], H. Lee[1], C. M. Castro[1], and R. Weissleder[1]
[1]*Massachusetts General Hospital, Boston, MA*

11:45AM OP-8-1-11F Integrated Molecular Diagnostic Systems (iMDs) for Sepsis Diagnostics
D. Mitra[1], S-S. Chen[1], and L. P. Lee[1]
[1]*University of California, Berkeley, Berkeley, CA*

Track: Devices: Nano to Micro – 8-1-12

Nano to Micro: Fluidic Technologies – III

Chairs: Sanjay Kumar, Huikai Xie
Room 16B

10:30AM OP-8-1-12A Directing Cell Migration by Dynamic Repositioning of Chemotactic Laminar Streams
S. Moorjani[1], R. Nielson[1,2], X. A. Chang[1], and J. B. Shear[1]
[1]*University of Texas, Austin, TX,* [2]*BD Technologies, Research Triangle Park, NC*

10:45AM OP-8-1-12B Core-Shell Biomimetic Cilia: Driven Flow in Aqueous and Viscoelastic Fluids
B. L. Fiser[1], A. R. Shields[1], D. Bober[2], B. A. Evans[3], and R. Superfine[1]
[1]*University of North Carolina at Chapel Hill, Chapel Hill, NC,* [2]*Swarthmore College, Swarthmore, PA,* [3]*Elon University, Elon, NC*

11:00AM OP-8-1-12C - A Parallelized Microfluidic Chamber Device for High-Throughput Nerve Regeneration Studies in C. elegans
N. Ghorashian[1], M. A. Hilliard[2], and A. Ben-Yakar[1]
[1]*The University of Texas at Austin, Austin, TX,* [2]*The University of Queensland, Brisbane, Queensland, Australia*

11:15AM OP-8-1-12D Open-Chamber Focal Stimulation Device for Biomimetic Study of Synaptogenesis
T. Chang[1], N. Bhattacharjee[1], and A. Folch[1]
[1]*University of Washington, Seattle, WA*

11:30AM OP-8-1-12E Autonomous Microfluidic Device for Quantification and Regulation of Vasopressin
A. J. Chung[1], I. Choi[1], B. Cordovez[1], Y. Huh[1,2], and D. Erickson[1]
[1]*Cornell University, Ithaca, NY,* [2]*Korea Basic Science Institute, Daejeon, Chung-nam, Korea, Republic of*

11:45AM OP-8-1-12F Characterization of Self-Assembled Micro/Nanochannel Fabrication in PDMS
W. T. Kahsai[1], U. H. Pham[1], R. Shafabakhsh[1], J. S. Sankaran[1], and S. M. Iqbal[1]
[1]*University of Texas Arlington, Arlington, TX*

Track: Drug Delivery Systems * – 8-1-13

Novel Materials & Self-Assemblying Systems

Chairs: Jason Burdick, Horst von Recum
Room 14

10:30AM OP-8-1-13A Enzymatically-Degradable Microgels for Physiologically-Triggered Release of Therapeutic Agents
P. Wanakule[1], A. Bergeron[1], and K. Roy[1]
[1]*University of Texas at Austin, Austin, TX*

10:45AM OP-8-1-13B Development of Inorganic/Organic Hybrid Based pH Responsive Hydrogels for Drug Delivery Application
S. Z. Khaled[1], S. Dietz[1], C. A. Smid[1], M. Ferrari[1], and E. Tasciotti[1]
[1]*The University of Texas Health Science Center at Houston, Houston, TX*

11:00AM OP-8-1-13C Sustained Release Nitric Oxide From Long Lived Circulating Nanoparticles
P. Cabrales[1]
[1]*University of California, San Diego, La Jolla, CA*

11:15AM OP-8-1-13D Novel Biodegradable PGD Polymeric Nanoparticles Preparation and Characterization
R. Manchanda[1], Y-C. Huang[1], T. Lei[1], A. Fernandez-Fernandez[1], and A. J. McGoron[1]
[1]*Florida International University, Miami, FL*

11:30AM OP-8-1-13E Controlled Delivery of Programmable Colloidal Structures
M. Rafat[1], J-O. You[1], and D. T. Auguste[1]
[1]*Harvard University, Cambridge, MA*

11:45AM OP-8-1-13F Immunosuppressive Micelles Delivered Locally to Lymph Nodes Prolong Allograft Survival
K. Y. Dane[1], C. P. O'Neil[1], C. Nembrini[1], A. A. Tomei[1], D. Velluto[1], J. K. Eby[1], M. A. Swartz[1], and J. A. Hubbell[1]
[1]*Ecole Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland*

*** Drug Delivery Systems Track is sponsored by Acta Biomaterialia**

Track: Drug Delivery Systems – 8-1-14

Translational Drug Delivery

Chairs: Jordan Green, Jung Suh
Room 15

10:30AM OP-8-1-14A Drug Release Kinetics of Coronary Stent: An *In Vivo* Analysis
S. K. Yazdani[1], F. D. Kolodgie[1], and R. Virmani[1]
[1]*CVPath Institute, Gaithersburg, MD*

10:45AM OP-8-1-14B Evolutionary Game Theoretical Approach for Controlled Drug Delivery of Giardiasis
J. Wu[1], S. Lenaghan[1], and M. Zhang[2]
[1]*UTK, Knoxville, TN,* [2]*University of Tennessee, Knoxville, TN*

11:00AM OP-8-1-14C Novel Nanoparticle-encapsulated Compound Halts Gliomalinvasion *In Vivo*
J. M. Munson[1], J. Arbiser[2], and R. Bellamkonda[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory Medical School, Atlanta, GA*

11:15AM OP-8-1-14D Hyperthermic Drug Delivery Using Metal Nanoparticles
N. H. Levi-Polyachenko[1], A. Braden[1], and M. Morykwas[1]
[1]*Wake Forest University Health Sciences, Winston-Salem, NC*

11:30AM OP-8-1-14E Enhancement of Drug Uptake to Rat Tibia Tumors Using Non-Invasive Mechanical Loading
P. E. Palacio Mancheno[1], D. Sharma[1], J. H. Healey[2], G. R. DiResta[3], and S. P. Fritton[1]
[1]*City College of New York, New York, NY,* [2]*Memorial Sloan-Kettering Cancer Center, New York, NY,* [3]*Polytechnic Institute of NYU, New York, NY*

11:45AM OP-8-1-14F Nanochannel Platform for the Controlled Delivery of Chemotherapeutics
A. Grattoni[1], H. Shen[1], D. Fine[1], A. Ziemys[1], J. Gill[1], and M. Ferrari[1,2]
[1]*The University of Texas Health Science Center at Houston, Houston, TX,* [2]*The University of Texas MD Anderson Cancer Center, Houston, TX*

Track: Tissue Engineering * – 8-1-15

Engineered Tissue Models of Disease

Chairs: Claudia Fischbach-Teschl, Yaakov Nahmias

Ballroom F

10:30AM OP-8-1-15A Normal and Diseased Development of Model Tissues

C. M. Nelson[1]

[1]*Princeton University, Princeton, NJ*

10:45AM OP-8-1-15B Adipose Derived Stem Cells and Their Role in Breast Cancer Stiffening

B. Seo[1], E. M. Chandler[1], D. Tims[1], M. Buckley[1], I. Cohen[1], and C. Fischbach[1]

[1]*Cornell University, Ithaca, NY*

11:00AM OP-8-1-15C Cell-Mediated Differences Between Vascular And Valvular Calcification

Z. Ferdous[1], H. Jo[2], and R. M. Nerem[3]

[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA,* [3]*Georgia Tech/ Emory Center (GTEC), Atlanta, GA*

11:15AM OP-8-1-15D Persistent Hepatitis C Virus Infection in Microscale Primary Human Hepatocyte Cultures

A. Ploss[1], S. Khetani[2], C. T. Jones[1], A. J. Syder[3], K. Trehan[4], V. A. Gaysinskaya[5], K. Mu[1], K. Ritola[1], C. M. Rice[1], and S. N. Bhatia[4]

[1]*The Rockefeller University, New York, NY,* [2]*Hepregen Corporation, Medford, MA,* [3]*iTherx Pharmaceuticals, San Diego, CA,* [4]*Massachusetts Institute of Technology, Cambridge, MA,* [5]*Johns Hopkins University, New York, NY*

11:30AM OP-8-1-15E Influence of GAG Identity on SMC Foam Cell Formation

A. C. Jimenez[1], D. Munoz-Pinto[1], D. Ortiz[2], and M. Hahn[1]

[1]*Texas A&M University, College Station, TX,* [2]*Texas A&M University, College Station, TX*

11:45AM OP-8-1-15F Modeling Shock Response of Human Head Using Fluid Structure Interaction (FSI)

N. Chandra[1], L. Gu[1], S. G. Ganpule[1], and E. Plougonven[1]

[1]*University of Nebraska Lincoln, Lincoln, NE*

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

Track: Tissue Engineering * – 8-1-16

Neural Tissue Engineering – II

Chairs: Jessica Winter, Xiaojun Yu

Ballroom G

10:30AM OP-8-1-16A Pre-treatment of Glia with DC Electrical Stimulation Increases Directional Neurite Outgrowth

A. N. Eldridge[1], A. Seggio[1], A. Nordberg[1], G. Paolillo[1], and D. Thompson[1]

[1]*Rensselaer Polytechnic Institute, Troy, NY*

10:45AM OP-8-1-16B Retinal Scaffolds: Synaptic and Stem Cell Integration

J. Hertz[1], E. Lavik[2], and J. L. Goldberg[1]

[1]*University of Miami, Miami, FL,* [2]*Case Western Reserve, Cleveland, OH*

11:00AM OP-8-1-16C Effects of Environment Dimensionality on DRG Neurons: 3D Better Mimics In Vivo Features

A. Ribeiro[1], E. Powell[2], and J. Leach[1]

[1]*UMBC, Chemical & Biochemical Engineering, Baltimore, MD,* [2]*University of Maryland School of Medicine, Departments of Anatomy & Neurobiology and Psychiatry, Baltimore, MD*

11:15AM OP-8-1-16D Neural, Astroglial and Endothelial Heterotypic Cell-Cell Interactions in 3D

Y-T. Liu[1], J. R. Morgan[1], and D. Hoffman-Kim[1]

[1]*Brown University, Providence, RI*

11:30AM OP-8-1-16E 3D Culture Models to Study Paracrine Signaling Between Endothelial and Brain Tumor Stem Cells

D. W. Infanger[1], S. C. Liu[1], D. Gursel[2], J. A. Boockvar[2], and C. Fischbach[1]

[1]*Cornell University, Ithaca, NY* [2]*Weill Cornell Medical College of Cornell University, New York, NY*

11:45AM OP-8-1-16F Astrocytic EphrinB2 Signaling Regulates Neuronal Differentiation of Adult Neural Stem Cells

R. S. Ashton[1], A. Conway[1], C. Pangarkar[2], M. Bissell[2], and D. V. Schaffer[1]

[1]*University of California Berkeley, Berkeley, CA,* [2]*Lawrence Berkeley National Laboratory, Berkeley, CA*

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

PS = Poster Session
OP = Oral Presentation

Track: Biomedical Engineering Education – PS-8B-1

Student Projects in Global Health

PS-8B-1-1 A Packet-Based Medicine Distribution System for Preventing Mother to Child Transmission of HIV/AIDS
S. Fok[1], Y. F. Fei[1], A. Li[1], A. Choe[1], W. Koury[1], A. McLaughlin[1], and M. Winek[1]
[1]*Washington University in St. Louis, St. Louis, MO*

PS-8B-1-2 Combined Thermometer/Otoscope Device Providing Dual Functionality With No External Power Source for Developing World Hospitals
D. Dorfman[1], B. Keeley[1], D. Salume[1], D. Shin[1], N. Bougrab[1], G. Barros[1], X. Hu[1], S. Brown[1], P. Poddar[1], and S. Kim[1]
[1]*Johns Hopkins University, Baltimore, MD*

PS-8B-1-3 Hand-Cranked Hypertension Screening Device to Detect Preeclampsia
M. Trachtenberg[1], G. Jayaram[1], S. Lee[1], S. Acharya[1], N. Thakor[1], and H. Sanghvi[2]
[1]*The Johns Hopkins University, Baltimore, MD,* [2]*JHPIEGO, Baltimore, MD*

PS-8B-1-4 Feasibility of Enhanced Algorithms for Post-Crash Injury Prediction for Improved Field Triage
S. M. Comas[1], and H. C. Gabler[1]
[1]*Virginia Tech, Blacksburg, VA*

PS-8B-1-5 Design and Development of a Low-Cost Spirometer
J. Glynn[1], A. Dias[1], J. Schaefer[1], A. Bremer[1], and D. Van Sickle[1]
[1]*University of Wisconsin - Madison, Madison, WI*

PS-8B-1-6 Removing Population Structure in Genome-Wide Association Studies Using Supervised Methods
A. B. Dicks[1], R. Parry[1], and M. D. Wang[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS-8B-1-7 Low-Cost EKG Proposed for the State of Chiuhuahua, Mexico
B. A. Rodriguez[1], S. L. Montes[1], and R. Aguilar[1]
[1]*ITESM Campus Chihuahua, Chihuahua, Chihuahua, Mexico*

PS-8B-1-8 CANCELED

PS-8B-1-9 Designing a Reliable, Reusable, and Inexpensive Respiratory Monitor for Use in Developing Hospitals
A. Greis[1], M. Danilevich[1], S. Merugumala[1], K. Hattaway[1], and K. Glass[1]
[1]*Engineering World Health University of Texas, Austin, TX*

PS-8B-1-10 Mercer on Mission Prosthetic Knee Joint
L. A. Elliott[1], C. Butler[1], and S. V. Ladson[1]
[1]*Mercer University, Macon, GA*

PS-8B-1-11 Reusable Digital Manometer for Diagnosis of Cryptococcal Meningitis in Resource-Poor Settings
M. S. Fifer[1], A. W. Cheng[1], S. C. Stender[2], N. V. Thakor[1], H. C. Sanghvi[2], and S. Acharya[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Jhpiego, Baltimore, MD*

PS-8B-1-12 Engineering Outside of the Classroom: Lessons From Engineers Without Borders at University of Washington
J. A. Callihan[1]
[1]*University of Washington, Seattle, WA*

Track: Biomedical Imaging and Optics – PS-8B-2

Imaging in the Enhancement or Assessment of Therapeutic Delivery

PS-8B-2-13 A Study on Porous Scaffold Design for Perfusion Control in a Dynamic Imaging Phantom
A. Thomas[1], J. Balter[1], and S. J. Hollister[1]
[1]*University of Michigan, Ann Arbor, MI*

PS-8B-2-14 Monte Carlo Simulations and Experimental Measurements for Chronic Wound Assessment with Diffuse NIR
X. Mao[1], and E. S. Papazoglou[1]
[1]*Drexel University, Philadelphia, PA*

PS-8B-2-15 Synthetic Ferritin Nanocores as a MRI Contrast Agent
B. Sana[1], and S. Lim[1]
[1]*Nanyang Technological University, Nanyang, Singapore*

PS-8B-2-16 A Contrast Enhancement Filter for improving Stent Visibility in Interventional X-Ray Fluoroscopy
Y. Jiang[1], and L-H. Chang[1]
[1]*University of Central Oklahoma, Edmond, OK*

PS-8B-2-17 A Novel Algorithm for 3D Model Reconstruction from Bi-Planar Angiogram Images
W. A. Stoy[1]
[1]*North Carolina State University, Raleigh, NC*

PS-8B-2-18 Three-dimensional Quantification and Visualization Model for Drug Delivery in Eyes
Y-T. Tsai[1], W. Hu[2], and L. Tang[1]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*Progenitec Inc., Arlington, TX*

PS-8B-2-19 Microfluidic Approaches for Synthesis of Microbubble-based Materials
J. Wan[1], and H. Stone[1]
[1]*Princeton University, Princeton, NJ*

PS-8B-2-20 Combined Mechanical and Optical Simulation of Tissue During Application of Optical Clearing Devices
W. C. Vogt[1], A. Izquierdo-Roman[1], A. A. Gurjarpadhye[1], and C. G. Rylander[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

PS-8B-2-21 Advanced Microscopic Analysis of the Attachment Mechanism of *Giardia lamblia*
S. Lenaghan[1], K. White[1], Z. Zhang[1], and M. Zhang[1]
[1]*University of Tennessee, Knoxville, TN*

PS-8B-2-22 Towards *In Vivo* Toxicity of Gadolinium-Single Walled Carbon Nanotubes as MRI Contrast Probes
P. K. Avti[1], K. R. Shroyer[1], and B. Sitharaman[1]
[1]*Stony Brook University, Stony Brook, NY*

PS-8B-2-23 Laser-induced Lipolysis Using Fiberoptic Microneedles
M. A. Kosoglu[1], C. Ye[1], R. L. Hood[1], and C. G. Rylander[1]
[1]*Virginia Tech, Blacksburg, VA*

PS-8B-2-24 Model Assisted MR Thermometry for Laser Induced Thermal Therapy
J. P. Yung[1,2], D. Fuentes[1], A. M. Elliott[1], R. J. Stafford[1], and J. D. Hazle[1]
[1]*The University of Texas M.D. Anderson Cancer Center, Houston, TX,* [2]*The University of Texas Graduate School of Biomedical Sciences at Houston, Houston, TX*

PS-8B-2-25 Multifunctional Magnetic Nanostructures for Imaging and Drug Delivery Applications
S. Foy[1,2], R. L. Manthe[1], T. K. Jain[1], S. K. Dimitrijevic[1], and V. Labhasetwar[1,3]
[1]*Cleveland Clinic, Cleveland, OH,* [2]*Cleveland Clinic Lerner College of Medicine of Case Western Reserve University, Cleveland, OH,* [3]*Taussig Cancer Institute, Cleveland, OH*

POSTER SESSION **8B**

See page 182 for Poster floor plan

PS-8B-2-26 Computational Model for Predicting Drug Distribution in the Human Brain Using DTI
Y. Rawash[1], O. Ivanchenko[1], N. Sindhwani[1], and A. Linninger[1]
[1]*University of Illinois at Chicago, Chicago, IL*

PS-8B-2-27 Acoustically Sensitive Microcapsules for Ultrasound-based Localized Drug Delivery
N. Phipps[1], M. Mobed-Miremadi[1], and M. Keralapura[1]
[1]*San Jose State University, San Jose, CA*

Track: Biomedical Imaging and Optics – PS-8B-3

Neuroimaging

PS-8B-3-28 Non-invasively Reconstructing Cortical Sources of Interictal Spikes using Scalp MEG Data from Epilepsy Patients
M. Zhu[1], L. Ding[1], W. B. Zhang[2], D. L. Dickens[2], and J. A. King[3]
[1]*University of Oklahoma, Norman, OK,* [2]*Minnesota Epilepsy Group, St. Paul, MN,* [3]*University of Oklahoma Health Science Center, Oklahoma City, OK*

PS-8B-3-29 Exploring the Feasibility of the Detection of Neuronal Activity Evoked By Dendrite Currents Using MRI
R. S. Wijesinghe[1], B. D. Dolasinski[1], and B. J. Roth[2]
[1]*Ball State University, Muncie, IN,* [2]*Oakland University, Rochester, MI*

PS-8B-3-30 Using ICA to investigate Impaired Motor Preparation in Parkinson's Patients During A Delayed Cued Finger Movement Task
S. Patel[1], and J. Lee[1]
[1]*University of Cincinnati, Cincinnati, OH*

PS-8B-3-31 Monte Carlo Modeling of *In Vivo* Phosphorescence -lifetime-based pO2 Measurements
M. A. Davis[1], A. Ponticorvo[1], and A. K. Dunn[1]
[1]*The University of Texas at Austin, Austin, TX*

PS-8B-3-32 Intraoperative Laser Speckle Contrast Imaging for Monitoring Cerebral Blood Flow
L. M. Richards[1], A. B. Parthasarathy[1], E. L. Weber[1], M. G. Burnett[2], D. J. Fox[2], and A. K. Dunn[1]
[1]*University of Texas at Austin, Austin, TX,* [2]*St. David's Hospitals, Austin, TX*

PS-8B-3-33 Comparison of Indocyanine Green Fluorescence and Laser Speckle Contrast Imaging
E. L. Weber[1], L. M. Richards[1], A. B. Parthasarathy[1], S. M. Kazmi[1], and A. K. Dunn[1]
[1]*University of Texas at Austin, Austin, TX*

PS-8B-3-34 Imaging Schwann Cell High Affinity Nerve Growth Factor Receptors Using Atomic Force Microscopy
R. Williamson[1], and C. Miller[1]
[1]*Saint Louis University, St. Louis, MO*

PS-8B-3-35 *In Vitro* Refractive Index Measurement of Acute Rat Brains Using Optical Coherence Tomography
J. Sun[1], S. Lee[1], M. Sarntinoranont[1], and H. Xie[1]
[1]*University of Florida, Gainesville, FL*

PS-8B-3-36 Simultaneous Dynamic and Functional MRI of Speech
T. L. Paine[1], B. Sutton[1], and C. Conway[1]
[1]*University of Illinois Urbana-Champaign, Urbana, IL*

PS-8B-3-37 Reassessing the Ubiquity of Small-world Networks
Q. K. Telesford[1], K. E. Joyce[1], S. Hayasaka[1], J. H. Burdette[1], and P. J. Laurienti[1]
[1]*Wake Forest University Health Sciences, Winston-Salem, NC*

PS-8B-3-38 Cortical Oxygenation Sensing Using Ruthenium-based Fluorescence Lifetime Imaging and 2P Microscopy
A. J. Salvaggio[1], A. D. Estrada[1], S. M. Kazmi[1], and A. K. Dunn[1]
[1]*The University of Texas at Austin, Austin, TX*

PS-8B-3-39 Accurate Brain Infarction Volume Estimation Based on Image Mapping
A. Dawkins[1], and W. Zhao[1]
[1]*University of Miami, Coral Gables, FL*

PS-8B-3-40 Chronic Cerebral Blood Flow Imaging with Multi-Exposure Speckle Imaging
S. M. Kazmi[1], A. B. Parthasarathy[1], and A. K. Dunn[1]
[1]*The University of Texas at Austin, Austin, TX*

PS-8B-3-41 Measuring Cerbrovascular Oxygenation Changes Due to Acute, Focal Ischemia Using Two-photon Microscopy
A. D. Estrada[1], S. M. Kazmi[1], A. Salvaggio[1], and A. K. Dunn[1]
[1]*University of Texas at Austin, Austin, TX*

PS-8B-3-42 Development of Amyloid-beta Targeting Nanoparticles for Imaging and Therapy
E. A. Tanifum[1], I. Dasgupta[1], L. Sun[2], I. Dhande[2], K. B. Ghaghada[1], A. V. Annapragada[1], and J. Eriksen[2]
[1]*University of Texas Health Science Center at Houston, Houston, TX,* [2]*University of Houston, Houston, TX*

PS-8B-3-43 Development of Methods for the Study of Traumatic Brain Injury Investigated Via Advanced Imaging
B. M. Vaughn[1], B. Jortner[2], and W. Hardy[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA*

Track: Cardiovascular Engineering – PS-8B-4

Vascular Permeability

PS-8B-4-44 A Model for Radioimmunotherapy Delivered Through Systemic Administration
L. Shi[1], and B. Fu[1]
[1]*City College of New York, New York, NY*

PS-8B-4-45 Paracrine Influences on Aortic Endothelial Hydraulic Conductivity
R. Mathura[1]
[1]*The City College of New York, New York, NY*

Track: Cardiovascular Engineering – PS-8B-5

Vascular Structure and Function

PS-8B-5-46 BSME 2010,Vessel Storage
M. Amin[1], A. Kunkel[2], V. Le[1], and J. E. Wagenseil[1]
[1]*St. Louis University, St. Louis, MO,* [2]*Rice University, Houston, TX*

PS-8B-5-47 Effect of Cigarette Smoking on Arterial Stiffness Re-interpreted Using a Structurally-based Model
M. S. Enevoldsen[1,2], J. D. Humphrey[2], L. Lönn[3], J. A. Jensen[1], and K-A. Henneberg[1]
[1]*Technical University of Denmark, Kongens Lyngby, Denmark,* [2]*Texas A&M University, College Station, TX,* [3]*Rigshospitalet, Denmark, Copenhagen, Denmark*

PS-8B-5-48 CANCELED

PS-8B-5-49 Evaluation of Digital Replantation Surgery Using Photoplethysmography
K. C. Nam[1], K. H. Jang[2], and D. W. Kim[1]
[1]*Yonsei University Health System, Seoul, Korea, Republic of,* [2]*Yonsei University, Seoul, Korea, Republic of*

POSTER SESSION 8B

PS = Poster Session
OP = Oral Presentation

PS-8B-5-50 Directing Vascular Function by Modulating Vascular Structure
P. W. Alford[1,2], A. P. Nesmith[1], J. N. Seywerd[1], and K. K. Parker[1,2]
[1]*Disease Biophysics Group, Harvard University, Cambridge, MA,* [2]*Wyss Institute for Biologically Inspired Engineering, Boston, MA*

PS-8B-5-51 Vascular Changes in Type 2 Diabetes Mellitus: Application to Restenosis After Stenting
H. Wang[1], L. M. Ellwein[1], J. R. Kersten[2], and J. F. LaDisa[1,2]
[1]*Marquette University, Milwaukee, WI,* [2]*Medical College of Wisconsin, Milwaukee, WI*

PS-8B-5-52 Relation Between Mechanical Properties and Histology of Aortic Aneurysms Evaluated in a Rupture Test
S. Sugita[1,2], T. Matsumoto[1,2], T. Ohashi[2], K. Kumagai[2], H. Akimoto[2], K. Tabayashi[2], and M. Sato[2]
[1]*Nagoya Institute of Technology, Nagoya, Japan,* [2]*Tohoku University, Sendai, Japan*

PS-8B-5-53 Inverted DTM – A Possible Solution to the Cold Finger Problem
M. W. Akhtar[1], S. J. Kleis[1], and R. W. Metcalfe[1]
[1]*University of Houston, Houston, TX*

PS-8B-5-54 Ionizing Irradiation Alters Aortic Elasticity Measured as Pulse Wave Velocity.
Y-Y. Liu[1], M. Butlin[1], T. Knittel[2], R. Smee[2], and A. Avolio[1]
[1]*Australian School of Advanced Medicine, Sydney, NSW, Australia,* [2]*Prince of Wales Hospital, Sydney, NSW, Australia*

PS-8B-5-55 Effects of Sleep Deprivation on Autonomic Nervous System
D. W. Kim[1], D. I. Yang[2], K. C. Nam[1], and M. K. Kwon[1]
[1]*Yonsei University Health System, Seoul, Korea, Republic of,* [2]*Yonsei University, Seoul, Korea, Republic of*

PS-8B-5-56 Regulation of Cathepsin K Activity by Monocytes and Arterial Endothelial Cells in Sickle Cell Disease
P. M. Keegan[1], B. E. Gee[2], and M. O. Platt[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Morehouse School of Medicine, Atlanta, GA*

PS-8B-5-57 Regional Atherosclerotic Plaque Properties as Measured by Atomic Force Microscopy
H. N. Hayenga[1], A. Trache[1,2], J. P. Trzeciakowski[2], and J. D. Humphrey[1]
[1]*Texas A&M University, College Station, TX,* [2]*Texas A&M Health Science Center, College Station, TX*

PS-8B-5-58 Variable Glycated Serum Albumin Modulates Endothelial Cell Culture Conditions
D. A. Rubenstein[1], Z. Maria[1], B. E. Morton[1], and W. Yin[1]
[1]*Oklahoma State University, Stillwater, OK*

PS-8B-5-59 ROS Signaling Modulates Enhanced Cell Proliferation and Intimal Hyperplasia in HSV Cultured Ex Vivo
B. Joddar[1], R. K. Reen[1], M. Firstenberg[1], and K. J. Gooch[1]
[1]*The Ohio State University, Columbus, OH*

PS-8B-5-60 Elastin Degradation Reduces the Structure Stability of Arteries
B. Han[1], A. Northcutt[1], and H-C. Han[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

PS-8B-5-61 Mechanical Measurements of the Sub-Endothelial Layer in Arteries using Indentation
J. M. Peloquin[1], J. Huynh[1], and C. A. Reinhart-King[1]
[1]*Cornell University, Ithaca, NY*

PS-8B-5-62 *In Vitro* Mechanical Testing of Hydration-Controlled Arterial Tissue
D. Shahmirzadi[1], and A. H. Hsieh[1]
[1]*University of Maryland, College Park, MD*

PS-8B-5-63 Spatiotemporal Dynamics of Vasoconstriction in Small Arteries
S. Pinto[1], S. Yasotharan[1], J. Yang[1], J. Voigtländer-Bolz[2], M. Sauve[1], C. Lochovsky[1], S-S. Bolz[1], and A. Günther[1]
[1]*University of Toronto, Toronto, Ontario, Canada,* [2]*St. Michael's Hospital, Toronto, Ontario, Canada*

PS-8B-5-64 The Combined Effects of Glycated Albumin and Tobacco Smoke Extracts on Endothelial Cells and Platelets
B. E. Morton[1], W. Yin[1], and D. A. Rubenstein[1]
[1]*Oklahoma State University, Stillwater, OK*

PS-8B-5-65 A Balance Point Approach to Characterize Adaptation of Arterial Networks
S. F. Knezek[1], P. H. Nguyen[1], and C. M. Quick[1]
[1]*Michael E. DeBakey Institute, TX A&M University, College Station, TX*

PS-8B-5-66 Structural and Hemodynamic Effects of Chronic Pulmonary Artery Stenosis in a Murine Model
H. Razavi[1], S. Zarafshar[1], H. Sawada[1], C. Xu[1], J. A. Feinstein[1], and C. A. Taylor[1]
[1]*Stanford University, Stanford, CA*

PS-8B-5-67 Inverse Mechanics of Cardiovascular Tissues
R. Raghupathy[1], C. M. Witzenburg[1], A. Oltean[1], S. P. Lake[1], and V. Barocas[1]
[1]*U. Minnesota, Minneapolis, MN*

PS-8B-5-68 The Elastic and Viscoelastic Behaviors of Aortic Elastin Network
Y. Zou[1], and K. Y. Zhang[1]
[1]*Boston University, Boston, MA*

PS-8B-5-69 Role of HIV Proteins in Biomechanically Mediated Protease Activity and Arterial Remodeling
I. Kennedy[1], L. Hanson[1], J. Raykin[1], R. Sutliff[2], R. Gleason[1], and M. Platt[1]
[1]*Georgia Tech, Atlanta, GA,* [2]*Emory, Atlanta, GA*

PS-8B-5-70 Surface Characterization and Adhesion Properties of Decellularized HUV
L. P. Jackson[1], P. McFetridge[2], M. Nollert[1], and C. Townsend[1]
[1]*University of Oklahoma, Norman, OK,* [2]*University of Florida, Gainseville, FL*

POSTER SESSION **8B**

Track: Cellular and Molecular Engineering – PS-8B-6

Cellular Engineering and Modeling

PS-8B-6-71 Force Generation on the Nucleus by Dynein Walking on Dynamic Microtubules is Sufficient to Explain Nuclear Rotation
J. Wu[1], K. C. Lee[1], R. B. Dickinson[1], and T. P. Lele[1]
[1]*University of Florida, Gainesville, FL*

PS-8B-6-72 Cytotoxicity of Ultrashort Electric Pulse Exposure in Multiple Cell Types
B. L. Ibey[1], C. C. Roth[2], J. A. Bernhard[1], D. R. Dalzell[1], G. J. Wilmink[1], and A. G. Pakhomov[3]
[1]*Air Force Research Laboratory, Brooks City-Base, TX,* [2]*General Dynamics IT, Brooks City-Base, TX,* [3]*Old Dominion University, Norfolk, VA*

PS-8B-6-73 Structural and Geometric Effects in a Synthetic System of Exactly Two Kinesin-1 Motors
J. Driver[1], A. Rogers[1], D. K. Jamison[1], R. Das[1], A. Kolomeisky[1], and M. Diehl[1]
[1]*Rice University, Houston, TX*

PS-8B-6-74 Electromechanical Coupling in the Membrane-Protein Motor Complex Associated with Prestin
N. Nilsen[1], W. E. Brownell[2], S. X. Sun[1], and A. A. Spector[1]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Baylor College of Medicine, Houston, TX*

PS-8B-6-75 Electrical Resistivity Changes in Splenic Tissue Under Compression
R. E. Dodde[1], and A. Shih[1]
[1]*University of Michigan, Ann Arbor, MI*

PS-8B-6-76 Estimation of Microtubule GTP Cap Size *In Vivo*
D. Seetapun[1], and D. J. Odde[1]
[1]*University of Minnesota, Minneapolis, MN*

PS-8B-6-77 Pericellular Conditions Regulate Extent of Cell-mediated Compaction of Collagen Gels
M. D. Stevenson[1], A. L. Sieminski[2], C. M. McLeod[2], F. J. Byfield[3], V. H. Barocas[4], and K. J. Gooch[1]
[1]Ohio State University, Columbus, OH, [2]Franklin W. Olin College of Engineering, Needham, MA, [3]University of Pennsylvania, Philadelphia, PA, [4]University of Minnesota, Minneapolis, MN

PS-8B-6-78 Metabolic Flux Determination in Perfused Livers by Mass Balance Analysis: Effect of Fasting
M. A. Orman[1], I. Androulakis[1], F. Berthiaume[1], and M. Ierapetritou[1]
[1]Rutgers University, Piscataway, NJ

PS-8B-6-79 Retinoic Acid-Induced Smooth Muscle Differentiation From Progenitor Cells is Regulated by ECM Cues
E. Logsdon[1], J. Perley[1], Q. Gan[1], A. Somlyo[1], G. Owens[1], and T. Skalak[1]
[1]University of Virginia, Charlottesville, VA

PS-8B-6-80 Insights from Modeling Natural Killer Cell Proliferative Responses to Cytokine Stimulation
Y. M. Zhao[1], and A. R. French[2]
[1]Washington University in St. Louis, Saint Louis, MO, [2]Washington University School of Medicine, Saint Louis, MO

PS-8B-6-81 Influence of Subcellular Structures on Single Vascular Smooth Muscle Cell Mechanics
S. T. Wood[1], B. C. Dean[1], and D. Dean[1]
[1]Clemson University, Clemson, SC

PS-8B-6-82 An Experimental Study on Cell Membrane Transport During Desiccation for Biopreservation
J. L. Jimenez-Rios[1], S. Bhowmick[1], and A. J. Fowler[1]
[1]University of Massachusetts Dartmouth, North Dartmouth, MA

POSTER SESSION **8B**

PS-8B-6-83 A Coarse-Grain Molecular Dynamics Model for Sickle Hemoglobin Fibers
H. Li[1], and G. Lykotrafitis[1]
[1]University of Connecticut, Storrs, CT

PS-8B-6-84 Uncovering Morphological and Morphogenetic Features in Epithelia by Eliminating Statistical Bias
M. P. Miklius[1], and S. Hilgenfeldt[1,2]
[1]Northwestern University, Evanston, IL, [2]University of Illinois at Urbana-Champaign, Urbana, IL

PS-8B-6-85 Computational Model of Force Propagation in Fibrous Extracellular Matrix
X. Ma[1], K. J. Gooch[1], S. N. Ghadiali[1], and R. T. Hart[1]
[1]The Ohio State University, Columbus, OH

PS-8B-6-86 Expanding the Genetic Code in Mammalian Cells
L. Xiang[1], K. Moncivais[1], and Z. J. Zhang[1]
[1]University of Texas at Austin, Austin, TX

PS-8B-6-87 Single Cell Based Modeling of Epithelial Tissue: A Biomechanical Approach
Y. Jamali[1], M. Azimi[1], and M. Mofrad[1]
[1]University of California Berkeley, Berkeley, CA

PS-8B-6-88 Modulating the Cellular Accumulation of Toxic Misfolded Alpha-synuclein
K. Kilpatrick[1], and L. Segatori[1]
[1]Rice University, Houston, TX

PS-8B-6-89 Type-I Collagen Gels are Structurally and Mechanically Inhomegeneous and Anistropic
X. Ma[1], M. Weber[1], M. Stevenson[1], K. J. Gooch[1], S. N. Ghadiali[1], and R. T. Hart[1]
[1]The Ohio State University, Columbus, OH

PS-8B-6-90 Integrated Feedback Regulation of the Epidermal Growth Factor Receptor in Non-Small Cell Lung Cancer
A. J. Macdonald[1], and M. J. Lazzara[1]
[1]University of Pennsylvania, Philadelphia, PA

Track: Devices: Nano to Micro – PS-8B-7

Micro and Nanostructured Biomaterials

PS-8B-7-91 Nanoscale Diffusion-Limiting Biopolyelectrolyte Multilayers
J. Park[1], and M. J. McShane[1]
[1]Texas A&M University, College Station, TX

PS-8B-7-92 The Effect of Substrate Topography on Endocytosis and Transfection
A. F. Adler[1], and K. W. Leong[1]
[1]Duke University, Durham, NC

PS-8B-7-93 Proximal Effects of Ultraviolet Light Absorbers and Polymer Matrix in the Photo-Protection of [beta]-Carotene
K. Morabito[1], K. Gilida[2], N. Shapely[2], and A. Tripathi[1]
[1]Brown University, Providence, RI, [2]Rutgers University, New Brunswick, NJ

PS-8B-7-94 Micro-Encapsulation as a Means to Modulate Nanomaterial-Cell Interactions
D. W. Ritter[1], A. A. Romoser[1], R. Majithia[1], K. E. Meissner[1], C. M. Sayes[1], and M. J. McShane[1]
[1]Texas A&M University, College Station, TX

PS-8B-7-95 Nanoscopic Mechanical Anisotropy in Hydrogel Surfaces
M. Flores-Merino[1,2], S. Chirasatitsin[3], C. LoPresti[1,2], G. Reilly[2], A. Engler[3], and G. Battaglia[1]
[1]University of Sheffield, Western Bank, Sheffield, United Kingdom, [2]University of Sheffield, Broad Lane, Sheffield, United Kingdom, [3]University of California, San Diego, La Jolla, CA

PS-8B-7-96 Patterning and Topographical Control of PEG Hydrogel Micro/Nanostructure by Dip-pen Nanolithography®
J-W. Jang[1], P. Stiles[1], and S. R. Nettikadan[1]
[1]NanoInk Inc., Skokie, IL

PS-8B-7-97 Micropatterning Polymeric Nanofibers with PEG Hydrogel for Application of Protein Microarray
Y. Lee[1], H. Lee[1], K. Son[1], S. Park[1], S. Nam[1], Y. Park[1], and W-G. Koh[1]
[1]Yonsei Univ., Seodaemoon-gu, Seoul, Korea, Republic of

PS-8B-7-98 Study of Parylene C as Non-Hermetic Coating for Micropackging of Implantable Microdevice
H-I. Kuo[1], R. Zhang[1], and W. Ko[1]
[1]Case Western Reserve University, Cleveland, OH

PS-8B-7-99 Effect of Size on Nanoparticle Uptake in a Vascular Endothelial Cell Model of Angiogenesis
A. L. Doiron[1], J. Spencer[1], and K. D. Rinker[1]
[1]University of Calgary, Calgary, Alberta, Canada

PS-8B-7-100 Window into a Microworld: Microfluidic System for Studying Microbial Growth in Porous Media
D. A. Markov[1], P. C. Samson[1], D. K. Schaffer[1], A. Dhummakupt[1], J. P. Wikswo[1], and L. M. Shor[2]
[1]Vanderbilt University, Nashville, TN, [2]University of Connecticut, Storrs, CT

PS-8B-7-101 Influence of TiO2 Nanotube Crystallinity on Cell Behaviour
G. Smith[1], K. Kolind[2], M. Foss[2], F. Besenbacher[2], and S. Jin[1]
[1]University of California San Diego, La Jolla, CA, [2]Aarhus University, Aarhus, Denmark

PS-8B-7-102 Understanding the Mechanics of the Insect Respiratory System Could Advance Tissue Engineering
M. R. Webster[1], J. Twigg[1], J. J. Socha[1], and R. De Vita[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

PS = Poster Session
OP = Oral Presentation

PS-8B-7-103 Decreased Lung Carcinoma Cell Function on Select Polymer Nanometer Surface Features
L. Zhang[1], and T. Webster[1]
[1]*Brown University, providence, RI*

PS-8B-7-104 Process Characterization: Reactive Ion Etching of Micro Hot-embossed Poly(lactic acid) Films
R. Tewari[1,2], K. L. Vanga[1,2], W. R. Knudsen[1,2], and C. Friedrich[1,2]
[1]*Michigan Technological University, Houghton, MI,* [2]*Multi Scale Technologies Institute, Houghton, MI*

PS-8B-7-105 Decreased Attachment of Epithelial Cells and Bacteria to Lubricin Coated Intraocular Lenses
G. E. Aninwene II[1], E. Taylor[1], T. J. Webster[1], and G. D. Jay[1]
[1]*Brown University, Providence, RI*

PS-8B-7-106 Improvement of Nanofiber Morphology through Electrospinning Process Pausing
D. Karatas[1], K. M. Sawicka[1], and S. R. Simon[1]
[1]*Stony Brook University, Stony Brook, NY*

PS-8B-7-107 The Bio-Assembler: 3D Cell Culturing Using Magnetic Levitation
C. S. Filgueira[1], C. P. Bertucci[1], and G. R. Souza[1]
[1]*Nano3D Biosciences, Inc., Houston, TX*

PS-8B-7-108 Chitosan Enhances Cell Adhesion and Spreading on Nanocomposite Films
A. K. Gaharwar[1], P. J. Schexnailder[1], C-J. Wu[1], Q. Jin[1], and G. Schmidt[1]
[1]*Purdue University, West Lafayette, IN*

PS-8B-7-109 UV-Modulated Elastomeric Microstructures for Studying Cell Mechanics
L-T. Jiang[1], R. Okada[1], and J. Fu[1]
[1]*University of Michigan, Ann Arbor, MI*

PS-8B-7-110 Bacterial Catch-and-Release Using Thermally Responsive Multiphoton Fabricated Protein Hydrogels
J. L. Connell[1], E. T. Ritschdorff[1], M. Whiteley[1], and J. B. Shear[1]
[1]*The University of Texas at Austin, Austin, TX*

PS-8B-7-111 Multifunctional Iron Oxide Core Gold Shell Nanoclusters for Optical and Magnetic Cellular Imaging
A. U. Borwankar[1], K. Yoon[1], L. L. Ma[1], M. Mehrmohammadi[1], B. Willsey[1], K. Sokolov[1,2], S. Emelianov[1], and K. Johnston[1]
[1]*The University of Texas at Austin, Austin, TX,* [2]*UT M.D. Anderson Cancer Center, Austin, TX*

PS-8B-7-112 Spatially Controlled Electrospun Solid Gradient Nanofibers for Guided Spiral Ganglion Neuron Culture
P. F. Jao[1], W. Sun[2], Y. K. Yoon[1], and G. J. Kim[3]
[1]*Dept. of Electrical Engineering, University at Buffalo, The State University of New York, Buffalo, NY,* [2]*Dept. of Communicative Disorders & Sciences, University at Buffalo, The State University of New York, Buffalo, NY,* [3]*Dept. of Biomedical Engineering, University at Buffalo, The State University of New York, Buffalo, NY*

PS-8B-7-113 Reduced Resistance to Air Flow from Nanomodified Endotracheal Tubes
M. C. Machado[1], K. Tarquinio[2], and T. Webster[1]
[1]*Brown University, Providence, RI,* [2]*Rhode Island Hospital, Providence, RI*

PS-8B-7-114 "The Disappearing Substrate": SiO2 Etch Rate by Common Buffers in Genomic and Proteomic Technology
S. Ahn[1], P. Spuhler[1], M. Cabodi[1], and S. Unlu[1]
[1]*Boston University, Boston, MA*

PS-8B-7-115 Polystyrene Microlens Array by Shrink-induced PDMS Mold
D. Dyer[1], S. Shreim[1], S. Jayadev[1], D. Taylor[1], V. Lew[1], E. Botvinick[1], and M. Khine[1]
[1]*University of California, Irvine, Irvine, CA*

PS-8B-7-116 STEP enabled Long Term Culture of Hepatocytes on Cross-Hatch Pattern of Sub-micron Polymeric Fibers
A. S. Nain[1], and G. Michalopoulos[2]
[1]*Virginia Tech, Blacksburg, VA,* [2]*University of Pittsburgh, Pittsburgh, PA*

PS-8B-7-117 Silk for High Fidelity Micromolding
D. N. Breslauer[1], F. B. Myers[1], E. P. Lee[1], B. W. Turner[1], S. J. Muller[1], and L. P. Lee[1]
[1]*UC Berkeley, Berkeley, CA*

PS-8B-7-118 Fabrication of Quantum Dot-Protein Arrays and their Application in Cell Adhesion Assays
Z. R. Taylor[1], and D. W. Schmidtke[1]
[1]*University of Oklahoma, Norman, OK*

Track: Devices: Nano to Micro – PS-8B-8

Miniature Energy Generation & Harvesting for Bio

PS-8B-8-119 An Optimization Method for Electromagnetic Energy Delivery to Electronic Implants
S. Deb[1], W-D. Huang[1], and J-C. Chiao[1]
[1]*University of Texas at Arlington, Arlington, TX*

PS-8B-8-120 Photosynthetically Active Protoplasts for Power Scavenging – Absorbance and Optical Density Analysis
A. Shahid[1], A. Ilyas[1], N. Obulareddy[1], M. H-C. Jin[1], M. Melotto[1], and S. M. Iqbal[1]
[1]*University of Texas Arlington, Arlington, TX*

Track: Drug Delivery Systems – PS-8B-9

Non-Parental Delivery

PS-8B-9-121 Whole-Animal Imaging and Immunological Analysis of Oral Vaccine Delivery Using Polymer Particles
A. V. Li[1], M. Yen[1], and D. J. Irvine[1,2]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Howard Hughes Medical Institute, Chevy Chase, MD*

PS-8B-9-122 Carbohydrate Surface Modification for Oral Protein Delivery
M. A. Phillips[1], and N. A. Peppas[1]
[1]*The University of Texas at Austin, Austin, TX*

PS-8B-9-123 Nanoparticulate Delivery of Targeted Immunotherapies for Inflammatory Bowel Disease
N. Capurso[1], M. Look[1], R. Ragheb[1], S. Demento[1], C. Abraham[1], and T. Fahmy[1]
[1]*Yale University, New Haven, CT*

PS-8B-9-124 A Novel Vaccine Paradigm
K. Sawicka[1], and S. Simon[1]
[1]*Stony Brook University, Stony Brook, NY*

PS-8B-9-125 Fluoride Release from Dental Cement with Different Redox Systems
J. Lee[1], and B. Suh[1]
[1]*Bisco Dental Products, Schaumburg, IL*

Track: Drug Delivery Systems – PS-8B-10

Novel Biomaterials and Scaffolds

PS-8B-10-126 Stable Gold Nanoparticles via Functionalization within Biodegradable Hydrogels
H. D. Chirra[1], D. Spencer[1], and J. Hilt[1]
[1]University of Kentucky, Lexington, KY

Track: Neural Engineering – PS-8B-11

Drug Delivery and Tissue Engineering in the Nervous System

PS-8B-11-127 Direct Electrospinning of PEDOT Microfibers for Neural Tissue Engineering
Z-Q. Feng[1,2], M. K. Leach[2], Y. Naim[2], and J. M. Corey[2,3]
[1]Southeast University, Nanjing, China, People's Republic of, [2]University of Michigan, Ann Arbor, MI, [3]VAMC, Ann Arbor, MI

PS-8B-11-128 A Novel Microfluidic Platform for Axon-Specific Injury
S. Hosmane[1], A. Venkatesan[1], and N. Thakor[1]
[1]Johns Hopkins University, Baltimore, MD

PS-8B-11-129 Translational Technology for Neural Protection: HPLC Quantification of Timolol Maleate Drug-Delivery
A. Shoffstall[1], E. Lavik[1], A. Dumitrescu[2], M. Kuehn[2], and Y. Kwon[2]
[1]Case Western Reserve University, Cleveland, OH, [2]University of Iowa, Iowa City, IA

PS-8B-11-130 Transparent CUPE Nerve Guides Allow Evaluation of Luminal Fillers and Mediate Nerve Gap Repair
S. Dash[1], R. Tran[1], J. Yang[1], and M. Romero-Ortega[1]
[1]University of Texas at Arlington, Arlington, TX

PS-8B-11-131 Addition of Chitosan to Tissue Engineering Hydrogels for Neural Regeneration Applications
J. M. Zuidema[1], M. M. Pap[2], E. J. Minner[2], D. B. Jaroch[3], F. A. Morrison[2], and R. J. Gilbert[1]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Michigan Technological University, Houghton, MI, [3]Purdue University, West Lafayette, IN

PS-8B-11-132 Development of a Composite Hydrogel Containing Electrospun Fibers for Spinal Cord Injury
C. J. Rivet[1], H. Wang[2], and R. J. Gilbert[1]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Syracuse University, Syracuse, NY

PS-8B-11-133 Electrospun Polycaprolactone/Elastin Aligned Fibrous Scaffolds for Schwann Cells
I-H. Lin[1], and C. Miller[1]
[1]Saint Louis University, St Louis, MO

PS-8B-11-134 Using micro-Computed Tomography to assess Transport Parameters through Fluid Spaces of the Cochlea
M. Gladstone[1], X. Zhu[1,2], A. Luebke[1], R. D. Frisina[1,2], and D. A. Borkholder[1,3]
[1]University of Rochester, Rochester, NY, [2]National Technical Institute, Rochester Institute of Technology, Rochester, NY, [3]Rochester Institute of Technology, Rochester, NY

PS-8B-11-135 Treatment of Spinal Cord Injury with Keratin Biomaterial Improves Survival and Recovery in Rats
B. Fearing[1], C. Hartley[1], O. Dayton[1], L. Pace[1], L. Burnett[2], T. Aboushwareb[1], and M. Van Dyke[1]
[1]Wake Forest University School of Medicine, Winston Salem, NC, [2]KeraNetics, Winston Salem, NC

PS-8B-11-136 Analysis of CAMs and ECM Proteins on Schwann Cell-mediated Neurite Guidance
A. M. Seggio[1], A. Narayanaswamy[1], B. Roysam[1], S. Aguilar[1], A. McGregor[1], and D. Thompson[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

PS-8B-11-137 The Functional Recovery of Neurons after Traumatic Brain Injury
M. K. Kutzing[1], C. Langhammer[1], and B. L. Firestein[1]
[1]Rutgers University, Piscataway, NJ

PS-8B-11-138 Aligned Collagen Threads Direct Neuronal Growth Due to Microtopography Not Nanotopography
M. Abu-Rub[1], K. L. Billiar[2], B. Rodriguez[3], D. Zeugolis[1], and A. Pandit[1]
[1]National University of Ireland, Dangan, Galway, Ireland, [2]Worcester Polytechnic Institute, Worcester, MA, [3]University College, Dublin, Leinster, Ireland

PS-8B-11-139 Design of Backflow-Free Catheters Based on Micro-fluid Dynamics
O. V. Ivanchenko[1], E. Lueshen[1], N. Sindhwani[1], Y. Rawash[1], and A. Linninger[1]
[1]UIC, Chicago, IL

PS-8B-11-140 Schwann Cell-Seeded Nanofiber Scaffolds Enhance and Direct Axonal Regeneration
M. R. MacEwan[1], J. Xie[1], N. Jesuraj[1], D. Siewe[1], X. Li[1], S. Sakiyama-Elbert[1], and Y. Xia[1]
[1]Washington University, Saint Louis, MO

PS-8B-11-141 Tunable 3D Hyaluronic Acid Hydrogels for Differentiation of Progenitors into Dopamine Neurons
Z. Z. Khaing[1], S. K. Seidlits[1], K. Sliverberg[1], S. A. Geissler[1], and C. E. Schmidt[1]
[1]UT Austin, Austin, TX

PS-8B-11-142 Microfluidic Devices for Studying Intercellular Communication Between Dorsal Root Ganglia (DRG)
N. Jain[1], B. J. Pfister[1], and R. Perez-Castillejos[1]
[1]NJIT, Newark, NJ

PS-8B-11-143 Aligned 6-Aminonicotinamide Releasing PLLA Fibers for Repair of the Injured Spinal Cord
N. Schaub[1], and R. J. Gilbert[2]
[1]Michigan Technological University, Houghton, MI, [2]Rensselaer Polytechnic Institute, Troy, NY

Track: Neural Engineering – PS-8B-12

Neural Modeling

PS-8B-12-144 Analysis of Spatio-temporal Odor Codes in the Locust Olfactory System
B. Raman[1], J. Joseph[2], J. Tang[2], and M. Stopfer[2]
[1]Washington University, St. Louis, MO, [2]National Institutes of Health, Bethesda, MD

PS-8B-12-145 Quantifying the Effectiveness of Different Targets of Deep Brain Stimulation for Parkinson's Disease Using a Computational Model of the Basal Ganglia
R. Y. Qi[1], A. R. Kent[1], and W. M. Grill[1]
[1]Duke University, Durham, NC

PS-8B-12-146 A Unifying Nonlinear Dynamic Model of Hippocampal Population Activities for Multiple Events During a Memory-dependent Behavioral Task
D. Song[1], R. H. Chan[1], V. Z. Marmarelis[1], R. E. Hampson[2], S. A. Deadwyler[2], and T. W. Berger[1]
[1]University of Southern California, Los Angeles, CA, [2]Wake Forest University, Winston-Salem, NC

PS-8B-12-147 Devlopment and Validation of a FE Model of the Rat Brain Subjected to Air Shock Loading
F. Zhu[1], H. Mao[1], C. Chou[1], C. Wagner[1], X. Jin[1], A. D. Leonardi[1], P. J. VandeVord[1], C. A. Bir[1], K. H. Yang[1], and A. I. King[1]
[1]Wayne State University, Detroit, MI

POSTER SESSION 8B

PS = Poster Session
OP = Oral Presentation

PS-8B-12-148 Power Flow in the Sandwich Model of the Cochlea
D. Kim[1,2], D. C. Mountain[1,2], and A. E. Hubbard[1,2]
[1]Boston University, Boston, MA, [2]Boston University Center for Hearing Research, Boston, MA

PS-8B-12-149 Macro- to Micro- Biomechanics of Traumatic Brain Injury
K. D. Browne[1], C. Mietus[1], R. Kraft[2], and D. Cullen[1]
[1]University of Pennsylvania, Philadelphia, PA, [2]U.S. Army Research Laboratory, Aberdeen Proving Ground, MD

PS-8B-12-150 Anatomically Detailed Micromechanical Model of the Organ of Corti Including Radial Microfluid Flow
B. F. Zagadou[1], P. E. Barbone[1], and D. C. Mountain[1]
[1]Boston University, Boston, MA

PS-8B-12-151 Spatiotemporal Investigation of Gamma Activity in the Human Epileptic Brain
M. Cotic[1], O. C. Zalay[1], T. Valiante[2], D. Andrade[2], P. L. Carlen[1,2], and B. L. Bardakjian[1]
[1]University of Toronto, Toronto, Ontario, Canada, [2]Toronto Western Research Institute, Toronto, Ontario, Canada

PS-8B-12-152 FDEHMT: A Finite Difference Electromagnetic Head Modeling Toolbox
H. V. Dang[1], and K. T. Ng[1]
[1]New Mexico State University, Las Cruces, NM

PS-8B-12-153 *In Silico* Investigation of Astrocytic Gliotransmission in Synaptic Signal Processing
V. R. Tiruvadi[1], P. Singh[1], and D. F. Meaney[1]
[1]University of Pennsylvania, Philadelphia, PA

PS-8B-12-154 Characterization of the Glial Scar using Raman Spectroscopy and Microindentation
T. Saxena[1], B. Deng[1], J. Gilbert[1], D. Stelzner[2], J. Chaiken[1], and J. Hasenwinkel[1]
[1]Syracuse University, Syracuse, NY, [2]Upstate Medical University, Syracuse, NY

PS-8B-12-155 Assessment of Strain Patterns in the Brain from Head Acceleration from Collegiate Football Players
K. Danelson[1], S. Rowson[2], S. Duma[2], and J. Stitzel[1]
[1]Virginia Tech/Wake Forest University SBES, Winston-Salem, NC, [2]Virginia Tech/Wake Forest University SBES, Blacksburg, VA

PS-8B-12-156 Neural Network Connectivity and Mapping of *In Vitro* Circuits
T. P. Patel[1], and D. F. Meaney[1]
[1]University of Pennsylvania, Philadelphia, PA

PS-8B-12-157 A Temporal Backpropagation Algorithm for the Resonate and Fire Perceptron
H. Mukhopadhy[1], and J. Tranquillo[1]
[1]Bucknell University, Lewisburg, PA

Track: New Frontiers in Bioengineering – PS-8B-13

Systems-Level Approaches in Bioengineering

PS-8B-13-158 Holding Strength of Suturing Techniques in Biological and Synthetic Models
A. Kumar[1]
[1]Ethicon inc, Somverville, NJ

PS-8B-13-159 Isolation and Culture of Contractile Myotubes from Insect Cells for Bioactuation Applications
A. L. Baryshyan[1], B. A. Trimmer[1], and D. L. Kaplan[1]
[1]Tufts University, Medford, MA

PS-8B-13-160 A Spin Drying Technique for Dry Preservation of Mammalian Cells
N. Chakraborty[1,2], M. A. Menze[3], S. C. Hand[3], and M. Toner[1,2]
[1]Center for Engineering in Medicine, Harvard Medical School, Boston, MA, [2]BioMEMS Resource Center, Massachusetts General Hospital, Charlestown, MA, [3]Louisiana State University, Baton Rouge, LA

PS-8B-13-161 EasyMed-ID: Private, Secure, and Memorable Identification of Medical Record Data for Mobile Devices
T. Stokes[1], R. Moffitt[2], S. Hang[3], C-W. Cheng[3], and M. Wang[4]
[1]Emory University - Georgia Tech, Atlanta, GA, [2]Georgia Tech - Emory University, Atlanta, GA, [3]Georgia Tech, Atlanta, GA, [4]Georgia Tech - Emory University, Atlanta, GA, Afghanistan

PS-8B-13-162 24-Hour Core Temperature in Obese and Lean Men and Women
R. A. Linsenmeier[1], M. Hoffmann[1], S. Rodriguez[2], D. Zeiss[2], R. Kushner[2], and L. Landsberg[2]
[1]Northwestern University, Evanston, IL, [2]Northwestern University, Chicago, IL

PS-8B-13-163 Synergistic Effects of Conditioned Media and Hydrostatic Pressure on Stem Cell Differentiation
S. Maxson[1], and K. Burg[1]
[1]Clemson University, Clemson, SC

PS-8B-13-164 A Coupled Agents –Transport Modelling Approach for Bioreactor Design
H. Kaul[1], D. J. Hughes[2], Z. Cui[1], and Y. Ventikos[1]
[1]University of Oxford, Oxford, United Kingdom, [2]Zyoxel Limited, Oxford, United Kingdom

PS-8B-13-165 Development of Solar Powered Transportable Mini-Lab for Field Disease Detection
E. Rios[1], R. Espinoza[1], L. Holguin[1], D. Terreros[2], and T. Xu[1,2]
[1]University of Texas at El Paso, El Paso, TX, [2]Texas Tech University Health Sciences Center, El Paso, TX

Track: Orthopedic and Rehabilitation Engineering –PS-8B-14

Orthopaedic Soft Tissue Biomechanics

PS-8B-14-166 Testing-configuration and Lubricant Effects on Cartilage Lubrication
L. Shi[1], and A. Striolo[1]
[1]The University of Oklahoma, Norman, OK

PS-8B-14-167 Investigation of Biaxial Periosteal Mechanics
O. O. Aruwajoye[1], and P. B. Wells[2]
[1]Texas Scottish Rite Hospital, Dallas, TX, [2]Baylor University, Waco, TX

PS-8B-14-168 Biomechanical Analysis of the Rabbit Temporomandibular Joint Fibrocartilages
A. J. Almarza[1], and S. E. Henderson[1]
[1]University of Pittsburgh, Pittsburgh, PA

PS-8B-14-169 Incomplete Fibers in Inner Annulus Affects Tissue Stresses Higher than in Outer or Middle Annulus
M. Hussain[1], R. E. Gay[2], and K-N. An[3]
[1]Logan University, Chesterfield, MO, [2]Mayo Clinic, Rochester, MN, [3]Mayo Clinics, Rochester, MN

PS-8B-14-170 Disc with Incomplete Fibers Bulges More than the Disc with Compelte Fibers: A Finite Element Study
M. Hussain[1], R. E. Gay[2], and K-N. An[3]
[1]Logan University, Chesterfield, MO, [2]Mayo Clinic, Rochester, MN, [3]Mayo Clinics, Rochester, MN

PS-8B-14-171 Characterization of Synthetic Ballistic Gelatin as an Achievable Biological Tissue Simulant
F. Amaechi [1], and J. L. Sparks[2,3]
[1]Wake Forest University School of Medicine, Winston Salem, [27157], [2]Virginia Tech-Wake Forest Center for Injury Biomechanics, Winston Salem, [27157], [3]Virgina Tech – Wake Forest University School of Biomedical Engineering and Sciences, Winston Salem, NC

PS-8B-14-172 Effect of Strain Rate and Soaking Time on the Mechanical Properties of Porcine Dermal Collagen
S. Saha[1], T. Thornton[1], and S. Batra[2]
[1]SUNY Downstate Medical Center, Brooklyn, NY, [2]CollaFirm, LLC, Monmouth Junction, NJ

PS-8B-14-173 The Effect of Radiation on Articular Cartilage Using a Murine Model
A. LINDBURG[1], J. WILLEY[1], T. BATEMAN[1], AND D. DEAN[1]
[1]*Clemson University, Clemson, SC*

PS-8B-14-174 A Method for 3D Strain Field Measurement with Dynamic Tissue Deformation Using MR Imaging
P. J. BROWN[1], H. TAN[1], R. A. KRAFT[1], AND J. D. STITZEL[1]
[1]*VT-WFU School of Biomedical Engineering and Sciences, Winston-Salem, NC*

PS-8B-14-175 The Dose Response of the Intervertebral Disc Neutral Zone Stability to Crosslinking with Genipin
B. KIRKING[1,2], J. TOUNGATE[2], AND T. HEDMAN[1,2]
[1]*Texas A&M University, College Station, TX,* [2]*Orthopeutics, Georgetown, TX*

PS-8B-14-176 Development of a Concussion Risk Curve Using Biomechanical Data from Collegiate Football Players
J. R. FUNK[1], S. DUMA[2], S. MANOOGIAN[1], AND S. ROWSON[2]
[1]*Biodynamic Research Corporation, San Antonio, TX,* [2]*Virginia Tech, Blacksburg, VA*

PS-8B-14-177 Physiological Distributions Of Neuronal Strain In Peripheral Nerves
S. B. SHAH[1], AND S. KRATOVAC[1]
[1]*University of Maryland, College Park, College Park, MD*

PS-8B-14-178 Effect of Shoe Laces on *In Situ* Measurement of Achilles Tendon Mechanics
S. ROWSON[1], C. MCNALLY[1], AND S. M. DUMA[1]
[1]*Virginia Tech, Blacksburg, VA*

PS-8B-14-179 On the Development of a Multilayered Finite Element Model of Scalp
S. RYLAND[1]
[1]*Mississippi State University, West Point, MS*

POSTER SESSION **8B**

Track: Respiratory Engineering – PS-8B-15

Complexity and Heterogeneity in Lung Behavior

PS-8B-15-180 Impact of Mean Pressure vs. Dynamics during Breathing-Like Fluctuations on Intact Airway Responsiveness
B. C. HARVEY[1], A. S. LAPRAD[1], AND K. R. LUTCHEN[1]
[1]*Boston University, Boston, MA*

PS-8B-15-181 A Method for Assessing Glottis Aperture Variation on Airway Resistance by Forced Oscillation
Y. CHEN[1,2], T. BRWON[1], S. BHATAWADEKAR[1], D. LEARY[1], U. PETERS[1], L. DENG[2], AND G. MAKSYM[1]
[1]*Dalhousie University, Halifax, Nova Scotia, Canada,* [2]*Chongqing University, Chongqing, China, People's Republic of*

PS-8B-15-182 Effects of Airway Wall Thickness on Bronchoconstriction in Asthma
A. BRAUNE[1], J. G. VENEGAS[1], AND T. WINKLER[1]
[1]*Massachusetts General Hospital, Boston, MA*

PS-8B-15-183 Modeling Tissue Heterogeneity and Respiratory Impedance in Elastase Treated Mice
S. SATO[1], A. MAJUMDAR[1], AND B. SUKI[1]
[1]*Boston University, Boston, MA*

PS-8B-15-184 Computational Modeling of Airway Diameter Variation and Respiratory Impedance
D. LEARY[1], G. PARRAGA[2], AND G. N. MAKSYM[1]
[1]*Dalhousie University, Halifax, NS, Canada,* [2]*Robarts Research Institute, The University of Western Ontario, London, ON, Canada*

PS-8B-15-185 Relating Tree Structures to Parallel Pathways: Implications of Heterogeneous Disease on Distributed Airway Models
S. AMIN[1], AND B. SUKI[1]
[1]*Boston University, Boston, MA*

PS-8B-15-186 Simulation of Dynamic Recruitment-Derecruitment in Mouse Lung under Deep Inflation
B. MA[1], AND J. H. BATES[1]
[1]*University of Vermont, Burlington, VT*

Track: Systems Biology, Bioinformatics and Computational Biology – PS-8B-16

Biological Systems and Control Dynamics

PS-8B-16-187 Artificial Pancreas and Hypoglycemia Alarms for Patients with Type 1 Diabetes
M. ORUKLU[1], L. QUINN[2], D. K. ROLLINS[3], AND A. CINAR[1]
[1]*Illinois Institute of Technology, Chicago, IL,* [2]*University of Illinois at Chicago, Chicago, IL,* [3]*Iowa State University, Ames, IA*

PS-8B-16-188 3D Finite Element Modeling of Guinea Pig Middle Ear for Sound Transmission
X. GUAN[1], AND R. GAN[1]
[1]*School of Aerospace & Mechanical Engineering and Bioengineering Center, University of Oklahoma, Norman, OK*

PS-8B-16-189 Model Analysis of Oxygen Transport and Metabolism in Contracting Muscle under Normoxia and Hypoxia
J. R. SPIRES[1], N. LAI[1], G. M. SAIDEL[1], AND L. B. GLADDEN[2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Auburn University, Auburn, AL*

PS-8B-16-190 MRI-Based Computational Models and Two-Compartment Models of Solid Tumors: Comparison of Predicted Tracer Distribution
G. L. PISHKO[1], K. N. MAGDOOM MOHAMED[1], G. W. ASTARY[1], T. H. MARECI[1], AND M. SARNTINORANONT[1]
[1]*University of Florida, Gainesville, FL*

PS-8B-16-191 Inferring Cross-talk Among Interleukin-12, Interferon- and Tumor Necrosis Factor Signaling Pathways Within T Helper Cells
D. J. KLINKE[1], E. CHAMBERS[1], AND N. CHENG[1]
[1]*West Virginia University, Morgantown, WV*

PS-8B-16-192 Adaptive Control in Metabolic Pathway Regulation
C. F. QUO[1], R. A. MOFFITT[1], A. H. MERRILL[1], AND M. D. WANG[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS-8B-16-193 An Efficient Approach for the Combinatorial Quantitation and Control of Cellular Functions
I. AL-SHYOUKH[1], F. YU[1], J. FENG[1], S. DUBINETT[1], C-M. HO[1], J. S. SHAMMA[2], AND R. SUN[1]
[1]*University of California Los Angeles, Los Angeles, CA,* [2]*Georgia Institute of Technology, Atlanta, GA*

PS-8B-16-194 Mathematical Model Predicts Master-regulatory Role of Hematopoietic Stem Cell Network Module
J. NARULA[1], AND O. A. IGOSHIN[1]
[1]*Rice University, Houston, TX*

PS-8B-16-195 Quantitative Modeling of Glabrous Skin Blood Flow
D. W. HENSLEY[1], AND K. R. DILLER[1]
[1]*University of Texas at Austin, Austin, TX*

PS-8B-16-196 Multiplexed Media Delivery to Study Nutrient Adaptation in C. elegans
P. THOMAS[1], A. PAZ[1], O. CINQUIN[1], AND E. HUI[1]
[1]*University of California at Irvine, Irvine, CA*

PS = Poster Session
OP = Oral Presentation

PS-8B-16-197 Modeling Inflammation with an Ensemble of Stochastic Cells
J. D. Scheff[1], S. E. Calvano[2], S. F. Lowry[2], and I. P. Androulakis[1]
[1]*Rutgers University, Piscataway, NJ,* [2]*UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ*

PS-8B-16-198 Metrics for Systems Biology Model Building and Comparison
C. Kaddi[1], C. Quo[1], and M. D. Wang[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA*

PS-8B-16-199 A Mathematical Model of Random Behavior of Micro-Objects Propelled by Attached Bacteria
M. A. Traore[1], and B. Behkam[1]
[1]*Virginia Tech, Blacksburg, VA*

PS-8B-16-200 Identification of Critical Network Interactions by Pathway-Centered Analysis of Microarray Data
J. Hood[1], and R. R. Vallabhajosyula[1]
[1]*CFD Research Corp, Huntsville, AL*

PS-8B-16-201 WebPK: A Web-Based Application for Custom Pharmacokinetic Simulations
J. Srimani[1], R. Moffitt[1], and M. D. Wang[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

Track: Tissue Engineering – PS-8B-17

Cardiovascular Tissue Engineering

PS-8B-16-202 Modeling *In Vivo* Metabolic Responses of Skeletal Muscle Fibers to Exercise
Y. Li[1], N. Lai[1], J. Kirwan[2], and S. Gerald[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Cleveland Clinic, Cleveland, OH*

PS-8B-17-203 Tailoring Electrospun Scaffolds for Use in Aortic Aneurysm Repair
J. Massey[1,2], M. Agrawal[1], and S. Bailey[2]
[1]*University of Texas at San Antonio, San Antonio, TX,* [2]*University of Texas Health Science Center at San Antonio, San Antonio, TX*

PS-8B-17-204 Development of a Slowly Degradable Microfabricated Perfusion Systems for Vascularized Tissues
L. S. Wray[1], and D. L. Kaplan[1]
[1]*Tufts University, Medford, MA*

PS-8B-17-205 Protein Solubilization for Antigen Removal from Bovine Pericardium in Heart Valve Tissue Engineering
M. L. Wong[1], and L. G. Griffiths[1]
[1]*University of California, Davis, Davis, CA*

PS-8B-17-206 Three Dimensionally Flocculated Proangiogenic Microgels for Neovascularization
R. J. DeVolder[1], and H. Kong[1]
[1]*University of Illinois, Urbana, IL*

PS-8B-17-207 Normalization of Microvascular Physiology by Cyclic AMP in Engineered Human Blood Microvessels
K. Wong[1], J. Truslow[1], and J. Tien[1]
[1]*Boston University, Boston, MA*

PS-8B-17-208 The Controlled Release of Neuropeptide Induces Angiogenesis
H. Kohara[1], M. Yamamoto[1], and Y. Tabata[1]
[1]*Institute for Frontier Medical Sciences, Kyoto University, Kyoto, Kyoto, Japan*

PS-8B-17-209 Engineering Functional Human Microvessels *In Vitro*
J. Tien[1]
[1]*Boston University, Boston, MA*

PS-8B-17-210 Hair Follicle Derived Mesenchymal Stem Cells for Engineering Arterial Susbstitute
H. Peng[1], E. Schlaich[1], D. D. Swartz[1], and S. T. Andreadis[1,2]
[1]*University at Buffalo, Buffalo, NY,* [2]*New York State Center of Excellence, Buffalo, NY*

PS-8B-17-211 Development of Bioactive Nanofibrous Vascular Grafts with *In-Vivo* Endothelialization Potential
J. Henry[1], and S. Li[1]
[1]*University of California - Berkeley, Berkeley, CA*

PS-8B-17-212 Vascular Cell Morphology on Aligned Collagen Matrices
N. F. Huang[1], T. S. Zaitseva[2], M. Paukshto[2], J. Sun[1], G. G. Fuller[1], and J. P. Cooke[1]
[1]*Stanford University, Stanford, CA,* [2]*Fibralign Corp., Sunnyvale, CA*

PS-8B-17-213 Reinforcing PEG Hydrogels with an Electrospun Mesh Sleeve to Form a Multilayer TEVG
M. B. Browning[1], D. K. Dempsey[1], and E. M. Cosgriff-Hernandez[1]
[1]*Texas A&M University, College Station, TX*

PS-8B-17-214 Molecular Modulation of Endothelial Cell Adhesion for Vascular Tissue Engineering
B. J. Tefft[1], A. M. Kopacz[1], W. K. Liu[1], and S. Q. Liu[1]
[1]*Northwestern University, Evanston, IL*

PS-8B-17-215 In Vitro Biodegradation of a Novel Bioresorbable Poly(ester urethane)
D. K. Dempsey[1], A. F. Haque[1], R. S. Ward[2], A. V. Iyer[2], J. P. Parakka[2], and E. M. Cosgriff-Hernandez[1]
[1]*Texas A&M University, College Station, TX,* [2]*DSM-PTG, Berkeley, CA*

PS-8B-17-216 Crosslinked Urethane-doped Polyester Triphasic Scaffold for Vascular Tissue Engineering
I. Qattan[1], R. T. Tran[1], and J. Yang[1]
[1]*The University of Texas at Arlington, Arlington, TX*

PS-8B-17-217 Mitral Valve Geometry Difference Between Ischemic and Dilated Condition During Systole
B. Gao[1], and Z. He[1]
[1]*Texas Tech Univ., Lubbock, TX*

PS-8B-17-218 Can Matrix Degrading Enzymes Improve Remodeling In Vitro? Pepsin Degradation of a SIS Cardiac Patch
B. B. Scully[1,2], D. L. Morales[2,3], J. E. Barzilla[1], and K. J. Grande-Allen[1]
[1]*Rice University, Houston, TX,* [2]*Baylor College of Medicine, Houston, TX,* [3]*Texas Children's Hospital, Houston, TX*

PS-8B-17-219 Dextran Stabilizes Engineered Human Microvessels *In Vitro*
A. D. Leung[1], K. H. Wong[1], and J. Tien[1]
[1]*Boston University, Boston, MA*

PS-8B-17-220 Enhanced Endothelialization Using EPC Autoseeding on POC/PLGA Microparticle Composite
H. Xu[1], and K. T. Nguyen[1]
[1]*University of Texas at Arlington, Arlington, TX*

PS-8B-17-221 Tailoring In Vivo Vascular Morphology with Bioactive Poly(ethylene glycol) Hydrogels
J. E. Saik[1], D. J. Gould[1,2], M. E. Dickinson[2], and J. L. West[1]
[1]*Rice University, Houston, TX,* [2]*Baylor College of Medicine, Houston, TX*

PS-8B-17-222 Methodology for the Fabrication of Cell Based Cardiac Pumps
R. Evers[1], and R. Birla[1]
[1]*University of Michigan, Ann Arbor, MI*

PS-8B-17-223 Cellular Assembly by Centrifugal Force to Form Tubular Tissue Constructs
C. Jones[1], E. J. Burford[1], L. Soderbom[1], P. Sullivan[1], and M. W. Rolle[1]
[1]*Worcester Polytechnic Institute, Worcester, MA*

PS-8B-17-224 A Porous Nylon Anchor System for Improved Culture of Cell-Derived Tissue Tubes
A. Z. Reidinger[1], A. Ortiz[1], and M. W. Rolle[1]
[1]*Worcester Polytechnic Institute, Worcester, MA*

PS-8B-17-225 Development of the Human Umbilical Artery as a 3D Scaffold for Vascular Reconstruction
M. Rodriguez[1], M. McClendon[1], and P. McFetridge[2]
[1]*University of Oklahoma, Norman, OK,* [2]*University of Florida, Gainesville, FL*

PS-8B-17-226 Multi-functional Nanofiber Patch to Tune Embryonic Stem Cell Delivery Onto Hypertrophic Myocardium
M. K. Gupta[1], D. K. Jung[1], A. K. Hatzopoulos[2], and H. J. Sung[1]
[1]*Vanderbilt University, Nashville, TN,* [2]*Vanderbilt University Medical Center, Nashville, TN*

PS-8B-17-227 Cell-Derived Ring Fusion to Generate Tubular Tissue Constructs
T. Gwyther[1], and M. W. Rolle[1]
[1]*Worcester Polytechnic Institute, Worcester, MA*

PS-8B-17-228 CANCELED

PS-8B-17-229 Development and Characterization of a Novel Bi-Layered Tissue Engineered Vascular Graft
J. D. Banik[1], and J. A. Cooper[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

PS-8B-17-230 Control of Tissue Engineered Cardiac Muscle Fibrosis by an Endocardial Surrogate
A. Parkar[1], N. Masoumi[1], A. Jean[1], and G. C. Engelmayr[1]
[1]*The Pennsylvania State University, University Park, PA*

PS-8B-17-231 Tailoring Electrospinning Fabrication for Scaffolds for Heart Valve Tissue Engineering
N. J. Amoroso[1,2], A. D'Amore[1,3], W. R. Wagner[1,2], and M. S. Sacks[1,2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA,* [3]*University of Palermo, Palermo, Sicily, Italy*

PS-8B-17-232 Macrophage Interactions with Decellularized Materials: Influence of Crosslinking Treatment
J. McDade[1], M. Ariganello[1], E. Brennan[1], R. Labow[2], and M. Lee[1]
[1]*Dalhousie University, Halifax, NS, Canada,* [2]*Ottawa Heart Institute, Ottawa, ON, Canada*

PS-8B-17-233 A Hybrid, Tissue Engineered Leaflet for Bioprosthetic Heart Valves
H. Alavi[1], R. L. Goodwin[1], and A. Kheradvar[1]
[1]*University of South Carolina, Columbia, SC*

Track: Tissue Engineering - PS-8B-18

Cell-Biomaterial Interfaces

PS-8B-18-234 Protein Transport and Stability: Considerations for Cell Encapsulation
W. L. Stoppel[1], J. C. White[1], S. R. Bhatia[1], and S. C. Roberts[1]
[1]*University of Massachusetts Amherst, Amherst, MA*

PS-8B-18-235 Canceled

PS-8B-18-236 Investigating Schwann Cell Response on Polypyrrole Substrates Upon Electrical Stimulation
L. Forciniti[1], J. F. Ybarra[1], J. Maldonado[1], and C. E. Schmidt[1]
[1]*University of Texas at Austin, Austin, TX*

PS-8B-18-237 Stiffness of the Substrate Influences the Phenotype of Embryonic Chicken Cardiac Myocytes
P. Bajaj[1], X. Tang[1], T. Saif[1], and R. Bashir[1]
[1]*University of Illinois Urbana Champaign, Urbana, IL*

PS-8B-18-238 Microtube Device Functionalized with Selectins for Capture and Study of Circulating Tumor Cells
A. D. Hughes[1], L. T. Western[2], J. C. Mattison[1], B. Greene[3], and M. R. King[1]
[1]*Cornell University, Ithaca, NY,* [2]*Rochester University, Rochester, NY,* [3]*Biocytics Inc., Huntersville, NC*

PS-8B-18-239 How Does ECM Fiber Stress State Affect Cell Behavior?
M. A. Kotlarchyk[1], S. Shreim[1], E. Kniazeva[1], M. Alvarez-Elizondo[1], A. Putnam[1,2], and E. Botvinick[1]
[1]*UC Irvine, Irvine, CA,* [2]*University of Michicigan, Ann Arbor, MI*

PS-8B-18-240 Harnessing Matrix Interface to Control Stem Cell Differentiation
R. Ayala[1], C. Zhang[1], A. Aung[1], Y. Hwang[1], and S. Varghese[1]
[1]*UC San Diego, La Jolla, CA*

PS-8B-18-241 Designing Biomaterial Surfaces to Enhance Keratinocyte Adhesion at the Skin-Implant Interface
C. M. Ting[1], A. M. Khaing[1], W. G. McGimpsey[1], and G. D. Pins[1]
[1]*Worcester Polytechnic Institute, Worcester, MA*

PS-8B-18-242 Effects of Synthetic Biogel Scaffold Properties in Angiogenesis, Modeling with Agent Based Systems
A. Artel[1], H. Mehdizadeh[1], E. Brey[1], and A. Cinar[1]
[1]*Illinois Institute of Technology, Chicago, IL*

PS-8B-18-243 Development Of Biomimetic Materials For Guided Endothelial Cell Morphogenesis, and Organization
A. Porter[1], Y. Yuan[1], C. M. Klinge[1], and A. S. Gobin[1]
[1]*University of Louisville, Louisville, KY*

PS-8B-18-244 Dynamic Bioactive Surfaces for Temporal Regulation of Extracellular Microenvironments
B. Liu[1], and W. Shen[1]
[1]*University of Minnesota, Minneapolis, MN*

PS-8B-18-245 Electrical Control of Cell Migration on a Conducting Polymer Surface
A. Gumus[1], J. Califano[1], A. Wan[1], J. Huynh[1], C. Reinhart-King[1], and G. Malliaras[1]
[1]*Cornell University, Ithaca, NY*

PS-8B-18-246 Microcracking and Maturation of MC3T3-E1 Osteoblast Behavior
Y. Shu[1], M. Baumann[1], L. McCabe[1], E. Case[1], and R. Irwin[1]
[1]*Michigan State University, East Lansing, MI*

PS-8B-18-247 Tryptophan: An Intrinsic Fluororeporter for Peptide Functionalized Biomaterials
S. N. Masand[1], A. Blazier[2], C. Bradley[1], and D. Shreiber[1]
[1]*Rutgers, The State University of New Jersey, Piscataway, NJ,* [2]*University of Virginia, Charlottesville, VA*

PS-8B-18-248 Pro- and Anti-Oxidative Biomaterial Surfaces to Modulate Stem Cell Fate
S. W. Crowder[1], A. L. Zachman[1], M. K. Gupta[1], E. Liu[2], J. B. Kohn[2], P. V. Moghe[2], and H-J. Sung[1]
[1]*Vanderbilt University, Nashville, TN,* [2]*Rutgers University, Piscataway, NJ*

PS-8B-18-249 Cell Interactions in Biomimetic Apatite Microenvironment
E. Tsang[1], C. Arakawa[1], P. Zuk[2], and B. Wu[1]
[1]*Dept of Bioengineering, UCLA, Los Angeles, CA,* [2]*Dept of Surgery, David Geffen School of Medicine, UCLA, Los Angeles, CA*

PS = Poster Session
OP = Oral Presentation

Track: Tissue Engineering – PS-8B-19

Controlled Release in Tissue Engineering*

PS-8B-19-250 Effect of Protein Molecular Weight on Release From Wet Spun PLGA and PLLA Fibers by Phase-inversion
D. M. Decoteau[1], L. Zhang[1], R. M. Stefani[1], R. A. Hopkins[2], and E. Mathiowitz[1]
[1]*Brown University, Providence, RI,* [2]*The Children's Mercy Hospital, Kansas City, MO*

PS-8B-19-251 Nitric Oxide Releasing Polymers as Bone Metabolism Support in Tissue Engineering Scaffolds
J. Forrest[1], G. E. Gierke[1], M. J. VanWagner[1], K. L. Snyder[1], M. C. Frost[1], and R. M. Rajachar[1]
[1]*Michigan Technological University, Houghton, MI*

PS-8B-19-252 Multiple Drug Delivery System Based on CAP-Pluronic Association Polymer
S. Sundararaj[1], D. Puleo[1], and M. Thomas[1]
[1]*University of Kentucky, Lexington, KY*

PS-8B-19-253 Preparation and Characterization of NSAID-embedded Nanofiber Matrix for Drug Delivery
P. Samuel[1], and J. A. Cooper[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

Track: Tissue Engineering – PS-8B-20

Nano- and Micro- Engineering in Tissue Engineering*

PS-8B-20-254 Micromilling for Fabricating Biologically Inspired Microfluidic Channels for Regenerative Medicine
M. E. Wilson[1], N. Kota[1], Y. Kim[1], D. B. Stolz[2], Y. Wang[2], O. B. Ozdoganlar[1], and P. R. LeDuc[1]
[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*University of Pittsburgh, Pittsburgh, PA*

PS-8B-20-255 High-Speed Biaxial Tissue Testing of Abdominal Viscera
N. A. White[1], M. K. Howes[1], and W. N. Hardy[1]
[1]*Virginia Tech, Blackburg, VA*

PS-8B-20-256 Temperature-controlled Harvesting of Cell Aggregates
H. Tekin[1,2], C. Nauman[2,3], M. Anaya[2,4], R. Langer*[4,5], and A. Khademhosseini*[2,5]
[1]*Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, MA,* [2]*Center for Biomedical Engineering, Brigham and Women's Hospital, Harvard Medical School, Cambridge, MA,* [3]*Department of Biology, Massachusetts Institute of Technology, Cambridge, MA,* [4]*Department Chemical Engineering, Massachusetts Institute of Technology, Cambridge, MA,* [5]*Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA*

PS-8B-20-257 Directed Celluar Invasion and Angiogenesis in Micropatterned Collagen Scaffolds
Y. Zheng[1], P. W. Henderson[2], N. W. Choi[1], L. J. Bonassar[1], J. A. Spector[2], and A. D. Stroock[1]
[1]*Cornell University, Ithaca, NY,* [2]*Weill Cornell Medical College, New York, NY*

PS-8B-20-258 Isolation and Purification of Novel Organic Nanoparticles from English Ivy (Hedera helix)
S. Lenaghan[1], L. Xia[1], W. Henson[1], and M. Zhang[1]
[1]*University of Tennessee, Knoxville, TN*

PS-8B-20-259 A Microstructure Based Mechanical Model for Planar Fibrous Scaffolds
A. D'Amore[1,2], C. M. Hobson[1], W. R. Wagner[1], and M. S. Sacks[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*University of Palermo, Palermo, Italy, Italy*

PS-8B-20-260 Engineering Optimal Islets for Transplantation for Type 1 Diabetes
K. Ramachandran[1], S. J. Williams[1], H-H. Huang[1], C. Berkland[2], and L. Stehno-Bittel[1]
[1]*University of Kansas Medical Center, Kansas City, KS,* [2]*University of Kansas, Lawrence, KS*

PS-8B-20-261 Tri-functional Nanoporous Silica Nanoparticles for Imaging, Delivery and Biomaterial Reinforcement
C. Smid[1]
[1]*University of Texas at Austin/ University of Texas Health Science Center, Houston, TX*

PS-8B-20-262 Biomechanical Response of Human Spleen Parenchyma in Tensile Loading
A. R. Kemper[1], A. Santago[1], J. Stitzel[1], J. Sparks[1], and S. Duma[1]
[1]*Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Blacksburg, VA*

PS-8B-20-263 Multi-Compartment Platform for Organotypic Spinal Cord Cultures to Study Axonal Synaptic Targeting
D. G. Castillo[1], and S. N. Hosmane[1]
[1]*Johns Hopkins University, Baltimore, MD*

PS-8B-20-264 Nano-Patterned Surfaces Induce Elastin Expression from Valvular Interstitial Cells
E. L. Hedberg-Dirk[1], U. A. Martinez[1], and A. E. Hellebust[1]
[1]*University of New Mexico, Albuquerque, NM*

PS-8B-20-265 Characterization of Small Diameter *In Vitro* Endothelial Linings of the Microvasculature
M. B. Esch[1], M. L. Shuler[1], and T. Stokol[1]
[1]*Cornell University, Ithaca, NY*

PS-8B-20-266 Photopatterning of Cell-laden PEGDA Hydrogel Microstructures Using Mask Projection Photolithography
S. J. Higbee[1], M. P. Cuchiara[1], and J. L. West[1]
[1]*Rice University, Houston, TX*

PS-8B-20-267 Step Based Isodiametric Design Space for Aligned Deposition of Polymer Nanofibers in Multiple Layers
J. Wang[1], and A. S. Nain[1]
[1]*Virginia Tech, Blacksburg, VA*

PS-8B-20-268 Dynamic Material Properties of Pregnant Human Uterus
S. Duma[1], S. Manoogian[1], J. Bisplinghoff[1], and J. Stitzel[1]
[1]*Virginia Tech - Wake Forest University, Center for Injury Biomechanics, Blacksburg, VA*

PS-8B-20-269 Transplantation of Two Derived hESC Populations in a Novel Biomemetic Architecture
W. Turner[1], J. Luna[1], M. Khine[2], and K. McCloskey[1]
[1]*University of California - Merced, Merced, CA,* [2]*University of California - Irvine, Irvine, CA*

PS-8B-20-270 Patented Electrospinning Process (EsNT) for NanoMedicine
G-M. Kim[1], J. D. Salazar[1], L. Muerza-Cascante[1], A. Elósegui[1], and E. De Juan-Pardo[1]
[1]*CEIT and TECNUN (University of Navarra), San Sebastián, Guipuzcoa, Spain*

Track: Tissue Engineering – PS-8B-21

Printing and Patterning in Tissue Engineering

PS-8B-21-271 Patterned Silk Film Scaffolds for Lamellar Bone Tissue Engineering
L. W. Tien[1], E. S. Gil[1], S. H. Park[1], B. B. Mandal[1], and D. L. Kaplan[1]
[1]*Tufts University, Medford, MA*

PS-8B-21-272 Patterning of Poly-Caprolactone (PCL) Nanofibers using Near Field Electrospinning
B. Starly[1], and S-F. Lan[1]
[1]*University of Oklahoma, Norman, OK*

PS-8B-21-273 Anatomically Precise 3D Printing for Engineering Spatially Heterogeneous Living Heart Valves
L. A. Hockaday[1], K. H. Kang[1], N. W. Colangelo[1], P. Y-C. Cheung[1], J. Wu[1], H. Lipson[1], C-C. Chu[1], and J. T. Butcher[1]
[1]*Cornell University, Ithaca, NY*

POSTER SESSION 8B 1:30PM – 5:00PM

PS-8B-21-274 Microfluidics in Hydrogels Using a Sealing Adhesion Layer
L. M. Bellan[1], D. Wu[1], J. T. Borenstein[2], D. M. Cropek[3], and R. Langer[1]
[1]*MIT, Cambridge, MA,* [2]*Draper Laboratory, Cambridge, MA,* [3]*ERDC-CERL, Champaign, IL*

PS-8B-21-275 Surface Immobilization of Adeno-Associated Virus for Localized Gene Delivery
K. I. McConnell[1], J. H. Slater[1], R. W. Adams[1], J. L. West[1], S. L. Biswal[1], and J. Suh[1]
[1]*Rice University, Houston, TX*

PS-8B-21-276 Vasculature Patterning within Hydrogel using Three-Dimensional Bio-Printing Technology
V. K. Lee[1], W. Lee[2], S-S. Yoo[3], and G. Dai[1]
[1]*RPI, Troy, NY,* [2]*KAIST, Daejeon, Korea, Republic of,* [3]*Brigham and Women's Hospital, Harvard Medical School, Boston, MA*

PS-8B-21-277 Ultra-high Density Oligonucleotide Arrays for Ordered, Pinpoint Cell Assembly in Tissue Engineered Structures
U. Vermesh[1], and O. Vermesh[1,2]
[1]*California Institute of Technology, Pasadena, CA,* [2]*The David Geffen School of Medicine at UCLA, Los Angeles, CA*

PS-8B-21-278 Hydrogel Tubular Constructs Formed Via a Multiphase Co-axial Flow
M. Hu[1], R. Deng[1], L. Wang[1], M. Kurisawa[1], and J. Ying[1]
[1]*Institute of Bioengineering and Nanotechnology, The Nanos, Singapore*

PS-8B-21-279 Development of Miniature Drug Screening Platform Utilizing Low Cost Bioprinting Technology
J. I. Rodriguez[1], D. Reyna[1], and T. Xu[1,2]
[1]*University of Texas at El Paso, El Paso, TX,* [2]*Texas Tech University Health Sciences Center, El Paso, TX*

POSTER SESSION **8B**

PS-8B-21-280 Hierarchical Silk Laminates for Tissue Formation
B. B. Mandal[1], and D. L. Kaplan[1]
[1]*Tufts University, Medford, MA*

PS-8B-21-281 Spatial Control of Cell Differentiation Fate Using Oriented Sub-micron Fibers and Bioprinted Growth Factors
D. Ker[1], A. Nain[2], J. Suhan[1], B. Chu[1], L. Weiss[1], and P. Campbell[1]
[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*Virgnia Tech, Blacksburgh, VA*

PS-8B-21-282 HUVEC Networks Printed to Stackable PLGA/Hydrogel 'Biopapers' via BioLP
R. K. Pirlo[1], P. K-C. Wu[2], and B. Ringeisen[1]
[1]*Naval Research Laboratory, Washington, DC,* [2]*Southern Oregon University, Ashland, OR*

PS-8B-21-283 Non-Contact Printing of High-Fidelity Heterocellular Niches Using Aqueous Biphasic Systems
H. Tavana[1], and S. Takayama[1]
[1]*University of Michigan, Ann Arbor, MI*

PS-8B-21-284 Three-Dimensional (3D) Stereo-Lithographic Technology for Bio-inspired Multi-Cellular Structures
V. Chan[1], P. Zorlutuna[1], J. Jeong[1], H. Kong[1], and R. Bashir[1]
[1]*University of Illinois, Urbana-Champaign, Urbana, IL*

PS-8B-21-285 High Throughput Miniaturization of Artificial Cells Using Inkjet Technology
M. Mobed-Miremadi[1], E. Acks[1], S. Polsaward[1], and D. Chen[1]
[1]*San Jose State University, San Jose, CA*

PS-8B-21-286 Topographic and Chemically Micropatterned Polyacrylamide Cell Substrates
M. J. Poellmann[1], P. A. Harrell[1], S. Mishra[1], K. A. Barton[1], W. P. King[1], and A. J. Wagoner Johnson[1]
[1]*University of Illinois at Urbana Champaign, Urbana, IL*

PS-8B-21-287 Micropatterning and Printing of Functional Microscale Tissue Subunits on Nanofibrous Scaffolds
D. Gallego-Perez[1], N. Higuita-Castro[1], J. Lannutti[1], K. Gooch[1], and D. Hansford[1]
[1]*The Ohio State University, Columbus, OH*

PS-8B-21-288 Improving Cell Viability Using Bio-printed Oxygen Particles for Tissue Engineering Application
A. Arteaga[1], and T. Xu[1,2]
[1]*University of Texas at El Paso, El Paso, TX,* [2]*Texas Tech University Health Sciences Center, El Paso, TX*

PS = Poster Session
OP = Oral Presentation

Track: Translational Biomedical Engineering – 8-2-1

Translational Biomedical Engineering

Chairs: Daniel G. Anderson, PhD

Room 12A

1:30PM OP-8-2-1A Navigating the Journey of Lab to Patient: Developing Products Based On Tyrosine-derived Polymers

INVITED SPEAKER: JOACHIM KOHN

2:00PM OP-8-2-1B Medical Product Development: Negotiating Its Peaks And Valleys

INVITED SPEAKER: ART COURY

2:30PM OP-8-2-1C - Peripheral Nerve Regeneration Using Keratin Biomaterials: From Bench to Bedside

L. PACE[1], J. BARNWELL[1], Z. LI[1], L. A. KOMAN[1], T. A. SMITH[1], AND M. VAN DYKE[1]

[1]Wake Forest University School of Medicine, Winston Salem, NC

2:45PM OP-8-2-1D Commercializing the Avance® Nerve Graft

C. DEISTER[1]

[1]AxoGen, Inc, Alachua, FL

Track: Biomedical Imaging and Optics – 8-2-2

Imaging in Therapeutics – II

Chairs: Stanislav Emelianov, Katherine Ferrara

Room 12B

1:30PM OP-8-2-2A Integrated Rational Design of Nanoparticle Systems for Biomedical Applications

A. L. VAN DE VEN[1], S. LEE[2], P. KIM[3], O. HALEY[3], S-H. YUN[3], M. FERRARI[1], AND P. DECUZZI[1]

[1]University of Texas Health Science Center, Houston, TX, [2]University of Texas, Austin, TX, [3]Harvard Medical School, Boston, MA

1:45PM OP-8-2-2B Targeted Microwave Hyperthermia Using Magnetite Nanoparticles

J. R. COOK[1], S. KIM[1], J. A. PEARCE[1], AND S. Y. EMELIANOV[1]

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

2:00PM OP-8-2-2C Methods for Creating Carbon Nanohorn-Quantum Dot Conjugates and an Investigation of Cellular Uptake

K. A. ZIMMERMANN[1], J. ZHANG[1], H. DORN[1], C. G. RYLANDER[1], AND M. N. RYLANDER[1]

[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

2:15PM OP-8-2-2D Tracking Modeling and Predicting the Erosion of Fluorescently Labeled Materials Noninvasively

N. ARTZI[1,2], C. PURON[1,3], A. B. RAMOS[1,3], A. GROOTHUIS[4], G. SAHAGIAN[5], AND E. EDELMAN[1,6]

[1]MIT, Cambridge, MA, [2]Brigham and Women Hospital, Harvard Medical School, Boston, MA, [3]Institut Quiimic de Sarria`, Barcelona, Spain, Spain, [4]CBSET, Concord, MA, [5]Tufts University School of Medicine, Boston, MA, [6]Brigham and Women's Hospital, Harvard Medical School, Boston, MA

2:30PM OP-8-2-2E Irreversible Electroporation Treatment Planning Techniques

R. E. NEAL[1], P. A. GARCIA[1], J. H. ROSSMEISL[2], AND R. V. DAVALOS[1]

[1]Virginia Tech - Wake Forest School of Biomedical Engineering and Sciences, Blacksburg, VA, [2]Virginia - Maryland Regional College of Veterinary Medicine, Blacksburg, VA

2:45PM OP-8-2-2F Multifractal and Lacunarity Analysis of Microvasculature

D. J. GOULD[1,2], T. J. VADAKKAN[2], AND M. E. DICKINSON[1,2]

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

Track: Biomedical Imaging and Optics – 8-2-3

Biophotonics – I

Chairs: Kristen Maitland, Brian Sorg

Room 19A

1:30PM OP-8-2-3A Fiber Optic Probe for Measuring Changes in Rectal Micro Architecture and Vasculature in Field of Carcinogenesis: Implications for Colon Cancer Risk Stratification

N. N. MUTYAL[1], V. TURZHITSKY[1], J. ROGERS[1], A. RADOSEVICH[1], H. ROY[2], M. GOLDBERG[2], M. JAMEEL[2], A. BOGOJEVICH[2], AND V. BACKMAN[1]

[1]Northwestern University, Evanston, IL, [2]Northshore University Healthsystems, Evanston, IL

1:45PM OP-8-2-3B Simultaneous Imaging of Blood Flow, Hemoglobin Concentration, and Absolute PO2 *In Vivo* During Stroke Using a Digital Micromirror Device

A. PONTITCORVO[1], M. A. DAVIS[1], AND A. K. DUNN[1]

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

2:00PM OP-8-2-3C Blood Vessel Detection in Line-Scanning Laser Ophthalmoscope and Raster Scan Images from Optical Coherence Tomography

A. DATTA[1], S. LIU[1], G. MURALIDHAR[1], A. S. PARANJAPE[1], B. ELMAANAOUI[1], J. DEWELLE[1], T. E. MILNER[1], H. G. RYLANDER III[1], AND M. K. MARKEY[1]

[1]The University of Texas at Austin, Austin, TX

2:15PM OP-8-2-3D Enhancing Video Capsule Endoscopy: Location and Bleeding Detection

D. L-P. YEUNG[1], A. SABET[1], Y. INOUE[1], AND J. M. YAP[1]

[1]University of Michigan, Ann Arbor, MI

2:30PM OP-8-2-3E Image Mapping Spectrometer for Real Time Hyperspectral Imaging of Living Cells

L. GAO[1], R. T. KESTER[1], N. BEDARD[1], N. HAGEN[1], AND T. S. TKACZYK[1]

[1]Rice University, Houston, TX

2:45PM OP-8-2-3F Fiber Optic Micro-endoscopy for *In Vivo* Detection of Bacteria in Early Stages of Infection

N. S. MUFTI[1], Y. KONG[2], J. D. CIRILLO[2], AND K. C. MAITLAND[1]

[1]Texas A&M University, College Station, TX, [2]Texas A&M Health Science Center, College Station, TX

Track: Neural Engineering – 8-2-4

Sensory Neural Prosthetics

Chairs: Hubert Lim, James Weiland

Room 19B

1:30PM OP-8-2-4A A Robust, Multimodal, Biomimetic Tactile Sensor

J. A. FISHEL[1,2], N. WETTELS[1,2], C. H. LIN[1,2], Z. SU[1], AND G. E. LOEB[1,2]

[1]University of Southern California, Los Angeles, CA, [2]SynTouch, LLC, Los Angeles, CA

1:45PM OP-8-2-4B Restoring Sensorimotor Function with Utah Slanted Electrode Arrays in Peripheral Nerves

G. A. CLARK[1], N. M. LEDBETTER[1], D. J. WARREN[1], A. M. WILDER[1], B. R. DOWDEN[1], M. A. FRANKEL[1], C. ETHIER[2], E. R. OBY[2], L. E. MILLER[2], F. SOLZBACHER[1], R. R. HARRISON[1], AND R. A. NORMANN[1]

[1]University of Utah, Salt Lake City, UT, [2]Northwestern University Feinberg School of Medicine, Chicago, Il

2:00PM OP-8-2-4C Direct Sensory Feedback for Prosthetics: Neural Mechanisms of Function, Plasticity, and Ownership

P. D. MARASCO[1], A. E. SCHULTZ[2], K. KIM[3], J. E. COLGATE[4], M. A. PESHKIN[4], AND T. A. KUIKEN[2]

[1]Louis Stokes Cleveland Department of Veterans Affairs Medical Center, Cleveland, OH, [2]Rehabilitation Institute of Chicago, Chicago, IL, [3]Korea Institute of Science and Technology, Seoul, Korea, Republic of, [4]Northwestern University, Evanston, IL

2:15PM OP-8-2-4D Electrical Stimulation of Degenerated Retina with High Resolution Electrode
J. Weiland[1,2], L. Chan[1], A. Ray[1], and M. Humayun[1,2]
[1]*University of Southern California, Los Angeles, CA,* [2]*Doheny Eye Institute, Los Angeles, CA*

2:30PM OP-8-2-4E Solutions to Problem of Electrode Channel Interaction in a Vestibular Prosthesis
G. Y. Fridman[1], C. Dai[1], N. S. Davidovics[1], B. Chiang[1], and C. C. Della Santina[1]
[1]*Johns Hopkins University, Baltimore, MD*

2:45PM OP-8-2-4F New Directions in Deep Brain Stimulation (DBS) for Hearing Restoration and Tinnitus Suppression
H. H. Lim[1], M. Lenarz[2], and T. Lenarz[2]
[1]*University of Minnesota, Minneapolis, MN,* [2]*Hannover Medical University, Hannover, Lower Saxony, Germany*

Track: Biomedical Engineering Education – 8-2-5

Global Health

Chairs: Justin Cooper, Mohammad Kiani
Room 18A

1:30PM OP-8-2-5A Biomedical Technician Assistant (BTA) and Biomedical Engineering Technician Training in Rwanda
L. E. Perry[1], and R. Malkin[1]
[1]*Duke University, Durham, NC*

1:45PM OP-8-2-5B Early Experiences Implementing a Low Resource Settings BME Curriculum at the US-Mexico border
T. Boland[1]
[1]*University of Texas at El Paso, El Paso, TX*

2:00PM OP-8-2-5C Collaboration for Healthcare in Developing Countries
A. L. Lerner[1], S. H. Seidman[1], B. Castaneda[2], and W. Carrera[2]
[1]*University of Rochester, Rochester, NY,* [2]*Pontificia Universidad Catolica del Peru, Lima, Peru*

2:15PM OP-8-2-5D Multifaceted Engineering Education is Facilitated by Design of Medical Devices for Kenya
P. J. Butler[1], and K. Mehta[1]
[1]*Penn State University, University Park, PA*

2:30PM OP-8-2-5E Design of a Dental Chair for Rural Communities: An International Collaboration
G. M. Ruiz Soto[1], and A. Louie[2]
[1]*ITESM, Monterrey, Nuevo Leon, Mexico,* [2]*University of California, Davis, CA*

2:45PM OP-8-2-5F X-Ray Development Timer
A. F. Britt[1], and P. G. Anderson[2]
[1]*Duke, Winnetka, IL,* [2]*Duke University, Durham, NC*

Track: Cellular and Molecular Engineering – 8-2-6

Cell Adhesion – II

Chairs: Nathan Gallant, Andres Garcia
Room 18B

1:30PM OP-8-2-6A Force Dynamics of Cell-Cell Interaction Mediated Through Cell-Matrix Adhesion
O. Shebanova[1]
[1]*University of Pennsylvania, Philadelphia, PA*

1:45PM OP-8-2-6B Vinculin Modulates Cell Adhesion Strength in Response to Fibronectin Density
D. W. Dumbauld[1], S. W. Craig[2], and A. J. Garcia[1]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*The Johns Hopkins School of Medicine, Baltimore, MD*

2:00PM OP-8-2-6C Nitric Oxide Impairs the Adhesive Properties of Dendritic Cells to Extracellular Matrix Components
M. Gu[1], J. McGinty[2], A. Venkatesh[1], M. Pate[2], and F. Benencia[1,2]
[1]*Russ College of Engineering, Ohio University, Athens, OH,* [2]*OUCOM, Ohio University, Athens, OH*

2:15PM OP-8-2-6D Structural Elastic Memory of Immune Synapse Cytoskeleton
E. Tabdanov[1], E. Judokusumo[1], and L. C. Kam[1]
[1]*Columbia University, New York, NY*

2:30PM OP-8-2-6E Rap1 and SLP-76 are Crucial to Chemokine-Triggered Firm Adhesion of T Cells under Flow
D. Lee[1], J. Kim[1], G. T. Koretzky[1], and D. A. Hammer[1]
[1]*University of Pennsylvania, Philadelphia, PA*

2:45PM OP-8-2-6F Characterization of HNSCC Ligand and Endothelium Receptor Interactions
J. Marshall[1], S. M. Wood[1], C. Abram[1], L. Nimrichter[2], and M. M. Burdick[1]
[1]*Ohio University, Athens, OH,* [2]*Universidade do Rio de Janeiro, Rio de Janeiro, Rio de Janeiro, Brazil*

Track: Cardiovascular Engineering – 8-2-7

Vascular Structure and Function I: Pathology

Chairs: Peter Davies, Damir B. Khismatullin
Room 18C

1:30PM OP-8-2-7A Endothelial DNA Methylation Differences Map to Athero-susceptible and Atheroprotected Sites *In Vivo*
J. E. Clark[1], and P. F. Davies[1]
[1]*University of Pennsylvania, Philadelphia, PA*

1:45PM OP-8-2-7B Endothelial Gene Connectivity Network Analysis Identifies Distinct Coronary Artery Phenotypes
M. Civelek[1], E. Manduchi[2], R. J. Riley[2], C. J. Stoeckert Jr[2], and P. F. Davies[2]
[1]*University of California, Los Angeles, Los Angeles, CA,* [2]*University of Pennsylvania, Philadelphia, PA*

2:00PM OP-8-2-7C Quantitative Mechanical Tests of Mouse Atherosclerotic Plaque Stability
Y. Wang[1,2], J. Ning[1], M. A. Sutton[1], and S. M. Lessner[1,2]
[1]*University of South Carolina, Columbia, SC,* [2]*University of South Carolina, School of Medicine, Columbia, SC*

2:15PM OP-8-2-7D Rapid Remodeling of Cardiovascular Tissues During Pregnancy
S. Wells[1], D. DeBay[1], A. Moeller[1], C. Pierlot[1], J. Doane[1], and M. Lee[1]
[1]*Dalhousie University, Halifax, NS, Canada*

2:30PM OP-8-2-7E Hyperglycemia Reduces Nitric Oxide, Increases Nitrotyrosine and Apoptosis in Endothelial Cell
S. C. Rogers[1], and M. Kavdia[1]
[1]*University of Arkansas, Fayetteville, AR*

2:45PM OP-8-2-7F Histamine Induces Monocyte Interactions with Arterial Endothelium *In Vitro*
C. Chen[1], and D. B. Khismatullin[1]
[1]*Tulane University, New Orleans, LA*

PS = Poster Session
OP = Oral Presentation

Track: Cardiovascular Engineering – 8-2-8

Cardiovascular Computational Modeling and Measurement – I

Chairs: Michael Sacks, Fotis Sotiropoulos

Room 18D

1:30PM OP-8-2-8A Spatial Characterization of Coronary Artery Pathologies using Optical Coherence Tomography

L. M. Ellwein[1], H. Otake[2], B-K. Koo[3], T. Shinke[4], Y. Honda[2], J. Shite[4], and J. F. LaDisa[1]

[1]Marquette University, Milwaukee, WI, [2]Stanford University, Stanford, CA, [3]Seoul National University College of Medicine, Seoul, Korea, Republic of, [4]Kobe University Graduate School of Medicine, Kobe, Japan

1:45PM OP-8-2-8B Differential Gene Expression, Ecm Organization And Multi-scale Mechanics Of The Aortic And Pulmonary Valve

C. A. Carruthers[1], C. M. Alfieri[2], E. M. Joyce[1], K. E. Yutzey[2], and M. S. Sacks[1]

[1]University of Pittsburgh, Pittsburgh, PA, [2]Cincinnati Children's Medical Center, Cincinnati, OH

2:00PM OP-8-2-8C Imaging-Based Lagrangian Fluid-Structure Interaction of the Mitral Valve: Trans-Chordal Fluid Dynamics

D. R. Einstein[1], F. del Pin[2], J-P. Rabbah[3], S. R. Idelsohn[4], A. P. Kuprat[1], X. Jiao[5], J. P. Carson[1], A. P. Yoganathan[3], and K. S. Kunzelman[6]

[1]Pacific Northwest National Laboratory, Richland, WA, [2]Livermore Software Technology Corp, Livermore, CA, [3]Georgia Tech, Atlanta, GA, [4]International Center for Numerical Methods in Engineering (CIMNE), Barcelona, Spain, [5]Stony Brook University, Stony Brook, NY, [6]University of Maine, Lewiston, ME

2:15PM OP-8-2-8D Multi-modality Experimental Platform for Validation of Dynamic Mitral Valve Computation Models

J-P. Rabbah[1], N. Saikrishnan[1], and A. P. Yoganathan[1]

[1]Georgia Institute of Technology, Atlanta, GA

2:30PM OP-8-2-8E Predicted Arterial Changes during Hypertension using Multi-Scale Modeling

H. N. Hayenga[1], B. C. Thorne[2], S. M. Peirce[2], and J. D. Humphrey[1]

[1]Texas A&M University, College Station, TX, [2]University of Virginia, Charlottesville, VA

2:45PM OP-8-2-8F Computational Evaluation of Mechanical Heart Valve Prosthesis Performance in Patient-Specific Anatomies

T. Le[1], I. Borazjani[1], and F. Sotiropoulos[1]

[1]University of Minnesota, Minneapolis, MN

Track: Respiratory Engineering – 8-2-9

Imaging the Lung – The New Frontier

Chairs: Eric Hoffman, Grace Parraga

Room 17A

1:30PM OP-8-2-9A - Imaging Morphometry of the Acinus Within the Intact Murine Lung

D. M. Vasilescu[1,2], A. S. Kizhakke Puliyakote[1], T. M. Eggleston[1], and E. A. Hoffman[1]

[1]University of Iowa, Iowa City, IA, [2]Philipps University, Marburg, Hessen, Germany

1:45PM OP-8-2-9B - Effect of Lung Inflation on Canine Airway Dimensions In Vivo

D. Chon[1], B. A. Simon[1,2], and D. W. Kaczka[1,2]

[1]Beth Israel Deaconess Medical Center, Boston, MA, [2]Harvard Medical School, Boston, MA

2:00PM OP-8-2-9C - Effects of Gas Properties on Regional Ventilation: Comparison between MDCT and MRI Assessments

Y. Yin[1], A. Halaweish[1], C-L. Lin[1], E. van Beek[1], and E. A. Hoffman[1]

[1]The University of Iowa, Iowa City, IA

2:15PM OP-8-2-9D Quantification of Lung Pressure Volume Curves and Regional Expansion with Respiratory-Gated 13N2 PET

T. J. Wellman[1], T. Winkler[2], E. L. Costa[2], R. S. Harris[2], G. Musch[2], J. G. Venegas[2], and M. F. Vidal Melo[2]

[1]Boston University, Boston, MA, [2]Massachusetts General Hospital, Boston, MA

2:30PM OP-8-2-9E The Relationship of Ultra Short Echo Time 1H Magnetic Resonance Imaging and Pulmonary Function in Chronic Obstructive Pulmonary Disease

A. Owrangi[1,2], J. X. Wang[1,3], E. O'Riordan[4], D. G. McCormack[5], and G. Parraga[1,2]

[1]Robarts Research Institute, London, Ontario, Canada, [2]Biomedical Engineering, University of Western Ontario, London, Ontario, Canada, [3]General Electric Healthcare CANADA, London, Ontario, Canada, [4]Department of Medical Imaging, Univerisity of Western Ontario, London, Ontario, Canada, [5]Division of Respirology, Univerity of Western Ontario, London, Ontario, Canada

2:45PM OP-8-2-9F Automatic Segmentation of Ventilation Defects in Hyperpolarized 3He MRI

N. J. Tustison[1], B. B. Avants[1], T. A. Altes[2], E. E. de Lange[2], J. P. Mugler[2], and J. C. Gee[1]

[1]University of Pennsylvania, Philadelphia, PA, [2]University of Virginia, Charlottesville, VA

Track: Orthopedic and Rehabilitation Engineering – 8-2-10

Rehabilitation Engineering

Chairs: John DesJardins, Joel Stitzel

Room 17B

1:30PM OP-8-2-10A Mapping Different Mechanical Response in the Infected and Inflamed Ears with Laser Vibrometer

C. Dai[1], X. Guan[1], W. Li[1], D. Nakamalil[1], and G. R. Gan[1]

[1]University of Oklahoma, Norman, OK

1:45PM OP-8-2-10B Dynamic Stability of Walking During Support Surface and Visual Field Translations

P. M. McAndrew[1], J. B. Dingwell[1], and J. M. Wilken[2]

[1]University of Texas at Austin, Austin, TX, [2]Center for the Intrepid, Ft. Sam Houston, TX

2:00PM OP-8-2-10C Feature Projection Framework to Improve the Performance of a Myoelectric Pattern Recognition System

J. M. Fontana[1], and A. W. Chiu[1]

[1]Louisiana Tech University, Ruston, LA

2:15PM OP-8-2-10D Effect of Endurance Exercise Training and Chronic Ethanol Ingestion on Skeletal Muscle in Rat

S. Iyer1, M. Sackeli1, C. Zappacosta1, and Y. Gao1

[1]Cornell University, Ithaca, NY

2:30PM OP-8-2-10E Physical Activity Classification Utilizing Activity Monitors in Manual Wheelchair Users with SCI

S. V. Hiremath[1], and D. Ding[1]

[1]University of Pittsburgh, Pittsburgh, PA

2:45PM OP-8-2-10F The Effects of Computer Keyboarding on Median Nerve Ultrasound Measures

K. Toosi[1], and M. Boninger[1]

[1]University of Pittsburgh, Pittsburgh, PA

PLATFORM SESSIONS 8-2 1:30PM-3:00PM

Track: Devices: Nano to Micro – 8-2-11

Drug Delivery Technologies: Nano to Micro Devices – I

Chairs: Tejal Desai, Sihong Wang
Room 16A

1:30PM OP-8-2-11A A Strategy for Chronic Convection-Enhanced Drug Delivery to the Brain
E. S-M. Chang[1], and W. Olbricht[1]
[1]Cornell University, Ithaca, NY

1:45PM OP-8-2-11B Multi-functional Coatings for the Delivery of Small Molecule Therapeutics
A. Shukla[1], R. C. Smith[1], and P. T. Hammond[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

2:00PM OP-8-2-11C Synthesis of Biodegradable Porous Silicon Nanoneedles for Combined Gene Therapy and Proteomics
C. Chiappini[1], J. Fakhoury[2], X. Liu[2], E. Tasciotti[2], L. Brousseau[2], and M. Ferrari[1,2]
[1]The University of Texas at Austin, Austin, TX, [2]The University of Texas Health Science Center at Houston, Houston, TX

2:15PM OP-8-2-11D Particle Size Dictates the Efficacy of Vascular-Targeted Drug Carrier in Disturbed Flow Relevant in Atherosclerosis
P. Charoenphol[1], and O. Eniola-Adefeso[2]
[1]University of Michigan, Ann Arbor, MI, [2]Unversity of Michigan, Ann Arbor, MI

2:30PM OP-8-2-11E The Influence of Size on the Interaction of Nanomaterials with Blood Serum
C. Walkey[1], and W. Chan[1]
[1]University of Toronto, Toronto, Ontario, Canada

2:45PM OP-8-2-11F Metal-Polymer Composite Nanoparticle Systems for Externally Controlled Delivery
M. L. Gran[1], and N. A. Peppas[1]
[1]University of Texas at Austin, Austin, TX

PLATFORM SESSIONS **8-2**

Track: Devices: Nano to Micro – 8-2-12

Micro and Nanostructured Biomaterials – I

Chairs: Xuanhong Cheng, Song Li
Room 16B

1:30PM OP-8-2-12A Microstructures in 3D Culture Alter the Mechanics of Cardiac Myocyte Contraction
M. W. Curtis[1], E. Budyn[1], T. Desai[2], and B. Russell[1]
[1]University of Illinois at Chicago, Chicago, IL, [2]University of California at San Francisco, San Francisco, CA

1:45PM OP-8-2-12B Purified Single Wall Carbon Nanotubes Reorganize the Actin Cytoskeleton
B. D. Holt[1], P. A. Short[1], K. N. Dahl[1], and M. F. Islam[1]
[1]Carnegie Mellon University, Pittsburgh, PA

2:00PM OP-8-2-12C Nanotube Coatings for Cell Isolation Alter Cell Separation Distance While Preserving Fluid Dynamics
A. D. Hughes[1], and M. R. King[1]
[1]Cornell University, Ithaca, NY

2:15PM OP-8-2-12D Treatment of Primary Brain Tumors with Thermally Activated Nanoparticles
E. S. Day[1], L. Zhang[2], P. A. Thompson[2], N. A. Lewinski[1], N. Ahmed[2], N. S. Riggall[1], R. A. Drezek[1], S. M. Blaney[2], and J. L. West[1]
[1]Rice University, Houston, TX, [2]Texas Children's Hospital, Houston, TX

2:30PM OP-8-2-12E Prostate Cancer Cell Photothermal Therapy with EphrinA1-Targeted Nanoshells
A. J. Coughlin[1], A. M. Gobin[1], J. J. Moon[1], and J. L. West[1]
[1]Rice University, Houston, TX

2:45PM OP-8-2-12F DNA Nanocomplexes Synthesized in a Microfluidic Droplet Generator
Y-P. Ho[1], C. Grigsby[1], F. Zhao[1], H. Li[1], and K. W. Leong[1]
[1]Duke University, Durham, NC

Track: Drug Delivery Systems * – 8-2-13

Novel Materials & Self-Assemblying Systems: Cancer Applications

Chairs: Jason Burdick, Horst von Recum
Room 14

1:30PM OP-8-2-13A Chitosan Delivery System for Protein-Based Vaccines
M. J. Heffernan[1], J. W. Schlom[1], and J. W. Greiner[1]
[1]National Cancer Institute, Bethesda, MD

1:45PM OP-8-2-13B Peptide Amphiphiles for Cancer Therapy
M. Black[1], and M. Tirrell[1,2]
[1]University of California, Santa Barbara, CA, [2]University of California, Berkeley, CA

2:00PM OP-8-2-13C - Optimal Conditions for Tumor Retention of a Thermally Responsive Polypeptide After Intratumoral Dosing
W. Liu[1], J. R. McDaniel[1], X. Li[1], M. R. Zalutsky[1], and A. Chilkoti[1]
[1]Duke University, Durham, NC

2:15PM OP-8-2-13D A Leukolike Multistage Delivery System to Overcome Biological Barriers
N. Quattrocchi[1], C. Chiappini[2], L. Cooper[3], M. Masserini[4], M. Ferrari[1], and E. Tasciotti[1]
[1]The University of Texas Health Science Center at Houston, Houston, TX, [2]The University of Texas at Austin, Austin, TX, [3]The University of Texas M.D. Anderson Cancer Center, Houston, TX, [4]Universita' Milano Bicocca, Monza, Milano, Italy

2:30PM OP-8-2-13E Chimeric Polypeptide-Doxorubicin Nanoparticle Self-Assembly Abolish Tumors After A Single Injection
M. Chen[1], J. MacKay[2], J. McDaniel[1], W. Liu[1], T. Chu[1], A. Simnick[1], and A. Chilkoti[1]
[1]Duke University, Durham, NC, [2]University of Southern California, Los Angeles, CA

2:45PM OP-8-2-13F Synthetic Polyphenols for Drug Delivery and Polymer Therapeutics
O. Z. Fisher[1], R. Langer[1], and D. G. Anderson[1]
[1]MIT, Cambridge, MA

*** Drug Delivery Systems Track is sponsored by Acta Biomaterialia**

Track: New Frontiers in Bioengineering – 8-2-14

Immunobioengineering - II

Chairs: Jeffrey Hubbell, Darrell Irvine
Room 15

1:30PM OP-8-2-14A Combinatorial Delivery of TLR 4 and 7 Ligands Using Nanoparticles Mediates Protective Immunity Against Pandemic Influenza
S. P. Kasturi[1], I. Skountzou[1], R. A. Albrecht[2], D. Koutsonanos[1], T. Hua[1], H. Nakaya[1], R. Ravindran[1], S. Stewart[3], M. Alam[3], N. Murthy[4], J. Steel[2], J. Jacob[1], R. J. Hogan[2], A. Garcia-Sastre[2], R. Compans[1], and B. Pulendran[1]
[1]Emory University, Atlanta, GA, [2]Mount Sinai School of Medicine, New York, NY, [3]Duke University Medical Center, Durham, NC, [4]Georgia Institute of Technology, Atlanta, GA

PS = Poster Session
OP = Oral Presentation

1:45PM OP-8-2-14B Interbilayer-Crosslinked Multilamellar Vesicles for Antigen Delivery and Vaccine Applications
J. J. Moon[1], H. Suh[1], M. Sohail[1], A. Bershteyn[1], A. Yadava[2], and D. J. Irvine[1,3]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Walter Reed Army Institute of Research, Silver Spring, MD,* [3]*Howard Hughes Medical Institute, Chevy Chase, MD*

2:00PM OP-8-2-14C Simultaneous, Single-carrier Delivery of Antigens and Immune-modulatory siRNA to Dendritic Cells
E. R. Dawson[1], A. Singh[1], T. Vo[1], and K. Roy[1]
[1]*The University of Texas at Austin, Austin, TX*

2:15PM OP-8-2-14D Lymphatic Drainage in Immunity: Implications in Lymph Node Targeting Strategies for Immunomodulation
S. N. Thomas[1], J. Rutkowski[1], and M. A. Swartz[1]
[1]*Swiss Federal Institute of Technology, Lausanne, VD, Switzerland*

2:30PM OP-8-2-14E *In Situ* Regulation of DC Subsets and T Cells Mediates Tumor Regression in Mice
O. A. Ali[1], D. Emerich[2], G. Dranoff[3], and D. J. Mooney[1]
[1]*Harvard University, Cambridge, MA,* [2]*Incytu, Inc, Lincoln, RI,* [3]*Dana Farber Cancer Institute, Boston, MA*

2:45PM OP-8-2-14F Spatial Coordination of CD28 and CD3 Signaling in Mouse and Human Lymphocytes
K. Bashour[1], J. Tsai[1], K. Shen[1,2], M. L. Dustin[3], and L. C. Kam[1]
[1]*Columbia University, New York, NY,* [2]*Harvard University, Cambridge, MA,* [3]*New York University School of Medicine, New York, NY*

Track: Tissue Engineering * – 8-2-15

Cardiovascular Tissue Engineering – II

Chairs: Lauren Black, Jeffrey Jacot
Ballroom F

1:30PM OP-8-2-15A Adipose-Derived Stromal Cell Homing and Recruitment in Angiogenesis in Inflamed Tissue
C. L. Mulvey[1], P. J. Amos[1], and S. Peirce-Cottler[1]
[1]*University of Virginia, Charlottesville, VA*

1:45PM OP-8-2-15B Myocyte-Depleted Engineered Cardiac Tissues Support Therapeutic Potential of Mesenchymal Stem Cells
G. W. Serrao[1], I. C. Turnbull[1], D. Ancukiewicz[1], Q. R. Youmans[1], L. Hadri[1], R. J. Hajjar[1], and K. D. Costa[1]
[1]*Mount Sinai School of Medicine, New York, NY*

2:00PM OP-8-2-15C Amniotic Fluid-derived Stem Cell Culture on Poly(ethylene glycol) Diacrylate Hydrogels
J. J. Petsche[1], B. Gill[1], M. Aliru[1], J. L. West[1], and J. G. Jacot[1,2]
[1]*Rice University, Houston, TX,* [2]*Texas Children's Hospital, Houston, TX*

2:15PM OP-8-2-15D Viral Fusogens to Promote Stem Cell Reprogramming via Fusion
B. Freeman[1], and B. Ogle[1]
[1]*University of Wisconsin-Madison, Madison, WI*

2:30PM OP-8-2-15E Highly Extensible Hydrogels Capable of Differentiating Mesenchymal Stem Cells Into Cardiomyocytes
Z. Li[1], and J. Guan[2]
[1]*The Ohio State University, Columbus, OH,* [2]*Ohio State University, Columbus, OH*

2:45PM OP-8-2-15F Relative Impact of Cell Shape Versus ECM Ligand Identity on MSC Lineage Progression
P. Qu[1], D. Munoz-Pinto[1], and M. Hahn[1]
[1]*Texas A&M University, College Station, Tx*

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

Track: Tissue Engineering * – 8-2-16

Engineered Tissue Models for Drug Discovery

Chairs: Deepak Nagrath, Laura Segatori
Ballroom G

1:30PM OP-8-2-16A Engineering Humanized Mice With Implantable Livers For Drug Development
A. A. Chen[1,2], L. Ong[1], and S. N. Bhatia[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Harvard University, Cambridge, MA*

1:45PM OP-8-2-16B Detoxification Profiles in Three-Dimensional (3D) Liver Mimetic Cellular Architectures
Y. Kim[1], and P. Rajagopalan[1]
[1]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

2:00PM OP-8-2-16C Engineering Microscale Liver Models for Drug Development
A. Moore[1], S. Krzyzewski[1], J. Gaffney[1], S. McLean[1], J. McGeehan[1], and S. Khetani[1]
[1]*Hepregen Corporation, Medford, MA*

2:15PM OP-8-2-16D Quantifying the Extent and Kinetics of Self-Assembly and Self-Sorting in 3D Micro-tissues
T-M. Ferruccio[1], S. McCalla[2], A. Tripathi[1], and J. Morgan[1]
[1]*Brown University, Providence, RI,* [2]*Brown University, Providence, RI*

2:30PM OP-8-2-16E A Novel *In Vitro* Microenvironment for Drug Delivery Particle Screening
B. Prabhakarpandian[1], J. Fewell[2], K. Anwer[2], and K. Pant[1]
[1]*CFD Research Corporation, Huntsville, AL,* [2]*EGEN Inc., Huntsville, AL*

2:45PM OP-8-2-16F The Development of a 3D Tissue Engineered Bone Tumor Model
E. Burdett[1], A. G. Mikos[1], F. K. Kasper[1], and J. A. Ludwig[2]
[1]*Rice University, Houston, TX,* [2]*Universtiy of Texas M.D. Anderson Cancer Center, Houston, TX*

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

POSTER SESSION 9A 9:30AM – 1:00PM

SATURDAY, OCTOBER **9**
TODAY'S HIGHLIGHTS

PLENARY SESSION
8:00am - 9:30am
Ballroom D, Convention Center

BMES 2010 Rita Schaffer Memorial Young Investigator Lecturer:
HOW MATRIX PROPERTIES CONTROL THE SELF-ASSEMBLY AND MAINTENANCE OF TISSUES
Cynthia Reinhart-King, PhD
Cornell University

Diversity Lecture:
TALK INFORMATION TO COME
Gilda Barabino, PhD
Georgia Institute of Technology
and Emory University

EXHIBIT HALL OPEN
9:30am - 1:30pm
Exhibit Hall 4, Convention Center

POSTER SESSION 9A and 9B
9:30am - 1:00pm
Exhibit Hall 4, Convention Center

PLATFORM SESSIONS 9-1
10:30am - 12:00noon
See pages 125-131
Convention Center

PLATFORM SESSIONS 9-2
1:30pm - 3:00pm
See pages 132-137
Convention Center

PLATFORM SESSIONS 9-3
3:45pm - 5:15pm
See pages 138-143
Convention Center

POSTER SESSION **9A**

PS = Poster Session
OP = Oral Presentation

Track: Biomedical Engineering Education – PS-9A-1

Education Assessment

PS-9A-1-1 Assessing Impact of Interdisciplinary Labs on Ability to Solve Multidisciplinary Biomedical Problems
J. D. Gassert, Ph.D., P.E.[1], J. A. LaMack, Ph.D.[1], R. J. Gerrits, Ph.D.[1], N. E. Schlick, Ph.D.[1], and L. Fennigkoh, Ph.D., P.E.[1]
[1]Milwaukee School of Engineering, Milwaukee, WI

Track: Biomedical Engineering Education – PS-9A-2

Learning Modules/Instructional Materials

PS-9A-2-2 Teaching Creative Problem-Solving with a Science Fiction-Inspired Research Proposal
M. Ali[1], and R. G. Voss[1]
[1]University of Texas, Austin, TX

PS-9A-2-3 Teaming Undergraduate Bioengineering & Graduate Physical Therapy Students: A Case Study
K. R. Csavina[1], and M. Venglar[1]
[1]Florida Gulf Coast University, Fort Myers, FL

Track: Biomedical Imaging and Optics – PS-9A-3

Imaging Technology Development (including Biophotonics)

PS-9A-3-4 Selective Two-photon Excitation by Phase and Amplitude Shaping of a Broadband Coherent Fiber Supercontinuum
Y. Liu[1], B. W. Graf[1], H. Tu[1], E. J. Chaney[1], U. Sharma[1], and S. A. Boppart[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

PS-9A-3-5 Evaluation of Noice Power Spectrum of Variable Resolution Computer Tomography Images
K. Devisetti[1], and F. DiBianca[1]
[1]University of Tennessee Health Science Center, Memphis, TN

PS-9A-3-6 Characterization of Corneal Birefringence Towards the Development of a Polarimetric Glucose Monitor
B. H. Malik[1], and G. L. Coté[1]
[1]Texas A&M University, College Station, TX

PS-9A-3-7 Projection Spatial Resolution Measurement for Variable Resolution X-Ray Cone Beam CT System
S. Arikapudi[1], and F. A. DiBianca[1]
[1]University of Tennessee Health Science Center, Memphis, TN

PS-9A-3-8 Piezoelectric MEMS Scanning Mirror for Endoscopic Imaging
K. H. Gilchrist[1], and S. Grego[1]
[1]RTI International, Research Triangle Park, NC

PS-9A-3-9 Polarization Sensitive Monte Carlo Simulation of Layered Tissues
J. Salazar[1], C-W. Kan[1], D. Côté[2], K. Sokolov[3], and M. K. Markey[1]
[1]The University of Texas at Austin, Austin, TX, [2]Centre de Recherche Universite Lval Robert Giffard, Quebec City, Quebec, Canada, [3]The University of Texas M.D. Anderson Cancer Center, Austin, TX

PS-9A-3-10 Optimization of EPI Distortion Correction in a Pediatric DTI Multi-center Study
A. Nayak[1], L. Walker[1], and C. Pierpaoli[1]
[1]NICHD, National Institutes of Health, Bethesda, MD

PS-9A-3-11 Investigating the Carbodiimide Mediated Conjugation of Quantum Dots to Proteins
F. Song[1], and W. C. Chan[1]
[1]*University of Toronto, Toronto, Ontario, Canada*

PS-9A-3-12 Optode-Based High-Resolution Chemical Imaging of 2D Surfaces
P. Ahuja[1], S. Nair[1], and M. Gratzl[1]
[1]*Case Western Reserve University, Cleveland, OH*

PS-9A-3-13 CT Based Three-Dimensional Measurement of Orbit and Eye Anthropometry
K. L. Loftis[1], A. A. Weaver[1], J. C. Tan[2], S. M. Duma[3,4], and J. D. Stitzel[1,2]
[1]*VT-WFU Center for Injury Biomechanics, Winston-Salem, NC,* [2]*Wake Forest University School of Medicine, Winston-Salem, NC,* [3]*VT-WFU Center for Injury Biomechanics, Blacksburg, VA,* [4]*Virginia Polytechnic Institute and State University, Blacksburg, VA*

PS-9A-3-14 Compact and Light-weight Telemedicine Microscope based on Lensfree On-Chip Imaging
O. Mudanyali[1], D. Tseng[1], S. O. Isikman[1], I. Sencan[1], W. Bishara[1], C. Oztoprak[1], S. Seo[2], B. Khademhosseini[1], and A. Ozcan[1,3]
[1]*UCLA, Los Angeles, CA,* [2]*Korea University, Seoul, Jochiwon, Korea, Republic of,* [3]*California NanoSystems Institute (CNSI), Los Angeles, CA*

PS-9A-3-15 Multiphoton Microscopy of Cleared Mouse Organs
S. G. Parra[1], T. H. Chia[1], J. P. Zinter[1], and M. J. Levene[1]
[1]*Yale University, New Haven, CT*

PS-9A-3-16 Primary Development of Emmetropic Spectacles: Ranging System
Q. Du[1], and F. A. DiBianca[1]
[1]*University of Tennessee Health Science Center, Memphis, TN*

PS-9A-3-17 Interferometric Reflectance Imaging: A Label-Free, High-Throughput, and Dynamic Approach to Pathogen Diagnostics
C. A. Lopez[1], G. Daaboul[1], J. H. Connor[1], and S. Unlu[1]
[1]*Boston University, Boston, MA*

PS-9A-3-18 Parameters Affecting Light Transmission through Tissue Using Optical Clearing Devices
A. Izquierdo-Roman[1], W. C. Vogt[1], R. Andriani[1], and C. G. Rylander[1]
[1]*Virginia Tech, Blacksburg, VA*

PS-9A-3-19 Effect of Mechanical Compression on Refractive Index and Optical Penetration Depth of Light in Skin
A. A. Gurjarpadhye[1], W. C. Vogt[1], A. Izquierdo-Roman[1], and C. G. Rylander[1]
[1]*Virginia Polytechnic and State University, Blacksburg, VA*

PS-9A-3-20 Automated Detection of Fiducial Points in 3D Torso Images
M. M. Kawale[1], A. Bose[1], G. P. Reece[2], E. K. Beahm[2], M. A. Crosby[2], M. K. Markey[3], and F. A. Merchant[1,4]
[1]*University of Houston, Houston, TX,* [2]*The University of Texas MD Anderson Cancer Center, Houston, TX,* [3]*The University of Texas at Austin, Austin, TX,* [4]*University of Houston, Houston, TX*

PS-9A-3-21 Visualization Tools for Pol-MC to Simulate Polarized Light-Tissue Interaction
A. Miranda[1], C-W. Kan[1], D. Côté[2], K. Sokolov[3], and M. K. Markey[1]
[1]*The University of Texas at Austin, Austin, TX,* [2]*Centre de Recherche Universite Lval Robert Giffard, Quebec City, Quebec, Canada,* [3]*The University of Texas M.D. Anderson Cancer Center, Austin, TX*

PS-9A-3-22 Probing Optical Properties of Gold-Silica-Gold Multilayer Nanoshells (MNSs) with Broken Symmetry
S. J. Noelck[1], Y. Hu[1], and R. Drezek[1]
[1]*Rice University, Houston, TX*

PS-9A-3-23 Novel Compact Flexible Endoscope Design for Simultaneous Wide-field Multispectral Fluorescence Lifetime Imaging Microscopy (FLIM)
S. Cheng[1], J. Jabbour[1], K. Maitland[1], and J. A. Jo[1]
[1]*Texas A&M University, College Station, TX*

PS-9A-3-24 High-resolution Lensfree On-chip Microscopy for Wide-field Imaging
W. Bishara[1], T-W. Su[1], A. F. Coskun[1], and A. Ozcan[1,2]
[1]*UCLA Electrical Engineering Department, Los Angeles, CA,* [2]*California NanoSystems Institute, UCLA, Los Angeles, CA*

PS-9A-3-25 Liver Tissue Analysis Using a Multiclass Algorithm and Dual-Excitation Autofluorescence Spectroscopy
V. R. Sauvage[1], H. T. Nguyen[1,2], R. Hill[1], D. Concas[1], A. Levene[1], M. R. Thursz[1], R. D. Goldin[1], Q. M. Anstee[1], and D. S. Elson[1]
[1]*Imperial College London, London, United Kingdom,* [2]*École Normale Supérieure de Cachan, Cachan, France*

PS-9A-3-26 A LabVIEW-based Operating sSystem for a Multi-channel MRI Transmitter
K. L. Moody[1], N. A. Hollingsworth[1], D. Noll[2], S. M. Wright[1], and M. P. McDougall[1]
[1]*Texas A&M University, College Station, TX,* [2]*University of Michigan, Ann Arbor, MI*

PS-9A-3-27 High Frequency Ultrasound Characterization of Three-Dimensional Engineered Tissues
N. Berry[1], M. Helguera[2], D. Hocking[1], and D. Dalecki[1]
[1]*University of Rochester, Rochester, NY,* [2]*Rochester Institute of Technology, Rochester, NY*

PS-9A-3-28 TIM-OS, A General Monte Carlo Optical Simulator for Biomedical Optics
H. Shen[1], W. C. Vogt[1], C. G. Rylander[1], and G. Wang[1]
[1]*Virginia Tech, Blacksburg, VA*

PS-9A-3-29 Development of a Red Blood Cell-based Sensing Platform for Continuous Blood Analyte Monitoring
S. Ritter[1], M. Milanick[2], and K. Meissner[1]
[1]*Texas A&M University, College Station, TX,* [2]*University of Missouri, Columbia, MO*

PS-9A-3-30 Ultrasound Image Analysis of Localized Pediatric Scleroderma
J. M. Desai[1], S. Li[2], A. Ritter[1], and H. Man[1]
[1]*Stevens Institute of Technology, Hoboken, NJ,* [2]*Hackensack University Medical Center, Hackensack, NJ*

PS-9A-3-31 Combined AFM-WGM Sensing-Imaging Technique Using QD Embedded Microspheres
S. Amini[1], Z. Sun[2], G. A. Meininger[2], and K. E. Meissner[1]
[1]*Texas A&M University, College Station, TX,* [2]*University of Missouri, Columbia, MO*

PS-9A-3-32 Preliminary Quality Assessment of Speckle Patterns on Soft Tissues for Digital Image Correlation
J. Ning[1], V. G. Braxton[2], Y. Wang[1], M. A. Sutton[1], Y. Wang[1], and S. M. Lessner[2]
[1]*University of South Carolina, Columbia, SC,* [2]*University of South Carolina School of Medicine, Columbia, SC*

PS-9A-3-33 Time-resolved Fluorescence Spectroscopy for Intraoperative Diagnosis of Oral Cancer
H. Xie[1], Y. Sun[1], and L. Marcu[1]
[1]*Univerisity of California - Davis, Davis, CA*

PS-9A-3-34 A Fourth Gradient Coil for Slice Dependent Phase Compensation with Planar RF Coil Arrays
J. C. Bosshard[1], E. P. Eigenbrodt[1], M. P. McDougall[1], and S. M. Wright[1]
[1]*Texas A&M University, College Station, TX*

PS-9A-3-35 Design and Development of an Integrated OCT and FLIM Catheter for Percutaneous Investigation of Atherosclerotic Plaques
J. Park[1], J. A. Jo[1], S. Shresta[1], P. Pande[1], and B. E. Applegate[1]
[1]*Texas A&M University, College Station, TX*

PS-9A-3-36 Development of a Whole-spectrum Fluorescence Microscope
R. Peterson[1], S. Xiao[1], S. Hussain[1], V. E. Centonze[2], J. D. Lechleiter[2], and J. Ye[1]
[1]*UTSA, San Antonio, TX,* [2]*UTHSCSA, San Antonio, TX*

PS-9A-3-37 Integrating Fourier Phase Microscopy with Optical Tweezers to Study Plasma Membrane Mechanics
M. Sarshar[1], N. Khatibzadeh[1], S. Gupta[1], W. E. Brownell[2], and B. Anvari[1]
[1]*University of California, Riverside, Riverside, CA,* [2]*Baylor College of Medicine, Houston, TX*

See page 182 for Poster floor plan

PS-9A-3-38 Design Considerations When Adapting a Planar Array of Coils for 3D WFOV Microscopy
E. P. EIGENBRODT[1], J. BOSSHARD[1], S. M. WRIGHT[1], AND M. P. MCDOUGALL[1]
[1]Texas A&M University, College Station, TX

PS-9A-3-39 Common-Path Endoscopic Fourier Domain OCT with a Michelson Interferometer-based Compensator
R. WANG[1], R. GOODWIN[2], R. R. MARKWALD[3], AND B. Z. GAO[1]
[1]Clemson Univ., Clemson, SC, [2]University of South Carolina, Columbia, SC, [3]Medical University of South Carolina, Charleston, SC

PS-9A-3-40 Lensless On-chip Microscope as a Portable Semen Analysis Device
T-W. SU[1], D. K. TSENG[1], AND A. OZCAN[1]
[1]University of California, Los Angeles, Los Angeles, CA

PS-9A-3-41 Development of a Multimodal Tissue Diagnostic System
Y. SUN[1], Y. H. SUN[1], D. S. ELSON[2], H. XIE[1], M. LAM[1], J. PHIPPS[1], S. TINGLING[1], G. FARWELL[1], J. M. CANNATA[3], K. SHUNG[3], AND L. MARCU[1]
[1]UC Davis, Davis, CA, [2]Imperial College of London, London, United Kingdom, [3]University of Southern California, Los Angeles, CA

PS-9A-3-42 Multiphoton Flow Cytometry for the Characterization and Purification of Large Cellular Aggregates
D. G. BUSCHKE[1], J. SQUIRRELL[1], K. ELICEIRI[1], AND B. OGLE[1]
[1]University of Wisconsin-Madison, Madison, WI

PS-9A-3-43 Malaria Detection Device
S. KHOSLA[1], J. DIAN[2], M. LABRECQUE[2], A. PERSAD[2] AND S. MEHRYAR[2]
[1]Sentinelle Medical Inc., [2]University of Toronto, Toronto, Ontario, Canada

Track: Cardiovascular Engineering – PS-9A-4

Heart Valve Structure-Function Relations and Computational Simulation

PS-9A-4-44 Oscillatory Shear Flow Drives Mesenchymal Transformation of Embryonic and Adult Valve Endothelial Cells
G. J. MAHLER[1], AND J. T. BUTCHER[1]
[1]Cornell University, Ithaca, NY

PS-9A-4-45 A Computational Model to Quantify Leaflet Wrinkling: Road to Assess Tissue Fatigue & Leaflet Tearing
A. FALAHATPISHEH[1], AND A. KHERADVAR[1]
[1]University of South Carolina, Columbia, SC

PS-9A-4-46 Pathologic Alterations in Shear Stress Magnitude Induce Valvular Endothelial Activation
D. HOEHN[1], L. SUN[1], AND P. SUCOSKY[1]
[1]University of Notre Dame, Notre Dame, IN

PS-9A-4-47 Annulus Tension of Tricuspid Valve Annulus
S. BHATTACHARYA[1], AND Z. HE[1]
[1]Texas Tech University, Lubbock, TX

PS-9A-4-48 Valvular Endothelial Cell-Derived Nitric Oxide Reduces Interstitial Cell Calcification
J. RICHARDS[1], S. CHEN[1], AND J. BUTCHER[1]
[1]Cornell University, Ithaca, NY

PS-9A-4-49 Micromechanics of the Anterior Mitral Valve Leaflet Under Physiological Deformations
C. A. CARRUTHERS[1], J. LIAO[2], AND M. S. SACKS[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Mississippi State University, Mississippi State, MS

PS-9A-4-50 Cyclic Strain Activates Aortic Valve Endothelial Cells in a Side-Specific Manner
S. A. METZLER[1], C. MCINTOSH[1], A. RUHL[1], AND J. N. WARNOCK[1]
[1]Mississippi State University, Mississippi State, MS

PS-9A-4-51 Measurement of Chordal Forces of the Tricuspid Valve using Miniature C Rings
L. G. TROXLER[1]
[1]Georgia Tech Institute for Science and Technology, Conyers, GA

PS-9A-4-52 Characterization of Bicuspid Aortic Valve Hemodynamics using Particle Image Velocimetry (PIV)
N. SAIKRISHNAN[1], C-H. YAP[1], AND A. P. YOGANATHAN[1]
[1]Georgia Institute of Technology, Atlanta, GA

PS-9A-4-53 Determination of Atrioventricular Cushion Material Properties in a Developing Chick Embryo
S. BIECHLER[1], J. MORAVEJI[1], J. W. WEIDNER[1], R. L. GOODWIN[1], D. DEAN[2], AND A. KHERADVAR[1]
[1]University of South Carolina, Columbia, SC, [2]Clemson University, Clemson, SC

PS-9A-4-54 Tricuspid Valve Leaflet Stretch: The Effect of Diseased Conditions and a Saddle-Shaped Annulus
D. BUICE[1], E. SPINNER[1,2], C. YAP[1], AND A. YOGANATHAN[1]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA

PS-9A-4-55 Meso-Scale Testing of Fiber Bundles and Membranes of the Aortic Valve
C. A. ROCK[1], O. KOMOLAFE[1], AND T. DOEHRING[1]
[1]Drexel University, Philadelphia, PA

Track: Cardiovascular Engineering – PS-9A-5

Thrombosis and Hemostasis

PS-9A-5-56 Engineering an Actively Thromboresistant Blood-contacting Interface
Z. QU[1], S. MUTHUKRISHNAN[2], M. K. URLAM[2], C. A. HALLER[2], V. KUMAR[1], U. M. MARZEC[3,4], S. R. HANSON[3,4], J. LAHANN[5], AND E. L. CHAIKOF[1,2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Emory University, Atlanta, GA, [3]Oregon National Primate Research Center, Beaverton, OR, [4]Oregon Health and Science University, Portland, OR, [5]University of Michigan, Ann Arbor, MI

PS-9A-5-57 The Effects of Wall Shear Rate on Microparticle (MP) Adhesion to Plasma Fibronectin
Y-H. LEE[1], M. FRANCIS-SEDLAK[1], C. HALL[2], AND V. TURITTO[1]
[1]Illinois Institute of Technology, Chicago, IL, [2]The College of New Jersey, Ewing, NJ

PS-9A-5-58 Amphiphilic Silicones with Reduced Blood Protein Adsorption
M. L. GIESE[1], B. M. BAILEY[1], AND M. A. GRUNLAN[1]
[1]Texas A&M University, College Station, TX

PS-9A-5-59 A Novel Characterization of Platelet Deposition in a Focal Injury Model
T. V. COLACE[1]
[1]University of Pennsylvania, Philadelphia, PA

PS-9A-5-60 The VWF Propeptide Binds And Inhibits The Function of Multimeric VWF In Blood
S. R. MADABHUSHI[1], C. SHANG[1], K. M. DAYANANDA[1], T. RYAN[2], AND S. NEELAMEGHAM[1]
[1]State University of New York at Buffalo, Buffalo, NY, [2]Reichert Inc., Depew, NY

PS-9A-5-61 Thrombin Flux and Shear Rate Regulate Fibrin Fiber Deposition State During Polymerization Under Flow
K. NEEVES[1,2], D. ILLING[1], AND S. DIAMOND[3]
[1]Colorado School of Mines, Golden, CO, [2]University of Colorado, Denver, Aurora, CO, [3]University of Pennsylvania, Philadelphia, PA

PS-9A-5-62 Polymer Hydrogel for Hemostatic Application
A. M. BEHRENS[1], B. J. CASEY[1], Z. TSINAS[2], J. R. HESS[3], Z. J. WU[3], B. P. GRIFFITH[3], AND P. KOFINAS[1]
[1]University of Maryland, College Park, MD, [2]National Technical University of Athens, Athens, Greece, [3]University of Maryland School of Medicine, Baltimore, MD

POSTER SESSION 9A

PS = Poster Session
OP = Oral Presentation

PS-9A-5-63 Simultaneous Sensing of Factor Xa and Thrombin Activity with Quantum Dot-Fluorescent Protein FRET Probes
B. Ren[1], and G. Bao[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS-9A-5-64 Effect of Platelet-Derived Nitric Oxide on Platelet Percentage Coverage under Static Conditions
M. G. Watson[1], J. M. Lopez[1], A. J. Veverka[2], and S. A. Jones[1]
[1]*Louisiana Tech University, Ruston, LA,* [2]*University of Akron, Akron, OH*

PS-9A-5-65 Computational Model of Mural Thrombogenesis Predicts Platelet Deposition Rates in Baboon Models
S. Rugonyi[1], E. Tucker[1], U. Marzec[1], A. Gruber[1], and S. Hanson[1]
[1]*Oregon Health & Science University, Portland, OR*

PS-9A-5-66 Improving Layer-by-Layer Nanoassembly Surface Morphology: Dynamic Layered Flat Biointerfaces
J. M. Lopez[1], M. G. Watson[1], and S. A. Jones[1]
[1]*Louisiana Tech University, Ruston, LA*

PS-9A-5-67 Hemocompatibility of a Novel Hyaluronan-High Density Polyethylene Composite
S. S. Yonemura[1], B. S. Smith[1], M. H. Forleo[1], S. P. James[1,2], K. C. Popat[1,2], and L. P. Dasi[1,2]
[1]*School of Biomedical Engineering, Colorado State University, Fort Collins, CO,* [2]*Department of Mechanical Engineering, Colorado State University, Fort Collins, CO*

Track: Cellular and Molecular Engineering – PS-9A-6

The Physics and Engineering of Cancer Cells and Their Microenvironment

PS-9A-6-68 The Role of the Tumor Vascular Niche in Regulating the Angiogenic Potential of Breast Cancer Cells
C. F. Buchanan[1], C. S. Szot[1], S. Akman[2], J. W. Freeman[1], and M. N. Rylander[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*Wake Forest University School of Medicine, Winston-Salem, NC*

PS-9A-6-69 Mechanobiology of Mammary Stroma Following Radiation Therapy (RT)
M. A. Qayyum[1,2], J. Xu[1], and M. F. Insana[1,2]
[1]*University of Illinois, Urbana, IL,* [2]*Beckman Institute for Advanced Science and Technology, Urbana, IL*

PS-9A-6-70 The Role of Biophysical and Biochemical Signals in Epithelial-Mesenchymal Transition
Q. K. Chen[1], E. W. Gomez[1], D. C. Radisky[2], and C. M. Nelson[1]
[1]*Princeton University, Princeton, NJ,* [2]*Mayo Clinic Cancer Center, Jacksonville, FL*

PS-9A-6-71 Mechanobiology at Topological Interfaces: Observations and Implications for Tumor Infiltration
T. A. Ulrich[1,2], and S. Kumar[1,2]
[1]*University of California, Berkeley, Berkeley, CA,* [2]*UCSF/UC Berkeley Joint Graduate Group in Bioengineering, Berkeley, CA*

PS-9A-6-72 Bacteria Invasion Mechanism in Cancer and Normal Cells
J. Hong[1], S. Park[1], and J. H. Shin[1]
[1]*KAIST, Daejeon, Daejeon, Korea, Republic of*

PS-9A-6-73 Adhesion of Wild Type and 4 Signaling-defect Mammary Cancer Cells to Brain Endothelium
J. Fan[1], B. Cai[1], Y. Hao[2], F. Giancotti[2], and B. M. Fu[1]
[1]*The City College of New York, New York, NY,* [2]*Memorial Sloan-Kettering Cancer Institute, New York, NY*

PS-9A-6-74 Force Characterization of Tissue from Normal, Pre-invasive and Invasive Breast Cancer
C. C. DuFort[1], J. Lopez[1], H. Yu[1], I. kang[1], I. Acerbi[2], S. Hwang[1], A. Au[1], and V. Weaver[1]
[1]*University of California, San Francisco, San Francisco, CA,* [2]*Universitat de Barcelona, Barcelona, Spain*

PS-9A-6-75 Laminin Enhances Expansion of a Bone Marrow Precursor in The Presence of Tumor Factors
H. Nandigan[1], J. McGinty[2], M. Pate[2], and F. Benencia[1,2]
[1]*Russ College of Engineering, Ohio University, Athens, OH,* [2]*OUCOM, Ohio University, Athens, OH*

PS-9A-6-76 Biophysical Characterization of CD44v-Counter Receptor Interactions using Force Spectroscopy
P. S. Raman[1], C. S. Alves[1], D. Wirtz[1], and K. Konstantopoulos[1]
[1]*Johns Hopkins University, Baltimore, Maryland*

PS-9A-6-77 Increased Asymmetric and Multi-Polar Divisions in Mechanically Confined Microenvironments
W. M. Weaver[1], H. T. Tse[1], and D. Di Carlo[1,2]
[1]*University of California, Los Angeles, Los Angeles, CA,* [2]*California NanoSystems Institute, Los Angeles, CA*

PS-9A-6-78 The Interplay Between Three Dimensional Microenvironment and Breast Cancer Invasion
L. Cassereau[1], J. Lopez[2], and V. Weaver[2,3]
[1]*UC Berkeley/UCSF, Berkeley, CA,* [2]*UCSF, San Francisco, CA,* [3]*Institute of Regenerative Medicine, UCSF, San Francisco, CA*

PS-9A-6-79 Substrate Elasticity Mediates Metastasis Like Phenotype In Vitro in HCT-8 Cells
X. Tang[1], T. B. Kuhlenschmidt[1], M. S. Kuhlenschmidt[1], and T. A. Saif[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

PS-9A-6-80 Development of Cancer Traps for Eliminating Metastatic Cancer Cells *In Vivo*
C-Y. Ko[1,2], A. Nair[1,3], Y-T. Tsai[1,3], J. Zhou[1], and L. Tang[1,3]
[1]*The University of Texas at Arlington, Arlington, TX,* [2]*The University of Texas Southwestern Medical Center at Dallas, Dallas, TX,* [3]*The University of Texas - Southwestern Medical Center at Dallas, Dallas, TX*

PS-9A-6-81 Novel Enzyme Prodrug Therapy for Treatment of Breast Cancer
B. D. Van Rite[1], Y. A. Lazrak[1], M. Pagnon[1], P. Bose[2], C. Kurkjian[2], V. I. Sikavitsas[1], and R. G. Harrison[1]
[1]*University of Oklahoma, Norman, OK,* [2]*University of Oklahoma Health Sciences Center, Oklahoma City, OK*

PS-9A-6-82 Mechanical Compression Stimulates Coordinated Migration of Mammary Carcinoma Cells
J. M. Tse[1,2], G. Cheng[2], J. A. Tyrrell[3], S. A. Wilcox-Adelman[4], Y. Boucher[2], R. K. Jain[2], and L. L. Munn[2]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Massachusetts General Hospital, Charlestown, MA,* [3]*Thomson Reuters, Rochester, New York,* [4]*Boston Biomedical Research Institute, Watertown, MA*

PS-9A-6-83 Study of Altered Metabolism due to Spherogenicity and Anoikis in Ovarian Cancer
C. A. Caneba[1], N. Bellance[1], T. Karedath[1], P. Ramakrishnan[1], L. Pabst[1], S. A. Hussain[1], A. Bozhchenko[1], and D. Nagrath[1]
[1]*Rice University, Houston, TX*

Track: Devices: Nano to Micro – PS-9A-7

Emerging Concept of Medical Micro Devices

PS-9A-7-84 Modeling the Interaction Between Light and TiO2 Thin Films in Photocatalytic Oxygen Generation
A. Perrin[1], S. M. Mijailovich[2], and R. J. Gilbert[3]
[1]Caritas St. Elizabeth's Medical Center, Brighton, MA, [2]Harvard School of Public Health, Boston, MA, [3]Caritas St. Elizabeth's Medical Center, Boston, MA

PS-9A-7-85 Fiberoptic Microneedle Device for Laser Lipolysis
Y. Chen[1], M. A. Kosoglu[1], R. L. Hood[1], and C. G. Rylander[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

PS-9A-7-86 Real Time DNA Amplification Using a Novel Microfluidic Tablet Platform
S. Angione[1], J. Lee[1], L. Mermel[2], and A. Tripathi[1]
[1]Brown University, Providence, RI, [2]Rhode Island Hosptial, Providence, RI

PS-9A-7-87 Development of a High-Throughput Biofilm Chip for Accelerated Antifungal Drug Discovery
A. Srinivasan[1], P. Uppuluri[1], J. L. Lopez-Ribot[1], and A. K. Ramasubramanian[1]
[1]University of Texas at San Antonio, San Antonio, TX

PS-9A-7-88 A Finite Element Study of an Enveloped Biopsy Catheter in RF Tumor Ablation
P. Ghanbari-Bavarsad[1], and R. L. Mahajan[1]
[1]Institute for Critical Technology and Applied Sience, Blacksburg, VA

Track: Devices: Nano to Micro – PS-9A-8

Medical Diagnostics: Nano to Micro Devices

PS-9A-8-89 A Photodefined Micropatterned Membrane for Precise Cell Trapping
A. L. McPherson[1], and G. M. Walker[1]
[1]North Carolina State University, Raleigh, NC

PS-9A-8-90 BIO-MEMS Impedance Sensor for Detecting E.coli O57:H7
M. Dweik[1]
[1]Lincoln University, Jefferson City, MO

PS-9A-8-91 Intensity-based Quantum Dot Barcode Identification Scheme towards Portable Disease Diagnostic Device
K. Ming[1], and W. Chan[1]
[1]University of Toronto, Toronto, Ontario, Canada

PS-9A-8-92 Bioanalytical Applications Using a Silicon-nanowire Drop-based Magnetic Microfluidic Platform
A. Egatz-Gomez[1]
[1]Texas A&M University TEES, College Station, TX

PS-9A-8-93 Progress in the Development of a Wireless Stimulator for Gastroparesis
S. Deb[1], T. Abell[2], W-D. Huang[1], C. Lahr[3], and J-C. Chiao[1]
[1]University of Texas at Arlington, Arlington, TX, [2]University of MIssissippi Medical Center, Jackson, MS, [3]University of MIssissippi Medical Center, Jackson, MS

PS-9A-8-94 The Design of a Wireless System Based on MSP430 Microcontroller for Multiple Parameter Sensing in Biomedical Applications
Y-S. Seo[1], W-D. Huang[1], and J-C. Chiao[1]
[1]University of Texas at Arlington, Arlington, TX

PS-9A-8-95 Electrical and Paper Based Point of Care Diagnostic Devices for Rapid Pathogenic Bacteria Detection
E. Hondroulis[1], C. Liu[1], and C-Z. Li[1]
[1]Florida International University, Miami, FL

PS-9A-8-96 Microfluidic Endothelial Progenitor Cell Capture Technology for Cardiovascular Diagnostic Medicine
B. D. Plouffe[1], G. Hansmann[2,3], and S. K. Murthy[1]
[1]Northeastern University, Boston, MA, [2]Children's Hospital Boston, Boston, MA, [3]Harvard Medical School, Boston, MA

PS-9A-8-97 Volatile Alkanes Micro Preconcentration for Breath Analysis Based Cancer Screening
B. Alfeeli[1], and M. Agah[1]
[1]Virginia Tech, Blacksburg, VA

PS-9A-8-98 *In Vivo* Transdermal SERS Glucose Measurements Using Spatially Offset Raman Spectroscopy
J. M. Yuen[1], R. P. Van Duyne[1], J. T. Walsh[1], and M. R. Glucksberg[1]
[1]Northwestern University, Evanston, IL

PS-9A-8-99 Development of a Microfluidic Reactor for Influenza A Subtyping
S. E. McCalla[1], A. Sarma[2], C. Ong[1], S. M. Opal[3], A. W. Artenstein[4], and A. Tripathi[1]
[1]Brown University, Providence, RI, [2]Harvard University, Cambridge, MA, [3]Rhode Island Hospital, Providence, RI, [4]Memorial Hospital of Rhode Island, Pawtucket, RI

PS-9A-8-100 Disruption of Radial Flow in an Evaporating Drop as a Visual Indicator of Infection
J. Trantum[1], R. L. Mernaugh[1], D. W. Wright[1], and F. R. Haselton[1]
[1]Vanderbilt University, Nashville, TN

PS-9A-8-101 One-step Extraction of Nucleic Acids from Clinical Samples
H. Bordelon[1], N. Adams[1], A. Klemm[1], P. Russ[1], J. Williams[1], D. Wright[1], and F. R. Haselton[1]
[1]Vanderbilt University, Nashville, TN

PS-9A-8-102 Development of a Novel Nano-Biosensor Chip Based on Surface Plasmon Resonance for Rapid Medical Diagnostics
M. Venkataramasubramani[1], and L. Tang[1]
[1]University Of Texas at San Antonio, San Antonio, TX

PS-9A-8-103 Quantitative Characterization of Microelectroporated T cells Using Flow Cytometry
D. J. Stark[1], T. C. Killian[1], and R. M. Raphael[1]
[1]Rice University, Houston, TX

PS-9A-8-104 Optically Forced Cytometry (OFC) for In Situ Bio-nano-particle Enumeration
Y. Hu[1], D. Ou-yang[1], and X. Cheng[1]
[1]Lehigh University, Bethlehem, PA

PS-9A-8-105 Towards Non-Invasive Breath Monitoring with Microsensor Arrays
B. Raman[1], K. Benkstein[2], C. Mungle[2], C. Montgomery[2], C. J. Martinez[3], and S. Semancik[2]
[1]Washington University, St. Louis, MO, [2]National Institutes of Standards and Technology, Gaithersburg, Maryland, [3]Purdue University, West Lafayette, IN

PS-9A-8-106 Rapid In-Field Detection of Viral Bioterrorism Agents via Complex Fluid Systems
F. Mashayekhi[1], Y. T. Chiu[1], A. Le[1], F. C. Chao[1], B. M. Wu[1], and D. T. Kamei[1]
[1]UCLA, Los Angeles, CA

PS-9A-8-107 An Asynchronous Magnetic Bead Rotation Assay: A magnetic Torque-based Biosensor
A. H. Hecht[1], P. Kinnunen[1], B. McNaughton[1], and R. Kopelman[1]
[1]University of Michigan, Ann Arbor, MI

POSTER SESSION 9A

PS = Poster Session
OP = Oral Presentation

PS-9A-8-108 High Density Multiplexed Microfluidic Platforms for Rapid, Informative Plasma Protein Detection in Cancer Diagnostics
O. VERMESH[1,2], AND U. VERMESH[1]
[1]California Institute of Technology, Pasadena, CA, [2]The David Geffen School of Medicine at UCLA, Los Angeles, CA

PS-9A-8-109 Lab-on-chip Sensor for Monitoring Zinc by Anodic Stripping Voltammetry
J. L. HERREN[1], P. JOTHIMUTHU[1], R. A. WILSON[1], H. WONG[2], W. R. HEINEMAN[1], AND I. PAPAUTSKY[1]
[1]University of Cincinnati, Cincinnati, OH, [2]Cincinnati Childrens Hospital Medical Center, Cincinnati, OH

PS-9A-8-110 Multiplexed, Rapid, Point of Care Device to Quantify Allergen-Specific IgE
M. R. MONROE[1], G. DAABOUL[1], A. REDDINGTON[1], S. UNLU[1], AND F. LITTLE[1]
[1]Boston University, Boston, MA

PS-9A-8-111 Device For Minimally Invasive Non-Destructive Analysis of Local Tissue Biomechanics
R. A. GOULD[1], G. TARSI[1], A. BOZKURT[1], AND J. BUTCHER[1]
[1]Cornell University, Ithaca, NY

PS-9A-8-112 Enhancing MRI Contrast of Fe3O4 Nanoparticles via Porous Si Entrapment
J. M. KINSELLA[1], S. ANANDA[1], AND M. SAILOR[1]
[1]University of California, San Diego, La Jolla, CA

PS-9A-8-113 Biomimetic Separation of Blood Cells on a Microfluidic Platform
A. JAIN[1,2], AND L. MUNN[1]
[1]Massachusetts General Hospital, Charlestown, MA, [2]Boston University, Boston, MA

PS-9A-8-114 Quantum Dot-Microbeads for Genetic Detection in Non-Amplified DNA Samples
Y. GAO[1], W. L. STANFORD[1], AND W. C. CHAN[1]
[1]University of Toronto, Toronto, ON, Canada

PS-9A-8-115 An Intracranial Volume Sensor to Monitor Ventricular Enlargement
S. BASATI[1], M. LARIVIERE[2], R. PENN[1], AND A. LINNINGER[1]
[1]University of Illinois at Chicago, Chicago, IL, [2]University of Chicago, Chicago, IL

Track: Drug Delivery Systems – PS-9A-9

Graduate Education

PS-9A-9-116 Purification of Bacterial APOA-1 and Characterization of Novel Anticancer Drug Delivery System
T. YOUNG[1], AND A. G. LACKO[2]
[1]North Carolina State, Raleigh, NC, [2]University of North Texas Health Science Center, Fort Worth, TX

Track: Drug Delivery Systems – PS-9A-10

Nucleic Acid Delivery

PS-9A-10-117 Preparation and Characterization of PEI-PEG attached Silica Nanoparticles for siRNA Delivery
H. LEE[1], D. SUNG[1], AND S-W. SEO[1]
[1]Biomedical Engineering Interdisciplinary program, School of Medicine, Sungkyunkwan University, Seoul, Korea, Republic of

PS-9A-10-118 Towards the Development of Mucus Penetrating DNA Nanoparticles
N. BOYLAN[1], J. SUK[2], S. LAI[1,3], R. JELINEK[4], M. BOYLE[2], AND J. HANES[3,5]
[1]The Johns Hopkins University, Baltimore, MD, [2]The Johns Hopkins University School of Medicine, Baltimore, MD, [3]Institute for NanoBioTechnology, Baltimore, MD, [4]Ben-Gurion University, Beersheba, Israel, [5]Wilmer Ophthalmological Institute, The Johns Hopkins University School of Medicine, Baltimore, MD

PS-9A-10-119 Development of Smart Particles for Effective Gene Silencing in Head & Neck Cancer
Y-L. LIN[1], G. JIANG[1], AND M. E.H. EL-SAYED[1]
[1]University of Michigan, Ann Arbor, MI

PS-9A-10-120 Understanding the Selective Transfection Mediated by Pentablock Copolymers with Study on Rate Limiting Steps
B. ZHANG[1], AND S. K. MALLAPRAGADA[1]
[1]Iowa State University, Ames, IA

PS-9A-10-121 Gene Expression Profiling of Cells Transfected with Nonviral Vectors
S. A. PLAUTZ[1], G. BOANCA[1], J-J. M. RIETHOVEN[1], AND A. K. PANNIER[1]
[1]University of Nebraska-Lincoln, Lincoln, NE

PS-9A-10-122 Small Molecular Changes to Gene Delivery Polymers Varies Transfection Efficacy Between 2D and 3D
N. S. BHISE[1], R. GRAY[1], J. SUNSHINE[1], S. HTET[1], J. GREEN[1], AND A. EWALD[1]
[1]Johns Hopkins School of Medicine, Baltimore, MD

PS-9A-10-123 The Role of Endocytosis in the Uptake and Internalization of Plasmid DNA Following Electroporation
M. WU[1], AND F. YUAN[1]
[1]Duke University, Durham, NC

PS-9A-10-124 Conjugation of Nucleic Acids to Gold Nanorods for Site-specific Delivery Using Photothermal Release
T. A. LARSON[1], S. CHIRIELEISON[1], A. ELLINGTON[1], AND K. SOKOLOV[1,2]
[1]UT Austin, Austin, TX, [2]MD Anderson Cancer Center, Houston, TX

PS-9A-10-125 Novel Block Copolypeptide Vesicles as Potential Transfection Agents
U-J. CHOE[1], V. Z. SUN[1], A. R. RODRIGUEZ[1], H. DAI[1], T. J. DEMING[1], AND D. T. KAMEI[1]
[1]UCLA, Los Angeles, CA

PS-9A-10-126 Intramyocardial Delivery of Functionalized Nanoparticles for Cardioprotection after Infarction
M. CHENG[1,2], C. CHANG[1], W. LIAO[2], A. TANG[2], C. YEH[3], Y. YANG[4], AND P. HSIEH[1,5]
[1]Biomedical Engineering, Tainan, Taiwan, Taiwan, [2]Clinical Medicine & Research Center of Clinical Medicine, Tainan, Taiwan, Taiwan, [3]Chemistry, Tainan, Taiwan, Taiwan, [4]Surgery, Tainan, Taiwan, Taiwan, [5]Biomedical Sciences, Academia Sinica, Taipei, Taiwan, Taiwan

PS-9A-10-127 Functional Performance of Polyplexes Self-assembled in Microfludics-generated Droplets
C. L. GRIGSBY[1], Y-P. HO[1], AND K. W. LEONG[1]
[1]Duke University, Durham, NC

PS-9A-10-128 *In Vivo* Gene Delivery with Biodegrading Nanoparticles
A. J. DITTO[1], J. J. REHO[1], J. A. SMOLEN[1], J. H. HOLDA[1], R. J. RAMIREZ[1], AND Y. H. YUN[1]
[1]University of Akron, Akron, OH

PS-9A-10-129 Synthesis and Biological Evaluation of Multifunctional Peptide-HPMA Copolymers as Nucleic Acid Delivery Vehicles
R. N. JOHNSON[1], J. SHI[1], R. BURKE[1], A. HOFFMAN[1], P. STAYTON[1], AND S. H. PUN[1]
[1]University of Washington, Seattle, WA

PS-9A-10-130 Apoptosis of Human Colon Cancer Cells by Silencing Eukaryotic Translation Initiation Factor 2 Alpha
C-H. WANG[1], AND C-A. PENG[1]
[1]Michigan Technological University, Houghton, MI

PS-9A-10-131 The Effect of Swelling and Cationic Character On Gene Transfection by pH-Responsive Nanocarriers
J-O. YOU[1], R. E. HORTON[1], AND D. T. AUGUSTE[1]
[1]Harvard University, Cambridge, MA

PS-9A-10-132 Well-defined Synthetic Polymers for DNA Vaccine Delivery: Uptake and Subcellular Trafficking in Dendritic Cells
D. PANUS[1], W. JI[1], AND C. WANG[1]
[1]University of Minnesota, Minneapolis, MN

POSTER SESSION **9A**

Track: Neural Engineering – PS-9A-11

Neural Engineering: Technology Development

PS-9A-11-133 Laser Suppresses Amyloid-beta Peptide-induced ROS and Inflammation in Primary Astrocytes
X. Yang[1], S. Askarova[1], W. Sheng[1], G. Yao[1], G. Sun[1], and J. Lee[1]
[1]University of Missouri, Columbia, MO

PS-9A-11-134 The Effects of Substrate Rigidity on Neuronal Precursor Cells
M. L. Previtera[1], M. Hui[1], M. S. Desai[1], D. Verma[1], R. S. Schloss[1], and N. A. Langrana[1]
[1]Rutgers University, Piscataway, NJ

PS-9A-11-135 Poly(3,4-ethylene dioxythiophene) Enables 38.5 µm2 Recording Site for Carbon Fiber Based Electrodes
T. D. Kozai[1], P. R. Patel[1], N. B. Langhals[1], X. Deng[1], H. Zhang[1], J. Lahann[1], N. A. Kotov[1], and D. R. Kipke[1]
[1]University of Michigan, Ann Arbor, MI

PS-9A-11-136 An Integrated Probe for Sensing Neurotransmitters
H. Cao[1], Y-B. Peng[1], and J-C. Chiao[1]
[1]University of Texas at Arlington, Arlington, TX

PS-9A-11-137 Investigating the Power Spectral Density as a Method for Quantifying Neuronal Signals for Pain Study
A. Farajidavar[1], C. Hagains[1], Y. Peng[1], and J-C. Chiao[1]
[1]The University of Texas at Arlington, Arlington, TX

PS-9A-11-138 Aqueous Micro-contact Printing for Design of Live Neuronal Network In Vitro
M. J. Jang[1], and Y. Nam[1]
[1]KAIST, Daejeon, Chungnam, Korea, Republic of

PS-9A-11-139 A Preliminary Study of Motor Unit Discrimination from Surface EMG Using EMGLAB
F. J. Nezhad[1], X. Li[1], W. Z. Rymer[1,2], and P. Zhou[1,2]
[1]Rehabilitation Institute of Chicago, Chicago, IL, [2]Northwestern University, Chicago, IL

PS-9A-11-140 In Vitro stability and In Vivo performance of PEDOT coatings for neural microstimulation
S. J. Wilks[1], A. S. Koivuniemi[1,2], and K. J. Otto[1]
[1]Purdue University, West Lafayette, IN, [2]Indiana University, Indianapolis, IN

PS-9A-11-141 Improving the Assessment of Tremor and Bradykinesia Using the Tablet PC
M. Zhang[1], S. Askari[1], and D. S. Won[1]
[1]California State University, Los Angeles, Los Angeles, CA

PS-9A-11-142 Impulsive Pressurization of Neuronal Cells for Studying Traumatic Brain Injury
J. Lee[1], M. Nienaber[1], R. Feng[1], and J. Lim[1]
[1]University of Nebraska, Lincoln, NE

PS-9A-11-143 Development of a High-Throughput Screen for Novel Biomaterials in Neural Tissue Engineering
C. Dumont[1], P. Karande[1], and D. Thompson[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

PS-9A-11-144 3-D Integrated Neuromorphic Processor
J. Park[1], T. Yu[1,2], S. Joshi[1], and G. Cauwenberghs[1,2]
[1]UCSD, La Jolla, CA, [2]Institute of Neural Computation, La Jolla, CA

PS-9A-11-145 Tape-Transfer Assisted Cryosectioning for the Mouse Brain Architecture Project
V. Pinskiy[1,2], J. Jones[1], H. Wang[1], H. Cox[1], and P. Mitra[1]
[1]Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, [2]Stony Brook University, Stony Brook, NY

PS-9A-11-146 Development of Mental Fatigue in Simulated Air Traffic Control Tasks Studied by EEG
D. Dasari[1], C. Crowe[1], C. Ling[1], M. Zhu[1], L. Bailey[2], J. Crutchfield[2], and L. Ding[1]
[1]University of Oklahoma, Norman, OK, [2]Federal Aviation Academy, Oklahoma City, OK

PS-9A-11-147 Improved Modeling and Application of Transcranial Magnetic Stimulation
T. Krieg[1], and D. Mogul[1]
[1]Illinois Institute of Technology, Chicago, IL

PS-9A-11-148 Monitoring the Depth of Anesthesia using the Time-Varying Spectral Features of EEG
E. E. Kang[1], H. El Beheiry[1,2], J. Wong[3], M. Del Campo[3], P. L. Carlen[1,3], and B. L. Bardakjian[1]
[1]University of Toronto, Toronto, Ontario, Canada, [2]Trillium Health Centre, Toronto, Ontario, Canada, [3]University Health Network, Toronto, Ontario, Canada

PS-9A-11-149 Electrical High Frequency Nerve Block of the Urethral Sphincter for Bladder Voiding
M. Franke[1,2], A. S. Boger[1,2], N. Bhadra[1,2], and K. J. Gustafson[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Louis Stokes VA Medical Center, Cleveland, OH

PS-9A-11-150 A FPGA-based Sound Classification and Localization System That Uses Output From a Biomimetic Model
Y. Pu[1], L. Solomon[2], and A. Hubbard[1]
[1]Boston University, Boston, MA, [2]US Army Research Laboratory, Aldephi, MD

PS-9A-11-151 Methodology and Characteristics of Micropatterned Neural Networks
E. W. Franca[1], S. Algapan[1], L. Pan[1], K. Varghese[1], G. J. Brewer[2], and B. Wheeler[1]
[1]University of Florida, Gainesville, FL, [2]Southern Illinois University School of Medicine, Springfield, IL

PS-9A-11-152 IV Administed Copolymer Surfactant Poloxamer 188 Accelerates Peripheral Axon Regeneration
R. C. Lee[1]
[1]University of Chicago, Chicago, IL

PS-9A-11-153 Carbon Nanotube Thread Supports Attachment and Differentiation of Murine Neural Cells in Culture
T. Hopkins[1], J. Vennemeyer[1], C. Jayasinghe[1], V. Shanov[1], and S. Pixley[1]
[1]University of Cincinnati, Cincinnati, OH

PS-9A-11-154 Novel Microchannel Device for Real Time Monitoring Tumor Cell Migration
S. Vasudevan[1], D. Tamuly[1], D. P. Dave[1], S. M. Iqbal[1], R. Bachoo[2], and Y-T. Kim[1]
[1]University of Texas at Arlington, Arlington, TX, [2]University of Texas Southwestern Medical Center, Dallas, TX

Track: New Frontiers in Bioengineering – PS-9A-12

Synthetic Biology in Health and Medicine

PS-9A-12-155 Improved Safety and Efficacy of Balloon Angioplasty Procedures Using Collagen-Binding Peptidoglycans
K. Stuart[1], J. Paderi[1], M. Sturek[2], and A. Panitch[1]
[1]Purdue University, West Lafayette, IN, [2]Indiana University School of Medicine, Indianapolis, IN

PS-9A-12-156 A Synthetic Biological Engineering Approach to Secretion-Based Recovery of Polyhydroxyalkanoates and Other Cellular Products
E. Linton[1], R. C. Sims[1], and C. D. Miller[1]
[1]Utah State University, Logan, UT

POSTER SESSION 9A

PS = Poster Session
OP = Oral Presentation

PS-9A-12-157 A Temperature-Responsive Synthetic Antibody for Reversible Cell Labeling
J. Zhou[1], B. Soontornworajit[1], and Y. Wang[1]
[1]*University of Connecticut, Storrs, CT*

PS-9A-12-158 Self-assembling Peptides as Chemically Defined Adjuvants
J. S. Rudra[1], Y. F. Tian[1], J. P. Jung[1], and J. H. Collier[1]
[1]*University of Chicago, Chicago, IL*

PS-9A-12-159 Tunable Signal Processing in Synthetic MAP Kinase Modules
E. C. O'Shaughnessy[1], S. Palani[2], J. J. Collins[1], and C. A. Sarkar[2]
[1]*Howard Hughes Medical Institute and Boston University, Boston, MA,* [2]*University of Pennsylvania, Philadelphia, PA*

Track: Orthopedic and Rehabilitation Engineering – PS-9A-13

Orthopaedic Hard Tissue Biomechanics

PS-9A-13-160 Effect of Plate Size on the Stability of Surgically Repaired Humeri in Simulated Crutch Ambulation
J. G. Bledsoe[1], J. Buchheit[1], S. Owen[1], and L. Cannada[1]
[1]*Saint Louis University, St Louis, MO*

PS-9A-13-161 Factors Influencing Tibial Loading Following Total Knee Arthroplasty: A Finite Element Study
S. Tokunaga[1], S. R. Small[2], R. D. Rogge[1], M. E. Berend[2], and M. A. Ritter[2]
[1]*Rose-Hulman Institute of Technology, Terre Haute, IN,* [2]*JRSI Foundation, Inc., Mooresville, IN*

PS-9A-13-162 Understanding Nanotopography Mediated Osteoblast Responses by Experiments and Mathematical Modeling
L. Yang[1], V. Chinthapenta[1], Q. Li[1], B. W. Sheldon[1], and T. J. Webster[1]
[1]*Brown University, Providence, RI*

PS-9A-13-163 A Mechanistic Model of the Nanoscracth Test to Determine the In Situ Toughness of Bone
A. Islam[1], X. Dong[1], and X. Wang[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

PS-9A-13-164 Microdamage Induced Collagen Denaturation in Bone
M. banka[1], M. Appleford[1], and X. Wang[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

PS-9A-13-165 High Initial Stability in Porous Titanium Acetabular Cup Designs: A Biomechanical Study
M. E. Berend[1], S. R. Small[1], L. Howard[2], R. D. Rogge[2], C. A. Buckley[2], and M. A. Ritter[1]
[1]*JRSI Foundation, Inc., Mooresville, IN,* [2]*Rose-Hulman Institute of Technology, Terre Haute, IN*

PS-9A-13-166 The role of Osteocalcin and Osteopontin in Fatigue Induced Microdamage Formation and Morphology
O. Nikel[1], R. A. Davignon[1], C. M. Gundberg[2], and D. Vashishth[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY,* [2]*Yale School of Medicine, New Haven, CT*

PS-9A-13-167 An Inverse FEA to Assess Bone Fracture Healing in Mice Receiving Mesenchymal Stem Cell Transplantation
J. A. Weis[1], F. Granero-Moltó[2], T. J. Myers[2], A. Spagnoli[2], and M. I. Miga[1]
[1]*Vanderbilt University, Nashville, TN,* [2]*University of North Carolina at Chapel Hill, Chapel Hill, NC*

PS-9A-13-168 The Influence of the Frontal Sinus on Fracture Tolerance
J. Cormier[1], S. Manoogian[1], J. Bisplinghoff[2], S. Rowson[2], A. Santago[2], C. McNally[2], J. Bolte IV[3], and S. Duma[2]
[1]*Biodynamic Research, San Antonio, TX,* [2]*Virginia Tech – Wake Forest Center for Injury Biomechanics, Blacksburg, VA,* [3]*The Ohio State University Transportation Research Center, Columbus, OH*

PS-9A-13-169T The Tolerance of the Nasal Bone to Blunt Impact
J. Cormier[1], S. Manoogian[1], J. Bisplinghoff[2], S. Rowson[2], A. Santago[2], C. McNally[2], J. Bolte IV[3], and S. Duma[2]
[1]*Biodynamic Research, San Antonio, TX,* [2]*Virginia Tech – Wake Forest Center for Injury Biomechanics, Blacksburg, VA,* [3]*The Ohio State University Transportation Research Center, Columbus, OH*

PS-9A-13-170 Variation of Mineral Crystal Orientation Under Uniaxial Load Using Synchotron X-Ray Scattering
A. R. Paterson[1], A. Belzung[2], X. Dong[2], J. Almer[3], and X. Wang[2]
[1]*University of Texas at San Antonio, San Antonio, TX,* [2]*UTSA, San Antonio, TX,* [3]*Argonne National Lab, Advanced Photon Source, Argonne, IL*

Track: Respiratory Engineering – PS-9A-14

Upper Airway Function

PS-9A-14-171 Modeling of Adhesion Dynamics and Eustachian Tube Function During Inflammatory Otitis Media
F. J. Sheer[1], and S. Ghadiali[1]
[1]*Ohio State University, Columbus, OH*

PS-9A-14-172 Real-Time Monitoring of Exercise Induced Changes in Respiratory Resistance Using the Airflow Perturbation Device
P. Chapain[1,2], A. Johnson[1], J. Vossought[2], and S. Majd[2]
[1]*University of Maryland College Park, College Park, MD,* [2]*Engineering and Scientific Research Associates, Olney, MD*

PS-9A-14-173 *In Vivo* Detection of Airway Narrowing and Occlusion in Obstructive Sleep Apnea/Hypopnea using Ultrasound
M. Al-Abed[1], P. Antich[2], D. E. Watenpaugh[3], G. Bhave[1], A. Bashaboyina[1], R. Alex[1], S. Iyer[1], E. Altuwaijri[1], and K. Behbehani[1]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*University of Texas Southwestern Medical Center at Dallas, Dallas, TX,* [3]*Sleep Consultants, Inc., Fort Worth, TX*

PS-9A-14-174 Odorant Uptake and Transport in the Human Nasal Nose Under Unsteady Airflow
J. Jiang[1], and K. Zhao[1]
[1]*Monell Chemical Sense Center, Philadelphia, PA*

PS-9A-14-175 A Study of Physiological Effects of Sleep Apnea on Cerebral Blood Flow Velocity
G. Bhave[1], D. E. Watenpaugh[2], R. Zhang[3], A. Bashaboyina[4], M. Al-Abed[1], S. Iyer[5], E. Altuwaijri[1], and K. . Behbehani[1]
[1]*The University of Texas, Arlington, Arlington, TX,* [2]*Sleep Consultants Inc., Ft. Worth, TX,* [3]*Presbytarian Hospital, Institute for Excercise and Environmental Medicine, Dallas, TX,*

PS-9A-14-176 A Pressure Measuring Syringe
J. Spiegel[1]
[1]*BIDMC, Natick, MA*

Track: Systems Biology, Bioinformatics and Computational Biology – PS-9A-15

Systems Cell Biology

PS-9A-15-177 Bioinformatic Elucidation of Consensus Phosphorylation Motifs Utilizing Inter-Species Functional Data
L. Brumfield[1]
[1]*NC State University, Raleigh, NC*

PS-9A-15-178 Systems Analysis of Nox1 Activation by Angiotensin II in Vascular Smooth Muscle Cells
W. Yin[1], and E. O. Voit[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

PS-9A-15-179 Modeling of Potassium Accumulation at the Immunological Synapse and its Effect on T-cell Function
G. Martin[1], Y. Yun[2], and L. Conforti[1]
[1]*University of Cincinnati, Cincinnati, OH,* [2]*North Carolina A&T State University, Greensboro, NC*

PS-9A-15-180 Design of an Ultrasensitive Activity Assay for Protein-Kinase Signaling Networks
K. J. Holmberg[1], and K. A. Janes[1]
[1]University of Virginia, Charlottesville, VA

PS-9A-15-181 Silver Salts: Effective Antibiotic Potentiators
J. R. Morones-Ramirez[1,2], and J. J. Collins[1,2]
[1]Howard Hughes Medical Institute, Boston, MA, [2]Boston University, Boston, MA

PS-9A-15-182 Quantitative Signaling Analysis of Monocyte Differentiation into Osteoclasts or Macrophages
M. O. Platt[1], and W. A. Li[1]
[1]Georgia Institute of Technology, Atlanta, GA

PS-9A-15-183 Toward Automated Quantitative Analysis of Macrophage Activation While Retaining Spatial Context
E. Highley[1], S. Y. Kwan[1], and P. G. Campbell[1]
[1]Carnegie Mellon University, Pittsburgh, PA

PS-9A-15-184 A Computational Toolbox to Analyze *In-Vitro* Cell Differentiation Heterogeneity
E. Highley[1], E. Ker[1], L. E. Weiss[1], and P. G. Campbell[1]
[1]Carnegie Mellon University, Pittsburgh, PA

PS-9A-15-185 Temporal Changes in ERK1/2 Signaling in Huvecs Cultured on Combinations of ECM Components
C. Pauken[1], and M. Caplan[1]
[1]Arizona State University, Tempe, AZ

PS-9A-15-186 Spatial Dynamics of TNF-α Induced Hydrogen Peroxide
A. F. Gardezi[1], and M. L. Kemp[2]
[1]Georgia Institute of Technology, Atlanta, GA, [2]Georgia Institute of Technology/Emory University, Atlanta, GA

PS-9A-15-187 Serpin-derived Anti-angiogenic Peptides as Therapeutic Agents for Breast Cancer
J. E. Koskimaki[1], E. V. Rosca[1], N. V. Pandey[1], E. V. Karagiannis[1], and A. S. Popel[1]
[1]Johns Hopkins University School of Medicine, Baltimore, MD

PS-9A-15-188 ShReD: A Novel Metric for Determining Reciprocal Interactions Between Biochemical Network Components
G. Sridharan[1], D. Weaver[1], S. Hassoun[1], and K. Lee[1]
[1]Tufts University, Medford, MA

POSTER SESSION **9A**

Track: Tissue Engineering – PS-9A-16

Biosensors and Tissue Engineering

PS-9A-16-189 Mechanically Directed Endothelial Morphogenesis
Y. Liu[1,2], D. A. Markov[2], J. P. Wikswo[2], and L. J. McCawley[2]
[1]West Virginia University, Morgantown, WV, [2]Vanderbilt University, Nashville, TN

PS-9A-16-190 A Wireless Platform for Wound Condition Monitoring
Y-S. Seo[1], H. Cao[1], S. K. Thakar[1], C. M. Nguyen[1], and J-C. Chiao[1]
[1]University of Texas at Arlington, Arlington, TX

PS-9A-16-191 *In Vivo* and *In Silico* Validation of a Novel Implantable Oxygen Sensor
H. V. Jain[1], H. Byrne[2], and N. I. Moldovan[3]
[1]Mathematical Biosciences Institute, The Ohio State University, Columbus, OH, [2]School of Mathematical Sciences, University of Nottingham, Nottingham, UK, United Kingdom, [3]Davis Heart and Lung Research Institute, Ohio State University, Columbus, OH

PS-9A-16-192 Optimizing the Design of a Self-cleaning Thermoresponsive Hydrogel Membrane for Glucose Sensing
A. A. Abraham[1], R. Fei[1], B. M. Cummins[1], M. A. Grunlan[1], and G. L. Cote[1]
[1]Texas A&M University, College Station, TX

PS-9A-16-193 Electrochemical Glucose Biosensor Based on Multi-walled Carbon Nanotubes (MWNTs) Modified Electrode.
D. M. Savani[1], A. Santiago[1], and P. Patra[1]
[1]University of Bridgeport, Bridgeport, CT

Track: Tissue Engineering – PS-9A-17

Host Response to Biomaterials

PS-9A-17-194 Alginate Hydrogels as a Calcium Source for Immunomodulation
G. Chan[1], and D. Mooney[1]
[1]Harvard University, Cambridge, MA

PS-9A-17-195 Improved Haemocompatibility of Polyethylene Terephthalate Films ,odified by NTPDase Immobilization
V. Muthuvijayan[1], and R. S. Lewis[2]
[1]Oklahoma State University, Stillwater, OK, [2]Brigham Young University, Provo, UT

PS-9A-17-196 Integrin-Directed Modulation of Macrophage Response to Biomaterials
T. Zaveri[1], N. Dolgova[1], M. Clare-Salzler[1], and B. Keselowsky[1]
[1]University of Florida, Gainesville, FL

PS-9A-17-197 Immunogenicity of Bovine and Leporine Meniscus Cells and Articular Chondrocytes
J. Sanchez-Adams[1], D. J. Huey[1], V. P. Willard[1], and K. A. Athanasiou[2]
[1]Rice University, Houston, TX, [2]UC Davis, Davis, CA

PS-9A-17-198 Biological Response to Submicron Cobalt Chromium Alloy Particles in a Rabbit Model
M. L. Harper[1], V. Singh[1], F. W. Chan[1], and N. Hallab[2]
[1]Medtronic, Spinal and Biologics, Memphis, TN, [2]Rush University Medical Center, Chicago, IL

Track: Tissue Engineering – PS-9A-18

Musculoskeletal Tissue Engineering

PS-9A-18-199 Effect of Combinatorial Stress Preconditioning and Heat Shock Proteins on Bone Regeneration
E. Chung[1], and M. N. Rylander[1]
[1]Virginia Tech, Blacksburg, VA

PS-9A-18-200 Aligned Collagen-GAG Scaffolds for Tendon Tissue Engineering
S. R. Caliari[1], M. Ramirez[1], and B. A. Harley[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

PS-9A-18-201 Skeletal Muscle Nanoactuator
K. D. McKeon-Fischer[1], D. H. Flagg[1], and J. W. Freeman[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

PS-9A-18-202 Force Generation in Engineered Muscle Tissue is Significantly Affected by Cell-matrix Interactions
S. Hinds[1], W. Bian[1], and N. Bursac[1]
[1]Duke University, Durham, NC

PS-9A-18-203 Composite Electrospun/Hydrogel Scaffold for Cartilage Tissue Engineering
L. Wright[1], K. D. McKeon-Fischer[1], L. S. Nair[2], and J. W. Freeman[1]
[1]Virginia Tech, Blacksburg, VA, [2]University of Connecticut, Farmington, CT

PS-9A-18-204 MicroCT Assessment of Bone Organ Culture Viability and Development in a Neonatal Rat Femur Model
K. Gurley[1], A. Gobin[2], and M. Saunders[1]
[1]University of Kentucky, Lexington, KY, [2]University of Louisville, Louisville, KY

PS-9A-18-205 Improved Cell Infiltration into Electrospun Bone Tissue Scaffolds via Sacrificial Fiber Removal
B. Whited[1], J. Whitney[1], Y. Xu[1], and M. N. Rylander[1]
[1]Virginia Polytechnic Institute and State University, Blacksburg, VA

PS = Poster Session
OP = Oral Presentation

PS-9A-18-206 Novel Glucosamine Analogs for Recovery of Chondrocytes from IL-1 Treatment
J. M. Coburn[1], J. Crist[1], L. Wo[1], K. J. Yarema[1], and J. H. Elisseeff[1]
[1]*Johns Hopkins University, Baltimore, MD*

PS-9A-18-207 Characterization of Electrospun Osteon-like Scaffolds
T. Andric[1], A. C. Sampson[1], and J. W. Freeman[1]
[1]*Virginia Tech, Blacksburg, VA*

PS-9A-18-208 Synthesis of Collagenase-Sensitive Polyureas for Ligament Tissue Engineering
T. J. Touchet[1], H. A. Benhardt[1], and E. M. Cosgriff-Hernandez[1]
[1]*Texas A&M University, College Station, TX*

PS-9A-18-209 Cartilage Tissue Engineering Using Neonatal Human Dermal Fibroblasts
M. Singh[1], F. K. Kasper[1], and A. G. Mikos[1]
[1]*Rice University, Houston, TX*

PS-9A-18-210 Soluble Mini-agrin Increases Contractility of Engineered Skeletal Muscle Tissues
W. Bian[1], and N. Bursac[1]
[1]*Duke University, Durham, NC*

PS-9A-18-211 Histological Sections - Can Major and Minor Centroidal Axes Serve as Absoluste Reference Points
S. H. McBride[1], S. Dolejs[1], U. Knothe[2], and M. Knothe Tate[1]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*Cleveland Clinic, Cleveland, OH*

PS-9A-18-212 Immature and Mature Muscle Cells Secrete Soluble Factors to Differentially Regulate Embryonic Tendon Cell Tenogenesis *In Vitro*
A. H. Thomas[1], Z. A. Schiller[1], C. C. Banos[1], and C. K. Kuo[1]
[1]*Tufts University, Medford, MA*

PS-9A-18-213 Prolotherapy Based Increases in Cellular Proliferation and Collagen Deposition in MC3T3-E1 Cells
Y. M. Empson[1], E. C. Ekwueme[1], and J. W. Freeman[1]
[1]*Virginia Tech, Blacksburg, VA*

PS-9A-18-214 Multivariate Analysis of Microporosity and BMP on Bone Regeneration in Biphasic CaP Scaffolds
S. Polak[1], S. Lan Levengood[2], A. Maki[1], S. Clark[1], M. Wheeler[1], and A. Wagoner Johnson[1]
[1]*University of Illinois at Urbana-Champaign, Urbana, IL,* [2]*University of Wisconsin, Madison, WI*

PS-9A-18-215 Orientation of Collagen Fibers in the ECM of Osteoblastic Cells by Mechanical Transduction
J. A. Boada[1], J. Jerez[1], I. De Jesus[1], J. Valera[1], R. Romañach[1], N. Diffoot-Carlo[1], and P. A. Sundaram[1]
[1]*University of Puerto Rico, Mayaguez, Puerto Rico*

PS-9A-18-216 Effect of a Mechanical Stimulation Bioreactor on Tissue Engineered Scaffold-Free Cartilage
S. Tran[1], and S. Elder[1]
[1]*Mississippi State University, Mississippi State, MS*

PS-9A-18-217 Highly Cellular Region of Scaffold-Free Engineered Cartilage Fails Under Compressive Shearing Loads
G. Whitney[1], K. Jayaraman[1], J. E. Dennis[1], and J. M. Mansour[1]
[1]*Case Western Reserve University, Cleveland, OH*

PS-9A-18-218 Novel Hydrogels of Photo-Crosslinkable PEG Macromers and Chitosan for Cartilage Tissue Engineering
B. J. Klein[1], A. Harley[1], and J. A. Cooper[1]
[1]*Rensselaer Polytechnic Institute, Troy, NY*

PS-9A-18-219 Synovium-Derived Stem Cells for Cartilage Tissue Engineering
S. R. Sampat[1], G. O'Connell[1], J. Fong[1], and C. T. Hung[1]
[1]*Columbia University, New York, NY*

PS-9A-18-220 *In Vitro* Evaluation of Magnesium Alloys for the Regeneration of Ligament and Ligament-Bone Interface
H. Liu[1], Z. Xu[2], and S. L-Y. Woo[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*North Carolina A&T State University, Greensboro, NC*

Track: Tissue Engineering – PS-9A-19

Translational Tissue Engineering and Clinical Experience*

PS-9A-19-221 Factors Affecting Tissue Culture and Transplantation Using Omentum
J. Kim[1], H. Lee[1], and S. Seo[1]
[1]*SungKyunKwan University, Seoul, Seoul, Korea, Republic of*

PS-9A-19-222 Computational Prediction of Breast Features after Partial Mastectomy
D. Thanoon[1], M. Garbey[1], and B. L. Bass[2]
[1]*University of Houston, Houston, TX,* [2]*The Methodist Hospital System, Houston, TX*

PS-9A-19-223 Comparing the Biomechanical Response of Porcine, Bovine, and Human Liver Tissue
A. Santago[1], A. Kemper[1], J. Sparks[2], and S. Duma[1]
[1]*Virginia Tech - Wake Forest School For Biomedical Engineering and Sciences, Blacksburg, VA,* [2]*Virginia Tech - Wake Forest School For Biomedical Engineering and Sciences, Winston-Salem, NC*

Track: Tissue Engineering – PS-9B-1

Undergraduate

PS-9B-1-1 Characterization of Early Embryonic Tissue Properties and their Effects on Stem Cell and Organ Development in Chick Cardiac Model
N. Chapurin[1], A. Neumann[1], N. S. Lor[2], K. Sayed[1], B. Davis[3], M. C. Goude[3], and J. Butcher[1]
[1]Cornell University, Ithaca, NY, [2]East Carolina University, Greenville, NC, [3]University of Florida, Gainsville, FL

PS-9B-1-2 Optimization of a Lab-on-chip Sensor for Highly Electronegative Heavy Metals
J. L. Herren[1], P. Jothimuthu[1], R. Wilson[1], W. R. Heineman[1], and I. Papautsky[1]
[1]University of Cincinnati, Cincinnati, OH

PS-9B-1-3 HOXA1 Regulation of an Athero-susceptible Phenotype in Endothelium
P. Islam[1], Y. Fang[1], and P. F. Davies[1]
[1]University of Pennsylvania, Philadelphia, PA

PS-9B-1-4 Platelet-targeted Liposomal Nanoconstructs for Site-specific Drug Delivery in Vascular Disease
C. Modery[1], M. Ravikumar[1], and A. Sen Gupta[1]
[1]Case Western Reserve University, Cleveland, OH

PS-9B-1-5 Optimization of Growth of Gluconobacter sp. 33 and PQQ-Dependent Enzyme Purification
D. W. Stern[1], and S. D. Minteer[2]
[1]Bucknell University, Lewisburg, PA, [2]Saint Louis University, Saint Louis, MO

PS-9B-1-6 A Simple Microfluidic Device for C. elegans Immobilization Fabricated Using Household Materials
B. G. Wong[1], O. Cinquin[1], and E. E. Hui[1]
[1]University of California, Irvine, Irvine, CA

PS-9B-1-7 Assessment of Silicate Cross-linked Poly(ethylene oxide) Hydrogels for Orthopedic Tissue Repair
J. Canter[1], S. A. Dammu[1], S. Vaid[1], A. Gaharwar[1], and G. Schmidt[1]
[1]Purdue University, West Lafayette, IN

PS-9B-1-8 Synthesis of a Biodegradable Methacrylated Ester for Bone Graft Fabrication
C. J. Wilson[1], R. Moglia[2], and E. Cosgriff-Hernandez[2]
[1]Texas Lutheran University, Seguin, TX, [2]Texas A&M University, College Station, TX

PS-9B-1-9 Cytokine Regulation of CD4 T cell Memory Development
R. A. Amezquita[1,2], H. D. Marshall[3], and S. M. Kaech[3]
[1]University of California - San Diego, San Diego, CA, [2]HHMI EXROP, Chevy Chase, MD, [3]Yale University, New Haven, CT

PS-9B-1-10 A High Throughput Workflow For The Analysis Of Diauxic Shifts In Escherichia Coli In A Paired Carbon Substrate Environment
A. Chaudhari[1], N. Lewis[1], J. Lerman[1], and B. Palsson[1]
[1]University of California San Diego, La Jolla, CA

PS-9B-1-11 Surface Capture and Imaging of H1N1 Virus
M. Johnson[1], H. Stephanou[2], M. R. Roner[3], and S. M. Iqbal[4]
[1]Department of Biology, ARRI, University of Texas at Arlington, Fort Worth, TX, [2]Department of Electrical Engineering, ARRI, University of Texas at Arlington, Fort Worth, TX, [3]Department of Biology, University of Texas at Arlington, Arlington, TX, [4]Department of Electrical Engineering, NanoFab, University of Texas Arlington, Arlington, TX

PS-9B-1-12 Multiphoton Microscopy Histology of Cleared Mouse Organs
S. G. Parra[1], T. H. Chia[1], J. P. Zinter[1], and M. J. Levene[1]
[1]Yale University, New Haven, CT

PS-9B-1-13 Galectin-1 and Human Umbilical Cord Mesenchymal Stromal Cell (HUCMSC) Differentiation *In Vitro*
E. J. Lee[1], L. Jing[1], L. A. Setton[1,2], and J. Chen[1]
[1]Duke University, Durham, NC, [2]Duke Medical Center, Durham, NC

PS-9B-1-14 Assessment of FRET Probes for High-Content Screening of Anti-AIDS Inhibitors
T. B. Busch[1], H. Yao[2], J. Veetil[2], K. Ye[2], and S. Jin[2]
[1]Southeast Missouri State University, MO, MO, [2]University of Arkansas, Fayetteville, AR

PS-9B-1-15 Design and Development of a Hemodynamic Pump for Arterial Wall Shear Stress Measurements
S. Newcomer[1], and K. D. Hudson[1]
[1]Purdue University, West Lafayette, IN

PS-9B-1-16 Phospholipid Composition Affects CLC-ec1 Chloride-transport Activity
T. Chew[1,2], S. Elvington[1], and M. Maduke[1]
[1]Stanford University, Stanford, CA, [2]University of California, San Diego, La Jolla, CA

PS-9B-1-17 Thread as a Matrix for Biomedical Assays
R. Dasgupta[1], M. Reches[1], and G. Whitesides[1]
[1]Harvard University, Cambridge, MA

PS-9B-1-18 Vinculin Adhesion Strength Regulation of Matrix Stiffness-Induced Stem Cell Differentiation
D. S. Vijayraghavan[1], A. W. Holle[1], and A. J. Engler[1]
[1]University of California San Diego, La Jolla, CA

PS-9B-1-19 Design and Implementation of Novel Silicone Cup Attachment for Ambulatory EEG Electrode
S. M. Bost[1], M. A. Long[1], F. Gilliam[2], K. A. Bierylа[1], and J. V. Tranquillo[1]
[1]Bucknell University, Lewisburg, PA, [2]Geisinger Medical Center, Danville, PA

PS-9B-1-20 Optimization of a Novel Method to Estimate Synovial Fluid Volume
B. J. Hinton[1], B. C. Hansen[2], J. P. Caffrey[2], and R. L. Sah[2]
[1]University of Minnesota-Twin Cities, Minneapolis, MN, [2]University of California-San Diego, La Jolla, CA

PS-9B-1-21 A Novel Microfluidic Experimental System for Investigating Neutrophil Decision Making in Chemotaxis
G. Ou[1], A. Aranyosi[2], and D. Irimia[2,3]
[1]Franklin W. Olin College of Engineering, Needham, MA, [2]Center for Engineering in Medicine, Massachusetts General Hospital, Charlestown, MA, [3]Harvard Medical School, Cambridge, MA

PS-9B-1-22 Stability Characterization of PEG-Conjugated Nanoshells for Improved Passive Tumor Accumulation
L. M. Tanenbaum[1], A. J. Coughlin[1], and J. L. West[1]
[1]Rice University, Houston, TX

PS-9B-1-23 MindBot: Robotic Control via Wireless Neural Headset
T. E. Laird[1], and N. L. Johnson[1]
[1]Clemson University, Clemson, SC

PS-9B-1-24 Prediction of Future Glucose Concentrations Using Linear Time-Series Models
L. Marxkors[1], M. Oruklu[2], and A. Cinar[2]
[1]Saint Louis University, St. Louis, MO, [2]Illinois Institute of Technology, Chicago, IL

PS-9B-1-25 Mechanobiology of the Periosteum: Finite Element Modeling and Histological Analysis
R. M. Miller[1], S. Dolejs[1], S. H. McBride[1], U. Knothe[2], and M. L. Knothe Tate[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Cleveland Clinic Foundation, Cleveland, OH

PS-9B-1-26 Cross-linked PEG-poly(amino acid) Nanoassemblies for Controlled Drug Delivery
L. Sandlin[1], A. Ponta[2], and Y. Bae[2]
[1]University of Kentucky, College of Engineering, Lexington, KY, [2]University of Kentucky, College of Pharmacy, Lexington, KY

POSTER SESSION 9B

PS = Poster Session
OP = Oral Presentation

PS-9B-1-27 Pentablock Copolymers for Sustained Gene Delivery
M. Q. Fleming[1], B. Zhang[2], and S. Mallapragada[2]
[1]University of Texas at Austin, Austin, TX, [2]Iowa State University, Ames, IA

PS-9B-1-28 Functionalized Macrocycles: A Journey toward a New Class of Insulin Mimetics
V. Rambaran[1], C. Ramkissoon[2], and K. Mungal[2]
[1]The University of Trinidad and Tobago, Arima, Trinidad and Tobago, [2]University of Trinidad and Tobago, Arima, Trinidad and Tobago

PS-9B-1-29 Effect of Cryopreservation on Periosteal Tissue
S. Evans[1], S. McBride[1], and M. L. Knothe Tate[1]
[1]Case Western Reserve University, Cleveland, OH

PS-9B-1-30 Development of Eye Injury Risk Functions for Multiple Projectile Diameters using the FOCUS Headform
R. Chaklader[1], E. Thiel[1], and E. Kennedy[1]
[1]Bucknell University, Lewisburg, PA

PS-9B-1-31 Multi-Angle Light Scatter Measurement in Flow Cytometry: Toward Enhanced Physical Properties Detection and Label-Free Classification
P. B. Carlsgaard[1], B. P. Rajwa[1], N. R. Lewis[1], V. P. Patsekin[1], C. M. Holdman[1], K. E. Ragheb[1], P. Rigby[1], D. Kramer[1], and J. P. Robinson[1]
[1]Purdue University, West Lafayette, IN

PS-9B-1-32 Influence of Cell-Substrate Chemistry on Stem Cell Adhesion Using Novel TIRF Microscope
D. Carlin[1], S. Ramachandran[2], S. Varghese[2], and R. Lal[2]
[1]California Polytechnic State University San Luis Obispo, San Luis Obispo, CA, [2]University of California San Diego, La Jolla, CA

PS-9B-1-33 Pulmonary-Airway-On-a-Chip: A Microfluidic Model of Pulmonary Airway Reopening at Bifurcations
J. J. Pitre[1], E. Yamaguchi[1], B. J. Smith[1], O. Forouzan[1], S. S. Shevkoplyas[1], and D. P. Gaver, III[1]
[1]Tulane University, New Orleans, LA

PS-9B-1-34 Computational Insight on the Influence of Subunit Packing on the Thermostability of Lactate Oxidase
N. J. Hams[1], L. Peng[2], and D. Gough[2]
[1]University of Missouri - Columbia, Columbia, MO, [2]University of California - San Diego, La Jolla, CA

PS-9B-1-35 Computational Study of Infarct Reinforcement and Its Impact on Left Ventricular Function
J. R. Macadangdang[1], J. W. Holmes[1], and G. M. Fomovsky[1]
[1]University of Virginia, Charlottesville, VA

PS-9B-1-36 Improvement of Registration of 2D X-ray Mammograms and 3D Speed of Sound Images
J. Bonn[1,2], T. Hopp[1], N. Ruiter[1], and N. Duric[3]
[1]Karlsruhe Institute of Technology, Karlsruhe, Baden-Württemberg, Germany, [2]University of Cincinnati, Cincinnati, OH, [3]Barbara Ann Karmanos Cancer Institute, Detroit, MI

PS-9B-1-37 An Investigation into Sex-related Differences in Pulmonary Hemodynamics
R. H. Clayman[1], A. Roldan[1], and N. C. Chesler[1]
[1]University of Wisconsin, Madison, WI

PS-9B-1-38 Study of Biopolymer Tissue Scaffold Degradation
E. McMullin[1], and K. C. Yan[1]
[1]The College of New Jersey, Ewing, NJ

PS-9B-1-39 Study of Heart Tissue Damage via Dynamic Heart Phantom
M. McDonough[1], and K. C. Yan[1]
[1]The College of New Jersey, Ewing, NJ

PS-9B-1-40 Pressure-Area Relationship of the Carpal Tunnel: A Cadaveric Study
T. L. Masters[1], T. A. Mondello[1], and Z-M. Li[1]
[1]Cleveland Clinic, Cleveland, OH

PS-9B-1-41 Promoting Peripheral Nerve Repair Using Basement Membrane-Polycaprolactone Nanofiber Scaffolds
D. Abebayehu[1], R. A. Neal[1], and E. Botchwey[1]
[1]U. of Virginia, Charlottesville, VA

PS-9B-1-42 Droplet Based Microfluidics for Single Cell Genetic Analysis
R. J. Kimmerling[1], T. Bakowski[1], and H. Strey[1]
[1]Stony Brook University, Stony Brook, NY

PS-9B-1-43 Immobilization of Trypsin in a PDMS Channel for Protein Digestion and Analysis
T. Locke[1], C. Goodwin[1], C. Marasco[1], J. Wikswo[1], and J. McLean[1]
[1]Vanderbilt University, Nashville, TN

PS-9B-1-44 Study of the Effects of Chemokines Secreted by Endothelial Cells in Response to Shear Stress on Cancer Metastasis in a Microfluidic Device
B. Z. Akselrad[1], M. Irvin[1], P. Samson[1], A. Pozzi[1], and J. Wikswo[1]
[1]Vanderbilt University, Nashville, TN

PS-9B-1-45 Development of an Inexpensive Device for Non-contact Measurement of Skin Temperature
S. E. Naylor[1], D. Nelson[1], and S. Leavesley[1]
[1]University of South Alabama, Mobile, AL

PS-9B-1-46 Characterization of Degradable Poly(ester amines) and Poly(amido amines) for Non-viral Gene Delivery
D. Y. Peng[1], J. C. Sunshine[2], and J. J. Green[2]
[1]Johns Hopkins University, Baltimore, MD, [2]Johns Hopkins University School of Medicine, Baltimore, MD

PS-9B-1-47 Self-Cleaning Micropatterned Nanocomposite Hydrogels
J. T. George[1], R. Fei[1], A. Han[1], M. S. Hahn[1], and M. A. Grunlan[1]
[1]Texas A&M University, College Station, TX

PS-9B-1-48 Quantifying the Effects of Cerebrospinal Fluid Pulsations on Intrathecal Drug Delivery
T. J. Harris[1], Y. Hsu[1], M. Hettiarachchi[1], and A. Linninger[1]
[1]University of Illinois at Chicago, Chicago, IL

PS-9B-1-49 The Dynamic Expression of Heat Shock Proteins in Human Mesenchymal Stem Cells After Mild Heat Shock
J. Zhang[1], J. Chen[1], and S. Wang[1]
[1]The City College Of New York / CUNY, New York, NY

PS-9B-1-50 Stabilization of Enzymes via Binding to Peptides
A. Prasad[1,2], J. Fu[1,3], and N. Woodbury[1,3]
[1]The Biodesign Institute at Arizona State University, Tempe, AZ, [2]Ira A. Fulton School of Engineering at Arizona State University, Tempe, AZ, [3]College of Liberal Arts and Sciences at Arizona State University, Tempe, AZ

PS-9B-1-51 PDMSstar-PEG Hydrogels as Tissue Engineering Scaffolds
K. Hui[1], B. M. Bailey[1], and M. A. Grunlan[1]
[1]Texas A&M University, College Station, TX

PS-9B-1-52 Development of a Microfluidic Platform for Neural Stem Cell Differentiation and Proliferation
S. Dria[1], I. Yang[1], N. Thakor[1], and A. Nath[1]
[1]Johns Hopkins University, Baltimore, MD

PS-9B-1-53 Developing New Expansion and Differentiation Media for Human Adipose Tissue-derived Mesenchymal Stem Cells
K. Kathiria[1,2], D. Wagner[2], and H. Weiss[2]
[1]Florida International University, Miami, FL, [2]University of Notre Dame, Notre Dame, IN

PS-9B-1-54 Generation of Predictive Models for Anti-Proliferative Drug Release from a Biodegradable Elastomer
A. L. Pelinescu[1], Y. Hong[1,2], and W. R. Wagner[1,2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]McGowan Institute for Regenerative Medicine, Pittsburgh, PA

PS-9B-1-55 The Use of Quantum Dots for Labeling Neural Cell Lines
M. Smyth[1], R. Willits[2], and A. Harkins[3]
[1]Vanderbilt University, Nashville, TN, [2]University of Akron, Akron, OH, [3]Saint Louis University, St. Louis, MO

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POSTER SESSION 9B 1:30AM – 5:00PM

PS-9B-1-56 Localized and Automated Chemical and Oxygen Delivery System for Microfluidic Brain Slice Devices
G. J. Yu[1], A. Blake[2], and D. Eddington[2]
[1]University of Illinois at Urbana-Champaign, Urbana, IL, [2]University of Illinois at Chicago, Chicago, IL

PS-9B-1-57 Effects of Cyclic Stretch on Expression of Pro-Inflammatory Genes
S. Vanderzyl[1], H-J. Hsu[1], A. W. Orr[2], and R. Kaunas[1]
[1]Texas A&M University, College Station, TX, [2]LSU Health Sciences Center - Shreveport, Shreveport, LA

PS-9B-1-58 Deficiencies in Mechanical Properties of Peripheral Nerves in Fibrillin-2 Knockout Mice
D. Redmond-White[1], R. Stahl[2], D. Carey[2], and D. M. Ebenstein[1]
[1]Bucknell University, Lewisburg, PA, [2]Weis Center for Research, Geisinger Medical Center, Danville, PA

PS-9B-1-59 *In Vitro* Forced Formation of Tunneling Nanotubes in T cells Using Micro-tipped Pipettes
S. Kabani[1], C. Marasco[1], and J. Wikswo[1]
[1]Vanderbilt University, Nashville, TN

PS-9B-1-60 A Novel Nanoparticle-Enhanced Biophysical Stimulus for Bone Tissue Engineering
Y. Talukdar[1], K. Schaefer[1], P. Avti[1], J. P. Longtin[1], and B. Sitharaman[1]
[1]State University of New York at Stony Brook, Stony Brook, NY

PS-9B-1-61 Fabricating Biodegradable Paclitaxel-Loaded Spheriodal Microparticles for Drug Delivery Applications
O. Shemi[1], M. Heslinga[2], and O. Eniola-Adefeso[2]
[1]University of Maryland, Baltimore County, Catonsville, MD, [2]University of Michigan, Ann Arbor, MI

PS-9B-1-62 A Novel Method to Create Macrochannels in Three-Dimensional Hydrogels for Enhanced Cell Proliferation
J. W. Kim[1], and B. M. Wu[1]
[1]University of California, Los Angeles, Los Angeles, CA

PS-9B-1-63 Mechanical Contribution of Smooth Muscle Cells in Large Elastic Arteries
B. Corley[1], V. Le[1], and J. Wagenseil[1]
[1]Saint Louis University, Saint Louis, MO

PS-9B-1-64 Glucose Stimulated Insulin Release in Single Pancreatic Islets Using Microfluidics Coupled with Ion Mobility-Mass Spectrometry
A. A. Ostrowski[1], J. Enders[1], C. Goodwin[1], C. Marasco[1], K. T. Seale[1], J. McLean[1], and J. Wikswo[1]
[1]Vanderbilt University, Nashville, TN

PS-9B-1-65 Mapping Local Strains in Mytilus edulis Byssal Threads
N. Ko[1], and D. M. Ebenstein[1]
[1]Bucknell University, Lewisburg, PA

PS-9B-1-66 Characterization and Optimization of Enzymatically-Degradable Microgels for Pulmonary Drug Delivery
A. E. Bergeron[1], P. Wanakule[1], and K. Roy[1]
[1]The University of Texas at Austin, Austin, TX

PS-9B-1-67 Aspirin Inhibits Activation of Aortic Valve Endothelial Cells by Angiotensin II
A. Ruhl[1], C. McIntosh[1], and J. N. Warnock[1]
[1]Mississippi State University, Mississippi State, MS

PS-9B-1-68 Analyzing Immune Effects of Staphylococcal Enterotoxin B in a Microfluidic-Ion Mobility-Mass Spectrometer Platform
A. Garza[1], C. Marasco[1], C. Goodwin[1], J. Enders[1], K. Seale[1], J. McLean[1], and J. Wikswo[1]
[1]Vanderbilt University, Nashville, TN

PS-9B-1-69 Effect of Cell-matrix Interface on Organization and Myogenic Differentiation of Stem Cells
S. Varghese[1], R. Powers[1], A. Aung[1], M. Gadde[1], and S. Shroff[1]
[1]University of California, San Diego, La Jolla, CA

PS-9B-1-70 Real-time Monitoring of -Factor Induced Mating Response in *S. cerevisiae* Secretomes
A. Kole[1], E. Curtis[1], B. Nguyen[2], J. Enders[1], T. Graham[1], K. Seale[1], J. McLean[1], and J. Wikswo[1]
[1]Vanderbilt University, Nashville, TN, [2]Belmont University, Nashville, TN

PS-9B-1-71 Investigation of CEACAM1 Dynamics by Single Cell Imaging
L. Poloni[1], and C. M. Yip[2,3]
[1]Division of Engineering Science, University of Toronto, Toronto, Ontario, Canada, [2]Institute of Biomaterials and Biomedical Engineering, University of Toronto, Toronto, Ontario, Canada, [3]Department of Chemical Engineering and Applied Chemistry, University of Toronto, Toronto, Ontario, Canada

PS-9B-1-72 Determining the Number of Cells Microencapsulated within PEGDA Hydrogel Microspheres
A. Rajgariah[1], R. M. Olabisi[2], C. L. Simpson[2], and J. L. West[2]
[1]Duke University, Durham, NC, [2]Rice University, Houston, TX

PS-9B-1-73 Decellularized Lipoaspirate as a Naturally-Derived Scaffold for Adipose Tissue Engineering
D. O. Ibrahim[1], A. Young[1], and K. L. Christman[1]
[1]UCSD, La Jolla, CA

PS-9B-1-74 Studies on Cardiomyocyte Health and Embryonic Stem Cell Differentiation Within a Microfluidic Platform
C. Allamneni[1], S. Faley[2], and A. Hatzopoulos[3]
[1]Vanderbilt University, Searle SyBBURE Program, Nashville, TN, [2]Vanderbilt University Department of Cardiovascular Medicine, Nashville, TN, [3]Vanderbilt University Department of Cardiovascular Medicine, Nashville, TN

PS-9B-1-75 Effect of Varying PLGA Molecular Weight Blends on Small-Molecule Drug Release
A. Olear[1], L. Solorio[1], J. Hamilton[2], and A. Exner[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Johns Hopkins University, Baltimore, MD

PS-9B-1-76 Bone and Cartilage Compensation in Response to Diet-Induced Obesity
A. H. Tsoi[1], M. E. Botros[1], E. M. Fievisohn[1], M. E. Chan[1], and C. T. Rubin[1]
[1]Stony Brook University, Stony Brook, NY

PS-9B-1-77 Local Schwann Cell-Produced Extracellular Matrix Can Direct Local Neurite Outgrowth
A. L. McGregor[1], A. M. Seggio[1], and D. M. Thompson[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

PS-9B-1-78 Designing Synapse Morphometry Tools for the Drosophila Brain Connectome Project
A. L. McGregor[1,2], P. K. Rivlin[2], and L. K. Scheffer[2]
[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Janelia Farm Research Campus, Howard Hughes Medical Institute, Ashburn, VA

PS-9B-1-79 Development of Semi-Automated Algorithm for Bone Marrow Adiposity Measurement
M. Botros[1], A. Tsoi[1], E. Fievisohn[1], E. Chan[1], and C. Rubin[1]
[1]Stony Brook University, Stony Brook, NY

PS-9B-1-80 Toward Understanding Nitric Oxide Release in Lymphatic Endothelial Cells
K. Nixon[1], and M. Frost[1]
[1]Michigan Tech, Houghton, MI

PS-9B-1-81 Regeneration of Periosteum in Denuded Bone
M. Yu[1], U. Knothe[2], and M. Knothe Tate[1]
[1]Case Western Reserve University, Cleveland, OH, [2]Cleveland Clinic Foundation, Cleveland, OH

POSTER SESSION **9B**

PS = Poster Session
OP = Oral Presentation

PS-9B-1-82 Poly Lactic-co-Glycolic Acid Carbon Nanofiber Materials for Cardiac Patch Applications
D. A. Stout[1,2], and T. J. Webster[1]
[1]Brown University, Providence, RI, [2]California State University, Long Beach, CA

PS-9B-1-83 Single Pore System for Classification of Cells
R. A. Khan[1], W. Asghar[2], Y. Wan[3], and S. M. Iqbal[4]
[1]Department of Electrical Engineering, Honors College, University of Texas at Arlington, Arlington, TX, [2]Department of Electrical Engineering, NanoFab, University of Texas Arlington, Arlington, TX, [3]Department of Bioengineering, NanoFab, University of Texas Arlington, Arlington, TX, [4]University of Texas Arlington, Arlington, TX

PS-9B-1-84 Geometrical Effects of Flow Chambers on Chemokine Secreting Cancer Cells
P. DelNero[1], J. Teo[2], U. Haessler[2], and M. Swartz[2]
[1]Vanderbilt University, Nashville, TN, [2]École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland

PS-9B-1-85 Quantifying Elastin and Collagen in Developing Mouse Arteries
A. Webster[1], V. Le[2], and J. Wagenseil[2]
[1]University of Wisconsin, Madison, WI, [2]Saint Louis University, St. Louis, MO

PS-9B-1-86 The Salifier: A New Device for Saliva Collection from Infants for DNA Analysis
E. Franz[1], G. Boon III[1], G. Gerhard[2], J. Baish[1], and D. Ebenstein[1]
[1]Bucknell University, Lewisburg, PA, [2]Weis Center for Health Research at Geisinger Medical Center, Danville, PA

PS-9B-1-87 Comparing Diffusion Coefficients Through Thin PDMS Membranes Exposed to Various Surface Treatments
E. Lillie[1,2], L. McCawley[1,2], D. Markov[1], and S. Garbett[2]
[1]Vanderbilt Institute for Integrative Biosystems Research and Education (VIIBRE), Nashville, TN, [2]Department of Cancer Biology, Vanderbilt University Medical Center, Nashville, TN

PS-9B-1-88 Finite Element Model to Examine Stress Distributions in Mechanical Tests on Mouse Arteries
C. Mulcahy[1], M. Amin[2], and J. Wagenseil[2]
[1]University of Minnesota, Minneapolis, MN, [2]Saint Louis University, St. Louis, MO

PS-9B-1-89 Mechanisms Governing Vascular Endothelium under Pulsatille and Oscillatory Conditions
M. Sosa[1], P. Vandrangi[1], and V. Rodgers[1]
[1]University of California Riverside, Riverside, CA

PS-9B-1-90 A Polymeric siRNA Delivery System to Induce Differentiation in hMSCs
M. E. Boutin[1], and D. S. Benoit[1]
[1]University of Rochester, Rochester, NY

PS-9B-1-91 Constructing a Realistic Brain phantom to Validate the Independent Component Analysis of EEG Data
T. G. Harvey[1], B. Dean[2], and D. Dean[2]
[1]South Carolina Governor's School for Science and Mathematics, Hartsville, SC, [2]Clemson University, Clemson, SC

PS-9B-1-92 Mechanical Properties of Mesenchymal Cells during Vascular Smooth Muscle Cell Differentiation
M. M. Toney[1], A. Lindburg[1], and D. Dean[1]
[1]Clemson University, Clemson, SC

PS-9B-1-93 High-speed Scanning Control Algorithms for MEMS-based Confocal Image Acquisition
M. Raj[1], Y. Wang[1], and J. X. Zhang[1]
[1]The University of Texas at Austin, Austin, TX

PS-9B-1-94 Direct Measurements of Nanoparticle and Cell Interactions using Atomic Force Microscopy
L. M. Ikonomov[1], W. McAllister[2], and D. Dean[2]
[1]Southside High School Center for International Studies, Greenville, SC, [2]Clemson University, Clemson, SC

PS-9B-1-95 Effect of X-Ray on Porcine Articular Cartilage Biomechanics
H. Roberts[1], A. Lindburg[2], and D. Dean[2]
[1]South Carolina State University, Orangeburg, SC, [2]Clemson University, Clemson, SC

PS-9B-1-96 Effects of Ibotenic Acid Lesions of the Globus Pallidus on Sleep in the Rat
K. Dzurisin[1], D. W. Barnett[2], and A. M. Anch[2]
[1]University of Akron, Parma, OH, [2]Saint Louis University, St. Louis, MO

PS-9B-1-97 Effects of Immobilized PDGF and VEGF on HUVEC Tubule Formation in Poly(ethylene glycol) Hydrogels
A. H. Keswani[1], J. E. Saik[1], and J. L. West[1]
[1]Rice University, Houston, TX

PS-9B-1-98 Specificity and Safety of Drug (4-phenylbutryate) Action in Cardiac Tissue
J. E. Gunther[1], Z. Jia[1], and E. Entcheva[1]
[1]Stony Brook University, Stony Brook, NY

PS-9B-1-99 Measuring Periosteal Permeability in Frozen and Fresh Tibiae
X. Zhen[1], and M. L. Knothe Tate[2]
[1]Worcester Polytechnic Institute, Worcester, MA, [2]Case Western Reserve University, Cleveland, OH

PS-9B-1-100 MOVED TO PS-7B-6-34

PS-9B-1-101 High Resolution Extended Field Imaging with Confocal Stage Scanning Microscopy
C. A. Olsovsky[1], M. A. Saldua[1], and K. C. Maitland[1]
[1]Texas A&M University, College Station, TX

PS-9B-1-102 Determining the Mechanical Role of Elastin and Collagen in Mouse Carotid Arteries
E. Marin[1], and J. Wagenseil[1]
[1]Saint Louis University, St. Louis, MO

PS-9B-1-103 Quantitative Live Imaging of Avian Embryonic Morphogenesis via Micro-Computed Tomography
A. L. Henning[1], M. X. Jiang[1], T. Kaushik[1], M. Riccio[1], C. Schaffer[1], M. Jin[1], and J. T. Butcher[1]
[1]Cornell University, Ithaca, NY

PS-9B-1-104 Scanning System Design and Synchronization for a Two-Photon and SHG Hybrid Confocal Microscope
L. Schmidt[1], Y. Shao[2], R. Wang[1], H. Liu[1], and B. Gao[1]
[1]Clemson University, Clemson, SC, [2]Shenzhen University, Shenzhen, Guangdong, China, People's Republic of

PS-9B-1-105 Developing a Glucose Biosensor for Monitoring Patients with Brain Injuries
L. Wiles[1], M. Rogers[2], and M. Boutelle[2]
[1]Clemson University, Clemson, SC, [2]Imperial College London, London, United Kingdom

PS-9B-1-106 On-chip analysis of -factor induced mating response in *S. cerevisiae*
E. Curtis[1], A. Kole[1], B. Nguyen[2], J. Enders[1], T. Graham[1], K. Seale[1], J. McLean[1], and J. Wikswo[1]
[1]Vanderbilt University, Nashville, TN, [2]Belmont University, Nashville, TN

PS-9B-1-107 Novel Noninvasive Technique for Measurement of Change in Interstitial Fluid Volume
J. C. Vo[1], J. M. Barba[1], Q. T. Nguyen[1], R. M. Dongaonkar[1], R. H. Stewart[1], G. A. Laine[1], and C. M. Quick[1]
[1]Michael E. DeBakey Institute, TX A&M University, College Station, TX

PS-9B-1-108 Tracking the CD95-Mediated Apoptotic Cascade in ARPE-19 Cells After Short Wavelength UV Irradiation
C. S. Thompson[1], V. Ngassam[2], A. N. Parikh[2], and A. E. Oliver[2]
[1]Rice University, Houston, TX, [2]University of California, Davis, CA

PS-9B-1-109 Biodegradable Microparticle-Mediated Delivery of PAX3 Protein to Induce Myogenic Differentiation of Stem Cells
L. Liu[1], C-W. Chang[1], and S. Varghese[1]
[1]University of California, San Diego, La Jolla, CA

POSTER SESSION 9B 1:30AM – 5:00PM

PS-9B-1-110 Evaluation of Electrically Conductive Nanomaterials for Neural Engineering: Schwann Cells Exhibit a Differential Response to Single Walled Carbon Nanotubes in 2D versus 3D
D. Bogdanowicz[1], B. Behan[1], D. DeWitt[1], A. Koppes[1], and D. Thompson[1]
[1]Rensselaer Polytechnic Institute, Troy, NY

PS-9B-1-111 Structure Based Design for Ultra Fast Acting Insulin Analysis
M. Weiss[1], V. Ramanujam[2], and V. Pandayarajan[1]
[1]Case Western Reserve, Cleveland, OH, [2]Case Western Reserve, South Euclid, OH

PS-9B-1-112 Mechanisms Underlying Collective Cell Migration in Vitro
K. Summers[1], M. Bindschadler[1], H. Chung[1], B. Nehilla[1], and J. McGrath[1]
[1]University of Rochester, Rochester, NY

PS-9B-1-113 Diagnostic Peptide-nanoparticle Probes for Multiplexed Profiling of Tumor Protease Activity
G. A. Kwong[1], G. von Maltzahn[1], O. Abudayyeh[1], S. Mo[1], G. Murugappan[1], I. Papayannopoulos[1], and S. N. Bhatia[1,2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Howard Hughes Medical Institute, Cambridge, MA

PS-9B-1-114 Design of a High Volumetric Mixer for a Continuous Microformulator Device
W. J. Matloff[1], J. Scherrer[1], R. Reiserer[1], K. Seale[1], and J. Wikswo[1]
[1]Vanderbilt University, Nashville, TN

PS-9B-1-115 VASP Negatively Regulates Breast Cancer Cell Motility Utilizing Profilin1
D. Gau[1], Z. Ding[1], C. Baty[1], and P. Roy[1]
[1]University of Pittsburgh, Pittsburgh, PA

PS-9B-1-116 Improving Clinical Balance Measures in Older Adults via Wii Fit Training
N. M. Dold[1], and K. A. Bieryla[1]
[1]Bucknell University, Lewisburg, PA

PS-9B-1-117 A Comparison of the Inflammation Response Among Novel Drug Eluting Stents (DES) and Bare Metal Stents by Histology
A. Burkholder[1], and D. Hou[2]
[1]Bucknell University, Lewisburg, PA, [2]Saint Josephs Translational Research Institute, Atlanta, GA

PS-9B-1-118T Studying the Effects of Endothelial Progenitor Cells Upon Cardiomyocytes in a Microfluidic Platform
R. Korman[1], S. Faley[1], K. Seale[1], and A. Hatzopoulos[1]
[1]Vanderbilt University, Nashville, TN

PS-9B-1-119 Characterization of Graft Copolymers that Augment Delivery of Antisense Oligodeoxynucleotides
R. Chou[1], L. Peddada[2], and C. Roth[2]
[1]University of Texas at Austin, Austin, TX, [2]Rutgers University, Piscataway, NJ

PS-9B-1-120 Development of pH-Responsive Nanoparticles for Targeted, Controlled Release of 5-Fluorouracil
R. L. Scheuerle[1], M. C. Moore[1], and N. A. Peppas[1]
[1]The University of Texas at Austin, Austin, TX

PS-9B-1-121 Systematic Variation of ECM Modulates Adhesion and Migration Responses of Human Breast Cancer Cells
L. E. Fong[1], S. K. Alford[1], S. R. Peyton[1], and D. A. Lauffenburger[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

PS-9B-1-122 *In Vitro* Characterization of Polysialic Acid Glycomimetics Immobilized on Collagen Scaffolds
I. J. Perron[1], S. Masand[1], and D. I. Shreiber[1]
[1]Rutgers University, Piscataway, NJ

PS-9B-1-123 Simulated Overcrowding Extrudes Live Cells from an Epithelium
P. D. Loftus[1], G. T. Eisenhoffer[2], and J. Rosenblatt[2]
[1]University of Utah, Salt Lake City, UT, [2]Huntsman Cancer Institute, Salt Lake City, UT

PS-9B-1-124 Ultrasonic Nebulization as a Tool for Creating Multilayered, Multi-component Anti-Infective Nanocoatings
M. Cowdery[1], K. McNamara[2], Y. Lvov[2], and D. Mills[2]
[1]University of Puget Sound, Tacoma, WA, [2]Louisiana Tech University, Ruston, LA

PS-9B-1-125 The Effect of Pluronic and Hyperthermia on Cancer Cell Permeability
J. D. Huang[1], and A. Exner[2]
[1]University Hospitals Case Medical Center, Shaker Heights, OH, [2]University Hospitals Case Medical Center, Cleveland, OH

PS-9B-1-126 The Use of Magnetic Nanoparticles for Antibacterial Properties and Increasing Osteoblast Functions
J. Yoo[1], H. F. Tross[1], E. N. Taylor[1], and T. J. Webster[1]
[1]Brown University, Providence, RI

PS-9B-1-127 The Inhibitory Effects of Magnetite Nanoparticles on Amyloid-beta Protein Fibril Formation in Alzheimer's Disease
S. E. Chastain[1], D. Soto-Ortega[2], M. A. Moss[2], J. Mangual[2], and J. Ritter[2]
[1]Newberry College, Newberry, SC, [2]University of South Carolina, Columbia, SC

PS-9B-1-28 A Novel Multichannel Telemetric System for Recording ECoG Activities in Freely Behaving Animals
P. G. McCorkle[1], A. Farajidavar[1], T. W. Wiggins[1], and J-C. Chiao[1]
[1]University of Texas at Arlington, Arlington, TX

PS-9B-1-129 Assembly of Mirrored Pyramidal Wells and Their Application with Microscopy
L. Qu[1], K. Qin[1], R. Reseirer[2], G. Wright[2], and C. Janetopoulos[2]
[1]Vanderbilt University, Nashville, TN, [2]Vanderbilt, Nashville, TN

PS-9B-1-130 Differentiation of Mouse Embryonic Stem Cells in Stirred Tank and Rotary Wall Bioreactors
R. Ambler[1], K. Fridley[1], I. Fernandez[1], and K. Roy[1]
[1]University of Texas at Austin, Austin, TX

PS-9B-1-131 Role of Simvastatin Treatment on Epithelial Cell Injury During Cyclic Airway Reopening
G. Eickert[1], and S. Ghadiali[1]
[1]The Ohio State University, Columbus, OH

PS-9B-1-132 Controlled Release of Biomolecules From Silica Sol-gel Thin Films
S. Vaidyanathan[1], S. Sommakia[1], J. L. Rickus[1], and K. J. Otto[1]
[1]Purdue University, West Lafayette, IN

PS-9B-1-133 Osteoblastic Response to Bioactive Nanocoatings
K. McNamara[1], M. Cowdery[2], Y. Lvov[1], and D. Mills[1]
[1]Louisiana Tech University, Ruston, LA, [2]University of Puget Sound, Tacoma, WA

PS-9B-1-134 Using Synthesized Porous Membranes to Induce Electroosmosis for Cell Injection
Z. W. Johnson[1], P. Hoblitzell[2], X. Sun[3], B. Hinds[3], and K. Anderson[3]
[1]Valparaiso University, Valparaiso, IN, [2]University of Louisville, Louisville, KY, [3]University of Kentucky, Lexington, KY

PS-9B-1-135 Leukocyte Separation Using Cross Flow in a Microfluidic Device
E. M. Werner[1], C. Marasco[1], and K. T. Seale[1]
[1]Vanderbilt University, Nashville, TN

PS-9B-1-136 Areal Strain of Giant Unilamellar Vesicles in a Magnetic Force Transducer
S. Strain[1,2], D. Stark[1], and R. Raphael[1]
[1]Rice University, Houston, TX, [2]University of Texas, Austin, TX

POSTER SESSION **9B**

PS = Poster Session
OP = Oral Presentation

PS-9B-I-137 Pancreatic Digestive Enzymes Activity in the Ischemic Intestine
H. Tam[1], M. Chang[2], and G. W. Schmid-Schönbein[2]
[1]Rose Hulman, Terre Haute, IN, [2]University of California San Diego, La Jolla, CA

PS-9B-I-138 Patient Specific Biomechanics Models of Surgical Ventricular Reconstruction Surgery
S. J. Livne[1], A. McCulloch[2], and D. Hunt[2]
[1]Tufts University, Medford, MA, [2]UCSD, La Jolla, CA

PS-9B-I-139 Nanoscale Surface Modification of the Skin-Implant Interface to Enhance Keratinocyte Attachment
S. Mattessich[1], C. Ting[1], I. Ivanov[1], A. Khaing[1], T. Camesano[1], C. Lambert[1], W. McGimpsey[1], and G. Pins[1]
[1]Worcester Polytechnic Institute, Worcester, MA

PS-9B-I-140 Activation Sequence Assessment Using Three-dimensional Isochronal Maps to Determine Effective Pacing Locations in a Diseased Heart
M. Cruz-Acuña[1], E. J. Howard[2], and J. H. Omens[2]
[1]University of Puerto Rico, Mayagüez Campus, Mayagüez, PR, Puerto Rico, [2]University of California, San Diego, CA

PS-9B-I-141 Design and Initial Performance of a Dedicated Cone-Beam CT Scanner for Musculoskeletal Extremities
Y. Ding[1], W. Zbijewski[1], P. Dejean[1], P. Prakash[1], J. W. Stayman[1], N. Packard[2], R. Senn[2], D. Yang[2], J. Yorkston[2], A. Machado[1], J. Carrino[1], and J. H. Siewerdsen[1]
[1]Johns Hopkins University, Baltimore, MD, [2]Carestream Health Inc., Rochester, NY

PS-9B-I-142 Collagen-binding Peptidoglycan's Influence on Fibrillogenesis & Mechanics
A. K. Ramaswamy[1], J. Paderi[1], K. Stuart[1], and A. Panitch[1]
[1]Purdue University, West Lafayette, IN

PS-9B-I-143 Quantifying Protein Kinase-Specific Phosphatase Activity
A. K. Bose[1], K. Holmberg[1], and K. Janes[1]
[1]University of Virginia, Charlottesville, VA

PS-9B-I-144 Decoupling PEG Hydrogel Modulus and Mesh Size Toward Rational Scaffold Design
B. Grigoryan[1], D. Munoz-Pinto[1], and M. Hahn[1]
[1]Texas A&M University, College Station, TX

PS-9B-I-145 Development and Validation of a Bubble Trap for Long Term Cell Culture Within Microfluidic Systems
J. E. Sadeghi[1], D. A. Markov[1], and L. J. McCawley[2]
[1]Vanderbilt University, Nashville, TN, [2]Vanderbilt University Medical Center, Nashville, TN

PS-9B-I-146 The Effect of Media Dilution on Cell Growth Rate in Saccharomyces cerevisiae
K. J. Roth[1], K. Seale[1], and T. Graham[1]
[1]Vanderbilt University, Nashville, TN

PS-9B-I-147 Low Intensity NIR Light Treatment for Attenuating Oxidative Stress induced by Amyloid Beta Peptide
B. L. Bungart[1], and J. Lee[1]
[1]Univeristy of Missouri, Columbia, MO

PS-9B-I-148 Development of Polymeric Microcapsules for Neural Stem Cell Culture and Tissue Engineering
K. L. Briggs[1], C. B. Highley[1], S. H. Bakhru[1], and S. Zappe[1]
[1]Carnegie Mellon University, Pittsburgh, PA

PS-9B-I-149 Design and Optimization of a Diffusion-based Microfluidic Blood Filtration Device
B. Reinemund[1], M. Beneford[1], S. Hong[1], J. Kameoka[1], and G. Cote[1]
[1]Texas A&M University, College Station, TX

PS-9B-I-150 A Novel Method for Measuring the Micromechanics of Soft Tissue using Digital Image Correlation
D. Lee[1], M. McDonough[1], M. Paliwal[1], and K. Yan[1]
[1]The College of New Jersey, Ewing, NJ

PS-9B-I-151 Preparation of the Transmembrane Domain of APP Receptor in Native Membrane for Solid State NMR
A. N. Santiago-Miranda[1], and F. Tian[2]
[1]University of Puerto Rico at Mayaguez, Toa Baja, PR, [2]Penn State College of Medicine, Hershey, PA

PS-9B-I-152 Investigation of the Effect of Cement Viscosity in TKA using Digital Image Correlation
K. Abbruzzese[1], R. O'Laughlin[1], D. Lee[1], M. Paliwal[1], and D. G. Allan[2]
[1]The College of New Jersey, Ewing, NJ, [2]SIU School of Medicine, Springfield, IL

PS-9B-I-153 Building Mathematical Models for Nanoparticle-Induced Reactive Oxygen Species Production
P. A. Smith[1], I. Ivanov[1], and C. M. Sayes[1]
[1]Texas A&M University, College Station, TX

PS-9B-I-154 Drugs Effect on the Dynamics of Stress Fiber Orientation under Cyclic Stretch
C. M. Haase[1], C-F. Lee[1], M. Archibong[2], and R. R. Kaunas[1]
[1]Texas A&M University, College Station, TX, [2]University of Florida, Tallahassee, FL

PS-9B-I-155 Young's Modulus of Multipotent Stem Cells from Different Age Groups
H. S. Cheung[1], N. Ziebarth[1], J. P. Ruiz[1], and D. Pelaez[1]
[1]University of Miami, Coral Gables, FL

PS-9B-I-156 Validation of Suitable Endogenous Control Genes for Quantitative Real-Time PCR Studies of Human Abdominal Aortic Aneurysm Tissue
E. C. Flinchbaugh[1,2], D. W. Chew[1,2], A. Xavier[1,2], D. Cleary[1,2], J. Muthu[1,2], and D. A. Vorp[1,2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]McGowan Institute for Regenerative Medicine, Pittsburgh, PA

PS-9B-I-157 The Effects of Proton Radiation on UHMWPE Material Properties for Total Joint Replacements
C. S. Cummings[1], E. M. Lucas[1], T. M. Kieu[1], J. A. Marro[1], and J. D. DesJardins[1]
[1]Clemson University, Clemson, SC

PS-9B-I-158 Re-design of a Mold for Cellular Aggregation to Create Smooth Muscle Tissue Rings
B. Alphonse[1], T. Gwyther[2], J. Hu[2], and M. W. Rolle[2]
[1]University of Rhode Island, Kingston, RI, [2]Worcester Polytechnic Institute, Worcester, MA

PS-9B-I-159 Visualizing the Complex 3D Geometry of the Border Zone in Isolated Rabbit Heart
S. Velamakanni[1], R. M. Smith[1], A. Black[1], T. Akkin[1], and E. G. Tolkacheva[1]
[1]University of Minnesota, Minneapolis, MN

PS-9B-I-160 A Protective Sheath for Stem Cell Delivery to the Heart
K. M. Vazquez[1], N. Duffy[1], J. Guyette[1], M. D. Phaneuf[2], S. G. Pathan[2], S. M. Ali[2], and G. R. Gaudette[1]
[1]Worcester Polytechnic Institute, Worcester, MA, [2]BioSurface Inc, Ashland, MA

PS-9B-I-161 Distance Measurements for Automated High-Throughput Compound Screening
N. R. Lewis[1], J. Robinson[1], V. Davisson[1], V. Patsekin[1], R. Fatig[1], B. Rajwa[1], P. Carlsgaard[1], L. Avramova[1], C. Holdman[1], K. Ragheb[1], P. Rigby[1], J. Sturgis[1], and A. Juan-Garcia[1]
[1]Purdue University, West Lafayette, IN

PS-9B-I-162 Peripheral Nerve Regeneration Using a Tension-inducing Scaffold
R. E. Wilson[1,2], J. P. Fisher[2], and S. Shah[2]
[1]Case Western Reserve University, Cleveland, OH, [2]University of Maryland, College Park, MD

PS-9B-I-163 Biological Sutures for Cell Delivery to the Heart: Assessment of Delivery Scaffold
S. Rowlinson[1], J. Guyette[2], S. Shaw[2], D. Sood[2], K. Minn[2], A. DeMartino[2], B. Choate[2], A. Kazanovicz[2], M. Rolle[2], G. Pins[2], and G. Gaudette[2]
[1]University of Miami, Coral Gables, FL, [2]Worcester Polytechnic Institute, Worcester, MA

POSTER SESSION 9B 1:30AM – 5:00PM

PS-9B-I-164 Palladium-Carbon Nanotube Electrocatalyst for Methanol Oxidation in Fuel Cells
H. LIN[1], Z. ZHU[2], AND S. ZHOU[2]
[1]The Cooper Union, Manhattan, NY, [2]Worcester Polytechnic Institute, Worcester, MA

PS-9B-I-165 Effect of Reaction Conditions on Size and Yield of Poly(ethylene glycol) (PEG) Microgels
J. STUKEL[1], AND R. WILLITS[1,2]
[1]Saint Louis University, St. Louis, MO, [2]University of Akron, Akron, OH

PS-9B-I-166 Adipose Progenitor Cells Promote Breast Cancer via their Extracellular Matrix
J. X. WANG[1], E. M. CHANDLER[1], AND C. FISCHBACH[1]
[1]Cornell University, Ithaca, NY

PS-9B-I-167 Dental Materials and Oral Bacterial Interaction
H. SHIH[1], K. S. GREGSON[2], AND R. L. GREGORY[2,3]
[1]Indiana-University Purdue-University Indianapolis, Indianapolis, IN, [2]Indiana University School of Dentistry, Indianapolis, IN, [3]Tobacco Cessation and Biobehavioral Center, Indianapolis, IN

PS-9B-I-168 Characterization of a Flow Chamber to Examine Hemostasis and Thrombosis in Re-Circulating Blood Flow
B. B. SHAH[1], M. FRANCIS-SEDLAK[2], M. CALT[1], AND C. L. HALL[1]
[1]The College of New Jersey, Ewing, NJ, [2]Illinois Institute of Technology, Chicago, IL

PS-9B-I-169 Employing Chondroitin as an Enzyme Encapsulation
B. MINDEN - BIRKENMAIER[1], R. ARECHEDERRA[1], AND S. MINTEER[1]
[1]St. Louis University, St. Louis, MO

PS-9B-I-170 Endothelial Inflammation Response under Cyclic Stretch Profiles on Micro-patterned Lines
P. MATHIEU[1,2], M. ASMUTH[3], AND B. HELMKE[1]
[1]University of Virginia, Charlottesville, VA, [2]North Carolina State University, Raleigh, NC, [3]Vanderbilt University, Nashville, TN

PS-9B-I-171 Diffusion Tensor Imaging Voxel-based Analysis of Pediatric Traumatic Brain Injury
K. W. AYOUB[1,2], E. A. WILDE[2], E. D. BIGLER[3], Z. CHU[4], T. C. WU[5], J. V. HUNTER[4], A. C. VASQUEZ[2], AND H. S. LEVIN[2]
[1]Rice University, Houston, TX, [2]Baylor College of Medicine, Houston, TX, [3]Brigham Young University, Provo, TX, [4]Texas Childrens Hospital, Houston, TX, [5]Brigham Young University, Provo, UT

PS-9B-I-172 The Effect of Hypoxia on the Motion of Jurkat T-cells in a Multi-Trap Nanophysiometer
K. HOLUB[1], A. DHUMMAKUPT[2], AND K. SEALE[2]
[1]Valparaiso University, Valparaiso, IN, [2]Vanderbilt University, Nashville, TN

POSTER SESSION **9B**

PS-9B-I-173 Does Substrate Stiffness Influence Non-Viral Plasmid DNA Trafficking?
R. W. DONNELLY[1], M. HOTIC[1], T. K. DEACY[1], A. R. RUIZ[1], AND R. C. GEIGER[1]
[1]Florida Gulf Coast University, U.A. Whitaker School of Engineering, Fort Myers, FL

PS-9B-I-174 Determining Optimal Cell Density and Oxygen Concentration for Encapsulated Tissue
D. SULLIVAN[1], J. BLANCHETTE[1], AND P. TOPIWALA[1]
[1]University of South Carolina, Columbia, SC

PS-9B-I-175 Characterization of Gold Nanoparticle-quantum Dot Assemblies and Their Potential Applications as Biosensors
E. L. PALMA[1], A. STADLER[2], P. SUN[2], AND O. GANG[2]
[1]Stony Brook University, Stony Brook, NY, [2]Brookhaven National Laboratory, Upton, NY

PS-9B-I-176 Exploring the Dimensions of the Olfactory Code
G. SHAMSAN[1], AND B. RAMAN[1]
[1]Washington University in St. Louis, St. Louis, MO

PS-9B-I-177 Multi-Step Development of Anatomical Urethane Phantoms for Optical Experimentation
C. GREGG[1], J. RYAN[1], K. POTERALA[1], H. BABIKER[1], D. COLLINS[1], A. KREVER[1], AND D. FRAKES[1]
[1]Arizona State University, Tempe, AZ

PS-9B-I-178 Digital Transcriptome Screening to Identify Universal Tumor Antigens for Mantle Cell Lymphoma
R. REKHI[1], H. QIN[2], AND L. KWAK[2]
[1]Rice University, Houston, TX, [2]MD Anderson Cancer Center, Houston, TX

PS-9B-I-179 Determination of Kinetic Parameters for Modeling Poly(ethylene glycol) Diacrylate Hydrogel Formation
J. JAMES[1], C-Y. LEE[1], M. TURTURRO[1], F. TEYMOUR[1], AND G. PAPAVASILIOU[1]
[1]Illinois Institute of Technology, Chicago, IL

PS-9B-I-180 Phosphoproteomic Profiling & Conservation Analysis of Phosphotyrosine Sites in Renal Collecting Duct
B. ZHAO[1,2], T. PISITKUN[2], C-L. CHOU[2], AND M. A. KNEPPER[2]
[1]University of Michigan, Ann Arbor, MI, [2]National Heart, Lung, and Blood Institute, NIH, Bethesda, MD

PS-9B-I-181 Boronic Acid Functionalized Gold Nanoparticles for Determining Protein Glycation
D. KIM[1], C. ZHANG[1], B. HAN[1], AND V. PEREZ-LUNA[1]
[1]Illinois Institute of Technology, Chicago, IL

PS-9B-I-182 A Simple Mock Circulatory System for Testing Direct Mechanical Ventricular Actuation
K. SWARTZMILLER[1], B. SCHMITT[1], D. REYNOLDS[1], R. DARNER[1], AND M. ANSTADT[1]
[1]Wright State University, Dayton, OH

PS-9B-I-183 Microfluidic Bandage for Localized Oxygen-Enhanced Wound Healing
Z. H. MERCHANT[1], J. LO[2], AND D. T. EDDINGTON[2]
[1]University of Pennsylvania, Philadelphia, PA, [2]University of Illinois, Chicago, IL

PS-9B-I-184 Dependence of Stress on Geometry and Stiffness of Calcified Plaque in Arterial Models
P. ROGERSON[1], C. BUFFINTON[1], AND D. EBENSTEIN[1]
[1]Bucknell University, Lewisburg, PA

PS-9B-I-185 High Speed Insertion Mechanics of Microelectrode Arrays for Implantable Neural Prostheses
B. LAU[1], Y. XIAO[2], AND M. HAN[3]
[1]University of California, Los Angeles, Los Angeles, CA, [2]University of California, Berkeley, Berkeley, CA, [3]Huntington Medical Research Institutes, Pasadena, CA

PS-9B-I-186 Mechanical Analysis of Cell Contracted Collagen for the Strengthening of Vascular Grafts
S. R. SOOD[1], D. SHREIBER[1], AND I. GAUDET[1]
[1]Rutgers University, Piscataway, NJ

PS-9B-I-187 A Method for Measuring Hydrostatic Pressure in Microfluidic Devices by Compressibility of Gases
K. ROMAN[1], K. SEALE[2], AND J. WIKSWO[2]
[1]Vanderbilt University, Madison, TN, [2]Vanderbilt University, Nashville, TN

PS-9B-I-188 Novel Parthenolide Delivery System for Acute Myeloid Leukemia Treatment
H. C. WATKINS[1], AND D. BENOIT[1]
[1]University of Rochester, Rochester, NY

PS-9B-I-189 Optimizing the Temperature Gradients used in DNA Melting Analysis
D. P. SINGH[1], AND N. CREWS[1]
[1]Louisiana Tech University, Ruston, LA

PS-9B-I-190 Investigation of Radical Production from Cells using EPR Spin Trapping
R. CRUZ-ACUÃ±A[1], AND F. VILLAMENA[2]
[1]University of Puerto Rico, Mayaguez, Puerto Rico, Puerto Rico, [2]The Ohio State University, Columbus, OH

PS = Poster Session
OP = Oral Presentation

PS-9B-1-191 Methods of Enhancing Cell Viability in Three Dimensional Tissue Engineering
D. B. Snyder[1], and S. Wang[1]
[1]*Louisiana Tech University, Ruston, LA*

PS-9B-1-92 Investigating Molecular Communication Between Microglia and CD4+ T-cells Using a Microfluidic Platform
L. E. Chatfield[1], R. Thobhani[1], S. Faley[1], K. Seale[1], and J. Wikswo[1]
[1]*Vanderbilt University, Nashville, TN*

PS-9B-1-193 Effects of Left Ventricular Pacing Location on Cardiac Function in a Dyssynchronously Failing Heart
R. M. Luevanos[1], J. Omens[2], and E. Howard[2]
[1]*University of California Santa Barbara, La Jolla, CA,* [2]*University of California San Diego, San Diego, CA*

PS-9B-1-194 The Effects of Increased Flow Rate on Jurkat T Cell Viability in the Multitrap Nanophysiometer
J. Irving[1], and J. Kappa[2]
[1]*University of Notre Dame, South Bend, IN,* [2]*Yale University, New Haven, CT*

PS-9B-1-195 A Study of Hemorheological Disorders in Diabetic Patients with End Stage Renal Disease
R. A. Munoz[1], P. Dhar[2], M. Hammes[3], and K. Cassel[4]
[1]*University of Arizona, Tucson, Arizona,* [2]*Illinois Institute of Technology, Chicago, IL,* [3]*University of Chicago, Chicago, IL,* [4]*Illinois, Chicago, IL*

PS-9B-1-196 Sensory Integration of Visual and Vestibular Cues in Recognition of Roll-tilt Motion
A. Adatia[1,2], R. Claret-Yakovenko[2,3], F. Karmali[2,4], K. Lim[2], and D. Merfeld[2,4]
[1]*University of Saskatchewan, Saskatoon, Saskatchewan, Canada,* [2]*Massachusetts Eye and Ear Infirmary, Boston, MA,* [3]*Swiss Federal Institute of Technology of Lausanne, Lausanne, Vaud, Switzerland,* [4]*Harvard Medical School, Cambridge, MA*

PS-9B-1-197 Designing a Surface Eroding Multilayered Plasticized Film for Drug Delivery
R. Van Stelle[1], C. Rabek[2], S. Sundararaj[2], D. Puleo[2], and T. Dziubla[2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*University of Kentucky, Lexington, KY*

PS-9B-1-198 Mapping Harmonic Response for Current-Control in Miniature Wireless Stimulators for Medical Applications
V. D. Lopez Klein[1], B. Towe[1], D. Gulick[1], and P. Larson[1]
[1]*Arizona State University, Tempe,AZ*

PS-9B-1-199 Assessing Intracellular Oxidative Stress in Co-Exposures of Carbon Black & Iron Oxide Nanoparticles
S. H. Ho[1], J. M. Berg[1], W. Hwang[1], R. Taylor[1], B. Guo[1], and C. M. Sayes[1]
[1]*Texas A&M University, College Station, TX*
[1]*Carnegie Mellon University, Pittsburgh, PA*

Track: Tissue Engineering * – 9-1-1

Novel Biomaterials and Scaffolds - III

Chairs: Stephanie Bryant, Sang Jin Lee

Room 12A

10:30AM OP-9-1-1A Photopolymerizable Laminin-PEG Hydrogels for Intervertebral Disc Regeneration

A. T. Francisco[1], J. W. Ogle[1], C. L. Gilchrist[1], J. Chen[1], S. L. Craig[1], and L. A. Setton[1]

[1]*Duke University, Durham, NC*

10:45AM OP-9-1-1B *In Situ* Forming Transient-Network Hydrogels for Tissue Morphogenesis

B. Liu[1], Y. Liu[1], and W. Shen[1]

[1]*University of Minnesota, Minneapolis, MN*

11:00AM OP-9-1-1C Hydrogels with Time-Dependent Mechanical Properties Enhance Cardiomyocyte Differentiation In Vitro

J. L. Young[1], and A. J. Engler[1]

[1]*UC San Diego, La Jolla, CA*

11:15AM OP-9-1-1D Click Chemistry for Synthesis of Modular Poly(ethylene glycol) (PEG) Scaffolds

P. K. Nguyen[1], and D. L. Elbert[1]

[1]*Washington University in St. Louis, Saint Louis, MO*

11:30AM OP-9-1-1E Tuning Mechanical Properties of Multiphoton-Fabricated, Biological Macromolecular Scaffolds

E. Spivey[1], C. E. Schmidt[1], and J. B. Shear[1]

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

11:45AM OP-9-1-1F Fabrication of Chemoselectively Crosslinked Hydrogels via Staudinger Ligation

K. M. Gattas-Asfura[1], and C. L. Stabler[1]

[1]*University of Miami, Miami, FL*

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

Track: Systems Biology, Bioinformatics and Computational Biology –9-1-2

Modeling of Biomolecules and Their Interactions

Chairs: Rohit Pappu, Michael Schnieders

Room 12B

10:30AM OP-9-1-2A SH1 Provides Additional Flexibility for the Rotation of Myosin VI's Converter Domain

Y. Zhang[1], and J-C. Liao[1]

[1]*Columbia University, New York, NY*

10:45AM OP-9-1-2B Development of Small Molecules Models for the AMOEBA Polarizable Force Field

J. C. Wu[1], and P. Y. Ren[1]

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

11:00AM OP-9-1-2C Editing and Aligning Complex Molecular Pathways Using 3D Models

B. Yankama[1], R. Umeton[1,2], S. Ayyadurai[1], and C. F. Dewey[1]

[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*University of Calabria, Rende, CS, Italy*

11:15AM OP-9-1-2D Monte Carlo Analysis of Neck Linker Extension in Native and Mutant Kinesin Molecular Motors

W. O. Hancock[1], M. L. Kutys[1], and J. Fricks[1]

[1]*Penn State University, University Park, PA*

11:30AM OP-9-1-2E Systems Analysis of the Mechanisms of *Clostridium difficile* Toxins A and B

K. M. D'Auria[1], G. M. Donato[1], M. C. Gray[1], E. L. Hewlett[1], and J. A. Papin[1]

[1]*University of Virginia, Charlottesville, VA*

11:45AM OP-9-1-2F A Parallel Approach to Creating a Quantitative Pathway Model for NO Production in Endothelial Cells

A. Koo[1], A. Surendran[1,2], J. M. Wentz[1], M. I. Legrand[1], J. E. Yazbek[1], and C. F. Dewey Jr[1]

[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*National University of Singapore, Singapore, Singapore, Singapore*

Track: Biomedical Imaging and Optics – 9-1-3

Biophotonics – II

Chairs: Aydogan Ozcan, Chris Rylander

Room 19A

10:30AM OP-9-1-3A Lensfree Differential Interference Contrast (DIC) Microscopy on a Chip

C. Oh[1], S. O. Isikman[1], M. Lee[1], and A. Ozcan[1,2]

[1]*Electrical Engineering Department, University of California, Los Angeles, CA,* [2]*California NanoSystems Institute (CNSI), University of California, Los Angeles, CA*

10:45AM OP-9-1-3B Ultra High-throughput Lensfree Fluorescent Imaging Using Compressive Sampling

A. F. Coskun[1], I. Sencan[1], T-W. Su[1], and A. Ozcan[1]

[1]*UCLA Electrical Engineering Dept., Los Angeles, CA*

11:00AM OP-9-1-3C Lensfree Color and Monochrome On-chip Imaging of Caenorhabditis Elegans Over a Wide Field-of-View

S. O. Isikman[1], I. Sencan[1], O. Mudanyali[1], W. Bishara[1], C. Oztoprak[1], and A. Ozcan[1,2]

[1]*UCLA Electrical Engineering Dept., Los Angeles, CA,* [2]*California NanoSystems Institute (CNSI), University of California, Los Angeles, CA*

11:15AM OP-9-1-3D A General and Label-Free Method for Assessing Cellular Attachment Using Photonic Crystal Biosensors

E. A. Lidstone[1], V. Chaudhery[1], A. Kohl[1], L. Trump[1], L. B. Schook[1], and B. T. Cunningam[1]

[1]*University of Illinois at Urbana-Champaign, Urbana, IL*

11:30AM OP-9-1-3E Multiplexed and Reiterative Fluorescence Labeling via DNA-Circuit Technologies

D. Y. Duose[1], R. M. Schweller[1], W. N. Hittelman[2], and M. R. Diehl[1]

[1]*Rice University, Houston, TX,* [2]*M.D Anderson Cancer Center, Houston, TX*

11:45AM OP-9-1-3F Lensfree Incoherent Microscopy on Nano-Structured Chips

B. Khademhosseinieh[1], I. Sencan[1], G. Biener[1], T-W. Su[1], A. Coskun[1], D. Tseng[1], and A. Ozcan[1,2]

[1]*UCLA, Los Angeles, CA,* [2]*California NanoSystems Institute, Los Angeles, CA*

Track: Neural Engineering – 9-1-4

Neural Control of Movement

Chairs: Robert Kirsch, Brian Schmitt

Room 19B

10:30AM OP-9-1-4A Enhancing the Performance of an Upper Extremity FES System via Feedback and a Mobile Arm Support

S. Solanki[1], and R. F. Kirsch[1,2]

[1]*Case Western Reserve University, Cleveland, OH,* [2]*Cleveland Functional Electrical Simulation Center, Cleveland, OH*

PS = Poster Session
OP = Oral Presentation

10:45AM OP-9-1-4B Trunk Dynamics in Response to Position Perturbations
E. MILLER[1], B. BAZRGARI[2], B. HENDERSHOT[1], M. NUSSBAUM[2], AND M. MADIGAN[2]
[1]Virginia Tech - Wake Forest, Blacksburg, VA, [2]Virginia Tech, Blacksburg, VA

11:00AM OP-9-1-4C Decoding of Arm End Point Trajectory Using Local Field Potentials from Primate Primary Motor Cortex
M. MOLLAZADEH[1], V. AGGARWAL[1], A. LAW[2], A. DAVIDSON[2], M. SCHIEBER[2], AND N. THAKOR[1]
[1]Johns Hopkins University, Baltimore, MD, [2]Univesity of Rochester, Rochester, NY

11:15AM OP-9-1-4D Spike Distribution Analysis of Surface EMG from Stroke Survivors
X. LI[1], N. SURESH[1], F. J. NEZHAD[1], W. Z. RYMER[1,2], AND P. ZHOU[1,2]
[1]Rehabilitation Institute of Chicago, Chicago, IL, [2]Northwestern University, Chicago, IL

11:30AM OP-9-1-4E Role of Tendon Vibration in Multijoint Reflex Couling of the Hemiparetic Arm Post Stroke
B. GADHOKE[1], AND B. D. SCHMIT[1]
[1]Marquette University, Milwaukee, WI

11:45AM OP-9-1-4F Recording Swallowing Patterns for Activating a Functional Electrical Stimulation System for Dysphagia
A. J. HADLEY[1,2], K. KRIVAL[3], AND D. TYLER[1,2]
[1]Case Western Reserve University, Cleveland, OH, [2]Functional Electrical Stimulation Center, Cleveland, OH, [3]Kent State University, Kent, OH

Track: Cellular and Molecular Engineering – 9-1-5
Molecular Engineering – III

Chairs: Jennifer Maynard, Jonathan Silberg
Room 18A

10:30AM OP-9-1-5A Parallel "One-Pot" Synthesis of Synthetic Genes that Encode Protein Polymers
M. AMIRAM[1], F. GARCIA QUIROZ[1], AND A. CHILKOTI
[11]Duke University, Durham, NC

10:45AM OP-9-1-5B Engineering a Human Methionine Lyase as a Cancer Therapeutic
O. M. PALEY[1], E. STONE[1], B. EKERDT[1], S. YANG[1], AND G. GEORGIOU[1]
[1]University of Texas, Austin, Austin, TX

11:00AM OP-9-1-5C Hydrogel Encapsulated Glucose Oxidase: Effect on Cell Growth and Proliferation
R. M. Khan[1], A. Guiseppi-Elie[2], and P. Vadgama[1]
[1]Queen Mary University of London, London, United Kingdom, [2]Clemson University, Clemson, SC

11:15AM OP-9-1-5D Light-induced Activation of Caged Morpholino Oligonucleotides in Embryonic Zebrafish
C. M. JARREAU[1], E. MENELAOU[1], K. SVOBODA[1], AND T. MONROE[1]
[1]Louisiana State University, Baton Rouge, LA

11:30AM OP-9-1-5E Molecular Mechanisms of Radiation-Induced Brain Injury for Treatment of Brain Tumor Patients
W. H. LEE[1], W. E. SONNTAG[2], AND Y. W. LEE
[11]Virginia Tech-Wake Forest University, Blacksburg, VA, [2]University of Oklahoma Health Sciences Center, Oklahoma City, OK

11:45AM OP-9-1-5F Modulation of Binding Site Density on an Elastic Fiber by Cyclic Stretch
S. AMIN[1], A. MAJUMDAR[1], AND B. SUKI[1]
[1]Boston University, Boston, MA

Track: Cellular and Molecular Engineering – 9-1-6
Cell Motility

Chairs: Amina Qutub, Maribel Vazquez
Room 18B

10:30AM OP-9-1-6A Stem Cells Migrate and then Differentiate on Matrices with Physiological Elasticity Gradients
J. R. TSE[1], AND A. J. ENGLER[1]
[1]University of California, San Diego, La Jolla, CA

10:45AM OP-9-1-6B - Endothelial Progenitors Migrate More Efficiently Than Adult Endothelial Cells: Role of SM22/Transgelin
L. MOLDOVAN[1], AND N. I. MOLDOVAN[1]
[1]Davis Heart and Lung Research Institute, The Ohio State University, Columbus, OH

11:00AM OP-9-1-6C - Cell-Cell Adhesion Between Invasive Cells Promotes Persistent Cell Migration in a Three-Dimensional Matrix
W. SHIH[1], AND S. YAMADA[1]
[1]University of California, Davis, CA

11:15AM OP-9-1-6D Epidermal Growth Factor Regulates Medulloblastoma *In Vitro* Migration
V. DUDU[1], V. ROTARI[1], Q. KONG[2], AND M. VAZQUEZ[1]
[1]City College of New York, New York, NY, [2]University of Illinois at Urbana-Champaign, Urbana, IL

11:30AM OP-9-1-6E Dynamic Actin Densities in the Axon of Sensory Neurons
J. CHETTA[1] AND S. SHAH[1]
[1]University of Maryland, College Park, MD

11:45AM OP-9-1-6F Mechanics of Leukocyte Transmigration through Endothelial Cell Monolayers
K. M. STROKA[1], AND H. ARANDA-ESPINOZA[1]
[1]University of Maryland, College Park, MD

Track: Cardiovascular Engineering – 9-1-7
Vascular Structure and Function II: Growth and Remodeling

Chairs: Jessica Wagenseil, David Vorp
Room 18C

10:30AM OP-9-1-7A Mechanics of Developing Arteries with Reduced Elastin Amounts
V. LE[1], AND J. WAGENSEIL[1]
[1]Saint Louis University, St. Louis, MO

10:45AM OP-9-1-7B Three-Dimensional Microscopy to Study Regional Microstructural Changes during Aneurysm Development
S. SAATCHI[1], J. AZUMA[1], N. WANCHOO[1], P. S. TSAO[1], S. J. SMITH[1], P. G. YOCK[1], AND C. A. TAYLOR[1]
[1]Stanford University, Stanford, CA

11:00AM OP-9-1-7C Association of Wall Strength of Ascending Thoracic Aneurysms with Different Aortic Valve Morphologies
J. E. PICHAMUTHU[1,2], J. A. PHILLIPPI[1,3], T. G. GLEASON[1,3], AND D. A. VORP[1,2]
[1]University of Pittsburgh, Pittsburgh, PA, [2]McGowan Institute for Regenerative Medicine, Pittsburgh, PA, [3]HLESI, Pittsburgh, PA

11:15AM OP-9-1-7D Comparison of the Postnatal Somatic Growth Patterns between the Pulmonary Trunk and Ascending Aorta
B. FATA[1], D. GOTTLIEB[2], A. COIS[3], G. STETTEN[1], J. MAYER[2], AND M. SACKS[1]
[1]University of Pittsburgh, Pittsburgh, PA, [2]Children's Hospital of Boston, Harvard Medical School, Boston, MA, [3]Carnegie Mellon University, Pittsburgh, PA

11:30AM **OP-9-1-7E** A New Constitutive Model of Arterial Wall Based on Finite-Strain Micromechanical Method
H. Chen[1], Y. Liu[1], X. Zhao[1], and G. S. Kassab[1]
[1]*Indiana University-Purdue University, Indianapolis, IN*

11:45AM **OP-9-1-7F** The Mechanical Behavior of Arteries Under Torsion
S. D. Lamm[1], J. R. Garcia[1], and H-C. Han[1]
[1]*University of Texas at San Antonio, San Antonio, TX*

Track: Cardiovascular Engineering – 9-1-8

Cardiovascular Computational Modeling and Measurement – II

Chairs: Todd Doehring, George Engelmayr
Room 18D

10:30AM **OP-9-1-8A** Simulations of Anisotropic Cardiac Tissue Formation Within Accordion-like Honeycomb Scaffolds
A. Jean[1], A. Parkar[1], N. Masoumi[1], and G. C. Engelmayr[1]
[1]*The Pennsylvania State University, University Park, PA*

10:45AM **OP-9-1-8B** Effect of Smooth Muscle Contraction on Residual Stress in the Canine Aorta: an Experimental and Numerical Study
C. Bellini[1], and E. S. Di Martino[1]
[1]*University of Calgary, Calgary, Alberta, Canada*

11:00AM **OP-9-1-8C** Mathematical Modeling of Transendothelial Water Transport and the Resulting Oncotic Paradox: Possible Link to Early Atherosclerosis?
S. Joshi[1], K-M. Jan[2], and D. Rumschitzki[1]
[1]*City College of New York, New York, NY,* [2]*College of Physician and Surgeons, New York, NY*

11:15AM **OP-9-1-8D** Modeling Blood Flow and Pressure Waves in Arteries incorporating a Viscoelastic Wall Model
R. Raghu[1], and C. Taylor[1]
[1]*Stanford University, Stanford, CA*

11:30AM **OP-9-1-8E** Fully automated 3D mesh Generation from Multi-domain Voxel Images
T. C. Doehring[1]
[1]*Drexel University, Philadelphia, PA*

11:45AM **OP-9-1-8F** Numerical Study of Blood Flow after Embolization of Cerebral Aneurysm with Yield Stress Fluids
W. Wang[1], F. Graziano[2], V. M. Russo[2], and D. B. Khismatullin[1]
[1]*Tulane University, New Orleans, LA,* [2]*Louisiana State University Health Sciences Center, New Orleans, LA*

PLATFORM SESSIONS **9-1**

Track: Respiratory Engineering - 9-1-9

Acute Lung Injury from Cell to System

Chairs: Konstatin G. Burukov, Susan Marguiles
Room 17A

10:30AM **OP-9-1-9A** Role of MicroRNAs in Regulating Mechanically Induced Inflammation in Human Alveolar Epithelial Cells
Y. Huang[1], M. Crawford[2], P. Nana-Sinkam[2], and S. Ghadiali[1]
[1]*Biomedical Engineering, Columbus, OH,* [2]*Department of Internal Medicine, Columbus, OH*

10:45AM **OP-9-1-9B** Expanding on Lung Slices
S. Uhlig[1], C. Martin[1], S. Rausch[2], R. Metzke[2], O. Pack[1], and W. Wall[2]
[1]*RTWH Aachen University, Aachen, NRW, Germany,* [2]*Technische Universitaet Muenchen, Garching, Bavaria, Germany*

11:00AM **OP-9-1-9C** Epac-Rap1 Mechanism in Modulation of Acute Lung Injury: From Cell to System
K. Birukov[1]
[1]*The University of Chicago, Chicago, IL*

11:15AM **OP-9-1-9D** MRI-based Assessment of Aerosol Deposition in the Rat Lung in Health and Disease
C. Darquenne[1], J. M. Oakes[1], and M. Scadeng[1]
[1]*University of California, San Diego, La Jolla, CA*

11:30AM **OP-9-1-9E** High Magnitude Stretch Decreases MLC Phosphorylation in Alveolar Epithelia
B. C. DiPaolo[1], and S. S. Margulies[1]
[1]*University of Pennsylvania, Philadelphia, PA*

11:45AM **OP-9-1-9F** Changes in Cell Mechanics During Airway Reopening Alter Pulmonary Epithelial Barrier Function
A-M. Jacob[1], and D. P. Gaver[1]
[1]*Tulane University, New Orleans, LA*

Track: Orthopedic and Rehabilitation Engineering – 9-1-10

Orthopedic Soft Tissue Biomechanics

Chairs: Stefan Duma, Johnna Temenoff
Room 17B

10:30AM **OP-9-1-10A** Three-dimensional Collagen Fiber Kinematics in Collagen Gels Subjected to Indentation
S. P. Lake[1], and V. H. Barocas[1]
[1]*University of Minnesota, Minneapolis, MN*

10:45AM **OP-9-1-10B** Effect of Cyclic Compressive Loading on Muscle Mechanical Properties Following Eccentric Exercise
C. M. Haas[1], F. Hao[1], Y. Zhao[1], T. A. Butterfield[2], and T. M. Best[1]
[1]*The Ohio State University, Columbus, OH,* [2]*University of Kentucky, Lexington, KY*

11:00AM **OP-9-1-10C** Contributions of Neural Tone to Muscle-Tendon Unit Stress-Relaxation Biomechanical Properties
S. Mannava[1,2], W. F. Wiggins[1,2], J. Stitzel[2], M. F. Callahan[1], L. A. Koman[1], T. L. Smith[1], and C. J. Tuohy[1]
[1]*Wake Forest University School of Medicine, Winston Salem, NC,* [2]*Wake Forest University Graduate School of Arts and Sciences, Winston Salem, NC*

11:15AM **OP-9-1-10D** Analysis of Spatiotemporal Changes in Elasticity of Developing Tendon using Atomic Force Microscopy
J. E. Marturano[1], J. D. Arena[1], and C. K. Kuo[1]
[1]*Tufts University, Medford, MA*

11:30AM **OP-9-1-10E** Damage Evolution Process in Ligaments
Z. Guo[1], J. Barrett[2], and R. De Vita[1]
[1]*Virginia Tech, Blacksburg, VA,* [2]*Virginia-Maryland Regional College of Veterinary Medicine, Leesburg, VA*

11:45AM **OP-9-1-10F** Passive Tension in Supraspinatus Following Rotator Cuff Repair: A Simulation Analysis
K. Saul Holzbaur[1,2], S. Hayon[3], T. Smith[1], C. Tuohy[1], and S. Mannava[1]
[1]*Wake Forest University School of Medicine, Winston-Salem, NC,* [2]*VT-WFU School of Biomedical Engineering and Sciences, Winston-Salem, NC,* [3]*Wake Forest University, Winston-Salem, NC*

PS = Poster Session
OP = Oral Presentation

Track: Devices: Nano to Micro – 9-1-11

Drug Delivery Technologies: Nano to Micro Devices – II

Chairs: Christine Trinkle, Jennifer West
Room 16A

10:30AM OP-9-1-11A A Mechanically Robust Nanofluidic Membrane with Tunable Zero-order Release for Implantable Dose Specific Drug Delivery
D. Fine[1], A. Grattoni[1], S. Hosali[2], A. Ziemys[1], E. De Rosa[1], J. Gill[1], M. Kojic[1], R. Medema[2], M. Milosevic[3], L. Brousseau, III[1], L. Hudson[2], R. Goodall[2], M. Ferrari[1,4], and X. Liu[1]
[1]The University of Texas Health Science Center at Houston, Houston, TX, [2]NanoMedical Systems, Inc., Austin, TX, [3]R & D Center for Bioengineering, Kragujevac, Šumadija, Serbia, [4]The University of Texas M.D. Anderson Cancer Center, Houston, TX

10:45AM OP-9-1-11B Size and Shape effects in the vascular dynamics of nano-Particle Systems (nPSs)
S. Lee[1], F. Gentile[2], A. Van de Ven[3], M. Ferrari[3], and P. Decuzzi[3]
[1]Univesity of Texas at Austin, Austin, TX, [2]University of Magna Graecia at Catanzaro, Catanzaro, Italy, [3]The University of Texas Medical School at Houston, Houston, TX

11:00AM OP-9-1-11C Mucus-penetrating Particles Achieve Prolonged Retention and Improved Distribution in the Mouse Vagina
Y-Y. Wang[1], S. K. Lai[1], L. Ensign[1], R. Cone[1], and J. Hanes[1]
[1]The Johns Hopkins University, Baltimore, MD

11:15AM OP-9-1-11D Silicon Nanowires Improve Adhesion *In Vitro* and *In Vivo* by Triggering Active Cell Remodeling
K. E. Fischer[1], R. H. Daniels[2], E. Li[2], V. Cowles[3], J. L. Miller[3], and T. A. Desai[1]
[1]UCSF, San Francisco, CA, [2]Nanosys, Inc, Palo Alto, CA, [3]Depomed, Menlo Park, CA

11:30AM OP-9-1-11E Development of a Nano/Micro Particle Protein Delivery System
J. Coleman[1], and A. Lowman[1]
[1]Drexel University, Philadelphia, PA

11:45AM OP-9-1-11F Thermoresponsive Nanocomposite Double Network Hydrogels with Cell-Releasing Behavior
R. Fei[1], J. T. George[1], and M. A. Grunlan[1]
[1]Texas A&M University, College Station, TX

Track: Devices: Nano to Micro - 9-1-12

Micro and Nanostructured Biomaterials - II

Chairs: Sanjay Kumar, Christine Trinkle
Room 16B

10:30AM OP-9-1-12A Design of Biodegradable Gold Nanoclusters for NIR Optical Imaging
A. K. Murthy[1], J. M. Tam[1], J. O. Tam[1], D. Ingram[1], M. Schulze[1], R. Nguyen[1], L. L. Ma[1], K. V. Sokolov[1], and K. P. Johnston[1]
[1]University of Texas at Austin, Austin, TX

10:45AM OP-9-1-12B Multifaceted Nano- and Micropatterned Surfaces Created with Laser Scanning Lithography
J. H. Slater[1], J. S. Miller[2], S. S. Yu[3], and J. L. West[1]
[1]Rice University, Houston, TX, [2]University of Pennsylvania, Philadelphia, PA, [3]Vanderbilt University, Nashville, TN

11:00AM OP-9-1-12C Single Walled Carbon Nanotube Peapods as Photothermal Agents for Laser Cancer Therapy
J. Whitney[1], J. Zhang[1], S. Naha[2], S. Torti[3], H. Dorn[1], and M. N. Rylander[1]
[1]Virginia Tech, Blacksburg, VA, [2]ADA Technologies, Littleton, CO, [3]Wake Forest University, Winston-Salem, NC

11:15AM OP-9-1-12D Multifunctional Virus-based Scaffold for Targeted In Vivo MR Imaging of Prostate Cancer
D. Ghosh[1,2], Y. Lee[1], A. Kohli[1,2], K. A. Kelly[3], and A. Belcher[1,2]
[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Koch Institute of Integrative Cancer Research, MA Institute of Technology, Cambridge, MA, [3]University of Virginia, Charlottesville, VA

11:30AM OP-9-1-12E A New Model of Iron Oxide Nanoparticle Magnetic Properties to Guide Design of Novel Nanomaterials
R. A. Ortega[1,2], S. S. Yu[1,2], and T. D. Giorgio[1,3]
[1]Vanderbilt University Department of Biomedical Engineering, Nashville, TN, [2]Vanderbilt Institute of Nanoscale Science and Engineering, Nashville, TN, [3]Vanderbilt University Department of Chemical and Biomolecular Engineering, Nashville, TN

11:45AM OP-9-1-12F Monodisperse, Stable Nanoparticles based on Amphiphilic Peptide-Polymer Conjugates
T. Xu[1]
[1]University of California, Berkeley, Berkeley, ca

Track: Drug Delivery Systems * – 9-1-13

Novel Materials & Self-Assemblying Systems: Peptide and Protein Delivery

Chairs: Jordan Green, Jung Suh
Room 14

10:30AM OP-9-1-13A Antimicrobial Peptide Delivery and Surface Coatings
A. Shukla[1], A. C. Engler[1], and P. T. Hammond[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

10:45AM OP-9-1-13B Polymeric Nanoparticles for Anti-angiogenic Peptide Delivery
R. B. Shmueli[1], J. E. Koskimaki[1], J. Sunshine[1], P. A. Campochiaro[1], A. S. Popel[1], and J. J. Green[1]
[1]Johns Hopkins University, Baltimore, MD

11:00AM OP-9-1-13C Exploring Multi-Domain Peptides and Gelatin Microparticles as an Osteogenic Factor Delivery System
D. M. Yoon[1], B. Y. Lu[1], E. L. Bakota[1], F. Kasper[1], J. D. Hartgerink[1], and A. G. Mikos[1]
[1]Rice University, Houston, TX

11:15AM OP-9-1-13D Low Viscosity Highly Concentrated Dispersions of Stable IgG Particles Formed by SWIFT Freezing
M. A. Miller[1], B. Wilson[1], J. Maynard[1], and K. P. Johnston[1]
[1]The University of Texas at Austin, Austin, TX

11:30AM OP-9-1-13E GLP-1 polymer Drug Depots for Treatment of Type-2 Diabetes
M. Amiram[1], and A. Chilkoti[1]
[1]Duke University, Durham, NC

11:45AM OP-9-1-13F Swelling and Insulin Release of Glucose-Responsive Microparticles and Nanogels
S. R. Marek[1], and N. A. Peppas[1]
[1]The University of Texas at Austin, Austin, TX

*** Drug Delivery Systems Track is sponsored by Acta Biomaterialia**

Track: Drug Delivery Systems * – 9-1-14

Targeted Drug Delivery - I

Chairs: Daniel Kamei, Justin Saul

Room 15

10:30AM OP-9-1-14A - Bone Marrow Targeted Multistage Drug Delivery System for the Treatment of Bone Marrow Associated Disorders

A. Mann[1], T. Tanaka[1,2], R. Nieves-Alicea[1], X. Liu[1,2], G. Lopez-Berestein[3], A. Sood[3], and M. Ferrari[1,2]

[1]University of Texas Health Science Center at Houston, Houston, TX, [2]University of Texas at Austin, Austin, TX, [3]University of Texas M.D. Anderson Cancer Center, Houston, TX

10:45AM OP-9-1-14B - Multi-ligand Nanoparticles for Targeted Drug Delivery to Endothelium after Cardio-Interventions

S. Kona[1,2], H. Xu[1,2], Y-T. Tsai[1,2], L-C. Su[1,2], J-F. Dong[3], L. Tang[1,2], and K. T. Nguyen[1,2]

[1]University of Texas at Arlington, Arlington, TX, [2]The University of Texas Southwestern Medical Center, Dallas, TX, [3]Baylor College of Medicine, Houston, TX

11:00AM OP-9-1-14C - Improving Protein Pharmacokinetics by Engineering Erythrocyte Affinity

S. Kontos[1], and J. A. Hubbell[1]

[1]Swiss Federal Institute of Technology, Lausanne, VD, Switzerland

11:15AM OP-9-1-14D - Biomarker-Triggered Aptamer Regulation Strategy for Targeted Therapeutics

N. Li[1], and C-M. Ho[2]

[1]University of Miami, Coral Gables, FL, [2]University of California, Los Angeles, Los Angeles, CA

11:30AM OP-9-1-14E - Neointimal Reduction with Vascular-Matrix Targeted Nanoparticles for Systemic Paclitaxel Delivery.

J. M. Chan[1], J-W. Rhee[2], G. Golomb[3], R. Langer[1], and O. Farokhzad[2]

[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Harvard Medical School, Boston, MA, [3]Hebrew University of Jerusalem, Jerusalem, Jerusalem, Israel

11:45AM OP-9-1-14F Doxorubicin-loaded Nanoscale Liposomes Targeted to E-selectin Ligands on Circulating Tumor Cells

V. Ponmudi[1], and M. R. King[1]

[1]Cornell University, Ithaca, NY

* **Drug** Delivery Systems Track is sponsored by Acta Biomaterialia

Track: Tissue Engineering * – 9-1-15

Stem Cells and Tissue Engineering – I

Chairs: Taby Ahsan, Brendan Harley

Ballroom E

10:30AM OP-9-1-15A Utilizing a Novel Microfluidic platform as an *Ex Vivo* Model to Recapitulate the Stem Cell Niche

B. Carrion[1], C. Huang[2], and A. J. Putnam[1]

[1]University of Michigan, Ann Arbor, MI, [2]University of California, Irvine, Irvine, CA

10:45AM OP-9-1-15B Human Mesenchymal Stem Cell Neural Differentiation by Synergistic Topographical & Sustained Biochemical Signaling

X. Jiang[1], and S-Y. Chew[1]

[1]Nanyang Technological University, Singapore, Singapore, Singapore

11:00AM OP-9-1-15C Development of a Chondrogenic Pellet Preculture System for Cartilage Tissue Engineering Applications

E. J. Levorson[1], F. K. Kasper[1], and A. G. Mikos[1]

[1]Rice University, Houston, TX

11:15AM OP-9-1-15D Combinatorial Development of Synthetic Polymeric Substrates for Clonal Growth of Human Pluripotent Stem Cells

K. Saha[1], Y. Mei[2], R. Langer[2], R. Jaenisch[1], and D. Anderson[2]

[1]Whitehead Institute/MIT, Cambridge, MA, [2]MIT, Cambridge, MA

11:30AM OP-9-1-15E Hematopoietic Stem Cell Culture on an Adipogenic Feeder Layer

D. L. Glettig[1], and D. L. Kaplan[1]

[1]Tufts University, Medford, MA

11:45AM OP-9-1-15F Neural Progenitor Cell Response to Flow-Stimulated Endothelial Cell Extracellular Matrix Production

C. M. Zwolinski[1], K. S. Ellison[1], N. DePaola[2], and D. M. Thompson[1]

[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Illinois Institute of Technology, Chicago, IL

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

Track: Tissue Engineering * – 9-1-16

Host Response to Biomaterials

Chairs: Eric Brey, Kent Leach

Ballroom F

10:30AM OP-9-1-16A Modeling the Relative Impact of Fibrous Encapsulation and Tissue Perfusion on Implanted Glucose Sensor Performance

M. T. Novak[1], F. Yuan[1], and W. M. Reichert[1]

[1]Duke University, Durham, NC

10:45AM OP-9-1-16B Novel Near-infrared Fluorescence (NIR) Nanoprobes for *In Vivo* Imaging of Inflammatory Diseases

J. Zhou[1], Y-T. Tsai[1], H. Weng[1], and L. Tang[1]

[1]University of Texas at Arlington, Arlington, TX

11:00AM OP-9-1-16C Dynamic *In Vivo* Visualization of Anastomosis Between a Prevascularized Implantable Tissue Construct and Host Circulation

S. M. White[1], C. Hughes[1], S. George[1], and B. Choi[1]

[1]University of California, Irvine, Irvine, CA

11:15AM OP-9-1-16D Parsing Inflammatory Cues in Angiogenesis Using Bioactive Hydrogels

A. L. Zachman[1], S. W. Crowder[1], H. K. Kleinman[2], J. B. Kohn[3], and H-J. Sung[1]

[1]Vanderbilt University, Nashville, TN, [2]NIH, Bathesda, MD, [3]Rutgers University, Piscataway, NJ

11:30AM OP-9-1-16E Dendritic Cell Response to a Library of Terpolymers with Graded Variations in Material Properties

P. Kou[1], A. Joy[2,3], B. Cunningham[2,3], J. Kohn[2,3], and J. Babensee[1]

[1]Georgia Institute of Technology, Atlanta, GA, [2]Rutgers University, Piscataway, NJ, [3]New Jersey Center for Biomaterials, Piscataway, NJ

11:45AM OP-9-1-16F *In Vivo* Imaging of Biomaterial-induced Reactive Oxygen Species

W. F. Liu[1,2], M. Ma[1], D. G. Anderson[1], and R. Langer[1]

[1]MIT, Cambridge, MA, [2]UC Irvine, Irvine, CA

***Tissue** Engineering Track sponsored by Kinetic Concepts, Inc.

Track: Tissue Engineering * - 9-1-17

Cell- and Gene-Based Therapeutics

Chairs: Eben Alsberg, WT Godbey

Ballroom G

10:30AM OP-9-1-17A Pure, Non-denatured Collagen Matrix: A Cell Delivery Model for Myocardial Repair

N. A. Kouris[1], J. Squirrell[1], and B. Ogle[1,2]

[1]University of Wisconsin - Madison, Madison, WI, [2]University of Wisconsin-Madison, Madison, WI

PS = Poster Session
OP = Oral Presentation

10:45AM OP-9-1-17B Injectable, Macroporous Hydrogels for Controlled Stem Cell Deployment
N. Huebsch[1,2], C. Madl[1], M. Xu[1], and D. J. Mooney[1,2]
[1]Harvard University, Cambridge, MA, [2]Wyss Institute for Biologically Inspired Engineering, Boston, MA

11:00AM OP-9-1-17C Engineering Cell Derived Materials
J. C. Wolchok[1], and P. Tresco[1]
[1]University of Utah, Salt Lake City, UT

11:15AM OP-9-1-17D Microspotting of Adeno-Associated Virus for Combinatorial Genetic Testing
K. I. McConnell[1], R. Schweller[1], M. Diehl[1], and J. Suh[1]
[1]Rice University, Houston, TX

11:30AM OP-9-1-17E Analysis of Promoters and Expression-targeted Gene Therapy, Optimization Based on Cell Behavior
X. Zhang[1], and W. T. Godbey[1]
[1]Tulane University, New Orleans, LA

11:45AM OP-9-1-17F Matrix-mediated Non-viral Gene Delivery
C. Chu[1], and H. Kong[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

Track: Undergraduate – 9-1-18

Undergraduate Research I

Chairs: R. Christopher Geiger, Ann Saterbak
Room 13B

10:30AM OP-9-1-18A A Biomechanical Analysis of Implantation-Induced Cup Deformation in Acetabular Cup Designs
M. E. Jones[1], S. R. Small[2], J. B. Meding[2], and K. S. Toohey[1]
[1]Rose-Hulman Institute of Technology, Terre Haute, IN, [2]Joint Replacement Surgeons of Indiana Foundation, Mooresville, IN

10:45AM OP-9-1-18B Biomimetic Thymic Niche: Controlling Notch Signaling in 3D for Generation of T cells
M. P. Mendoza[1], M. H. Kim[1], and K. Roy[1]
[1]University of Texas at Austin, Austin, TX

11:00AM OP-9-1-18C Retaining the Inert Environment of Macroporous Alginate Scaffolds via Sacrificial Porogen Chemistry
M. M. Xu[1], N. D. Huebsch[1,2], and D. J. Mooney[1,3]
[1]Harvard University, Cambridge, MA, [2]Harvard-MIT Division of Health Sciences and Technology, Cambridge, MA, [3]Wyss Institute for Biologically Inspired Engineering, Cambridge, MA

11:15AM OP-9-1-18D Structural Adaptations of Endothelial Progenitor Cells in Response to Fluid Flow Shear Stresses
E. A. McNamara[1], M. Knothe Tate[1], and H. Chang[1]
[1]Case Western Reserve University, Cleveland, OH

11:30AM OP-9-1-18E Engineered Nanoparticles for Targeted Tumor Delivery
S. Kadali[1], Á. Mercado[1], and E. Jabbari[1]
[1]University of South Carolina, Columbia, SC

11:45AM OP-9-1-18F - Compression-induced Changes in Nuclear Rheology: Linking Force Response to Genome Organization
T. A. Alcoser[1], E. A. Booth-Gauthier[1], and K. N. Dahl[1]
[1]Carnegie Mellon University, Pittsburgh, PA

Track: Tissue Engineering * – 9-2-1

Novel Biomaterials and Scaffolds – IV

Chairs: Balaji Sitharaman, Lakeshia Taite

Room 12A

1:30PM OP-9-2-1A Engineered Bacterial Cellulose as a Scaffold for Chondrogenesis

B. Panilaitis[1], L. Sun[1], V. Yadav[1], and D. Kaplan[1]

[1]Tufts University, Medford, MA

1:45PM OP-9-2-1B Engineered Aprotinin for Enhanced Stability of Fibrin Biomaterials

K. Lorentz[1], P. Frey[1,2], and J. A. Hubbell[1]

[1]Swiss Federal Institute of Technology (EPFL), Lausanne, VD, Switzerland, [2]Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne, VD, Switzerland

2:00PM OP-9-2-1C A Biohybrid Composite of Extracellular Matrix Gel and Elastomeric Fibers for Soft Tissue Repair

Y. Hong[1,2], A. Huber[1,2], R. Hashizume[1,2], N. J. Amoroso[1], S. F. Badylak[1,2], and W. R. Wagner[1,2]

[1]McGowan Insitute for Regenerative Medicine, University of Pittsburgh, Pittsburgh, PA, [2]Department of Surgery, University of Pittsburgh, Pittsburgh, PA

2:15PM OP-9-2-1D Synthetic Collagen Fiber and Elastin-like Protein Composites for Abdominal Wall Repair

J. M. Caves[1], W. Cui[1], J. Wen[1], V. A. Kumar[1,2], A. W. Martinez[1,2], and E. L. Chaikof[1,2]

[1]Emory University, Atlanta, GA, [2]Georgia Inst Technology, Atlanta, GA

2:30PM OP-9-2-1E Encapsulation and Culture of Neural Stem Cells in Hyaluronic Acid and Collagen-Based Microcapsules

C. B. Highley[1], S. H. Bakhru[1], and S. F. Zappe[1]

[1]Carnegie Mellon University, Pittsburgh, PA

2:45PM OP-9-2-1F Engineering Differentiated Cells and Stem Cells Using GAG-Chitosan Capsules as Tissue Modules

R. T. Annamalai[1], D. R. Armant[1], and H. W. Matthew[1]

[1]Wayne State University, Detroit, MI

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

Track: Systems Biology, Bioinformatics and Computational Biology – 9-2-2

Signals and Networks in Cancer and Disease – II

Chairs: Mark Brynildsen, Gert Cauwenberghs, David Meaney

Room 12B

1:30PM OP-9-2-2A An Integrated Microfluidic-Coupled-Ion Mobility-Mass Spectrometer for Investigating Leukocyte Dynamics

C. Marasco[1], J. Enders[1], K. Seale[1], J. McLean[1], and J. Wikswo[1]

[1]Vanderbilt University, Nashville, TN

1:45PM OP-9-2-2B Computational Analysis of Extracellular Matrix Degradation in Tumor Microenvironments

M. O. Platt[1], Z. T. Barry[1], and C. L. Wilder[1]

[1]Georgia Institute of Technology, Atlanta, GA

2:00PM OP-9-2-2C Modeling the Electrophysiology of the Mammalian Circadian Clock

C. Diekman[1], and D. Forger[1]

[1]University of Michigan, Ann Arbor, MI

2:15PM OP-9-2-2D A Computational Model of Interactions between Human APOBEC3G and HIV Vif

I. Hosseini[1], and F. Mac Gabhann[1]

[1]Johns Hopkins University, Baltimore, MD

2:30PM OP-9-2-2E Network Analysis-directed Assessment of FDA Approved Drugs for Antileishmanial Activity

A. K. Chavali[1], and J. A. Papin[1]

[1]University of Virginia, Charlottesville, VA

2:45PM OP-9-2-2F Identifying Potential Roles for EGFR Family Cross-Talk During Lesion Formation in Endometriosis

M. T. Beste[1], N. Doyle[1], A. Starzinski-Powitz[2], D. A. Lauffenburger[1], K. B. Isaacson[3], and L. G. Griffith[1]

[1]Massachusetts Institute of Technology, Cambridge, MA, [2]Goethe Universität, Frankfurt am Main, Germany, [3]Newton-Wellesley Hospital, Newton, MA

Track: Biomedical Imaging and Optics – 9-2-3

Biophotonics - III

Chairs: Brian Applegate, Tomasz Tckazyk

Room 19A

1:30PM OP-9-2-3A Multiphoton Imaging to Aid in Microdissection Testicular Sperm Extraction

D. M. Huland[1], R. Ramasamy[2], T. Southard[1], S. Mukherjee[2], W. W. Webb[1], and C. Xu[1]

[1]Cornell University, Ithaca, NY, [2]Weill Cornell Medical College, New York, NY

1:45PM OP-9-2-3B Molecular Imaging with Pump-Probe Optical Coherence Microscopy

Q. Wan[1], and B. Applegate[1]

[1]TAMU, College Station, TX

2:00PM OP-9-2-3C MEMS Based Hyperspectral Imaging System Towards Imaging of Biological Tissue

S. Bish[1], Y. Wang[1], J. W. Tunnell[1], and J. X. Zhang[1]

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

2:15PM OP-9-2-3D Ultrashort Pulse Nonlinear Optical Microscopy Spectral Imaging System

A. Lee[1], S. Vitha[1], A. Holzenburg[1], and A. Yeh[1]

[1]Texas A&M University, College Station, TX

2:30PM OP-9-2-3E Using a Photonic Crystal Fiber Supercontinuum Source for Multispectral Photoacoustic Microscopy

Y. N. Billeh[1], M. Liu[2], and T. Buma[2]

[1]University of Michigan, Ann Arbor, MI, [2]University of Delaware, Newark, DE

2:45PM OP-9-2-3F Simultaneous Co-registered Morphological and Biochemical Imaging of Coronary Atherosclerotic Plaques Using a Dual-modal Optical System Combining OCT and FLIM

J. Park[1], B. E. Applegate[1], S. Shresta[1], P. Pande[1], and J. A. Jo[1]

[1]Texas A&M University, College Station, TX

Track: Neural Engineering – 9-2-4

Neural Engineering Technology

Chairs: Pat Crago, Justin Williams

Room 19B

1:30PM OP-9-2-4A STEP-Aligned Polymer Fiber Meshes Direct Migration and Neuronal Differentiation of Neural Stem Cells

S. Bakhru[1], and A. S. Nain[2]

[1]Carnegie Mellon University, Pittsburgh, PA, [2]Virginia Tech, Blacksburg, VA

PS = Poster Session
OP = Oral Presentation

1:45PM OP-9-2-4B Perfusion System for Enhanced Viability and Local Chemical Stimulation of Organotypic Brain Slices
H. H. CAICEDO[1], M. VIGNES[2,3], B. BRUGG[2], AND J. M. PEYRIN[2]
[1]*University of Illinois at Chicago, Chicago, IL,* [2]*Université Pierre et Marie Curie, Paris, France,* [3]*Institut Curie, Paris, France*

2:00PM OP-9-2-4C Dissecting *C. elegans* Neural Circuitry and Behavior in Microfluidic Arenas
D. R. ALBRECHT[1], AND C. BARGMANN[1]
[1]*The Rockefeller University, New York, NY*

2:15PM OP-9-2-4D PEDOT Improves Sensitivity and Fidelity of *In Situ* Nerve Conduction Signals
C. M. FROST[1], K. EWING[1], B. WEI[1], Z. BAGHMANLI[1], P. CEDERNA[1], AND M. URBANCHEK[1]
[1]*University of Michigan, Ann Arbor, MI*

2:30PM OP-9-2-4E Novel Packaging and Interconnect Techniques for Implantable MEMS Devices for the Brain
J. SUTANTO[1], S. ANAND[1], A. SRIDHARAN[1], AND J. MUTHUSWAMY[1]
[1]*Arizona State University, Tempe, AZ*

2:45PM OP-9-2-4F An Optoelectronic Hybrid Device for *In Vivo* Stimulation and Recording of Neural Microcircuits
J. WANG[1], AND D. BORTON[1]
[1]*Brown University, Providence, RI*

Track: Biomedical Engineering Education – 9-2-5

Teaching Tools and Strategies

Chairs: Aura Gimm, Joe Tranquillo
Room 18A

1:30PM OP-9-2-5A A Project-Oriented BME Survey Course: Making Pass-Fail Grading Work
J. A. SMITH[1]
[1]*Ryerson University, Toronto, ON, Canada*

1:45PM OP-9-2-5B Program Improvement through Assessment and Evaluation
L. HERZ[1]
[1]*Lehigh University, Bethlehem, PA*

2:00PM OP-9-2-5C Developing a Novel Approach to Training Biomedical Innovation Leaders: The New Johns Hopkins Center for Bioengineering Innovation & Design: Outcomes from Year One
Y. YAZDI[1], S. ACHARYA[1],, A. POLSANI[1],, A. J. KHANNA[1],, R. H. ALLEN[1],, M. B. SACHS[1]
[1]*Johns Hopkins University, Baltimore, MD*

2:15PM OP-9-2-5D Digital Ink in the BME Classroom: Application in Quantitative Physiology
S. A. CAREY[1], S. DANIEL[1], AND C. A. REINHART-KING[1]
[1]*Cornell University, Ithaca, NY*

2:30PM OP-9-2-5E Implementation of Problem-Based Learning in Two Sophomore Bioengineering Courses
A. SATERBAK[1], J. JACOT[1], AND T. VOLZ[1]
[1]*Rice University, Houston, TX*

2:45PM OP-9-2-5F Acquiring Experimental Design Skills Through Problem-Based Learning
S. M. GEORGE[1], AND B. B. FASSE[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

Track: Cellular and Molecular Engineering – 9-2-6

Mechanotransduction – II

Chairs: Adam Engler, Alisha Sieminski
Room 18B

1:30PM OP-9-2-6A Coupled Biomechanical Signal Integration Reveals Nonlinear Cell Responses through Cell Alignment
R. STEWARD JR.[1], C-M. CHENG[2], AND P. LEDUC[1]
[1]*Carnegie Mellon University, Pittsburgh, PA,* [2]*Harvard University, Cambridge, MA*

1:45PM OP-9-2-6B Nanoscale Mechanical Manipulation of the Endothelial Cell Surface Reveals Mechanical Coupling of Membrane Rafts
D. FUENTES[1], C. BAE[2], AND P. J. BUTLER[1]
[1]*Penn State University, University Park, PA,* [2]*State University of New York at Buffalo, Buffalo, NY*

2:00PM OP-9-2-6C Suggested Structure of Activated Vinculin
J. GOLJI[1], AND M. MOFRAD[1]
[1]*UC Berkeley, Berkeley, CA*

2:15PM OP-9-2-6D The Primary Cilium: A Potential Receptor Antenna in Human Adipose Stem Cells?
J. C. BODLE[1], A. R. SAKHARE[1], S. H. BERNACKI[1], J. QI[2], A. J. BANES[3], AND E. G. LOBOA[1]
[1]*North Carolina State University, Raleigh, NC,* [2]*Flexcell International Inc., Hillsborough, NC,* [3]*University of North Carolina, Hillsborough, NC*

2:30PM OP-9-2-6E Mechanochemical Regulation of Actin Depolymerization Kinetics
C-Y. LEE[1,2], J. LOU[1,3], K-K. WEN[4], S. ONO[2], S. G. ESKIN[1,2], P. A. RUBENSTEIN[4], C. ZHU[1,2], AND L. V. MCINTIRE[1,2]
[1]*Georgia Institute of Technology, Atlanta, GA,* [2]*Emory University, Atlanta, GA,* [3]*Chinese Academy of Sciences, Beijing, China, People's Republic of,* [4]*University of Iowa, Iowa City, IA*

2:45PM OP-9-2-6F Stem Cell Durotaxis - Trafficking to Fibrotic Scars
M. RAAB[1], AND D. DISCHER[1]
[1]*University of Pennsylvania, Philadelphia, PA*

Track: Cardiovascular Engineering - 9-2-7

Cardiac Stents and Arterial Devices

Chairs: Jun Liao, James Moore, Jr.
Room 18C

1:30PM OP-9-2-7A Incorrect Stent Sizing Promotes In-stent Restenosis: Role of Endothelial Shear Stress and Intramural Wall Stress
H. Y. CHEN[1], D. BHATT[2], AND G. KASSAB[3]
[1]*Purdue University, Indianapolis, IN,* [2]*Harvard Medical School, Boston, MA,* [3]*Indiana University School of Medicine, Indianapolis, IN*

1:45PM OP-9-2-7B Modelling and Experiments to Aid Performance Assessment of Biodegradable Metallic Stents
J. GROGAN[1], S. LEEN[1], AND P. MCHUGH[1]
[1]*NUI Galway, Galway, Galway, Ireland*

2:00PM OP-9-2-7C *In Vitro* and *In Vivo* Characterization of Biodegradable Polymer-based Drug Eluting Stent
S. K. YAZDANI[1], M. VORPAHL[1], S-H. SU[2], J. SHULZE[2], F. D. KOLODGIE[1], AND R. VIRMANI[1]
[1]*CVPath Institute, Gaithersburg, MD,* [2]*Biosensors International, Singapore, Singapore, Singapore*

2:15PM OP-9-2-7D Exploiting the Differential Cellular Effects of Elastin as a Device Coating
B. D. WILSON[1], L. K. SORENSEN[1], C. C. GIBSON[1], M. YOKLAVICH[2], L. L. KELLEY[1], Y-T. SHIU[1], AND D. Y. LI[1]
[1]*University of Utah, Salt Lake City, UT,* [2]*OrbusNeich Medical, Fort Lauderdale, FL*

2:30PM OP-9-2-7E A 360-deg Digital Image Correlation Optical System for Arterial Strain Measurement *In Vitro*

Y-U. LEE[1], K. GENOVESE[2], AND J. D. HUMPHREY[1]

[1]Texas A&M University, College Station, TX, [2]Università degli Studi della Basilicata, POTENZA, POTENZA, Italy

2:45PM OP-9-2-7F Physiology-based Control System for a Novel Pediatric Adjustable Systemic-Pulmonary Artery Shunt

A. R. CONNOR[1], W. I. DOUGLAS[2], AND M. W. MOHIUDDIN[1]

[1]Michael E. DeBakey Institute, TX A&M University, College Station, TX, [2]The University of Texas Health Science Center, Houston, TX

Track: Cardiovascular Engineering – 9-2-8

Vascular Mechanosignal Transduction

Chairs: Anthony Passerini, Cynthia Reinhart-King,
Room 18D

1:30PM OP-9-2-8A Nesprin-3 Regulates Human Aortic Endothelial Cell Morphology

J. T. MORGAN[1], G. PENG[1], E. R. PFEIFFER[1], T. L. THIRKILL[1], G. C. DOUGLAS[1], D. A. STARR[1], AND A. I. BARAKAT[1]

[1]University of California, Davis, Davis, CA

1:45PM OP-9-2-8B HSPG-Mediated FAK Activation Plays a Mechanotransduction Role in Interstitial Flow-Induced MMP Expression

Z-D. SHI[1], AND J. M. TARBELL[1]

[1]City College and Graduate Center of City University of New York, New York, NY

2:00PM OP-9-2-8C Shear Stress Modulates Metallothionein Expression and Intracellular Zinc Level in Endothelial Cells

S. LEE[1], D. E. CONWAY[2], S. G. ESKIN[1], A. K. SHAH[1], AND L. V. MCINTIRE[1]

[1]Georgia Institute of Technology, Atlanta, GA, [2]University of Virginia, Charlottesville, VA

2:15PM OP-9-2-8D Shear Stress Suppresses TNF Induced Apoptosis; In Part by Modulating DAPK Expression and Activity

K. RENNIER[1], AND J. Y. JI[1]

[1]Indiana University Purdue University Indianapolis, Indianapolis, IN

2:30PM OP-9-2-8E MicroRNA-10a Regulation of Pro-inflammatory Phenotype in Athero-susceptible Endothelium *In Vivo* and *In Vitro*

Y. FANG[1], C. SHI[1], E. MANDUCHI[1], M. CIVELEK[1], AND P. F. DAVIES[1]

[1]University of Pennsylvania, Philadelphia, PA

2:45PM OP-9-2-8F Atherosclerosis and Flow – The End Game?

C. F. DEWEY JR[1]

[1]MIT, Cambridge, MA

Track: Respiratory Engineering - 9-2-9

Mechanobiology in the Lung

Chairs: Steve George, Cheryl Miller
Room 17A

1:30PM OP-9-2-9A Alveolar Epithelial Cells Respond to Mechanical Stretch Through Primary Cilia Formation

R. L. HEISE[1], AND S. GARANTZIOTIS[1]

[1]National Institute of Environmental Health Sciences, Research Triangle Park, NC

1:45PM OP-9-2-9B Role of Microtubule Dynamics in the Response of Airway Smooth Muscle Cells to Cyclic Uniaxial Stretching

H. PARAMESWARAN[1], M. MORIOKA[2], S. ITO[2], AND B. SUKI[1]

[1]Boston University, Boston, MA, [2]Nagoya University, Nagoya, Aichi Prefecture, Japan

2:00PM OP-9-2-9C Mechanical Properties of Migrating Alveolar Epithelial Cells

A. BADA[1], C. E. COZAD[1], L. M. CROSBY[2], E. ROAN[1], AND C. M. WATERS[2]

[1]University of Memphis, Memphis, TN, [2]University of Tennessee Health Science Center, Memphis, TN

2:15PM OP-9-2-9D *In Vivo* Optical Coherence Elastography of the Trachea

C. J. ROBERTSON[1], Y-C. AHN[1], S-W. LEE[1], S. MAHON[1], Z. CHEN[1], M. BRENNER[1], AND S. C. GEORGE[1]

[1]UCI, Irvine, CA

2:30PM OP-9-2-9E PTEN and Akt Mediated Biomechanical Mechanisms of Lung Epithelial Cell Migration and Wound Repair

C. COSMIN[1], S. BAO[2], D. KNOELL[2], AND S. GHADIALI[2]

[1]The Ohio State University, Columbus, OH, [2]Ohio State University, Columbus, OH

2:45PM OP-9-2-9F PECAM-1 Mechanosensing Contributes to ROS Generation with Loss of Shear in the *Ex Vivo* Mouse Lung

J. NOEL[1], N. HONG[1], K. DEBOLT[1], A. FISHER[1], AND S. CHATTERJEE[1]

[1]University of Pennsylvania, Philadelphia, PA

Track: Orthopedic and Rehabilitation Engineering – 9-2-10

Orthopedic Hard Tissue Biomechanics

Chairs: Warren Grayson, Jiro Nagatomi
Room 17B

1:30PM OP-9-2-10A Architectural Predictors for Human Trabecular Bone Strength

T. GUDA[1,2], B. E. POLLOT[2], AND J. ONG[2]

[1]Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC, [2]University of Texas at San Antonio, San Antonio, TX

1:45PM OP-9-2-10B From CT Scans to Bone Resorption Pattern – A Patient Specific Bone Remodeling Simulation for THR

X. LIU[1], S. GOVINDARAJAN[1], S. SETT[1], B. VEECKMANS[2], P. LOPES[2], AND E. BOELEN[2]

[1]Dassault Systemes Simulia Corp, Providence, RI, [2]Materialise, Leuven, Flemish Brabant, Belgium

2:00PM OP-9-2-10C Acetabular Cup Design and Orientation Affect Periacetabular Loading Distribution

M. E. BEREND[1], S. R. SMALL[1], L. HOWARD[2], D. TUNC[2], C. A. BUCKLEY[2], AND M. A. RITTER[1]

[1]JRSI Foundation, Inc., Mooresville, IN, [2]Rose-Hulman Institute of Technology, Terre Haute, IN

2:15PM OP-9-2-10D Four Point Bending Stiffness of Fractured Rat Femora Treated with Two Different Methods of Fixation

H. KIM[1], C. GRIFFITH[2], S. LEUNG[2], L. GITAJN[3], L. MURPHY[3], A. H. HSIEH[1,2], R. V. O'TOOLE[2], AND V. D. PELLEGRINI[2]

[1]University of Maryland, College Park, MD, [2]University of Maryland, Medical Center, Baltimore, MD, [3]University of Maryland, Baltimore, MD

2:30PM OP-9-2-10E Deletion of Osteocalcin and Osteopontin from Extracellular Matrix Leads to Increased Bone Fragility

A. A. POUNDARIK[1], C. GUNDBERG[2], AND D. VASHISHTH[1]

[1]Rensselaer Polytechnic Institute, Troy, NY, [2]Yale University, New Haven, CT

2:45PM OP-9-2-10F Measurement of Osteopontin and Osteocalcin from Laser Microdissected Microdamaged Regions in Bone

L. KARIM[1], G. SROGA[1], AND D. VASHISHTH[1]

[1]Rensselaer Polytechnic Institute, Troy, NY

PS = Poster Session
OP = Oral Presentation

Track: Devices: Nano to Micro – 9-2-11

Biosensors, Bio-Interfaces and Implantable Devices – I

Chairs: Peter Gascoyne, Chenzhong Li
Room 16A

1:30PM OP-9-2-11A Long-Term Evaluation of the Implantable Magnetic Microctuators
H. Lee[1], A. K. Gill[1], M. Bergsneider[1], and J. W. Judy[1]
[1]UCLA, Los Angeles, CA

1:45PM OP-9-2-11B Electronic Nanobiosensors for Genomic and Proteomic Biomarkers Analysis at Single Cell Level
S. Prabhulkar[1], and C-Z. Li[1]
[1]Florida International University, Miami, FL

2:00PM OP-9-2-11C An Implantable Biochip to Influence Patient Outcomes Following Trauma-induced Hemorrhage
A. Guiseppi-Elie[1]
[1]Clemson University, Clemson, SC

2:15PM OP-9-2-11D NanoCluster Beacon (NCB): a DNA-silver Nanocluster Probe that Fluoresces Upon Hybridization
H-C. Yeh[1], J. Sharma[1], J. J. Han[1], J. S. Martinez[1], and J. H. Werner[1]
[1]Los Alamos National Laboratory, Los Alamos, NM

2:30PM OP-9-2-11E Nanoscale Growth of Individual Bacteria with Hydrodynamic Sensing
P. Kinnunen[1], I. Sinn[1], D. Newton[1], M. Burns[1], B. H. McNaughton[1], and R. Kopelman[1]
[1]University of MIchigan, Ann Arbor, MI

2:45PM OP-9-2-11F On-chip Labeling via Enzymatic DNA Polymerization for Nucleic Acid Detection
V. Tjong[1], H. Yu[1], A. Hucknall[1], S. Rangarajan[1], and A. Chilkoti[1]
[1]Duke University, Durham, NC

Track: Devices: Nano to Micro – 9-2-12

Emerging Concept of Medical Micro Devices

Chairs: Mark Feldman, Keith Johnson
Room 16B

1:30PM OP-9-2-12A Nanoporous Silica as Membrane for Implantable Ultra-thin Biofuel Cells (iBFCs)
T. Sharma[1], Y. Hu[1], M. Stoller[1], R. S. Ruoff[1], M. Feldman[2], M. Ferrari[3], and X. Zhang[1]
[1]Univ of Texas at Austin, Austin, TX, [2]Univ of Texas Health Science Center at San Antonio, San Antonio, TX, [3]Univ of Texas Health Science Center at Houston, Houston, TX

1:45PM OP-9-2-12B Immunoaffinity Microchip for Hematopoietic Stem Cell Enrichment From Human Blood
J. Zhang[1], H. Gaskins[1], and P. J. Kenis[1]
[1]Univeristy of Illinois at Urbana Champaign, Urbana, IL

2:00PM OP-9-2-12C Monodisperse Artificial Oxygen Carriers Generated on a Droplet Microfluidics Platform
S-Y. Teh[1], and A. P. Lee[1]
[1]University of California, Irvine, Irvine, CA

2:15PM OP-9-2-12D Controlled Perturbation of Cells Using Magnetic Nanorods
A. Celedon[1], and D. Wirtz[2]
[1]Catholic University/Johns Hopkins, Santiago, Metropolitana, Chile, [2]Johns Hopkins University, Baltimore, MD

2:30PM OP-9-2-12E Thermoresponsive Nanocomposite Hydrogels as Self-Cleaning Membranes for Glucose Biosensors
M. A. Grunlan[1], R. Fei[1], G. Cote[1], and A. A. Abraham[1]
[1]Texas A&M University, College Station, TX

2:45PM OP-9-2-12F Electrospun Polymer Fibers With Zinc Oxide Nanoparticles Provide Efficient Antibacterial Surfaces
J. T. Seil[1], and T. J. Webster[1]
[1]Brown University, Providence, RI

Track: Drug Delivery Systems * – 9-2-13

Targeted Drug Delivery – II

Chairs: Daniel Kamei, Justin Saul
Room 14

1:30PM OP-9-2-13A TLR9-targeted Biodegradable Nanoparticles as Immunization Vectors Protect Against West Nile Encephalitis
S. L. Demento[1], N. Bonafe[2], W. Cui[1], S. M. Kaech[1], M. J. Caplan[1], E. Fikrig[1], M. Ledizet[2], and T. M. Fahmy[1]
[1]Yale University, New Haven, CT, [2]L[2] Diagnostics, New Haven, CT

1:45PM OP-9-2-13B Lupus Immunotherapy Using a CD4 Targeted, Hydrogel-Based Nanoparticle System
M. Look[1], E. Stern[1], Q. Wang[1], L. DiPlacido[1], J. E. Craft[1], and T. M. Fahmy[1]
[1]Yale University, New Haven, CT

2:00PM OP-9-2-13C Comprehensive Immunomodulatory Treatment via Targeted Drug Delivery to ICAM-1
S. Kang[1], and M. M. Jin[1]
[1]Cornell University, Ithaca, NY

2:15PM OP-9-2-13D Transcellular Transport of Nanocarriers Across Gastrointestinal Epithelial Cells by Targeting ICAM-1
R. Ghaffarian[1], T. Bhowmick[1], and S. Muro[1]
[1]University of Maryland, College Park, MD

2:30PM OP-9-2-13E Development of Novel Single Chain Antibodies for Fibrin-targeted Theranostics
S. E. Stabenfeldt[1], W. E. Brown[1], L. Cao[1], and T. H. Barker[1]
[1]Georgia Institute of Technology / Emory University, Atlanta, GA

2:45PM OP-9-2-13F T Cell Vehicles Enhance Tumor Accumulation of Gold Nanoparticles
L. Carpin[1,2], A. Bear[2,3], J. Young[1], N. Lewinski[1], A. Foster[2,3], and R. Drezek[1]
[1]Rice University, Houston, TX, [2]Baylor College of Medicine, Houston, TX, [3]Texas Children's Hospital, Houston, TX

*** Drug Delivery Systems Track is sponsored by Acta Biomaterialia**

Track: New Frontiers in Bioengineering – 9-2-14

Integrated Cellular Systems

Chairs: K. Jimmy Hsia, Robert Nerem
Room 15

1:30PM OP-9-2-14A Integrated Cellular Systems: An Engineering Approach to Constructing Multi-cellular Organisms
R. D. Kamm[1]
[1]Massachusetts Institute of Technology, Cambridge, MA

1:45PM OP-9-2-14B Engineering the Differentiation of Multicellular Stem Cell Systems
T. C. McDevitt[1]
[1]Georgia Institute of Technology, Atlanta, GA

2:00PM OP-9-2-14C Electrophysiological Sorting of Pluripotent Stem Cell-Derived Cardiomyocytes in a Microfluidic Platform
F. B. MYERS[1], O. J. ABILEZ[2], C. K. ZARINS[2], AND L. P. LEE[1]
[1]*University of California, Berkeley, Berkeley, CA,* [2]*Stanford University, Stanford, CA*

2:15PM OP-9-2-14D Enabling Technologies for Development and Characterization of Integrated Cellular Systems
R. BASHIR[1]
[1]*UIUC, Urbana, IL*

2:30PM OP-9-2-14E Mechanical Regulation of Tissue Morphogenesis
N. GJOREVSKI[1], AND C. M. NELSON[1]
[1]*Princeton University, Princeton, NJ*

2:45PM OP-9-2-14F Synthetic Biology: From Modules to Systems
R. WEISS[1]
[1]*MIT, Cambridge, MA*

Track: Tissue Engineering * – 9-2-15

Stem Cells and Tissue Engineering – II

Chairs: Eben Alsberg, Shyni Varghese
Ballroom E

1:30PM OP-9-2-15A Bioreactor Type and Culture Parameters Significantly Influence ES Cell Differentiation
K. M. FRIDLEY[1], I. FERNANDEZ[1], R. AMBLER[1], AND K. ROY[1]
[1]*The University of Texas at Austin, Austin, TX*

1:45PM OP-9-2-15B Role of Substrate Stiffness on ESC Differentiation into Endoderm Lineage
M. JARAMILLO[1], S. SINGH[1], J. CANDIELLO[1], P. KUMTA[1], AND I. BANERJEE[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

2:00PM OP-9-2-15C Endoderm Expression in Embryonic Stem Cells is Driven by Scaffold Structure
W. HELEN[1], C. C. KING[1], AND A. J. ENGLER[1]
[1]*UC San Diego, San Diego, CA*

2:15PM OP-9-2-15D Quantification and Enhancement of Contractile Characteristics in hESC and iPSC Derived Cardiomyocytes
S. D. LUNDY[1], M. J. BLOEMINK[2], M. A. GEEVES[2], M. A. LAFLAMME[1], AND M. REGNIER[1]
[1]*University of Washington, Seattle, WA,* [2]*University of Kent, Canterbury, Kent, United Kingdom*

2:30PM OP-9-2-15E Peripheral Nerve Regeneration by Using Induced Pluripotent Stem Cell-Derived Neural Crest Stem Cells
A. WANG[1], Z. TANG[1], I-H. PARK[2], Y. ZHU[1], S. PATEL[1], G. Q. DALEY[3], AND S. LI[1]
[1]*UC Berkeley, Berkeley, CA,* [2]*Yale School of Medicine, New Haven, CT,* [3]*Harvard Medical School, Boston, MA*

2:45PM OP-9-2-15F Generation of Hematopoietic progenitors from Induced Pluripotent Stem Cells under Feeder Free System
I. FERNANDEZ[1], J. LIN[2], AND K. ROY[2]
[1]*University of Texas at Austin, Austin, TX,* [2]*University of Texas at Austin, Austin, TX*

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

Track: Tissue Engineering * – 9-2-16

Cardiovascular Tissue Engineering – III

Chairs: Guohao Dai, Mariah Hahn
Ballroom F

1:30PM OP-9-2-16A Understanding Mechanisms by Which Injectable Materials Preserve Cardiac Function Post-MI
A. RANE[1], J. S. CHUANG[1], A. SHAH[1], D. P. HU[1], N. D. DALTON[1], Y. GU[1], K. L. PETERSON[1], J. H. OMENS[1], AND K. L. CHRISTMAN[1]
[1]*University of California San Diego, La Jolla, CA*

1:45PM OP-9-2-16B Cell-Seeded Fibrin Scaffolds for Cardiac Tissue Engineering
K. S. THOMSON[1], G. D. ROBINSON[1], F. S. KORTE[1], C. M. GIACHELLI[1], B. D. RATNER[1], M. SCATENA[1], AND M. REGNIER[1]
[1]*University of Washington, Seattle, WA*

2:00PM OP-9-2-16C Evaluating the Mechanical Contribution of De-novo Matrix in Engineered Heart Valve Scaffolds
J. A. STELLA[1], N. J. AMOROSO[1], J. E. MAYER[2], W. R. WAGNER[1], AND M. S. SACKS[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*Children's Hospital Boston, Boston, MA*

2:15PM OP-9-2-16D In Situ Regeneration of the Heart Valve
D. RAGHAVAN[1], J. K. WILLIAMS[1], J. YOO[1], S. J. LEE[1], J. E. JORDAN[1], AND A. ATALA[1]
[1]*Wake Forest University, Winston-Salem, NC*

2:30PM OP-9-2-16E Characterization of Sex-related Differences in the Phenotype of Valvular Interstitial Cells
C. M. MCCOY[1], AND K. S. MASTERS[1]
[1]*University of Wisconsin-Madison, Madison, WI*

2:45PM OP-9-2-16F Comparison of Fibrin-based Engineered Tissue from Neonatal Versus Adult Human Dermal Fibroblast
Z. SYEDAIN[1], AND R. TRANQUILLO[1]
[1]*University of Minnesota, Minneapolis, MN*

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

Track: Tissue Engineering * – 9-2-17

Bioreactors and Bioprocessing in Tissue Engineering

Chairs: Milica Radisic, Vassilios Sikavitsas
Ballroom G

1:30PM OP-9-2-17A Effect of Strain on the Tensile Properties and mRNA Expression of a Tissue-Engineered Flexor Tendon
T. L. SMITH[1], P. W. WHITLOCK[1], T. M. SEYLER[1], C. N. NORTHAM[1], M. E. VAN DYKE[1], G. G. POEHLING[1], AND L. A. KOMAN[1]
[1]*Wake Forest University Health Sciences, Winston-Salem, NC*

1:45PM OP-9-2-17B hMSC Culture in a Tubular Perfusion System Enhances Late Osteoblastic Differentiation
A. B. YEATTS[1], AND J. P. FISHER[1]
[1]*University of Maryland, College Park, MD*

2:00PM OP-9-2-17C Mechanical Loading of Mesenchymal Stem Cells on Electrospun Scaffolds for Ligament Tissue Engineering
R. SHAFFER[1], J. KLUGE[2], L. DAHLGREN[3], A. GOLDSTEIN[1], AND D. KAPLAN[4]
[1]*Virginia Tech, Blacksburg, VA,* [2]*University of Pennsylvania, Philadelphia, PA,* [3]*Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, VA,* [4]*Tufts University, Medford, MA*

2:15PM OP-9-2-17D *In Situ* Bioluminescence Imaging of BMP-2 Expression in a Perfusion Bioreactor
S. J. LAPP[1], H. SHEN[1], L. A. BASHUR[1], G. WANG[1], AND A. S. GOLDSTEIN[1]
[1]*Virginia Tech, Blacksburg, VA*

PS = Poster Session
OP = Oral Presentation

2:30PM OP-9-2-17E Engineering Biomimetic Microenvironments for the Functional Regeneration of Vocal Fold Lamina Propria
A. J. Farran[1], A. K. Jha[1], R. L. Duncan[1], and X. Jia[1]
[1]*University of Delaware, Newark, DE*

2:45PM OP-9-2-17F Characterization of Engineered Tissue Development with Biaxial Mechanical Testing and Microscopy
Y. Bai[1], J. D. Humphrey[1], and A. T. Yeh[1]
[1]*Texas A&M University, College Station, TX*

*** Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

Track: Undergraduate – 9-2-18

Undergraduate Research II

Chairs: Connie Hall, Hossein Tavana
Room 13B

1:30PM OP-9-2-18A Using Ultrasonic Decorrelation Algorithms To Improve *In Vivo* Visualization of Injected Anesthetics
S. L. Lipman[1], K. R. Nightingale[1], S. Grant[2], D. MacLeod[2], and M. L. Palmeri[1,2]
[1]*Duke University, Durham, NC,* [2]*Duke University Medical Center, Durham, NC*

1:45PM OP-9-2-18B Experimentation and Modeling of Beta-cell Ca2+ Oscillations
P. Eich[1], N. Tamarina[1], L. Fridyland[1], and L. Philipson[1]
[1]*University of Chicago, Chicago, IL*

2:00PM OP-9-2-18C - Developing a Microbead-based, maAPC Platform to Generate Antigen-Specific Cytotoxic Lymphocytes
A. A. Tu[1], Y-L. Chiu[1], M. Oelke[2], and J. Schneck[2]
[1]*Johns Hopkins University, Baltimore, MD,* [2]*Johns Hopkins University School of Medicine, Baltimore, MD*

2:15PM OP-9-2-18D Monovalent PEGylated Fibrin 'A' Knob Peptides Inhibit Hemostatic Clot Formation
N. M. Aboujamous[1], S. E. Stabenfeldt[1], A. Soon[1], and T. H. Barker[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

2:30PM OP-9-2-18E Cranberry Juice Does Not Alter Bacterial Growth but May Inhibit Bacterial Adhesion
R. A. Richard[1], A. Tao[2], Y. Zhang[2], and T. Camesano
[21]*Bay Path College, Longmeadow, MA,* [2]*Worcester Polytechnic Institute, Worcester, MA*

2:45PM OP-9-2-18F WRAP UP

Track: Tissue Engineering * – 9-3-1

Novel Biomaterials and Scaffolds – V

Chairs: Gudrun Schmidt, Anirban Sen Gupta

Room 12A

3:15PM OP-9-3-1A Interfacial Polyelectrolyte Complexation (IPC) Fibers and Scaffolds for Tissue Engineering

A. C. Wan[1], B. C. Tai[1], K. Narayanan[1], M. F. Leong[1], J. K. Toh[1], H. Lu[1], C. Du[1], K-J. Leck[1], S. Gao[1], and J. Y. Ying[1]

[1]Institute of Bioengineering and Nanotechnology, Singapore, Singapore

3:30PM OP-9-3-1B Electrospun Scaffolds with Depth-dependent Alignment to Mimic the Structure of Articular Cartilage

I. L. Kim[1], H. G. Sundararaghavan[1], and J. A. Burdick[1]

[1]University of Pennsylvania, Philadelphia, PA

3:45PM OP-9-3-1C Tunable Silk Fibers: Mimicking Natural Silkworm Processing with Microfluidics

M. E. Kinahan[1], E. Filippidi[2], S. Köster[3], H. M. Evans[4], T. Pfohl[5], D. L. Kaplan[6], and J. Y. Wong[1]

[1]Boston University, Boston, MA, [2]New York University, New York, NY, [3]Georg-August-Universität Goettingen, Goettingen, Germany, [4]Max-Planck-Institute for Dynamics and Self-Organization, Goettingen, Germany, [5]Universität Basel, Basel, Switzerland, [6]Tufts University, Medford, MA

4:00PM OP-9-3-1D Active Porous Scaffolds for Triggered Drug and Cell Delivery

X. Zhao[1], C. A. Cezar[1], and D. J. Mooney[1]

[1]Harvard University, Cambridge, MA

4:15PM OP-9-3-1E Trifunctional Porogens for the Development of an Injectable Putty to Treat Traumatic Bone Defects

R. Buchanan[1,2], M. Murphy[2], D. Yoon[3], X. Liu[1,2], K. Kasper[3], P. Simmons[2], A. Mikos[3], M. Ferrari[1,2], E. Tasciotti[2],, A.Henslee[3], and M. Nair[3]

[1]The University of Texas at Austin, Austin, TX, [2]The University of Texas Health Science Center at Houston, Houston, TX, [3]Rice University, Houston, TX

4:30PM OP-9-3-1F Replicating the Topography of Intestinal Basement Membrane

C. Pfluger[1], and R. Carrier[1]

[1]Northeastern University, Boston, MA

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

Track: Systems Biology, Bioinformatics and Computational Biology – 9-3-2

Systems Cell Biology

Chairs: Timothy Galitski, Pamela Kreeger

Room 12B

3:15PM OP-9-3-2A Single Cell Analysis Reveals that HIV Viral Integration Position Alters the Mode of Stochastic HIV Gene Expression from Poisson to Infrequent Bursting

J. E. Foley[1], R. Skukspy[2], A. Arkin[1,2], and D. V. Schaffer[1]

[1]UC Berkeley, Berkeley, CA, [2]Lawerence Berkeley National Lab, Berkeley, CA

3:30PM OP-9-3-2B A Comprehensive Computational Model of Mycoplasma Genitalium

J. Sanghvi[1], J. Karr[1], and M. Covert[1]

[1]Stanford University, Stanford, CA

3:45PM OP-9-3-2C Temporal Cascades of Perturbed Biological Processes in Engineered Liver Mimics

C. D. Lasher[1], Y. Kim[1], T. Murali[1], and P. Rajagopalan[1]

[1]Virginia Tech, Blacksburg, VA

4:00PM OP-9-3-2D Pairwise Agonist Scanning of Human Platelets Reveals the High-dimensional Calcium Response to Combinatorial Mediators of Thrombosis

M. S. Chatterjee[1], J. E. Purvis[1], and S. L. Diamond[1]

[1]University of Pennsylvania, Philadelphia, PA

4:15PM OP-9-3-2E A Common Mechanism of Antifungal-Induced Cell Death Mediated by Reactive Oxygen Species

P. A. Belenky[1,2], D. Camacho[1], and J. J. Collins[1,2]

[1]Howard Hughes Medical Institute, Boston, MA, [2]Boston University, Boston, MA

4:30PM OP-9-3-2F Computational Analysis of the Compartmentalization of Phosphatase-Mediated Regulation of EGFR

C. S. Monast[1], and M. J. Lazzara[1]

[1]University of Pennsylvania, Philadelphia, PA

Track: Biomedical Imaging and Optics – 9-3-3

Imaging Hardware and Software

Chairs: May Wang, Steve Wright

Room 19A

3:15PM OP-9-3-3A - An Eight Channel Parallel Transmitter for use with Existing Systems

N. A. Hollingsworth[1], K. L. Moody[1], K. Feng[1], M. P. McDougall[1], and S. M. Wright[1]

[1]Texas A&M University, College Station, TX

3:30PM OP-9-3-3B - A 64-Channel Parallel MRI Transmitter

K. Feng[1], N. A. Hollingsworth[1], J. C. Bosshard[1], C-W. Chang[1], K. L. Moody[1], M. P. McDougall[1], and S. M. Wright[1]

[1]Texas A&M University, College Station, TX

3:45PM OP-9-3-3C - Automatic Color Segmentation of Histological Images for Cancer Diagnosis

S. Kothari[1], Q. Chaudry[1], J. H. Phan[2], A. N. Young[3], and M. D. Wang[2]

[1]Georgia Tech, Atlanta, GA, [2]Georgia Tech and Emory University, Atlanta, GA, [3]Emory University, Atlanta, GA

4:00PM OP-9-3-3D - TissueWikiMobile: An Easy Way to Access Large-scale Histology Image Data Using iPhone

C. Cheng[1], T. H. Stokes[1], S. Hang[1], and M. D. Wang[1]

[1]Georgia Institute of Technology, Atlanta, GA

4:15PM OP-9-3-3E - Soft-threshold Filtering Approach for Compressive Sampling based Computed Tomography Reconstruction

H. Yu[1], and G. Wang[2]

[1]Wake Forest University Health Sciences, Winston-Salem, NC, [2]Virginia Tech., Blacksburg, VA

4:30PM OP-9-3-3F - Pregnant Female Anthropometry from Computed Tomography Scan for Finite Element Model Development

K. L. Loftis[1], M. G. Halsey[2], E. Y. Anthony[2], S. M. Duma[3], and J. D. Stitzel[1]

[1]VT-WFU Center for Injury Biomechanics, Winston-Salem, NC, [2]Wake Forest University School of Medicine, Winston-Salem, NC, [3]VT-WFU Center for Injury Biomechanics, Blacksburg, VA

PS = Poster Session
OP = Oral Presentation

Track: Neural Engineering – 9-3-4

Neural Electrode Tissue Interface

Chairs: Jeff Capadona, Dustin Tyler
Room 19B

3:15PM OP-9-3-4A Improving Neural Implant Biocompatibility via Biomimetic Design
T. Cui[1,2]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*McGowan Institute for Regenerative Medicine, Pittsburgh, PA*

3:30PM OP-9-3-4B Integrating the Prodrug Approach for Therapeutic Interventions at the Neural Interface
W. He[1], and Y. Cao[1]
[1]*The University of Tennessee, Knoxville, TN*

3:45PM OP-9-3-4C Biodegradable Electronic Materials and Devices for Neural Interfaces
C. J. Bettinger[1]
[1]*Carnegie Mellon University, Pittsburgh, PA*

4:00PM OP-9-3-4D *In Situ* Analysis of Brain Tissue-Implant Interfaces
J. Williams[1]
[1]*Univ. of Wisconsin- Madison, Madison, WI*

4:15PM OP-9-3-4E Biological Constraints on Reliable Neural Interfacing
R. V. Bellamkonda[1]
[1]*Georgia Institute of Technology, Atlanta, GA*

4:30PM OP-9-3-4F Molecular Approaches to Understanding and Modulating Gliosis at the Cortical Electrode Interface
J. R. Capadona[1,2], K. A. Potter[1,2], and B. Gui[1,2]
[1]*Case Western Reserve University, Cleveland, OH,* [2]*L. Stokes Cleveland Department of Veteran's Affairs, Cleveland, O*

Track: Biomedical Engineering Education – 9-3-5

Learning Modules and Instructional Materials

Chairs: Tim Allen
Room 18A

3:15PM OP-9-3-5A Natural Engineering: Developmental Biology as a Frontier for Engineering and Therapeutic Discovery
J. Butcher[1]
[1]*Cornell University, Ithaca, NY*

3:30PM OP-9-3-5B Introducing Cellular Labs in BME Undergraduate Courses
S. Archer[1]
[1]*Cornell University, Ithaca, NY*

3:45PM OP-9-3-5C An Argument for Writing about the History of Technology as Part of an Engineering Education
R. G. Voss[1], and M. Ali[1]
[1]*UT at Austin, Austin, TX*

4:00PM OP-9-3-5D Project Modules in a Course on Cellular Bioengineering
A. L. Sieminski[1]
[1]*Franklin W. Olin College of Engineering, Needham, MA*

4:15PM OP-9-3-5E Rationale and Resources for a Course Module in Athletic Performance Engineering
D. C. Clarke[1], and P. F. Skiba[2]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*Jersey Shore University Medical Center, Neptune, NJ*

4:30PM OP-9-3-5F Engineers Be Taught To Be Creative?
J. Tranquillo[1]
[1]*Bucknell University, Lewisburg, PA*

Track: Cellular and Molecular Engineering – 9-3-6

The Physics and Engineering of Cancer Cells and Their Microenvironment

Chairs: Nastaran Kuhn, Jerry Lee
Room 18B

3:15PM OP-9-3-6A Cancer Cell Motility in a 3D Matrix
D. Wirtz[1]
[1]*Johns Hopkins University, Baltimore, MD*

3:30PM OP-9-3-6B Using Microfluidics for Real-Time Studies of Tumor Cell Behavior under Flow or Interacting with an Intact Endothelium
I. Zervantonakis[1], W. J. Polacheck[1], J. L. Charest[2], and R. D. Kamm[1]
[1]*Massachusetts Institute of Technology, Cambridge, MA,* [2]*The Charles Stark Draper Laboratory, Cambridge, MA*

3:45PM OP-9-3-6C Metastatic Cells from Breast and Prostate Generate Increased Force Compared to Non-Metastatic Cells
C. Kraning-Rush[1], S. Carey[1], J. Califano[1], and C. Reinhart-King[1]
[1]*Cornell University, Ithaca, NY*

4:00PM OP-9-3-6D Cell Stiffness Dictates Cytoskeleton Dependent Cancer Cell Invasion and Signaling
V. Swaminathan[1], K. Mythreye[2], E. O'Brien[1], G. C. Blobe[2], and R. Superfine[1]
[1]*University of North Carolina, Chapel Hill, NC,* [2]*Duke University, Durham, NC*

4:15PM OP-9-3-6E Vascular Recruitment of Retinoblastoma Stem Cells by Multicellular Adhesive Interactions with Circulating Leukocytes
Y. Geng[1], G. M. Seigel[2], and M. R. King[1]
[1]*Cornell University, Ithaca, NY,* [2]*State University of New York at Buffalo, Buffalo, NY*

4:30PM OP-9-3-6F Interstitial Flow Affects Invasive Potentials of Metastatic Tumor Cells
H. Qazi[1], Z-D. Shi[1], X-Y. Ji[1], and J. M. Tarbell[1]
[1]*The City College of New York, New York, NY*

Track: Cardiovascular Engineering - 9-3-7

Heart Valve Biomechanics II: Mechanics and Simulation

Chairs: Zhaoming He, Sarah Wells
Room 18C

3:15PM OP-9-3-7A An FSI Study of Aortic Valve Sparing Procedures on Coaptation and Durability
G. Marom[1], R. Haj-Ali[1], M. Rosenfeld[1], E. Raanani[2], and H. J. Schaefers[3]
[1]*Tel-Aviv University, Tel Aviv, Israel,* [2]*Chaim Sheba Medical Center, Tel Hashomer, Israel,* [3]*University Hospitals of Saarland, Homburg, Saarland, Germany*

3:30PM OP-9-3-7B Biomechanical Remodeling in Valves and Aortas of FBN1 Mutant Mice: Insights into Marfan Syndrome
R. A. Gould[1], R. Sinha[1], H. Aziz[2], R. Rouf[2], D. Judge[2], and J. Butcher[1]
[1]*Cornell University, Ithaca, NY,* [2]*, Johns Hopkins University School of Medicine, Baltimore, MD*

3:45PM OP-9-3-7C In Situ Estimation of Extracellular Matrix Stiffness-Interstitial Cell Mechanical Coupling in the Heart Valve Leaflet
M. S. Sacks[1]
[1]*University of Pittsburgh, Pittsburgh, PA*

4:00PM OP-9-3-7D Vortex Interaction and Dissipation under Edge-to-Edge Repair
L. SHI[1], Y. HU[1], AND Z. HE[1]
[1]*Texas Tech University, Lubbock, TX*

4:15PM OP-9-3-7E *In Vivo* Dynamic Stresses in the Functional Mitral Valve
C. E. ECKERT[1], M. MORITA[2], K. KOOMALSINGH[2], M. MINAKAWA[2], R. C. GORMAN[2], J. H. GORMAN III[2], AND M. S. SACKS[1]
[1]*University of Pittsburgh, Pittsburgh, PA,* [2]*University of Pennsylvania, Philadelphia, PA*

4:30PM OP-9-3-7F Remodeling of the Mitral Valve in Response to the Physiological Effects of Pregnancy
C. PIERLOT[1], A. MOELLER[1], M. LEE[1], AND S. WELLS[1]
[1]*Dalhousie University, Halifax, NS, Canada*

Track: Cardiovascular Engineering – 9-3-8

Thrombosis and Hemostasis

Chairs: Guillermo Ameer, Mariah Hahn
Room 18D

3:15PM OP-9-3-8A *In Vitro* Modulation of Shear-Induced Platelet Sensitization
J. SHERIFF[1], G. GIRDHAR[1], M. XENOS[1], J. JESTY[1], AND D. BLUESTEIN[1]
[1]*Stony Brook University, Stony Brook, NY*

3:30PM OP-9-3-8B - Dynamic Spreading of Platelets using Reflection Interference Contrast Microscopy
D. LEE[1], K. P. FONG[1], L. F. BRASS[1], AND D. A. HAMMER[1]
[1]*University of Pennsylvania, Philadelphia, PA*

3:45PM OP-9-3-8C - Novel FRET Proteins that Quantify Structural Changes in VWF and ADAMTS-13 Mediated Proteolysis
K. M. DAYANANDA[1], S. GOGIA[1], G. P. VISENTIN[2], AND S. NEELAMEGHAM[1]
[1]*State University of New York at Buffalo, Buffalo, NY,* [2]*GTI Diagnostics, Waukesha, WI*

4:00PM OP-9-3-8D - Development of a Novel Nano Particle Scaffold to Regenerate Endothelium *In Situ*
L-C. SU[1,2], R. TRAN[1,2], J. YANG[1,2], AND K. T. NGUYEN[1,2]
[1]*University of Texas at Arlington, Arlington, TX,* [2]*University of Southwestern Medical Center at Dallas, Dallas, TX*

4:15PM OP-9-3-8E - In Vivo Performance of Small Diameter Vascular Grafts Lined with Endothelial Progenitor Cells Overexpressing Thrombomodulin
J. D. STRONCEK[1], R. LICHENG[1], J. H. LAWSON[2], B. KLITZMAN[1], AND W. M. REICHERT[1]
[1]*Duke University, Durham, NC,* [2]*Duke University Medical Center, Durham, NC*

4:30PM OP-9-3-8F - Thrombogenicity Optimization of Ventricular Assist Devices (VAD) - Case-Study with the HeartAssist 5
G. GIRDHAR[1], Y. ALEMU[1], M. XENOS[1], R. BENKOWSKI[2], M. SLEPIAN[3], J. JESTY[1], S. EINAV[1], AND D. BLUESTEIN[1]
[1]*Stony Brook University, Stony Brook, NY,* [2]*MicroMed Cardiovascular Inc., Houston, TX,* [3]*University of Arizona, Tucson, AZ*

Track: Respiratory Engineering – 9-3-9

Lung Computational Fluid Dynamics and Particle Deposition

Chairs: Ching-Long Lin, Merryn Tawhai
Room 17A

3:15PM OP-9-3-9A Effect of Alveolar Wall Motion on Simulated Aerosol Dispersion in the Lung
C. DARQUENNE[1], AND B. MA[2]
[1]*University of California, San Diego, La Jolla, CA,* [2]*University of Vermont, Burlington, VT*

3:30PM OP-9-3-9B An Initial Analysis of Enhanced Condensational Growth (ECG) for Respiratory Drug Delivery
G. TIAN[1], G. SU[1], M. HINDLE[1], AND P. W. LONGEST[1]
[1]*Virginia Commonwealth University, Richmond, VA*

3:45PM OP-9-3-9C Prediction of the Focal Sites of Ozone-Induced Tissue Injury in the Respiratory Tract through Numerical Simulation in Anatomically-Accurate Airway Structures
B. KESHAVARZI[1], J. ULTMAN[2], AND A. BORHAN[2]
[1]*The Pennsylavnia State University, University Park, PA,* [2]*The Pennsylvania State University, University Park, PA*

4:00PM OP-9-3-9D Comparative Computational Fluid Dynamics Simulations of Airflows in the Full Respiratory System of Rats, Monkeys, and Humans
S. KABILAN[1], J. P. CARSON[2], R. E. JACOB[2], A. P. KUPRAT[2], K. R. MINARD[2], R. GLENNY[1], E. M. POSTLETHWAIT[3], D.R. EINSTEIN[2], AND R. A. CORLEY[2]
[1]*University of Washington, Seattle, WA,* [2]*Pacific Northwest National Laboratory, Richland, WA,*[3]*University of Alabama at Birmingham, Birmingham, AL*

4:15PM OP-9-3-9E Numerical Simulations of the Propagation of a Liquid Plug through a 2D Airway Bifurcation
B. L. VAUGHAN, JR.[1], AND J. B. GROTBERG[1]
[1]*University of Michigan, Ann Arbor, MI*

4:30PM OP-9-3-9F Multiscale Simulation of Airflow and Particle Transport in a CT-based Human Airway Model
C-L. LIN[1], A. R. LAMBERT[1], M. H. TAWHAI[2], AND E. A. HOFFMAN[1]
[1]*The University of Iowa, Iowa City, IA,* [2]*University of Auckland, Auckland, New Zealand*

Track: Orthopedic and Rehabilitation Engineering – 9-3-10

Skeletal Biomechanics

Chairs: Yingxin Gao, Deepak Vashishth
Room 17B

3:15PM OP-9-3-10A A Finite Element Model of the Effects of Subchondral Bone Geometrical and Mechanical Properties on Cartilage Axial Contact Loading
K. A. WALLER[1], M. J. RAINBOW[1], D. C. MOORE[2], AND J. T. CRISCO[2]
[1]*Brown University, Providence, RI,* [2]*Alpert Medical School of Brown University and Rhode Island Hospital, Providence, RI*

3:30PM OP-9-3-10B Calcium- and Phosphorus-Supplemented Diet Increases Bone Quantity and Strength in Exercising Mice
M. A. FRIEDMAN[1], A. M. BAILEY[1], AND D. H. KOHN[1]
[1]*University of Michigan, Ann Arbor, MI*

3:45PM OP-9-3-10C Local and Systemic Effects of Dynamic Hydraulic Pressure Stimulation on Mitigation of Bone Loss
M. HU[1], J. CHENG[1], S. FERRERI[1], F. SERRA-HSU[1], W. LIN[1], AND Y-X. QIN[1]
[1]*Stony Brook University, Stony Brook, NY*

PS = Poster Session
OP = Oral Presentation

4:00PM OP-9-3-10D Static Evaluation of Shear Loading Associated With Extension/Compression of the CerviCore Intervertebral Disc
A. Valdevit[1,2], K. Stascavage[1], M. Brophy[1], A. Lisi[1], T. Errico[2], and A. Ritter[1]
[1]*The Stevens Institute of Technology, Hoboken, NJ,* [2]*NYU Hospital for Joint Diseases, New York, NY*

4:15PM OP-9-3-10E Effects of Muscle Activation on Occupant Kinematics in Frontal Sled Tests
S. Beeman[1], A. Kemper[1], M. Madigan[2], and S. Duma[1]
[1]*Virginia Tech - Wake Forest, Blacksburg, VA,* [2]*Virginia Tech, Blacksburg, VA*

4:30PM OP-9-3-10F The Rat Skull is an "Energy Pathway" to the Brain during Shock Wave Exposure
R. Bolander[1], C. Bir[1], B. Mathie[1], and P. VandeVord[1,2]
[1]*Wayne State University, Detroit, MI,* [2]*John D. Dingell VA Medical Center, Research & Development Service, Detroit, MI*

Track: Devices: Nano to Micro – 9-3-11

Biosensors, Bio-Interfaces and Implantable Devices – II

Chairs: John McDevitt, John X.J. Zhang
Room 16A

3:15PM OP-9-3-11A Bioactive Electroconductive Hydrogels as Hosting Membranes for Enzyme-based Biosensors
C. Kotanen[1], and A. Guiseppi-Elie[2]
[1]*Clemson University, Anderson, SC,* [2]*Clemson University, Clemson, SC*

3:30PM OP-9-3-11B Magnetoelastic Materials as Novel Bioactive Coatings for Control of Cell Adhesion
E. Vlaisavljevich[1], H. Holmes[1], K. Ong[1], and R. Rajachar[1]
[1]*Michigan Technological University, Houghton, MI*

3:45PM OP-9-3-11C *In Vivo* Glucose Monitoring with Polyethylene Glycol (PEG) Bonded Hydrogel Fibers
Y. Heo[1,2], H. Shibata[2,3], T. Okitsu[2,4], Y. Tsuda[1,2], T. Kawanish[2,3], and S. Takeuchi[1,2]
[1]*The University of Tokyo, Meguro-ku, Tokyo, Japan,* [2]*BEANS Project, Meguro-ku, Tokyo, Japan,* [3]*TERUMO Co., Ashigarakami, Kanagawa, Japan,* [4]*Kyoto University, Sakyo, Kyoto, Japan*

4:00PM OP-9-3-11D Large Deflection, Linear Transduction Pressure Sensor for Ventricular Research
J. V. Clark[1], and A. G. Akingba[2]
[1]*Purdue University, West Lafayette, IN,* [2]*Indiana University, Indianapolis, IN*

4:15PM OP-9-3-11E Surface Plasmon Resonance for Dynamic Analysis of Cell Secreting Behavior
S-H. Wu[1], M-T. Wei[2], A. Chiou[1], P-K. Wei[3], and X. Cheng[2]
[1]*National Yang-Ming University, Taipei, Taiwan, Taiwan,* [2]*Lehigh University, Bethlehem, PA,* [3]*Academia Sinica, Taipei, Taiwan, Taiwan*

4:30PM OP-9-3-11F Development of a Minimally Invasive Bladder Pressure Monitoring System
J. N. Weaver[1], J. C. Alspaugh[1], and B. Behkam[1]
[1]*Virginia Tech, Blacksburg, VA*

Track: New Frontiers in Bioengineering – 9-3-12

Systems-Level Approaches in Bioengineering

Chairs: Jason Papin, Shayn Peirce-Cottler
Room 16B

3:15PM OP-9-3-12A Direct Reprogramming as a Random Drift in Cell State
K. Saha[1], J. Hanna[1], B. Pando[2], A. van Oudenaarden[2], and R. Jaenisch[1]
[1]*Whitehead Institute/MIT, Cambridge, MA,* [2]*MIT, Cambridge, MA*

3:30PM OP-9-3-12B Proteolytic Activity Matrix (PrAM) Analysis for Simultaneous Determination of Multiple Protease Activities
M. A. Miller[1], L. Barkal[1], K. Jeng[2], L. G. Griffith[1], and D. A. Lauffenburger[1]
[1]*Massachusetts Inst. of Tech., Cambridge, MA,* [2]*Boston Univ. School of Public Health, Boston, MA*

3:45PM OP-9-3-12C Rapid Miniaturized Assays to Quantify Glycosyltransferase Activity
S. A. Patil[1], and S. Neelamegham[1]
[1]*The State University of New York at Buffalo, Buffalo, NY*

4:00PM OP-9-3-12D *Ex Vivo* Perfusion Optimization of Donor Liver Grafts for Transplantation and Cell Isolation
M-L. Izamis[1], T. Herman[1], B. Uygun[1], F. Berthiaume[1], K. Uygun[1], and M. Yarmush[1]
[1]*Massachusetts General Hospital, Boston, MA*

4:15PM OP-9-3-12E Model of Lingual Motion During Swallowing Derived From Mechanics of Myofiber Tracts Imaged by MRI
S. M. Mijailovich[1,2], B. Stojanovic[3,4], M. Kojic[1,5], A. Liang[6], V. J. Wedeen[7], and R. J. Gilbert[2]
[1]*Harvard School of Public Health, Boston, MA,* [2]*Caritas St. Elizabeth's Medical Center, Boston, MA,* [3]*Research and Development Center for Bioengineering, Kragujevac, Serbia, Yugoslavia,* [4]*University of Kragujevac, Kragujevac, Serbia, Yugoslavia,* [5]*The University of Texas Health Science Center, Houston, TX,* [6]*Massachusetts Institute of Technology, Cambridge, MA,* [7]*Massachusetts General Hospital, Charlestown, MA*

4:30PM OP-9-3-12F A Hybrid Game Theoretical Approach for Stochastic Control of Drug Delivery in HIV Infection
J. Wu[1], S. Lenaghan[1], and M. Zhang[1]
[1]*University of Tennessee, Knoxville, TN*

Track: Drug Delivery Systems* – 9-3-13

Targeted Drug Delivery – III

Chairs: Daniel Kamei, Justin Saul
Room 14

3:15PM OP-9-3-13A Engineered Transferrin Improves the Delivery of Therapeutics to Brain Tumors
D. J. Yoon[1], G. Y. Lam[1], B. H. Kwan[1], F. C. Chao[1], T. P. Nicolaides[2], J. J. Phillips[2], A. B. Mason[3], W. A. Weiss[2], and D. T. Kamei[1]
[1]*UCLA, Los Angeles, CA,* [2]*UCSF, San Francisco, CA,* [3]*University of Vermont, Burlington, VT*

3:30PM OP-9-3-13B Nitric Oxide Delivery to Glioblastomas: Specificity and Therapeutic Efficacy
S. Safdar[1], and L. J. Taite[1]
[1]*Georgia Institute of Engineering, Atlanta, GA*

3:45PM OP-9-3-13C Development of Enzyme-Activated Nanoconjugates for Hepatic Cancer Therapy
S. Medina[1], M. Chevliakov[1], D. S. Shewach[1], W. D. Ensminger[1], and M. E. El-Sayed[1]
[1]*University of Michigan, Ann Arbor, MI*

4:00PM OP-9-3-13D Targeted Virus Nanoparticles for Localized Chemotherapy of Breast Cancer
F. Wei[1], K. I. McConnell[1], T-K. Yu[2], and J. Suh[1]
[1]Rice University, Houston, TX, [2]The University of Texas M. D. Anderson Cancer Center, Houston, TX

4:15PM OP-9-3-13E Targeting Pc 4 Conjugated Gold Nanoparticles to Tumors Improves Drug Accumulation and PDT Efficacy
A-M. Broome[1], Y. Cheng[1], J. Meyers[1], R. S. Agnes[1], M. E. Kenney[1], C. Burda[1], and J. P. Basilion[1]
[1]Case Western Reserve University, Cleveland, OH

4:30PM OP-9-3-13F Stem Cell-Directed Theranostic Nanovectors for Cancer Intervention
J. O. Martinez[1], F. Amaya[2], R. Serda[1], X. Liu[1], M. Ferrari[1,3], M. Kolonin[2], and E. Tasciotti[1]
[1]The University of Texas Health Science Center, Houston, TX, [2]The University of Texas Health Science Center - Houston, Houston, TX, [3]The University of Texas MD Anderson Cancer Center, Houston, TX

*** Drug Delivery Systems Track is sponsored by Acta Biomaterialia**

Track: New Frontiers in Bioengineering – 9-3-14

Cellular and Subcellular Mechanics

Chairs: Roger Kamm, Mohammed Mofrad
Room 15

3:15PM OP-9-3-14A Measuring Mechanical Tension Across Vinculin Reveals Regulation of Focal Adhesion Dynamics
B. D. Hoffman[1], C. Grashoff[1], M. D. Brenner[2], R. Zhou[2], M. Parsons[3], M. T. Yang[4], M. A. McLean[2], S. G. Sligar[2], C. S. Chen[4], T. Ha[2], and M. A. Schwartz[1]
[1]University of Virginia, Charlottesville, VA, [2]University of Illinois, Urbana, IL, [3]King's College London, London, SE[1] [1]UL, United Kingdom, [4]University of Pennsylvania, Philadelphia, PA

3:30PM OP-9-3-14B Programmed Subcellular to Study the Dynamics of Cell Detachment
B. E. Wildt[1], P. C. Searson[1], and D. Wirtz[1]
[1]Johns Hopkins University, Baltimore, MD

3:45PM OP-9-3-14C Mechanical Behavior of Neurons in Live Drosophila Embryos
J. Rajagopalan[1], A. Tofangchi[1], and T. A. Saif[1]
[1]University of Illinois at Urbana-Champaign, Urbana, IL

4:00PM OP-9-3-14D The Cell Nucleus as a Dominant Structure in the Mechanics of Adult Stem Cells
A. J. Ribeiro[1], and K. N. Dahl[1]
[1]Carnegie Mellon University, Pittsburgh, PA

4:15PM OP-9-3-14E A Coarse-grained Model of the Functional State of the Nuclear Pore Complex
R. Moussavi Baygi[1], Y. Jamali[1], R. Karimi[2], and M. Mofrad[1]
[1]UC Berkeley, Berkeley, CA, [2]Massachusetts Institute of Technology, Cambridge, MA

4:30PM OP-9-3-14F Substrate Stiffness and Cell Area Predict Traction Stresses in Single Cells and Cells in Contact
J. P. Califano[1], and C. A. Reinhart-King[1]
[1]Cornell University, Ithaca, NY

Track: Tissue Engineering * – 9-3-15

Stem Cells and Tissue Engineering – III

Chairs: Catherine Kuo, Fan Yang
Ballroom E

3:15PM OP-9-3-15A Geometric Control of Stem Cell Motility in 3D Synthetic Scaffolds
S. Peyton[1]
[1]MIT, Cambridge, MA

3:30PM OP-9-3-15B A Multilayer Hydrogel Capable of Regenerating Zonally Organized Articular Cartilage from a Single Stem Cell Population
L. H. Nguyen[1], N. Saxena[1], and K. Roy[1]
[1]University of Texas at Austin, Austin, TX

3:45PM OP-9-3-15C Elastomeric Tissue Constructs Mimicking Structural and Mechanical Properties and 3-D Cellular Anisotropy of Soft Tissues
J. Guan[1], F. Wang[1], and Z. Li[1]
[1]The Ohio State University, Columbus, OH

4:00PM OP-9-3-15D Effects of Nanog and Oct4 Overexpression on Mesenchymal Stem Cells for Vascular Tissue Engineering
J. Han[1], S. Row[1], D. D. Swartz[2], and S. T. Andreadis[1]
[1]University at Buffalo, The State University of New York, Amherst, NY, [2]Women and Children's Hospital of Buffalo, University at Buffalo, The State University of New York, Buffalo, NY

4:15PM OP-9-3-15E Engineering Stem Cell-interactive Biomaterials for the Treatment of Inflammatory Diseases
C. Griffith[1], A. L'huillier[2], D. Bolikal[1], Y. Shi[3], J. Kohn[1], and P. V. Moghe[1]
[1]Rutgers University, Piscataway, NJ, [2]Robert Wood Johnson Medical School, UMDNJ, Piscataway, NJ, [3]Robert Wood Johnson Medical School, Piscataway, NJ

4:30PM OP-9-3-15F Enhancement of Skeletal Muscle Stem Cell Engrafment by Dual Delivery of VEGF and IGF-1 from a Macroporous Alginate Gel
C. Borselli[1], C. A. Cezar[1], D. Shvartsman[1], H. H. Vandenburgh[2], and D. J. Mooney[1]
[1]Harvard University, Cambridge, MA, [2]Brown University, Providence, RI

*** Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

Track: Tissue Engineering * – 9-3-16

Controlled Release in Tissue Engineering

Chairs: Debra Auguste, Danielle Benoit
Ballroom F

3:15PM OP-9-3-16A Release of TGF- from PEGylated Fibrin Gels Promotes EC Stabilization and SMC Differentiation
C. T. Drinnan[1], R. S. Stowers[1], M. A. Alexander[1], and L. J. Suggs[1]
[1]University of Texas at Austin, Austin, TX

3:30PM OP-9-3-16B Sustained Protein Release from Novel Aptamer-Functionalized Hydrogels
B. Soontornworajit[1], J. Zhou[1], M. T. Shaw[1], T-H. Fan[1], and Y. Wang[1]
[1]University of Connecticut, Storrs, CT

3:45PM OP-9-3-16C Electrospun Fiber – Hydrogel Controlled Release Composites
N. Han[1], J. Johnson[1], K. Parikh[1], P. Bradley[1], A. Hissong[1], J. Lannutti[1], and J. O. Winter[1]
[1]The Ohio State University, Columbus, OH

PS = Poster Session
OP = Oral Presentation

4:00PM OP-9-3-16D Covalent Conjugation of Transforming Growth Factor-beta1 to Fibrin Hydrogel for Tissue Engineering
M-S. LIANG[1], AND S. T. ANDREADIS[1]
[1]*State University of New York at Buffalo, Amherst, NY*

4:15PM OP-9-3-16E Nano-Structured Silicon/Polymer Composite Microspheres for Sustained Release of Biomolecules
D. FAN[1]
[1]*The University of Texas Health Science Center at Houston, Houston, TX*

4:30PM OP-9-3-16F CANCELED

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

Track: Tissue Engineering * – 9-3-17

Bioinspired Materials

Chairs: Joel Collier, Sarah Stabenfeldt
Ballroom G

3:15PM OP-9-3-17A Bioinspired Collagen-Binding Peptidoglycans – Designing Key Tissue Ingredients for Tissue Engineering
J. PADERI[1], K. STUART[1], AND A. PANITCH[1]
[1]*Purdue University, West Lafayette, IN*

3:30PM OP-9-3-17B Tunable Proteolytic Degradation of Molecularly Engineered PEG Hydrogels to Enhance Cellular Invasion
J. PATTERSON[1], AND J. A. HUBBELL[1]
[1]*Ecole Polytechnique Fédérale de Lausanne, Lausanne, Vaud, Switzerland*

3:45PM OP-9-3-17C General Bioinspired Platform for the Engineering of Novel "Smart" Protein-Polymers
F. GARCIA QUIROZ[1], AND A. CHILKOTI[1]
[1]*Duke University, Durham, NC*

4:00PM OP-9-3-17D Engineering Biomaterial-Associated Complement Activation for Immune Modulation
S. N. THOMAS[1], M. A. SWARTZ[1], AND J. A. HUBBELL[1]
[1]*Swiss Federal Institute of Technology, Lausanne, VD, Switzerland*

4:15PM OP-9-3-17E S1P-Enhanced Vascularization in Porous Poly(ethylene glycol) Modular Scaffolds In Vivo
P. K. Nguyen[1], M. R. MacEwan[1], L. Li[1], L. V. Wang[1], and D. L. Elbert[1]
[1]*Washington University in St. Louis, Saint Louis, MO*

4:30PM OP-9-3-17F Insights from Biology for the Development of Tissue Engineering Scaffolds: the Beetle Exoskeleton
P. A. HUBER[1], J. LOMAKIN[1], R. THOMAS[2], Y. ARAKANE[3], K. J. KRAMER[3], R. W. BEEMAN[4], M. R. KANOST[3], AND S. H. GEHRKE[1]
[1]*University of Kansas, Lawrence, KS,* [2]*Haskell Indian Nations University, Lawrence, KS,* [3]*Kansas State University, Manhattan, KS,* [4]*Grain Marketing and Production Research Center, US Department of Agriculture, Manhattan, KS*

***Tissue Engineering Track sponsored by Kinetic Concepts, Inc.**

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KEY TO PROGRAM CODES:

PS – Poster Session

OP – Oral Presentation

PS-7A-9-172 = Poster Session on 10/7 (Thursday) in the A session (morning) – track order 9 - poster board 172

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7B – Thursday afternoon – 10/7
8A – Friday morning - 10/8
8B – Friday afternoon – 10/8
9A – Saturday morning – 10/9

OP-8-1-4B – Oral Presentation on 10/7 (Thursday) in the 4th session in the 1st platform time – 2nd presenter

7-1-# - Thursday Platform Session 1 – 10:30am – 12noon
7-2-# - Thursday Platform Session 2 – 1:30pm – 3:00pm
7-3-# - Thursday Platform Session 3 – 4:00pm – 5:30pm
8-1-# -Friday Platform Session 1 – 10:30am – 12noon
8-2-# - Friday Platform Session 2 – 1:30pm – 3:00pm
9-1-# - Saturday Platform Session 1 – 10:30am – 12noon
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9-3-# - Saturday Platform Session 3 – 4:00pm – 5:00pm

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Simpleware develops world-leading mesh generation software which converts 3D scan data into high-quality computer models used for CAD, Finite Element, CFD, and Rapid Prototyping. Simpleware software can be used to reconstruct models of human anatomy from MRI and CT, integrate implant data, and generate accurate computational models for biomedical research.

BOOTH # 503

Springer

233 Spring Street
New York, NY 10013
P 201-348-4033
E exhibits-ny@springer.com
W www.springer.com

Springer is the proud publisher of the BMES journals. Sample copies of Annals of Biomedical Engineering, Cellular and Molecular Bioengineering, and the new journal, Cardiovascular Engineering and Technology (CVET) will be available at the booth. We will also be showcasing our multi-format publishing model. Get hands-on experience with Springer ebooks on one of the world's largest content platforms, SpringerLink . Test drive highlights online, in print, and on ebook readers. Ask about your Springer MyCopy.

BOOTH # 129

Temple University

COLLEGE OF ENGINEERING

1947 N. 12th Street
Philadelphia, PA 19122
P 215-204-7800
E grbaran@temple.edu
W www.temple.edu/engineering

Temple University College of Engineering offers graduate training leading to advanced degrees in Bioengineering. Research areas include Biomechanics, Biomaterials, Drug Delivery Technologies and the Brain-Machine interface. The programs are interdisciplinary with strong ties to the School of Medicine, the College of Science and Technology, and School of Health Professions and Social Work. Please visit www.temple.edu/engineering/Bio/index.html. Matriculating doctoral students receive financial support that includes a stipend, tuition remission and health insurance. Matriculating master's degree students are also eligible for financial support.

BOOTH # 101

Texas A & M University

DEPARTMENT OF BIOMEDICAL ENGINEERING

337 Zachry Engineering Center
3120 TAMU
College Station, TX 77843-3120
P 979-845-2312
E npriolo@bme.tamu.edu
W http://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 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.

BOOTH # 229

Texas A & M University

Medical Sciences Library
4462 TAMU
College Station, TX 77843-4462
P 979-845-4631
E bmckay@medlib.tamu.edu

The Texas A&M University Medical Sciences Library promotes free online resources from the National Library of Medicine of Medicine, including PubMed MEDLINE, the premier bibliographic database that contains references to journal articles in the life sciences, with a concentration on biomedicine, indexing over 5000 journals going back to the 1950s.

BOOTH # 425

Tietronix Software, Inc.

1331 Gemini Ave, Suite 100
Houston, TX 77058
P 205-482-7003
E cdupont@tietronix.com
W www.tietronix.com

Tietronix specializes in medical device software development, FDA design control automation through our Medical Device Accelerator (MDA) tool, and visualization of your design concepts through our graphics and 3D animation services. We have been developing mission-critical software for over a decade. Tietronix is an expert at translating user requirements into software and we use an innovative workflow development tool called Medical Device Accelerator (MDA) to help automate the design process. We can also help visualize your ideas to investors, physicians, and patients through computer graphics and animations.

BOOTHS # 219/221

Tufts University BME

TISSUE ENGINEERING RESOURCE CENTER

4 Colby Street
Room 229
Medford, MA 02155
P 614-627-2580
E milva.ricci@tufts.edu
W 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 # 109

Tulane University

BIOMEDICAL ENGINEERING

500 Lindy Boggs Bldg.
New Orleans, LA 70118
P 504-314-2926
E cstewar3@tulane.edu
W 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 # 513

University of Alabama at Birmingham

BIOMEDICAL ENGINEERING

1075 13th Street South
Birmingham.AL 35294
P 205-482-7003
E pgeorge@uab.edu
W www.uab.edu/bme

The UAB Department of Biomedical Engineering offers undergraduate (BS) and graduate (MS and PhD) opportunities, as well as focused research areas in biomedical implants, imaging, cardiac electrophysiology, tissue engineering, and drug discovery/biotechnology. Significant collaborative research also exists with the UAB Schools of Medicine, Dentistry, Optometry, and other institutional clinical areas.

BOOTH # 107

The University of Arizona

BIOMEDICAL ENGINEERING

P.O. Box 21240
Tucson, AZ 85721
P 480-965-5485
E SBHSE@asu.edu
W www.bme.arizona.edu

The Biomedical Engineering Graduate Interdisciplinary Program at the University of Arizona offers exciting opportunities for students interested in research and training related to biomedical engineering. Students can learn in a broad range of areas, integrating engineering, mathematics, biology, and medicine in a highly collaborative and multi-disciplinary environment. The BME-IDP offers Doctor of Philosophy and Masters of Science degrees as well as graduate minor degrees in related disciplines. Doctoral students accepted into the BME program can participate in a number of specialized training programs.

BOOTH # 413

University of Arkansas

BIOMEDICAL ENGINEERING PROGRAM

3189 Bell Engineering
Fayetteville, AR 72701
P 479-575-7780
E bwhill@uark.edu
W 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; Vascular Systems Biology and Physiology; Computational and Multiscale Modeling; 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 # 501

University of California at Davis

Biomedical Engineering
One Shields Avenue
Davis, CA 95616
P 530-752-6978
E jcyhu@ucdavis.edu
W www.bme.ucdavis.edu

BME at UC Davis consists of 22 primary faculty and a graduate group of ~70 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 bio-molecular engineering and PhD programs in imaging, cell and molecular systems, and biomechanics.

BOOTH # 521

University of California, Irvine

DEPARTMENT OF BIOMEDICAL ENGINEERING

3120 Natural Sciences II
Irvine, CA 92697-2715
P 949-824-3494
E kstephen@uci.edu
W www.wng.uci.edu/dept/bme

The Department of Biomedical Engineering at UCI has 16 faculty, 5 staff, 525 undergraduates, and 129 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 # 608

University of California at Riverside

DEPARTMENT OF BIOENGINEERING

900 University Drive
Bourns Hall, Room A 220
Riverside, CA 92521
P 951-827-6416
E jerome.schultz@ucr.edu
W www.bioeng.ucr.edu

Departmental research encompasses intracellular biosensors, cell signal transduction pathways, mathematical and in-silico computational modeling, immune and connective tissue pathologies, and membrane electromechanics. Other important research areas include biophotonic technologies, high-throughput screening of drugs, metabolomics, protein folding and thermodynamics of proteins in solutions.

BOOTH # 309

University of Illinois at Urbana-Champaign

DEPARTMENT OF BIOENGINEERING

1304 W. Springfield Avenue
Room 1270 Digital Computer Laboratory
Urbana, IL 61801
P 217-333-1867
E bioen@illinois.edu
W www.bioen.illinois.edu

The Department of Bioengineering at the University of Illinois at Urbana-Champaign offers B.S., M.S., and Ph.D. programs, and participates in the Medical Scholars Program that offers combined M.D./Ph.D. degrees. There are 10 Department faculty and 55 affiliate faculty from the Colleges of Engineering, Medicine, Veterinary Medicine, Liberal Arts and Sciences, and Applied Health Sciences. We offer students research opportunities in the area of biomedical imaging, bionanotechnology, cellular engineering, computational biology, informatics and synthetic biology. Visit our exhibit to learn about unique campus resources, research institutes, training grant fellowships, and other educational opportunities.

BOOTH # 618

University of Kansas

BIOENGINEERING GRADUATE PROGRAM

1520 West 15th Street, Room 1
Lawrence, KS 66045
P 785-864-5258
E bioe@ku.edu
W http://bio.engr.ku.edu

KU Bioengineering offers M.S.and Ph.D., and coordinating with KU School of Medicine, the M.D./Ph.D. KU Bioengineering provides breadth in engineering and biological sciences, and depth in a particular research area chosen from six tracks: Bioimaging, Bioinformatics, Biomolecular, Biomedical Product Design & Development, Biomechanics & Neural, and Biomaterials & Tissue.

BOOTH # 408

University of Maryland

FISCHELL DEPARTMENT OF BIOENGINEERING

Room 2330
Jeong H. Kim Engineering Building (Bldg. #225) College Park, MD 20742
P 301-405-7771
E shuskamp@umd.edu
W 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 # 520

University of Memphis

UNIVERSITY OF TENNESSEE HEALTH SCIENCES CENTER

330 Eng. Tech. Bldg., Heaps College, University of Memphis
Memphis, TN 38152
P 901-678-3733
E eckstein@memphis.edu
W 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/orthopeadics, computational models (pulmonary, coronary, and muscoskeletal), sensor nano/microfabrication, and image processing and analyses.

BOOTH # 400

University of Michigan

BIOMEDICAL ENGINEERING DEPARTMENT

1107 Carl A. Gerstacker Building
2200 Bonisteel Blvd.
Ann Arbor, MI 48109-2099
P 734-647-1422
E mbdon@umich.edu
W 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 # 606

University of Minnesota

DEPARTMENT OF BIOMEDICAL ENGINEERING

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

The Department of Biomedical Engineering at the University of Minnesota offers an established graduate program (since 1972) located at the intersection of the medical school, engineering, and physical sciences, in the heart of Medical Alley. Research conducted by the faculty spans the full spectrum, with thrusts in cardiovascular/neural engineering, cell/tissue engineering, and biomedical imaging/optics.

BOOTH # 415

University of Missouri

BIODESIGN & INNOVATION PROGRAM

115 Business Loop 70 West
Room 421
Columbia, MO 65203
P 573-884-2058
E jahnsenm@health.missouri.edu
W www.mubiodesign.com

The Biodesign & Innovation Fellowship is for engineers who have interest in a career developing new medical technologies. The engineer fellow works with a physician and business fellow. The team identifies clinical needs, develops solutions for the needs and filters the solutions for a final product to focus on for the remaining year.

BOOTH # 402

University of Pittsburgh

CENTER FOR BIOTECHNOLOGY

300 Technology Drive
Pittsburgh, PA 15219
P 412-624-6445
E lspataro@pitt,edu
W 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 # 115

University of Rochester

209 Robert E. Georgen Hall
Rochester, NY 14627
P 585-275-0453
E hurlbutt@bme.rochester.edu
W www.urmc.rochester.edu/bme

The Graduate Program in the Department of Biomedical Engineering at the University of Rochester has been designed to emphasize the application of engineering skills to biomedical problem solving at the Masters and Doctoral level. Research in the department covers a broad spectrum, ranging in length scale from molecular to whole animal, and encompassing a wide variety of physiological systems and experimental approaches. Primary faculty members typically collaborate with faculty in other established centers and areas of strength at the University. With access to over 50 laboratories on the River Campus, Medical Center, and Strong Memorial Hospital, students can tailor their own interdisciplinary training experience. Multiple active centers and affiliated groups offer collaborative research in the five general research areas: Biomedical Optics; Neuroengineering; Biomechanics; Medical Imaging; and Cell & Tissue Engineering.

BOOTH # 406

University of Texas at Arlington

Joint Program with Southwestern Medical Center at Dallas

DEPARTMENT OF BIOENGINEERING

501 West First Street, ELR 233
Arlington, TX 76019
P 817-272-2249
E Bradfield@exchanging.uta.edu
W www.uta.edu/bioengineering/index.php

The Bioengineering Department at the University of Texas Arlington offers joint graduate degrees with The University of Texas Southwestern Medical Center at Dallas with many research opportunities in Bioinstrumentation, Biomaterials & Tissue Engineering, Biomechanics & Orthopedics, Medical Imaging, and Protein Engineering. Please visit our booth to learn more.

BOOTHS # 312/314

The University of Texas at Austin

DEPARTMENT OF BIOMEDICAL ENGINEERING

1 University Station, C0800
Austin, TX 78712
P 512-475-8623
E sbixby@mail.utexas.edu
W www.bme.utexas.edu

With an accomplished faculty and diverse student body, The University of Texas at Austin's Biomedical Engineering Graduate Program offers opportunities for scholars to build interdisciplinary knowledge in research areas such as cellular and molecular imaging, cellular and biomolecular engineering, and computational biomedical engineering and bioinformatics.

BOOTH # 121

The University of Texas at Dallas

800 West Campbell
Dallas, TX 75080
P 972-883-4679
E m.vidyasagar@utdallas.edu
W www.ecs.utdallas.edu/bioengineering

The University of Texas at Dallas offers M.S. and Ph.D. degrees in Biomedical Engineering, in collaboration with the UT Southwestern Medical Center and UT Arlington. Specializations include: Devices and materials, computational biology, and medical imaging.

BOOTH # 612

University of Texas at San Antonio

One UTSA Circle, AET 1.102
San Antonio, TX 78249
P 210-458-5535
E margaret.bullosa@utsa.edu
W http://engineering.utsa.edu/bme/bme_program

The University of Texas at San Antonio and The University of Texas Health Science Center at San Antonio (UTSA/UTHSCSA) jointly offer graduate degrees in Biomedical Engineering. The Joint Program is designed to train students for careers at the forefront of biomedical engineering. Visit us at Exhibit Booth 612 and see what San Antonio has to offer!

BOOTH # 620

University of Washington

DEPARTMENT OF BIOENGINEERING

3720 15th Avenue NE, Box 355061
Seattle, WA 98103
P 206-685-2000
E bioeng@uw.edu
W http://depts.washington.edu/bioe/index.html

Our department aims to serve 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 employment, research, and educational opportunities in the department. Informational brochures and memorabilia are also available.

BOOTH # 203

Vanderbilt University

DEPARTMENT OF BIOMEDICAL ENGINEERING

5824 Stevenson Center
VU Station 35-1631
Nashville, TN 37235
P 615-322-3521
E bme-info@vanderbilt.edu
W 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. A comprehensive and highly integrated program of graduate education, including a unique first year curriculum, rapidly prepares graduate students for success in research.

BOOTHS # 600/602

Virginia Tech-Wake Forest University

SCHOOL OF BIOMEDICAL ENGINEERING & SCIENCE

VT-WFU SBES:
319 ICTAS, Stanger Street MC0298
Virginia Polytechnic Institute & State University Blacksburg, VA 24061
P 540-231-8191
E pamstiff@vt.edu
W http://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 51 biomedical engineering faculty with active research programs in tissue engineering, imaging, biomechanics, medical physics, nano-medicine, surgical simulation, and other emerging fields.

BOOTH # 300

Washington University - St. Louis

DEPARTMENT OF BIOMEDICAL ENGINEERING

One Brookings Drive, Box 1097
St. Louis, MO 63130
P 314-935-6164
E teasdalek@wustl.edu
W 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. We offer BS, MS, MS/MBA, PhD and MD/PhD degrees.

BOOTH # 500

Wayne State University

BIOMEDICAL ENGINEERING

818 W. Hancock
Detroit, MI 48201
P 313-577-1345
E bme@eng.wayne.edu
W 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 # 224

Wells Fargo Insurance Services

1401 H Street NW, Suite 750
Washington, DC 20005
P 202-772-4197
E ashley.walley@wellsfargo.com
W wellsfargo.com/wfis

Wells Fargo partners with BMES to bring its members valued added and discounted products and services including Smart Savings (discounted products), Health, Life and Long Term Care insurances as well as Auto, Homeowners, Legal, Pet, Cancer and Accident insurances.

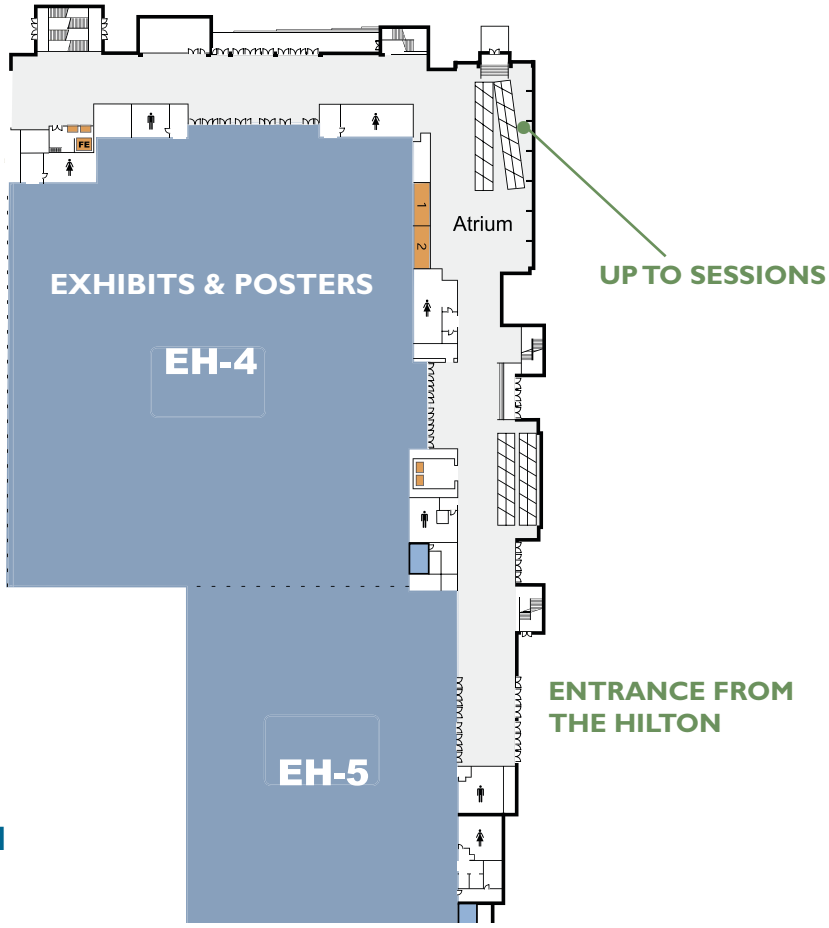
BOOTH # 428

World Precision Instruments, Inc.

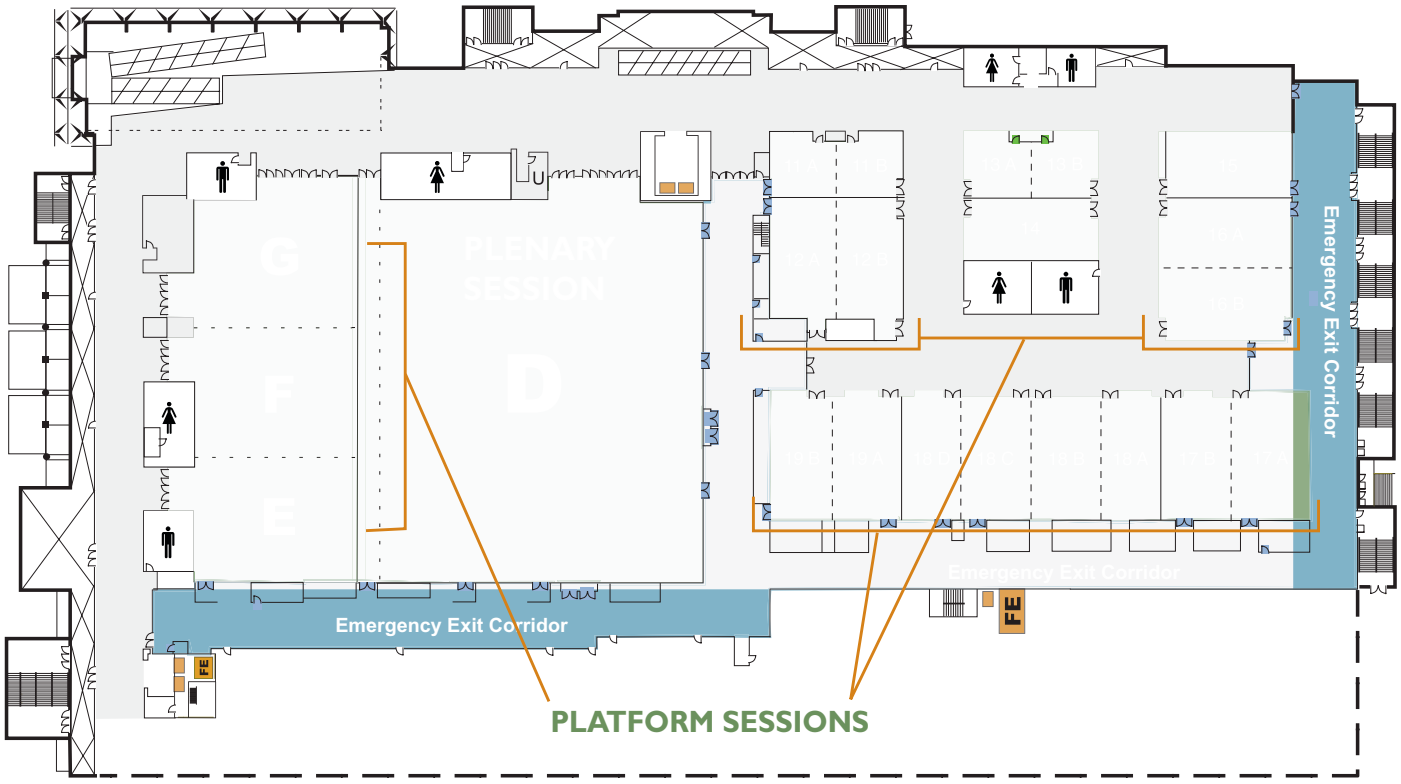
175 Sarasota Center Boulevard
Sarasota, FL 34240
P 941-371-1003
E am@wpiinc.com
W www.wpiinc.com

Austin Convention Center

500 East Cesar Chavez Street
Austin, TX 78701
512-404-4000



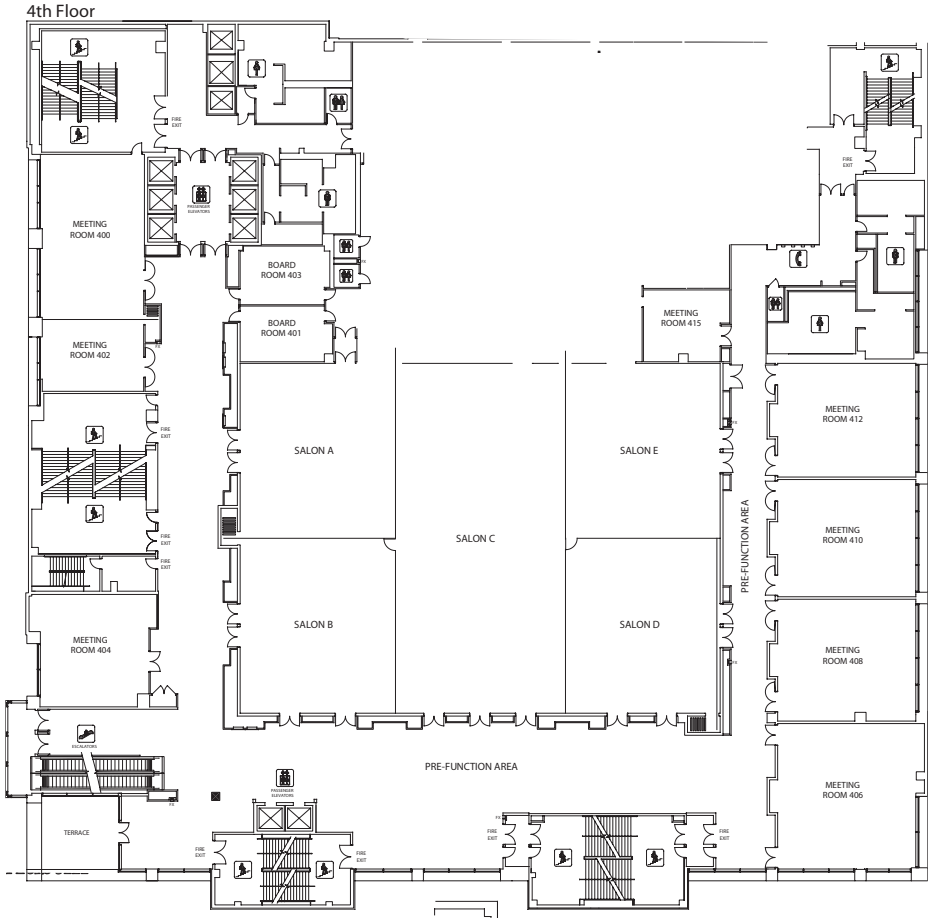
LEVEL 4 GRAND BALLROOM AND MEETING ROOMS



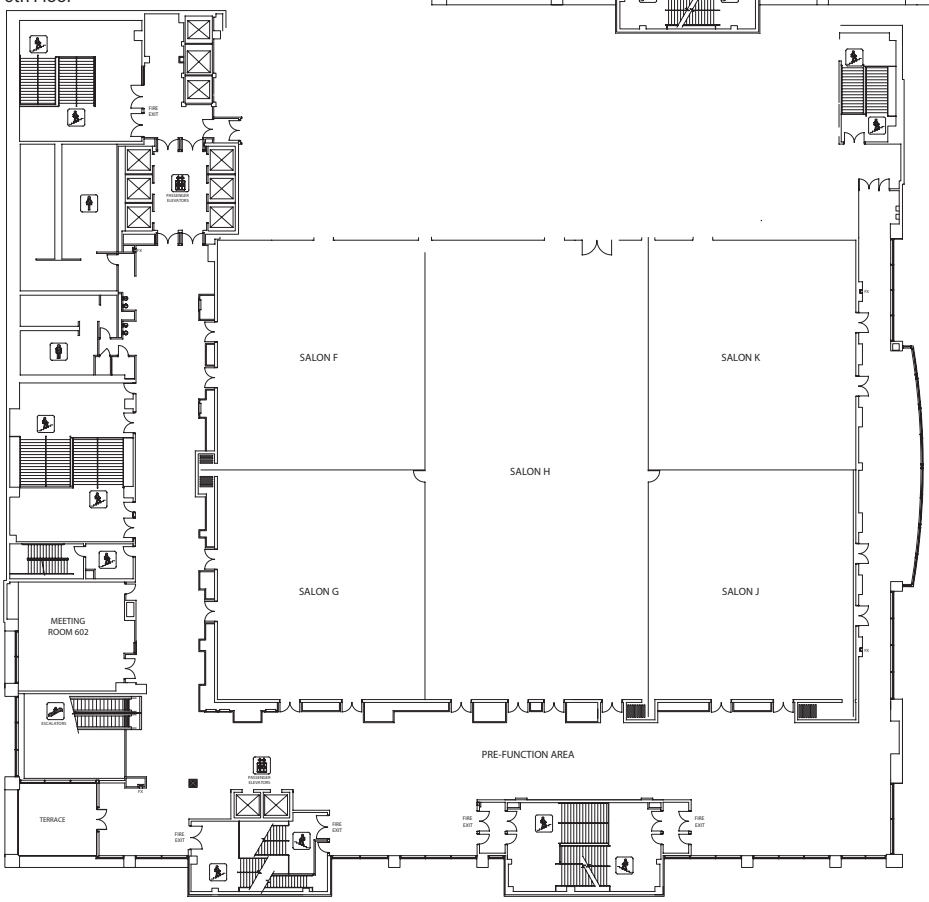
Hilton Austin

500 East 4th Street
Austin, Texas 78701
512-482-8000

4th Floor



6th Floor



PROGRAM AT-A-GLANCE

Track	10:30am - 12:00noon	1:30pm - 3:00pm	4:00pm - 5:30pm
Biomedical Engineering Education		**Cardiovascular Devices – II** Room 406	
Biomedical Imaging and Optics	**Molecular Imaging I – New Approaches and Technologies** Room 12B **Imaging in Cancer Using Nanotechnology - I** Room 19A	**Molecular Imaging II – Synthesis and In Vitro Imaging** Room 12B **Imaging in Cancer Using Nanotechnology - II** Room 19A	**Optical and Ultrasound Imaging of Cancer** Room 12B **CV Imaging** Room 19A
Cardiovascular Engineering	**Innovations in Cardiovascular Bioengineering I: Cardiac** Room 18C **Cardiovascular Fluid Dynamics – I** Room 18D	**Cardiac Electrophysiology** Room 18C **Cardiovascular Fluid Dynamics – II** Room 18D **Cardiovascular Tissue Engineering - I** Ballroom F	**Innovations in Cardiovascular Bioengineering II: Vascular** Room 18C **Microvasculature, Angiogenesis, and Capillary Patches** Room 18D
Cellular and Molecular Engineering	**Cellular and Subcellular Imaging** Room 18A **Cell Adhesion - I** Room 18B	**Molecular Engineering - I** Room 18A **Cell Mechanics** Room 18B	**Molecular Engineering – II** Room 18A **Mechanotransduction – I** Room 18B **Acta Biomaterialia Gold Medal Award Session** Ballroom G
Devices: Nano to Micro	**Biomems and Nanotech for Cellular Engineering** Room 16B	**Medical Diagnostics: Nano to Micro Devices – I** Room 16A **Nano to Micro: Fluidic Technologies – I** Room 16B	**Medical Diagnostics: Nano to Micro Devices – II** Room 16A **Nano to Micro: Fluidic Technologies – II** Room 16B
Drug Delivery and Intelligent Systems	**Nucleic Acid Delivery - I** Room 14	**Nucleic Acid Delivery - II** Room 14	**Acta Biomaterialia Gold Medal Award Session** Ballroom G
Orthopedic and Rehabilitation Engineering	**Orthopedic Bioengineering & Imaging** Room 17A	**Orthopedic Biomaterials** Room 17A	**Musculoskeletal Cell Mechanotransduction** Room 17A
New Frontiers in Bioengineering	**Immunobioengineering – I** Room 15	**Biological Engineering in Cancer** Room 15	**Synthetic Biology in Health and Medicine** Room 15
Neural Engineering	**Brain-Computer Interfaces** Room 19B **Neural Tissue Engineering – I** Ballroom F	**Motor Neural Prosthetics** Room 19B	**Engineering the Neural Environment** Room 19B
Respiratory Engineering			**Complex and Multiscale Behavior in the Lung** Room 12A
Systems Biology, Bioinformatics and Computational Biology	**High-throughput Computational Biology** Room 17B	**Signals and Networks in Cancer and Disease - I** Room 17B	**Molecular and Cellular Design and Evolution** Room 17B
Tissue Engineering	**Novel Biomaterials and Scaffolds – I** Room 12A **Nano- and Micro-Engineering in Tissue Engineering – I** Ballroom E **Neural Tissue Engineering – I** Ballroom F **Musculoskeletal Tissue Engineering – I** Ballroom G	**Novel Biomaterials and Scaffolds - II** Room 12A **Nano- and Micro-Engineering in Tissue Engineering - II** Ballroom E **Cardiovascular Tissue Engineering - I** Ballroom F **Musculoskeletal Tissue Engineering – II** Ballroom G	**Printing and Patterning in Tissue Engineering** Ballroom F **Acta Biomaterialia Gold Medal Award Session** Ballroom G
Other	**AIMBE Session,** Room 16A **Whitaker International Fellows and Scholars Program** Hilton, Room 602		**Acta Biomaterialia Gold Medal Award Session** Ballroom G

PROGRAM AT-A-GLANCE

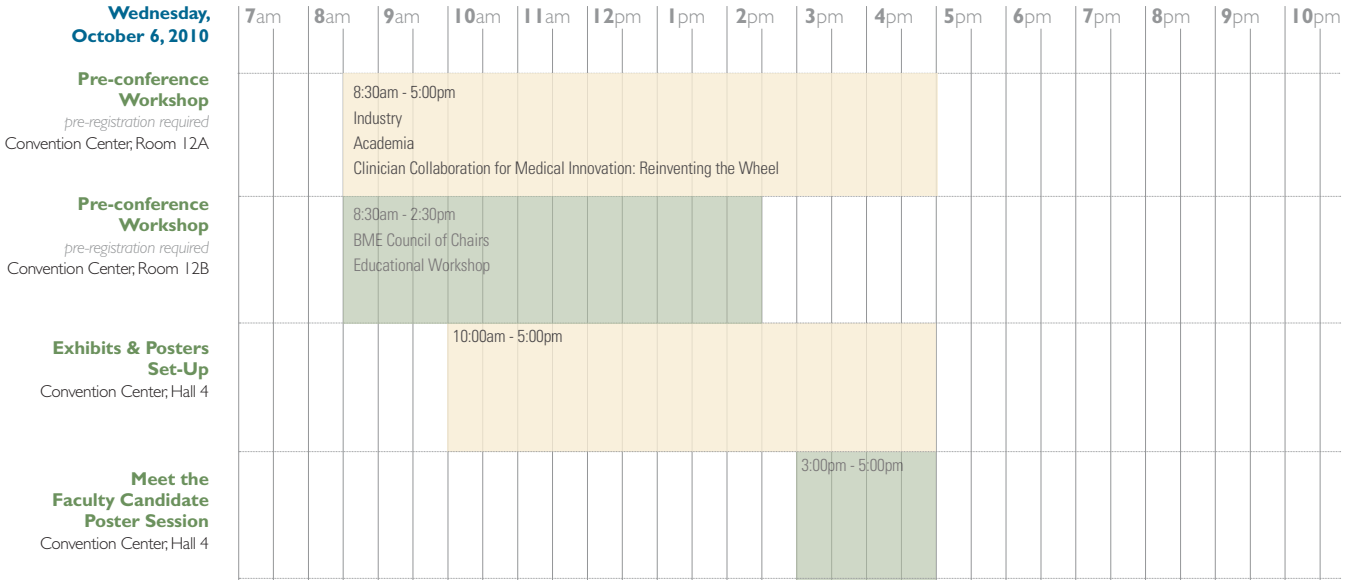
Track	10:30am - 12:00noon	1:30pm - 3:00pm
Biomedical Engineering Education		**Global Health** Room 18A
Biomedical Imaging and Optics	**Neuroimaging** Room 12B **Imaging in Therapeutics - I** Room 19A	**Imaging in Therapeutics - II** Room 12B **Biophotonics - I** Room 19A
Cardiovascular Engineering	**Vascular Permeability** Room 18C **Heart Valve I: Mechanobiology and Pathology** Room 18D	**Vascular Structure and Function I: Pathology** Room 18C **Cardiovascular Computational Modeling and Measurement - I** Room 18D **Cardiovascular Tissue Engineering - II** Ballroom F
Cellular and Molecular Engineering	**Cellular Engineering and Modeling** Room 18A **Cell-Cell Interactions** Room 18	**Cell Adhesion - II** Room 18B
Devices: Nano to Microg	**Medical Diagnostics: Nano to Micro Devices – III** Room 16A **Nano to Micro: Fluidic Technologies – III** Room 16B	**Drug Delivery Technologies: Nano to Micro Devices - I** Room 16A **Micro and Nanostructured Biomaterials – I** Room 16B
Drug Delivery and Intelligent Systems	**Novel Materials & Self-Assemblying Systems** Room 14 **Translational Drug Delivery** Room 15	**Novel Materials & Self-Assemblying Systems: Cancer Applications** Room 14
Orthopedic and Rehabilitation Engineering		**Rehabilitation Engineering** Room 17B
New Frontiers in Bioengineering		**Immunobioengineering - II** Room 15
Neural Engineering	**Neural Modeling** Room 19B **Neural Tissue Engineering - II** Ballroom G	**Sensory Neural Prosthetics** Room 19B
Respiratory Engineering	**Microfluidics and Tissue Engineering Constructs for the Lung** Room 17A	**Imaging the Lung – The New Frontier** Room 17A
Systems Biology, Bioinformatics and Computational Biology	**Multiscale Modeling** Room 17B	
Tissue Engineering	**Cell-Biomaterial Interfaces** Room 12A **Engineered Tissue Models of Disease** Ballroom F **Neural Tissue Engineering - II** Ballroom G	**Cardiovascular Tissue Engineering - II** Ballroom F **Engineered Tissue Models for Drug Discovery** Ballroom G
Translational Biomedical Engineering		**Translational Biomedical Engineering** Room 12A

PROGRAM AT-A-GLANCE

2010 | OCTOBER 10 | SATURDAY

Track	10:30am - 12:00noon	1:30pm - 3:00pm	3:30pm - 5:30pm
Biomedical Engineering Education		**Teaching Tools and Strategies** Room 18A	**Learning Modules and Instructional Materials** Room 18A
Biomedical Imaging and Optics	**Biophotonics – II** Room 19A	**Biophotonics – III** Room 19A	**Imaging Hardware and Software** Room 19A
Cardiovascular Engineering	**Vascular Structure and Function II: Growth and Remodeling** Room 18C **Cardiovascular Computational Modeling and Measurement – II** Room 18D	**Cardiac Stents and Arterial Devices** Room 18C **Vascular Mechanosignal Transduction** Room 18D **Cardiovascular Tissue Engineering - III** Ballroom F	**Heart Valve Biomechanics II: Mechanics and Simulation** Room 18C **Thrombosis and Hemostasis** Room 18D
Cellular and Molecular Engineering	**Molecular Engineering – III** Room 18A **Cell Motility** Room 18B	**Mechanotransduction – II** Room 18B	**The Physics and Engineering of Cancer Cells and Their Microenvironment** Room 18B **Cellular and Subcellular Mechanics** Room 15
Devices: Nano to Micro	**Drug Deliv65ogies: Nano to Micro Devices – II** Room 16A **Micro and Nanostructured Biomaterials – II** Room 16B	**Biosensors, Bio-Interfaces and Implantable Devices – I** Room 16A **Emerging Concept of Medical Micro Devices** Room 16B	**Biosensors, Bio-Interfaces and Implantable Devices – II** Room 16A
Drug Delivery and Intelligent Systems	**Drug Delivery Technologies: Nano to Micro Devices – II** Room 16A **Micro and Nanostructured Biomaterials – II** Room 16B	**Targeted Drug Delivery – II** Room 14	**Targeted Drug Delivery – III** Room 14
Orthopedic and Rehabilitation Engineering	**Orthopedic Soft Tissue Biomechanics** Room 17B	**Orthopedic Hard Tissue Biomechanics** Room 17B	**Skeletal Biomechanics** Room 17B
New Frontiers in Bioengineering		**Integrated Cellular Systems** Room 15	**Systems – Level Approaches in Bioengineering** Room 16B **Cellular and Subcellular Mechanics** Room 15
Neural Engineering	**Neural Control of Movement** Room 19B	**Neural Engineering Technology** Room 19B	**Neural Electrode Tissue Interface** Room 19B
Respiratory Engineering	**Acute Lung Injury from Cell to System** Room 17A	**Mechanobiology in the Lung** Room 17A	**Lung Computational Fluid Dynamics and Particle Deposition** Room 17A
Systems Biology, Bioinformatics and Computational Biology	**Modeling of Biomolecules and Their Interactions** Room 12B	**Signals and Networks in Cancer and Disease – II** Room 12B	**Systems Cell Biology** Room 12B
Tissue Engineering	**Stem Cells and Tissue Engineering – I** Ballroom E **Host Response to Biomaterials** Ballroom F **Cell- and Gene-Based Therapeutics** Ballroom G	**Novel Biomaterials and Scaffolds – IV** Room 12A **Stem Cells and Tissue Engineering – II** Ballroom E **Cardiovascular Tissue Engineering – III** Ballroom F **Bioreactors and Bioprocessing in Tissue Engineering** Ballroom G	**Novel Biomaterials and Scaffolds – V** Room 12A **Stem Cells and Tissue Engineering – III** Ballroom E **Controlled Release in Tissue Engineering** Ballroom F **Bioinspired Materials** Ballroom G
Translational Biomedical Engineering	**Novel Biomaterials and Scaffolds – III** Room 12A		
Undergraduate	**Undergraduate Research I** Room 13B	**Undergraduate Research II** Room 13B	

SCHEDULE AT-A-GLANCE



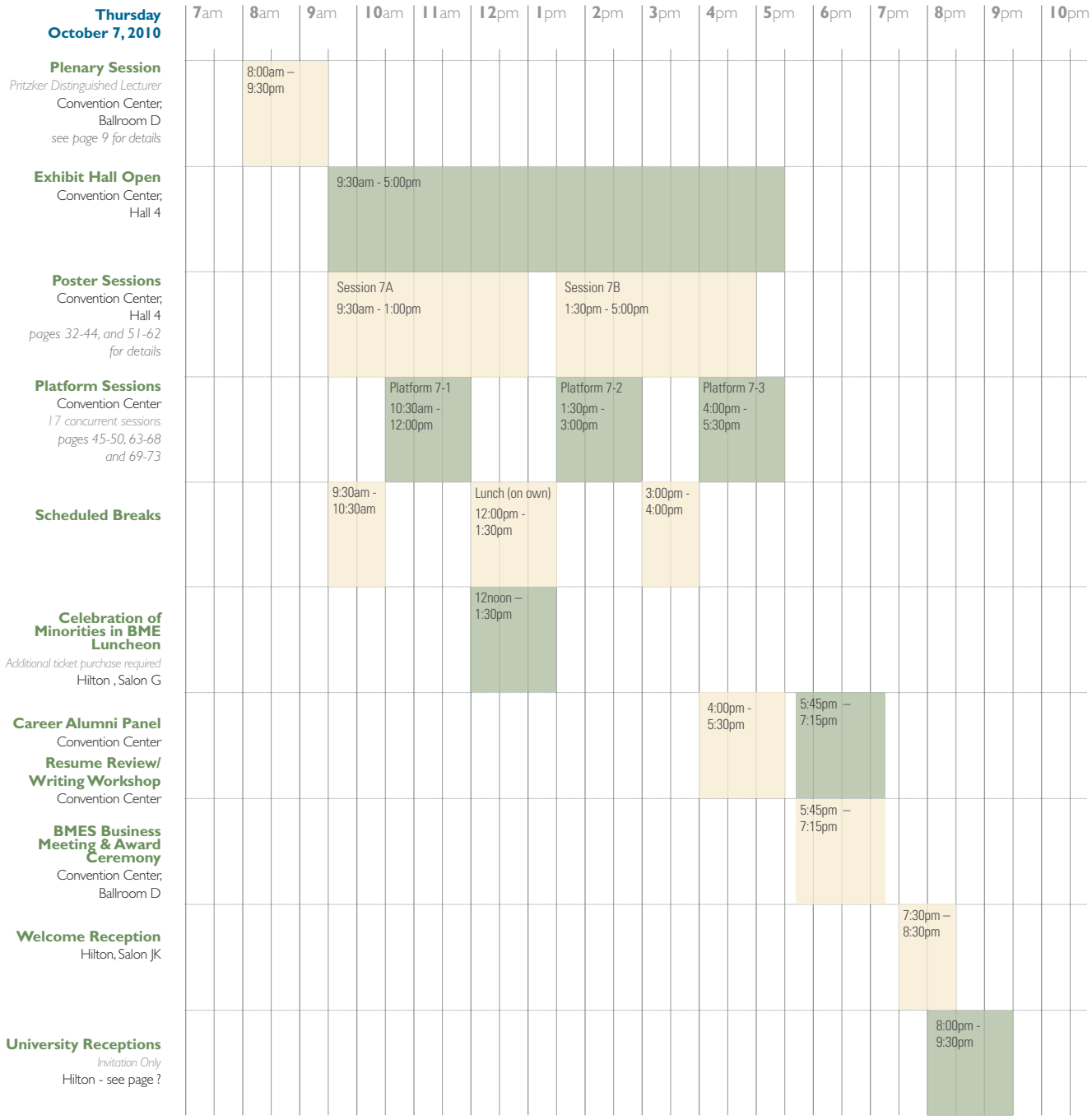
Registration
Convention Center, Hall 4
7:00am - 5:00pm

Speaker Ready Room
Room 13A

BMES Board of Directors Meeting
Hilton, Salon AB
8:30am - 4:30pm

Council of Chairs Meeting & Dinner
University of Texas,
BME Building
5:30pm - 9:30pm

SCHEDULE AT-A-GLANCE



Registration
Convention Center, Hall 4
7:00am – 6:00pm

Speaker Ready Room
Room 13A

Whitaker International Fellows and Scholars Program
Hilton, 602
10:30am – 12:00pm

CVET Editorial Board Lunch
Invitation Only
Marriott Downtown
Courtyard
12:00pm - 1:30pm

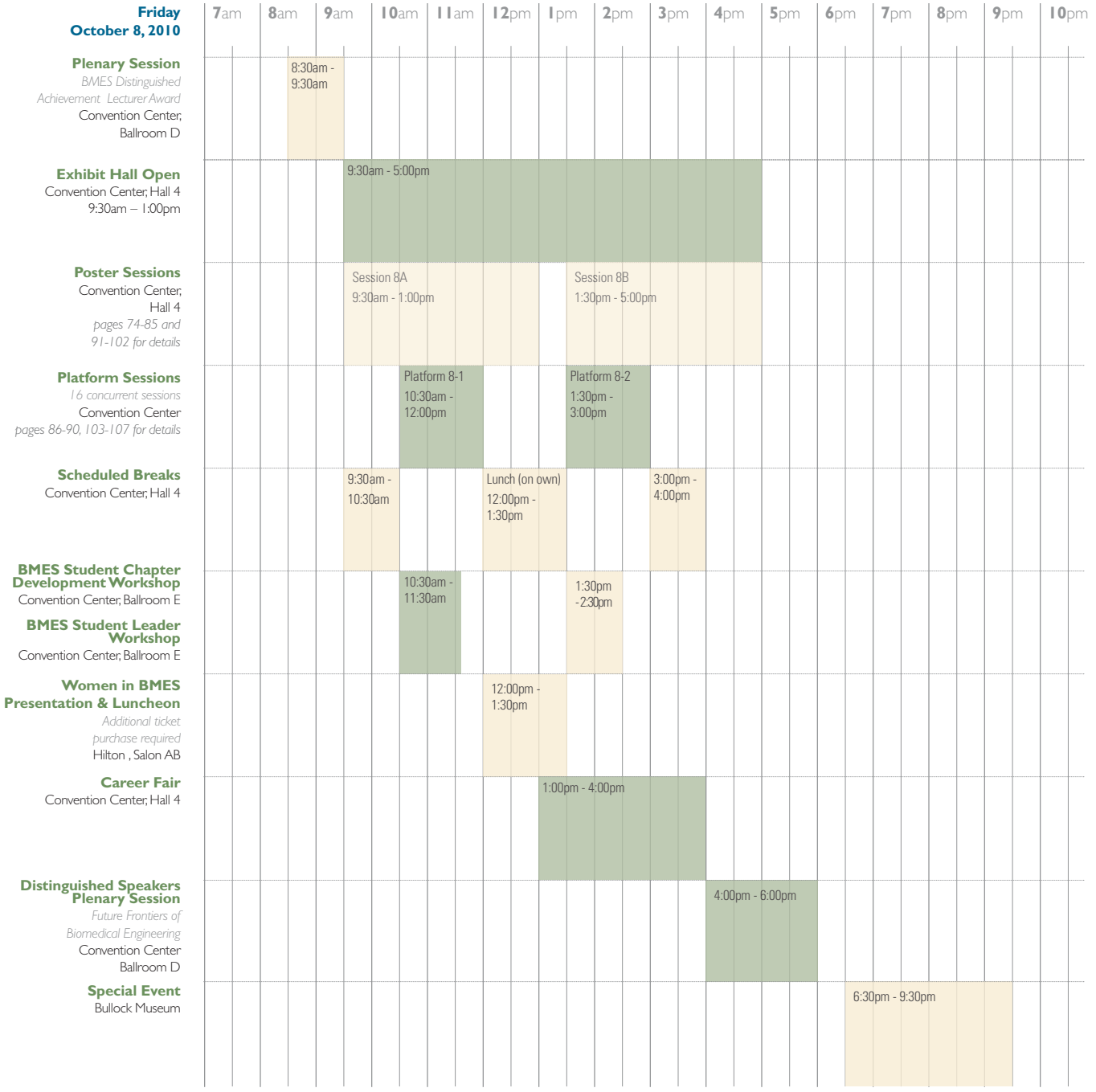
BMES National Meetings Committee Luncheon
Convention Center
Room 13B
12:00noon – 1:30pm

AEMB Annual Grand Meeting
Hilton, 602
1:00PM - 3:00PM

AIMBE Industry Tech Transfer Meeting
Invitation Only
Hilton, 401
1:30PM - 4:30PM

ABME Editorial Board Dinner
Invitation Only
Marriott Downtown
Courtyard
7:30pm - 10:00pm

SCHEDULE AT-A-GLANCE



Registration
Convention Center, Hall 4
7:00am – 6:00pm

Speaker Ready Room
Room 13A

AEMB Annual Ethics Session
Hilton, 602
10:00am - 11:00am

AIBME Academic Council Meeting
Hilton, 406
10:00am - 12:00pm

CMBE Editorial Board Lunch
Invitation Only
Marriott Downtown Courtyard
12:00pm - 1:30pm

2011 BMES Annual Meeting Committee Meeting
9:30am - 11:00am
Convention Center, Room 13B

AEMB Public Policy Forum
Hilton, 602
2:30pm - 3:30pm

Saturday, October 9, 2010

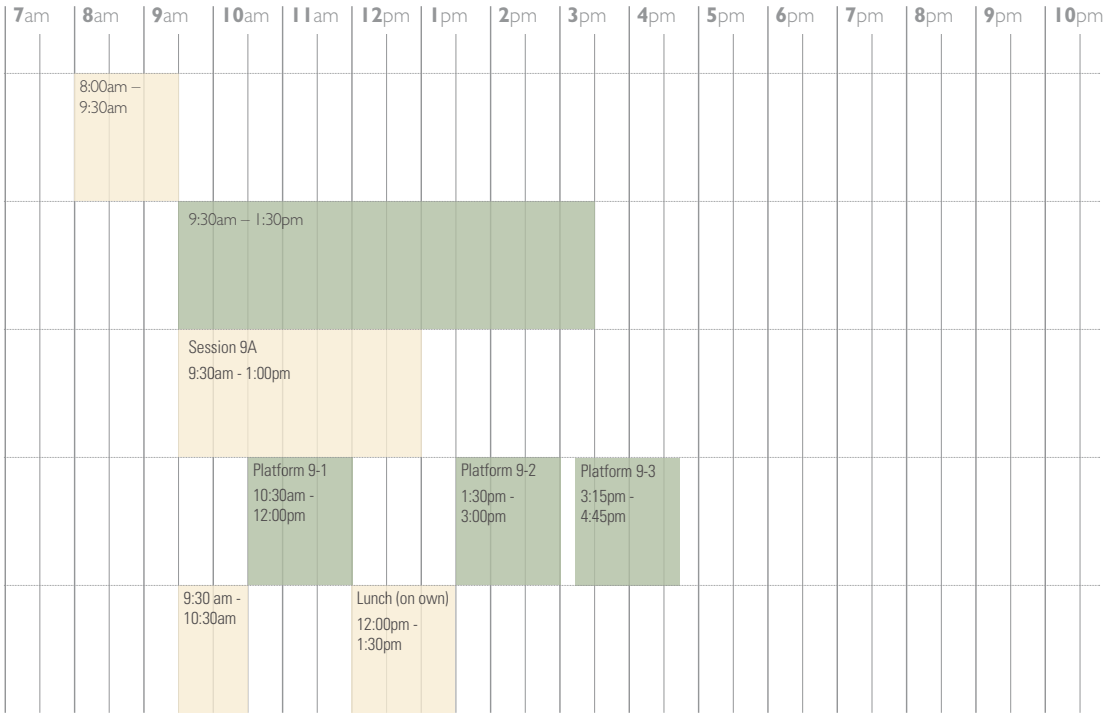
Plenary Session
Rita Schaffer Young Investigator Lecture
Diversity Award Winner
Convention Center; Ballroom D

Exhibit Hall Open
Convention Center, Hall 4
9:30am – 1:00pm

Poster Session
Convention Center; Hall 4
see pages 108-117, and 118-125 for details

Platform Sessions
Convention Center
Hall 4
18 concurrent sessions see pages 125-131, 132-137 and 138-143 for details

Scheduled Breaks



Registration
Convention Center, Hall 4
7:00am – 2:00pm

Speaker Ready Room
Room 13A

BMES Board of Directors Meeting
Hilton, Salon AB
10:00am – 2:30pm

NOTES

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