

FRIDAY, OCTOBER 8, 2010

POSTER SESSION - 8A - 9:30AM - 1:00PM Exhibit Hall 4

Track: Biomedical Imaging and Optics - **PS-8A-1 - *Molecular Imaging***

- PS-8A-1-1 Engineering a Small Molecule-Activatable Bioluminescence Reporter**
R. Warden¹, and A. Tsourkas¹
¹University of Pennsylvania, Philadelphia, PA
- PS-8A-1-2 Transient Absorption Ultrasonic Microscopy**
R. L. Shelton¹, and B. E. Applegate¹
¹Texas A&M University, College Station, TX
- PS-8A-1-3 Multiplex Photoacoustic Imaging for Molecular Imaging of Cancerous Tumors Using Targeted Nanorods**
C. L. Bayer¹, Y-S. Chen¹, S. Kim¹, S. Mallidi¹, K. Sokolov^{1,2}, and S. Y. Emelianov¹
¹The University of Texas at Austin, Austin, TX, ²The 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. Quek¹
¹Duke University, Durham, NC
- PS-8A-1-5 Applications of Potential Dependent DNA Orientation on Indium Tin Oxide Surface by Fluorescent-self Interference Microscopy**
P. Spuhler¹, L. Sola², M. Monroe¹, M. Chiari², and M. Unlu¹
¹Boston University, Boston, MA, ²CNR, Milan, Milan, Italy
- PS-8A-1-6 Real-Time Observation of Rad51 Nucleoprotein Filament Formation**
Y. Qiu¹, and S. Myong¹
¹University of Illinois at Urbana-Champaign, Urbana, IL
- PS-8A-1-7 Alternating-color Nanoparticles for Particle Tracking**
G. Ruan¹, and J. O. Winter¹
¹The Ohio State University, Columbus, OH
- PS-8A-1-8 Characterization of Solid State Photomultipliers in PET Detector Designs**
J. Schmall¹, E. Roncali¹, J. Christian², P. Dokhale², K. Shah², and S. Cherry¹
¹UC Davis, Davis, CA, ²Radiation Monitoring Devices, Inc., Watertown, MA
- PS-8A-1-9 Image Analysis Methods for Whole Cell cryo-Electron Tomography data**
K. Wang¹, C-Y. Fu², P. C. Doerschuk¹, and J. E. Johnson²
¹Cornell University, Ithaca, NY, ²The Scripps Research Institute, La Jolla, CA
- PS-8A-1-10 Design of pH Sensitive MR Contrast Agents for Tumor Imaging**
S. Crayton¹, and A. Tsourkas¹
¹University of Pennsylvania, Philadelphia, PA
- PS-8A-1-11 Molecular Specific Biocompatible Gold Nanorods for Non-invasive Imaging and Therapy**
P. P. Joshi¹, Y-S. Chen¹, S. J. Yoon¹, S. Emelianov¹, and K. Sokolov^{1,2}
¹University of Texas at Austin, Austin, TX, ²MD Anderson Cancer Center, Houston, TX

- PS-8A-1-12 Effects of Temperature on the Fluorescence Quantum Yield of Nano-Encapsulated ICG**
S. Gupta¹, K. Thenkondar¹, H. Mehta¹, B. Bahmani¹, V. Vullev¹, and B. Anvari¹
¹University of California, Riverside, CA
- PS-8A-1-13 Quantum Dot-Fluorescent Protein Fluorescence Resonance Energy Transfer Probe for Chloride Sensing**
D. Sotto¹, and G. Bao¹
¹Georgia 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
¹University of Houston, Houston, TX
- PS-8A-1-15 Enhanced Excitation of Multiple Fluorophores by Sub-10fs Laser Pulses for Two-photon Microscopy**
C. Wang¹
¹Texas 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. Elahi¹, Z. Liu¹, K. Luker¹, G. Luker¹, and T. Wang¹
¹University of Michigan, Ann Arbor, MI
- PS-8A-1-17 Immunoliposomes- Vehicles for Molecular Imaging of Inflamed Endothelium**
D. Danila¹, M. Lackey², S. Casscells¹, and J. L. Conyers¹
¹UTHealth, Houston, TX, ²Howrey LLP, Houston, TX
- PS-8A-1-18 Sensitivity of Detection of Biological AFM for Gold-Labeled Liposomes at HCAEC Membranes**
J. L. Conyers¹, A. Zasko¹, D. Danila¹, and E. B. Golunski¹
¹UTHealth, Houston, TX

Track: Cardiovascular Engineering - **PS-8A-2 - Cardiovascular Modeling**

- PS-8A-2-19 Computational Modeling and Vascular Surgery: Improving the Current Assessment of Abdominal Aortic Aneurysms?**
B. Doyle¹, P. Coyle², E. Kavanagh², P. Grace², and T. McGloughlin¹
¹University of Limerick, Limerick, Limerick, Ireland, ²HSE Midwestern Regional Hospital, Limerick, Limerick, Ireland
- PS-8A-2-20 Lattice Kinetic Monte Carlo Simulations of Convectively-Driven Particle and Platelet Aggregation**
M. H. Flamm¹, T. Sinno¹, and S. L. Diamond¹
¹University of Pennsylvania, Philadelphia, PA
- PS-8A-2-21 Cardiac Cell Culture Model to Study Cardiomyocytes under Physiological Loads**
M-D. T. Nguyen¹, R. Estrada¹, G. Giridharan¹, S. D. Prabhu¹, and P. Sethu¹
¹University of Louisville, Louisville, KY
- PS-8A-2-22 Modeling Mechanical Heart Function**
J. L. Palladino¹, and A. Noordergraaf²
¹Trinity College, Hartford, CT, ²University of Pennsylvania, Philadelphia, PA
- PS-8A-2-23 Effects of Geometric Variations on the Buckling of Arteries**
P. Datir¹, A. Northcutt¹, and H-C. Han¹
¹University 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. Yin¹, R. Hariharan¹, F. Rouf¹, S. Shanmugavelayudam¹, and D. A. Rubenstein¹
¹Oklahoma State University, Stillwater, OK
- PS-8A-2-25 Computational Geometric Analysis of the Normal and Hypertensive Human Right Ventricle**
J. Wu¹, J. C. Brigham¹, M. A. Simon¹, S. Tripathy¹, K. Kim¹, and M. Sacks¹
¹University 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. Zhou¹, A-C. Wei¹, T. Liu¹, S. Cortassa¹, R. Winslow¹, and B. O'Rourke¹
¹Johns Hopkins University, Baltimore, MD
- PS-8A-2-27 Microfluidic Devices to Study the Effect of Atherogenic Flow Pattern on Cultured Endothelial Cells**
R. Estrada¹, V. Parichehreh¹, M-D. Nguyen¹, and P. Sethu¹
¹University of Louisville, Louisville, KY
- PS-8A-2-28 Calibration of Abdominal Aortic Aneurism Models Using *In Vivo* Velocimetry Measurements**
M. A. McElroy¹, G. Mihai², Y. Ding², S. Rajagopalan^{2,3}, O. P. Simonetti^{2,3}, and S. N. Ghadiali^{1,2}
¹The Ohio State University, Columbus, OH, ²Davis Heart and Lung Research Institute, Columbus, OH, ³Richard M. Ross Heart Hospital, Columbus, OH
- PS-8A-2-29 Microstructurally Motivated Constitutive Modeling of the Developing Mouse Aorta**
J. K. Cheng¹, J. E. Wagenseil², and R. P. Mecham¹
¹Washington University, St. Louis, MO, ²Saint Louis University, St. Louis, MO
- PS-8A-2-30 Characterization of Microcalcifications in Coronary Artery Disease**
N. Maldonado Martinez¹, A. Kelly¹, S. Chakraborti¹, Y. Vengrenyuk², L. Cardoso¹, and S. Weinbaum¹
¹City College of New York, New York, NY, ²New York University, New York, NY
- PS-8A-2-31 Numerical Study of Fluid-Structure Interaction in a Developing Chick Heart**
A. Falahatpisheh¹, H. Alavi¹, S. J. Stinson¹, L. Junor¹, R. L. Goodwin¹, and A. Kheradvar¹
¹University of South Carolina, Columbia, SC
- PS-8A-2-32 Pumping During Fetal Cardiac Development: Peristaltic or Impedance?**
J. Moraveji¹, S. Biechler¹, J. W. Weidner¹, R. L. Goodwin¹, L. Junor¹, and A. Kheradvar¹
¹University of South Carolina, Columbia, SC
- PS-8A-2-33 Multiscale Modeling of Blood Rheology in a Developing Heart: When Granularity Matters**
J. Moraveji¹, S. Biechler¹, J. W. Weidner¹, R. L. Goodwin¹, and A. Kheradvar¹
¹University 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. Cheheltani¹, J. M. Rosano¹, N. E. D'Souza¹, B. Wang¹, N. Pleshko¹, and M. F. Kiani¹
¹Temple University, Philadelphia, PA
- PS-8A-3-35 Molecular Electrophysiological Differences Between Genders in the Nonfailing Human Heart**
C. M. Ambrosi¹, N. Moazami², J. M. Nerbonne², and I. R. Efimov¹
¹Washington University in St. Louis, St. Louis, MO, ²Washington University School of Medicine, St. Louis, MO
- PS-8A-3-36 Method for *Ex Vivo* Assessment of Functional Myocardial Mechanics**
O. M. Benavides¹, and J. G. Jacot^{1,2}
¹Rice University, Houston, TX, ²Texas Children's Hospital, Houston, TX
- PS-8A-3-37 Comparison of Cardiac Wall Motion and Strain Patterns During Dobutamine Stress-Induced Ischemia**
K. M. Parker¹, and J. W. Holmes¹
¹University of Virginia, Charlottesville, VA
- PS-8A-3-38 Characterization of Dyssynchrony in Contraction Strain Pattern**
C. M. Nazzari¹, J. C. Criscione², and L. Mulligan³
¹Texas A&M University, College Station, TX, ²Texas A&M University, College Station, TX, ³Medtronic, Inc., Mounds View, MN

- PS-8A-3-39 A Micromechanics Model for Myocardium-Vessel Interaction in Perfused Myocardium**
Y. Liu¹, H. Chen¹, X. Zhao¹, and G. S. Kassab¹
¹Indiana University-Purdue University, Indianapolis, IN
- PS-8A-3-40 The Structural and Biomechanical Properties of Porcine Myocardial Extracellular Matrix**
B. Wang¹, D. McCollum¹, M. E. Tedder², D. T. Simionescu², F. To¹, A. L. Curry³, L. Williams¹, and J. Liao¹
¹Mississippi State University, Mississippi State, Mississippi, ²Clemson University, Clemson, SC, ³University of Memphis, Memphis, TN
- PS-8A-3-41 Cardiac Myocyte Response to Engineered Extracellular Matrix**
V. Lin¹, A. Chopra², P. Jamney³, and J. Kresh¹
¹Drexel University College of Medicine, Philadelphia, PA, ²Drexel University, Philadelphia, PA, ³University 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. Forsyth¹, P. D. Owrutsky¹, J. Wan², and H. A. Stone²
¹Harvard University, Cambridge, MA, ²Princeton University, Princeton, NJ
- PS-8A-4-43 Tyrosine Phosphorylation of Endothelial Cell-Cell Adhesion Proteins Induced by Shear Stress Gradient**
N. Sakamoto¹, H. Xiaobo¹, and M. Sato¹
¹Tohoku University, Sendai, Miyagi, Japan
- PS-8A-4-44 Mitochondrial Network Morphology in Postischemic Vascular Endothelial Cells**
R. J. Giedt¹, M. Praetorius-Ibba¹, A. Matzavinos², and B. R. Alevriadou¹
¹The Ohio State University, Columbus, OH, ²Iowa State University, Ames, IA
- PS-8A-4-45 Differential Endothelial Cell Response to Simultaneous Shear and Cytokine Stimulation**
R. B. Huang¹, and O. Eniola-Adefeso²
¹University of Michigan, Ann Arbor, MI, ²University 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. Shi¹, and J. M. Tarbell¹
¹City College 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. Lopez¹, and J. M. Tarbell¹
¹The 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. Huang¹, and B. P. Helmke¹
¹University of Virginia, Charlottesville, VA
- PS-8A-4-49 Biochemical and Biophysical Factors Regulate Inflammation Due to Systemic Infection**
S. J. Evani¹, N. Mareedu¹, A. Murthy¹, B. P. Arulanandam¹, and A. K. Ramasubramanian¹
¹University of Texas at San Antonio, San Antonio, TX
- PS-8A-4-50 Smooth Muscle Cell Behavior in Non-uniform Stretch Environments**
W. J. Richardson¹, R. P. Metz², E. M. Wilson², and J. E. Moore Jr.¹
¹Texas A&M University, College Station, TX, ²Texas A&M Health Science Center, College Station, TX
- PS-8A-4-51 Extracellular Matrix Control of Flow-Induced Structural Dynamics**
R. E. Evans¹, and B. P. Helmke¹
¹University of Virginia, Charlottesville, VA
- PS-8A-4-52 Shear Stress Modulates RAGE Expression and Activation in Human Aortic Endothelial Cells**
J. S. DeVerse¹, and A. G. Passerini¹
¹University of California, Davis, Davis, CA

- PS-8A-5-53 Quantum Dot Barcodes Expedite Genetic Screening of Infectious Diseases**
E. Sykes¹, S. Giri¹, and W. Chan¹
¹University of Toronto, Toronto, ON, Canada
- PS-8A-5-54 Cholesterol-dependent Phase Separation in Cell Derived Giant Plasma Membrane Vesicles**
I. Levental¹, F. J. Byfield², T. Baumgart², and P. Janmey²
¹Max Planck Institute for Cell Biology and Genetics, Dresden, Germany, ²University of Pennsylvania, Philadelphia, PA
- PS-8A-5-55 Cooperative Effects in the Ordered Assembly of Collagen Layers on Mica**
W. Leow¹, and W. Hwang¹
¹Texas 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. Judd¹, P. Nguyen¹, J. Silberg¹, and J. Suh¹
¹Rice 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-Korkut¹, H. Gandhok¹, X. Jiang², and S. Wang¹
¹City College of New York, New York, NY, ²Memorial 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. Duque¹, and M. Mobed-Miremadi²
¹San Jose State University, San Jose, CA, ²San Jose State University, San Jose, CA
- PS-8A-5-59 CNT-Oxidoreductase Enzyme Conjugates for Biosensors and Biofuel Cells**
O. A. Karunwi¹, and A. Guiseppi-Elie²
¹Clemson University, Anderson, SC, Afghanistan, ²Clemson University, Clemson, SC
- PS-8A-5-60 Molecular Biomechanics of the Kinesin Neck Linker Domain**
S. Shastry¹, and W. O. Hancock¹
¹Penn State University, University Park, PA
- PS-8A-5-61 Load-dependent Transport of Sub-Cellular Commodities by Multiple Motor Proteins**
D. K. Jamison¹, J. W. Driver¹, A. R. Rogers¹, P. E. Constantinou¹, and M. R. Diehl¹
¹Rice University, Houston, TX
- PS-8A-5-62 Engineered Peptide Binding ScFv to Chaperone Membrane Protein Crystallization**
J. C. Pai¹, and J. A. Maynard¹
¹University of Texas at Austin, Austin, TX
- PS-8A-5-63 What Governs the Interaction Between Warfarin and Cyclodextrins?**
J. M. Vasquez¹, S. Bae², B. Kim², G. Upadhyayula¹, S. Gupta¹, A. Vu¹, A. Hashemi¹, J. S. Schultz¹, and V. I. Vullev¹
¹University of California, Riverside, Riverside, CA, ²Kyung Hee University, Suwon, Seoul, Korea, Democratic People's Republic of
- PS-8A-5-64 A Solvent Exchange Method for Solubilizing and Functionalizing Nanoparticles for *In Vivo* Imaging and Drug Deliver Applications**
S. Tong¹, S. Hou¹, and G. Bao¹
¹Georgia Institute of Technology, Atlanta, GA
- PS-8A-5-65 Exhaustive Sampling of Ribosome Binding Sites for Fast Translation by Ribosome Display**
P. A. Barendt¹, and C. A. Sarkar¹
¹University of Pennsylvania, Philadelphia, PA
- PS-8A-5-66 Programming Enzyme-free DNA Reaction Circuits for Ultra Low-cost Molecular Diagnosis**
X. Chen¹, G. Eckhoff¹, and B. Li¹
¹University 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. Kwan¹, L. A. Ernst¹, S. K. Andreko¹, B. T. Ballou¹, and P. G. Campbell¹
¹Carnegie Mellon University, Pittsburgh, PA
- PS-8A-5-68 Quantifying the Tension-lipid Packing Relationship Using Fluorescence Lifetime of DiI**
H. Muddana¹, T. Tabouillot¹, H. Chiang¹, and P. J. Butler¹
¹Penn State University, University Park, PA
- PS-8A-5-69 Design and Implementation of a FRET-based High-Throughput Screening Technology in Sumoylation**
R. L. Mello¹, R. Lauhead¹, Y. Song¹, V. Madahar¹, Y. Liu¹, and J. Liao¹
¹University of California Riverside, Riverside, CA
- PS-8A-5-70 Coarse-Grained Molecular Dynamics of Myosin II and Structural Dynamics of Nucleotide Pocket**
E. A. Khatiblou¹, S. Kreuzer¹, C-C. Liu¹, J. Marquez¹, J. Zhou¹, and T. J. Moon¹
¹UT-Austin, Austin, TX
- PS-8A-5-71 Mapping Foldome Changes with Cysteine Labeling Kinetics Measured by Mass Spectrometry**
B. Chase¹, D. Pantano², J. Pajeroski³, H-Y. Tang⁴, D. Speicher⁴, and D. Discher²
¹University of Pennsylvania, Philadelphia, PA, ²University of Pennsylvania, Philadelphia, PA, ³Merck, Whitehouse Station, NJ, ⁴Wistar 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. Shrirao¹, and R. Perez-Castillejos¹
¹NJIT, Newark, NJ
- PS-8A-6-73 Nanofluidic Flow Proteometry for the Determination of Biomarker Concentration**
J. Kameoka¹
¹Texas 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. Hamlington¹, H. Fujioka¹, D. A. Blake¹, R. Cortez¹, and D. P. Gaver¹
¹Tulane University, New Orleans, LA
- PS-8A-6-75 Push Valve for Microfluidic Devices**
M-E. Brett¹, S. Zhao¹, J. L. Stoa¹, G. Mittal¹, and D. T. Eddington¹
¹University 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. Rao¹, U. Tata¹, P. Singhal², S. Singhal³, S. Awasthi⁴, K. T. Nguyen¹, and J-C. Chiao⁵
¹The Univ. of Texas at Arlington, Arlington, TX, ²Arlington High School, Arlington, TX, ³UNT Health Science Center, Fort Worth, TX, ⁴UNT Health Science Center, Fort Worth, TX, ⁵The Univ. of Texas at Arlington, Arlington, TX
- PS-8A-6-77 Migration of PC-3 Cells Under the Influence of Various EGF Concentrations**
S. Salodkar¹, U. Tata¹, S. Rao¹, K. T. Nguyen¹, and J-C. Chiao¹
¹The Univ. of Texas at Arlington, Arlington, TX
- PS-8A-6-78 Microfluidics Made Easy**
V. Nuñez¹, B. Millare², S. Shin¹, K. Chau¹, A. Lin¹, and V. I. Vullev¹
¹University of California, Riverside, Riverside, CA, ²Johns Hopkins University, Baltimore, MD
- PS-8A-6-79 Optimizing Microfluidic Devices for Immobilization of C. elegans for High-Throughput Screens**
I. D. Caceres¹, and H. Lu¹
¹Georgia Institute of Technology, Atlanta, GA
- PS-8A-6-80 Lateral Cavity Acoustic Transducers (LCATs) for Cell and Particle Sorting Applications**
M. V. Patel¹, A. R. Tovar¹, R. Lin¹, S-Y. Teh¹, and A. P. Lee¹
¹University 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. Elliott¹, L. You¹, and F. Yuan¹
¹Duke University, Durham, NC
- PS-8A-6-82 Exploiting Osmosis for Size-based Separation of Blood Cells into Subpopulations using Microfluidics**
V. Parichehreh¹, K. K. Bhavanam¹, and P. Sethu¹
¹University of Louisville, Louisville, KY
- PS-8A-6-83 A Novel, High-Throughput, Single-Cell Deformability Measurement Technique For Diagnostics And Therapeutics**
H. T. Tse¹, D. R. Gossett¹, S. Lee¹, A. T. Clark¹, and D. Di Carlo¹
¹University of California, Los Angeles, Los Angeles, CA
- PS-8A-6-84 What Determines the Quality of Adhesion between Poly(Dimethylsiloxane) and Glass Surfaces?**
K. Chau¹, B. Millare², A. P. Lin¹, V. Nuñez¹, and V. I. Vullev¹
¹University of California, Riverside, Riverside, CA, ²Johns Hopkins University, Baltimore, MD
- PS-8A-6-85 A Switchable Microfluidic Serial Dilution Circuit for Constant Flow Rate Tissue Perfusion**
A. K. Au¹, H. A. Arns², C. G. Sip¹, T. E. Holy², and A. Folch¹
¹University of Washington, Seattle, WA, ²Washington University in St. Louis, St. Louis, MO
- PS-8A-6-86 Nanoscale Diffusivity Measurement Device**
J. S. Gill¹, A. Grattoni¹, A. Ziemys¹, and M. Ferrari^{1,2}
¹University of Texas at Houston Medical School, Houston, TX, ²University 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. Launier¹, S. Hong¹, and D. Eddington¹
¹University of Illinois at Chicago, Chicago, IL
- PS-8A-6-88 Automated Dielectrophoretic Characterization of Mycobacteria**
C. Huang¹, B. G. Hawkins¹, S. Arsanipalaji¹, and B. J. Kirby¹
¹Cornell University, Ithaca, NY
- PS-8A-6-89 Cell Dosing on Subsecond Time Scales Using a Laminar-Flow Device**
M. M. Robinson¹, S. Moorjani¹, T. Hoppe¹, and J. B. Shear¹
¹University 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. Raghavan², and S. P. Forry¹
¹National Institute of Standard and Technology, Gaithersburg, MD, ²University of Maryland, College Park, MD
- PS-8A-6-91 Characterization of Microfluidic Calorimeter for Measuring Small Dynamic Temperature Changes**
V. L. Koppa¹, S. M. Tangutooru¹, R. Gumma¹, G. G. Nestorova¹, and E. J. Guilbeau¹
¹Louisiana Tech University, Ruston, LA
- PS-8A-6-92 Fluid Flow Characterization of Micro- and Nanochanneled Silicon Membranes**
E. Zabre¹, J. Gill¹, A. Grattoni¹, A. Ziemys¹, and M. Ferrari^{1,2}
¹University of Texas Health Science Center at Houston, Houston, TX, ²University 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. Pinto¹, S. Yasotharan¹, J. Voigtländer-Bolz², S-S. Bolz¹, and A. Günther¹
¹University of Toronto, Toronto, Ontario, Canada, ²St. Michael's Hospital, Toronto, Ontario, Canada
- PS-8A-6-94 A Novel Microfluidic Assay for Study of Chemotaxis Response**
M. A. Traore¹, and B. Behkam¹
¹Virginia Tech, Blacksburg, VA
- PS-8A-6-95 Droplet Microfluidic System for Biodetection and Cell Growth Studies Using a Hydrodynamic Sensor**
I. Sinn¹, P. Kinnunen¹, B. H. McNaughton¹, M. A. Burns¹, and R. Kopelman¹
¹University of Michigan, Ann Arbor, MI

- PS-8A-6-96 A Miniaturized Device for Non-Destructive Detection of Radiation Damaged Cells**
B. Prabhakarapandian¹, K. Bhatt¹, M. Achary², M. F. Kiani², and K. Pant¹
¹CFD Research Corporation, Huntsville, AL, ²Temple University, Philadelphia, PA
- PS-8A-6-97 Micro-Sandwich in Microfluidics: 3D Biopolymer Membranes for Cell Assembly**
X. Luo¹, H-C. Wu¹, C-Y. Tsao¹, Y. Cheng¹, R. Ghodssi¹, G. F. Payne¹, G. Rubloff¹, and W. E. Bentley¹
¹University of Maryland, College Park, MD
- PS-8A-6-98 Mixing Enhancement in Microfluidic Devices Utilizing Contactless Dielectrophoresis (cDEP)**
A. Salmanzadeh-Dozdabi¹, H. Shafiee¹, R. V. Davalos¹, and M. A. Stremler¹
¹Virginia 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. Lan¹, and D. B. Khismatullin¹
¹Tulane University, New Orleans, LA
- PS-8A-6-100 A Planar Peristaltic Pump for Microfluidics**
P. Gould¹, L. Hoang¹, K. Seale¹, S. Darby¹, M. Moore², and J. Wikswo¹
¹Vanderbilt University, Nashville, TN, ²Sewanee: The University of the South, Sewanee, TN
- PS-8A-6-101 Enlarging from Microscale: A Milli-scale Device for Blood and Plasma Fractionation**
V. BHAL¹, and E. C. Eckstein¹
¹University of Memphis, Memphis, TN
- PS-8A-6-102 The Influence of Microfluidic Channel Height on Leukocyte Adhesion and Rolling Under Flow**
P. W. Coghill¹, E. A. Shimp¹, E. K. Kesselhuth¹, and D. W. Schmidtke¹
¹University of Oklahoma, Norman, OK
- PS-8A-6-103 Integrated Nanofluidic Channel Device for Biomimic Applications**
Y-T. T. Yeh¹, and S. Zheng¹
¹Pennsylvania State University, University Park, PA
- PS-8A-6-104 Investigation of Multivalent Ion Solution Flow Reversal under Travelling Wave Electroosmosis**
Z. Wang¹, X. Liu², L. Brousseau², and M. Ferrari²
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- PS-8A-6-105 High-Throughput Sheathless Flow Cytometry Using Inertial Microfluidics**
A. S. Bhagat¹, S. S. Kuntaegowdanahalli¹, and I. Papautsky¹
¹University of Cincinnati, Cincinnati, OH
- PS-8A-6-106 Thermoelectric Sensing for Microfluidic DNA Melting Analysis**
N. Crews¹, and A. Ganveer¹
¹Louisianan Tech, Ruston, LA
- PS-8A-6-107 Modeling of a Microfluidic Magnetic Particle Fractionation Device**
T. O. Tasci¹, and B. Gale¹
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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. Gajria¹, T. Neumann², J. Weinstein², D. Schaffer², and M. Tirrell²
¹UC Santa Barbara, Berkeley, CA, ²UC Berkeley, Berkeley, CA
- PS-8A-7-109 Independent Control of Elasticity and Drug Release Rate of an Injectable Poly(ethylene glycol) Hydrogel for Stem Cell Mobilization**
Y. Liang¹, T. W. Jensen¹, E. J. Roy¹, R. J. DeVolder¹, L. A. Rund¹, K. B. Textor¹, L. B. Schook¹, Y. Tong², and H. Kong¹
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- PS-8A-7-110 A Novel Oral Drug Delivery Carrier: The Effect of Cellulose Nanocrystals on Caco-2 Cell Monolayers**
K. R. Colacino¹, H. Wang², S. Dong², M. Roman², and Y. W. Lee¹
¹Virginia Tech-Wake Forest University, Blacksburg, VA, ²Virginia Polytechnic Institute and State University, Blacksburg, VA
- PS-8A-7-111 Polymeric Platform for Oral Drug Delivery of Chemotherapeutics**
C. A. Schoener¹
¹University of Texas at Austin, Austin, TX
- PS-8A-7-112 Giant Amphiphiles Toward Monodispersed, Stable Nanoparticles for Drug Delivery and Imaging**
H. Dong¹, J. Y. Shu¹, S. Liu¹, and T. Xu¹
¹University of California at Berkeley, Berkeley, CA
- PS-8A-7-113 Modification of Porous Silicon Particles for Enhanced Protein Stability**
E. U. De Rosa¹, D. Fan¹, C. Chiappini², X. Liu^{1,3}, M. Ferrari^{1,4}, and E. Tasciotti¹
¹University of Texas HSCH, Houston, TX, ²University of Texas Austin, Austin, TX, ³University of Texas Austin, Austin, TX, ⁴Rice 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. Argen¹, G. Mani¹, N. Torres¹, and J. L. Ong¹
¹University 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-Fernandez¹, R. Manchanda¹, T. Lei¹, D. A. Carvajal¹, and A. J. McGoron¹
¹Florida International University, Miami, FL
- 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. cheng¹
¹University of Pennsylvania, Philadelphia, PA
- PS-8A-7-117 Chitosan Microparticles for Drug Delivery Applications**
L. Rodriguez¹, A. Nadarajah¹, and N. Chiaia¹
¹The University of Toledo, Toledo, OH
- PS-8A-7-118 Mesoporous Silicon Microparticles for the Sustained Delivery of Antibiotics**
I. Yazdi¹, C. Chiappini², B. Weiner³, E. Tasciotti¹, and M. Ferrari^{1,2}
¹The University of Texas Health Science Center at Houston, Houston, TX, ²The University of Texas at Austin, Austin, TX, ³The Methodist Hospital Research Institute, Houston, TX
- PS-8A-7-119 Ultrasonic Nebulization as a Tool for Creating Multilayered, Multicomponent Nanoassemblies**
D. Mills¹, Y. Lvov¹, K. McNamara¹, and M. Thangaraj¹
¹Louisiana Tech University, Ruston, LA
- PS-8A-7-120 A Novel Dual-agent Loaded PLGA Nanoparticle for the Simultaneous Delivery of Chemotherapy and Hyperthermia**
Y. tang¹, T. Lei¹, R. Manchanda¹, A. Nagesetti¹, A. Fernandez-Fernandez¹, and A. J. McGoron¹
¹Florida International University, Miami, FL
- PS-8A-7-121 Synthesis of a Thermally Responsive Curcumin Conjugate for Treating Intervertebral Disc Pathologies**
S. M. Sinclair¹, D. Qu¹, X. Chen¹, E. J. Toone¹, A. Chilkoti¹, and L. A. Setton¹
¹Duke University, Durham, NC
- PS-8A-7-122 Model analysis of Implant Formation and Drug Release from *In Situ* Forming Implants**
R. B. Patel¹, G. M. Saidel¹, and A. A. Exner¹
¹Case 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. Mani², and C. M. Agrawal²
¹University of Texas Health Science Center at San Antonio, San Antonio, TX, ²University 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. Huang¹, and C. Zhang¹
¹Virginia Tech, Blacksburg, VA
- PS-8A-7-125 Dual Functional Thin Film Coating: Microbial With Controlled Release of A Therapeutic Agent**
S. Y. Wong¹, J. S. Moskowicz¹, R. C. Smith¹, J. Veselinovic¹, R. A. Rosario¹, K. Timachova¹, M. R. Blaise¹, A. M. Klibanov¹, and P. T. Hammond¹
¹Massachusetts Institute of Technology, Cambridge, MA
- PS-8A-7-126 Nano-micro Carrier Systems for Sustained Pulmonary Drug Delivery**
I. M. El-Sherbiny¹, and H. D. Smyth²
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- PS-8A-7-127 The Effect of Hydrophobic Chain Length on the Toxicity of Block Copolypeptide Vesicles**
U.-J. Choe¹, A. R. Rodriguez¹, J.-K. Y. Tan¹, W. Lou¹, T. J. Deming¹, and D. T. Kamei¹
¹UCLA, 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. Fan¹, G. Mani¹, J. Luo², D. Marton^{1,2}, E. A. Sprague^{1,2}, M. D. Feldman^{1,2}, and M. Agrawal¹
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- PS-8A-7-129 Boronic Acid Based Microparticulate Insulin Delivery System**
I. Dasgupta¹, M. Srivastava¹, E. Tanifum¹, and A. Annapragada¹
¹The 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. Blanco¹, J. O. Martinez¹, T. Sangai², F. Meric-Bernstam², and M. Ferrari¹
¹University of Texas Health Science Center at Houston, Houston, TX, ²University of Texas MD Anderson Cancer Center, Houston, TX
- PS-8A-7-131 Nanoporous Silicon Particles With Tailored Features for Controlled Biodegradation**
J. O. Martinez¹, C. Chiappini², X. Liu¹, M. Ferrari^{1,3}, and E. Tasciotti¹
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- PS-8A-7-132 Development and Characterization of Fast-acting Microspheres for Thrombolytic Therapy**
H. X. Nguyen¹, and E. A. O'Rear¹
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- PS-8A-7-133 Pertussis Toxin Stability within a Nanofibrous Whooping Cough Vaccine Patch**
A. Shteyman¹, K. Sawicka², and S. Simon²
¹Stony Brook University, Brooklyn, NY, ²Stony Brook University, Stony Brook, NY
- PS-8A-7-134 Calcium Carbonate Coprecipitation for Ibl Nanocapsule Drug Delivery System**
M.-M. Kelley¹, S. M. Shiels¹, and M. R. Appleford¹
¹University 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. Poon¹, and P. T. Hammond¹
¹MIT, Cambridge, MA

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. Freedman¹, P. S. Spuhler¹, E. Cevik¹, M. Sahin², and M. S. Unlu¹
¹Boston University, Boston, MA, ²New Jersey Institute of Technology, Newark, NJ
- PS-8A-8-137 A 64-Site Three-Dimensional Folded Electrode Array Using Planar Fabrication**
Sr. M-E. Merriam¹, O. Srivannavit¹, and K. D. Wise¹
¹University of Michigan, Ann Arbor, MI
- PS-8A-8-138 A Biodegradable Regenerative Peripheral Neural Interface**
D. Lewitus¹, J. R. Vogelstein², Z. Gehua³, C. Youngseok³, J. Kohn¹, S. Harshbarger², and X. Jia³
¹Rutgers University, Piscataway, NJ, ²The Johns Hopkins University Applied Physics Laboratory, Laurel, MD, ³Johns Hopkins University School of Medicine, Baltimore, MD
- PS-8A-8-139 Wavelength Selective Floating Light Activated Micro-Electrical Neurostimulators (FLAMES)**
E. Cevik¹, D. S. Freedman¹, P. S. Spuhler¹, M. Sahin², and M. S. Unlu¹
¹Boston University, Boston, MA, ²New Jersey Institute of Technology, Newark, NJ
- PS-8A-8-140 EMG-Based Neural Network Control of Prosthetic Limbs**
C. Pulliam¹, and R. Kirsch¹
¹Case 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. Rouse¹, D. C. Nahlik¹, M. A. Peshkin², and T. A. Kuiken^{1,3}
¹Northwestern University, Chicago, IL, ²Northwestern University, Evanston, IL, ³Rehabilitation Institute of Chicago, Chicago, IL
- PS-8A-8-142 Data Fusion for Lower Limb Prosthesis Locomotion Mode Detection**
E. J. Rouse¹, A. J. Young¹, C. Shirota^{1,2}, C. J. Griffith¹, and L. J. Hargrove^{1,3}
¹Northwestern University, Chicago, IL, ²Ministry of Education of Brazil, Brasília, DF, Brazil, ³Rehabilitation Institute of Chicago, Chicago, IL
- PS-8A-8-143 An Impulse-Based Virtual Prosthesis (IVP) for Neural-Machine Control Development**
N. Bunderson¹, and T. Kuiken¹
¹Rehabilitation 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. Young¹, and L. Hargrove^{2,3}
¹Northwestern University, Evanston, IL, ²Northwestern University, Chicago, IL, ³Rehabilitation Institute of Chicago, Chicago, IL
- PS-8A-9-145 The Effect of Increased Inertia on Standing Balance and Balance Recovery**
K. E. Costello¹, S. L. Matrangola¹, and M. L. Madigan²
¹Virginia Tech-Wake Forest, Blacksburg, VA, ²Virginia Tech, Blacksburg, VA
- PS-8A-9-146 An EMG Based Continuous Adaptive Controller for Upper Extremity Neuroprostheses**
M. Iorio¹, and R. Kirsch¹
¹Case Western Reserve University, Cleveland, OH
- PS-8A-9-147 Human Postural Control System Responses When Perturbed With Frequencies Near That of Normal Sway**
V. Bhatkar¹
¹Clarkson University, Potsdam, NY
- PS-8A-9-148 Empirical Mode Decomposition/ Hilbert Transform Analysis of Induced Postural Oscillations**
R. B. Pilkar¹, E. M. Bollt¹, and C. J. Robinson^{1,2}
¹Clarkson University, Potsdam, NY, ²Syracuse VA Medical Center, Syracuse, NY

PS-8A-9-149 Dimensionality Reduction in Primate Motor Cortex During Dexterous Grasps
V. Aggarwal¹, M. Mollazadeh¹, A. Davidson², A. Cheng¹, M. H. Schieber², and N. Thakor¹
¹Johns Hopkins University, Baltimore, MD, ²University 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. Merriam¹, J. Skousen², O. Srivannavit¹, P. A. Tresco², and K. D. Wise¹
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PS-8A-10-151 Real-Time Imaging of Intracortical Inflammation at the Device-Tissue Interface
B. Gui¹, J. R. Capadona^{1,2}, and J. P. Basilion^{1,3}
¹Case Western Reserve University, Cleveland, OH, ²Cleveland Veteran Affairs Medical Center, Cleveland, OH, ³National Foundation for Cancer Research, Cleveland, OH

PS-8A-10-152 Novel Degradable Polymer Carrier for Cortical Neural Probes
D. Lewitus¹, K. Smith², W. Shain², and J. Kohn¹
¹Rutgers University, Piscataway, NJ, ²Wadsworth Center, Albany, NY

PS-8A-10-153 CNT-Modified Electrode Sites for *In Vitro* and *In Vivo* Silicon Probe Studies
Sr. M-E. Merriam¹, O. Srivannavit¹, M. J. Roberts¹, Y. Zhang¹, N. K. Dhingra¹, A. J. Hart¹, and K. D. Wise¹
¹University of Michigan, Ann Arbor, MI

PS-8A-10-154 Targeted Electrical Stimulation for Excitation of Selective Neuronal Populations
M. L. Kuykendal¹, G. S. Guvanasen¹, M. A. Grover¹, S. M. Potter¹, and S. P. DeWeerth¹
¹Georgia Institute of Technology, Atlanta, GA

PS-8A-10-155 Mechanical Properties of Brain Structures; Implications for Compliant Electrodes
B. Morrison¹, and B. S. Elkin¹
¹Columbia University, New York, NY

PS-8A-10-156 Assessment of Tissue Response in Push Pull Perfusion for Neurochemical/Electrophysiological Sensing
D. E. Cepeda¹, L. H. Hains², K. L. Smith², W. Shain², and R. T. Kennedy¹
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PS-8A-10-157 Macrostimulation through the Microelectrode Guide Cannula During DBS Implantation
J. Rakkar¹, K. Mewes², C. D. Esper², M. R. DeLong², and R. E. Gross²
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PS-8A-10-158 Characterization of Tissue at Intracortical Microelectrode Interfaces Using *In Vitro*, *In Situ* and *In Vivo* Imaging Strategies.
A. J. Woolley¹, H. Desai¹, M. A. Steckbeck¹, N. Onunkwo¹, N. Patel¹, S. Sommakia¹, and K. J. Otto¹
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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. Pacheco¹, N. O. Enemchukwu¹, T. A. Sulchek¹, D. White², and A. J. Garcia¹
¹Georgia Institute of Technology, Atlanta, GA, ²Centers for Disease Control and Prevention, Atlanta, GA

PS-8A-11-160 Enhancing Transfection Efficiency of Lipopolyplexes via a "Soft-Core" Approach
K. Phua¹, C. Grigsby¹, and K. Leong¹
¹Duke University, Durham, NC

PS-8A-11-161 Design Algorithm for making Non-Immunogenic Proteins
S. C. Lee¹
¹The Ohio State University, Columbus, OH

- PS-8A-11-162 Antibody Responses to Nanodevices and a Design Algorithm for Their Mitigation**
S. C. Lee¹
¹The Ohio State University, Columbus, OH
- PS-8A-11-163 Clustering of Stimuli on Single-Walled Carbon Nanotube Bundles Enhances Cellular Activation**
T. R. Fadel¹, M. Look², G. Haller², L. Pfefferle², and T. Fahmy²
¹Yale Univ, New Haven, CT, ²Yale University, New Haven, CT
- PS-8A-11-164 High-throughput Particle Production & Antigen Presenting Cell Arrays for Particle Vaccine Optimization**
A. P. Acharya¹, N. Dolgova¹, J. S. Lewis¹, T. Zaveri¹, M. R. Carstens¹, C-Q. Xia², M. J. Clare-Salzler², and B. G. Keselowsky¹
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- PS-8A-11-165 Design of Potent Complement Inhibitors of the Compstatin Family**
D. Morikis¹, A. Lopez De Victoria¹, R. Gorham¹, M. L. Bellows², P. Tamamis³, G. Archontis³, D. D. Lo¹, and C. A. Floudas²
¹University of California, Riverside, Riverside, CA, ²Princeton University, Princeton, NJ, ³University of Cyprus, Nicosia, Cyprus
- PS-8A-11-166 Control of Inflammation Using Spatially Immobilized Cytokines**
S. Y. Kwan¹, S. K. Andreko¹, L. L. Schultz¹, L. E. Weiss¹, B. T. Ballou¹, X. X. Zheng², and P. G. Campbell¹
¹Carnegie Mellon University, Pittsburgh, PA, ²University of Pittsburgh Medical Center, Pittsburgh, PA
- PS-8A-11-167 Targeted, Immuno-suppressive Microparticles Modify Dendritic Cell Behavior and Induce Foxp3+ Tregs.**
J. Lewis¹, N. Dolgova¹, C. Xia¹, M. Clare-Salzler¹, and B. Keselowsky¹
¹University of Florida, Gainesville, FL
- PS-8A-11-168 Relationship Between Antigen Binding Affinity and Neutralization Potency of Antibodies Against SARS-COV Strains**
M. Rani¹, R. Baric², B. Iverson¹, and G. Georgiou¹
¹UT Austin, Austin, TX, ²UNC, Chapel hill, NC
- PS-8A-11-169 Distinct Mechanics of Neutrophil Phagocytosis of Fungal Particles and Antibody-coated Targets**
C-Y. Lee¹, M. Herant², S. M. Johnson¹, D. Pappagianis¹, and V. Heinrich¹
¹University of California, Davis, CA, ²Boston University, Boston, MA
- PS-8A-11-170 Inducing Immune Tolerance Using a Material to Program Dendritic Cells**
C. Verbeke¹, 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. Pasluosta¹, and A. W. Chiu¹
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- PS-8A-12-172 Closed Loop Non-Invasive Human-Robot Interaction: Temperature Sensitive Bionic Finger**
B. Teplitzky¹, V. J. Santos¹, and S. Helms Tillery¹
¹Arizona State University, Tempe, AZ
- PS-8A-12-173 Quantification of Maximum Neck Range of Motion in Assessment of Patient Peripheral Vision**
B. L. Roach¹, J. McKee¹, R. R. Goodenough¹, J. O. Brooks¹, and J. D. DesJardins¹
¹Clemson University, Clemson, SC
- PS-8A-12-174 The Design and Evaluation of a Three-Variable Vibrotactile Feedback System for a Myoelectric Arm**
E. D. Sellers¹, and A. W. Chiu¹
¹Louisiana Tech University, Ruston, LA
- PS-8A-12-175 The Effects of Noise and Inertia Distribution During a Planar Reaching Task**
H. P. Nguyen¹, and J. Dingwell¹
¹University 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. Dingwell¹, and P. E. Roos²

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PS-8A-12-177 The Design of Cost Efficient Prosthetic Gripper Spring Powered Rotary (SPR) Prosthetics

K. Seyedmadani¹, V. B. Pizziconi², J. Muthuswamy², and S. I. Helms Tillery²

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PS-8A-12-178 Analysis of Amputee Gait Using Virtual Reality Rehabilitation Techniques

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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

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PS-8A-13-180 Dynamic Properties of Soft Tissues in Human Ear at Auditory Frequencies

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PS-8A-13-181 High-Speed 3D Motion Analysis System for Quantifying Human Subject Kinematics During Frontal Sled Tests

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PS-8A-13-182 An Objective Assessment Device For Quantifying Ankle Plantarflexion Muscle Performance During Dialysis

R. Soangra¹, and T. E. Lockhart¹

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PS-8A-13-183 The Influence of Screw Thread and Tapping on the Fatigue Performance of Pedicle Screws

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PS-8A-13-184 Rib Fracture Timing in Dynamic Belt Tests with Human Cadavers

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PS-8A-13-185 Dynamic Tensile Material Properties of Human Pelvic Cortical Bone

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PS-8A-13-186 Dynamic Hydraulic Pressure Stimulation-induced Intramedullary Pressure and its Adaptation Potential

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¹Stony Brook University, Stony Brook, NY

PS-8A-13-187 Relationships between Linear and Angular Head Acceleration from Impact to Human Volunteers

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PS-8A-13-188 Head Accelerations from Baseballs Impacting Catcher's Masks and Implication on Injury

S. Rowson¹, K. Shain¹, M. Madigan¹, and S. M. Duma¹

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PS-8A-13-189 Variances in the Blast-Induced Intracranial Pressure Response Due to Subject Orientation

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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. Heydarian¹, S. Choy¹, A. Wheatley¹, R. Etemad-Rezai², D. G. McCormack², and G. Parraga^{1,2}

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PS-8A-14-191 Development of a Pulmonary Surrogate for Blunt to Blast Loading Applications.

K. A. Danelson¹, F. S. Gayzik¹, J. J. Hoth², and J. D. Stitzel¹

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PS-8A-14-192 Challenges Associated with Quantitative Assessment of the Lung with Dual Energy Xe-MDCT

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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

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PS-8A-15-194 A Study of Artefacts and Their Removal During Forced Oscillation

S. A. Bhatwadekar¹, Y. Chen¹, J. Ohishi², P. Hernandez¹, T. Brown¹, C. McParland¹, and G. N. Maksym¹

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PS-8A-15-195 Model-Based Prediction of Exacerbations in Asthma

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PS-8A-15-196 Assessment of Metabolic Variation In Sleep Apnea

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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

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PS-8A-16-198 Calculations of Thermodynamic Effects of Conformational Constraints in Protein-Ligand Interactions

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PS-8A-16-199 Protein-ligand Binding Free Energy Calculation with the AMOEBA Polarizable Force Field

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PS-8A-16-200 Selective Binding of Peptides on Conducting Polymers

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PS-8A-16-201 Steered Molecular Dynamics Parameters to Study Shear Between Collagen Molecules

A. L. Kwansa¹, and J. W. Freeman¹

¹Virginia 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. Dolly¹, and D. J. Klinken¹
¹West Virginia University, Morgantown, WV
- PS-8A-16-203 Release of Nitric Oxide From Hemoglobin Solution Due to Reaction With Nitrite – A Quantitative Analysis**
V. Muthuvijayan¹, B. Piknova², R. N. Pittman³, A. N. Schechter², and A. S. Popel¹
¹Johns Hopkins University, Baltimore, MD, ²National Institutes of Health, Bethesda, MD, ³Virginia Commonwealth University, Richmond, VA
- PS-8A-16-204 Shape-Based Virtual Screening: The Discovery of a Potent Inhibitor Targeting JNK1-JIP1 Interaction**
C. Yan¹, K. N. Dalby¹, and P. Ren¹
¹the 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. McBride¹, and V. G. J. Rodgers¹
¹University of California, Riverside, CA
- PS-8A-16-206 Modeling of the Effects of Protein Alignment & Orientation on Actin Myosin Interaction**
C-C. Liu¹, S. M. Kreuzer¹, E. A. Khatiblou¹, J. D. Marquez¹, J. Zhou¹, and T. J. Moon^{1,2}
¹The University of Texas at Austin, Austin, TX, ²Texas Materials Institute, Austin, TX
- PS-8A-16-207 Understanding Protein Preservation in Sugar Glasses via Simulation Study of Fast Dynamics**
D. S. Simmons¹, M. T. Cicerone¹, and J. F. Douglas¹
¹National Institute of Standards and Technology, Gaithersburg, MD
- PS-8A-16-208 Modeling of Sustained Protein Release from an Aptamer-Functionalized Hydrogel**
B. Soontornworajit¹, M. Karzar-Jeddi¹, Y. Wang¹, and T-H. Fan¹
¹University of Connecticut, Storrs, CT
- PS-8A-16-209 A Coarse-Grained Model for RNA Molecular Dynamics Simulation**
Z. Xia¹, and P. Ren¹
¹The University of Texas at Austin, Austin, TX
- PS-8A-16-210 Using Simulation to Study the Effect of Microtubule Dynamics Parameters Categorization**
K. Y. Kong¹, R. Moffitt¹, H. Khan¹, A. I. Marcus², and M. D. Wang¹
¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA
- PS-8A-16-211 Discrete and Stochastic Spatiotemporal Models of Reaction-Diffusion using Agent Based Modeling**
M. Azimi¹, Y. Jamali¹, and M. Mofrad¹
¹UC Berkeley, Berkeley, CA
- PS-8A-16-212 Discrimination of Collagen Denaturation Models Using Parameter Estimation**
N. T. Wright¹
¹Michigan State University, East Lansing, MI
- PS-8A-16-213 Continuum Modeling of Myosin II Subfragment-2 Coiled-coil**
J. Zhou¹, S. M. Kreuzer¹, E. Khatiblou¹, C-C. Liu¹, J. D. Marquez¹, and T. J. Moon¹
¹University 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. Moussalem¹, R. Chowdhury¹, D. Keidel², A. Olson², M. Sanner², and C. Bajaj¹
¹The University of Texas at Austin, Austin, TX, ²The Scripps Research Institute, La Jolla, CA
- PS-8A-16-215 Scalable Integration of Multiple Molecular Pathway Models**
V. Ayyadurai¹, and C. F. Dewey¹
¹M.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. Marquez¹, S. Kreuzer¹, E. Khatiblou¹, D. Liu¹, J. Zhou¹, and T. Moon^{1,2}
¹The University of Texas at Austin, Austin, TX, ²Texas Materials Institute, Austin, TX
- PS-8A-16-217 Integrative Model of Interferon (IFN) Response to Viral Infection**
S. Ayyadurai¹
¹M.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. Nagao¹, and C. E. Schmidt¹
¹University of Texas at Austin, Austin, TX
- PS-8A-17-219 Independent Tuning of Enzymatically Cleavable starPEG-heparin Hydrogels to Direct Tissue Regeneration**
K. R. Levental¹, M. S. Grieb¹, M. V. Tsurkan¹, K. Chwalek¹, U. Freudenberg¹, and C. Werner¹
¹Leibniz Institute of Polymer Research Dresden, Dresden, Germany
- PS-8A-17-220 Investigation of Biomimetic Folding within Polydepsipeptides**
M. M. Nguyen¹, J. Zhang¹, P. Ren¹, and L. Suggs¹
¹University of Texas at Austin, Austin, TX
- PS-8A-17-221 Sequential Immobilization of TM and EPCR to create a Biomimetic Vascular Surface**
M. Schneider¹, A. Subramanian¹, K. Kador¹, and T. Mammedov¹
¹University 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. Cox¹, and J. J. Socha²
¹Virginia Tech, Blacksburg, VA, ²Virginia Tech, Blacksburg, VA
- PS-8A-17-223 Selectable, Tunable Naturally Occurring Nano-materials for Tissue Engineering**
L. Xia¹, S. Lenaghan¹, A. Wills¹, and M. Zhang¹
¹University of Tennessee, Knoxville, TN
- PS-8A-17-224 What Makes a Nerve Guidance Feature?-Novel materials Inspired by Schwann cells**
C. Y. Lopez-Fagundo¹, and D. Hoffman-Kim, Ph.D.¹
¹Brown University, Providence, RI
- PS-8A-17-225 Biomimetic Surface Functionalized Poly(Lactic Acid) Fibers for Musculoskeletal Tissue Regeneration**
J. D. Murray¹, S. B. VanGordon¹, T. B. Blue¹, R. L. Shambaugh¹, P. L. DeAngelis², and V. I. Sikavitsas¹
¹University of Oklahoma, Norman, OK, ²University 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. Choh¹, and C. Wang¹
¹University 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. Noriega¹, S. Guha Thakurta¹, M. Schneider¹, G. Buddiraja¹, and A. Subramanian¹
¹University of Nebraska, Lincoln, NE
- PS-8A-18-228 Large Scale Production of Erythrocytes from Placental Derived Stem Cells Using 3D Perfusion Bioreactor Technology Based on a Four Compartment Hollow Fiber Membrane Systems with Integral Oxygenation**
G. J. Housler^{1,2}, R. Zhao², M. V. Kameneva^{1,2}, and J. C. Gerlach^{2,3}
¹University of Pittsburgh, Pittsburgh, PA, ²McGowan Institute for Regenerative Medicine, Pittsburgh, PA, ³University of Pittsburgh Medical Center, Pittsburgh, PA

- PS-8A-18-229 Bioreactor Expansion and Differentiation of Adult Side Population Stem Cells**
D. B. Cowan¹, I. V. Alpatov¹, and K-R. Wang¹
¹Children'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. Hu¹, and Y-C. Liu²
¹Institute of Biomedical Engineering, National Cheng Kung University, Tainan, Taiwan, Taiwan, ²Department 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. Penick¹, H. Baskaran¹, J. A. Berilla¹, and J. F. Welter¹
¹Case Western Reserve University, Cleveland, OH
- PS-8A-18-232 A Bioreactor to Mechanically Stimulate and Evaluate Tissue-engineered Constructs During Culture**
T. J. Lujan¹, K. Wirtz¹, S. Madey¹, and M. Bottlang¹
¹Legacy Research, Portland, OR
- PS-8A-18-233 Influence of Scaffold Structure and Flow Perfusion Shear Stress on MSC Osteoblastic Differentiation**
S. B. VanGordon¹, R. S. Voronov¹, T. B. Blue¹, R. L. Shambaugh¹, D. V. Papavassiliou¹, and V. I. Sikavitsas¹
¹University of Oklahoma, Norman, OK
- PS-8A-18-234 High-Throughput Antibody-Independent Method For Sorting Stem Cells**
K. M. Lynch¹, and T. Ahsan¹
¹Tulane University, New Orleans, LA
- PS-8A-18-235 Bioreactor Analysis of Endothelialised Urinary Bladder Matrix Tubular Scaffolds Under Steady Flow: A Potential Vascular Graft**
A. Callanan¹, M. Walsh¹, and T. McGloughlin¹
¹University of Limerick, Limerick, Ireland

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. Azarin¹, J. Zhang¹, C. Hsiao¹, X. Lian¹, T. J. Kamp¹, and S. P. Palecek¹
¹University 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
¹Georgia Institute of Technology, Atlanta, GA
- PS-8A-19-238 Tissue Engineered 3-Dimensional Bone Autografts Using the Wharton's Jelly**
R. I. Abousleiman^{1,2}, and V. Sikavitsas²
¹Oklahoma Medical Research Foundation, Oklahoma City, OK, ²University of Oklahoma, Norman, OK
- PS-8A-19-239 Sonic Hedgehog Presentation on Dynabeads Directs Mesodermal Commitment of Mouse Embryonic Stem Cells**
L. Geuss¹, G. Zhang², and L. J. Suggs¹
¹The University of Texas at Austin, Austin, TX, ²The University of Akron, Akron, OH
- PS-8A-19-240 Reprogramming of Gastric Cancer Line MKN-28**
C. X. Cai¹, A. Q. Lu¹, and J-C. Liao¹
¹Columbia University, New York, NY
- PS-8A-19-241 Dynamic Tracking of Induced Pluripotent Stem Cell Reprogramming Process**
P. J. Hampilos¹, C. X. Cai¹, and J-C. Liao¹
¹Columbia University, New York, NY
- PS-8A-19-242 Unique Technique for Growing Progenitor Epithelial Keratinocyte Strains**
A. Peramo¹, and C. Marcelo¹
¹University 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. Almodovar¹, S. Bacon¹, J. Gogolski¹, J. Kisiday¹, and M. Kipper¹
¹Colorado State University, Fort Collins, CO
- PS-8A-19-244 Optimization of Intermediate Steps of the Beta-Islet Differentiation Program for Human Embryonic Stem Cells**
M. Jaramillo¹, and I. Banerjee¹
¹University of Pittsburgh, Pittsburgh, PA
- PS-8A-19-245 Microstructures and Growth Factors Alter Stem Cell Proliferation and Migration for Regenerative Therapy**
J. M. Collins¹, P. Ayala², T. A. Desai², P. H. Goldspink¹, and B. Russell¹
¹University of Illinois at Chicago, Chicago, IL, ²University 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. Franco¹, N. Gorenkova², Z. Hassani², G. El Akabawy², R. Poche³, M. Mado², M. Dickinson³, and J. West¹
¹Rice University, Houston, TX, ²King's College, London, United Kingdom, ³Baylor 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. Zhang², and L. Tang^{1,2}
¹The University of Texas at Arlington, Arlington, TX, ²The 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. Desai¹, N. Kulkarni¹, D. Verma¹, M. L. Previtara¹, R. Schloss¹, and N. Langrana¹
¹Rutgers University, Piscataway, NJ
- PS-8A-19-249 Spontaneous Fusion of Mesenchymal Stem Cells with Endothelial Cells**
Q. A. Tran¹, and B. Ogle¹
¹University 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. Tong¹, S. Sant^{2,3}, A. Khademhosseini^{2,3}, and X. Jia¹
¹Delaware Biotechnology Institute, University of Delaware, Newark, DE, ²Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, Cambridge, MA, ³Brigham 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. Wolfe¹, J. Leleux¹, and T. Ahsan¹
¹Tulane 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. Hepp⁴, R. Richter⁴, C. Josten⁴, A. Bader², and B. Marquass^{1,4}
¹University of Leipzig Translational Centre for Regenerative Medicine, Leipzig, Germany, ²University of Leipzig Center of Biotechnology and Biomedicine, Leipzig, Germany, ³University of Texas Health Science Center San Antonio, San Antonio, TX, ⁴University 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. Rao¹
¹Virginia Commonwealth University, Richmond, VA
- PS-8A-19-254 An Implantable Immuno-Modulatory Bioreactor for Spinal Cord Injury Repair**
J. Barminko¹, J. H. Kim¹, S. Otsuka¹, R. Schloss¹, M. Grumet¹, and M. L. Yarmush¹
¹Rutgers University, Piscataway, NJ
- PS-8A-19-255 A Small-scale Assay for Optimizing Differentiation Protocols of Human Embryonic Stem Cells**
J. T. Outten¹, X. Cheng², P. Gadue², D. L. French², and S. L. Diamond¹
¹University of Pennsylvania, Philadelphia, PA, ²Children'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 Fortin¹, and T. Ahsan¹
¹Tulane University, New Orleans, LA
- PS-8A-19-257 Engineering the Pericellular Matrix: Silencing Type VI Collagen and Decorin in Differentiating hMSCs**
J. D. Twomey¹, P. I. Thakore¹, and A. H. Hsieh^{1,2}
¹University of Maryland, College Park, MD, ²University of Maryland, Baltimore, MD
- PS-8A-19-258 Donor-age Dependent Changes in Mesenchymal Stem Cell Functions**
C. Buckspan¹, and S. Varghese¹
¹Uc 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. West¹
¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX
- PS-8A-19-260 Biomaterial Systems to Assess the Influence of Cell-matrix Interactions on Hematopoietic Stem Cells**
J. Choi¹, and B. Harley¹
¹University of Illinois at Urbana-Champaign, Urbana, IL
- PS-8A-19-261 Use of Chemical Gradients to Facilitate the Development of Structurally Oriented Cartilage**
A. L. Rivera¹, R. T. Li², J. F. Welter¹, and H. Baskaran¹
¹Case Western Reserve University, Cleveland, OH, ²University 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. Ricles¹, S. Nam¹, K. Sokolov^{1,2}, S. Emelianov¹, and L. J. Suggs¹
¹University of Texas at Austin, Austin, TX, ²University 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. Kim¹, J. Granick¹, C. Kwok¹, D. Borjesson¹, F-R. Curry¹, L. Miller², and S. Simon¹
¹UC Davis, Davis, CA, ²UCLA, Los Angeles, CA
- PS-8A-19-264 Impact of Extracellular Matrix Composition on Cardiomyogenic Differentiation of hESCs**
A. Laperle¹, S. Palecek¹, and K. Masters¹
¹University of Wisconsin-Madison, Madison, WI
- PS-8A-19-265 Connexon-mediated Cell Adhesion Drives Microtissue Self-Assembly**
B. A. Bao¹, and J. Morgan¹
¹Brown 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. Tian¹
¹University of California, Irvine, Irvine, CA
- PS-8A-19-267 Effect of Patterned TNF- α Delivery On *In Vitro* Osteogenic Differentiation of Mesenchymal Stem Cells**
P. M. Mountziaris¹, E. D. Lehman¹, F. K. Kasper¹, and A. G. Mikos¹
¹Rice University, Houston, TX
- PS-8A-19-268 Biomaterial Systems to Assess Cell-cell Interactions on Hematopoietic Progenitor Cells**
B. Mahadik¹, J. Lin¹, G. Timp¹, M. Sivaguru¹, and B. Harley¹
¹University of Illinois at Urbana Champaign, Urbana, IL
- PS-8A-19-269 Biomechanical Control of Stem Cell Behavior and Fate**
I. Titushkin¹, J. Shin², and M. Cho¹
¹University of Illinois, Chicago, IL, ²Korea 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. Schiller¹, and C. K. Kuo¹
¹Tufts University, Medford, MA
- PS-8A-19-271 Three-Dimensional Differentiation of Human Embryonic Stem Cells into Definitive Endoderm**
W. Wang¹, Y. Zhu¹, S. Jin¹, and K. Ye¹
¹University of Arkansas, Fayetteville, AR
- PS-8A-19-272 The Effects of Microenvironment on the Growth and Differentiation of Human Pulpal-derived Stem Cells**
L. Datko¹, M. Cupelli¹, S. Alapati², and D. Dean¹
¹Clemson University, Clemson, SC, ²University of Illinois at Chicago, Chicago, IL
- PS-8A-19-273 Applying Multiple, Independent Chemical Gradients to Human Stem Cells In 3D Culture Environments**
S. Sandock¹, J. White², and T. M. Keenan¹
¹University of Wisconsin, Madison, WI, ²University of Michigan, Ann Arbor, MI
- PS-8A-19-274 Cell Secreted Matrices Influence the Differentiation of Adipose Derived Stem Cells**
H. B. Coan¹, C. Booth¹, M. Lively¹, and M. Van Dyke¹
¹Wake 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. Hammers¹, M. Cannon¹, B. A. Bunnell², and R. P. Farrar¹
¹The University of Texas at Austin, Austin, TX, ²Tulane 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. Song¹, D. Dean¹, and M. L. Knothe Tate¹
¹Case Western Reserve University, Cleveland, OH
- PS-8A-19-277 Single Cell Analysis of Human Embryonic Stem Cells**
V. Lew¹, D. Nguyen¹, H. Sharma¹, S. Mirzaie¹, and M. Khine¹
¹University of California Irvine, Irvine, CA
- PS-8A-19-278 Bioactive PEG Hydrogels Promote the Expansion of Hematopoietic Progenitor Cells while Maintaining their Potency**
M. Rowland¹, S. Coskun², K. Hirschi², and J. West¹
¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX
- PS-8A-19-279 The Effects of Spin Embryoid Body Formation on the Chondrogenesis of Human Embryonic Stem Cells**
V. P. Willard¹, and K. A. Athanasiou²
¹Rice University, Houston, TX, ²University of California Davis, Davis, CA
- PS-8A-19-280 Hypoxia Induced Cardiogenesis May be Regulated by the Extracellular Matrix in Human Embryonic Stem Cell derived Embryoid Bodies**
R. E. Horton¹, E. Sachlos², and D. T. Auguste¹
¹Harvard University, Cambridge, MA, ²McMaster Stem Cell and Cancer Research Institute, Hamilton, Ontario, Canada
- PS-8A-19-281 Ultrasound Generated Mechanical Induction of Mesenchymal Stem Cells**
J-L. Ruan¹, Y-N. Wang¹, L. A. Crum¹, and S. B. Mitchell¹
¹University of Washington, Seattle, WA
- PS-8A-19-282 Metabolic Profiling Reveals Enhanced Understanding Of The Role of Hypoxia In Both Pluripotent And Differentiated (Hepatic) Mouse and Human ES Cells**
P. Ramakrishnan¹, T. Karedath¹, N. Bellance¹, C. Caneba¹, A. Bozchenko¹, S. A. Hussain¹, L. Pabst¹, and D. Nagrath¹
¹Rice University, Houston, TX
- PS-8A-19-283 Environment Enforced Conformation Alters Stem Cell and Nucleus Shape**
J. Zimmermann¹, and M. Knothe Tate¹
¹Case Western Reserve University, Cleveland, OH

PS-8A-19-284 hMSC-Seeded Biological Sutures Improve Delivery Efficiency for Cell Therapy in Cardiac Applications

J. Guyette¹, M. Fakharzadeh¹, M. Rolle¹, G. Pins¹, and G. Gaudette¹

¹Worcester Polytechnic Institute, Worcester, MA

Track: Translational Biomedical Engineering - **PS-8A-20 - *Translating Tissue Engineering Products: From Bench to Bedside***

PS-8A-20-285 Biocompatible Decellularization Technique for Whole Kidney

D. C. Sullivan¹, G. Orlando^{1,2}, S-H. Mirmalek-Sani¹, P. Baptista¹, A. Atala^{1,3}, T. AbouShwareb¹, S. Soker¹, and J. J. Yoo¹

¹Wake Forest University, Winston-Salem, NC, ²The University of Oxford, Oxford, United Kingdom, ³Wake Forest University Health Sciences, Winston-Salem, NC

PS-8A-20-286 Development of Influenza Vaccines Using Yeast Proteins Surface Display Vectors

L. Zhou¹, Y. Masniuk¹, S. Jin¹, and K. Ye¹

¹University of Arkansas, Fayetteville, AR

PS-8A-20-287 Nerve Injury Isolation: A novel Anti-adhesion Film From Natural Materials

S. Mayes¹, and C. Schmidt¹

¹UT Austin, Austin, TX

PS-8A-20-288 Translational Research: On the Road to Sustainability

F. R. Khan^{1,2}, C. K. Drummond¹, and J. L. Duerk¹

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

POSTER SESSION - 8B - 1:30PM - 5:00PM

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. Fok¹, Y. F. Fei¹, A. Li¹, A. Choe¹, W. Koury¹, A. McLaughlin¹, and M. Winek¹

¹Washington 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. Dorfman¹, B. Keeley¹, D. Salume¹, D. Shin¹, N. Bougrab¹, G. Barros¹, X. Hu¹, S. Brown¹, P. Poddar¹, and S. Kim¹

¹Johns Hopkins University, Baltimore, MD

PS-8B-1-3 Hand-Cranked Hypertension Screening Device to Detect Preeclampsia

M. Trachtenberg¹, G. Jayaram¹, S. Lee¹, S. Acharya¹, N. Thakor¹, and H. Sanghvi²

¹The Johns Hopkins University, Baltimore, MD, ²JHPIEGO, Baltimore, MD

PS-8B-1-4 Feasibility of Enhanced Algorithms for Post-Crash Injury Prediction for Improved Field Triage

S. M. Comas¹, and H. C. Gabler¹

¹Virginia Tech, Blacksburg, VA

PS-8B-1-5 Design and Development of a Low-Cost Spirometer

J. Glynn¹, A. Dias¹, J. Schaefer¹, A. Bremer¹, and D. Van Sickle¹

¹University of Wisconsin - Madison, Madison, WI

PS-8B-1-6 Removing Population Structure in Genome-Wide Association Studies Using Supervised Methods

A. B. Dicks¹, R. Parry¹, and M. D. Wang¹

¹Georgia Institute of Technology, Atlanta, GA

PS-8B-1-7 Low-Cost EKG Proposed for the State of Chihuahua, Mexico

B. A. Rodriguez¹, S. L. Montes¹, and R. Aguilar¹

¹ITESM Campus Chihuahua, Chihuahua, Chihuahua, Mexico

- PS-8B-1-8** **An Innovative Design Solution for an Affordable Infant CPAP in Developing Countries**
K. McEllen¹, A. Peabody¹, S. R. Sadaria¹, A. C. Seawright¹, and P. Irazoqui¹
¹Purdue University, West Lafayette, IN
- PS-8B-1-9** **Designing a Reliable, Reusable, and Inexpensive Respiratory Monitor for Use in Developing Hospitals**
A. Greis¹, M. Danilevich¹, S. Merugumala¹, K. Hattaway¹, and K. Glass¹
¹Engineering World Health University of Texas, Austin, TX
- PS-8B-1-10** **Mercer on Mission Prosthetic Knee Joint**
L. A. Elliott¹, C. Butler¹, and S. V. Ladson¹
¹Mercer University, Macon, GA
- PS-8B-1-11** **Reusable Digital Manometer for Diagnosis of Cryptococcal Meningitis in Resource-Poor Settings**
M. S. Fifer¹, A. W. Cheng¹, S. C. Stender², N. V. Thakor¹, H. C. Sanghvi², and S. Acharya¹
¹Johns Hopkins University, Baltimore, MD, ²Jhpiego, Baltimore, MD
- PS-8B-1-12** **Engineering Outside of the Classroom: Lessons From Engineers Without Borders at University of Washington**
J. A. Callihan¹
¹University 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. Thomas¹, J. Balter¹, and S. J. Hollister¹
¹University of Michigan, Ann Arbor, MI
- PS-8B-2-14** **Monte Carlo Simulations and Experimental Measurements for Chronic Wound Assessment with Diffuse NIR**
X. Mao¹, and E. S. Papazoglou¹
¹Drexel University, Philadelphia, PA
- PS-8B-2-15** **Synthetic Ferritin Nanocores as a MRI Contrast Agent**
B. Sana¹, and S. Lim¹
¹Nanyang Technological University, Nanyang, Singapore
- PS-8B-2-16** **A Contrast Enhancement Filter for improving Stent Visibility in Interventional X-Ray Fluoroscopy**
Y. Jiang¹, and L-H. Chang¹
¹University of Central Oklahoma, Edmond, OK
- PS-8B-2-17** **A Novel Algorithm for 3D Model Reconstruction from Bi-Planar Angiogram Images**
W. A. Stoy¹
¹North Carolina State University, Raleigh, NC
- PS-8B-2-18** **Three-dimensional Quantification and Visualization Model for Drug Delivery in Eyes**
Y-T. Tsai¹, W. Hu², and L. Tang¹
¹University of Texas at Arlington, Arlington, TX, ²Progenitex Inc., Arlington, TX
- PS-8B-2-19** **Microfluidic Approaches for Synthesis of Microbubble-based Materials**
J. Wan¹, and H. Stone¹
¹Princeton University, Princeton, NJ
- PS-8B-2-20** **Combined Mechanical and Optical Simulation of Tissue During Application of Optical Clearing Devices**
W. C. Vogt¹, A. Izquierdo-Roman¹, A. A. Gurjarpadhye¹, and C. G. Rylander¹
¹Virginia Polytechnic Institute and State University, Blacksburg, VA
- PS-8B-2-21** **Advanced Microscopic Analysis of the Attachment Mechanism of *Giardia lamblia***
S. Lenaghan¹, K. White¹, Z. Zhang¹, and M. Zhang¹
¹University of Tennessee, Knoxville, TN

- PS-8B-2-22 Towards *In Vivo* Toxicity of Gadolinium-Single Walled Carbon Nanotubes as MRI Contrast Probes**
P. K. Avti¹, K. R. Shroyer¹, and B. Sitharaman¹
¹Stony Brook University, Stony Brook, NY
- PS-8B-2-23 Laser-induced Lipolysis Using Fiberoptic Microneedles**
M. A. Kosoglu¹, C. Ye¹, R. L. Hood¹, and C. G. Rylander¹
¹Virginia Tech, Blacksburg, VA
- PS-8B-2-24 Model Assisted MR Thermometry for Laser Induced Thermal Therapy**
J. P. Yung^{1,2}, D. Fuentes¹, A. M. Elliott¹, R. J. Stafford¹, and J. D. Hazle¹
¹The University of Texas M.D. Anderson Cancer Center, Houston, TX, ²The 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. Manthe¹, T. K. Jain¹, S. K. Dimitrijevic¹, and V. Labhasetwar^{1,3}
¹Cleveland Clinic, Cleveland, OH, ²Cleveland Clinic Lerner College of Medicine of Case Western Reserve University, Cleveland, OH, ³Taussig Cancer Institute, Cleveland, OH
- PS-8B-2-26 Computational Model for Predicting Drug Distribution in the Human Brain Using DTI**
Y. Rawash¹, O. Ivanchenko¹, N. Sindhwani¹, and A. Linninger¹
¹University of Illinois at Chicago, Chicago, IL
- PS-8B-2-27 Acoustically Sensitive Microcapsules for Ultrasound-based Localized Drug Delivery**
N. Phipps¹, M. Mobed-Miremadi¹, and M. Keralapura¹
¹San 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. Zhu¹, L. Ding¹, W. B. Zhang², D. L. Dickens², and J. A. King³
¹University of Oklahoma, Norman, OK, ²Minnesota Epilepsy Group, St. Paul, MN, ³University 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. Wijesinghe¹, B. D. Dolasinski¹, and B. J. Roth²
¹Ball State University, Muncie, IN, ²Oakland 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. Patel¹, and J. Lee¹
¹University of Cincinnati, Cincinnati, OH
- PS-8B-3-31 Monte Carlo Modeling of *In Vivo* Phosphorescence-lifetime-based pO₂ Measurements**
M. A. Davis¹, A. Ponticorvo¹, and A. K. Dunn¹
¹The University of Texas at Austin, Austin, TX
- PS-8B-3-32 Intraoperative Laser Speckle Contrast Imaging for Monitoring Cerebral Blood Flow**
L. M. Richards¹, A. B. Parthasarathy¹, E. L. Weber¹, M. G. Burnett², D. J. Fox², and A. K. Dunn¹
¹University of Texas at Austin, Austin, TX, ²St. David's Hospitals, Austin, TX
- PS-8B-3-33 Comparison of Indocyanine Green Fluorescence and Laser Speckle Contrast Imaging**
E. L. Weber¹, L. M. Richards¹, A. B. Parthasarathy¹, S. M. Kazmi¹, and A. K. Dunn¹
¹University of Texas at Austin, Austin, TX
- PS-8B-3-34 Imaging Schwann Cell High Affinity Nerve Growth Factor Receptors using Atomic Force Microscopy**
R. Williamson¹, and C. Miller¹
¹Saint Louis University, St. Louis, MO

- PS-8B-3-35** ***In Vitro* Refractive Index Measurement of Acute Rat Brains Using Optical Coherence Tomography**
J. Sun¹, S. Lee¹, M. Sarntinoranont¹, and H. Xie¹
¹University of Florida, Gainesville, FL
- PS-8B-3-36** **Simultaneous Dynamic and Functional MRI of Speech**
T. L. Paine¹, B. Sutton¹, and C. Conway¹
¹University of Illinois Urbana-Champaign, Urbana, IL
- PS-8B-3-37** **Reassessing the Ubiquity of Small-world Networks**
Q. K. Telesford¹, K. E. Joyce¹, S. Hayasaka¹, J. H. Burdette¹, and P. J. Laurienti¹
¹Wake 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. Salvaggio¹, A. D. Estrada¹, S. M. Kazmi¹, and A. K. Dunn¹
¹The University of Texas at Austin, Austin, TX
- PS-8B-3-39** **Accurate Brain Infarction Volume Estimation Based on Image Mapping**
A. Dawkins¹, and W. Zhao¹
¹University of Miami, Coral Gables, FL
- PS-8B-3-40** **Chronic Cerebral Blood Flow Imaging with Multi-Exposure Speckle Imaging**
S. M. Kazmi¹, A. B. Parthasarathy¹, and A. K. Dunn¹
¹The University of Texas at Austin, Austin, TX
- PS-8B-3-41** **Measuring Cerebrovascular Oxygenation Changes Due to Acute, Focal Ischemia Using Two-photon Microscopy**
A. D. Estrada¹, S. M. Kazmi¹, A. Salvaggio¹, and A. K. Dunn¹
¹University of Texas at Austin, Austin, TX
- PS-8B-3-42** **Development of Amyloid-beta Targeting Nanoparticles for Imaging and Therapy**
E. A. Tanifum¹, I. Dasgupta¹, L. Sun², I. Dhande², K. B. Ghaghada¹, A. V. Annapragada¹, and J. Eriksen²
¹University of Texas Health Science Center at Houston, Houston, TX, ²University of Houston, Houston, TX
- PS-8B-3-43** **Development of Methods for the Study of Traumatic Brain Injury Investigated Via Advanced Imaging**
B. M. Vaughn¹, B. Jortner², and W. Hardy¹
¹Virginia Tech, Blacksburg, VA, ²Virginia-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. Shi¹, and B. Fu¹
¹City College of New York, New York, NY
- PS-8B-4-45** **Paracrine Influences on Aortic Endothelial Hydraulic Conductivity**
R. Mathura¹
¹The 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. Amin¹, A. Kunkel², V. Le¹, and J. E. Wagenseil¹
¹St. Louis University, St. Louis, MO, ²Rice 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. Humphrey², L. Lönn³, J. A. Jensen¹, and K-A. Henneberg¹
¹Technical University of Denmark, Kongens Lyngby, Denmark, ²Texas A&M University, College Station, TX, ³Rigshospitalet, Denmark, Copenhagen, Denmark

- PS-8B-5-48 Modeling the Mechanical Properties of Veins Under Low (Venous) and High (Arterial) Transmural**
D. Valdez-Jasso¹, D. Bia², M. A. Haider¹, Y. Zocalo², R. L. Armentano^{2,3}, and M. S. Olufsen¹
¹North Carolina State University, Raleigh, NC, ²Universidad de La Republica, Montevideo, Uruguay, ³Universidad Favorolo, Buenos Aires, Argentina
- PS-8B-5-49 Evaluation of Digital Replantation Surgery Using Photoplethysmography**
K. C. Nam¹, K. H. Jang², and D. W. Kim¹
¹Yonsei University Health System, Seoul, Korea, Republic of, ²Yonsei University, Seoul, Korea, Republic of
- PS-8B-5-50 Directing Vascular Function by Modulating Vascular Structure**
P. W. Alford^{1,2}, A. P. Nesmith¹, J. N. Seywerd¹, and K. K. Parker^{1,2}
¹Disease Biophysics Group, Harvard University, Cambridge, MA, ²Wyss Institute for Biologically Inspired Engineering, Boston, MA
- PS-8B-5-51 Vascular Changes in Type 2 Diabetes Mellitus: Application to Restenosis After Stenting**
H. Wang¹, L. M. Ellwein¹, J. R. Kersten², and J. F. LaDisa^{1,2}
¹Marquette University, Milwaukee, WI, ²Medical 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. Ohashi², K. Kumagai², H. Akimoto², K. Tabayashi², and M. Sato²
¹Nagoya Institute of Technology, Nagoya, Japan, ²Tohoku University, Sendai, Japan
- PS-8B-5-53 Inverted DTM – A Possible Solution to the Cold Finger Problem**
M. W. Akhtar¹, S. J. Kleis¹, and R. W. Metcalfe¹
¹University of Houston, Houston, TX
- PS-8B-5-54 Ionizing Irradiation Alters Aortic Elasticity Measured as Pulse Wave Velocity.**
Y-Y. Liu¹, M. Butlin¹, T. Knittel², R. Smee², and A. Avolio¹
¹Australian School of Advanced Medicine, Sydney, NSW, Australia, ²Prince of Wales Hospital, Sydney, NSW, Australia
- PS-8B-5-55 Effects of Sleep Deprivation on Autonomic Nervous System**
D. W. Kim¹, D. I. Yang², K. C. Nam¹, and M. K. Kwon¹
¹Yonsei University Health System, Seoul, Korea, Republic of, ²Yonsei 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. Keegan¹, B. E. Gee², and M. O. Platt¹
¹Georgia Institute of Technology, Atlanta, GA, ²Morehouse School of Medicine, Atlanta, GA
- PS-8B-5-57 Regional Atherosclerotic Plaque Properties as Measured by Atomic Force Microscopy**
H. N. Hayenga¹, A. Trache^{1,2}, J. P. Trzeciakowski², and J. D. Humphrey¹
¹Texas A&M University, College Station, TX, ²Texas A&M Health Science Center, College Station, TX
- PS-8B-5-58 Variable Glycated Serum Albumin Modulates Endothelial Cell Culture Conditions**
D. A. Rubenstein¹, Z. Maria¹, B. E. Morton¹, and W. Yin¹
¹Oklahoma State University, Stillwater, OK
- PS-8B-5-59 ROS Signaling Modulates Enhanced Cell Proliferation and Intimal Hyperplasia in HSV Cultured *Ex Vivo***
B. Joddar¹, R. K. Reen¹, M. Firstenberg¹, and K. J. Gooch¹
¹The Ohio State University, Columbus, OH
- PS-8B-5-60 Elastin Degradation Reduces the Structure Stability of Arteries**
B. Han¹, A. Northcutt¹, and H-C. Han¹
¹University 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. Peloquin¹, J. Huynh¹, and C. A. Reinhart-King¹
¹Cornell University, Ithaca, NY

- PS-8B-5-62** ***In Vitro* Mechanical Testing of Hydration-Controlled Arterial Tissue**
D. Shahmirzadi¹, and A. H. Hsieh¹
¹University of Maryland, College Park, MD
- PS-8B-5-63** **Spatiotemporal Dynamics of Vasoconstriction in Small Arteries**
S. Pinto¹, S. Yasotharan¹, J. Yang¹, J. Voigtländer-Bolz², M. Sauve¹, C. Lochovsky¹, S-S. Bolz¹, and A. Günther¹
¹University of Toronto, Toronto, Ontario, Canada, ²St. 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. Morton¹, W. Yin¹, and D. A. Rubenstein¹
¹Oklahoma State University, Stillwater, OK
- PS-8B-5-65** **A Balance Point Approach to Characterize Adaptation of Arterial Networks**
S. F. Knezek¹, P. H. Nguyen¹, and C. M. Quick¹
¹Michael 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. Razavi¹, S. Zarafshar¹, H. Sawada¹, C. Xu¹, J. A. Feinstein¹, and C. A. Taylor¹
¹Stanford University, Stanford, CA
- PS-8B-5-67** **Inverse Mechanics of Cardiovascular Tissues**
R. Raghupathy¹, C. M. Witzenburg¹, A. Oltean¹, S. P. Lake¹, and V. Barocas¹
¹U. Minnesota, Minneapolis, MN
- PS-8B-5-68** **The Elastic and Viscoelastic Behaviors of Aortic Elastin Network**
Y. Zou¹, and K. Y. Zhang¹
¹Boston University, Boston, MA
- PS-8B-5-69** **Role of HIV Proteins in Biomechanically Mediated Protease Activity and Arterial Remodeling**
I. Kennedy¹, L. Hanson¹, J. Raykin¹, R. Sutliff², R. Gleason¹, and M. Platt¹
¹Georgia Tech, Atlanta, GA, ²Emory, Atlanta, GA
- PS-8B-5-70** **Surface Characterization and Adhesion Properties of Decellularized HUV**
L. P. Jackson¹, P. McFetridge², M. Nollert¹, and C. Townsend¹
¹University of Oklahoma, Norman, OK, ²University of Florida, Gainesville, FL

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. Wu¹, K. C. Lee¹, R. B. Dickinson¹, and T. P. Lele¹
¹University of Florida, Gainesville, FL
- PS-8B-6-72** **Cytotoxicity of Ultrashort Electric Pulse Exposure in Multiple Cell Types**
B. L. Ibe¹, C. C. Roth², J. A. Bernhard¹, D. R. Dalzell¹, G. J. Wilmink¹, and A. G. Pakhomov³
¹Air Force Research Laboratory, Brooks City-Base, TX, ²General Dynamics IT, Brooks City-Base, TX, ³Old Dominion University, Norfolk, VA
- PS-8B-6-73** **Structural and Geometric Effects in a Synthetic System of Exactly Two Kinesin-1 Motors**
J. Driver¹, A. Rogers¹, D. K. Jamison¹, R. Das¹, A. Kolomeisky¹, and M. Diehl¹
¹Rice University, Houston, TX
- PS-8B-6-74** **Electromechanical Coupling in the Membrane-Protein Motor Complex Associated with Prestin**
N. Nilsen¹, W. E. Brownell², S. X. Sun¹, and A. A. Spector¹
¹Johns Hopkins University, Baltimore, MD, ²Baylor College of Medicine, Houston, TX

- PS-8B-6-75** **Electrical Resistivity Changes in Splenic Tissue Under Compression**
R. E. Dodde¹, and A. Shih¹
¹University of Michigan, Ann Arbor, MI
- PS-8B-6-76** **Estimation of Microtubule GTP Cap Size *In Vivo***
D. Seetapun¹, and D. J. Odde¹
¹University of Minnesota, Minneapolis, MN
- PS-8B-6-77** **Pericellular Conditions Regulate Extent of Cell-mediated Compaction of Collagen Gels**
M. D. Stevenson¹, A. L. Sieminski², C. M. McLeod², F. J. Byfield³, V. H. Barocas⁴, and K. J. Gooch¹
¹Ohio State University, Columbus, OH, ²Franklin W. Olin College of Engineering, Needham, MA, ³University of Pennsylvania, Philadelphia, PA, ⁴University of Minnesota, Minneapolis, MN
- PS-8B-6-78** **Metabolic Flux Determination in Perfused Livers by Mass Balance Analysis: Effect of Fasting**
M. A. Orman¹, I. Androulakis¹, F. Berthiaume¹, and M. Ierapetritou¹
¹Rutgers University, Piscataway, NJ
- PS-8B-6-79** **Retinoic Acid-Induced Smooth Muscle Differentiation From Progenitor Cells is Regulated by ECM Cues**
E. Logsdon¹, J. Perley¹, Q. Gan¹, A. Somlyo¹, G. Owens¹, and T. Skalak¹
¹University of Virginia, Charlottesville, VA
- PS-8B-6-80** **Insights from Modeling Natural Killer Cell Proliferative Responses to Cytokine Stimulation**
Y. M. Zhao¹, and A. R. French²
¹Washington University in St. Louis, Saint Louis, MO, ²Washington University School of Medicine, Saint Louis, MO
- PS-8B-6-81** **Influence of Subcellular Structures on Single Vascular Smooth Muscle Cell Mechanics**
S. T. Wood¹, B. C. Dean¹, and D. Dean¹
¹Clemson University, Clemson, SC
- PS-8B-6-82** **An Experimental Study on Cell Membrane Transport During Desiccation for Biopreservation**
J. L. Jimenez-Rios¹, S. Bhowmick¹, and A. J. Fowler¹
¹University of Massachusetts Dartmouth, North Dartmouth, MA
- PS-8B-6-83** **A Coarse-Grain Molecular Dynamics Model for Sickle Hemoglobin Fibers**
H. Li¹, and G. Lykotrafitis¹
¹University of Connecticut, Storrs, CT
- PS-8B-6-84** **Uncovering Morphological and Morphogenetic Features in Epithelia by Eliminating Statistical Bias**
M. P. Miklius¹, and S. Hilgenfeldt^{1,2}
¹Northwestern University, Evanston, IL, ²University of Illinois at Urbana-Champaign, Urbana, IL
- PS-8B-6-85** **Computational Model of Force Propagation in Fibrous Extracellular Matrix**
X. Ma¹, K. J. Gooch¹, S. N. Ghadiali¹, and R. T. Hart¹
¹The Ohio State University, Columbus, OH
- PS-8B-6-86** **Expanding the Genetic Code in Mammalian Cells**
L. Xiang¹, K. Moncivais¹, and Z. J. Zhang¹
¹University of Texas at Austin, Austin, TX
- PS-8B-6-87** **Single Cell Based Modeling of Epithelial Tissue: A Biomechanical Approach**
Y. Jamali¹, M. Azimi¹, and M. Mofrad¹
¹University of California Berkeley, Berkeley, CA
- PS-8B-6-88** **Modulating the Cellular Accumulation of Toxic Misfolded Alpha-synuclein**
K. Kilpatrick¹, and L. Segatori¹
¹Rice University, Houston, TX

- PS-8B-6-89 Type-I Collagen Gels are Structurally and Mechanically Inhomogeneous and Anisotropic**
X. Ma¹, M. Weber¹, M. Stevenson¹, K. J. Gooch¹, S. N. Ghadiali¹, and R. T. Hart¹
¹The 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. Macdonald¹, and M. J. Lazzara¹
¹University 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. Park¹, and M. J. McShane¹
¹Texas A&M University, College Station, TX
- PS-8B-7-92 The Effect of Substrate Topography on Endocytosis and Transfection**
A. F. Adler¹, and K. W. Leong¹
¹Duke University, Durham, NC
- PS-8B-7-93 Proximal Effects of Ultraviolet Light Absorbers and Polymer Matrix in the Photo-Protection of [beta]-Carotene**
K. Morabito¹, K. Gilida², N. Shapely², and A. Tripathi¹
¹Brown University, Providence, RI, ²Rutgers University, New Brunswick, NJ
- PS-8B-7-94 Micro-Encapsulation as a Means to Modulate Nanomaterial-Cell Interactions**
D. W. Ritter¹, A. A. Romoser¹, R. Majithia¹, K. E. Meissner¹, C. M. Sayes¹, and M. J. McShane¹
¹Texas A&M University, College Station, TX
- PS-8B-7-95 Nanoscopic Mechanical Anisotropy in Hydrogel Surfaces**
M. Flores-Merino^{1,2}, S. Chirasatitsin³, C. LoPresti^{1,2}, G. Reilly², A. Engler³, and G. Battaglia¹
¹University of Sheffield, Western Bank, Sheffield, United Kingdom, ²University of Sheffield, Broad Lane, Sheffield, United Kingdom, ³University 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. Jang¹, P. Stiles¹, and S. R. Nettikadan¹
¹NanoInk Inc., Skokie, IL
- PS-8B-7-97 Micropatterning Polymeric Nanofibers with PEG Hydrogel for Application of Protein Microarray**
Y. Lee¹, H. Lee¹, K. Son¹, S. Park¹, S. Nam¹, Y. Park¹, and W-G. Koh¹
¹Yonsei Univ., Seodaemooon-gu, Seoul, Korea, Republic of
- PS-8B-7-98 Study of Parylene C as Non-Hermetic Coating for Micropackging of Implantable Microdevice**
H-I. Kuo¹, R. Zhang¹, and W. Ko¹
¹Case 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. Doiron¹, J. Spencer¹, and K. D. Rinker¹
¹University of Calgary, Calgary, Alberta, Canada
- PS-8B-7-100 Window into a Microworld: Microfluidic System for Studying Microbial Growth in Porous Media**
D. A. Markov¹, P. C. Samson¹, D. K. Schaffer¹, A. Dhummakupt¹, J. P. Wiksw¹, and L. M. Shor²
¹Vanderbilt University, Nashville, TN, ²University of Connecticut, Storrs, CT
- PS-8B-7-101 Influence of TiO2 Nanotube Crystallinity on Cell Behaviour**
G. Smith¹, K. Kolind², M. Foss², F. Besenbacher², and S. Jin¹
¹University of California San Diego, La Jolla, CA, ²Aarhus University, Aarhus, Denmark
- PS-8B-7-102 Understanding the Mechanics of the Insect Respiratory System Could Advance Tissue Engineering**
M. R. Webster¹, J. Twigg¹, J. J. Socha¹, and R. De Vita¹
¹Virginia Polytechnic Institute and State University, Blacksburg, VA

- PS-8B-7-103** **Decreased Lung Carcinoma Cell Function on Select Polymer Nanometer Surface Features**
L. Zhang¹, and T. Webster¹
¹Brown 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}
¹Michigan Technological University, Houghton, MI, ²Multi Scale Technologies Institute, Houghton, MI
- PS-8B-7-105** **Decreased Attachment of Epithelial Cells and Bacteria to Lubricin Coated Intraocular Lenses**
G. E. Aninwene II¹, E. Taylor¹, T. J. Webster¹, and G. D. Jay¹
¹Brown University, Providence, RI
- PS-8B-7-106** **Improvement of Nanofiber Morphology through Electrospinning Process Pausing**
D. Karatas¹, K. M. Sawicka¹, and S. R. Simon¹
¹Stony Brook University, Stony Brook, NY
- PS-8B-7-107** **The Bio-Assembler: 3D Cell Culturing Using Magnetic Levitation**
C. S. Filgueira¹, C. P. Bertucci¹, and G. R. Souza¹
¹Nano3D Biosciences, Inc., Houston, TX
- PS-8B-7-108** **Chitosan Enhances Cell Adhesion and Spreading on Nanocomposite Films**
A. K. Gaharwar¹, P. J. Schexnailder¹, C-J. Wu¹, Q. Jin¹, and G. Schmidt¹
¹Purdue University, West Lafayette, IN
- PS-8B-7-109** **UV-Modulated Elastomeric Microstructures for Studying Cell Mechanics**
L-T. Jiang¹, R. Okada¹, and J. Fu¹
¹University of Michigan, Ann Arbor, MI
- PS-8B-7-110** **Bacterial Catch-and-Release Using Thermally Responsive Multiphoton Fabricated Protein Hydrogels**
J. L. Connell¹, E. T. Ritschdorff¹, M. Whiteley¹, and J. B. Shear¹
¹The 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. Borwankar¹, K. Yoon¹, L. L. Ma¹, M. Mehrmohammadi¹, B. Willsey¹, K. Sokolov^{1,2}, S. Emelianov¹, and K. Johnston¹
¹The University of Texas at Austin, Austin, TX, ²UT 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. Jao¹, W. Sun², Y. K. Yoon¹, and G. J. Kim³
¹Dept. of Electrical Engineering, University at Buffalo, The State University of New York, Buffalo, NY, ²Dept. of Communicative Disorders & Sciences, University at Buffalo, The State University of New York, Buffalo, NY, ³Dept. 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. Machado¹, K. Tarquinio², and T. Webster¹
¹Brown University, Providence, RI, ²Rhode Island Hospital, Providence, RI
- PS-8B-7-114** **"The Disappearing Substrate": SiO₂ Etch Rate by Common Buffers in Genomic and Proteomic Technology**
S. Ahn¹, P. Spuhler¹, M. Cabodi¹, and S. Unlu¹
¹Boston University, Boston, MA
- PS-8B-7-115** **Polystyrene Microlens Array by Shrink-induced PDMS Mold**
D. Dyer¹, S. Shreim¹, S. Jayadev¹, D. Taylor¹, V. Lew¹, E. Botvinick¹, and M. Khine¹
¹University 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. Nain¹, and G. Michalopoulos²
¹Virginia Tech, Blacksburg, VA, ²University of Pittsburgh, Pittsburgh, PA

PS-8B-7-117 **Silk for High Fidelity Micromolding**
D. N. Breslauer¹, F. B. Myers¹, E. P. Lee¹, B. W. Turner¹, S. J. Muller¹, and L. P. Lee¹
¹UC Berkeley, Berkeley, CA

PS-8B-7-118 **Fabrication of Quantum Dot-Protein Arrays and their Application in Cell Adhesion Assays**
Z. R. Taylor¹, and D. W. Schmidtke¹
¹University 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. Deb¹, W-D. Huang¹, and J-C. Chiao¹
¹University of Texas at Arlington, Arlington, TX

PS-8B-8-120 **Photosynthetically Active Protoplasts for Power Scavenging - Absorbance and Optical Density Analysis**
A. Shahid¹, A. Ilyas¹, N. Obulareddy¹, M. H-C. Jin¹, M. Melotto¹, and S. M. Iqbal¹
¹University 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. Li¹, M. Yen¹, and D. J. Irvine^{1,2}
¹Massachusetts Institute of Technology, Cambridge, MA, ²Howard Hughes Medical Institute, Chevy Chase, MD

PS-8B-9-122 **Carbohydrate Surface Modification for Oral Protein Delivery**
M. A. Phillips¹, and N. A. Peppas¹
¹The University of Texas at Austin, Austin, TX

PS-8B-9-123 **Nanoparticulate Delivery of Targeted Immunotherapies for Inflammatory Bowel Disease**
N. Capurso¹, M. Look¹, R. Ragheb¹, S. Demento¹, C. Abraham¹, and T. Fahmy¹
¹Yale University, New Haven, CT

PS-8B-9-124 **A Novel Vaccine Paradigm**
K. Sawicka¹, and S. Simon¹
¹Stony Brook University, Stony Brook, NY

PS-8B-9-125 **Fluoride Release from Dental Cement with Different Redox Systems**
J. Lee¹, and B. Suh¹
¹Bisco 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. Chirra¹, D. Spencer¹, and J. Hilt¹
¹University 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. Leach², Y. Naim², and J. M. Corey^{2,3}
¹Southeast University, Nanjing, China, People's Republic of, ²University of Michigan, Ann Arbor, MI, ³VAMC, Ann Arbor, MI

PS-8B-11-128 **A Novel Microfluidic Platform for Axon-Specific Injury**
S. Hosmane¹, A. Venkatesan¹, and N. Thakor¹
¹Johns Hopkins University, Baltimore, MD

- PS-8B-11-129** **Translational Technology for Neural Protection: HPLC Quantification of Timolol Maleate Drug-Delivery**
A. Shoffstall¹, E. Lavik¹, A. Dumitrescu², M. Kuehn², and Y. Kwon²
¹Case Western Reserve University, Cleveland, OH, ²University of Iowa, Iowa City, IA
- PS-8B-11-130** **Transparent CUPE Nerve Guides Allow Evaluation of Luminal Fillers and Mediate Nerve Gap Repair**
S. Dash¹, R. Tran¹, J. Yang¹, and M. Romero-Ortega¹
¹University of Texas at Arlington, Arlington, TX
- PS-8B-11-131** **Addition of Chitosan to Tissue Engineering Hydrogels for Neural Regeneration Applications**
J. M. Zuidema¹, M. M. Pap², E. J. Minner², D. B. Jaroch³, F. A. Morrison², and R. J. Gilbert¹
¹Rensselaer Polytechnic Institute, Troy, NY, ²Michigan Technological University, Houghton, MI, ³Purdue University, West Lafayette, IN
- PS-8B-11-132** **Development of a Composite Hydrogel Containing Electrospun Fibers for Spinal Cord Injury**
C. J. Rivet¹, H. Wang², and R. J. Gilbert¹
¹Rensselaer Polytechnic Institute, Troy, NY, ²Syracuse University, Syracuse, NY
- PS-8B-11-133** **Electrospun Polycaprolactone/Elastin Aligned Fibrous Scaffolds for Schwann Cells**
I-H. Lin¹, and C. Miller¹
¹Saint Louis University, St Louis, MO
- PS-8B-11-134** **Using micro-Computed Tomography to assess Transport Parameters through Fluid Spaces of the Cochlea**
M. Gladstone¹, X. Zhu^{1,2}, A. Luebke¹, R. D. Frisina^{1,2}, and D. A. Borkholder^{1,3}
¹University of Rochester, Rochester, NY, ²National Technical Institute, Rochester Institute of Technology, Rochester, NY, ³Rochester Institute of Technology, Rochester, NY
- PS-8B-11-135** **Treatment of Spinal Cord Injury with Keratin Biomaterial Improves Survival and Recovery in Rats**
B. Fearing¹, C. Hartley¹, O. Dayton¹, L. Pace¹, L. Burnett², T. Aboushwareb¹, and M. Van Dyke¹
¹Wake Forest University School of Medicine, Winston Salem, NC, ²KeraNetics, Winston Salem, NC
- PS-8B-11-136** **Analysis of CAMs and ECM Proteins on Schwann Cell-mediated Neurite Guidance**
A. M. Seggio¹, A. Narayanaswamy¹, B. Roysam¹, S. Aguilar¹, A. McGregor¹, and D. Thompson¹
¹Rensselaer Polytechnic Institute, Troy, NY
- PS-8B-11-137** **The Functional Recovery of Neurons after Traumatic Brain Injury**
M. K. Kutzing¹, C. Langhammer¹, and B. L. Firestein¹
¹Rutgers University, Piscataway, NJ
- PS-8B-11-138** **Aligned Collagen Threads Direct Neuronal Growth Due to Microtopography Not Nanotopography**
M. Abu-Rub¹, K. L. Billiar², B. Rodriguez³, D. Zeugolis¹, and A. Pandit¹
¹National University of Ireland, Dangan, Galway, Ireland, ²Worcester Polytechnic Institute, Worcester, MA, ³University College, Dublin, Leinster, Ireland
- PS-8B-11-139** **Design of Backflow-Free Catheters Based on Micro-fluid Dynamics**
O. V. Ivanchenko¹, E. Lueshen¹, N. Sindhwani¹, Y. Rawash¹, and A. Linninger¹
¹UIC, Chicago, IL
- PS-8B-11-140** **Schwann Cell-Seeded Nanofiber Scaffolds Enhance and Direct Axonal Regeneration**
M. R. MacEwan¹, J. Xie¹, N. Jesuraj¹, D. Siewe¹, X. Li¹, S. Sakiyama-Elbert¹, and Y. Xia¹
¹Washington University, Saint Louis, MO
- PS-8B-11-141** **Tunable 3D Hyaluronic Acid Hydrogels for Differentiation of Progenitors into Dopamine Neurons**
Z. Z. Khaing¹, S. K. Seidlits¹, K. Sliverberg¹, S. A. Geissler¹, and C. E. Schmidt¹
¹UT Austin, Austin, TX
- PS-8B-11-142** **Microfluidic Devices for Studying Intercellular Communication Between Dorsal Root Ganglia (DRG)**
N. Jain¹, B. J. Pfister¹, and R. Perez-Castillejos¹
¹NJIT, Newark, NJ

PS-8B-11-143 **Aligned 6-Aminonicotinamide Releasing PLLA Fibers for Repair of the Injured Spinal Cord**
N. Schaub¹, and R. J. Gilbert²
¹Michigan Technological University, Houghton, MI, ²Rensselaer 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. Raman¹, J. Joseph², J. Tang², and M. Stopfer²
¹Washington University, St. Louis, MO, ²National 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. Qi¹, A. R. Kent¹, and W. M. Grill¹
¹Duke 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. Song¹, R. H. Chan¹, V. Z. Marmarelis¹, R. E. Hampson², S. A. Deadwyler², and T. W. Berger¹
¹University of Southern California, Los Angeles, CA, ²Wake Forest University, Winston-Salem, NC

PS-8B-12-147 **Development and Validation of a FE Model of the Rat Brain Subjected to Air Shock Loading**
F. Zhu¹, H. Mao¹, C. Chou¹, C. Wagner¹, X. Jin¹, A. D. Leonardi¹, P. J. VandeVord¹, C. A. Bir¹, K. H. Yang¹, and A. I. King¹
¹Wayne State University, Detroit, MI

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}
¹Boston University, Boston, MA, ²Boston University Center for Hearing Research, Boston, MA

PS-8B-12-149 **Macro- to Micro- Biomechanics of Traumatic Brain Injury**
K. D. Browne¹, C. Mietus¹, R. Kraft², and D. Cullen¹
¹University of Pennsylvania, Philadelphia, PA, ²U.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. Zagadou¹, P. E. Barbone¹, and D. C. Mountain¹
¹Boston University, Boston, MA

PS-8B-12-151 **Spatiotemporal Investigation of Gamma Activity in the Human Epileptic Brain**
M. Cotic¹, O. C. Zalay¹, T. Valiante², D. Andrade², P. L. Carlen^{1,2}, and B. L. Bardakjian¹
¹University of Toronto, Toronto, Ontario, Canada, ²Toronto Western Research Institute, Toronto, Ontario, Canada

PS-8B-12-152 **FDEHMT: A Finite Difference Electromagnetic Head Modeling Toolbox**
H. V. Dang¹, and K. T. Ng¹
¹New Mexico State University, Las Cruces, NM

PS-8B-12-153 **In Silico Investigation of Astrocytic Gliotransmission in Synaptic Signal Processing**
V. R. Tiruvadi¹, P. Singh¹, and D. F. Meaney¹
¹University of Pennsylvania, Philadelphia, PA

PS-8B-12-154 **Characterization of the Glial Scar using Raman Spectroscopy and Microindentation**
T. Saxena¹, B. Deng¹, J. Gilbert¹, D. Stelzner², J. Chaiken¹, and J. Hasenwinkel¹
¹Syracuse University, Syracuse, NY, ²Upstate Medical University, Syracuse, NY

PS-8B-12-155 **Assessment of Strain Patterns in the Brain from Head Acceleration from Collegiate Football Players**
K. Danelson¹, S. Rowson², S. Duma², and J. Stitzel¹
¹Virginia Tech/Wake Forest University SBES, Winston-Salem, NC, ²Virginia Tech/Wake Forest University SBES, Blacksburg, VA

PS-8B-12-156 Neural Network Connectivity and Mapping of *In Vitro* Circuits

T. P. Patel¹, and D. F. Meaney¹

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PS-8B-12-157 A Temporal Backpropagation Algorithm for the Resonate and Fire Perceptron

H. Mukhopadhy¹, and J. Tranquillo¹

¹Bucknell 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. Kumar¹

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PS-8B-13-159 Isolation and Culture of Contractile Myotubes from Insect Cells for Bioactuation Applications

A. L. Baryshyan¹, B. A. Trimmer¹, and D. L. Kaplan¹

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PS-8B-13-160 A Spin Drying Technique for Dry Preservation of Mammalian Cells

N. Chakraborty^{1,2}, M. A. Menze³, S. C. Hand³, and M. Toner^{1,2}

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PS-8B-13-161 EasyMed-ID: Private, Secure, and Memorable Identification of Medical Record Data for Mobile Devices

T. Stokes¹, R. Moffitt², S. Hang³, C-W. Cheng³, and M. Wang⁴

¹Emory University - Georgia Tech, Atlanta, GA, ²Georgia Tech - Emory University, Atlanta, GA, ³Georgia Tech, Atlanta, GA, ⁴Georgia Tech - Emory University, Atlanta, GA, Afghanistan

PS-8B-13-162 24-Hour Core Temperature in Obese and Lean Men and Women

R. A. Linsenmeier¹, M. Hoffmann¹, S. Rodriguez², D. Zeiss², R. Kushner², and L. Landsberg²

¹Northwestern University, Evanston, IL, ²Northwestern University, Chicago, IL

PS-8B-13-163 Synergistic Effects of Conditioned Media and Hydrostatic Pressure on Stem Cell Differentiation

S. Maxson¹, and K. Burg¹

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PS-8B-13-164 A coupled Agents - Transport Modelling Approach for Bioreactor Design

H. Kaul¹, D. J. Hughes², Z. Cui¹, and Y. Ventikos¹

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PS-8B-13-165 Development of Solar Powered Transportable Mini-Lab for Field Disease Detection

E. Rios¹, R. Espinoza¹, L. Holguin¹, D. Terreros², and T. Xu^{1,2}

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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. Shi¹, and A. Striolo¹

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PS-8B-14-167 Investigation of Biaxial Periosteal Mechanics

O. O. Aruwajoye¹, and P. B. Wells²

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PS-8B-14-168 Biomechanical Analysis of the Rabbit Temporomandibular Joint Fibrocartilages

A. J. Almarza¹, and S. E. Henderson¹

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- PS-8B-14-169 Incomplete Fibers in Inner Annulus Affects Tissue Stresses Higher than in Outer or Middle Annulus**
M. Hussain¹, R. E. Gay², and K-N. An³
¹Logan University, Chesterfield, MO, ²Mayo Clinic, Rochester, MN, ³Mayo Clinics, Rochester, MN
- PS-8B-14-170 Disc with Incomplete Fibers Bulges More than the Disc with Complete Fibers: A Finite Element Study**
M. Hussain¹, R. E. Gay², and K-N. An³
¹Logan University, Chesterfield, MO, ²Mayo Clinic, Rochester, MN, ³Mayo Clinics, Rochester, MN
- PS-8B-14-171 Characterization of Synthetic Ballistic Gelatin as an Achievable Biological Tissue Simulant**
F. Amaechi¹, and J. L. Sparks^{2,3}
¹Wake Forest University School of Medicine, Winston Salem, 27157, ²Virginia Tech-Wake Forest Center for Injury Biomechanics, Winston Salem, 27157, ³Virginia 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. Saha¹, T. Thornton¹, and S. Batra²
¹SUNY Downstate Medical Center, Brooklyn, NY, ²CollaFirm, LLC, Monmouth Junction, NJ
- PS-8B-14-173 The Effect of Radiation on Articular Cartilage Using a Murine Model**
A. Lindburg¹, J. Willey¹, T. Bateman¹, and D. Dean¹
¹Clemson University, Clemson, SC
- PS-8B-14-174 A Method for 3D Strain Field Measurement with Dynamic Tissue Deformation Using MR Imaging**
P. J. Brown¹, H. Tan¹, R. A. Kraft¹, and J. D. Stitzel¹
¹VT-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. Toungate², and T. Hedman^{1,2}
¹Texas A&M University, College Station, TX, ²Orthopeutics, Georgetown, TX
- PS-8B-14-176 Development of a Concussion Risk Curve Using Biomechanical Data from Collegiate Football Players**
J. R. Funk¹, S. Duma², S. Manoogian¹, and S. Rowson²
¹Biodynamic Research Corporation, San Antonio, TX, ²Virginia Tech, Blacksburg, VA
- PS-8B-14-177 Physiological Distributions Of Neuronal Strain In Peripheral Nerves**
S. B. Shah¹, and S. Kratovac¹
¹University of Maryland, College Park, College Park, MD
- PS-8B-14-178 Effect of Shoe Laces on *In Situ* Measurement of Achilles Tendon Mechanics**
S. Rowson¹, C. McNally¹, and S. M. Duma¹
¹Virginia Tech, Blacksburg, VA
- PS-8B-14-179 On the Development of a Multilayered Finite Element Model of Scalp**
S. Ryland¹
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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. Harvey¹, A. S. LaPrad¹, and K. R. Lutchen¹
¹Boston 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. Brown¹, S. Bhatawadekar¹, D. Leary¹, U. Peters¹, L. Deng², and G. Maksym¹
¹Dalhousie University, Halifax, Nova Scotia, Canada, ²Chongqing University, Chongqing, China, People's Republic of
- PS-8B-15-182 Effects of Airway Wall Thickness on Bronchoconstriction in Asthma**
A. Braune¹, J. G. Venegas¹, and T. Winkler¹
¹Massachusetts General Hospital, Boston, MA

- PS-8B-15-183** **Modeling Tissue Heterogeneity and Respiratory Impedance in Elastase Treated Mice**
S. Sato¹, A. Majumdar¹, and B. Suki¹
¹Boston University, Boston, MA
- PS-8B-15-184** **Computational Modeling of Airway Diameter Variation and Respiratory Impedance**
D. Leary¹, G. Parraga², and G. N. Maksym¹
¹Dalhousie University, Halifax, NS, Canada, ²Robarts 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. Amin¹, and B. Suki¹
¹Boston University, Boston, MA
- PS-8B-15-186** **Simulation of Dynamic Recruitment-Derecruitment in Mouse Lung under Deep Inflation**
B. Ma¹, and J. H. Bates¹
¹University 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. Oruklu¹, L. Quinn², D. K. Rollins³, and A. Cinar¹
¹Illinois Institute of Technology, Chicago, IL, ²University of Illinois at Chicago, Chicago, IL, ³Iowa State University, Ames, IA
- PS-8B-16-188** **3D Finite Element Modeling of Guinea Pig Middle Ear for Sound Transmission**
X. Guan¹, and R. Gan¹
¹School 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. Spires¹, N. Lai¹, G. M. Sidel¹, and L. B. Gladden²
¹Case Western Reserve University, Cleveland, OH, ²Auburn 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. Pishko¹, K. N. Magdoo Mohamed¹, G. W. Astary¹, T. H. Mareci¹, and M. Sarntinoranont¹
¹University of Florida, Gainesville, FL
- PS-8B-16-191** **Inferring Cross-talk Among Interleukin-12, Interferon- γ and Tumor Necrosis Factor Signaling Pathways Within T Helper Cells**
D. J. Klinke¹, E. Chambers¹, and N. Cheng¹
¹West Virginia University, Morgantown, WV
- PS-8B-16-192** **Adaptive Control in Metabolic Pathway Regulation**
C. F. Quo¹, R. A. Moffitt¹, A. H. Merrill¹, and M. D. Wang¹
¹Georgia Institute of Technology, Atlanta, GA
- PS-8B-16-193** **An Efficient Approach for the Combinatorial Quantitation and Control of Cellular Functions**
I. Al-Shyoukh¹, F. Yu¹, J. Feng¹, S. Dubinett¹, C-M. Ho¹, J. S. Shamma², and R. Sun¹
¹University of California Los Angeles, Los Angeles, CA, ²Georgia Institute of Technology, Atlanta, GA
- PS-8B-16-194** **Mathematical Model Predicts Master-regulatory Role of Hematopoietic Stem Cell Network Module**
J. Narula¹, and O. A. Igoshin¹
¹Rice University, Houston, TX
- PS-8B-16-195** **Quantitative Modeling of Glabrous Skin Blood Flow**
D. W. Hensley¹, and K. R. Diller¹
¹University of Texas at Austin, Austin, TX
- PS-8B-16-196** **Multiplexed Media Delivery to Study Nutrient Adaptation in *C. elegans***
P. Thomas¹, A. Paz¹, O. Cinquin¹, and E. Hui¹
¹University of California at Irvine, Irvine, CA

- PS-8B-16-197 Modeling Inflammation with an Ensemble of Stochastic Cells**
J. D. Scheff¹, S. E. Calvano², S. F. Lowry², and I. P. Androulakis¹
¹Rutgers University, Piscataway, NJ, ²UMDNJ-Robert Wood Johnson Medical School, New Brunswick, NJ
- PS-8B-16-198 Metrics for Systems Biology Model Building and Comparison**
C. Kaddi¹, C. Quo¹, and M. D. Wang^{1,2}
¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA
- PS-8B-16-199 A Mathematical Model of Random Behavior of Micro-Objects Propelled by Attached Bacteria**
M. A. Traore¹, and B. Behkam¹
¹Virginia Tech, Blacksburg, VA
- PS-8B-16-200 Identification of Critical Network Interactions by Pathway-Centered Analysis of Microarray Data**
J. Hood¹, and R. R. Vallabhajosyula¹
¹CFD Research Corp, Huntsville, AL
- PS-8B-16-201 WebPK: A Web-Based Application for Custom Pharmacokinetic Simulations**
J. Srimani¹, R. Moffitt¹, and M. D. Wang¹
¹Georgia Institute of Technology, Atlanta, GA

Track: Tissue Engineering - **PS-8B-17 - *Cardiovascular Tissue Engineering***

- PS-8B-17-202 Tailoring Electrospun Scaffolds for Use in Aortic Aneurysm Repair**
J. Massey^{1,2}, M. Agrawal¹, and S. Bailey²
¹University of Texas at San Antonio, San Antonio, TX, ²University of Texas Health Science Center at San Antonio, San Antonio, TX
- PS-8B-17-203 Development of a Slowly Degradable Microfabricated Perfusion Systems for Vascularized Tissues**
L. S. Wray¹, and D. L. Kaplan¹
¹Tufts University, Medford, MA
- PS-8B-17-204 Protein Solubilization for Antigen Removal from Bovine Pericardium in Heart Valve Tissue Engineering**
M. L. Wong¹, and L. G. Griffiths¹
¹University of California, Davis, Davis, CA
- PS-8B-17-205 Three Dimensionally Flocculated Proangiogenic Microgels for Neovascularization**
R. J. DeVolder¹, and H. Kong¹
¹University of Illinois, Urbana, IL
- PS-8B-17-206 Normalization of Microvascular Physiology by Cyclic AMP in Engineered Human Blood Microvessels**
K. Wong¹, J. Truslow¹, and J. Tien¹
¹Boston University, Boston, MA
- PS-8B-17-207 The Controlled Release of Neuropeptide Induces Angiogenesis**
H. Kohara¹, M. Yamamoto¹, and Y. Tabata¹
¹Institute for Frontier Medical Sciences, Kyoto University, Kyoto, Kyoto, Japan
- PS-8B-17-208 Engineering Functional Human Microvessels *In Vitro***
J. Tien¹
¹Boston University, Boston, MA
- PS-8B-17-209 Hair Follicle Derived Mesenchymal Stem Cells for Engineering Arterial Substitute**
H. Peng¹, E. Schlaich¹, D. D. Swartz¹, and S. T. Andreadis^{1,2}
¹University at Buffalo, Buffalo, NY, ²New York State Center of Excellence, Buffalo, NY

- PS-8B-17-210 Development of Bioactive Nanofibrous Vascular Grafts with In-Vivo Endothelialization Potential**
J. Henry¹, and S. Li¹
¹University of California - Berkeley, Berkeley, CA
- PS-8B-17-211 Vascular Cell Morphology on Aligned Collagen Matrices**
N. F. Huang¹, T. S. Zaitseva², M. Paukshto², J. Sun¹, G. G. Fuller¹, and J. P. Cooke¹
¹Stanford University, Stanford, CA, ²Fibralign Corp., Sunnyvale, CA
- PS-8B-17-212 Reinforcing PEG Hydrogels with an Electrospun Mesh Sleeve to Form a Multilayer TEVG**
M. B. Browning¹, D. K. Dempsey¹, and E. M. Cosgriff-Hernandez¹
¹Texas A&M University, College Station, TX
- PS-8B-17-213 Molecular Modulation of Endothelial Cell Adhesion for Vascular Tissue Engineering**
B. J. Tefft¹, A. M. Kopacz¹, W. K. Liu¹, and S. Q. Liu¹
¹Northwestern University, Evanston, IL
- PS-8B-17-214 In Vitro Biodegradation of a Novel Bioresorbable Poly(ester urethane)**
D. K. Dempsey¹, A. F. Haque¹, R. S. Ward², A. V. Iyer², J. P. Parakka², and E. M. Cosgriff-Hernandez¹
¹Texas A&M University, College Station, TX, ²DSM-PTG, Berkeley, CA
- PS-8B-17-215 Crosslinked Urethane-doped Polyester Triphasic Scaffold for Vascular Tissue Engineering**
I. Qattan¹, R. T. Tran¹, and J. Yang¹
¹The University of Texas at Arlington, Arlington, TX
- PS-8B-17-216 Mitral Valve Geometry Difference Between Ischemic and Dilated Condition During Systole**
B. Gao¹, and Z. He¹
¹Texas Tech Univ., Lubbock, TX
- PS-8B-17-217 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. Barzilla¹, and K. J. Grande-Allen¹
¹Rice University, Houston, TX, ²Baylor College of Medicine, Houston, TX, ³Texas Children's Hospital, Houston, TX
- PS-8B-17-218 Dextran Stabilizes Engineered Human Microvessels In Vitro**
A. D. Leung¹, K. H. Wong¹, and J. Tien¹
¹Boston University, Boston, MA
- PS-8B-17-219 Enhanced Endothelialization Using EPC Autoseeding on POC/PLGA Microparticle Composite**
H. Xu¹, and K. T. Nguyen¹
¹University of Texas at Arlington, Arlington, TX
- PS-8B-17-220 Tailoring In Vivo Vascular Morphology with Bioactive Poly(ethylene glycol) Hydrogels**
J. E. Saik¹, D. J. Gould^{1,2}, M. E. Dickinson², and J. L. West¹
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- PS-8B-17-221 Methodology for the Fabrication of Cell Based Cardiac Pumps**
R. Evers¹, and R. Birla¹
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- PS-8B-17-222 Cellular Assembly by Centrifugal Force to Form Tubular Tissue Constructs**
C. Jones¹, E. J. Burford¹, L. Soderbom¹, P. Sullivan¹, and M. W. Rolle¹
¹Worcester Polytechnic Institute, Worcester, MA
- PS-8B-17-223 A Porous Nylon Anchor System for Improved Culture of Cell-Derived Tissue Tubes**
A. Z. Reidinger¹, A. Ortiz¹, and M. W. Rolle¹
¹Worcester Polytechnic Institute, Worcester, MA

- PS-8B-17-224** **Development of the Human Umbilical Artery as a 3D Scaffold for Vascular Reconstruction**
M. Rodriguez¹, M. McClendon¹, and P. McFetridge²
¹University of Oklahoma, Norman, OK, ²University of Florida, Gainesville, FL
- PS-8B-17-225** **Multi-functional Nanofiber Patch to Tune Embryonic Stem Cell Delivery Onto Hypertrophic Myocardium**
M. K. Gupta¹, D. K. Jung¹, A. K. Hatzopoulos², and H. J. Sung¹
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- PS-8B-17-226** **Cell-Derived Ring Fusion to Generate Tubular Tissue Constructs**
T. Gwyther¹, and M. W. Rolle¹
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- PS-8B-17-227** **hESC Derived Mesenchymal Cells Functionally Stabilize HUVEC Networks in 3D Collagen I Constructs**
N. L. Boyd¹, S. Nunes¹, L. Krishnan¹, C. Chang¹, J. D. Jokinen¹, and J. B. Hoying¹
¹University of Louisville, Louisville, KY
- PS-8B-17-228** **Development and Characterization of a Novel Bi-Layered Tissue Engineered Vascular Graft**
J. D. Banik¹, and J. A. Cooper¹
¹Rensselaer Polytechnic Institute, Troy, NY
- PS-8B-17-229** **Control of Tissue Engineered Cardiac Muscle Fibrosis by an Endocardial Surrogate**
A. Parkar¹, N. Masoumi¹, A. Jean¹, and G. C. Engelmayr¹
¹The Pennsylvania State University, University Park, PA
- PS-8B-17-230** **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}
¹University of Pittsburgh, Pittsburgh, PA, ²McGowan Institute for Regenerative Medicine, Pittsburgh, PA, ³University of Palermo, Palermo, Sicily, Italy
- PS-8B-17-231** **Macrophage Interactions with Decellularized Materials: Influence of Crosslinking Treatment**
J. McDade¹, M. Ariganello¹, E. Brennan¹, R. Labow², and M. Lee¹
¹Dalhousie University, Halifax, NS, Canada, ²Ottawa Heart Institute, Ottawa, ON, Canada
- PS-8B-17-232** **A Hybrid, Tissue Engineered Leaflet for Bioprosthetic Heart Valves**
H. Alavi¹, R. L. Goodwin¹, and A. Kheradvar¹
¹University of South Carolina, Columbia, SC

Track: Tissue Engineering - **PS-8B-18** - *Cell-Biomaterial Interfaces*

- PS-8B-18-233** **Protein Transport and Stability: Considerations for Cell Encapsulation**
W. L. Stoppel¹, J. C. White¹, S. R. Bhatia¹, and S. C. Roberts¹
¹University of Massachusetts Amherst, Amherst, MA
- PS-8B-18-234** **Hepato-Stimulatory Effects of Micropatterned Heparin-based Hydrogels**
S. S. Shah¹, M. Kim², K. Cahill-Thompson¹, G. Tae², and A. Revzin¹
¹University of California, Davis, Davis, CA, ²Gwangju Institute of Science and Technology, Buk-gu, Gwangju, Korea, Republic of
- PS-8B-18-235** **Investigating Schwann Cell Response on Polypyrrole Substrates Upon Electrical Stimulation**
L. Forciniti¹, J. F. Ybarra¹, J. Maldonado¹, and C. E. Schmidt¹
¹University of Texas at Austin, Austin, TX
- PS-8B-18-236** **Stiffness of the Substrate Influences the Phenotype of Embryonic Chicken Cardiac Myocytes**
P. Bajaj¹, X. Tang¹, T. Saif¹, and R. Bashir¹
¹University of Illinois Urbana Champaign, Urbana, IL
- PS-8B-18-237** **Microtube Device Functionalized with Selectins for Capture and Study of Circulating Tumor Cells**
A. D. Hughes¹, L. T. Western², J. C. Mattison¹, B. Greene³, and M. R. King¹
¹Cornell University, Ithaca, NY, ²Rochester University, Rochester, NY, ³Biocytics Inc., Huntersville, NC

- PS-8B-18-238** **How Does ECM Fiber Stress State Affect Cell Behavior?**
M. A. Kotlarchyk¹, S. Shreim¹, E. Kniazeva¹, M. Alvarez-Elizondo¹, A. Putnam^{1,2}, and E. Botvinick¹
¹UC Irvine, Irvine, CA, ²University of Michigan, Ann Arbor, MI
- PS-8B-18-239** **Harnessing Matrix Interface to Control Stem Cell Differentiation**
R. Ayala¹, C. Zhang¹, A. Aung¹, Y. Hwang¹, and S. Varghese¹
¹UC San Diego, La Jolla, CA
- PS-8B-18-240** **Designing Biomaterial Surfaces to Enhance Keratinocyte Adhesion at the Skin-Implant Interface**
C. M. Ting¹, A. M. Khaing¹, W. G. McGimpsey¹, and G. D. Pins¹
¹Worcester Polytechnic Institute, Worcester, MA
- PS-8B-18-241** **Effects of Synthetic Biogel Scaffold Properties in Angiogenesis, Modeling with Agent Based Systems**
A. Artel¹, H. Mehdizadeh¹, E. Brey¹, and A. Cinar¹
¹Illinois Institute of Technology, Chicago, IL
- PS-8B-18-242** **Development Of Biomimetic Materials For Guided Endothelial Cell Morphogenesis, and Organization**
A. Porter¹, Y. Yuan¹, C. M. Klinge¹, and A. S. Gobin¹
¹University of Louisville, Louisville, KY
- PS-8B-18-243** **Dynamic Bioactive Surfaces for Temporal Regulation of Extracellular Microenvironments**
B. Liu¹, and W. Shen¹
¹University of Minnesota, Minneapolis, MN
- PS-8B-18-244** **Electrical Control of Cell Migration on a Conducting Polymer Surface**
A. Gumus¹, J. Califano¹, A. Wan¹, J. Huynh¹, C. Reinhart-King¹, and G. Malliaras¹
¹Cornell University, Ithaca, NY
- PS-8B-18-245** **Microcracking and Maturation of MC3T3-E1 Osteoblast Behavior**
Y. Shu¹, M. Baumann¹, L. McCabe¹, E. Case¹, and R. Irwin¹
¹Michigan State University, East Lansing, MI
- PS-8B-18-246** **Tryptophan: An Intrinsic Fluororeporter for Peptide Functionalized Biomaterials**
S. N. Masand¹, A. Blazier², C. Bradley¹, and D. Shreiber¹
¹Rutgers, The State University of New Jersey, Piscataway, NJ, ²University of Virginia, Charlottesville, VA
- PS-8B-18-247** **Pro- and Anti-Oxidative Biomaterial Surfaces to Modulate Stem Cell Fate**
S. W. Crowder¹, A. L. Zachman¹, M. K. Gupta¹, E. Liu², J. B. Kohn², P. V. Moghe², and H-J. Sung¹
¹Vanderbilt University, Nashville, TN, ²Rutgers University, Piscataway, NJ
- PS-8B-18-248** **Cell Interactions in Biomimetic Apatite Microenvironment**
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¹Dept of Bioengineering, UCLA, Los Angeles, CA, ²Dept of Surgery, David Geffen School of Medicine, UCLA, Los Angeles, CA

Track: Tissue Engineering - **PS-8B-19 - *Controlled Release in Tissue Engineering****

- PS-8B-19-249** **Effect of Protein Molecular Weight on Release From Wet Spun PLGA and PLLA Fibers by Phase-inversion**
D. M. Decoteau¹, L. Zhang¹, R. M. Stefani¹, R. A. Hopkins², and E. Mathiowitz¹
¹Brown University, Providence, RI, ²The Children's Mercy Hospital, Kansas City, MO
- PS-8B-19-250** **Nitric Oxide Releasing Polymers as Bone Metabolism Support in Tissue Engineering Scaffolds**
J. Forrest¹, G. E. Gierke¹, M. J. VanWagner¹, K. L. Snyder¹, M. C. Frost¹, and R. M. Rajachar¹
¹Michigan Technological University, Houghton, MI
- PS-8B-19-251** **Multiple Drug Delivery System Based on CAP-Pluronic Association Polymer**
S. Sundararaj¹, D. Puleo¹, and M. Thomas¹
¹University of Kentucky, Lexington, KY
- PS-8B-19-252** **CANCELED**

PS-8B-19-253 Preparation and Characterization of NSAID-embedded Nanofiber Matrix for Drug Delivery

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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. Wilson¹, N. Kota¹, Y. Kim¹, D. B. Stolz², Y. Wang², O. B. Ozdoganlar¹, and P. R. LeDuc¹

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PS-8B-20-255 High-Speed Biaxial Tissue Testing of Abdominal Viscera

N. A. White¹, M. K. Howes¹, and W. N. Hardy¹

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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}

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PS-8B-20-257 Directed Cellular Invasion and Angiogenesis in Micropatterned Collagen Scaffolds

Y. Zheng¹, P. W. Henderson², N. W. Choi¹, L. J. Bonassar¹, J. A. Spector², and A. D. Stroock¹

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PS-8B-20-258 Isolation and Purification of Novel Organic Nanoparticles from English Ivy (*Hedera helix*)

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PS-8B-20-259 A Microstructure Based Mechanical Model for Planar Fibrous Scaffolds

A. D'Amore^{1,2}, C. M. Hobson¹, W. R. Wagner¹, and M. S. Sacks¹

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PS-8B-20-260 Engineering Optimal Islets for Transplantation for Type 1 Diabetes

K. Ramachandran¹, S. J. Williams¹, H-H. Huang¹, C. Berkland², and L. Stehno-Bittel¹

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PS-8B-20-261 Tri-functional Nanoporous Silica Nanoparticles for Imaging, Delivery and Biomaterial Reinforcement

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PS-8B-20-262 Biomechanical Response of Human Spleen Parenchyma in Tensile Loading

A. R. Kemper¹, A. Santago¹, J. Stitzel¹, J. Sparks¹, and S. Duma¹

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PS-8B-20-263 Multi-Compartment Platform for Organotypic Spinal Cord Cultures to Study Axonal Synaptic Targeting

D. G. Castillo¹, and S. N. Hosmane¹

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PS-8B-20-264 Nano-Patterned Surfaces Induce Elastin Expression from Valvular Interstitial Cells

E. L. Hedberg-Dirk¹, U. A. Martinez¹, and A. E. Hellebust¹

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PS-8B-20-265 Characterization of Small Diameter *In Vitro* Endothelial Linings of the Microvasculature

M. B. Esch¹, M. L. Shuler¹, and T. Stokol¹

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PS-8B-20-266 Photopatterning of Cell-laden PEGDA Hydrogel Microstructures Using Mask Projection Photolithography
S. J. Higbee¹, M. P. Cuchiara¹, and J. L. West¹
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PS-8B-20-267 Step Based Isodiametric Design Space for Aligned Deposition of Polymer Nanofibers in Multiple Layers
J. Wang¹, and A. S. Nain¹
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PS-8B-20-268 Dynamic Material Properties of Pregnant Human Uterus
S. Duma¹, S. Manoogian¹, J. Bisplinghoff¹, and J. Stitzel¹
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PS-8B-20-269 Transplantation of Two Derived hESC Populations in a Novel Biomimetic Architecture
W. Turner¹, J. Luna¹, M. Khine², and K. McCloskey¹
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PS-8B-20-270 Patented Electrospinning Process (EsNT) for NanoMedicine
G-M. Kim¹, J. D. Salazar¹, L. Muerza-Cascante¹, A. Elósegui¹, and E. De Juan-Pardo¹
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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. Tien¹, E. S. Gil¹, S. H. Park¹, B. B. Mandal¹, and D. L. Kaplan¹
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PS-8B-21-272 Patterning of Poly-Caprolactone (PCL) Nanofibers using Near Field Electrospinning
B. Starly¹, and S-F. Lan¹
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PS-8B-21-273 Anatomically Precise 3D Printing for Engineering Spatially Heterogeneous Living Heart Valves
L. A. Hockaday¹, K. H. Kang¹, N. W. Colangelo¹, P. Y-C. Cheung¹, J. Wu¹, H. Lipson¹, C-C. Chu¹, and J. T. Butcher¹
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PS-8B-21-274 Microfluidics in Hydrogels Using a Sealing Adhesion Layer
L. M. Bellan¹, D. Wu¹, J. T. Borenstein², D. M. Crokek³, and R. Langer¹
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PS-8B-21-275 Surface Immobilization of Adeno-Associated Virus for Localized Gene Delivery
K. I. McConnell¹, J. H. Slater¹, R. W. Adams¹, J. L. West¹, S. L. Biswal¹, and J. Suh¹
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PS-8B-21-276 Vasculature Patterning within Hydrogel using Three-Dimensional Bio-Printing Technology
V. K. Lee¹, W. Lee², S-S. Yoo³, and G. Dai¹
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PS-8B-21-277 Ultra-high Density Oligonucleotide Arrays for Ordered, Pinpoint Cell Assembly in Tissue Engineered Structures
U. Vermesh¹, and O. Vermesh^{1,2}
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PS-8B-21-278 Hydrogel Tubular Constructs Formed Via a Multiphase Co-axial Flow
M. Hu¹, R. Deng¹, L. Wang¹, M. Kurisawa¹, and J. Ying¹
¹Institute of Bioengineering and Nanotechnology, The Nanos, Singapore

- PS-8B-21-279 Development of Miniature Drug Screening Platform Utilizing Low Cost Bioprinting Technology**
J. I. Rodriguez¹, D. Reyna¹, and T. Xu^{1,2}
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- PS-8B-21-280 Hierarchical Silk Laminates for Tissue Formation**
B. B. Mandal¹, and D. L. Kaplan¹
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- PS-8B-21-281 Spatial Control of Cell Differentiation Fate Using Oriented Sub-micron Fibers and Bioprinted Growth Factors**
D. Ker¹, A. Nain², J. Suhan¹, B. Chu¹, L. Weiss¹, and P. Campbell¹
¹Carnegie Mellon University, Pittsburgh, PA, ²Virginia Tech, Blacksburg, VA
- PS-8B-21-282 HUVEC Networks Printed to Stackable PLGA/Hydrogel 'Biopapers' via BioLP**
R. K. Pirlo¹, P. K-C. Wu², and B. Ringeisen¹
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- PS-8B-21-283 Non-Contact Printing of High-Fidelity Heterocellular Niches Using Aqueous Biphasic Systems**
H. Tavana¹, and S. Takayama¹
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- PS-8B-21-284 Three-Dimensional (3D) Stereo-Lithographic Technology for Bio-inspired Multi-Cellular Structures**
V. Chan¹, P. Zorlutuna¹, J. Jeong¹, H. Kong¹, and R. Bashir¹
¹University of Illinois, Urbana-Champaign, Urbana, IL
- PS-8B-21-285 High Throughput Miniaturization of Artificial Cells Using Inkjet Technology**
M. Mobed-Miremadi¹, E. Acks¹, S. Polsaward¹, and D. Chen¹
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- PS-8B-21-286 Topographic and Chemically Micropatterned Polyacrylamide Cell Substrates**
M. J. Poellmann¹, P. A. Harrell¹, S. Mishra¹, K. A. Barton¹, W. P. King¹, and A. J. Wagoner Johnson¹
¹University of Illinois at Urbana Champaign, Urbana, IL
- PS-8B-21-287 Micropatterning and Printing of Functional Microscale Tissue Subunits on Nanofibrous Scaffolds**
D. Gallego-Perez¹, N. Higueta-Castro¹, J. Lannutti¹, K. Gooch¹, and D. Hansford¹
¹The Ohio State University, Columbus, OH
- PS-8B-21-288 Improving Cell Viability Using Bio-printed Oxygen Particles for Tissue Engineering Application**
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