

SATURDAY, OCTOBER 9, 2010

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

Track: Biomedical Engineering Education - **PS-9A-1 - *Education Assessment***

- PS-9A-1-1** **Assessing Impact of Interdisciplinary Labs on Ability to Solve Multidisciplinary Biomedical Problems**
J. D. Gassert, Ph.D., P.E.¹, J. A. LaMack, Ph.D.¹, R. J. Gerrits, Ph.D.¹, N. E. Schlick, Ph.D.¹, and L. Fennigkoh, Ph.D., P.E.¹
¹Milwaukee School of Engineering, Milwaukee, WI

Track: Biomedical Engineering Education - **PS-9A-2 - *Learning Modules/Instructional Materials***

- PS-9A-2-2** **Teaching Creative Problem-Solving with a Science Fiction-Inspired Research Proposal**
M. Ali¹, and R. G. Voss¹
¹University of Texas, Austin, TX
- PS-9A-2-3** **Teaming Undergraduate Bioengineering & Graduate Physical Therapy Students: A Case Study**
K. R. Csavina¹, and M. Venglar¹
¹Florida Gulf Coast University, Fort Myers, FL

Track: Biomedical Imaging and Optics - **PS-9A-3 - *Imaging Technology Development (including Biophotonics)***

- PS-9A-3-4** **Selective Two-photon Excitation by Phase and Amplitude Shaping of a Broadband Coherent Fiber Supercontinuum**
Y. Liu¹, B. W. Graf¹, H. Tu¹, E. J. Chaney¹, U. Sharma¹, and S. A. Boppart¹
¹University of Illinois at Urbana-Champaign, Urbana, IL
- PS-9A-3-5** **Evaluation of Noise Power Spectrum of Variable Resolution Computer Tomography Images**
K. Devisetti¹, and F. DiBianca¹
¹University of Tennessee Health Science Center, Memphis, TN
- PS-9A-3-6** **Characterization of Corneal Birefringence Towards the Development of a Polarimetric Glucose Monitor**
B. H. Malik¹, and G. L. Coté¹
¹Texas A&M University, College Station, TX
- PS-9A-3-7** **Projection Spatial Resolution Measurement for Variable Resolution X-Ray Cone Beam CT System**
S. Arikapudi¹, and F. A. DiBianca¹
¹University of Tennessee Health Science Center, Memphis, TN
- PS-9A-3-8** **Piezoelectric MEMS Scanning Mirror for Endoscopic Imaging**
K. H. Gilchrist¹, and S. Grego¹
¹RTI International, Research Triangle Park, NC
- PS-9A-3-9** **Polarization Sensitive Monte Carlo Simulation of Layered Tissues**
J. Salazar¹, C-W. Kan¹, D. Côté², K. Sokolov³, and M. K. Markey¹
¹The University of Texas at Austin, Austin, TX, ²Centre de Recherche Universite Lval Robert Giffard, Quebec City, Quebec, Canada, ³The University of Texas M.D. Anderson Cancer Center, Austin, TX

- PS-9A-3-10 Optimization of EPI Distortion Correction in a Pediatric DTI Multi-center Study**
A. Nayak¹, L. Walker¹, and C. Pierpaoli¹
¹NICHD, National Institutes of Health, Bethesda, MD
- PS-9A-3-11 Investigating the Carbodiimide Mediated Conjugation of Quantum Dots to Proteins**
F. Song¹, and W. C. Chan¹
¹University of Toronto, Toronto, Ontario, Canada
- PS-9A-3-12 Optode-Based High-Resolution Chemical Imaging of 2D Surfaces**
P. Ahuja¹, S. Nair¹, and M. Gratzl¹
¹Case Western Reserve University, Cleveland, OH
- PS-9A-3-13 CT Based Three-Dimensional Measurement of Orbit and Eye Anthropometry**
K. L. Loftis¹, A. A. Weaver¹, J. C. Tan², S. M. Duma^{3,4}, and J. D. Stitzel^{1,2}
¹VT-WFU Center for Injury Biomechanics, Winston-Salem, NC, ²Wake Forest University School of Medicine, Winston-Salem, NC, ³VT-WFU Center for Injury Biomechanics, Blacksburg, VA, ⁴Virginia Polytechnic Institute and State University, Blacksburg, VA
- PS-9A-3-14 Compact and Light-weight Telemedicine Microscope based on Lensfree On-Chip Imaging**
O. Mudanyali¹, D. Tseng¹, S. O. Isikman¹, I. Sencan¹, W. Bishara¹, C. Oztoprak¹, S. Seo², B. Khademhosseini¹, and A. Ozcan^{1,3}
¹UCLA, Los Angeles, CA, ²Korea University, Seoul, Jochiwon, Korea, Republic of, ³California NanoSystems Institute (CNSI), Los Angeles, CA
- PS-9A-3-15 Multiphoton Microscopy of Cleared Mouse Organs**
S. G. Parra¹, T. H. Chia¹, J. P. Zinter¹, and M. J. Levene¹
¹Yale University, New Haven, CT
- PS-9A-3-16 Primary Development of Emmetropic Spectacles: Ranging System**
Q. Du¹, and F. A. DiBianca¹
¹University of Tennessee Health Science Center, Memphis, TN
- PS-9A-3-17 Interferometric Reflectance Imaging: A Label-Free, High-Throughput, and Dynamic Approach to Pathogen Diagnostics**
C. A. Lopez¹, G. Daaboul¹, J. H. Connor¹, and S. Unlu¹
¹Boston University, Boston, MA
- PS-9A-3-18 Parameters Affecting Light Transmission through Tissue Using Optical Clearing Devices**
A. Izquierdo-Roman¹, W. C. Vogt¹, R. Andriani¹, and C. G. Rylander¹
¹Virginia Tech, Blacksburg, VA
- PS-9A-3-19 Effect of Mechanical Compression on Refractive Index and Optical Penetration Depth of Light in Skin**
A. A. Gurjarpadhye¹, W. C. Vogt¹, A. Izquierdo-Roman¹, and C. G. Rylander¹
¹Virginia Polytechnic and State University, Blacksburg, VA
- PS-9A-3-20 Automated Detection of Fiducial Points in 3D Torso Images**
M. M. Kawale¹, A. Bose¹, G. P. Reece², E. K. Beahm², M. A. Crosby², M. K. Markey³, and F. A. Merchant^{1,4}
¹University of Houston, Houston, TX, ²The University of Texas MD Anderson Cancer Center, Houston, TX, ³The University of Texas at Austin, Austin, TX, ⁴University of Houston, Houston, TX
- PS-9A-3-21 Visualization Tools for Pol-MC to Simulate Polarized Light-Tissue Interaction**
A. Miranda¹, C-W. Kan¹, D. Côté², K. Sokolov³, and M. K. Markey¹
¹The University of Texas at Austin, Austin, TX, ²Centre de Recherche Université Laval Robert Giffard, Quebec City, Quebec, Canada, ³The University of Texas M.D. Anderson Cancer Center, Austin, TX
- PS-9A-3-22 Probing Optical Properties of Gold-Silica-Gold Multilayer Nanoshells (MNSs) with Broken Symmetry**
S. J. Noelck¹, Y. Hu¹, and R. Drezek¹
¹Rice University, Houston, TX

- PS-9A-3-23 Novel Compact Flexible Endoscope Design for Simultaneous Wide-field Multispectral Fluorescence Lifetime Imaging Microscopy (FLIM)**
S. Cheng¹, J. Jabbour¹, K. Maitland¹, and J. A. Jo¹
¹Texas A&M University, College Station, TX
- PS-9A-3-24 High-resolution Lensfree On-chip Microscopy for Wide-field Imaging**
W. Bishara¹, T-W. Su¹, A. F. Coskun¹, and A. Ozcan^{1,2}
¹UCLA Electrical Engineering Department, Los Angeles, CA, ²California NanoSystems Institute, UCLA, Los Angeles, CA
- PS-9A-3-25 Liver Tissue Analysis Using a Multiclass Algorithm and Dual-Excitation Autofluorescence Spectroscopy**
V. R. Sauvage¹, H. T. Nguyen^{1,2}, R. Hill¹, D. Concas¹, A. Levene¹, M. R. Thursz¹, R. D. Goldin¹, Q. M. Anstee¹, and D. S. Elson¹
¹Imperial College London, London, United Kingdom, ²École Normale Supérieure de Cachan, Cachan, France
- PS-9A-3-26 A LabVIEW-based Operating System for a Multi-channel MRI Transmitter**
K. L. Moody¹, N. A. Hollingsworth¹, D. Noll², S. M. Wright¹, and M. P. McDougall¹
¹Texas A&M University, College Station, TX, ²University of Michigan, Ann Arbor, MI
- PS-9A-3-27 High Frequency Ultrasound Characterization of Three-Dimensional Engineered Tissues**
N. Berry¹, M. Helguera², D. Hocking¹, and D. Dalecki¹
¹University of Rochester, Rochester, NY, ²Rochester Institute of Technology, Rochester, NY
- PS-9A-3-28 TIM-OS, A General Monte Carlo Optical Simulator for Biomedical Optics**
H. Shen¹, W. C. Vogt¹, C. G. Rylander¹, and G. Wang¹
¹Virginia Tech, Blacksburg, VA
- PS-9A-3-29 Development of a Red Blood Cell-based Sensing Platform for Continuous Blood Analyte Monitoring**
S. Ritter¹, M. Milanick², and K. Meissner¹
¹Texas A&M University, College Station, TX, ²University of Missouri, Columbia, MO
- PS-9A-3-30 Ultrasound Image Analysis of Localized Pediatric Scleroderma**
J. M. Desai¹, S. Li², A. Ritter¹, and H. Man¹
¹Stevens Institute of Technology, Hoboken, NJ, ²Hackensack University Medical Center, Hackensack, NJ
- PS-9A-3-31 Combined AFM-WGM Sensing-Imaging Technique Using QD Embedded Microspheres**
S. Amini¹, Z. Sun², G. A. Meininger², and K. E. Meissner¹
¹Texas A&M University, College Station, TX, ²University of Missouri, Columbia, MO
- PS-9A-3-32 Preliminary Quality Assessment of Speckle Patterns on Soft Tissues for Digital Image Correlation**
J. Ning¹, V. G. Braxton², Y. Wang¹, M. A. Sutton¹, Y. Wang¹, and S. M. Lessner²
¹University of South Carolina, Columbia, SC, ²University of South Carolina School of Medicine, Columbia, SC
- PS-9A-3-33 Time-resolved Fluorescence Spectroscopy for Intraoperative Diagnosis of Oral Cancer**
H. Xie¹, Y. Sun¹, and L. Marcu¹
¹University of California - Davis, Davis, CA
- PS-9A-3-34 A Fourth Gradient Coil for Slice Dependent Phase Compensation with Planar RF Coil Arrays**
J. C. Bosshard¹, E. P. Eigenbrodt¹, M. P. McDougall¹, and S. M. Wright¹
¹Texas A&M University, College Station, TX
- PS-9A-3-35 Design and Development of an Integrated OCT and FLIM Catheter for Percutaneous Investigation of Atherosclerotic Plaques**
J. Park¹, J. A. Jo¹, S. Shresta¹, P. Pande¹, and B. E. Applegate¹
¹Texas A&M University, College Station, TX
- PS-9A-3-36 Development of a Whole-spectrum Fluorescence Microscope**
R. Peterson¹, S. Xiao¹, S. Hussain¹, V. E. Centonze², J. D. Lechleiter², and J. Ye¹
¹UTSA, San Antonio, TX, ²UTHSCSA, San Antonio, TX

- PS-9A-3-37 Integrating Fourier Phase Microscopy with Optical Tweezers to Study Plasma Membrane Mechanics**
M. Sarshar¹, N. Khatibzadeh¹, S. Gupta¹, W. E. Brownell², and B. Anvari¹
¹University of California, Riverside, Riverside, CA, ²Baylor College of Medicine, Houston, TX
- PS-9A-3-38 Design Considerations When Adapting a Planar Array of Coils for 3D WFOV Microscopy**
E. P. Eigenbrodt¹, J. Bosshard¹, S. M. Wright¹, and M. P. McDougall¹
¹Texas A&M University, College Station, TX
- PS-9A-3-39 Common-Path Endoscopic Fourier Domain OCT with a Michelson Interferometer-based Compensator**
R. Wang¹, R. Goodwin², R. R. Markwald³, and B. Z. Gao¹
¹Clemson Univ., Clemson, SC, ²University of South Carolina, Columbia, SC, ³Medical University of South Carolina, Charleston, SC
- PS-9A-3-40 Lensless On-chip Microscope as a Portable Semen Analysis Device**
T-W. Su¹, D. K. Tseng¹, and A. Ozcan¹
¹University of California, Los Angeles, Los Angeles, CA
- PS-9A-3-41 Development of a Multimodal Tissue Diagnostic System**
Y. Sun¹, Y. H. Sun¹, D. S. Elson², H. Xie¹, M. Lam¹, J. Phipps¹, S. Tingling¹, G. Farwell¹, J. M. Cannata³, K. Shung³, and L. Marcu¹
¹UC Davis, Davis, CA, ²Imperial College of London, London, United Kingdom, ³University of Southern California, Los Angeles, CA
- PS-9A-3-42 Multiphoton Flow Cytometry for the Characterization and Purification of Large Cellular Aggregates**
D. G. Buschke¹, J. Squirrel¹, K. Eliceiri¹, and B. Ogle¹
¹University of Wisconsin-Madison, Madison, WI
- PS-9A-3-43 Malaria Detection Device**
S. Khosla¹, J. Dian², M. Labrecque², A. Persad² and S. Mehryar²
¹Sentinel Medical Inc., ²University of Toronto, Toronto, Ontario, Canada

Track: Cardiovascular Engineering - **PS-9A-4 - Heart Valve Structure-Function Relations and Computational Simulation**

- PS-9A-4-44 Oscillatory Shear Flow Drives Mesenchymal Transformation of Embryonic and Adult Valve Endothelial Cells**
G. J. Mahler¹, and J. T. Butcher¹
¹Cornell University, Ithaca, NY
- PS-9A-4-45 A Computational Model to Quantify Leaflet Wrinkling: Road to Assess Tissue Fatigue & Leaflet Tearing**
A. Falahatpisheh¹, and A. Kheradvar¹
¹University of South Carolina, Columbia, SC
- PS-9A-4-46 Pathologic Alterations in Shear Stress Magnitude Induce Valvular Endothelial Activation**
D. Hoehn¹, L. Sun¹, and P. Sucasny¹
¹University of Notre Dame, Notre Dame, IN
- PS-9A-4-47 Annulus Tension of Tricuspid Valve Annulus**
S. Bhattacharya¹, and Z. He¹
¹Texas Tech University, Lubbock, TX
- PS-9A-4-48 Valvular Endothelial Cell-Derived Nitric Oxide Reduces Interstitial Cell Calcification**
J. Richards¹, S. Chen¹, and J. Butcher¹
¹Cornell University, Ithaca, NY
- PS-9A-4-49 Micromechanics of the Anterior Mitral Valve Leaflet Under Physiological Deformations**
C. A. Carruthers¹, J. Liao², and M. S. Sacks¹
¹University of Pittsburgh, Pittsburgh, PA, ²Mississippi State University, Mississippi State, MS
- PS-9A-4-50 Cyclic Strain Activates Aortic Valve Endothelial Cells in a Side-Specific Manner**
S. A. Metzler¹, C. McIntosh¹, A. Ruhl¹, and J. N. Warnock¹
¹Mississippi State University, Mississippi State, MS

- PS-9A-4-51 Measurement of Chordal Forces of the Tricuspid Valve using Miniature C Rings**
L. G. Troxler¹
¹Georgia Tech Institute for Science and Technology, Conyers, GA
- PS-9A-4-52 Characterization of Bicuspid Aortic Valve Hemodynamics using Particle Image Velocimetry (PIV)**
N. Saikrishnan¹, C-H. Yap¹, and A. P. Yoganathan¹
¹Georgia Institute of Technology, Atlanta, GA
- PS-9A-4-53 Determination of Atrioventricular Cushion Material Properties in a Developing Chick Embryo**
S. Biechler¹, J. Moraveji¹, J. W. Weidner¹, R. L. Goodwin¹, D. Dean², and A. Kheradvar¹
¹University of South Carolina, Columbia, SC, ²Clemson University, Clemson, SC
- PS-9A-4-54 Tricuspid Valve Leaflet Stretch: The Effect of Diseased Conditions and a Saddle-Shaped Annulus**
D. Buice¹, E. Spinner^{1,2}, C. Yap¹, and A. Yoganathan¹
¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA
- PS-9A-4-55 Meso-Scale Testing of Fiber Bundles and Membranes of the Aortic Valve**
C. A. Rock¹, O. Komolafe¹, and T. Doehring¹
¹Drexel University, Philadelphia, PA

Track: Cardiovascular Engineering - **PS-9A-5 - *Thrombosis and Hemostasis***

- PS-9A-5-56 Engineering an Actively Thromboresistant Blood-contacting Interface**
Z. Qu¹, S. Muthukrishnan², M. K. Urlam², C. A. Haller², V. Kumar¹, U. M. Marzec^{3,4}, S. R. Hanson^{3,4}, J. Lahann⁵, and E. L. Chaikof^{1,2}
¹Georgia Institute of Technology, Atlanta, GA, ²Emory University, Atlanta, GA, ³Oregon National Primate Research Center, Beaverton, OR, ⁴Oregon Health and Science University, Portland, OR, ⁵University of Michigan, Ann Arbor, MI
- PS-9A-5-57 The Effects of Wall Shear Rate on Microparticle (MP) Adhesion to Plasma Fibronectin**
Y-H. Lee¹, M. Francis-Sedlak¹, C. Hall², and V. Turitto¹
¹Illinois Institute of Technology, Chicago, IL, ²The College of New Jersey, Ewing, NJ
- PS-9A-5-58 Amphiphilic Silicones with Reduced Blood Protein Adsorption**
M. L. Giese¹, B. M. Bailey¹, and M. A. Grunlan¹
¹Texas A&M University, College Station, TX
- PS-9A-5-59 A Novel Characterization of Platelet Deposition in a Focal Injury Model**
T. V. Colace¹
¹University of Pennsylvania, Philadelphia, PA
- PS-9A-5-60 The VWF Propeptide Binds And Inhibits The Function Of Multimeric VWF In Blood**
S. R. Madabhushi¹, C. Shang¹, K. M. Dayananda¹, T. Ryan², and S. Neelamegham¹
¹State University of New York at Buffalo, Buffalo, NY, ²Reichert Inc., Depew, NY
- PS-9A-5-61 Thrombin Flux and Shear Rate Regulate Fibrin Fiber Deposition State During Polymerization Under Flow**
K. Neeves^{1,2}, D. Illing¹, and S. Diamond³
¹Colorado School of Mines, Golden, CO, ²University of Colorado, Denver, Aurora, CO, ³University of Pennsylvania, Philadelphia, PA
- PS-9A-5-62 Polymer Hydrogel for Hemostatic Application**
A. M. Behrens¹, B. J. Casey¹, Z. Tsinas², J. R. Hess³, Z. J. Wu³, B. P. Griffith³, and P. Kofinas¹
¹University of Maryland, College Park, MD, ²National Technical University of Athens, Athens, Greece, ³University of Maryland School of Medicine, Baltimore, MD
- PS-9A-5-63 Simultaneous Sensing of Factor Xa and Thrombin Activity with Quantum Dot-Fluorescent Protein FRET Probes**
B. Ren¹, and G. Bao¹
¹Georgia Institute of Technology, Atlanta, GA

- PS-9A-5-64** **Effect of Platelet-Derived Nitric Oxide on Platelet Percentage Coverage under Static Conditions**
M. G. Watson¹, J. M. Lopez¹, A. J. Veverka², and S. A. Jones¹
¹Louisiana Tech University, Ruston, LA, ²University of Akron, Akron, OH
- PS-9A-5-65** **Computational Model of Mural Thrombogenesis Predicts Platelet Deposition Rates in Baboon Models**
S. Rugonyi¹, E. Tucker¹, U. Marzec¹, A. Gruber¹, and S. Hanson¹
¹Oregon Health & Science University, Portland, OR
- PS-9A-5-66** **Improving Layer-by-Layer Nanoassembly Surface Morphology: Dynamic Layered Flat Biointerfaces**
J. M. Lopez¹, M. G. Watson¹, and S. A. Jones¹
¹Louisiana Tech University, Ruston, LA
- PS-9A-5-67** **Hemocompatibility of a Novel Hyaluronan-High Density Polyethylene Composite**
S. S. Yonemura¹, B. S. Smith¹, M. H. Forleo¹, S. P. James^{1,2}, K. C. Papat^{1,2}, and L. P. Dasi^{1,2}
¹School of Biomedical Engineering, Colorado State University, Fort Collins, CO, ²Department of Mechanical Engineering, Colorado State University, Fort Collins, CO

Track: Cellular and Molecular Engineering - **PS-9A-6 - *The Physics and Engineering of Cancer Cells and Their Microenvironment***

- PS-9A-6-68** **The Role of the Tumor Vascular Niche in Regulating the Angiogenic Potential of Breast Cancer Cells**
C. F. Buchanan¹, C. S. Szot¹, S. Akman², J. W. Freeman¹, and M. N. Rylander¹
¹Virginia Tech, Blacksburg, VA, ²Wake Forest University School of Medicine, Winston-Salem, NC
- PS-9A-6-69** **Mechanobiology of Mammary Stroma Following Radiation Therapy (RT)**
M. A. Qayyum^{1,2}, J. Xu¹, and M. F. Insana^{1,2}
¹University of Illinois, Urbana, IL, ²Beckman Institute for Advanced Science and Technology, Urbana, IL
- PS-9A-6-70** **The Role of Biophysical and Biochemical Signals in Epithelial-Mesenchymal Transition**
Q. K. Chen¹, E. W. Gomez¹, D. C. Radisky², and C. M. Nelson¹
¹Princeton University, Princeton, NJ, ²Mayo Clinic Cancer Center, Jacksonville, FL
- PS-9A-6-71** **Mechanobiology at Topological Interfaces: Observations and Implications for Tumor Infiltration**
T. A. Ulrich^{1,2}, and S. Kumar^{1,2}
¹University of California, Berkeley, Berkeley, CA, ²UCSF/UC Berkeley Joint Graduate Group in Bioengineering, Berkeley, CA
- PS-9A-6-72** **Bacteria Invasion Mechanism in Cancer and Normal Cells**
J. Hong¹, S. Park¹, and J. H. Shin¹
¹KAIST, Daejeon, Daejeon, Korea, Republic of
- PS-9A-6-73** **Adhesion of Wild Type and β_4 Signaling-defect Mammary Cancer Cells to Brain Endothelium**
J. Fan¹, B. Cai¹, Y. Hao², F. Giancotti², and B. M. Fu¹
¹The City College of New York, New York, NY, ²Memorial Sloan-Kettering Cancer Institute, New York, NY
- PS-9A-6-74** **Force Characterization of Tissue from Normal, Pre-invasive and Invasive Breast Cancer**
C. C. DuFort¹, J. Lopez¹, H. Yu¹, I. kang¹, I. Acerbi², S. Hwang¹, A. Au¹, and V. Weaver¹
¹University of California, San Francisco, San Francisco, CA, ²Universitat de Barcelona, Barcelona, Spain
- PS-9A-6-75** **Laminin Enhances Expansion of a Bone Marrow Precursor in The Presence of Tumor Factors**
H. Nandigan¹, J. McGinty², M. Pate², and F. Benencia^{1,2}
¹Russ College of Engineering, Ohio University, Athens, OH, ²OUCOM, Ohio University, Athens, OH
- PS-9A-6-76** **Biophysical Characterization of CD44v-Counter Receptor Interactions using Force Spectroscopy**
P. S. Raman¹, C. S. Alves¹, D. Wirtz¹, and K. Konstantopoulos¹
¹Johns Hopkins University, Baltimore, Maryland

- PS-9A-6-77 Increased Asymmetric and Multi-Polar Divisions in Mechanically Confined Microenvironments**
W. M. Weaver¹, H. T. Tse¹, and D. Di Carlo^{1,2}
¹University of California, Los Angeles, Los Angeles, CA, ²California NanoSystems Institute, Los Angeles, CA
- PS-9A-6-78 The Interplay Between Three Dimensional Microenvironment and Breast Cancer Invasion**
L. Cassereau¹, J. Lopez², and V. Weaver^{2,3}
¹UC Berkeley/UCSF, Berkeley, CA, ²UCSF, San Francisco, CA, ³Institute of Regenerative Medicine, UCSF, San Francisco, CA
- PS-9A-6-79 Substrate Elasticity Mediates Metastasis Like Phenotype *In Vitro* in HCT-8 Cells**
X. Tang¹, T. B. Kuhlenschmidt¹, M. S. Kuhlenschmidt¹, and T. A. Saif¹
¹University of Illinois at Urbana-Champaign, Urbana, IL
- PS-9A-6-80 Development of Cancer Traps for Eliminating Metastatic Cancer cells *In Vivo***
C-Y. Ko^{1,2}, A. Nair^{1,3}, Y-T. Tsai^{1,3}, J. Zhou¹, and L. Tang^{1,3}
¹The University of Texas at Arlington, Arlington, TX, ²The University of Texas Southwestern Medical Center at Dallas, Dallas, TX, ³The University of Texas - Southwestern Medical Center at Dallas, Dallas, TX
- PS-9A-6-81 Novel Enzyme Prodrug Therapy for Treatment of Breast Cancer**
B. D. Van Rite¹, Y. A. Lazrak¹, M. Pagnon¹, P. Bose², C. Kurkjian², V. I. Sikavitsas¹, and R. G. Harrison¹
¹University of Oklahoma, Norman, OK, ²University of Oklahoma Health Sciences Center, Oklahoma City, OK
- PS-9A-6-82 Mechanical Compression Stimulates Coordinated Migration of Mammary Carcinoma Cells**
J. M. Tse^{1,2}, G. Cheng², J. A. Tyrrell³, S. A. Wilcox-Adelman⁴, Y. Boucher², R. K. Jain², and L. L. Munn²
¹Massachusetts Institute of Technology, Cambridge, MA, ²Massachusetts General Hospital, Charlestown, MA, ³Thomson Reuters, Rochester, New York, ⁴Boston Biomedical Research Institute, Watertown, MA
- PS-9A-6-83 Study of Altered Metabolism due to Spherogenicity and Anoikis in Ovarian Cancer**
C. A. Caneba¹, N. Bellance¹, T. Karedath¹, P. Ramakrishnan¹, L. Pabst¹, S. A. Hussain¹, A. Bozhchenko¹, and D. Nagrath¹
¹Rice University, Houston, TX
- Track: Devices: Nano to Micro - **PS-9A-7 - *Emerging Concept of Medical Micro Devices***
- PS-9A-7-84 Modeling the Interaction Between Light and TiO₂ Thin Films in Photocatalytic Oxygen Generation**
A. Perrin¹, S. M. Mijailovich², and R. J. Gilbert³
¹Caritas St. Elizabeth's Medical Center, Brighton, MA, ²Harvard School of Public Health, Boston, MA, ³Caritas St. Elizabeth's Medical Center, Boston, MA
- PS-9A-7-85 Fiberoptic Microneedle Device for Laser Lipolysis**
Y. Chen¹, M. A. Kosoglu¹, R. L. Hood¹, and C. G. Rylander¹
¹Virginia Polytechnic Institute and State University, Blacksburg, VA
- PS-9A-7-86 Real Time DNA Amplification Using a Novel Microfluidic Tablet Platform**
S. Angione¹, J. Lee¹, L. Mermel², and A. Tripathi¹
¹Brown University, Providence, RI, ²Rhode Island Hospital, Providence, RI
- PS-9A-7-87 Development of a High-Throughput Biofilm Chip for Accelerated Antifungal Drug Discovery**
A. Srinivasan¹, P. Uppuluri¹, J. L. Lopez-Ribot¹, and A. K. Ramasubramanian¹
¹University of Texas at San Antonio, San Antonio, TX
- PS-9A-7-88 A Finite Element Study of an Enveloped Biopsy Catheter in RF Tumor Ablation**
P. Ghanbari-Bavarsad¹, and R. L. Mahajan¹
¹Institute for Critical Technology and Applied Science, Blacksburg, VA

- PS-9A-8-89 A Photodefined Micropatterned Membrane for Precise Cell Trapping**
A. L. McPherson¹, and G. M. Walker¹
¹North Carolina State University, Raleigh, NC
- PS-9A-8-90 BIO-MEMS Impedance Sensor for Detecting E.coli O57:H7**
M. Dweik¹
¹Lincoln University, Jefferson City, MO
- PS-9A-8-91 Intensity-based Quantum Dot Barcode Identification Scheme towards Portable Disease Diagnostic Device**
K. Ming¹, and W. Chan¹
¹University of Toronto, Toronto, Ontario, Canada
- PS-9A-8-92 Bioanalytical Applications Using a Silicon-nanowire Drop-based Magnetic Microfluidic Platform**
A. Egatz-Gomez¹
¹Texas A&M University TEES, College Station, TX
- PS-9A-8-93 Progress in the Development of a Wireless Stimulator for Gastroparesis**
S. Deb¹, T. Abell², W-D. Huang¹, C. Lahr³, and J-C. Chiao¹
¹University of Texas at Arlington, Arlington, TX, ²University of Mississippi Medical Center, Jackson, MS, ³University of Mississippi Medical Center, Jackson, MS
- PS-9A-8-94 The Design of a Wireless System Based on MSP430 Microcontroller for Multiple Parameter Sensing in Biomedical Applications**
Y-S. Seo¹, W-D. Huang¹, and J-C. Chiao¹
¹University of Texas at Arlington, Arlington, TX
- PS-9A-8-95 Electrical and Paper Based Point of Care Diagnostic Devices for Rapid Pathogenic Bacteria Detection**
E. Hondroulis¹, C. Liu¹, and C-Z. Li¹
¹Florida International University, Miami, FL
- PS-9A-8-96 Microfluidic Endothelial Progenitor Cell Capture Technology for Cardiovascular Diagnostic Medicine**
B. D. Plouffe¹, G. Hansmann^{2,3}, and S. K. Murthy¹
¹Northeastern University, Boston, MA, ²Children's Hospital Boston, Boston, MA, ³Harvard Medical School, Boston, MA
- PS-9A-8-97 Volatile Alkanes Micro Preconcentration for Breath Analysis Based Cancer Screening**
B. Alfeeli¹, and M. Agah¹
¹Virginia Tech, Blacksburg, VA
- PS-9A-8-98 In Vivo Transdermal SERS Glucose Measurements Using Spatially Offset Raman Spectroscopy**
J. M. Yuen¹, R. P. Van Duyne¹, J. T. Walsh¹, and M. R. Glucksberg¹
¹Northwestern University, Evanston, IL
- PS-9A-8-99 Development of a Microfluidic Reactor for Influenza A Subtyping**
S. E. McCalla¹, A. Sarma², C. Ong¹, S. M. Opal³, A. W. Artenstein⁴, and A. Tripathi¹
¹Brown University, Providence, RI, ²Harvard University, Cambridge, MA, ³Rhode Island Hospital, Providence, RI, ⁴Memorial Hospital of Rhode Island, Pawtucket, RI
- PS-9A-8-100 Disruption of Radial Flow in an Evaporating Drop as a Visual Indicator of Infection**
J. Trantum¹, R. L. Mernaugh¹, D. W. Wright¹, and F. R. Haselton¹
¹Vanderbilt University, Nashville, TN
- PS-9A-8-101 One-step Extraction of Nucleic Acids from Clinical Samples**
H. Bordelon¹, N. Adams¹, A. Klemm¹, P. Russ¹, J. Williams¹, D. Wright¹, and F. R. Haselton¹
¹Vanderbilt University, Nashville, TN
- PS-9A-8-102 Development of a Novel Nano-Biosensor Chip Based on Surface Plasmon Resonance for Rapid Medical Diagnostics**
M. Venkataramasubramani¹, and L. Tang¹
¹University Of Texas at San Antonio, San Antonio, TX

- PS-9A-8-103 Quantitative Characterization of Microelectroporated T cells Using Flow Cytometry**
D. J. Stark¹, T. C. Killian¹, and R. M. Raphael¹
¹Rice University, Houston, TX
- PS-9A-8-104 Optically Forced Cytometry (OFC) for *In Situ* Bio-nano-particle Enumeration**
Y. Hu¹, D. Ou-yang¹, and X. Cheng¹
¹Lehigh University, Bethlehem, PA
- PS-9A-8-105 Towards Non-Invasive Breath Monitoring with Microsensor Arrays**
B. Raman¹, K. Benkstein², C. Mungle², C. Montgomery², C. J. Martinez³, and S. Semancik²
¹Washington University, St. Louis, MO, ²National Institutes of Standards and Technology, Gaithersburg, Maryland, ³Purdue University, West Lafayette, IN
- PS-9A-8-106 Rapid In-Field Detection of Viral Bioterrorism Agents via Complex Fluid Systems**
F. Mashayekhi¹, Y. T. Chiu¹, A. Le¹, F. C. Chao¹, B. M. Wu¹, and D. T. Kamei¹
¹UCLA, Los Angeles, CA
- PS-9A-8-107 An Asynchronous Magnetic Bead Rotation Assay: A magnetic Torque-based Biosensor**
A. H. Hecht¹, P. Kinnunen¹, B. McNaughton¹, and R. Kopelman¹
¹University of Michigan, Ann Arbor, MI
- PS-9A-8-108 High Density Multiplexed Microfluidic Platforms for Rapid, Informative Plasma Protein Detection in Cancer Diagnostics**
O. Vermesh^{1,2}, and U. Vermesh¹
¹California Institute of Technology, Pasadena, CA, ²The David Geffen School of Medicine at UCLA, Los Angeles, CA
- PS-9A-8-109 Lab-on-chip Sensor for Monitoring Zinc by Anodic Stripping Voltammetry**
J. L. Herren¹, P. Jothimuthu¹, R. A. Wilson¹, H. Wong², W. R. Heineman¹, and I. Papautsky¹
¹University of Cincinnati, Cincinnati, OH, ²Cincinnati Childrens Hospital Medical Center, Cincinnati, OH
- PS-9A-8-110 Multiplexed, Rapid, Point of Care Device to Quantify Allergen-Specific IgE**
M. R. Monroe¹, G. Daaboul¹, A. Reddington¹, S. Unlu¹, and F. Little¹
¹Boston University, Boston, MA
- PS-9A-8-111 Device For Minimally Invasive Non-Destructive Analysis of Local Tissue Biomechanics**
R. A. Gould¹, G. Tarsi¹, A. Bozkurt¹, and J. Butcher¹
¹Cornell University, Ithaca, NY
- PS-9A-8-112 Enhancing MRI Contrast of Fe₃O₄ Nanoparticles via Porous Si Entrapment**
J. M. Kinsella¹, S. Ananda¹, and M. Sailor¹
¹University of California, San Diego, La Jolla, CA
- PS-9A-8-113 Biomimetic Separation of Blood Cells on a Microfluidic Platform**
A. Jain^{1,2}, and L. Munn¹
¹Massachusetts General Hospital, Charlestown, MA, ²Boston University, Boston, MA
- PS-9A-8-114 Quantum Dot-Microbeads for Genetic Detection in Non-Amplified DNA Samples**
Y. Gao¹, W. L. Stanford¹, and W. C. Chan¹
¹University of Toronto, Toronto, ON, Canada
- PS-9A-8-115 An Intracranial Volume Sensor to Monitor Ventricular Enlargement**
S. Basati¹, M. LaRiviere², R. Penn¹, and A. Linninger¹
¹University of Illinois at Chicago, Chicago, IL, ²University of Chicago, Chicago, IL

Track: Drug Delivery Systems - **PS-9A-9 - Graduate Education**

- PS-9A-9-116 Purification of Bacterial APOA-1 and Characterization of Novel Anticancer Drug Delivery System**
T. Young¹, and A. G. Lacko²
¹North Carolina State, Raleigh, NC, ²University of North Texas Health Science Center, Fort Worth, TX

- PS-9A-10-117 Preparation and Characterization of PEI-PEG attached Silica Nanoparticles for siRNA Delivery**
H. Lee¹, D. Sung¹, and S-W. Seo¹
¹Biomedical Engineering Interdisciplinary program, School of Medicine, Sungkyunkwan University, Seoul, Korea, Republic of
- PS-9A-10-118 Towards the Development of Mucus Penetrating DNA Nanoparticles**
N. Boylan¹, J. Suk², S. Lai^{1,3}, R. Jelinek⁴, M. Boyle², and J. Hanes^{3,5}
¹The Johns Hopkins University, Baltimore, MD, ²The Johns Hopkins University School of Medicine, Baltimore, MD, ³Institute for NanoBioTechnology, Baltimore, MD, ⁴Ben-Gurion University, Beersheba, Israel, ⁵Wilmer Ophthalmological Institute, The Johns Hopkins University School of Medicine, Baltimore, MD
- PS-9A-10-119 Development of Smart Particles for Effective Gene Silencing in Head & Neck Cancer**
Y-L. Lin¹, G. Jiang¹, and M. E.H. El-Sayed¹
¹University of Michigan, Ann Arbor, MI
- PS-9A-10-120 Understanding the Selective Transfection Mediated by Pentablock Copolymers with Study on Rate Limiting Steps**
B. ZHANG¹, and S. K. Mallapragada¹
¹Iowa State University, Ames, Iowa
- PS-9A-10-121 Gene Expression Profiling of Cells Transfected with Nonviral Vectors**
S. A. Plautz¹, G. Boanca¹, J-J. M. Riethoven¹, and A. K. Pannier¹
¹University of Nebraska-Lincoln, Lincoln, NE
- PS-9A-10-122 Small Molecular Changes to Gene Delivery Polymers Varies Transfection Efficacy Between 2D and 3D**
N. S. Bhise¹, R. Gray¹, J. Sunshine¹, S. Htet¹, J. Green¹, and A. Ewald¹
¹Johns Hopkins School of Medicine, Baltimore, MD
- PS-9A-10-123 The Role of Endocytosis in the Uptake and Internalization of Plasmid DNA Following Electroporation**
M. Wu¹, and F. Yuan¹
¹Duke University, Durham, NC
- PS-9A-10-124 Conjugation of Nucleic Acids to Gold Nanorods for Site-specific Delivery Using Photothermal Release**
T. A. Larson¹, S. Chirieleison¹, A. Ellington¹, and K. Sokolov^{1,2}
¹UT Austin, Austin, TX, ²MD Anderson Cancer Center, Houston, TX
- PS-9A-10-125 Novel Block Copolypeptide Vesicles as Potential Transfection Agents**
U-J. Choe¹, V. Z. Sun¹, A. R. Rodriguez¹, H. Dai¹, T. J. Deming¹, and D. T. Kamei¹
¹UCLA, Los Angeles, CA
- PS-9A-10-126 Intramyocardial Delivery of Functionalized Nanoparticles for Cardioprotection after Infarction**
M. Cheng^{1,2}, C. Chang¹, W. Liao², A. Tang², C. Yeh³, Y. Yang⁴, and P. Hsieh^{1,5}
¹Biomedical Engineering, Tainan, Taiwan, Taiwan, ²Clinical Medicine & Research Center of Clinical Medicine, Tainan, Taiwan, Taiwan, ³Chemistry, Tainan, Taiwan, Taiwan, ⁴Surgery, Tainan, Taiwan, Taiwan, ⁵Biomedical Sciences, Academia Sinica, Taipei, Taiwan, Taiwan
- PS-9A-10-127 Functional Performance of Polyplexes Self-assembled in Microfluidics-generated Droplets**
C. L. Grigsby¹, Y-P. Ho¹, and K. W. Leong¹
¹Duke University, Durham, NC
- PS-9A-10-128 In Vivo Gene Delivery with Biodegrading Nanoparticles**
A. J. Ditto¹, J. J. Reho¹, J. A. Smolen¹, J. H. Holda¹, R. J. Ramirez¹, and Y. H. Yun¹
¹University of Akron, Akron, OH
- PS-9A-10-129 Synthesis and Biological Evaluation of Multifunctional Peptide-HPMA Copolymers as Nucleic Acid Delivery Vehicles**
R. N. Johnson¹, J. Shi¹, R. Burke¹, A. Hoffman¹, P. Stayton¹, and S. H. Pun¹
¹University of Washington, Seattle, WA

- PS-9A-10-130 Apoptosis of Human Colon Cancer Cells by Silencing Eukaryotic Translation Initiation Factor 2 Alpha**
C-H. Wang¹, and C-A. Peng¹
¹Michigan Technological University, Houghton, MI
- PS-9A-10-131 The Effect of Swelling and Cationic Character On Gene Transfection by pH-Responsive Nanocarriers**
J-O. You¹, R. E. Horton¹, and D. T. Auguste¹
¹Harvard University, Cambridge, MA
- PS-9A-10-132 Well-defined Synthetic Polymers for DNA Vaccine Delivery: Uptake and Subcellular Trafficking in Dendritic Cells**
D. Panus¹, W. Ji¹, and C. Wang¹
¹University of Minnesota, Minneapolis, MN

Track: Neural Engineering - **PS-9A-11 - *Neural Engineering: Technology Development***

- PS-9A-11-133 Laser Suppresses Amyloid-beta Peptide-induced ROS and Inflammation in Primary Astrocytes**
X. Yang¹, S. Askarova¹, W. Sheng¹, G. Yao¹, G. Sun¹, and J. Lee¹
¹University of Missouri, Columbia, MO
- PS-9A-11-134 The Effects of Substrate Rigidity on Neuronal Precursor Cells**
M. L. Previtara¹, M. Hui¹, M. S. Desai¹, D. Verma¹, R. S. Schloss¹, and N. A. Langrana¹
¹Rutgers University, Piscataway, NJ
- PS-9A-11-135 Poly(3,4-ethylene dioxythiophene) Enables 38.5 μm^2 Recording Site for Carbon Fiber Based Electrodes**
T. D. Kozai¹, P. R. Patel¹, N. B. Langhals¹, X. Deng¹, H. Zhang¹, J. Lahann¹, N. A. Kotov¹, and D. R. Kipke¹
¹University of Michigan, Ann Arbor, MI
- PS-9A-11-136 An Integrated Probe for Sensing Neurotransmitters**
H. Cao¹, Y-B. Peng¹, and J-C. Chiao¹
¹University of Texas at Arlington, Arlington, TX
- PS-9A-11-137 Investigating the Power Spectral Density as a Method for Quantifying Neuronal Signals for Pain Study**
A. Farajidavar¹, C. Hagains¹, Y. Peng¹, and J-C. Chiao¹
¹The University of Texas at Arlington, Arlington, TX
- PS-9A-11-138 Aqueous Micro-contact Printing for Design of Live Neuronal Network *In Vitro***
M. J. Jang¹, and Y. Nam¹
¹KAIST, Daejeon, Chungnam, Korea, Republic of
- PS-9A-11-139 A Preliminary Study of Motor Unit Discrimination from Surface EMG Using EMGLAB**
F. J. Nezhad¹, X. Li¹, W. Z. Rymer^{1,2}, and P. Zhou^{1,2}
¹Rehabilitation Institute of Chicago, Chicago, IL, ²Northwestern University, Chicago, IL
- PS-9A-11-140 *In Vitro* stability and *In Vivo* performance of PEDOT coatings for neural microstimulation**
S. J. Wilks¹, A. S. Koivuniemi^{1,2}, and K. J. Otto¹
¹Purdue University, West Lafayette, IN, ²Indiana University, Indianapolis, IN
- PS-9A-11-141 Improving the Assessment of Tremor and Bradykinesia Using the Tablet PC**
M. Zhang¹, S. Askari¹, and D. S. Won¹
¹California State University, Los Angeles, Los Angeles, CA
- PS-9A-11-142 Impulsive Pressurization of Neuronal Cells for Studying Traumatic Brain Injury**
J. Lee¹, M. Nienaber¹, R. Feng¹, and J. Lim¹
¹University of Nebraska, Lincoln, NE
- PS-9A-11-143 Development of a High-Throughput Screen for Novel Biomaterials in Neural Tissue Engineering**
C. Dumont¹, P. Karande¹, and D. Thompson¹
¹Rensselaer Polytechnic Institute, Troy, NY

- PS-9A-11-144 3-D Integrated Neuromorphic Processor**
J. Park¹, T. Yu^{1,2}, S. Joshi¹, and G. Cauwenberghs^{1,2}
¹UCSD, La Jolla, CA, ²Institute of Neural Computation, La Jolla, CA
- PS-9A-11-145 Tape-Transfer Assisted Cryosectioning for the Mouse Brain Architecture Project**
V. Pinskiy^{1,2}, J. Jones¹, H. Wang¹, H. Cox¹, and P. Mitra¹
¹Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, ²Stony Brook University, Stony Brook, NY
- PS-9A-11-146 Development of Mental Fatigue in Simulated Air Traffic Control Tasks Studied by EEG**
D. Dasari¹, C. Crowe¹, C. Ling¹, M. Zhu¹, L. Bailey², J. Crutchfield², and L. Ding¹
¹University of Oklahoma, Norman, OK, ²Federal Aviation Academy, Oklahoma City, OK
- PS-9A-11-147 Improved Modeling and Application of Transcranial Magnetic Stimulation**
T. Krieg¹, and D. Mogul¹
¹Illinois Institute of Technology, Chicago, IL
- PS-9A-11-148 Monitoring the Depth of Anesthesia using the Time-Varying Spectral Features of EEG**
E. E. Kang¹, H. El Beheiry^{1,2}, J. Wong³, M. Del Campo³, P. L. Carlen^{1,3}, and B. L. Bardakjian¹
¹University of Toronto, Toronto, Ontario, Canada, ²Trillium Health Centre, Toronto, Ontario, Canada, ³University Health Network, Toronto, Ontario, Canada
- PS-9A-11-149 Electrical High Frequency Nerve Block of the Urethral Sphincter for Bladder Voiding**
M. Franke^{1,2}, A. S. Boger^{1,2}, N. Bhadra^{1,2}, and K. J. Gustafson^{1,2}
¹Case Western Reserve University, Cleveland, OH, ²Louis Stokes VA Medical Center, Cleveland, OH
- PS-9A-11-150 A FPGA-based Sound Classification and Localization System That Uses Output From a Biomimetic Model**
Y. Pu¹, L. Solomon², and A. Hubbard¹
¹Boston University, Boston, MA, ²US Army Research Laboratory, Adelphi, MD
- PS-9A-11-151 Methodology and Characteristics of Micropatterned Neural Networks**
E. W. Franca¹, S. Algapan¹, L. Pan¹, K. Varghese¹, G. J. Brewer², and B. Wheeler¹
¹University of Florida, Gainesville, FL, ²Southern Illinois University School of Medicine, Springfield, IL
- PS-9A-11-152 IV Administered Copolymer Surfactant Poloxamer 188 Accelerates Peripheral Axon Regeneration**
R. C. Lee¹
¹University of Chicago, Chicago, IL
- PS-9A-11-153 Carbon Nanotube Thread Supports Attachment and Differentiation of Murine Neural Cells in Culture**
T. Hopkins¹, J. Vennemeyer¹, C. Jayasinghe¹, V. Shanov¹, and S. Pixley¹
¹University of Cincinnati, Cincinnati, OH
- PS-9A-11-154 Novel Microchannel Device for Real Time Monitoring Tumor Cell Migration**
S. Vasudevan¹, D. Tamuly¹, D. P. Dave¹, S. M. Iqbal¹, R. Bachoo², and Y-T. Kim¹
¹University of Texas at Arlington, Arlington, TX, ²University of Texas Southwestern Medical Center, Dallas, TX

Track: New Frontiers in Bioengineering - **PS-9A-12 - *Synthetic Biology in Health and Medicine***

- PS-9A-12-155 Improved Safety and Efficacy of Balloon Angioplasty Procedures Using Collagen-Binding Peptidoglycans**
K. Stuart¹, J. Paderi¹, M. Sturek², and A. Panitch¹
¹Purdue University, West Lafayette, IN, ²Indiana University School of Medicine, Indianapolis, IN
- PS-9A-12-156 A Synthetic Biological Engineering Approach to Secretion-Based Recovery of Polyhydroxyalkanoates and Other Cellular Products**
E. Linton¹, R. C. Sims¹, and C. D. Miller¹
¹Utah State University, Logan, UT

- PS-9A-12-157 A Temperature-Responsive Synthetic Antibody for Reversible Cell Labeling**
J. Zhou¹, B. Soontornworajit¹, and Y. Wang¹
¹University of Connecticut, Storrs, CT
- PS-9A-12-158 Self-assembling Peptides as Chemically Defined Adjuvants**
J. S. Rudra¹, Y. F. Tian¹, J. P. Jung¹, and J. H. Collier¹
¹University of Chicago, Chicago, IL
- PS-9A-12-159 Tunable Signal Processing in Synthetic MAP Kinase Modules**
E. C. O'Shaughnessy¹, S. Palani², J. J. Collins¹, and C. A. Sarkar²
¹Howard Hughes Medical Institute and Boston University, Boston, MA, ²University of Pennsylvania, Philadelphia, PA

Track: Orthopedic and Rehabilitation Engineering - **PS-9A-13 - Orthopaedic Hard Tissue Biomechanics**

- PS-9A-13-160 Effect of Plate Size on the Stability of Surgically Repaired Humeri in Simulated Crutch Ambulation**
J. G. Bledsoe¹, J. Buchheit¹, S. Owen¹, and L. Cannada¹
¹Saint Louis University, St Louis, MO
- PS-9A-13-161 Factors Influencing Tibial Loading Following Total Knee Arthroplasty: A Finite Element Study**
S. Tokunaga¹, S. R. Small², R. D. Rogge¹, M. E. Berend², and M. A. Ritter²
¹Rose-Hulman Institute of Technology, Terre Haute, IN, ²JRSI Foundation, Inc., Mooresville, IN
- PS-9A-13-162 Understanding Nanotopography Mediated Osteoblast Responses by Experiments and Mathematical Modeling**
L. Yang¹, V. Chinthapenta¹, Q. Li¹, B. W. Sheldon¹, and T. J. Webster¹
¹Brown University, Providence, RI
- PS-9A-13-163 A Mechanistic Model of the Nanoscratch Test to Determine the *In Situ* Toughness of Bone**
A. Islam¹, X. Dong¹, and X. Wang¹
¹University of Texas at San Antonio, San Antonio, TX
- PS-9A-13-164 Microdamage Induced Collagen Denaturation in Bone**
M. banka¹, M. Appleford¹, and X. Wang¹
¹University of Texas at San Antonio, San Antonio, TX
- PS-9A-13-165 High Initial Stability in Porous Titanium Acetabular Cup Designs: A Biomechanical Study**
M. E. Berend¹, S. R. Small¹, L. Howard², R. D. Rogge², C. A. Buckley², and M. A. Ritter¹
¹JRSI Foundation, Inc., Mooresville, IN, ²Rose-Hulman Institute of Technology, Terre Haute, IN
- PS-9A-13-166 The role of Osteocalcin and Osteopontin in Fatigue Induced Microdamage Formation and Morphology**
O. Nikel¹, R. A. Davignon¹, C. M. Gundberg², and D. Vashishth¹
¹Rensselaer Polytechnic Institute, Troy, NY, ²Yale School of Medicine, New Haven, CT
- PS-9A-13-167 An Inverse FEA to Assess Bone Fracture Healing in Mice Receiving Mesenchymal Stem Cell Transplantation**
J. A. Weis¹, F. Granero-Moltó², T. J. Myers², A. Spagnoli², and M. I. Miga¹
¹Vanderbilt University, Nashville, TN, ²University of North Carolina at Chapel Hill, Chapel Hill, NC
- PS-9A-13-168 The Influence of the Frontal Sinus on Fracture Tolerance**
J. Cormier¹, S. Manoogian¹, J. Bisplinghoff², S. Rowson², A. Santago², C. McNally², J. Bolte IV³, and S. Duma²
¹Biodynamic Research, San Antonio, TX, ²Virginia Tech – Wake Forest Center for Injury Biomechanics, Blacksburg, VA, ³The Ohio State University Transportation Research Center, Columbus, OH
- PS-9A-13-169 The Tolerance of the Nasal Bone to Blunt Impact**
J. Cormier¹, S. Manoogian¹, J. Bisplinghoff², S. Rowson², A. Santago², C. McNally², J. Bolte IV³, and S. Duma²
¹Biodynamic Research, San Antonio, TX, ²Virginia Tech – Wake Forest Center for Injury Biomechanics, Blacksburg, VA, ³The Ohio State University Transportation Research Center, Columbus, OH

PS-9A-13-170 **Variation of Mineral Crystal Orientation Under Uniaxial Load Using Synchrotron X-Ray Scattering**
A. R. Paterson¹, A. Belzung², X. Dong², J. Almer³, and X. Wang²
¹University of Texas at San Antonio, San Antonio, TX, ²UTSA, San Antonio, TX, ³Argonne National Lab, Advanced Photon Source, Argonne, IL

Track: Respiratory Engineering - **PS-9A-14 - Upper Airway Function**

PS-9A-14-171 **Modeling of Adhesion Dynamics and Eustachian Tube Function During Inflammatory Otitis Media**
F. J. Sheer¹, and S. Ghadiali¹
¹Ohio State University, Columbus, OH

PS-9A-14-172 **Real-Time Monitoring of Exercise Induced Changes in Respiratory Resistance Using the Airflow Perturbation Device**
P. Chapain^{1,2}, A. Johnson¹, J. Vossough², and S. Majd²
¹University of Maryland College Park, College Park, MD, ²Engineering and Scientific Research Associates, Olney, MD

PS-9A-14-173 **In Vivo Detection of Airway Narrowing and Occlusion in Obstructive Sleep Apnea/Hypopnea using Ultrasound**
M. Al-Abed¹, P. Antich², D. E. Watenpaugh³, G. Bhawe¹, A. Bashaboyina¹, R. Alex¹, S. Iyer¹, E. Altuwaijri¹, and K. Behbehani¹
¹University of Texas at Arlington, Arlington, TX, ²University of Texas Southwestern Medical Center at Dallas, Dallas, TX, ³Sleep Consultants, Inc., Fort Worth, TX

PS-9A-14-174 **Odorant Uptake and Transport in the Human Nasal Nose Under Unsteady Airflow**
J. Jiang¹, and K. Zhao¹
¹Monell Chemical Sense Center, Philadelphia, PA

PS-9A-14-175 **A Study of Physiological Effects of Sleep Apnea on Cerebral Blood Flow Velocity**
G. Bhawe¹, D. E. Watenpaugh², R. Zhang³, A. Bashaboyina⁴, M. Al-Abed¹, S. Iyer⁵, E. Altuwaijri¹, and K. . Behbehani¹
¹The University of Texas, Arlington, Arlington, TX, ²Sleep Consultants Inc., Ft. Worth, TX, ³Presbyterian Hospital, Institute for Exercise and Environmental Medicine, Dallas, TX,

PS-9A-14-176 **A Pressure Measuring Syringe**
J. Spiegel¹
¹BIDMC, Natick, MA

Track: Systems Biology, Bioinformatics and Computational Biology - **PS-9A-15 - Systems Cell Biology**

PS-9A-15-177 **Bioinformatic Elucidation of Consensus Phosphorylation Motifs Utilizing Inter-Species Functional Data**
L. Brumfield¹
¹NC State University, Raleigh, NC

PS-9A-15-178 **Systems Analysis of Nox1 Activation by Angiotensin II in Vascular Smooth Muscle Cells**
W. Yin¹, and E. O. Voit¹
¹Georgia Institute of Technology, Atlanta, GA

PS-9A-15-179 **Modeling of Potassium Accumulation at the Immunological Synapse and its Effect on T-cell Function**
G. Martin¹, Y. Yun², and L. Conforti¹
¹University of Cincinnati, Cincinnati, OH, ²North Carolina A&T State University, Greensboro, NC

PS-9A-15-180 **Design of an Ultrasensitive Activity Assay for Protein-Kinase Signaling Networks**
K. J. Holmberg¹, and K. A. Janes¹
¹University of Virginia, Charlottesville, VA

PS-9A-15-181 **Silver Salts: Effective Antibiotic Potentiators**
J. R. Morones-Ramirez^{1,2}, and J. J. Collins^{1,2}
¹Howard Hughes Medical Institute, Boston, MA, ²Boston University, Boston, MA

PS-9A-15-182 **Quantitative Signaling Analysis of Monocyte Differentiation into Osteoclasts or Macrophages**
M. O. Platt¹, and W. A. Li¹
¹Georgia Institute of Technology, Atlanta, GA

- PS-9A-15-183** **Toward Automated Quantitative Analysis of Macrophage Activation While Retaining Spatial Context**
E. Highley¹, S. Y. Kwan¹, and P. G. Campbell¹
¹Carnegie Mellon University, Pittsburgh, PA
- PS-9A-15-184** **A Computational Toolbox to Analyze in-vitro Cell Differentiation Heterogeneity**
E. Highley¹, E. Ker¹, L. E. Weiss¹, and P. G. Campbell¹
¹Carnegie Mellon University, Pittsburgh, PA
- PS-9A-15-185** **Temporal Changes in ERK1/2 Signaling in Huvecs Cultured on Combinations of ECM Components**
C. Pauken¹, and M. Caplan¹
¹Arizona State University, Tempe, AZ
- PS-9A-15-186** **Spatial Dynamics of TNF- & [alpha] Induced Hydrogen Peroxide**
A. F. Gardezi¹, and M. L. Kemp²
¹Georgia Institute of Technology, Atlanta, GA, ²Georgia Institute of Technology/Emory University, Atlanta, GA
- PS-9A-15-187** **Serpine-derived Anti-angiogenic Peptides as Therapeutic Agents for Breast Cancer**
J. E. Koskimaki¹, E. V. Rosca¹, N. V. Pandey¹, E. V. Karagiannis¹, and A. S. Popel¹
¹Johns Hopkins University School of Medicine, Baltimore, MD
- PS-9A-15-188** **ShReD: A Novel Metric for Determining Reciprocal Interactions Between Biochemical Network Components**
G. Sridharan¹, D. Weaver¹, S. Hassoun¹, and K. Lee¹
¹Tufts University, Medford, MA

Track: Tissue Engineering - **PS-9A-16 - *Biosensors and Tissue Engineering***

- PS-9A-16-189** **Mechanically Directed Endothelial Morphogenesis**
Y. Liu^{1,2}, D. A. Markov², J. P. Wikswo², and L. J. McCawley²
¹West Virginia University, Morgantown, WV, ²Vanderbilt University, Nashville, TN
- PS-9A-16-190** **A Wireless Platform for Wound Condition Monitoring**
Y-S. Seo¹, H. Cao¹, S. K. Thakar¹, C. M. Nguyen¹, and J-C. Chiao¹
¹University of Texas at Arlington, Arlington, TX
- PS-9A-16-191** **In Vivo and In Silico Validation of a Novel Implantable Oxygen Sensor**
H. V. Jain¹, H. Byrne², and N. I. Moldovan³
¹Mathematical Biosciences Institute, The Ohio State University, Columbus, OH, ²School of Mathematical Sciences, University of Nottingham, Nottingham, UK, United Kingdom, ³Davis Heart and Lung Research Institute, Ohio State University, Columbus, OH
- PS-9A-16-192** **Optimizing the Design of a Self-cleaning Thermoresponsive Hydrogel Membrane for Glucose Sensing**
A. A. Abraham¹, R. Fei¹, B. M. Cummins¹, M. A. Grunlan¹, and G. L. Cote¹
¹Texas A&M University, College Station, TX
- PS-9A-16-193** **Electrochemical Glucose Biosensor Based on Multi-walled Carbon Nanotubes (MWNTs) Modified Electrode.**
D. M. Savani¹, A. Santiago¹, and P. Patra¹
¹University of Bridgeport, Bridgeport, CT

Track: Tissue Engineering - **PS-9A-17 - *Host Response to Biomaterials***

- PS-9A-17-194** **Alginate Hydrogels as a Calcium Source for Immunomodulation**
G. Chan¹, and D. Mooney¹
¹Harvard University, Cambridge, MA
- PS-9A-17-195** **Improved Haemocompatibility of Polyethylene Terephthalate Films ,odified by NTPDase Immobilization**
V. Muthuvijayan¹, and R. S. Lewis²
¹Oklahoma State University, Stillwater, OK, ²Brigham Young University, Provo, UT

- PS-9A-17-196** **Integrin-Directed Modulation of Macrophage Response to Biomaterials**
T. Zaveri¹, N. Dolgova¹, M. Clare-Salzler¹, and B. Keselowsky¹
¹University of Florida, Gainesville, FL
- PS-9A-17-197** **Immunogenicity of Bovine and Leporine Meniscus Cells and Articular Chondrocytes**
J. Sanchez-Adams¹, D. J. Huey¹, V. P. Willard¹, and K. A. Athanasiou²
¹Rice University, Houston, TX, ²UC Davis, Davis, CA
- PS-9A-17-198** **Biological Response to Submicron Cobalt Chromium Alloy Particles in a Rabbit Model**
M. L. Harper¹, V. Singh¹, F. W. Chan¹, and N. Hallab²
¹Medtronic, Spinal and Biologics, Memphis, TN, ²Rush University Medical Center, Chicago, IL

Track: Tissue Engineering - **PS-9A-18 - *Musculoskeletal Tissue Engineering***

- PS-9A-18-199** **Effect of Combinatorial Stress Preconditioning and Heat Shock Proteins on Bone Regeneration**
E. Chung¹, and M. N. Rylander¹
¹Virginia Tech, Blacksburg, VA
- PS-9A-18-200** **Aligned Collagen-GAG Scaffolds for Tendon Tissue Engineering**
S. R. Caliar¹, M. Ramirez¹, and B. A. Harley¹
¹University of Illinois at Urbana-Champaign, Urbana, IL
- PS-9A-18-201** **Skeletal Muscle Nanoactuator**
K. D. McKeon-Fischer¹, D. H. Flagg¹, and J. W. Freeman¹
¹Virginia Polytechnic Institute and State University, Blacksburg, VA
- PS-9A-18-202** **Force Generation in Engineered Muscle Tissue is Significantly Affected by Cell-matrix Interactions**
S. Hinds¹, W. Bian¹, and N. Bursac¹
¹Duke University, Durham, NC
- PS-9A-18-203** **Composite Electrospun/Hydrogel Scaffold for Cartilage Tissue Engineering**
L. Wright¹, K. D. McKeon-Fischer¹, L. S. Nair², and J. W. Freeman¹
¹Virginia Tech, Blacksburg, VA, ²University of Connecticut, Farmington, CT
- PS-9A-18-204** **MicroCT Assessment of Bone Organ Culture Viability and Development in a Neonatal Rat Femur Model**
K. Gurley¹, A. Gobin², and M. Saunders¹
¹University of Kentucky, Lexington, KY, ²University of Louisville, Louisville, KY
- PS-9A-18-205** **Improved Cell Infiltration into Electrospun Bone Tissue Scaffolds via Sacrificial Fiber Removal**
B. Whited¹, J. Whitney¹, Y. Xu¹, and M. N. Rylander¹
¹Virginia Polytechnic Institute and State University, Blacksburg, VA
- PS-9A-18-206** **Novel Glucosamine Analogs for Recovery of Chondrocytes from IL-1 β Treatment**
J. M. Coburn¹, J. Crist¹, L. Wo¹, K. J. Yarema¹, and J. H. Elisseeff¹
¹Johns Hopkins University, Baltimore, MD
- PS-9A-18-207** **Characterization of Electrospun Osteon-like Scaffolds**
T. Andric¹, A. C. Sampson¹, and J. W. Freeman¹
¹Virginia Tech, Blacksburg, VA
- PS-9A-18-208** **Synthesis of Collagenase-Sensitive Polyureas for Ligament Tissue Engineering**
T. J. Touchet¹, H. A. Benhardt¹, and E. M. Cosgriff-Hernandez¹
¹Texas A&M University, College Station, TX
- PS-9A-18-209** **Cartilage Tissue Engineering Using Neonatal Human Dermal Fibroblasts**
M. Singh¹, F. K. Kasper¹, and A. G. Mikos¹
¹Rice University, Houston, TX

- PS-9A-18-210 Soluble Mini-agrin Increases Contractility of Engineered Skeletal Muscle Tissues**
W. Bian¹, and N. Bursac¹
¹Duke University, Durham, NC
- PS-9A-18-211 Histological Sections - Can Major and Minor Centroidal Axes Serve as Absolute Reference Points**
S. H. McBride¹, S. Dolejs¹, U. Knothe², and M. Knothe Tate¹
¹Case Western Reserve University, Cleveland, OH, ²Cleveland Clinic, Cleveland, OH
- PS-9A-18-212 Immature and Mature Muscle Cells Secrete Soluble Factors to Differentially Regulate Embryonic Tendon Cell Tenogenesis *In Vitro***
A. H. Thomas¹, Z. A. Schiller¹, C. C. Banos¹, and C. K. Kuo¹
¹Tufts University, Medford, MA
- PS-9A-18-213 Prolotherapy Based Increases in Cellular Proliferation and Collagen Deposition in MC3T3-E1 Cells**
Y. M. Empson¹, E. C. Ekwueme¹, and J. W. Freeman¹
¹Virginia Tech, Blacksburg, VA
- PS-9A-18-214 Multivariate Analysis of Microporosity and BMP on Bone Regeneration in Biphasic CaP Scaffolds**
S. Polak¹, S. Lan Levensgood², A. Maki¹, S. Clark¹, M. Wheeler¹, and A. Wagoner Johnson¹
¹University of Illinois at Urbana-Champaign, Urbana, IL, ²University of Wisconsin, Madison, WI
- PS-9A-18-215 Orientation of Collagen Fibers in the ECM of Osteoblastic Cells by Mechanical Transduction**
J. A. Boada¹, J. Jerez¹, I. De Jesus¹, J. Valera¹, R. Romañach¹, N. Diffoot-Carlo¹, and P. A. Sundaram¹
¹University of Puerto Rico, Mayaguez, Puerto Rico
- PS-9A-18-216 Effect of a Mechanical Stimulation Bioreactor on Tissue Engineered Scaffold-Free Cartilage**
S. Tran¹, and S. Elder¹
¹Mississippi State University, Mississippi State, MS
- PS-9A-18-217 Highly Cellular Region of Scaffold-Free Engineered Cartilage Fails Under Compressive Shearing Loads**
G. Whitney¹, K. Jayaraman¹, J. E. Dennis¹, and J. M. Mansour¹
¹Case Western Reserve University, Cleveland, OH
- PS-9A-18-218 Novel Hydrogels of Photo-Crosslinkable PEG Macromers and Chitosan for Cartilage Tissue Engineering**
B. J. Klein¹, A. Harley¹, and J. A. Cooper¹
¹Rensselaer Polytechnic Institute, Troy, NY
- PS-9A-18-219 Synovium-Derived Stem Cells for Cartilage Tissue Engineering**
S. R. Sampat¹, G. O'Connell¹, J. Fong¹, and C. T. Hung¹
¹Columbia University, New York, NY
- PS-9A-18-220 *In Vitro* Evaluation of Magnesium Alloys for the Regeneration of Ligament and Ligament-Bone Interface**
H. Liu¹, Z. Xu², and S. L-Y. Woo¹
¹University of Pittsburgh, Pittsburgh, PA, ²North Carolina A&T State University, Greensboro, NC

Track: Tissue Engineering - **PS-9A-19 - *Translational Tissue Engineering and Clinical Experience***

- PS-9A-19-221 Factors Affecting Tissue Culture and Transplantation Using Omentum**
J. Kim¹, H. Lee¹, and S. Seo¹
¹SungKyunKwan University, Seoul, Seoul, Korea, Republic of
- PS-9A-19-222 Computational Prediction of Breast Features after Partial Mastectomy**
D. Thanoon¹, M. Garbey¹, and B. L. Bass²
¹University of Houston, Houston, TX, ²The Methodist Hospital System, Houston, TX
- PS-9A-19-223 Comparing the Biomechanical Response of Porcine, Bovine, and Human Liver Tissue**
A. Santago¹, A. Kemper¹, J. Sparks², and S. Duma¹
¹Virginia Tech - Wake Forest School For Biomedical Engineering and Sciences, Blacksburg, VA, ²Virginia Tech - Wake Forest School For Biomedical Engineering and Sciences, Winston-Salem, NC

- PS-9B-1-1 Characterization of Early Embryonic Tissue Properties and their Effects on Stem Cell and Organ Development in Chick Cardiac Model**
N. Chapurin¹, A. Neumann¹, N. S. Lor², K. Sayed¹, B. Davis³, M. C. Goude³, and J. Butcher¹
¹Cornell University, Ithaca, NY, ²East Carolina University, Greenville, NC, ³University of Florida, Gainesville, FL
- PS-9B-1-2 Optimization of a Lab-on-chip Sensor for Highly Electronegative Heavy Metals**
J. L. Herren¹, P. Jothimuthu¹, R. Wilson¹, W. R. Heineman¹, and I. Papautsky¹
¹University of Cincinnati, Cincinnati, OH
- PS-9B-1-3 HOXA1 Regulation of an Athero-susceptible Phenotype in Endothelium**
P. Islam¹, Y. Fang¹, and P. F. Davies¹
¹University of Pennsylvania, Philadelphia, PA
- PS-9B-1-4 Platelet-targeted Liposomal Nanoconstructs for Site-specific Drug Delivery in Vascular Disease**
C. Modery¹, M. Ravikumar¹, and A. Sen Gupta¹
¹Case Western Reserve University, Cleveland, OH
- PS-9B-1-5 Optimization of Growth of *Gluconobacter* sp. 33 and PQQ-Dependent Enzyme Purification**
D. W. Stern¹, and S. D. Minter²
¹Bucknell University, Lewisburg, PA, ²Saint Louis University, Saint Louis, MO
- PS-9B-1-6 A Simple Microfluidic Device for *C. elegans* Immobilization Fabricated Using Household Materials**
B. G. Wong¹, O. Cinquin¹, and E. E. Hui¹
¹University of California, Irvine, Irvine, CA
- PS-9B-1-7 Assessment of Silicate Cross-linked Poly(ethylene oxide) Hydrogels for Orthopedic Tissue Repair**
J. Canter¹, S. A. Dammu¹, S. Vaid¹, A. Gaharwar¹, and G. Schmidt¹
¹Purdue University, West Lafayette, IN
- PS-9B-1-8 Synthesis of a Biodegradable Methacrylated Ester for Bone Graft Fabrication**
C. J. Wilson¹, R. Moglia², and E. Cosgriff-Hernandez²
¹Texas Lutheran University, Seguin, TX, ²Texas A&M University, College Station, TX
- PS-9B-1-9 Cytokine Regulation of CD4 T cell Memory Development**
R. A. Amezcua^{1,2}, H. D. Marshall³, and S. M. Kaech³
¹University of California - San Diego, San Diego, CA, ²HHMI EXROP, Chevy Chase, MD, ³Yale University, New Haven, CT
- PS-9B-1-10 A High Throughput Workflow For The Analysis Of Diauxic Shifts In *Escherichia Coli* In A Paired Carbon Substrate Environment**
A. Chaudhari¹, N. Lewis¹, J. Lerman¹, and B. Palsson¹
¹University of California San Diego, La Jolla, CA
- PS-9B-1-11 Surface Capture and Imaging of H1N1 Virus**
M. Johnson¹, H. Stephanou², M. R. Roner³, and S. M. Iqbal⁴
¹Department of Biology, ARRI, University of Texas at Arlington, Fort Worth, TX, ²Department of Electrical Engineering, ARRI, University of Texas at Arlington, Fort Worth, TX, ³Department of Biology, University of Texas at Arlington, Arlington, TX, ⁴Department of Electrical Engineering, NanoFab, University of Texas Arlington, Arlington, TX
- PS-9B-1-12 Multiphoton Microscopy Histology of Cleared Mouse Organs**
S. G. Parra¹, T. H. Chia¹, J. P. Zinter¹, and M. J. Levene¹
¹Yale University, New Haven, CT
- PS-9B-1-13 Galectin-1 and Human Umbilical Cord Mesenchymal Stromal Cell (HUCMSC) Differentiation *In Vitro***
E. J. Lee¹, L. Jing¹, L. A. Setton^{1,2}, and J. Chen¹
¹Duke University, Durham, NC, ²Duke Medical Center, Durham, NC

- PS-9B-1-14** **Assessment of FRET Probes for High-Content Screening of Anti-AIDS Inhibitors**
T. B. Busch¹, H. Yao², J. Veetil², K. Ye², and S. Jin²
¹Southeast Missouri State University, MO, MO, ²University of Arkansas, Fayetteville, AR
- PS-9B-1-15** **Design and Development of a Hemodynamic Pump for Arterial Wall Shear Stress Measurements**
S. Newcomer¹, and K. D. Hudson¹
¹Purdue University, West Lafayette, IN
- PS-9B-1-16** **Phospholipid Composition Affects CLC-ec1 Chloride-transport Activity**
T. Chew^{1,2}, S. Elvington¹, and M. Maduke¹
¹Stanford University, Stanford, CA, ²University of California, San Diego, La Jolla, CA
- PS-9B-1-17** **Thread as a Matrix for Biomedical Assays**
R. Dasgupta¹, M. Reches¹, and G. Whitesides¹
¹Harvard University, Cambridge, MA
- PS-9B-1-18** **Vinculin Adhesion Strength Regulation of Matrix Stiffness-Induced Stem Cell Differentiation**
D. S. Vijayraghavan¹, A. W. Holle¹, and A. J. Engler¹
¹University of California San Diego, La Jolla, CA
- PS-9B-1-19** **Design and Implementation of Novel Silicone Cup Attachment for Ambulatory EEG Electrode**
S. M. Bost¹, M. A. Long¹, F. Gilliam², K. A. Bieryla¹, and J. V. Tranquillo¹
¹Bucknell University, Lewisburg, PA, ²Geisinger Medical Center, Danville, PA
- PS-9B-1-20** **Optimization of a Novel Method to Estimate Synovial Fluid Volume**
B. J. Hinton¹, B. C. Hansen², J. P. Caffrey², and R. L. Sah²
¹University of Minnesota-Twin Cities, Minneapolis, MN, ²University of California-San Diego, La Jolla, CA
- PS-9B-1-21** **A Novel Microfluidic Experimental System for Investigating Neutrophil Decision Making in Chemotaxis**
G. Ou¹, A. Aranyosi², and D. Irimia^{2,3}
¹Franklin W. Olin College of Engineering, Needham, MA, ²Center for Engineering in Medicine, Massachusetts General Hospital, Charlestown, MA, ³Harvard Medical School, Cambridge, MA
- PS-9B-1-22** **Stability Characterization of PEG-Conjugated Nanoshells for Improved Passive Tumor Accumulation**
L. M. Tanenbaum¹, A. J. Coughlin¹, and J. L. West¹
¹Rice University, Houston, TX
- PS-9B-1-23** **MindBot: Robotic Control via Wireless Neural Headset**
T. E. Laird¹, and N. L. Johnson¹
¹Clemson University, Clemson, SC
- PS-9B-1-24** **Prediction of Future Glucose Concentrations Using Linear Time-Series Models**
L. Marxkors¹, M. Oruklu², and A. Cinar²
¹Saint Louis University, St. Louis, MO, ²Illinois Institute of Technology, Chicago, IL
- PS-9B-1-25** **Mechanobiology of the Periosteum: Finite Element Modeling and Histological Analysis**
R. M. Miller¹, S. Dolejs¹, S. H. McBride¹, U. Knothe², and M. L. Knothe Tate¹
¹Case Western Reserve University, Cleveland, OH, ²Cleveland Clinic Foundation, Cleveland, OH
- PS-9B-1-26** **Cross-linked PEG-poly(amino acid) Nanoassemblies for Controlled Drug Delivery**
L. Sandlin¹, A. Ponta², and Y. Bae²
¹University of Kentucky, College of Engineering, Lexington, KY, ²University of Kentucky, College of Pharmacy, Lexington, KY
- PS-9B-1-27** **Pentablock Copolymers for Sustained Gene Delivery**
M. Q. Fleming¹, B. Zhang², and S. Mallapragada²
¹University of Texas at Austin, Austin, TX, ²Iowa State University, Ames, IA

- PS-9B-1-28 Functionalized Macrocycles: A Journey toward a New Class of Insulin Mimetics**
V. Rambaran¹, C. Ramkissoon², and K. Mungal²
¹The University of Trinidad and Tobago, Arima, Trinidad and Tobago, ²University of Trinidad and Tobago, Arima, Trinidad and Tobago
- PS-9B-1-29 Effect of Cryopreservation on Periosteal Tissue**
S. Evans¹, S. McBride¹, and M. L. Knothe Tate¹
¹Case Western Reserve University, Cleveland, OH
- PS-9B-1-30 Development of Eye Injury Risk Functions for Multiple Projectile Diameters using the FOCUS Headform**
R. Chaklader¹, E. Thiel¹, and E. Kennedy¹
¹Bucknell University, Lewisburg, PA
- PS-9B-1-31 Multi-Angle Light Scatter Measurement in Flow Cytometry: Toward Enhanced Physical Properties Detection and Label-Free Classification**
P. B. Carlsgaard¹, B. P. Rajwa¹, N. R. Lewis¹, V. P. Patsekina¹, C. M. Holdman¹, K. E. Ragheb¹, P. Rigby¹, D. Kramer¹, and J. P. Robinson¹
¹Purdue University, West Lafayette, IN
- PS-9B-1-32 Influence of Cell-Substrate Chemistry on Stem Cell Adhesion Using Novel TIRF Microscope**
D. Carlin¹, S. Ramachandran², S. Varghese², and R. Lal²
¹California Polytechnic State University San Luis Obispo, San Luis Obispo, CA, ²University of California San Diego, La Jolla, CA
- PS-9B-1-33 Pulmonary-Airway-On-a-Chip: A Microfluidic Model of Pulmonary Airway Reopening at Bifurcations**
J. J. Pitre¹, E. Yamaguchi¹, B. J. Smith¹, O. Forouzan¹, S. S. Shevkopyas¹, and D. P. Gaver, III¹
¹Tulane University, New Orleans, LA
- PS-9B-1-34 Computational Insight on the Influence of Subunit Packing on the Thermostability of Lactate Oxidase**
N. J. Hams¹, L. Peng², and D. Gough²
¹University of Missouri - Columbia, Columbia, MO, ²University of California - San Diego, La Jolla, CA
- PS-9B-1-35 Computational Study of Infarct Reinforcement and Its Impact on Left Ventricular Function**
J. R. Macadangdang¹, J. W. Holmes¹, and G. M. Fomovsky¹
¹University of Virginia, Charlottesville, VA
- PS-9B-1-36 Improvement of Registration of 2D X-ray Mammograms and 3D Speed of Sound Images**
J. Bonn^{1,2}, T. Hopp¹, N. Ruiter¹, and N. Duric³
¹Karlsruhe Institute of Technology, Karlsruhe, Baden-Württemberg, Germany, ²University of Cincinnati, Cincinnati, OH, ³Barbara Ann Karmanos Cancer Institute, Detroit, MI
- PS-9B-1-37 An Investigation into Sex-related Differences in Pulmonary Hemodynamics**
R. H. Clayman¹, A. Roldan¹, and N. C. Chesler¹
¹University of Wisconsin, Madison, WI
- PS-9B-1-38 Study of Biopolymer Tissue Scaffold Degradation**
E. McMullin¹, and K. C. Yan¹
¹The College of New Jersey, Ewing, NJ
- PS-9B-1-39 Study of Heart Tissue Damage via Dynamic Heart Phantom**
M. McDonough¹, and K. C. Yan¹
¹The College of New Jersey, Ewing, NJ
- PS-9B-1-40 Pressure-Area Relationship of the Carpal Tunnel: A Cadaveric Study**
T. L. Masters¹, T. A. Mondello¹, and Z-M. Li¹
¹Cleveland Clinic, Cleveland, OH
- PS-9B-1-41 Promoting Peripheral Nerve Repair Using Basement Membrane-Polycaprolactone Nanofiber Scaffolds**
D. Abebayehu¹, R. A. Neal¹, and E. Botchwey¹
¹U. of Virginia, Charlottesville, VA

- PS-9B-1-42 Droplet Based Microfluidics for Single Cell Genetic Analysis**
R. J. Kimmerling¹, T. Bakowski¹, and H. Strey¹
¹Stony Brook University, Stony Brook, NY
- PS-9B-1-43 Immobilization of Trypsin in a PDMS Channel for Protein Digestion and Analysis**
T. Locke¹, C. Goodwin¹, C. Marasco¹, J. Wiksw¹, and J. McLean¹
¹Vanderbilt University, Nashville, TN
- PS-9B-1-44 Study of the Effects of Chemokines Secreted by Endothelial Cells in Response to Shear Stress on Cancer Metastasis in a Microfluidic Device**
B. Z. Akselrad¹, M. Irvin¹, P. Samson¹, A. Pozzi¹, and J. Wiksw¹
¹Vanderbilt University, Nashville, TN
- PS-9B-1-45 Development of an Inexpensive Device for Non-contact Measurement of Skin Temperature**
S. E. Naylor¹, D. Nelson¹, and S. Leavesley¹
¹University of South Alabama, Mobile, AL
- PS-9B-1-46 Characterization of Degradable Poly(ester amines) and Poly(amido amines) for Non-viral Gene Delivery**
D. Y. Peng¹, J. C. Sunshine², and J. J. Green²
¹Johns Hopkins University, Baltimore, MD, ²Johns Hopkins University School of Medicine, Baltimore, MD
- PS-9B-1-47 Self-Cleaning Micropatterned Nanocomposite Hydrogels**
J. T. George¹, R. Fei¹, A. Han¹, M. S. Hahn¹, and M. A. Grunlan¹
¹Texas A&M University, College Station, TX
- PS-9B-1-48 Quantifying the Effects of Cerebrospinal Fluid Pulsations on Intrathecal Drug Delivery**
T. J. Harris¹, Y. Hsu¹, M. Hettiarachchi¹, and A. Linninger¹
¹University of Illinois at Chicago, Chicago, IL
- PS-9B-1-49 The Dynamic Expression of Heat Shock Proteins in Human Mesenchymal Stem Cells After Mild Heat Shock**
J. Zhang¹, J. Chen¹, and S. Wang¹
¹The City College Of New York / CUNY, New York, NY
- PS-9B-1-50 Stabilization of Enzymes via Binding to Peptides**
A. Prasad^{1,2}, J. Fu^{1,3}, and N. Woodbury^{1,3}
¹The Biodesign Institute at Arizona State University, Tempe, AZ, ²Ira A. Fulton School of Engineering at Arizona State University, Tempe, AZ, ³College of Liberal Arts and Sciences at Arizona State University, Tempe, AZ
- PS-9B-1-51 PDMSstar-PEG Hydrogels as Tissue Engineering Scaffolds**
K. Hui¹, B. M. Bailey¹, and M. A. Grunlan¹
¹Texas A&M University, College Station, TX
- PS-9B-1-52 Development of a Microfluidic Platform for Neural Stem Cell Differentiation and Proliferation**
S. Dria¹, I. Yang¹, N. Thakor¹, and A. Nath¹
¹Johns Hopkins University, Baltimore, MD
- PS-9B-1-53 Developing New Expansion and Differentiation Media for Human Adipose Tissue-derived Mesenchymal Stem Cells**
K. Kathiria^{1,2}, D. Wagner², and H. Weiss²
¹Florida International University, Miami, FL, ²University of Notre Dame, Notre Dame, IN
- PS-9B-1-54 Generation of Predictive Models for Anti-Proliferative Drug Release from a Biodegradable Elastomer**
A. L. Pelinescu¹, Y. Hong^{1,2}, and W. R. Wagner^{1,2}
¹University of Pittsburgh, Pittsburgh, PA, ²McGowan Institute for Regenerative Medicine, Pittsburgh, PA
- PS-9B-1-55 The Use of Quantum Dots for Labeling Neural Cell Lines**
M. Smyth¹, R. Willits², and A. Harkins³
¹Vanderbilt University, Nashville, TN, ²University of Akron, Akron, OH, ³Saint Louis University, St. Louis, MO

- PS-9B-1-56** **Localized and Automated Chemical and Oxygen Delivery System for Microfluidic Brain Slice Devices**
G. J. Yu¹, A. Blake², and D. Eddington²
¹University of Illinois at Urbana-Champaign, Urbana, IL, ²University of Illinois at Chicago, Chicago, IL
- PS-9B-1-57** **Effects of Cyclic Stretch on Expression of Pro-Inflammatory Genes**
S. Vanderzyl¹, H-J. Hsu¹, A. W. Orr², and R. Kaunas¹
¹Texas A&M University, College Station, TX, ²LSU Health Sciences Center - Shreveport, Shreveport, LA
- PS-9B-1-58** **Deficiencies in Mechanical Properties of Peripheral Nerves in Fibrillin-2 Knockout Mice**
D. Redmond-White¹, R. Stahl², D. Carey², and D. M. Ebenstein¹
¹Bucknell University, Lewisburg, PA, ²Weis Center for Research, Geisinger Medical Center, Danville, PA
- PS-9B-1-59** ***In Vitro* Forced Formation of Tunneling Nanotubes in T cells Using Micro-tipped Pipettes**
S. Kabani¹, C. Marasco¹, and J. Wikswo¹
¹Vanderbilt University, Nashville, TN
- PS-9B-1-60** **A Novel Nanoparticle-Enhanced Biophysical Stimulus for Bone Tissue Engineering**
Y. Talukdar¹, K. Schaefer¹, P. Avti¹, J. P. Longtin¹, and B. Sitharaman¹
¹State University of New York at Stony Brook, Stony Brook, NY
- PS-9B-1-61** **Fabricating Biodegradable Paclitaxel-Loaded Spheroidal Microparticles for Drug Delivery Applications**
O. Shemi¹, M. Heslinga², and O. Eniola-Adefeso²
¹University of Maryland, Baltimore County, Catonsville, MD, ²University of Michigan, Ann Arbor, MI
- PS-9B-1-62** **A Novel Method to Create Macrochannels in Three-Dimensional Hydrogels for Enhanced Cell Proliferation**
J. W. Kim¹, and B. M. Wu¹
¹University of California, Los Angeles, Los Angeles, CA
- PS-9B-1-63** **Mechanical Contribution of Smooth Muscle Cells in Large Elastic Arteries**
B. Corley¹, V. Le¹, and J. Wagenseil¹
¹Saint Louis University, Saint Louis, MO
- PS-9B-1-64** **Glucose Stimulated Insulin Release in Single Pancreatic Islets Using Microfluidics Coupled with Ion Mobility-Mass Spectrometry**
A. A. Ostrowski¹, J. Enders¹, C. Goodwin¹, C. Marasco¹, K. T. Seale¹, J. McLean¹, and J. Wikswo¹
¹Vanderbilt University, Nashville, TN
- PS-9B-1-65** **Mapping Local Strains in *Mytilus edulis* Byssal Threads**
N. Ko¹, and D. M. Ebenstein¹
¹Bucknell University, Lewisburg, PA
- PS-9B-1-66** **Characterization and Optimization of Enzymatically-Degradable Microgels for Pulmonary Drug Delivery**
A. E. Bergeron¹, P. Wanakule¹, and K. Roy¹
¹The University of Texas at Austin, Austin, TX
- PS-9B-1-67** **Aspirin Inhibits Activation of Aortic Valve Endothelial Cells by Angiotensin II**
A. Ruhl¹, C. McIntosh¹, and J. N. Warnock¹
¹Mississippi State University, Mississippi State, MS
- PS-9B-1-68** **Analyzing Immune Effects of Staphylococcal Enterotoxin B in a Microfluidic-Ion Mobility-Mass Spectrometer Platform**
A. Garza¹, C. Marasco¹, C. Goodwin¹, J. Enders¹, K. Seale¹, J. McLean¹, and J. Wikswo¹
¹Vanderbilt University, Nashville, TN
- PS-9B-1-69** **Effect of Cell-matrix Interface on Organization and Myogenic Differentiation of Stem Cells**
S. Varghese¹, R. Powers¹, A. Aung¹, M. Gadde¹, and S. Shroff¹
¹University of California, San Diego, La Jolla, CA
- PS-9B-1-70** **Real-time Monitoring of σ^2 -Factor Induced Mating Response in *S. cerevisiae* Secretomes**
A. Kole¹, E. Curtis¹, B. Nguyen², J. Enders¹, T. Graham¹, K. Seale¹, J. McLean¹, and J. Wikswo¹
¹Vanderbilt University, Nashville, TN, ²Belmont University, Nashville, TN

- PS-9B-1-71 Investigation of CEACAM1 Dynamics by Single Cell Imaging**
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- PS-9B-1-72 Determining the Number of Cells Microencapsulated within PEGDA Hydrogel Microspheres**
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- PS-9B-1-73 Decellularized Lipoaspirate as a Naturally-Derived Scaffold for Adipose Tissue Engineering**
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- PS-9B-1-74 Studies on Cardiomyocyte Health and Embryonic Stem Cell Differentiation Within a Microfluidic Platform**
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- PS-9B-1-75 Effect of Varying PLGA Molecular Weight Blends on Small-Molecule Drug Release**
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- PS-9B-1-76 Bone and Cartilage Compensation in Response to Diet-Induced Obesity**
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- PS-9B-1-77 Local Schwann Cell-Produced Extracellular Matrix Can Direct Local Neurite Outgrowth**
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- PS-9B-1-78 Designing Synapse Morphometry Tools for the Drosophila Brain Connectome Project**
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- PS-9B-1-79 Development of Semi-Automated Algorithm for Bone Marrow Adiposity Measurement**
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- PS-9B-1-80 Toward Understanding Nitric Oxide Release in Lymphatic Endothelial Cells**
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- PS-9B-1-81 Regeneration of Periosteum in Denuded Bone**
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- PS-9B-1-82 Poly Lactic-co-Glycolic Acid Carbon Nanofiber Materials for Cardiac Patch Applications**
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- PS-9B-1-83 Single Pore System for Classification of Cells**
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- PS-9B-1-84 Geometrical Effects of Flow Chambers on Chemokine Secreting Cancer Cells**
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- PS-9B-1-85 Quantifying Elastin and Collagen in Developing Mouse Arteries**
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- PS-9B-1-86 The Salifier: A New Device for Saliva Collection from Infants for DNA Analysis**
E. Franz¹, G. Boon III¹, G. Gerhard², J. Baish¹, and D. Ebenstein¹
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- PS-9B-1-87 Comparing Diffusion Coefficients Through Thin PDMS Membranes Exposed to Various Surface Treatments**
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- PS-9B-1-88 Finite Element Model to Examine Stress Distributions in Mechanical Tests on Mouse Arteries**
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- PS-9B-1-89 Mechanisms Governing Vascular Endothelium under Pulsatile and Oscillatory Conditions**
M. Sosa¹, P. Vandrangi¹, and V. Rodgers¹
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- PS-9B-1-90 A Polymeric siRNA Delivery System to Induce Differentiation in hMSCs**
M. E. Boutin¹, and D. S. Benoit¹
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- PS-9B-1-91 Constructing a Realistic Brain phantom to Validate the Independent Component Analysis of EEG Data**
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- PS-9B-1-92 Mechanical Properties of Mesenchymal Cells during Vascular Smooth Muscle Cell Differentiation**
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- PS-9B-1-93 High-speed Scanning Control Algorithms for MEMS-based Confocal Image Acquisition**
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- PS-9B-1-94 Direct Measurements of Nanoparticle and Cell Interactions using Atomic Force Microscopy**
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- PS-9B-1-95 Effect of X-Ray on Porcine Articular Cartilage Biomechanics**
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- PS-9B-1-96 Effects of Ibotenic Acid Lesions of the Globus Pallidus on Sleep in the Rat**
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- PS-9B-1-97 Effects of Immobilized PDGF and VEGF on HUVEC Tubule Formation in Poly(ethylene glycol) Hydrogels**
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- PS-9B-1-98 Specificity and Safety of Drug (4-phenylbutryate) Action in Cardiac Tissue**
J. E. Gunther¹, Z. Jia¹, and E. Entcheva¹
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- PS-9B-1-99 Measuring Periosteal Permeability in Frozen and Fresh Tibiae**
X. Zhen¹, and M. L. Knothe Tate²
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- PS-9B-1-100 Non-labeled, Real-time Detection of H1N1 DNA Hybridization Using Combined QCM-D and EIS System**
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- PS-9B-1-101 High Resolution Extended Field Imaging with Confocal Stage Scanning Microscopy**
C. A. Olsovsky¹, M. A. Saldua¹, and K. C. Maitland¹
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- PS-9B-1-102 Determining the Mechanical Role of Elastin and Collagen in Mouse Carotid Arteries**
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- PS-9B-1-103 Quantitative Live Imaging of Avian Embryonic Morphogenesis via Micro-Computed Tomography**
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- PS-9B-1-104 Scanning System Design and Synchronization for a Two-Photon and SHG Hybrid Confocal Microscope**
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- PS-9B-1-105 Developing a Glucose Biosensor for Monitoring Patients with Brain Injuries**
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- PS-9B-1-106 On-chip analysis of α -factor induced mating response in *S. cerevisiae***
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- PS-9B-1-107 Novel Noninvasive Technique for Measurement of Change in Interstitial Fluid Volume**
J. C. Vo¹, J. M. Barba¹, Q. T. Nguyen¹, R. M. Dongaonkar¹, R. H. Stewart¹, G. A. Laine¹, and C. M. Quick¹
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- PS-9B-1-108 Tracking the CD95-Mediated Apoptotic Cascade in ARPE-19 Cells After Short Wavelength UV Irradiation**
C. S. Thompson¹, V. Ngassam², A. N. Parikh², and A. E. Oliver²
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- PS-9B-1-109 Biodegradable Microparticle-Mediated Delivery of PAX3 Protein to Induce Myogenic Differentiation of Stem Cells**
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- PS-9B-1-110 Evaluation of Electrically Conductive Nanomaterials for Neural Engineering: Schwann Cells Exhibit a Differential Response to Single Walled Carbon Nanotubes in 2D versus 3D**
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- PS-9B-1-111 Structure Based Design for Ultra Fast Acting Insulin Analysis**
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- PS-9B-1-112 Mechanisms Underlying Collective Cell Migration in Vitro**
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- PS-9B-1-113 Diagnostic Peptide-nanoparticle Probes for Multiplexed Profiling of Tumor Protease Activity**
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- PS-9B-1-114 Design of a High Volumetric Mixer for a Continuous Microformulator Device**
W. J. Matloff¹, J. Scherrer¹, R. Reiserer¹, K. Seale¹, and J. Wiksw¹
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- PS-9B-1-115 VASP Negatively Regulates Breast Cancer Cell Motility Utilizing Profilin1**
D. Gau¹, Z. Ding¹, C. Baty¹, and P. Roy¹
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- PS-9B-1-116 Improving Clinical Balance Measures in Older Adults via Wii Fit Training**
N. M. Dold¹, and K. A. Bieryla¹
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- PS-9B-1-117 A Comparison of the Inflammation Response Among Novel Drug Eluting Stents (DES) and Bare Metal Stents by Histology**
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- PS-9B-1-118 Studying the Effects of Endothelial Progenitor Cells Upon Cardiomyocytes in a Microfluidic Platform**
R. Korman¹, S. Faley¹, K. Seale¹, and A. Hatzopoulos¹
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- PS-9B-1-119 Characterization of Graft Copolymers that Augment Delivery of Antisense Oligodeoxynucleotides**
R. Chou¹, L. Peddada², and C. Roth²
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- PS-9B-1-120 Development of pH-Responsive Nanoparticles for Targeted, Controlled Release of 5-Fluorouracil**
R. L. Scheuerle¹, M. C. Moore¹, and N. A. Peppas¹
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- PS-9B-1-121 Systematic Variation of ECM Modulates Adhesion and Migration Responses of Human Breast Cancer Cells**
L. E. Fong¹, S. K. Alford¹, S. R. Peyton¹, and D. A. Lauffenburger¹
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- PS-9B-1-122 In Vitro Characterization of Polysialic Acid Glycomimetics Immobilized on Collagen Scaffolds**
I. J. Perron¹, S. Masand¹, and D. I. Shreiber¹
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- PS-9B-1-123 Simulated Overcrowding Extrudes Live Cells from an Epithelium**
P. D. Loftus¹, G. T. Eisenhoffer², and J. Rosenblatt²
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- PS-9B-1-124 Ultrasonic Nebulization as a Tool for Creating Multilayered, Multi-component Anti-Infective Nanocoatings**
M. Cowdery¹, K. McNamara², Y. Lvov², and D. Mills²
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- PS-9B-1-125 The Effect of Pluronic and Hyperthermia on Cancer Cell Permeability**
J. D. Huang¹, and A. Exner²
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- PS-9B-1-126 The Use of Magnetic Nanoparticles for Antibacterial Properties and Increasing Osteoblast Functions**
J. Yoo¹, H. F. Tross¹, E. N. Taylor¹, and T. J. Webster¹
¹Brown University, Providence, RI
- PS-9B-1-127 The Inhibitory Effects of Magnetite Nanoparticles on Amyloid-beta Protein Fibril Formation in Alzheimer's Disease**
S. E. Chastain¹, D. Soto-Ortega², M. A. Moss², J. Mangual², and J. Ritter²
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- PS-9B-1-28 A Novel Multichannel Telemetric System for Recording ECoG Activities in Freely Behaving Animals**
P. G. McCorkle¹, A. Farajidavar¹, T. W. Wiggins¹, and J-C. Chiao¹
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- PS-9B-1-129 Assembly of Mirrored Pyramidal Wells and Their Application with Microscopy**
L. Qu¹, K. Qin¹, R. Reseire², G. Wright², and C. Janetopoulos²
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- PS-9B-1-130 Differentiation of Mouse Embryonic Stem Cells in Stirred Tank and Rotary Wall Bioreactors**
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- PS-9B-1-131 Role of Simvastatin Treatment on Epithelial Cell Injury During Cyclic Airway Reopening**
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- PS-9B-1-132 Controlled Release of Biomolecules From Silica Sol-gel Thin Films**
S. Vaidyanathan¹, S. Sommakia¹, J. L. Rickus¹, and K. J. Otto¹
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- PS-9B-1-133 Osteoblastic Response to Bioactive Nanocoatings**
K. McNamara¹, M. Cowdery², Y. Lvov¹, and D. Mills¹
¹Louisiana Tech University, Ruston, LA, ²University of Puget Sound, Tacoma, WA
- PS-9B-1-134 Using Synthesized Porous Membranes to Induce Electroosmosis for Cell Injection**
Z. W. Johnson¹, P. Hoblitzell², X. Sun³, B. Hinds³, and K. Anderson³
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- PS-9B-1-135 Leukocyte Separation Using Cross Flow in a Microfluidic Device**
E. M. Werner¹, C. Marasco¹, and K. T. Seale¹
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- PS-9B-1-136 Areal Strain of Giant Unilamellar Vesicles in a Magnetic Force Transducer**
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- PS-9B-1-137 Pancreatic Digestive Enzymes Activity in the Ischemic Intestine**
H. Tam¹, M. Chang², and G. W. Schmid-Schönbein²
¹Rose Hulman, Terre Haute, IN, ²University of California San Diego, La Jolla, CA
- PS-9B-1-138 Patient Specific Biomechanics Models of Surgical Ventricular Reconstruction Surgery**
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- PS-9B-1-139 Nanoscale Surface Modification of the Skin-Implant Interface to Enhance Keratinocyte Attachment**
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- PS-9B-1-140** **Activation Sequence Assessment Using Three-dimensional Isochronal Maps to Determine Effective Pacing Locations in a Diseased Heart**
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- PS-9B-1-141** **Design and Initial Performance of a Dedicated Cone-Beam CT Scanner for Musculoskeletal Extremities**
Y. Ding¹, W. Zbijewski¹, P. Dejean¹, P. Prakash¹, J. W. Stayman¹, N. Packard², R. Senn², D. Yang², J. Yorkston², A. Machado¹, J. Carrino¹, and J. H. Siewerdsen¹
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- PS-9B-1-142** **Collagen-binding Peptidoglycan's Influence on Fibrillogenesis & Mechanics**
A. K. Ramaswamy¹, J. Paderi¹, K. Stuart¹, and A. Panitch¹
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- PS-9B-1-143** **Quantifying Protein Kinase-Specific Phosphatase Activity**
A. K. Bose¹, K. Holmberg¹, and K. Janes¹
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- PS-9B-1-144** **Decoupling PEG Hydrogel Modulus and Mesh Size Toward Rational Scaffold Design**
B. Grigoryan¹, D. Munoz-Pinto¹, and M. Hahn¹
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- PS-9B-1-145** **Development and Validation of a Bubble Trap for Long Term Cell Culture Within Microfluidic Systems**
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¹Vanderbilt University, Nashville, TN, ²Vanderbilt University Medical Center, Nashville, TN
- PS-9B-1-146** **The Effect of Media Dilution on Cell Growth Rate in *Saccharomyces cerevisiae***
K. J. Roth¹, K. Seale¹, and T. Graham¹
¹Vanderbilt University, Nashville, TN
- PS-9B-1-147** **Low Intensity NIR Light Treatment for Attenuating Oxidative Stress induced by Amyloid Beta Peptide**
B. L. Bungart¹, and J. Lee¹
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- PS-9B-1-148** **Development of Polymeric Microcapsules for Neural Stem Cell Culture and Tissue Engineering**
K. L. Briggs¹, C. B. Highley¹, S. H. Bakhru¹, and S. Zappe¹
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- PS-9B-1-149** **Design and Optimization of a Diffusion-based Microfluidic Blood Filtration Device**
B. Reinemund¹, M. Beneford¹, S. Hong¹, J. Kameoka¹, and G. Cote¹
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- PS-9B-1-150** **A Novel Method for Measuring the Micromechanics of Soft Tissue using Digital Image Correlation**
D. Lee¹, M. McDonough¹, M. Paliwal¹, and K. Yan¹
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- PS-9B-1-151** **Preparation of the Transmembrane Domain of APP Receptor in Native Membrane for Solid State NMR**
A. N. Santiago-Miranda¹, and F. Tian²
¹University of Puerto Rico at Mayaguez, Toa Baja, PR, ²Penn State College of Medicine, Hershey, PA
- PS-9B-1-152** **Investigation of the Effect of Cement Viscosity in TKA using Digital Image Correlation**
K. Abbruzzese¹, R. O'Laughlin¹, D. Lee¹, M. Paliwal¹, and D. G. Allan²
¹The College of New Jersey, Ewing, NJ, ²SIU School of Medicine, Springfield, IL
- PS-9B-1-153** **Building Mathematical Models for Nanoparticle-Induced Reactive Oxygen Species Production**
P. A. Smith¹, I. Ivanov¹, and C. M. Sayes¹
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- PS-9B-1-154** **Drugs Effect on the Dynamics of Stress Fiber Orientation under Cyclic Stretch**
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- PS-9B-1-155** **Young's Modulus of Multipotent Stem Cells from Different Age Groups**
H. S. Cheung¹, N. Ziebarth¹, J. P. Ruiz¹, and D. Pelaez¹
¹University of Miami, Coral Gables, FL
- PS-9B-1-156** **Validation of Suitable Endogenous Control Genes for Quantitative Real-Time PCR Studies of Human Abdominal Aortic Aneurysm Tissue**
E. C. Flinchbaugh^{1,2}, D. W. Chew^{1,2}, A. Xavier^{1,2}, D. Cleary^{1,2}, J. Muthu^{1,2}, and D. A. Vorp^{1,2}
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- PS-9B-1-157** **The Effects of Proton Radiation on UHMWPE Material Properties for Total Joint Replacements**
C. S. Cummings¹, E. M. Lucas¹, T. M. Kieu¹, J. A. Marro¹, and J. D. DesJardins¹
¹Clemson University, Clemson, SC
- PS-9B-1-158** **Re-design of a Mold for Cellular Aggregation to Create Smooth Muscle Tissue Rings**
B. Alphonse¹, T. Gwyther², J. Hu², and M. W. Rolle²
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- PS-9B-1-159** **Visualizing the Complex 3D Geometry of the Border Zone in Isolated Rabbit Heart**
S. Velamakanni¹, R. M. Smith¹, A. Black¹, T. Akkin¹, and E. G. Tolkacheva¹
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- PS-9B-1-160** **A Protective Sheath for Stem Cell Delivery to the Heart**
K. M. Vazquez¹, N. Duffy¹, J. Guyette¹, M. D. Phaneuf², S. G. Pathan², S. M. Ali², and G. R. Gaudette¹
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- PS-9B-1-161** **Distance Measurements for Automated High-Throughput Compound Screening**
N. R. Lewis¹, J. Robinson¹, V. Davisson¹, V. Patsekina¹, R. Fatig¹, B. Rajwa¹, P. Carlsgaard¹, L. Avramova¹, C. Holdman¹, K. Ragheb¹, P. Rigby¹, J. Sturgis¹, and A. Juan-Garcia¹
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- PS-9B-1-162** **Peripheral Nerve Regeneration Using a Tension-inducing Scaffold**
R. E. Wilson^{1,2}, J. P. Fisher², and S. Shah²
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- PS-9B-1-163** **Biological Sutures for Cell Delivery to the Heart: Assessment of Delivery Scaffold**
S. Rowlinson¹, J. Guyette², S. Shaw², D. Sood², K. Minn², A. DeMartino², B. Choate², A. Kazanovicz², M. Rolle², G. Pins², and G. Gaudette²
¹University of Miami, Coral Gables, FL, ²Worcester Polytechnic Institute, Worcester, MA
- PS-9B-1-164** **Palladium-Carbon Nanotube Electrocatalyst for Methanol Oxidation in Fuel Cells**
H. Lin¹, Z. Zhu², and S. Zhou²
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- PS-9B-1-165** **Effect of Reaction Conditions on Size and Yield of Poly(ethylene glycol) (PEG) Microgels**
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¹Saint Louis University, St. Louis, MO, ²University of Akron, Akron, OH
- PS-9B-1-166** **Adipose Progenitor Cells Promote Breast Cancer via their Extracellular Matrix**
J. X. Wang¹, E. M. Chandler¹, and C. Fischbach¹
¹Cornell University, Ithaca, NY

- PS-9B-1-167 Dental Materials and Oral Bacterial Interaction**
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- PS-9B-1-168 Characterization of a Flow Chamber to Examine Hemostasis and Thrombosis in Re-Circulating Blood Flow**
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- PS-9B-1-169 Employing Chondroitin as an Enzyme Encapsulation**
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- PS-9B-1-170 Endothelial Inflammation Response under Cyclic Stretch Profiles on Micro-patterned Lines**
P. Mathieu^{1,2}, M. Asmuth³, and B. Helmke¹
¹University of Virginia, Charlottesville, VA, ²North Carolina State University, Raleigh, NC, ³Vanderbilt University, Nashville, TN
- PS-9B-1-171 Diffusion Tensor Imaging Voxel-based Analysis of Pediatric Traumatic Brain Injury**
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- PS-9B-1-172 The Effect of Hypoxia on the Motion of Jurkat T-cells in a Multi-Trap Nanophysiometer**
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- PS-9B-1-173 Does Substrate Stiffness Influence Non-Viral Plasmid DNA Trafficking?**
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- PS-9B-1-174 Determining Optimal Cell Density and Oxygen Concentration for Encapsulated Tissue**
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- PS-9B-1-175 Characterization of Gold Nanoparticle-quantum Dot Assemblies and Their Potential Applications as Biosensors**
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- PS-9B-1-176 Exploring the Dimensions of the Olfactory Code**
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- PS-9B-1-177 Multi-Step Development of Anatomical Urethane Phantoms for Optical Experimentation**
C. Gregg¹, J. Ryan¹, K. Poterala¹, H. Babiker¹, D. Collins¹, A. Krever¹, and D. Frakes¹
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- PS-9B-1-178 Digital Transcriptome Screening to Identify Universal Tumor Antigens for Mantle Cell Lymphoma**
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- PS-9B-1-179 Determination of Kinetic Parameters for Modeling Poly(ethylene glycol) Diacrylate Hydrogel Formation**
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- PS-9B-1-180 Phosphoproteomic Profiling & Conservation Analysis of Phosphotyrosine Sites in Renal Collecting Duct**
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- PS-9B-1-181 Boronic Acid Functionalized Gold Nanoparticles for Determining Protein Glycation**
D. Kim¹, C. Zhang¹, B. Han¹, and V. Perez-Luna¹
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- PS-9B-1-182 A Simple Mock Circulatory System for Testing Direct Mechanical Ventricular Actuation**
K. Swartzmiller¹, B. Schmitt¹, D. Reynolds¹, R. Darner¹, and M. Anstadt¹
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- PS-9B-1-183 Microfluidic Bandage for Localized Oxygen-Enhanced Wound Healing**
Z. H. Merchant¹, J. Lo², and D. T. Eddington²
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- PS-9B-1-184 Dependence of Stress on Geometry and Stiffness of Calcified Plaque in Arterial Models**
P. Rogerson¹, C. Buffinton¹, and D. Ebenstein¹
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- PS-9B-1-185 High Speed Insertion Mechanics of Microelectrode Arrays for Implantable Neural Prostheses**
B. Lau¹, Y. Xiao², and M. Han³
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- PS-9B-1-186 Mechanical Analysis of Cell Contracted Collagen for the Strengthening of Vascular Grafts**
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- PS-9B-1-187 A Method for Measuring Hydrostatic Pressure in Microfluidic Devices by Compressibility of Gases**
K. Roman¹, K. Seale², and J. Wikswo²
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- PS-9B-1-188 Novel Parthenolide Delivery System for Acute Myeloid Leukemia Treatment**
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¹University of Rochester, Rochester, NY
- PS-9B-1-189 Optimizing the Temperature Gradients used in DNA Melting Analysis**
D. P. Singh¹, and N. Crews¹
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- PS-9B-1-190 Investigation of Radical Production from Cells using EPR Spin Trapping**
R. Cruz-Acuña¹, and F. Villamena²
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- PS-9B-1-191 Methods of Enhancing Cell Viability in Three Dimensional Tissue Engineering**
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- PS-9B-1-92 Investigating Molecular Communication Between Microglia and CD4+ T-cells Using a Microfluidic Platform**
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- PS-9B-1-193 Effects of Left Ventricular Pacing Location on Cardiac Function in a Dyssynchronously Failing Heart**
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- PS-9B-1-194 The Effects of Increased Flow Rate on Jurkat T Cell Viability in the Multitrap Nanophysiometer**
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- PS-9B-1-195** **A Study of Hemorheological Disorders in Diabetic Patients with End Stage Renal Disease**
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- PS-9B-1-196** **Sensory Integration of Visual and Vestibular Cues in Recognition of Roll-tilt Motion**
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- PS-9B-1-197** **Designing a Surface Eroding Multilayered Plasticized Film for Drug Delivery**
R. Van Stelle¹, C. Rabek², S. Sundararaj², D. Puleo², and T. Dziubla²
¹Georgia Institute of Technology, Atlanta, GA, ²University of Kentucky, Lexington, KY
- PS-9B-1-198** **Mapping Harmonic Response for Current-Control in Miniature Wireless Stimulators for Medical Applications**
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