

## POSTER SESSIONS

Times shown reflect when authors present

**Thurs., Oct. 12** 9:30-10:15 AM, 3:00 pm - 3:45 PM in Exhibit Hall 300 North

### Hydrophilic Topcoat on NO-Releasing Surfaces for Enhanced Antibacterials and Antifouling Properties -7

Christina Workman, Priyadarshini Singha, Jitendra Pant, Marcus Goudie, Hitesh Handa

Session title: Natural and Bioinspired Biomaterials  
Track: Biomaterials

### Automatic Characterization of Complex Cell Shapes and Patterns in Biological Data -30

William Pilcher, Denis Tsygankov

Session title: Analysis of Multi-Cellular Systems  
Track: Bioinformatics, Computational and Systems Biology

### Tissue-engineered Atherosclerosis Model in a Physiological Bioreactor -369

Jun Chen, Grant Alexander, ChaeYun Bae, Chunxiang Zhang, Young-Sup Yoon, Brigitta Brott, Palaniappan Sethu, Jeonga Kim, Ho-Wook Jun

Session title: Cardiovascular Tissue Engineering  
Track: Cardiovascular Engineering

### Amyloid Beta1-42 Dysregulates Vascular Endothelial Barrier Function and Angiogenesis -511

John Long, Levi Wood

Session title: Neural Disease: Model Systems and Therapeutics  
Track: Neural Engineering

### Electric Field Sensors in Mouse Home-Cage Detect Activity and Respiration Changes After Nerve Injury -527

Heidi Kloefkorn, Alejandro Lopez, Bill Goolsby, Michael Sawchuck, Mallika Halder, Shawn Hochman

Session title: Neuromuscular Biomechanics  
Track: Neural Engineering

### Delivery and in situ Differentiation of MSCs to the Trabecular Meshwork during Glaucoma -545

Eric Snider, Yinglin Li, Irsham Zaman, Kristin Gao, Richard Kim, Kelsey Tweed, C. Ross Ethier

Session title: Stem Cells in Tissue Engineering  
Track: Stem Cell Engineering

**Friday, Oct. 13** 9:30-10:15 AM, 2:45-3:30 PM in Exhibit Hall 300 North

### Enhanced Stochastic Fluctuations To Measure Steep Energy Landscapes With Atomic Force Microscopy -114

Todd Sulchek, Ahmad Haider, Daniel Potter

Session title: Nano and Micro Technologies - Other / Non-Specified  
Track: Nano and Micro Technologies

### Nanomatrix Coated Stent Enhances Endothelialization and Reduces Platelet and Smooth Muscle Cell Adhesion under Physiologic Conditions -152

Grant Alexander, Patrick Hwang, Jeong-a Kim, Brigitta Brott, Young-Sup Yoon, Ho-Wook Jun

Session title: Cardiovascular Devices  
Track: Cardiovascular Engineering

### Conditional Regulation of Inflammation-driven Angiogenesis using Engineered HDL-mimetic Nanoparticles -189

Jungho Ahn, Yoshitaka Sei, Noo Li Jeon, YongTae Kim

Session title: Angiogenesis and Engineered Vascularization  
Track: Cardiovascular Engineering

### A Novel, Flow-Sensitive MicroRNA, miR-744, Induces Endothelial Inflammation by Targeting LIMS2 -226

Rachel Simmons, Dong Won Kang, Sandeep Kumar, Hanjoong Jo

Session title: Hemodynamics and Vascular Mechanics  
Track: Cardiovascular Engineering

### Touch-spinning of PCL Nanofibers for Nerve Regeneration -394

Se-Jun Lee, Darya Asheghali, Sergiy Minko, Lijie Grace Zhang

Session title: Micro/Nano Tools in Neurosciences  
Track: Nano and Micro Technologies

### Imidazole-modified Chitosan Nanoparticles for Delivery to Lung Epithelial Cells in Air-liquid Interface Cultures -440

Blake Lash, Joscelyn Mejias, Krishnendu Roy

Session title: Drug Delivering Biomaterials  
Track: Drug Delivery & Intelligent Systems

### Contraceptive Hormone-loaded Electrospun Patches in Combination with Microneedles for Transdermal Drug Delivery -497

Mohammad Mofidfar, Mark R. Prausnitz

Session title: Topics in Drug Delivery  
Track: Drug Delivery & Intelligent Systems

### Rapidly Separable Microneedle Patches for Sustained Release of Contraceptive Hormones -499

Wei Li, Richard Terry, Mark Prausnitz

Session title: Topics in Drug Delivery  
Track: Drug Delivery & Intelligent Systems

### "Smart" Surgical Instruments: Surgical Skill Measurement Apparatus for Resident Motor Skills Training and Evaluation -563

Ashkan Pourkand, Rebecca Smith, Krishan Bhakta, Naghmeh Zamani, Deana Mercer, Christina Salas, David Grow

Session title: Bone  
Track: Orthopedic and Rehabilitation Engineering

### A Comparison Pullout Strength Between Locking Screw and Non-locking Screw: A Biomechanical Study of Fresh Frozen Cadaver -583

Trung Le, Bich Nguyen, Ha Vo, Loc Lam

Session title: Orthopedic Biomechanics  
Track: Orthopedic and Rehabilitation Engineering

### Person-to-person Variability in Macrophage Protease Dynamics -669

Ken D. Brandon II, W. Andrew Shockey, Manu O. Platt

Session title: Industry Preparation  
Track: Undergraduate Research, Design & Leadership

**Saturday, Oct. 14** 9:30-10:30 AM in Exhibit Hall 300 North

### Imidazole-Modification Enhances Nanoparticle Transport Through Cystic-Fibrosis (CF) like Mucus and Promotes Uptake into a Human CF Cell Line -29

Angela Jimenez, Joscelyn Mejias, Blake Lash, Krishnendu Roy

Session title: Biomaterials  
Track: Undergraduate Research, Design & Leadership

### Development of A Rodent Restraint System to Study Brain Networks in Absence of Anesthetic Agents -212

Isak Thomas, Hisham Temmar, Ayende Ibere, Maysam Nezafati, Shella Keilholz

Session title: Biomedical Imaging and Optics  
Track: Undergraduate Research, Design & Leadership

### Developing a Bioink to 3D Print Aortic Valve Leaflets -314

Siyi Li, Aline Yonezawa, Michael Davis

Session title: Cardiovascular Engineering  
Track: Undergraduate Research, Design & Leadership



Georgia  
Tech

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# BMES Oral and Poster Sessions

# ORAL SESSIONS

## Thursday, Oct. 12

8:15-8:30 AM in Room 227C

**In vivo Biomechanics of Porous PEEK and Plasma-sprayed Titanium Coating on PEEK**

Brennan Torstrick, Angela Lin, Ken Gall, **Robert Guldberg**

Session title: Devices and Approaches for Neural and Rehabilitation Engineering

Track: Orthopedic and Rehabilitation Engineering

8:30-8:45 AM in Room 228B

**Synthetic Nanoparticle Antibodies for Target Cell Depletion: A Flexible New Tool for Cancer Immunotherapy**

Jiaying Liu, Shohini Ghosh-Choudhary, Pallab Pradhan, Randall Toy, **Krishnendu Roy**

Session title: Cancer Immunoen지니어링

Track: Cancer Technologies

8:30-8:45 AM in Room 225B

**Neutrophil Elastase Responsive Nano-in-Micro Multi Stage Particles for Pulmonary Delivery**

Joscelyn Mejias, Osric Forrest, Rabindra Tirouvanziam, **Krishnendu Roy**

Session title: Targeted or Responsive Delivery Systems

Track: Drug Delivery & Intelligent Systems

1:45-2:00 PM in Room 222A

**Detecting the Endothelial Conditional Response to Oscillatory Shear Stress**

Yoshitaka Sei, Song Ih Ahn, Theodore Virtue, **YongTae Kim**

Session title: Organ-on-Chip Models for Study of Disease and Drug Discovery I

Track: Nano and Micro Technologies

2:00-2:15 PM in Room 222A

**Microengineering of Vascularized 3D Glial Network for the Development of a Neurovascular Unit**

Song Ahn, Jiwon Yom, Candice Hovell, **YongTae Kim**

Session title: Organ-on-Chip Models for Study of Disease and Drug Discovery I

Track: Nano and Micro Technologies

2:15-2:30 PM in Room 221C

**Material-Directed Chondrogenic Differentiation Under Dynamic Culture Conditions**

Madeline Smerchansky, Kirsten Parratt, **Krishnendu Roy**

Session title: Stem Cells in Tissue Engineering

Track: Drug Delivery & Intelligent Systems

2:30-2:45 PM in Room 225B

**Novel Immunotherapy for Systemic Lupus Erythematosus Using siRNA Therapeutics Delivered by Polymeric Nanoparticles**

Kyung-Ho Roh, Pallab Pradhan, Randall Toy, **Krishnendu Roy**

Session title: Delivery Systems for Proteins and Vaccines

Track: Drug Delivery & Intelligent Systems

3:45-4:00 PM in Room 221A

**Stable Flow Prevents Inflammation Of Aortic Valve Endothelial Cells By Increasing Expression Of A Novel Flow-Sensitive MiR-483, Which In Turn Downregulates Ash2L And Ube2c**

Joan Fernandez, Jack Heath, Sandeep Kumar, Marwa Mahmoud, **Hanjoong Jo**

Session title: Heart Valve Structure, Function, and Disease

Track: Cardiovascular Engineering

3:45-5:15 PM in Room 121A

**Special Session: Vascular Mechanobiology and Nanotherapeutics**  
**B. Rita Alevriadou, Hanjoong Jo**

Session title: Vascular Mechanobiology and Nanotherapeutics

Track: Cardiovascular Engineering

3:45-5:15 PM in Room 121A

**DNA Barcoded Nanoparticles for High Throughput *in Vivo* Biodistribution**  
**James Dahlman**

Session title: Vascular Mechanobiology and Nanotherapeutics

Track: Cardiovascular Engineering and Biomaterials/Drug Delivery

## Friday, Oct. 12

8:15-8:30 AM in Room 227C

**Evaluating the Successful Implementation of Project ENGAGES: A Paid Biomedical Engineering Research Experience for African American High School Students at Georgia Tech**

Ayesha Boyce, Adeyemo Adetogun, Cherie Avent, Lakeita Servance, **Lizanne DeStefano, Robert Nerem, Manu Platt**

Session title: Assessment of Innovations

Track: Biomedical Engineering Education (BME)

8:30-8:45 AM in Room 224C

**Intra-Articular TSG-6 Delivery From Heparin-based Materials Reduces Cartilage Damage In Osteoarthritis**

Liane Tellier, Elda Trevino, **Nick Willett, Robert Guldberg, Johnna Temenoff**

Session title: Biomaterials for Regenerative Medicine I

Track: Biomaterials

8:30-8:45 AM in Room 229B

**Accelerated Atherosclerosis Development In C57bl6 Mice By Overexpressing AAV-Mediated PCSK9 And Partial Carotid Ligation**

**Sandeep Kumar, Dong Won Kang, Amir Rezvan, Hanjoong Jo**

Session title: Cardiovascular Biomechanics

Track: Biomechanics

9:00-9:15 AM in Room 226A

**Peripheral Neuromodulation For Female Sexual Dysfunction**

Tim Bruns, Lauren Zimmerman, Indie Rice, Kora Dreffs, Nicole Honey, **Mitch Berger**

Session title: Peripheral Nerve Stimulation

Track: Neural Engineering

9:15-9:30 AM in Room 228B

**Viability Sorting of Cells Based on Differences in Cell Stiffness Using Microfluidics**

Muhymin Islam, Nicholas Stone, Hannah Brink, Anna Liu, **Wilbur Lam, Alexander Alexeev, Edmund Waller, Todd Sulchek**

Session title: Biosensors I

Track: Device Technologies and Biomedical Robotics

9:15-9:30 AM in Room 224B

**Prediction and Validation of Engineered High-density Lipoprotein-mimetic Nanoparticle Formulations for Multifunctional Drug Carrier Development**

Taeyoung Kim, Yoshitaka Sei, Seung Soon Jang, **YongTae Kim**

Session title: Drug Delivering Biomaterials I

Track: Stem Cell Engineering

1:15-1:30 PM in Room 227C

**Engineering Synthetic Multivalent Ligands to Investigate and Control Stem Cell Signaling**

Chun Yang, **Ravi Kane, David Schaffer**

Session title: Neural Stem Cell Engineering

Track: Orthopedic and Rehabilitation Engineering

4:45-5:00 PM in Room 225A

**Hyperspectral Imaging for Cancer Detection and Image-guided Surgery**  
**Baowei Fei, Guolan Lu, Martin Halicek, James Little, Xu Wang, Amy Chen**

Session title: Imaging Techniques in Clinical Translation

Track: Biomedical Imaging and Optics

5:15-6:15 PM in Main Room

**Diversity Award Plenary Lecture**  
**Manu Platt**

Session title: Plenary

Track: Plenary

## Saturday, Oct. 12

8:15-8:30 AM in Room 222A

**P-selectin and ICAM-1 Synergy in Mediating THP-1 Monocyte Adhesion in Flow is Length Dependent**

Erin Edwards, **Susan Thomas**

Session title: Mechanobiology of Cell Adhesion

Track: Cellular and Molecular Bioengineering

8:30-8:45 AM in Room 221C

**Non-Plasmin Fibrinolytic Proteases As Alternative Destabilizers of Fibrin-Based Tissue Constructs**

Simone Douglas, Rodney Averett, **Manu Platt**

Session title: Naturally-Derived and Extracellular Matrix Biomaterials in Tissue Engineering

Track: Tissue Engineering

9:00-9:15 AM in Room 222B

**Glycoengineering HIV Immunogens to Enhance the Binding Landscape for Humoral Immune Responses**

Wen-Han Yu, Peng Zhao, Monia Draghi, Claudia Arevalo,

Christina Karsten, Lance Wells, Douglas Lauffenburger, Galit Alter

Session title: Molecular and Cellular Immunoen지니어링 I

Track: Cellular and Molecular Bioengineering

9:15-9:30 AM in Room 229A

**Image Processing Framework Utilizing OCT and MicroCT to Characterize the 3D Deformed In Vivo Stent Geometry**

Mark Elliott, Dan Kim, David Molony, Liam Morris, Sarang Joshi, Lucas Timmins

Session title: Imaging Techniques in Biomechanics

Track: Biomechanics

1:30-1:45 PM in Room 224B

**NO-Releasing Polymer Combined With Covalently-Bound Polyzwitterion For Antimicrobial Applications**

Priyadarshini Singha, Qiaohong Liu, Jason Locklin, Hitesh Handa

Session title: Natural and Bioinspired Biomaterials I

Track: Biomaterials

2:15-2:30 PM in Room 223

**Long-Term Survival, Functionality, and Proteolytic Degradation of 3D Printed Neuromuscular Machines**

Caroline Cvetkovic, Meghan Ferrall-Fairbanks, **Manu Platt**, Rashid Bashir

Session title: Musculoskeletal Tissue Engineering

Track: Tissue Engineering

3:15-3:30 PM in Room 221A

**On the use of Brachial Pressure as an Estimator of Hyperemic Aortic Pressure in Computing Fractional Flow Reserve**

Elizabeth Thompson, Adrien Lefieux, Habib Samady, **Don Giddens**

Session title: Computational Modeling in Cardiovascular Systems

Track: Cardiovascular Engineering

4:00-4:09 PM in Room 227C

**Anti-inflammatory Potential and Dose Dependence of Select Cytokines on Macrophage Activation Profiles**

Nicolas Castro, Hongyu Chen, Mariah Hahn

Session title: Undergraduate Research, Design & Leadership III

Track: Undergraduate Research, Design & Leadership