P-Fri-A-317 **A Tunable Thermo-Responsive, Self-Adhesive, Injectable Heart Patch for Stem Cell Delivery and Differentiation**
Xintong Wang, Timothy Boire, Mukesh Gupta, Simon Maltais, Hak-Joon Sung

P-Fri-A-248 **'Click' Glycoconjugate Nanoparticles for Dual-Mode Fluorescence/MRI Imaging of siRNA Delivery to Pathologically-Activated Inflammatory Cells In Vivo**
Shann Yu, Nathaniel Bloodworth, Whitney Barham, Fiona Yull, Craig Duvall, Todd Giorgio

P-Fri-A-275 **Gold and Silver Multistrata Nanoparticles: Biomagnetophotonic Mutilayered Metallodielectric Nanoparticles for Theranostic Applications**
Charleson Bell, Ryan Ortega, Andre Stevenson, Todd Giorgio

P-Fri-A-15 **Cloud based cluster computation for increased efficiency and accessibility of bioinformatics software**
Nolan Smith, Erik Werner, Kevin Seale

P-Fri-A-122 **NMR Analysis of Age-Related Bone Properties**
Kristen Findley, Mary-Kate Manhard, Sasidhar Uppuganti, Jeffry Nyman, Mark Does

Saturday, October 27th
POSTER SESSION Sat-A, Sat-B, 9:30AM-1:00PM, Exhibit Hall

P-Sat-A-25 **Combination Collagen-Hyaluronic Acid Gels Promote Endocardial EMT in vitro**
M Sewell-Loftin, Daniel DeLaughter, Joey Barnett, W. Merryman

P-Sat-A-76 **Synthesis of a Novel Injectable, ROS-degradable Tissue-Engineering Scaffold**
John Martin, Mukesh Gupta, Jonathan Page, Elizabeth Adolph, Scott Guelcher, Craig Duvall

P-Sat-A-200 **TGF-β1-Induced Changes in Cadherin Expression Lead to Calcific Nodule Morphogenesis**
Joseph Chen, Joshua Hutcheson, Larisa Ryzhova, W. Merryman

P-Sat-A-114 **Cell-mediated degradation and metabolism of implantable polymers: in vitro study of tyrosine-derived polycarbonate monomer**
William Stokes, Xintong Wang, Angela Zachman, Joan Zeltinger (REVA Medical, Inc.), Hak-Joon Sung

P-Sat-A-129 **Development of Biodegradable, Biocompatible Shape Memory Polymers for Vascular Patch Applications**
Timothy Boire, Mukesh Gupta, Joshua Stewart, James Taylor (University of Maryland Baltimore County), Hak-Joon Sung

P-Sat-A-309 **Strain and Stiffness Dependent Effects on Intracellular Calcium Levels in Fibroblasts**
Stephanie Preston, Joshua Hutcheson, M.K. Sewell-Loftin, David Merryman

P-Sat-B-210 **Melanoma Migration and Chemotaxis in a 3-Dimensional Microfluidic Device**
Mary Morgan Scott, Halina Onishko, Jon Ehrman, Erin Rericha

P-Sat-B-160 **Effect of Controlled Delivery of Glial-Derived Neurotrophic Factor on Schwann Cell Phenotype**
Cara Welker, Laura Marquardt (Washington University of Saint Louis), Shelly Sakiyama-Elbert (Washington University of Saint Louis)

PLATFORM OP - Sat - 1 - 19, 10:30AM-12:00PM, Tissue Engineering, Room A411
Session: Host Response to Tissue Engineered Constructs

10:45AM **Therapeutic scaffolds for peripheral artery disease: Pro-angiogenic and anti-inflammatory regulation**
Angela Zachman, Kristin Poole, Aidan Boone, Craig Duvall, Melissa Skala, David Harrison, Hak-Joon Sung

PLATFORM OP - Sat - 2 - 6, 1:30PM-3:00PM, Nano and Micro Technologies, Room A316
Session: Drug Delivery Technologies I

1:30PM **Local and Targeted siRNA Delivery Technologies**
Craig Duvall, Christopher Nelson, Hongmei Li, Shann Yu, Jeffrey Davidson, Scott Guelcher, Todd Giorgio

PLATFORM OP - Sat - 2 - 13, 1:30PM-3:00PM, Cardiovascular and Respiratory Engineering, Room A404
Session: Biomechanics of Percutaneous Interventions

2:00PM **Feasibility of Cryo-Anchoring for Increased Catheter Stability in Percutaneous RF Ablation Treatment**
Steven Boronyak, W. Merryman

PLATFORM OP - Sat - 3 - 6, 3:15PM-4:45PM, Nano and Micro Technologies, Room A316
Session: Drug Delivery Technologies II

3:15PM **Shape-Engineered Porous Silicon Nanoparticles by Direct Imprinting for Drug Delivery**
Jeremy Mares, Judson Ryckman, Kelsey Beavers, Craig Duvall, Sharon Weiss

PLATFORM OP - Sat - 3 - 7, 3:15PM-4:45PM, Other, Room A301
Session: Undergraduate Research IV - Nano and Micro Technologies

3:45PM **Testing of a Novel RAFT-Synthesized Polymer Library for Efficient, Hemocompatible siRNA Delivery**
James Kintzing (Grove City College), Chris Nelson, Joshua Shannon, Mukesh Gupta, Craig Duvall

PLATFORM OP - Sat - 3 - 13, 3:15PM-4:45PM, Biomedical Imaging and Optics, Room A304
Session: Optical Imaging III

4:00PM **Noninvasive Quantification of Hemoglobin Oxygen Saturation in a Model of Peripheral Arterial Disease**
Kristin Poole, Wesley Sit, Alex Walsh, Melissa Skala, Craig Duvall

VANDERBILT UNIVERSITY

Presentation Guide

BMES 2012

Thursday, October 25th
Platform OP - Thurs - 1 - 5, 8:00AM-9:30AM, Biomaterials, Room A315

Session: Targeting Strategies in Drug Delivery

8:00AM **Dual MMP-7-Proximity-Activated and Folate Targeted Nanoparticles for siRNA Delivery**
Hongmei Li, Martina Miteva, Todd Giorgio, MIng Cheng, Craig Duvall

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

P-Th-A-8 **Estimation of Postural Changes in Human Stroke Volume from Bio-Impedance**
Siqi Wang (University of Kentucky), André Diedrich, Vladimir Kostas (University of Kentucky), Rachel Moore (University of Kentucky), Mathew Stasuk (University of Kentucky), Michael Stenger (Wyle Science, Technology & Engineering Group), Charles Knapp (University of Kentucky), Joyce Evans (University of Kentucky)

P-Th-A-114 **Thick-Tissue Bioreactor for maintaining tumor specific microenvironmental conditions**
Dmitry Markov, Jenny Lu, Elizabeth Lillie, Philip Samson, John Wikswo, Lisa McCawley

P-Th-A-208 **SyM-BBB: Microfluidic Blood Brain Barrier Model**
Balabhaskar Prabhakarpandian (CFD Research Corporation), Ming-Che Shen (CFD Research Corporation), Ivy Mills (CFD Research Corporation), Michael Aschner, Kapil Pant (CFD Research Corporation)

P-Th-A-256 **Controlled Delivery of FGF from Dual Stimuli Responsive Microspheres for Therapeutic Angiogenesis**
Christopher Nelson, Rucha Joshi, Craig Duvall

P-Th-A-283 **Electrically-conductive composite scaffolds for improved cardiac differentation of mesenchymal stem cells**
Spencer Crowder, Yi Liang, Rutwik Rath, Andrew Park, Chee Lim, Xintong Wang, Hak-Joon Sung

P-Th-A-39 **Regulation of adhesion-dependent apoptosis in macrophages by PEG-containing polyurethane films**
Angela Zachman, Jonathan Page, Aidan Boone, Gayathri Prabhakar, Scott Gulecher, Hak-Joon Sung

P-Th-A-64 **Gold Nanorod Vaccine for Respiratory Syncytial Virus**
John Stone (Armstrong Atlantic State University), James Crowe, Natalie Thornburg, David Blum, Sam Kuhn, David Wright

P-Th-A-55 **ROS-Responsive Scaffold for Angiogenic Differentiation of Mesenchymal Stem Cells**
Sue Hyun Lee, Angela Zachman, Desirae Deskins, Timothy Boire, Lucas Hofmeister, Pampee Young, Hak-Joon Sung

PLATFORM OP - Thurs - 2 - 1, 1:30PM-3:00PM, Biomaterials, Room A311

Session:Biomaterials for RNA Delivery

2:30PM BMES Award Winner **Injectable Tissue Engineering Scaffolds that Mediate Efficient Gene Silencing In Vivo**
Christopher Nelson, Arnold Kim, Elizabeth Adolph, Mukesh Gupta, Fang Yu, Jeff Davidson, Scott Guelcher, Craig Duvall

PLATFORM OP - Thurs - 2 - 9, 1:30PM-3:00PM, Stem Cell Engineering, Room A305

Session: Engineering the Stem Cell Niche

2:30PM **Engineering an in vitro model of cancerous transformation of adult stem cells: effects of cell passage and senescence**
Spencer Crowder, Sue Lee, Amanda Palmer, Hak-Joon Sung

POSTER SESSION Thurs-B, 1:30PM-5:00PM, Exhibit Hall

P-Th-B-8 **Material Property Assessment of a Murine Model of Triple Negative Breast Cancer Using Modality Independent Elastography: Preliminary Results**
Jared Weis, Stephanie Barnes, Thomas Yankeelov, Michael Miga

P-Th-B-104 **Dually-Targeted Proteolytic Nanobeacons for Targeted Delivery and Optical Tumor Imaging**
Ian McFadden, Hongmei Li, Aron Parekh, Alissa Weaver, Todd Giorgio, Lynn Matrisian, J McIntyre

P-Th-B-107 **Targeted Knockdown of NF-κB in Tumor Associated Macrophages**
Ryan Ortega, Bharat Kumar, Shann Yu, Todd Giorgio

P-Th-B-181 **Bridging the Limitations of Single Cell and Collective Cell Migration with Magnetically Attachable Stencils**
William Ashby, Alina Starchenko, John Wikswo, Andries Zijlstra

P-Th-B-222 **Designing Surface Tension Valves for Self-Contained Magnetic Bead-Based Assays**
Nicholas Adams, Amy Creecy, Catherine Majors, Philip Short, David Wright, Frederick Haselton

P-Th-B-220 **Development of a Coffee-Ring Diagnostic for Malaria**
Joshua Trantum, Christopher Gulka, David Wright, Frederick Haselton

P-Th-B-221 **Low Resource Extraction of DNA from Human Urine**
Hali Bordelon, Amy Creecy, Nicholas Adams, Philip Short, David Wright, Frederick Haselton

P-Th-B-194 **On-chip Bacterial Detection and Diagnosis with Integrated Electromechanical Micropump for Low-Resource Settings**
Erica Curtis, Ayeeshik Kole, Erik Werner, Brian Lesniak, Benjamin Brantley, Kevin Seale, John Wikswo

P-Th-B-281 **Improved Design for Cell-Free, Fast Degrading Synthetic Artery Grafts**
Robert Allen (University of Pittsburgh), Masahiro Yoshida (Children's Hospital of Pittsburgh of the University of Pittsburgh School of Medicine), Wei Wu (Yale University), Lisa Volpatti (University of Pittsburgh), Scott Guelcher, Yadong Wang (University of Pittsburgh)

BMES Award Winner Congratulations to our BMES Award Winners: Christopher Nelson and Shann Yu!

Platform OP - Thurs - 3 - 2, 4:00PM-5:30PM, New Frontiers and Special Topics, Room A312

Session: Engineering Immunology and Immunotherapy III

4:45PM BMES Award Winner **Achieving Cancer Immunotherapy Through RNAi Interference in Tumor-Associated Macrophages via 'Click', Mannosylated Polymeric Nanoparticles**
Shann Yu, Cheryl Lau, Whitney Barham, Christopher Nelson, Fiona Yull, Craig Duvall, Todd Giorgio

Platform OP - Thurs - 3 - 7, 4:00PM-5:30PM, Biomedical Imaging and Optics, Room A301

Session: Optical Diagnostic Sensing & Devices I

4:30PM **Photothermal Optical Coherence Tomography for Quantifying Blood Oxygen Saturation in vivo**
Devin McCormack, Chetan Patil, Jason Tucker-Schwartz, Lucas Hofmeister, Melissa Skala

4:45PM **Characterization of cervical tissue from preterm labor mouse models using in vivo Raman Spectroscopy and ex vivo Biomechanical Testing**
Christine O'Brien, Elizabeth Vargis, Naoko Brown, Bibhash Paria, Jeffry Reese, Anita Mahadevan-Jansen

Platform OP - Thurs - 3 - 10, 4:00PM-5:30PM, Biomaterials, Room A401

Session: Micro & Nano Structured Biomaterials II

4:45PM **Multifunctional polymeric thin films for local therapy after endoscopic mucosa resection of colorectal polyps**
Virginia Pensabene, Todd Giorgio

Platform OP - Thurs - 3 - 19, 4:00PM-5:30PM, Other, Room A313

Session: McIntire Symposium II

4:45PM **Decoupling Mechanical Cues on Cells: Translation to Engineering Design for Personalized Medicine.**
Hak-Joon Sung

Friday, October 26th
POSTER SESSION Fri-A, 9:30AM-1:00PM, Exhibit Hall

P-Fri-A-26 **Short and long range forces influencing plasmid nanocarriers margination and adhesive dynamics under convective flow**
Virginia Pensabene, Elaine Simpson, Premal Patel, Todd Giorgio

P-Fri-A-66 **A Cost Effective, Modular, Open Source, Wireless Hardware Platform to Introduce Students to Smart Mobile Health Care Technologies**
Rene Harder, Jonathan Whitfield, Kenneth Pence, Andre Diedrich, Franz Baudenbacher

P-Fri-A-176 **5-HT2B Antagonism Arrests Non-Canonical TGF-β1-Induced Myofibroblast Differentiation**
Joshua Hutcheson, Larisa Ryzhova, W Merryman

P-Fri-A-242 **Modeling Smooth Muscle Alpha Actin Expression in Fibroblasts: Regulatory Role of FAK and ERK ½**
Alison Schroer, Larisa Ryzhova, W. Merryman