

# Annual Scientific Retreat

March 11 and 12, 2019

**PittMcGowan**

Institute for Regenerative Medicine



**PittsciVelo**



# Agenda

**Monday, March 11, 2019**

**7:30–8:30 a.m.**

**Networking Breakfast**

Ballroom B

**9–10:30 a.m.**

**Morning Breakout Sessions (3 concurrent)**

**Session 1 Pulmonary Regeneration and Repair**

Ballroom B

**Session Organizers and Chairs:**

**Charlie Ren, PhD**, Assistant Professor of Medical Engineering, Carnegie Mellon University

**Keith Cook, PhD**, Professor, Bioengineering, Carnegie Mellon University

**“Iron-Sulfur Biogenesis Controls Endothelial Dysfunction in Pulmonary Hypertension”**

**Stephen Chan, MD, PhD, FAHA** (9–9:20 a.m.), Director, Center for Pulmonary Vascular Biology and Medicine; Associate Professor of Medicine, Pittsburgh Heart, Lung, Blood, and Vascular Medicine Institute, Division of Cardiology, Department of Medicine, UPMC and University of Pittsburgh School of Medicine

**“EVLP: A Human Pre-Clinical Model for Lung Therapies”**

**Mauricio Rojas, MD** (9:25–9:45 a.m.), Scientific Director, Dorothy P. and Richard P. Simmons Center for Interstitial Lung Diseases; Associate Professor, Division of Pulmonary, Allergy and Critical Care Medicine; Associate Professor of Clinical and Translational Research, Department of Medicine, University of Pittsburgh

**“Clinical Aspects of Ex Vivo Lung Perfusion”**

**Pablo G. Sanchez, MD, PhD, FACS** (9:50–10:10 a.m.), Assistant Professor of Cardiothoracic Surgery; Vice Chairman, Benign Lung Diseases; Surgical Director, Lung Transplantation and ECMO; Director, Lung Transplant Research; Director, Ex Vivo Lung Perfusion (EVLP) Program, Department of Cardiothoracic Surgery, University of Pittsburgh

**“Thirty-Day In Vivo Evaluation of a Wearable Pumping Artificial Lung”**

**Ryan Orizondo, PhD** (10:15–10:30 a.m.), Postdoctoral Associate, McGowan Institute, University of Pittsburgh

**Each presentation will be followed by a 5-minute Q&A session.**

**Session 2 Beyond PD1 Immunotherapy: Novel Strategies to Target the Tumor Microenvironment**

Gold Room

**Session Organizer:**

**Tullia Bruno, PhD**, Research Assistant Professor, Department of Immunology, University of Pittsburgh

**Session Chairs:**

**Tullia Bruno, PhD**

**Greg Delgoffe, PhD**, Assistant Professor, Department of Immunology, University of Pittsburgh

**“Engineering Metabolic Sufficiency in Adoptive Cell Therapies for Cancer”**

**Greg Delgoffe, PhD** (9–9:20 a.m.), Assistant Professor, Department of Immunology, University of Pittsburgh

# Agenda

## Session 2 **Beyond PD1 Immunotherapy**, continued

### **“Tumor Infiltrating B Cells: An Immunotherapy Target on the Rise”**

**Tullia Bruno, PhD** (9:20–9:40 a.m.), Research Assistant Professor, Department of Immunology, University of Pittsburgh

### **“Engineering Universal CAR and SynNotch Receptors for Programmable Antigen Targeting”**

**Jason Lohmueller, PhD** (9:40–10 a.m.), Postdoctoral Associate, Department of Immunology, University of Pittsburgh

### **“The Therapeutically Induced Matrisome (Tim) Protects and Promotes Metastatic Disease”**

**Andrew Bradshaw, BS** (10:–10:10 a.m.), PhD Student, Department of Pathology, University of Pittsburgh

### **Panel Discussion (10:10–10:30 a.m.)**

**Greg Delgroffe, PhD; Tullia Bruno, PhD; Jason Lohmueller, PhD; Andrew Bradshaw, BS**

## Session 3 **Importance of (Re)Vascularization**

Conference Room A

### **Session Organizer and Chair:**

**Marie Billaud, PhD**, Research Assistant Professor, Department of Cardiothoracic Surgery, University of Pittsburgh School of Medicine

### **Session Co-Chair:**

**Sai Yerneni**, PhD Student, Department of Biomedical Engineering, Carnegie Mellon University

### **“The Scope and Sequence of Growth Factor Delivery for Angiogenesis”**

**Steven Little, PhD** (9–9:25 a.m.), William Kepler Whiteford Endowed Professor and Chair, Department of Chemical and Petroleum Engineering, University of Pittsburgh Swanson School of Engineering

### **“Revascularization of the Aortic Adventitia: A New Therapeutic Target for Aortic Disease?”**

**Marie Billaud, PhD** (9:30–9:55 a.m.), Research Assistant Professor, Department of Cardiothoracic Surgery, University of Pittsburgh School of Medicine

### **“Decellularized Chick Chorioallantoic Membrane as an Inductive Biomaterial for Functional Blood and Lymph Vasculature”**

**Sai Yerneni, BS** (10–10:15 a.m.), PhD Student, Department of Biomedical Engineering, Carnegie Mellon University

### **Panel Discussion (10:15–10:30 a.m.)**

**Panelists: Steven Little, PhD; Marie Billaud, PhD; Stephen Badylak, DVM, MD, PhD; Sai Yerneni, BS**

## **10:30–11:00 a.m. Break**

## **11–11:30 a.m.**

### **Welcome and State of the Institute Address**

**William R. Wagner, PhD**, Director, McGowan Institute Ballroom B



# Agenda

**11:30 a.m.–12:30 p.m.**

## **Buffet Lunch and Roundtable Topics**

Ballroom B

### **Topics:**

Tables will be labeled by topic. Seating is first come, first served.

**Entrepreneurship for Scientists**—*Don Taylor, PhD*

**Design Thinking for Scientific Innovation**—*Garrett Cohan, MD, MS*

**Developing a Research Niche**—*Cecilia Yates, PhD*

**All About Manuscripts**—*Donna Stolz, PhD*

**Mentorship**—*Shilpa Sant, PhD*

**Working with Industry**—*Robert Kormos, MD*

**Academic Research vs. Start-up**—*Bryan Brown, PhD*

**Writing Your First R01**—*Jelena M. Janjic, PhD*

**Research Strategy and Management**—*Phil Campbell, PhD*

**Machine Learning/Artificial Intelligence in Regenerative Medicine**—*Vanathi Gopalakrishnan, PhD*

## **1–2 p.m. “Pop-Up” Workshops**

### **Workshop 1 Bioelectric Strategies to Repair, Replace and Regenerate Impaired or Damaged Tissue Systems**

Ballroom B

#### **Workshop Organizer:**

**Robert Kormos, MD**, Brack G Hattler Professor of Cardiothoracic Transplantation; Deputy Director for the McGowan Institute for Regenerative Medicine; Professor, Cardiothoracic Surgery and Bioengineering, Department of Cardiothoracic Surgery, UPMC Heart and Vascular Institute

#### **Workshop Chair:**

**Stephen Badylak DVM, PhD, MD**, Professor, Department of Surgery, University of Pittsburgh; Deputy Director and Director of the Center for Pre-Clinical Tissue Engineering, McGowan Institute for Regenerative Medicine

**“Implantable and wearable technologies for sensing and controlling neurological functions”**  
**Douglas Weber, PhD** (1–1:10 p.m.), Associate Professor of Bioengineering, University of Pittsburgh

**“Bioelectric Medicine: A Regenerative Approach”**  
**Jorge Genovese, MD, PhD** (1:10–1:20 p.m.), Vice President of Electrical Stimulation Regeneration Research, BioLeonhardt LTP; Cal-X Starts Business Accelerator; Leonhardt’s Launchpads Utah

**“Bioelectronics with Nanocarbons—from Transparent to Fuzzy Interfaces”**  
**Tzahi Cohen-Karni, PhD** (1:20–1:30 p.m.), Assistant Professor, Department of Biomedical Engineering and Materials Science Engineering, Carnegie Mellon University

**“Exploiting Endogenous Bioelectric Signaling for Regenerative Medicine”**  
**Vaibhav P. Pai, PhD** (1:30–1:40 p.m.), Research Scientist II, Allen Discovery Center, Tufts University

**Panel Discussion (15 min)**

# Agenda

## Workshop 2 **Pharmaceutical Quality by Design Research and Education**

Conference Room A

### Workshop Organizer:

**Jelena Janjic, PhD**, Associate Professor, School of Pharmacy, Duquesne University

### Workshop Chair:

**James Drennen, PhD**, Associate Dean for Research and Graduate Programs, Duquesne University  
School of Pharmacy

#### **“Quality by Design: Modern Strategies for Product Development”**

**James K. Drennen, PhD** (1–1:25 p.m.), Associate Dean for Research and Graduate Programs,  
Duquesne University School of Pharmacy

#### **“Process Analytical Technology (PAT) Technology and Applications”**

**Carl Anderson, PhD** (1:25–1:45 p.m.), Division Head, Pharmaceutical, Administrative & Social Sciences,  
Duquesne University School of Pharmacy

#### **Panel Discussion (15 min)**

**Panelists: Carl Anderson, PhD; Jelena Janjic, PhD; James Drennen, PhD**

## Workshop 3 **Finished Training, Now What? Pathways to Independence**

Gold Room

### Workshop Organizer and Chair:

**Garrett Coyan, MD, MS**, Resident, Cardiothoracic Surgery, UPMC

#### **“Institutional Environment and Support for New/Early Stage Investigators”**

**Arthur Levine, MD**, Senior Vice Chancellor for the Health Sciences, John and Gertrude Petersen Dean,  
University of Pittsburgh School of Medicine

#### **“Initiating Research Collaborations”**

**Christopher Sciortino, MD, PhD**, Assistant Professor of Cardiothoracic Surgery, Surgical Director,  
UPMC Advanced Heart Failure Center, Department of Cardiothoracic Surgery, University of Pittsburgh

#### **“Developing an Independent Research Theme”**

**Fatima Syed-Picard, PhD**, Assistant Professor, University of Pittsburgh School of Dental Medicine

#### **“Finding Money”**

**Ryan Champagne**, Grants Development Coordinator, Office of Research, University of Pittsburgh

## **2–2:30 p.m. Break**

# Agenda

## 2:30–4 p.m. Afternoon Breakout Sessions (3 concurrent)

### Session 4 The 15th Anniversary of the Center for Inflammation and Regeneration Modeling

Ballroom B

#### Session Organizers and Chairs:

**Yoram Vodovotz, PhD**, Professor, Department of Surgery, University of Pittsburgh

**Gilles Clermont, MD**, Professor, Department of Critical Care Medicine, University of Pittsburgh

#### “The CIRM at 15: From Translational Systems Biology to Model-based Precision Medicine for Trauma”

**Yoram Vodovotz, PhD** (2:30–2:50 p.m.), Professor, Department of Surgery, University of Pittsburgh

#### “Why Modeling Sepsis?”

**Gilles Clermont, MD** (2:50–3:10 p.m.), Professor, Department of Critical Care Medicine, University of Pittsburgh

#### “Computing Stem Cell Fate Choice for Regenerative Medicine Applications”

**Shibin Mathew, PhD** (3:10–3:30 p.m.), Postdoctoral Research Fellow, Department of Cancer Biology, Dana Farber Cancer Institute; Department of Genetics, Harvard Medical School

#### “Kinetic Model Simulation and Antigenicity Analysis of a Miniaturized Fc-Binding Domain for Local Deposition of Antibodies”

**Ngoc Pham, BS** (3:30–3:40 p.m.), PhD Student, Graduate School of Pharmaceutical Sciences, Duquesne University

#### Panel Discussion (20 min):

**Panelists: Yoram Vodovotz, PhD; Gilles Clermont, MD; Shibin Mathew, PhD; Ngoc Pham, BS**

### Session 5 Drug Delivery Strategies in the Extracellular and Intracellular Spaces

Gold Room

#### Session Organizers:

**Wilson Meng, PhD**, Associate Professor, School of Pharmacy, Graduate School of Pharmaceutical Sciences, Duquesne University

**Jelena Janjic, PhD**, Associate Professor, School of Pharmacy, Duquesne University

#### Session Chair:

**Wilson Meng, PhD**

#### “Pulmonary Drug Delivery Using Perfluorocarbon Emulsions”

**Keith Cook, PhD** (2:30–3 p.m.), Professor of Biomedical Engineering, Carnegie Mellon University

#### “Nanoparticle-mediated CNS Drug Delivery”

**Devika S. Manickam, PhD** (3–3:20 p.m.), Research Fellow, Department of Plastic Surgery, University of Pittsburgh

#### “Protein-Polymer Conjugates with Improved Transport Properties for Oral Drug Delivery”

**Jingjing Li, MD** (3:20–3:40 p.m.), Research Fellow, Department of Plastic Surgery, University of Pittsburgh

#### Panel Discussion (3:40–4 p.m.)

**Panelists: Keith Cook, PhD; Devika Manickam, PhD; Jingjing Li, MD**

# Agenda

## Session 6 Hepatic Regenerative Medicine

Conference Room A

### Session Chairs:

**Andrew Duncan, PhD**, Assistant Professor, Department of Pathology, University of Pittsburgh  
**Jacquelyn Russell, BS**, PhD Student, Department of Pathology, University of Pittsburgh

#### “Liver Regeneration after Hepatectomy”

**Satdarshan (Paul) Singh Monga, MD, FAASLD** (2:30–2:55 p.m.), Professor of Pathology and Medicine; Director, Pittsburgh Liver Research Center (PLRC); Assistant Dean for Medical Scientist Training Program (MSTP); Director of Cellular Approaches to Tissue Engineering & Regeneration (CATER) Training Program, University of Pittsburgh

#### “Liver Regeneration Making Living Donation Feasible”

**Swaytha Ganesh, MD** (2:55–3:20 p.m.), Assistant Professor, Department of Medicine—Division of Gastroenterology, Hepatology, and Nutrition; Medical Director of Living Donor Program—UPMC Thomas E. Starzl Transplantation Institute, Center for Liver Diseases, University of Pittsburgh

#### “BioFabrication of Human Liver Tissue”

**Alejandro Soto-Gutierrez, MD, PhD** (3:20–3:45 p.m.), Associate Professor, Department of Pathology, University of Pittsburgh

#### “Lack of Beta-Catenin in Hepatocytes Impairs Proliferation and Promotes Liver Progenitor Cell-Mediated Repair in Response to Hepatic Injury”

**Jacquelyn Russell, BS** (3:45–4 p.m.), PhD Student, Department of Pathology, University of Pittsburgh

## 4–4:30 p.m. Break

## 4:30–5 p.m. Rapid Fire Presentations

Ballroom B

### Session Chairs:

**Andrew Duncan, PhD**, Assistant Professor, Department of Pathology, University of Pittsburgh  
**Evan Delgado, PhD**, Postdoctoral Scholar, Department of Pathology, University of Pittsburgh

#### “Adipose-Derived Stem Cells Partially Mitigate Muscle Atrophy after Peripheral Nerve Injury in the Rodent Model”

**Benjamin K. Schilling, MS**, PhD Student, Department of Bioengineering, University of Pittsburgh  
Poster 106

#### “Elucidation and Integration of Tissue-Specific, Protein-Level Inflammatory Networks following Vascularized Composite Allotransplantation”

**Ali Aral, MD**, Postdoctoral Scholar, Department of Surgery, University of Pittsburgh  
Poster 40

#### “Perfused 3D Printed Collagen Tubes Support Tissue Viability”

**Jacqueline Wittmer, BS**, PhD student, Biomedical Engineering, Carnegie Mellon University  
Poster 110



# Agenda

## “Cytokine Mimicking Microspheres for Use in Porous Scaffolds”

**Katherine Lorentz, MS**, PhD Student, Department of Bioengineering, University of Pittsburgh  
Poster 100

## “Biomagnetic Genetically Programmed Multicellular Microrobots”

**Michael Behrens, BS**, PhD Student, Department of Bioengineering, University of Pittsburgh  
Poster 4

## “Theranostic Analgesic Regenerative Gel-Emulsion Technology (T.A.R.G.E.T.) Platform for Local Analgesia and Promotion of Nerve Regeneration”

**Mallory R. Wampler, MD**, Postdoctoral Scholar, AIRMED/RESTOR, United States Army Institute of Surgical Research

**Lu Liu, MS**, PhD Candidate, Graduate School of Pharmaceutical Sciences, Chronic Pain Research Consortium, Duquesne University

Poster 76

**5–7 p.m.**

### **Poster Session/Evening Reception**

Ballroom A

5–6 p.m.

Odd numbers present

6–7 p.m.

Even numbers present

## **Tuesday, March 12, 2019**

**7:30–8:30 a.m.**

### **Networking Breakfast**

Ballroom B

## **9–10:30 a.m. Morning Breakout Sessions (3 concurrent)**

**Session 7**

### **Pediatric Innovations**

Ballroom B

#### **Session Organizer and Chair:**

**George Gittes, MD**, Director, Richard King Mellon Foundation Institute for Pediatric Research; and Co-Scientific Director, UPMC Children’s Hospital

#### **“PET Probe for Radioguided Surgery”**

**Marcus Malek, MD, FAAP**, Assistant Professor of Surgery; Director, Pediatric Surgical Oncology, Department of Surgery, University of Pittsburgh

#### **“Ventriculamniotic Shunt for Fetal Aqueductal Stenosis”**

**Stephen Emery, MD**, Associate Professor, Department of Obstetrics, Gynecology & Reproductive Sciences, Divisions of Ultrasound and Maternal-Fetal Medicine, Magee-Womens Research Institute

# Agenda

## **“ThreadRiteIV Catheter”**

**Cameron Dezfullian, MD**, Assistant Professor, Adult and Pediatric Critical Care Medicine and Clinical and Translational Science; Scientist, Safar Center for Resuscitation Research; Faculty, Vascular Medicine Institute, University of Pittsburgh School of Medicine

## **“Biodegradable Magnesium Alloy-Based Tracheal Stent”**

**Prashant Kumta, PhD**, Edward R. Weidlein Chair Professor, University of Pittsburgh Swanson School of Engineering

**David Chi, MD**, Associate Professor, Department of Otolaryngology, University of Pittsburgh; Clinical Director, Division of Pediatric Otolaryngology, UPMC Children’s Hospital of Pittsburgh

## **“interACTION: ACL”**

**Michael McClincy, MD**, Assistant Professor, Department of Orthopaedic Surgery, University of Pittsburgh

## **“Bili-Hut™: Merging Human Centered Design, Usability, Biomedical Engineering and Health Economics to Democratize Newborn Jaundice Treatment”**

**Donna Brezinski, MD**, CEO and Founder, Little Sparrows Technologies, Inc.

## **Session 8 Emerging Military Threats, Combat Casualty Gaps and Opportunities for Innovation**

Gold Room

### **Session Organizers and Chairs:**

**Jelena M. Janjic, PhD**, ORISE Faculty Fellow, Principal Scientist, AIRMED, 59th MDW, U.S. Air Force; Associate Professor, Duquesne University

**Margaux Salas, PhD**, Senior Scientist, AIRMED

### **Session Co-Chair:**

**Nicholas Robbins, DO**, General Surgery Resident, The Long School of Medicine, University of Texas Health San Antonio

### **“Prolonged Field Care on the Multi-Domain Battlefield: Current Emphasis and Future Needs”**

**Margaux Salas, PhD** (9–9:20 a.m.), Senior Scientist, AIRMED, 59th MDW, U.S. Air Force

### **“The AIRMED Program: Regenerative, Resuscitative and Restorative Technologies in Combat Casualty Care”**

**Michael Sippel, MD** (9:20–9:40 a.m.), Surgical Resident, AIRMED, 59th MDW, U.S. Air Force

### **“Inflammation Targeted Nanomedicine for Military Applications: Design, Manufacturing, and Quality Control”**

**Jelena M. Janjic, PhD** (9:40–10 a.m.), ORISE Faculty Fellow, Principal Scientist, AIRMED, 59th MDW, U.S. Air Force; Associate Professor, Duquesne University

### **“Prevention of Ischemia-Reperfusion Injury and Chronic Rejection in a Porcine Vascularized Composite Allotransplantation Model”**

**Nicholas L. Robbins, DO** (10–10:15 a.m.), Surgical Resident, AIRMED, 59th MDW, U.S. Air Force

### **Panel Discussion**

**Panelists: Margaux Salas, PhD; Michael Sippel, MD, PhD; Jelena M. Janjic, PhD; Nicholas Robbins, DO (10:15–10:30 a.m.)**

# Agenda

## Session 9 **Regenerative Rehabilitation**

Conference Room A

### Session Organizer and Chair:

**Riccardo Gottardi, PhD**, Principal Investigator, Center for Pediatric Airway Disorders, Children's Hospital of Philadelphia

### Session Co-Chair:

**Amin Cheikhi, PhD**, Postdoctoral Scholar, Department of Physical Medicine and Rehabilitation, University of Pittsburgh

#### **“Evaluating Clinical Outcomes of Biological Treatments”**

**Christine McDonough, PT, PhD**, Assistant Professor, Departments of Physical Therapy and Orthopaedic Surgery, University of Pittsburgh School of Medicine

#### **“Peripheral Nerve Regeneration and Physical Rehabilitation”**

**Kacey Marra, PhD**, Professor, Department of Plastic Surgery, University of Pittsburgh

#### **“Exposure of Muscle Stem Cells to a Stiff Microenvironment Drives an “Aged” Mitochondrial Phenotype”**

**Hikaru Mamiya, BS**, PhD Student, Department of Bioengineering, University of Pittsburgh

#### **Panel Discussion**

**Panelists: Christine McDonough, PT, PhD; Kacey Marra, PhD; Hikaru Mamiya, BS**

## **11 a.m.–12:30 p.m.**

### **Distinguished Lecture Luncheon**

William Pitt Union Assembly Room\*  
3959 Forbes Ave., 1st Floor

*\*Exit the University Club onto University Place, turn right and walk half a block to Fifth Ave. Cross Fifth Ave. and turn left. The William Pitt Union will be on your immediate right on the corner of Fifth Ave. and Bigelow Blvd. Turn right once inside and follow signs to the Assembly Room.*

#### **Distinguished Lecture: “Lessons in Regenerative Medicine Translation: Are We Designing for the Right Therapeutic Target?”**

**Jennifer Elisseeff, PhD**, Professor of Ophthalmology, Director of the Translational Tissue Engineering Center, Johns Hopkins University

# Agenda

## 1–2 p.m. “Pop-Up” Workshops (3 concurrent)

### Workshop 1 **Wearable Biosensors**

Ballroom B

#### Session Organizers and Chairs:

**Jana Kainerstorfer, PhD**, Assistant Professor, Department of Biomedical Engineering, Carnegie Mellon University

**Carmel Majidi, PhD**, Associate Professor, Department of Mechanical Engineering, Carnegie Mellon University

#### “Continuous Monitoring and Treatment Opportunities, Applications and Challenges Using Biosensing Stickers”

**Brian Stancil, PhD** (15 min), President, Lifeware Labs

#### “Parylene Photonics: A New Platform for Flexible Optoelectronic Sensors”

**Maysam Chamanzar, PhD** (15 min), Assistant Professor, Department of Electrical and Computer Engineering, Carnegie Mellon University

#### “Monitoring of Cerebral Perfusion Continuously and at the Bedside with Near-Infrared Light”

**Jana Kainerstorfer, PhD** (15 min), Assistant Professor, Department of Biomedical Engineering, Carnegie Mellon University

#### “Microneedles Arrays for Transdermal and Intradermal Deliver of Bioactive Molecules and their Application for Endogenous Sensing”

**Burak Ozdoganlar, PhD** (15 min), Professor, Department of Mechanical Engineering, Carnegie Mellon University

### Workshop 2 **Malignant Pleural Effusion: When Push Comes to Shove**

Gold Room

#### Session Organizers and Chairs:

**Michael Lotze, MD**, Professor of Surgery and Bioengineering, University of Pittsburgh

**Rajeev Dhupar, MD, MBA**, Assistant Professor of Cardiothoracic Surgery; Chief, Thoracic Surgery, VAMC of Pittsburgh; Department of Cardiothoracic Surgery, University of Pittsburgh

**Chigozirim Ekeke, MD**, Cardiothoracic Surgery Resident, UPMC

#### “Current Therapies for Malignant Pleural Effusion”

**Chigozirim Ekeke, MD**, Cardiothoracic Surgery Resident, UPMC

#### “Oncolytic Vaccinia Virus Delivering Cytokines – Trials and Tribulations”

**David Bartlett, MD**, Bernard Fisher Professor of Surgery, University of Pittsburgh School of Medicine

#### “Novel Immune Approaches to the Pleural Space”

**Rajeev Dhupar, MD, MBA**, Assistant Professor of Cardiothoracic Surgery; Chief, Thoracic Surgery, VAMC of Pittsburgh; Department of Cardiothoracic Surgery, University of Pittsburgh

#### “Therapeutic Targeting of The Pleural Effusion Environment”

**Vera Donnenberg, PhD**, Associate Professor, Department of Cardiothoracic Surgery, University of Pittsburgh School of Medicine

# Agenda

## **Workshop 3 From Laboratory to Standard of Care: LifeX and Regional Resources for Translating and Commercializing Innovation**

Conference A

### **Workshop Organizer:**

**Mara McFadden, MBA**, VP of Product and Medical Devices, LifeX Ventures

### **Workshop Chair:**

**Robert Kormos, MD**, Brack G Hattler Professor of Cardiothoracic Transplantation; Deputy Director, McGowan Institute for Regenerative Medicine; Professor of Cardiothoracic Surgery and Bioengineering, Department of Cardiothoracic Surgery, UPMC Heart and Vascular Institute

#### **“Regional Resources for Taking a Company from Concept to Start-Up”**

**Mara McFadden, MBA** (15 min), VP of Product and Medical Devices, LifeX Ventures

#### **“Life Sciences Start-Ups: Lessons from the First Year ”**

**Anne Germain, PhD** (15 min), Professor of Psychiatry, Psychology, and Clinical and Translational Science (on leave), University of Pittsburgh; CEO, Noctem LLC

**Joseph Pugar** (15 min), CEO, Aruga Technologies LLC

**Panel Discussion (15 min)**

## **2–2:30 p.m. Break**

## **2:30-4 p.m. Afternoon Breakout Sessions (3 concurrent)**

### **Session 10 Let’s Talk Science: Communicating Your Research to Different Audiences**

Ballroom B

#### **Session Organizers and Chairs:**

**Arvind Suresh, MS**, Manager, Science Writing, UPMC Media Relations

**Erin Hare, PhD**, Manager, Science Writing, UPMC Media Relations

#### **“Business Basics: Pitching your Invention to Potential Partners”**

**Antonio Torres**, Entrepreneur in Residence, University of Pittsburgh

#### **“Science in the News: What Makes Your Research Interesting to a Reporter”**

**Liz Reid**, Health & Science Editor, 90.5 WESA FM

#### **“Being Social: Do’s and Don’ts of Talking Science on Social Media”**

**Vaughn Cooper, PhD**, Professor, Department of Microbiology and Molecular Genetics, University of Pittsburgh

**Panel Discussion**

**Panelists: Tony Torres; Liz Reid; Vaughn Cooper, PhD**



# Agenda

## Session 11 Image-Guided Therapeutic Delivery in Regenerative Medicine

Gold Room

### Session Organizer and Chair:

**Michel Modo, PhD**, Professor, Department of Radiology, University of Pittsburgh

#### “Image-Guided Intra-Arterial Delivery of Cell Therapy for Stroke”

**Piotr Walczak, PhD**, Assistant Professor, Department of Radiology, Johns Hopkins University

#### “Unmet Needs and Opportunities for Regenerative Medicine in Interventional Neuroradiology”

**Monica Pearl, MD, DABR**, Associate Professor, Interventional Neuroradiology; Director, Interventional Neuroradiology Fellowship Program; Director of Faculty Experience, Department of Radiology, Johns Hopkins University

#### “Interventional PET for Precise and Quantitative Monitoring of the Delivery of Biologicals to the Brain”

**Mirosław Janowski, MA, MD, PhD**, Associate Professor, Department of Radiology, Johns Hopkins University

#### “In Vivo Non-Invasive Monitoring of the Immune Response to ECM Hydrogel Implantation”

**Michel Modo, PhD**, Professor, Department of Radiology, University of Pittsburgh

#### “Development of Imaging Nanoparticles for Translational MR Imaging in Regenerative Medicine”

**Charlie O’Hanlon**, President and CEO, CelSense

## Session 12 Microphysiological Tissue Chip for Drug Development

Conference Room A

### Session Organizers:

**Riccardo Gottardi, PhD**, Principal Investigator, Center for Pediatric Airway Disorders, Children’s Hospital of Philadelphia

**Hang Lin, PhD**, Assistant Professor, Department of Orthopaedic Surgery, University of Pittsburgh School of Medicine

### Session Chairs:

**Hang Lin, PhD**, Assistant Professor, Department of Orthopaedic Surgery, UPMC

**Alessandro Piroso, PhD**, Postdoctoral Researcher, Department of Orthopaedic Surgery, University of Pittsburgh

#### “Development of Human MSC-Based Organotypic Cultures for Toxicity Testing”

**Peter Alexander, PhD**, Assistant Professor, Department of Orthopaedic Surgery, University of Pittsburgh

#### “iPSC-Based Three-Dimensional Neuronal Platforms for Modeling CNS Infections and Drug Screening”

**Leonardo D’Aiuto, PhD**, Research Instructor, Department of Psychiatry, University of Pittsburgh

#### “Organ-on-a-Chip System for the Modeling of Synovial Joint Pathologies”

**Zhong Li, PhD**, Postdoctoral Associate, Department of Orthopaedic Surgery, University of Pittsburgh

### Panel Discussion

**Panelists: Peter Alexander, PhD; Leonardo D’Aiuto, PhD; Zhong Li, PhD**

# Agenda

## 4–5 p.m. **Regenerative Medicine Forum—Open to the Public**

### “Hope vs. Hype of Stem Cell Therapy”

Ballroom B

#### Forum Organizer:

**Bryan Brown, PhD**, Assistant Professor, Department of Bioengineering, Swanson School of Engineering, University of Pittsburgh

#### Forum Moderator:

**Bill Flanagan**, Chief Corporate Relations Officer, Allegheny Conference

#### Panel Discussion:

**J. Peter Rubin, MD, FACS**, UPMC Endowed Professor and Chair of Plastic Surgery; Director, UPMC Wound Healing Services; Professor of Bioengineering, University of Pittsburgh

**Carl Kurlander**, Documentarian and Filmmaker; Visiting Distinguished Senior Lecturer, Faculty Adviser, Pitt In Hollywood, University of Pittsburgh

**Lawrence R. Wechsler, MD**, Henry B. Higman Professor and Chair, Department of Neurology, University of Pittsburgh School of Medicine, Co-Director of The Neurological Institute, and Vice President of Telemedicine Services, UPMC

## 5 p.m. **Poster Awards**

Ballroom B

#### Presenter:

**Andrew Duncan, PhD**, Assistant Professor, Department of Pathology, University of Pittsburgh

## 5–6 p.m. **Meet the Researchers Poster Session and Reception**

Ballroom A

All poster presenters

# 2019 McGowan Retreat Poster Abstracts

## Cellular and Gene Therapy

1. **Abigail Allen**, Ryan Martin, Walter Storkus, Michael Lotze and Partha Roy. *A Therapeutic Role for Profilin 1 in the Progression and Metastasis of Renal Cell Carcinoma*
2. **Lawrence P. Andrews**, Sasikanth Manne, E. John Wherry, Creg J. Workman and Dario A.A. Vignali. *Synergistic interactions between PD1 and LAG3 limit anti-tumor immunity*
3. **Oliver Beale** and Deniz Dalkara. *Utilization of Superparamagnetic Nanoparticles and Columns for One-Step Purification of Recombinant Adeno-Associated Viral (AAV) Vectors*
4. **Michael R. Behrens**, Felicia Y. Scott and Warren C. Ruder. *Biomagnetic Genetically Programmed Multicellular Microrobots*
5. **Zachary Clemens**, Abish Pius, Amrita Sahu, Sunita Shinde, Aaron Barchowsky and Fabrisia Ambrosio. *Administration of alpha-Klotho systemically enhances skeletal muscle regeneration*
6. **Maria Cohen**, Lukas Schimunek, Rami A. Namas, Haley Lindberg, Fayten El-Dehaibi, A. Murat Kaynar, Timothy, R. Billiar and Yoram Vodovotz. *Sevoflurane is Associated with Worse Clinical Outcomes and Altered Inflammatory Markers in Blunt Trauma Patients: Potential Role of Single Nucleotide Polymorphisms rs4715332 and rs1695*
7. **Dan Crompton**, David Chan, John Waters and Marina V. Kameneva. *In vitro optimization of hemoglobin solution for use in sickle cell hemoglobin replacement therapy*
8. **Evan Delgado**, Junyan Tao, Madeleine Leek, Satdarshan Monga and Andrew Duncan. *Understanding the role of the pleiotropic scaffolding protein IQGAP1 in Hepatocellular Carcinogenesis*
9. **Asim Ejaz**, Michael W. Epperly, Joel S. Greenberger and Peter J. Rubin. *Molecular basis of Adipose-Derived Stem Cell (ASC) therapy for management of Radiation Induced Fibrosis (RIF)*
10. **Chigozirim Ekeke**, Michael Lotze and Rajeev Dhupar. *Making Cold Malignant Pleural Effusions Hot: Development of a Murine Model of MPE*
11. **David Gau**, Souvik Chakraborty, David Boone, Alan Wells and Partha Roy. *MRTF/Profilin is an important signaling axis for metastatic outgrowth of triple negative breast cancer cells*
12. **David Gau**, Lucile Vignaud, Jordan Strum, Paul Francoeur, David Koes, Xavier Guillonneau and Partha Roy. *First-generation small molecule antagonists of profilin1 suppresses pathological retinal neovascularization*
13. **Lauren V. Huckaby**, Marie Billaud, Jennifer Hill, Tara Richards, Julie Phillippi and Thomas G. Gleason. *Sex Differences in Oxidative Stress Response in Bicuspid Aortic Valve Aortopathy*
14. **Noriyuki Kashiya**, Robert L. Kormos, Yasumoto Matsumura, Shin-ichi Higuchi, Lindemberg M. Silveira-Filho, Garrett Coyan, Jiang Hong Bin, Antonio D'Amore and William R. Wagner. *Adipose Derived Stem Cells Enhance Cardiac Function Preservation of a Biodegradable Cardiac Patch and Increase Vascularization in Rats with Subacute Myocardial Infarction*
15. **Karis Kosar** and Kari Nejak-Bowen. *Treatment of a Mouse Model of Cholestasis with a Thyromimetic Improves Biliary Injury But Exacerbates Hepatocyte Injury*
16. **N. G. Lamson**, R. Ball, K. Suri, S. Xian, A. Zhang, V. Ahuja, A. Berger and K. A. Whitehead. *Strawberry Polyphenols are Intestinal Permeation Enhancers for Oral Drug Delivery*
17. **Madeleine P. Leek**, Evan R. Delgado, Patrick D. Wilkinson, Frances Alencastro, Narita Roy, Kero Kamel and Andrew W. Duncan. *The Role of Diploid Hepatocytes in Promoting Regeneration Following Acetaminophen Toxicity*
18. **Jingjing Li**, Wensheng Zhang, Chiaki Komatsu, Yong Wang, Moriah Johngrass, Kia Washington, Kacey Marra, Peter J Rubin, Vijay Gorantla, Lauren Kokai and Mario Solari. *Local Delivery of Adipose-Derived Mesenchymal Stem Cells Promotes Immunomodulation and Allograft Survival in Vascularized Composite Allograft Transplantation (VCA)*

Presenter in bold

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19. **Jr-Jiun Liou**, Shenghuo Tian, Michael Yee, Paul Kinchington and Jonathan P. Vande Geest. *Manipulating Gene Expression of Human Lamina Cribrosa Cells and Astrocytes*
20. **Jason Lohmueller**, Adam Butchy, Yaniv Tivon, Natasa Miskov-Zivanov, Alexander Deiters and Olivera Finn. *Engineering universal CAR and SynNotch receptors for programmable antigen targeting*
21. **Bo Ma**, Kyle Sylakowski, Yuhan Jiang, Hanshuang Shao and Alan Wells. *Bi-directional and diametrical regulation of mesenchymal stem cells and epithelial-mesenchymal plasticity in prostate cancers*
22. **Hikaru Mamiya**, Amrita Sahu, Amin Cheikhi, Sunita Shinde, Samuel Luketich, Gabriele Nasello, Bennette Van Houten, Antonio D'Amore, Aaron Barchowsky and Fabrisia Ambrosio. *Exposure of muscle stem cells to a stiff microenvironment drives an "aged" mitochondrial phenotype*
23. **Brian Martin**, Beth Gabris, Xuwen Wang, Guillermo Romero and Guy Salama. *Cardioprotective Actions of Relaxin via Wnt Signaling*
24. **Meghan Mooring** and Dean Yimlamai. *Using CyTOF to elucidate the signals controlling progenitor cells during liver regeneration*
25. **Abish Pius**, Amrita Sahu, Zachary Clemens, Sunita Shinde, Aaron Barchowsky and Fabrisia Ambrosio. *AAV delivery of alpha-Klotho: Gene therapy as a strategy to counteract sarcopenia*
26. **C. Reyes**, L. Mo, D. Guimaraes, A. Braganza, K. Quesnelle, Y. Wang and S. Shiva. *Nitrite Regulates Mitochondrial Dynamics to Inhibit Vascular Smooth Muscle Cell Proliferation*
27. **Dayana B. Rivadeneira**, Kristin DePeaux, Tracy Tabib, Ashley V. Menk, Padmavathi Sampath, Robert Lafyatis, Saumendra N. Sarkar, Stephen H. Thorne and Greg M. Delgoffe. *Oncolytic virus immunotherapy-induced remodeling of antitumor immunity is improved through vector-encoded metabolic modulation*
28. **Jacquelyn Russell**, Hirohisa Okabe, Sucha Singh, Minakshi Poddar, Marc Abrams, Kari Nejak-Bowen and Satdarshan Monga. *Lack of Beta-catenin in Hepatocytes Impairs Proliferation and Promotes Liver Progenitor Cell-Mediated Repair in Response to Hepatic Injury*
29. **Nairita Roy**, Patrick D. Wilkinson, Evan R. Delgado, Frances Alencastro, Madeleine P. Leek, Michael J. Reynolds, Sruti Shiva and Andrew W. Duncan. *Role of SLC25A34, an uncharacterized mitochondrial protein, in fatty acid metabolism and mitochondrial respiration in primary hepatocytes*
30. **Amrita Sahu**, Hikaru Mamiya, Sunita Shinde, Amin Cheikhi, Lia Winter, Nam Vo, Donna Stolz, Vera Roginskaya, Wan-ye Tang, Claudette St. Croix, Laurie Sanders, Michael Franti, Ben Van Houten, Thomas Rando, Aaron Barchowsky and Fabrisia Ambrosio. *Age-related declines in alpha-Klotho drive progenitor cell mitochondrial dysfunction and impaired muscle regeneration*
31. **Aaron Gabriel Sandoval**, Jason Brant and Malcolm Maden. *African spiny mouse (Acomys) regeneration following acute, chronic, and volumetric muscle loss injuries*
32. **Ashwin Somasundaram**, Anthony R. Cillo, Lauren Oliveri, Maria Velez, Sona Joyce, James G. Herman, Katie S. Nason, John M. Kirkwood, Robert L. Ferris, Tullia C. Bruno and Dario A. A. Vignali. *IL-6 and IL-8 drive IR-specific immune suppression of effector, memory and naïve, peripheral blood CD8+ T cells in cancer patients*
33. **Hengyun Sun**, Jingjing Li, Wensheng Zhang, Chiaki Komatsu, Yong Wang, Moriah V. Johngrass, Kia Washington, Kacey Marra, Peter J. Rubin, Vijay Gorantla, Lauren Kokai and Mario Solari. *Local Delivery of Adipose-Derived Stem Cells Promotes Allograft Survival and Durable Tolerance in Vascularized Composite Allograft Transplantation*
34. **Kyle Sylakowski**, Amritha Justin and Alan Wells. *The Angiogenic Capability of Mesenchymal Stem Cells Coupled with Tenascin-C Under Hypoxic Conditions*

**Presenter in bold**

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## 2019 McGowan Retreat Poster Abstracts, continued

35. **Kien Tran**, Mark Murdock, Stephen Badylak and Kyle Orwig. *Effects of Matrix-Bound Nanovesicles in Human Spermatogonial Stem Cell Culture*
36. **Daniel B. Whitefield**, Li Lan, Shelly Peyton and Kris Noel Dahl. *Mechanical Response of Chromatin to DNA Damage*
37. **Patrick D. Wilkinson**, Evan R. Delgado, Frances Alencastro, Madeleine P. Leek, Nairita Roy, Matthew P. Weirich, Elizabeth C. Stahl, P. Anthony Otero, Maelee I. Chen, Whitney K. Brown, Michael Oertel and Andrew W. Duncan. *Polyploidy in Liver Regeneration and Adaptation to Chronic Injury*
38. **Fatih Zor**, Huseyin Karagoz, Lu Liu, Vijay S. Gorantla and Jelena M. Janjic. *New theranostic approaches to chronic sterile inflammation and immune rejection monitoring and treatment*
39. **Daniel A. Zuppo**, Maria A. Missinato and Michael Tsang. *Foxm1 drives Cardiomyocyte Proliferation during Zebrafish Cardiac Regeneration*
43. **Tian Yong Foong**, Yi Hua, Alexandra Gogola and Ian A. Sigal. *Modeling collagen fiber recruitment across the corneoscleral shell*
44. **Ronald Fortunato**, Chao Sang, Anne Robertson and Spandan Maiti. *Failure Biomechanics of Arterial Tissue*
45. **George C. Gabriel**, Nathan Salamacha, William T. Reynolds, Tuantuan Tan, Xiaoqin Liu, Hisato Yagi, Abha Bais, Ashok Panigrahy, Dennis Simon, Yijen Wu and Cecilia Lo. *Characterization of Neurodevelopmental Defects Associated with a Mouse Model of Hypoplastic Left Heart Syndrome*
46. **Eric Lambert\***, **Michele Herneisey\***, Lu Liu, James K. Drennen, Jelena M. Janjic (\*Equal contribution). *Quality by Design: methodology to boost process understanding in nanomedicine*
47. **Eric Lei**, Kyle Miller, Michael Pinsky and Artur Dubrawski. *Characterization of Multi-View Hemodynamic Data by Learning Mixtures of Multi-Output Regressors*

### Computation and Modeling

40. **Ali Mubin Aral**, Ruben Zamora, Derek Barclay, Jinling, Yin, Fayten El-Dehaibi, Vijay Gorantla and Yoram Vodovotz. *Elucidation and Integration of Tissue-Specific, Protein-Level Inflammatory Networks following Vascularized Composite Allograft Transplantation*
41. **Shaniel Bowen**, Pamela Moalli and Steven Abramowitch. *Defining and Comparing Mechanisms of Uterovaginal Prolapse Repair Failure*
42. **Leonid Emerel**, James Thunes, Trevor Kickliter, Marie Billaud, Julie A. Phillippi, David A. Vorp, Spandan Maiti and Thomas G. Gleason. *Pre-Dissection-Derived Geometric and Distensibility Indices Reveal Increased Peak Longitudinal Stress and Stiffness in Patients Sustaining Acute Type A Aortic Dissection: Implications for Predicting Dissection*
48. **Xinyu Li**, Michael R. Pinsky, Gilles Clermont and Artur Dubrawski. *Leveraging Routine Blood Draws to Predict Risk of Hemorrhagic Shock Before Surgery*
49. **Ngoc B. Pham**, Wen Liu, Nathan R. Schueller, Ellen S. Gawalt, Yong Fan and Wilson S. Meng. *Kinetic Model Simulation and Antigenicity Analysis of a Miniaturized Fc-Binding Domain for Local Deposition of Antibodies*
50. **Feng Shan**, Anthony R Cillo, Tullia C Bruno, Panayiotis V. Benos and Dario A.A. Vignali. *Defining transcriptional regulation of CD8+ T cells in HPV(+) and HPV(-) head and neck cancer via gene regulatory networks*
51. **Elaine Soohoo**, Lewis K. Waldman and Dennis R. Trumble. *Computational Assessment of Cardiac Hemodynamics and Biomechanics for a Torsional Ventricular Assist Device (tVAD)*

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52. **Anthony Wertz**, Michael R. Pinsky, Gilles Clermont and Artur Dubrawski. *Granularity and Parsimony of Hemodynamic Vital Signs Data Impact Accuracy and Timeliness of Assessment of Physiologic State*
53. **Joo Heung Yoon**, Yang Chen, Michael Pinsky and Gilles Clermont. *Non-invasive Hemorrhage Detection Approach using Photoplethysmography Medical Devices*
54. **Edgar Aranda-Michel**, Lewis K. Waldman and Dennis Trumble. *Beating Heart Simulation of Left Ventricular Compression for Heart Failure*
55. **Jennifer M. Armen**, Ngoc Pham, Wilson S. Meng and Ellen S. Gawalt. *Analysis of the cross-linked ionic peptide, EAK16-II*
56. **Ernesto Bedoy**, Mike Urbin and Douglas Weber. *A High-Density Electrode Array for Mapping Corticospinal Muscle Recruitment After Stroke*
57. **Garrett Coyan**, Lindemberg Silveira Filho, Yasumoto Matsumura, Samuel Luketich, William Katz, Vinay Badhwar, William Wagner and Antonio D'Amore. *Acute In Vivo Functional Assessment of a Biodegradable Stentless Elastomeric Tricuspid Valve*
58. **Eoghan M. Cunnane**, Niall F. Davis, Alan J. Ryan, Jochen Hess, Justin S. Weinbaum, Michael T. Walsh, Fergal J. O'Brien and David A. Vorp. *Improving urinary catheter safety and tissue engineered urethral scaffolds through an enhanced understanding of human urethral biomechanics*
59. **Vishaal Dhamotharan**, Ryan Orizondo and William Federspiel. *In-vitro flow characterization of PAAL & P-PAL using dimensional analysis for detection of abnormal flow conditions*
60. **Leah Dickey**, Lu Liu, Shannon Loftus, Michele Herneisey and Jelena M. Janjic. *Quality Assessment and Optimization of Nanoemulgels for Local Inflammation Treatment*
61. **Moataz Elsisy**, Bryan Tillman, Catherine Go and Youngjae Chun. *Design and Manufacturing A Novel Customizable Nitinol-PTFE Stent Graft for Effective Torso Hemorrhage Control*
62. **Firuz Feturi**, Joshua M. Barnett, Bo Xiao, Yolandi van der Merwe, Xinzhu Gu, Evan Katzel, Mario Solari, Raman Venkataramanan, William Wagner, Daniel Simons, Michael B. Steketee and Kia M. Washington. *Local Delivery of FK506 with Impregnated Nerve Wraps Accelerates Nerve Regeneration in Infraorbital Nerve Transection and Repair Model*
63. **Catherine Go**, Jenna Kuhn, Moataz Elsisy, Youngjae Chun and Bryan Tillman. *A Novel Retrievable Rescue Stent as a Comprehensive Solution to Non-Compressible Traumatic Hemorrhage*
64. **Aimon Iftikhar**, Alexis Nolfi, Branimir Popovic and Bryan Brown. *Development of a Novel Rabbit Surgical Model of Pelvic Reconstruction for the Use of Testing an IL-4 Eluting Coated Polypropylene Mesh*
65. **Jenna Kuhn**, Catherine Go, Moataz Elsisy, Yanfei Chen, Youngjae Chun and Bryan Tillman. *An E-Mag Cannulation Approach Reduces Radiation Exposure During Simulated Fenestrated Endograft Repair*
66. **Tell Lovelace**, Alexander Rupperecht, Rachelle Palchesko-Simko, Jared Romeo, Wilson Meng and Ellen Gawalt. *Immobilization of Anti-Platelet Molecules on Implant Materials*
67. **Alexandra G. May**, Ryan A. Orizondo, Brian J. Frankowski, Peter D. Wearden and William J. Federspiel. *Acute In Vivo Performance of a Pediatric Ambulatory Artificial Lung*
68. **Alexandra G. May**, Ryan A. Orizondo, Brian J. Frankowski, Ergin Kocylidirim, Jonathan D'Cunha and William J. Federspiel. *7-day In Vivo Performance of a Low-Flow Extracorporeal CO2 Removal Device*
69. **Alexis Nolfi**, Vishal Jhanji, Mangesh Kulkarni and Bryan Brown. *Polyelectrolyte multilayer coating for delivery of IL-4 from contact lenses for dry eye disease*

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# 2019 McGowan Retreat Poster Abstracts, continued

## Tissue Engineering

70. **Katelin S. Omecinski**, Brian J. Frankowski and William J. Federspiel. *Characterization of Floating Impeller Phenomena in an Integrated HFM bundle and Centrifugal Pump Design*
71. **Drake Pedersen**, Antonio D'Amore and William R. Wagner. *Characterizing Deformation in Tissue Engineered Heart Valves under Dynamic Loading Conditions*
72. **Shivbaskar Rajesh**, Daniel Crompton, James F. Antaki and Marina V. Kameneva. *Effect of turbulent flow on damage to blood cells using the in vitro model of the assisted blood circulation*
73. **Constance Robbins**, Jason Yang, James F. Antaki and Jana M. Kainerstorfer. *Hand-held optical imaging for breast cancer therapy prediction*
74. **Nicholas L. Robbins**, Matthew J. Wordsworth, Michael R. Sippel, Jennifer M. Cox, Zachary T. Homas, Bijaya K. Parida, Margaux S. Salas, Vijay S. Gorantla, Warren C. Breidenbach, George E. Wolf, Col Michael R Davis and Col Erik K. Weitzel. *Prevention of Ischemia-Reperfusion Injury and Chronic Rejection in a Porcine Vascularized Composite Allotransplantation Model*
75. **Kaylene Stocking**, Alberto Vazquez and Takashi Kozai. *Intracortical neural stimulation with untethered, ultrasmall carbon fiber electrodes mediated by the photoelectric effect*
76. **Mallory R. Wampler**, Lu Liu, Michele L. Herneisey, Margaux M. Salas, Jennifer Cox-Hinshaw, Shannon Loftus, Vijay S. Gorantla, Jelena M. Janjic and Erik K. Weitzel. *Theranostic Analgesic Regenerative Gel-Emulsion Technology (T.A.R.G.E.T.) Platform for Local Analgesia and Promotion of Nerve Regeneration*
77. **Gary Yu**, Filip Istvanic, Xucai Chen, Mehdi Nouarie and John Pacella. *Ultrasound-targeted microbubble cavitation with sodium nitrite synergistically enhances nitric oxide production and microvascular perfusion*
78. **Arianna Adamo**, Giovanni Spiaggia, Garrett Coyan, William R. Wagner and Antonio D'Amore. *Bioengineered the Cordae Tendineae apparatus*
79. **Reem Azar**, Harmanvir Ghuman, Stephen Badylak and Michel Modo. *Mechanisms of extracellular matrix (ECM) hydrogel biodegradation: an in vitro assay*
80. **Ali Behrangzade**, Jr-Jiun Jean Liou, Ehab Tamimi, Catalina Ardila, David Harris, Tom Doetschman, Marie Billaud, William Wagner and Jonathan Vande Geest. *Design and Characterization of a Compliance-matched Biopolymer Tissue-Engineered Vascular Graft*
81. **Andrew Bradshaw**, Jelena Grahovac, Amanda Clark, Linda Griffith and Alan Wells. *The Therapeutically Induced Matrisome (Tim) Protects and Promotes Metastatic Disease*
82. **Bryn L Brazile**, Bin Yang, Andrew Voorhees and Ian A Sigal. *Visualizing the microvasculature of the optic nerve head and their changes during intraocular pressure increases*
83. **Michael J. Buckenmeyer**, Ziyu Xian, Srujan Dadi, Aimon Iftikhar, Alexis L. Nolfi, Meena Sukhwani, Kyle E. Orwig and Bryan N. Brown. *The Development of Ovarian Hydrogels as an Alternative Strategy for Fertility Preservation*
84. **Adam Chin**, Jingming Chen, Tyler Swenson, Juan Taboas and Alejandro Almarza. *In Vitro Differentiation of BMSCs in PGH and Gelatin Hydrogels*
85. **Madeline Cramer**, Jenna Dziki, George Hussey, Heth Turnquist and Stephen Badylak. *MBV-associated IL-33 Protects Against Chronic Heart Transplant Rejection*
86. **Anjani Ravindra**, William D'Angelo, Li Zhang, Janet Reing and Stephen Badylak. *Growth & differentiation of human bronchial epithelial cells on decellularized trachea ECM scaffold for airway replacement*

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87. **Megan DeBari**, Rachel Niu, Bin He and Rosalyn Abbott. *Controlled Silk Degradation Using Non-Invasive Ultrasound for Tissue Regeneration*
88. **Bryant Fisher**, Jennifer C. Hill, Marie Billaud, Tara D. Richards, Thomas G. Gleason and Julie A. Phillippi. *Adventitial Extracellular Matrix Hydrogel Improves Sprouting of Human Thoracic Aortic Aneurysm-Derived Pericytes*
89. **Kenneth J. Furdella**, Shinichi Higuchi, Kang Kim, William R. Wagner and Jonathan P. Vande Geest. *Compliance Manipulation of Polycaprolactone/Gelatin Tissue Engineered Vascular Grafts in a Rat Model*
90. **Martin Haschak** and Bryan Brown. *Age-related compositional and biomechanical changes in the cardiac extracellular matrix promote altered macrophage phenotype and function*
91. **Shinichi Higuchi**, Antonio D'Amore and William R. Wagner. *Creating innervated vascularized muscle flaps from elastic, cellularized biocomposites developed in situ for facial muscle reconstruction*
92. **Bistra Lordanova**, William Klunk and Alberto Vazquez. *Hypercapnia exposes deficiencies in cerebrovascular response and tissue oxygenation of transgenic AD mice*
93. **Irona Khandaker**, Moira Geary, Martha Funderburgh and James Funderburgh. *A Novel Mouse Model for Corneal Scarring*
94. **Biao Kuang**, Yuwei Liu, Rocky S. Tuan and Hang Lin. *Robust Bone Formation through the Developmental Condensation and Endochondral Ossification of human Mesenchymal Stem Cells within their Own Extracellular Matrix*
95. **Yoojin Lee**, Urszula Zdanowicz, George Hussey and Stephen F. Badylak. *Matrix-bound Nanovesicles for Treatment of Achilles Tendinopathy*
96. **Zhong Li**, Zixuan Lin, Monica R. Lopez, Benjamin O'Donnell, Xinyu Li, Ian J. Moran, Peter G. Alexander, Stuart B. Goodman, Bruce A. Bunnell, Hang Lin and Rocky S. Tuan. *Organ-on-a-chip System for the Modeling of Synovial Joint Pathologies*
97. **Zixuan Lin**, Zhong Li, He Shen, Xinyu Li, Rocky S. Tuan and Hang Lin. *iPSCs-Derived Osteochondral Tissue Chip to Model Joint Physiology and Osteoarthritis Pathology*
98. **Jr-Jiun Liou**, Catalina Ardila, Kenneth Furdella, Ali Behrangzade and Jonathan P. Vande Geest. *Cord Blood-Derived Endothelialization of Tissue-Engineered Vascular Grafts*
99. **Samuel K. Luketich**, Garrett Coyan, Lindemberg M. Silveira-Filho, Yasumoto Matsumura, Drake Pedersen, Arianna Adamo, Casey C. Tompkins-Rhoades, Salvatore Pasta, William R. Wagner and Antonio D'Amore. *Development and assessment of a novel tissue engineered mitral valve with an engineered chordal apparatus*
100. **Katherine Lorentz**, Jeffrey Krawiec, Darren Haskett, Justin Weinbaum, Morgan Fedorchak, Antonio D'Amore, William R. Wagner, Steven Little and David Vorp. *Cytokine Mimicking Microspheres for Use in Porous Scaffolds*
101. **Tyler Meder**, Travis Prest, Lucile Marchal, Chloe Kaunitz, Clint Skillen and Bryan Brown. *Combining a Peripheral Nerve Matrix Derived Hydrogel and Post-Surgical Therapy for Improving Functional Recovery Following Nerve Reconstruction"*
102. **Wai Hoe Ng**, Elizabeth Johnston, Jun Jie Tan and Xi Ren. *Simultaneous Heart and Lung Co-differentiation by Modulating WNT, Activin A and BMP4*
103. **Kevin Pietz**, Connor Wiegand and Ipsita Banerjee. *Differentiation of hPSCs into Islet-mimetic cells: Encapsulation versus Suspension Culturing*
104. **Alessandro Piroso**, Karen Clark, Hang Lin, Mateus Pinho, Yuanheng Yang, Rocky S. Tuan and Peter G. Alexander. *Development of human organotypic culture models for teratogenesis assessment on limb development*

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## 2019 McGowan Retreat Poster Abstracts, continued

105. **Sahil K Rastogi**, Jacqueline Bliley, Daniel Shiwerski, Raghav Garg, Adam Feinberg and Tzahi Cohen-Karni. *Novel Three-Dimensional Fuzzy Graphene (3DFG)-Based Ultra Microelectrodes Array for Sub-Cellular Electrical Recordings*
106. **Benjamin K. Schilling**, M. Asher Schusterman II, Deok-Yeol Kim, Alex Repko, Katarina Klett, George J. Christ and Kacey G. Marra. *Adipose-Derived Stem Cells Partially Mitigate Muscle Atrophy after Peripheral Nerve Injury in the Rodent Model*
107. **Hikaru Mamiya**, Sruthi Sivakumar, Amrita Sahu, Amin Cheikhi, Sunita Shinde, Adam Wise, Samuel Luketich, Gabriele Nasello, Philip Leduc, Bennett Van Houten, Antonio D'Amore, Aaron Barchowsky and Fabrisia Ambrosio. *Establishing the role of ECM stiffness in skeletal muscle regeneration*
108. **Ning Wang**, Yuzhao Huang, Rocky S. Tuan and Hang Lin. *Enhancing Regenerative Potential of in vitro-expanded chondrocytes by selectively removing senescent cells*
109. **Connor Wiegand**, Joseph Candiello, Prashant N. Kumta, Jay Hoying and Ipsita Banerjee. *Islet-mimetic Organoid Vascularization using Microvessel Fragments*
110. **Jacqueline Wittmer**, Andrew Hudson, Andrew Lee, TJ Hinton, Daniel Shiwerski, Josh Tashman, Sai Gopal Yerneni, Phil Campbell and Adam Feinberg. *Perfused 3D Printed Collagen Tubes Support Tissue Viability*
111. **Piyumi Wijesekara**, Daniele Evangelista-Leite, Konrad T. Rajab, Philipp T. Moser, Kentaro Kitano, Konstantinos P. Economopoulos, Daniel E. Gorman, Harald C. Ott and Xi Ren. *Metabolic Labeling and Chemoselective Functionalization of Native Biomaterials*
112. **Saigopalakrishna S. Yerneni**, Ezgi Yalcintas, Emrullah Korkmaz, Jason D. Smith, O. Burak Ozdoganlar and Phil G. Campbell. *Transdermal Delivery of Extracellular Vesicles Using Dissolvable Microneedle Arrays to Control Inflammation*
113. **Michael Sippel**, Jaclyn Yracheta, Bijaya Parida, Margaux M. Salas, Ben Antebi, Vijay S. Gorantla, Eric K. Weitzel, J. Chen, T. Swenson, Alejandro Almarza and Juan Taboas. *Novel Delivery System of TGF B-1 utilizing fabricated scaffold for Bone Regeneration of Compromised Wounds in a Swine Model (Sus scrofa)*

# VOTE

for the Poster Session  
People's Choice Award



The online voting site will be open  
from 5 p.m. to 7:30 p.m. on  
Monday, March 11, 2019.

ONE VOTE  
per each retreat participant  
Vote online  
[tinyurl.com/mirmvote](http://tinyurl.com/mirmvote)



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## **Thank you for attending this event.**

As is customary at celebrations such as this one, you will notice photographers and videographers commemorating the event. By being in attendance, you authorize the University of Pittsburgh to photograph (still photo, film, or videotape), audiotape, and/or identify you. Should you not feel comfortable with this, please instruct the photographer as your photo is being taken and she/he will respect your wishes. Please understand that the University of Pittsburgh and our partners have all legal rights for the use of the photograph(s)/audiotape(s)/interview(s) of you that may be taken here and that you give up any and all rights to these organizations and will not receive payment of compensation for use of the same. Please also understand the photograph(s)/audiotape(s)/interview(s) could be used for publicity, education, public information, or paid advertising by the University of Pittsburgh and that the photograph(s)/video(s)/interview(s) could appear on the University of Pittsburgh's website and/or elsewhere on the Internet. Your cooperation is appreciated in releasing the University of Pittsburgh, its subsidiaries, and its and their employees, agents, and representatives from any claims, liability, or results caused by the use of the said photograph(s), film, videotape, audiotape and/or interview of you from this event.





# PittMcGowan

Institute for Regenerative Medicine