



20th McGowan Institute Scientific Retreat-Program and Zoom Links March 9-11, 2021

Tuesday, March 9th, 2021 – Cell and Gene Therapy

12:00-12:45 PM

Trainee Event/Networking Sessions

Roundtable Discussion Academic Entrepreneurship

Dr. Morgan Fedorchak, Assistant Professor, Departments of Ophthalmology, Chemical Engineering, and Clinical & Translational Sciences

Dr. Kacey Marra, Professor, Departments of Plastic Surgery and Bioengineering

Achieving translational impact of biomedical research often involves significant efforts outside the laboratory. Many times, this involves the creation of a new business venture to bring a new technology from the benchtop to a clinical reality. Come discuss academic entrepreneurship with two award winning scientist-entrepreneurs who have founded companies based on their research.

<https://pitt.zoom.us/j/97858319433>

Meeting ID: 978 5831 9433

Passcode: 232532

Panel Discussion Training Grants and Trainee Success

Biomechanics in Regenerative Medicine T32:

Dr. Kris Noel Dahl, Professor, Chemical Engineering, Carnegie Mellon University

Dr. Savio Woo, Distinguished Professor, Department of Bioengineering

Diann DeCenzo, Grant Administrator, Department of Bioengineering

Cellular Approaches to Tissue Engineering and Regeneration T32:

Dr Andy Duncan, Associate Professor, Departments of Pathology and Bioengineering

Dr. Samira Kiani, Associate Professor, Department of Pathology

Dr. Paul Monga, Professor, Departments of Pathology and Medicine

Dr. William Wagner, Distinguished Professor, Departments of Surgery, Bioengineering and Chemical Engineering; Director, McGowan Institute for Regenerative Medicine

Cardiovascular Bioengineering Training Program T32:

Dr. Sanjeev Shroff, Distinguished Professor, Department of Bioengineering; Professor, Department of Medicine; Chair, Department of Bioengineering

Clinical and Translational Science Fellowship TL1:

Dr. Cecelia Yates, Associate Professor, Departments of Health Promotion & Development, Pathology, and Bioengineering

Bioengineering in Psychiatry T32:

Dr. Howard Aizenstein, Professor, Departments of Geriatric Psychiatry, Bioengineering
Dr. Tamir Ibrahim, Professor, Department of Bioengineering

Training grants present a unique opportunity for trainees to develop research skills, receive interdisciplinary mentoring, and participate in unique educational programs. This panel will introduce multiple interdisciplinary and translational training grants available to graduate students in the School of Engineering and the Schools of Health Sciences at the University of Pittsburgh. The program directors will introduce the training grants, the unique opportunities presented, and their views on student career development.

<https://pitt.zoom.us/j/93879059612>

Meeting ID: 938 7905 9612

Passcode: 124756

Introduction to Grant Writing – the Basic Dos and Don'ts of Proposal Preparation

Dr. Julie Myers-Irvin, Grants Developer, Swanson School of Engineering

This talk is designed to introduce trainees to the basics of grant writing, provide tips for appropriate writing and presentation, and discuss some of the most common pitfalls to avoid.

<https://pitt.zoom.us/j/93238319733>

Meeting ID: 932 3831 9733

Passcode: 598465

1:00-1:45 PM

State of the Institute/Retreat Kickoff

William Wagner, PhD

Professor, Surgery, Bioengineering, and Chemical Engineering, University of Pittsburgh
Director, McGowan Institute for Regenerative Medicine

<https://pitt.zoom.us/j/95007873463>

Meeting ID: 950 0787 3463

Passcode: 550126

2:00-2:45 PM

Keynote Speaker

David Brindley, PhD

Managing Partner, Biolacuna

Chief Operating Officer, Rational Vaccines, Inc.

Principal, Thiel Capital LLC

Senior Research Fellow, Healthcare Translation, University of Oxford

“A Decade of Regenerative Medicine: Never Look Backwards or You’ll Fall Down the Stairs”

<https://pitt.zoom.us/j/98851527570>

Meeting ID: 988 5152 7570

Passcode: 195140

Faculty Speakers

3:00-3:20 PM

Samira Kiani, MD

Associate Professor, Liver Research Center, Department of Pathology, School of Medicine, University of Pittsburgh

“CRISPR-Based Epigenetic Therapies to Control Host Immunity”

3:20-3:40 PM

Elizabeth Wayne, PhD

TED Fellow

Assistant Professor, Chemical Engineering and Biomedical Engineering, Carnegie Mellon University

“Using Macrophages for Gene and Drug Delivery”

3:40-4:00 PM

Michael Hufford, PhD

Co-Founder and Chief Executive Officer of LyGenesis, Inc.

“LyGenesis: Crossing the Chasm between Academic Discovery and Clinical Stage Biotech Company”

<https://pitt.zoom.us/j/96477280644>

Meeting ID: 964 7728 0644

Passcode: 744344

Poster Session

4:15-5:15 PM

Trainee Posters Presentations

<https://pitt.zoom.us/j/99350476551>

Meeting ID: 993 5047 6551 • Passcode: 375075

Cellular and Gene Therapy	
<p>1. Dasia Aldarondo and Elizabeth Wayne. <i>Investigating the effects of nanoparticle phagocytosis on monocyte activation in diabetic hypertension</i></p> <p>2. Abigail Allen*, David Gau*, Paul Francoeur, Jordan Sturm, Yue Wang, Ryan Martin, Jodi Maranchie, Anette Duensing, Adam Kaczorowski Stefan Duensing, Lily Wu Michael T. Lotze, David Koes, Walter J. Storkus, and Partha Roy. <i>ActinBinding Protein Profilin1 Promotes Aggressiveness of Clear-Cell Renal Cell Carcinoma Cells</i></p> <p>3. Amin Cheikhi, Bing Han, Maria Giovanna Francipane, and Eric Lagasse. <i>In vivo Transcriptional Reprogramming of Hepatic Metabolism through Lymphatic-based Ectopic Liver Organoids</i></p> <p>4. Hannah Fox and Dr. Elizabeth Wayne. <i>Developing methods to assess the exosome cross-talk between maternal and fetal cells in normal pregnancy and preeclampsia</i></p>	<p>5. Meghan Mooring, K Yao, S Liu, Y Liu, and D Yimlamai. <i>Cyr61 coordinates liver fibrosis through monocyte and macrophage recruitment and polarization</i></p> <p>6. Kien Tran, Wenbo Li, Tianjiao Chu, Kwon Sung Cho, and Kyle E. Orwig. <i>A Novel Organotypic Culture System Supported Germ Cell Development of Immature Rhesus macaque Testicular Tissues</i></p> <p>7. Yingqiao Wang, Raghav Garg, Jane E. Hartung, Adam Z. Goad, Dipna Patel, Kyoungin Kang, Flavia Vitale, Michael S. Gold, Yury Gogotsi, and Tzahi Cohen-Karni. <i>Remote Nongenetic Optical Modulation of Cellular Electrical Activity Using Two-dimensional Ti3C2 MXene</i></p> <p>8. Shiyuan Zheng, Kirill Lavrenyuk, Katherine Fein, Nicholas Lamson, Katheryn Whitehead, and Kris N. Dahl. <i>Multiscale Structural Characterization of Epithelial Cell Monolayers Associated with the Addition of Permeability Enhancers for Enhancing Drug Delivery</i></p>

View the abstracts [here](#).

Wednesday, March 10th, 2021 – Tissue Engineering and Biomaterials

12:00-12:45 PM

Trainee Event/Networking

Roundtable Discussion Persevering Through A Pandemic

Dr. Seth Young, Psychological Services Clinician, University of Pittsburgh Wellness Center

This round table discussion will explore the impacts of the current pandemic, political climate, race relations, and other challenges, on student productivity and mental health. In particular, we will discuss are some of the new issues that arising given this unique situation and what resources exist for students to help handle these issues and resolve conflicts. Dr. Seth Young, PhD, Psychological Services Clinician, University of Pittsburgh Wellness Center will guide the discussion.

<https://pitt.zoom.us/j/97858319433>

Meeting ID: 978 5831 9433

Passcode: 232532

1:00-2:00 PM

Space Station Lecture/Panel – Life Science Research in Microgravity

Moderator: Marc Giulianotti, PhD, Program Director, International Space Station Laboratory

Marc Giulianotti, PhD

Program Director, International Space Station Laboratory

“ISSNL’s Vision for Accelerating Life Science Research in Microgravity”

Arun Sharma, PhD

Senior Research Fellow

Cedar-Sinai Medical Center

“The Use of Human Induced Pluripotent Stem Cells for Enabling Therapeutic Applications”

Nicole Wagner, PhD, CEO

LAMDA Vision

“Protein Based Artificial Retina for Restoring Vision”

Anjali Gupta, PhD MBA

Business Development Life Science Lead In-Space Research & Manufacturing

Axiom Space, Inc.

“Humanity’s Next Chapter: Axiom Station as a Platform for Discovery & Innovation”

Q&A

<https://pitt.zoom.us/j/93711542340>

Meeting ID: 937 1154 2340

Passcode: 856584

Keynote Speaker

2:15-3:00 PM

Cherie Stabler, PhD

Associate Professor, Department of Biomedical Engineering, University of Florida

Chair-Elect TERMIS

“Engineering Bioactive Materials for Enhancing Cell-Based Treatments for Type 1 Diabetes”

<https://pitt.zoom.us/j/97261237286>

Meeting ID: 972 6123 7286

Passcode: 621129

Faculty Speakers

3:15-3:35 PM

Julie Phillippi, PhD

Associate Professor, Cardiothoracic Surgery and Bioengineering

Director, Postdoctoral Research, Cardiothoracic Surgery, University of Pittsburgh

“The Case of the Curious Pericyte: Adventitial ECM Hydrogels Influence Pericyte Behaviors via Integrin and Growth Factor Dependent-Mechanisms”

3:35-3:55 PM

Katrina Knight, PhD

Magee Womens Research Institute Postdoctoral Fellow, Department of Obstetrics Gynecology and Reproductive Sciences, University of Pittsburgh

“Pore Collapse and Mesh Wrinkling: A Pathway to Mesh Complications In Vivo”

3:55-4:15 PM

Adam Feinberg, PhD

Professor, Department of Biomedical Engineering and Department of Materials Science and Engineering, Carnegie Mellon University

“FRESH 3D Bioprinting Complex Tissues and the Path Towards Commercialization”

<https://pitt.zoom.us/j/95917086104>

Meeting ID: 959 1708 6104

Passcode: 424963

Poster Session

4:30-5:30PM

Trainee Poster Presentations

Tissue Engineering and Biomaterials (parallel sessions)

Session A https://pitt.zoom.us/j/92396990300 Meeting ID: 923 9699 0300 Passcode: 891966	Session B https://pitt.zoom.us/j/91710243288 Meeting ID: 917 1024 3288 Passcode: 757872
9. Arianna Adamo, Joseph G. Bartolacci, Marco Traina, William R. Wagner, Stephen F. Badylak, and Antonio D'Amore. <i>A Continuous Microfiber Wire Mandrel-Less Biofabrication For Soft Tissue Engineering Applications</i>	17. Ravikumar K, Kevin Pietz, Connor Wiegand, Anne Zeleniak, Wen Liu, Catherine McCormick, Haonan Guan, Yong Fan, and Ipsita Banerjee. <i>Investigating the scaffold architecture of thymus to inform its synthetic reconstruction</i>
10. Madeline Cramer, William D'Angelo, and Stephen F. Badylak. <i>Matrix Bound Nanovesicles Represent a Distinct Subset of Extracellular Vesicle</i>	18. Miranda Poklar, Ravi Krishnamurthy, Prashant N. Kumta, and Ipsita Banerjee. <i>Increasing bioink printability for future tissue fabrication</i>
11. Kenneth J. Furdella, Shinichi Higuchi, Kang Kim, Tom Doetschman, William R. Wagner, and Jonathan P. Vande Geest. <i>Transforming Growth Factor Beta 2 Elution From A Tissue Engineered Vascular Graft Influences In Vivo Smooth Muscle Cell Activity Over An Acute Time Point</i>	19. Abhijit Roy, Mubin Ali Aral, Matthew Criado, John Ohodnicki, Vijay Gorantla, MaCalus V. Hogan, and Prashant N. Kumta. <i>Novel Biodegradable Porous Mg Alloy Scaffolds for Critical Sized Cranial Bone Defect Repair and Regeneration</i>
12. Raghav Garg, Reem B. Rashid, Daniel San Roman, Yingqiao Wang, Samuel A. Gershanok, Maria Stang, Stephen F. Badylak, Adam W.	20. Marris Therriault, Aimon Iftikhar, Branimir Popovic, Clint D. Skillen, McKenzie Sicke, Meegan Ambrose, Pamela A. Moalli, and Bryan N. Brown.

<p>Feinberg, Douglas J. Weber, Jonathan Rivnay, and Tzahi Cohen-Karni. <i>Multi-Dimensional Fuzzy Graphene Bioelectronic Actuators</i></p> <p>13. Andrew Hudson, Daniel Shiwarski, Joshua Tashman, and Adam Feinberg. <i>Engineering In Vitro Vascularized Tissues Using FRESH 3D Bioprinted Collagen Scaffolds</i></p> <p>14. Dorota Jazwinska and Ioannis Zervantonakis. <i>Tumor-Mesothelial Assay to Study Ovarian Cancer Clearance Dynamics</i></p> <p>15. Elizabeth K. Johnston, Megan K. DeBari, Mallory D. Griffin, and Rosalyn D. Abbott. <i>Characterization of Biological and Mechanical Properties of Fibrotic Adipose Tissue to Inform Better Regenerative Outcomes</i></p> <p>16. Tyler Meder, Travis Prest, Clint Skillen, Lucile Marchal, Valeria Tupac Yupanqui, Lorenzo Soletti, Paul Gardner, Jonathan Cheetham, and Bryan Brown. <i>Nerve specific extracellular matrix hydrogel promotes functional regeneration following nerve crush and gap injury</i></p>	<p><i>Evaluating Immunomodulatory Biomaterials in a Rabbit Model of Lumbar Colpoplexy</i></p> <p>21. Weitao Wang, Rebecca Taylor, and Charlie Xi. <i>Building a DNA Nano-shell with DNA origami tubes</i></p> <p>22. Connor Wiegand, Ravi Krishnamurthy, Kevin Pietz, Xiang Li, Lans Taylor, and Ipsita Banerjee. <i>Developing Islet-on-Chip Model towards T2D disease Modeling</i></p> <p>23. Piyumi Wijesekara, Ying Liu, Weitao Wang, Elizabeth K. Johnston, Rebecca E. Taylor, and Xi Ren. <i>Accessing and Assessing the Cell-Surface Glycocalyx Using DNA Origami</i></p> <p>24. Kelsey Hall, Arthi Shridhar, Alvin Liu, and Stephen Badylak. <i>Effects of Anti-Bacterial Coated Extracellular Matrix Bioscaffolds on Immunomodulation and Mobilization of Progenitor Cells for Volumetric Muscle Loss Treatment</i></p>
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View the abstracts [here](#).

Thursday, March 11th, 2021 – Medical Devices and Computational Modeling

12:00-12:45 PM

Trainee Event/Networking

Workshop – Communicating with Your Mentor: How to Articulate What You Need

Dr. April Dukes, Faculty and Future Faculty Program Director, Engineering Education Resource Center, Swanson School of Engineering

The development of a mutually beneficial relationship between mentors and mentees relies on effective two-way communication. Mentors rely on their mentees to speak up when there is a problem or if they need help. Mentees are often intimidated by the mentor-mentee power dynamic imbalance to speak openly to their mentors, especially at the start of the relationship. In this roundtable discussion, we will share strategies on how to overcome communication obstacles to successfully communicate and clearly share your expectations and needs with your mentor.

<https://pitt.zoom.us/j/97858319433>

Meeting ID: 978 5831 9433

Passcode: 232532

Health Science Communications: Communicating Medical Research to the Media and Public

Dr. Ana Gorelova, Science Writer and Media Relations Manager, UPMC

What is media and what can scientists do to better communicate their research to a wide audience? In this open discussion we will talk about strategies that you can use to get non-scientists – journalists and public alike – excited about your work. You can find examples of her work at UPMC [here](#), [here](#), and [here](#).

<https://pitt.zoom.us/j/92040598798>

Meeting ID: 920 4059 8798

Passcode: 407813

Poster Session

1:00-2:00 PM

<https://pitt.zoom.us/j/93386020742>

Meeting ID: 933 8602 0742 Passcode: 616774

Medical Devices and Computational Modeling	
25. Sommer Anjum and Lance Davidson. <i>Understanding the mechanics of passive cellular responses during epithelial convergent extension</i>	29. Constance M. Robbins, Kuanren Qian, Yongjie Jessica Zhang, and Jana M. Kainerstorfer. <i>Combined mechanical and optical simulation of the effect of compression on breast-tumor mimicking software phantoms</i>
26. Shaniel Bowen and Steven Abramowitch. <i>Characterization of Pelvic Floor Muscle Fiber Architecture for Computational Modeling</i>	30. Daniel San Roman, Yingqiao Wang, Raghav Garg, Marissa Behun, Bryan Brown, Stephen Badylak, and Tzahi Cohen-Karni. <i>ThreeDimensional Graphene Microelectrode Arrays for Detection of Wound Healing Biomarkers</i>
27. Ronald Fortunato, Juan Cebal, Anne Robertson, and Spandan Maiti. <i>Using In-Vivo Morphological Measurements of Cerebral Aneurysm Blebs to Predict Aneurysm Rupture Risk</i>	
28. Matthew D. Poskus, Thomas O. McDonald, Alexis L. Scott, Lia Franco, and Ioannis K. Zervantonakis. <i>A Predictive Model of Stromal Fibroblast-Mediated Drug Resistance in HER2+ Breast Cancer</i>	

View the abstracts [here](#).

Faculty Speakers

2:00-2:20 PM

Ruben Zamora, PhD

Research Professor, Department of Surgery, University of Pittsburgh

“Dynamics of Systemic Inflammation as a Function of Developmental Stage in Pediatric Acute Liver Failure (PALF)”

2:20-2:40 PM

Ryan Orizondo, PhD

Assistant Professor, Department of Bioengineering, University of Pittsburgh
“Design and Hemocompatibility Optimization of a Long-Term Artificial Lung”

2:40-3:00 PM

Jeremy Kimmel, PhD

Vice President, New Technology, ALung

“ALung Technologies – Challenges and Opportunities for Medical Device Commercialization”

<https://pitt.zoom.us/j/91492691444>

Meeting ID: 914 9269 1444

Passcode: 536293

3:00-4:30 PM

Companion Session: FDA Pediatric Device Consortium Innovation Forum

“Biomaterial Challenges in Pediatric Prosthetic Heart Valve Development”

You **must complete a separate** registration to attend the Pediatric Device Innovators Forum. Please follow this link <http://www.pdiforum.org> to learn more about the forum and register.

3:00-4:30 PM

Panelist	Topic
Jonathan Chen, MD (Chief, Cardiothoracic Surgery, CHOP)	Pediatric heart valve prostheses— Addressing unmet needs
William Wagner, PhD (Director, McGowan Institute, University of Pittsburgh)	New synthetic biomaterials for pediatric heart valves
Narendra Vyavahare, PhD, (Professor, Dept. of Bioengineering, Clemson University)	Preclinical development of a novel heart valve prosthesis for pediatrics
Martijn Cox, PhD (Chief Technology Officer, Xeltis)	Pediatric prosthetic heart valve trials in the US
Scott McNamee, PhD (Special Assistant, Material Engineering, FDA)	Materials regulation for pediatric heart valves

Keynote Speaker

4:45-5:30 PM

Gary An, MD, FACS

Professor, Larner College of Medicine, University of Vermont

“Managing Biological Heterogeneity: Integrating Mechanistic Simulation and Machine Learning for Therapeutic Control Discovery”

<https://pitt.zoom.us/j/96909875714>

Meeting ID: 969 0987 5714

Passcode: 106087