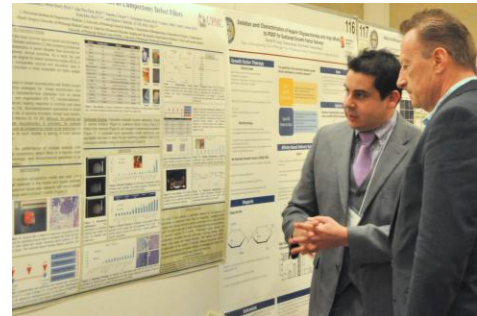




McGowan Institute for Regenerative Medicine: 2015 Annual Scientific Retreat

The McGowan Institute for Regenerative Medicine held its 2015 Scientific Retreat March 8-10, 2015. The focus was on peer-to-peer networking, and the retreat provided many opportunities to explore collaborative endeavors with other researchers, participating guests, and external partners who are working to bring regenerative medicine technologies to clinical use.



The participation and contributions of the guests and external collaborators - along with McGowan Institute for Regenerative Medicine affiliated faculty and trainees - provided for insightful discussions and identification of opportunities for partnerships. This year's program was chaired by [Fabrisia Ambrosio, PhD, MPT](#), Assistant Professor in the Department of Physical Medicine and Rehabilitation at the University of Pittsburgh.

Program Highlights

The retreat program included special presentations by the following guests:

- McGowan Institute Distinguished Lecture, "*Tissue Engineering: Into the Era of Personalized Medicine*," Gordana Vunjak-Novakovic, PhD, Makati Foundation Professor, Departments of Biomedical Engineering and Medical Sciences, Columbia University
- Plenary Session, "*The Road to Technology Implementation Including FDA Experiences—Introduction of the Medical Product Development Lifecycle, The Pathway from Innovation to Application*," Patsy Trisler, JD, RAC, Principal Consultant—Medical Devices, Trisler Consulting LLC
- Highlights of emerging clinical therapies introduced by Lawrence Wechsler, MD; [Christian Bermudez, MD](#), and [William Federspiel, PhD](#); and [Vijay Gorantla, MD, PhD](#).

The Retreat program also included a great cross-section of scientific presentations given by invited researchers from other institutions and agencies who are not formally affiliated with the Institute (in alphabetical order):



- Warren Breidenbach III, MD, MSc, Chief, Division of Reconstructive and Plastic Surgery, Professor, Department of Surgery, University of Arizona: “Challenges and Opportunities in Limb Transplantation”
- Jeff Bulte, PhD, Director of Cellular Imaging, Institute for Cell Engineering, Professor, Departments of Radiology, Biomedical Engineering, and Chemical and Biomolecular Engineering, Johns Hopkins University: “MR Imaging in Regenerative Medicine”
- Rodney Chan, MD, Chief of Plastic and Reconstructive Surgery, Clinical Division/Burn Center, United States Army Institute of Surgical Research, San Antonio Military Medical Center: “Gaps in Craniofacial Soft Tissue Reconstruction”
- Kirk P. Conrad, MD, Professor, Department of Physiology and Functional Genomics, University of Florida: “The Cardiovascular Hormone, Relaxin: A Long Journey from Pregnancy to Potential Therapeutics”
- Morgan Fedorchak, PhD, Research Assistant Professor, Departments of Chemical Engineering and Ophthalmology, University of Pittsburgh: “Preclinical Testing of a Novel Controlled Release Formulation for Glaucoma”
- Jonathan Forsberg, MD, Commander, Medical Corps, US Navy Associate Professor, Department of Surgery, Uniformed Services University: “The Defense Health Program Surgical Critical Care Initiative (SC2i): Decision Making in Complex Trauma”
- Joshua Hazelton, DO, Attending Surgeon, Cooper University Hospital: “Managing the Severely Injured - Lessons from a Busy Level 1 Trauma Center”
- Daniel J. Kass, MD, Assistant Professor, Department of Medicine, Division of Pulmonary, Allergy and Critical Care Medicine, University of Pittsburgh: “Relaxin’ with Idiopathic Pulmonary Fibrosis”
- Jeremy Kimmel, PhD, ALung Technologies: “Hemolung”
- Robert Kroslowicz, President and CEO, Berlin Heart Inc.: “Unique Challenges of Pediatric Device Development”
- Faina Linkov, PhD, MPH, Associate Professor, Department of Obstetrics, Gynecology and Reproductive Sciences, University of Pittsburgh: “New Directions in the Use of Adipose-Derived Stem Cells for Cancer Detection and Prevention”
- Ricardo Londono, Badylak Lab, Department of Pathology, University of Pittsburgh: “Pediatric Esophageal Reconstruction”
- Mioara D. Manole, MD, Assistant Professor of Pediatrics, University of Pittsburgh, Safar Center for Resuscitation Research: “Assessment of Cerebral Blood Flow and Cerebral Microcirculation after Experimental Pediatric Cardiac Arrest”
- Matthew Murphy, PhD, OTERO Postdoctoral Fellow, Fox Center for Vision Restoration: “Relationship Between Visual Functional Connectivity and Duration of Blindness Depends on Onset of Visual Deprivation”
- Brian Pfister, PhD, MBA, Strategic Portfolio Manager for Regenerative Medicine Clinical and Rehabilitative Medicine Research Program (CRM RP), US Army Medical



Research and Materiel Command (USAMRMC): “Military Programmatic Gaps and Research Priorities in Regenerative Medicine and Trauma/Critical Care” and “DOD Priorities and Opportunities for Regenerative and Rehabilitative Technologies”

- Paul Robbins, PhD, Professor, Department of Metabolism and Aging, The Scripps Research Institute: “Development of Clinically Relevant Approaches to Extend Health Span”
- Giuliano Scarcelli, PhD, Assistant Professor, Department of Dermatology, Massachusetts General Hospital, Harvard Medical School: “Brillouin Microscopy for Imaging Tissue Mechanical Properties”
- Sruti Shiva, PhD, Associate Professor, Department of Pharmacology and Chemical Biology, University of Pittsburgh: “Looking for Bioenergetics in All the Wee Places”
- John Sinden, PhD, Chief Scientific Officer, ReNeuron, Inc.: “Taking the CTX Human Neural Stem Cell Product to Clinical Trials in Disabled Stroke Patients”
- Mario Solari, MD, Assistant Professor, Department of Plastic Surgery, University of Pittsburgh: “Regenerative Medicine and Tissue Engineering in Reconstructive Surgery-Indications and Applications”
- Fatima Syed-Picard, PhD, Postdoctoral Associate, Department of Ophthalmology, University of Pittsburgh: “Scaffold-Free Engineering of Corneal Stromal Lamellar Tissue”
- Daolin Tang, MD, PhD, Assistant Professor, Department of Surgery, University of Pittsburgh: “Dying Dangerously – Apoptosis, Necroptosis, Ferroptosis, and Necrosis”
- Lans Taylor, PhD, Allegheny Foundation Professor of Computational and Systems Biology, Director of the University of Pittsburgh Drug Discovery Institute, University of Pittsburgh: “Human Microphysiology Platform for Liver Efficacy and Safety Testing and Linkage to Other Organ Systems”
- Kia Washington, MD, Assistant Professor, Department of Plastic Surgery, University of Pittsburgh: “Progress Toward a Whole Eye Transplant”
- Lawrence Wechsler, MD, Henry B. Higman Professor of Neurology/Neurosurgery and Chair, Department of Neurology; Vice President, Telemedicine, Physician Services Division, University of Pittsburgh: “Stem cell based stroke therapy”
- Linn Zhang, Department of Bioengineering, University of Pittsburgh: “Pediatric Paracorporeal Assist Lung (P-PAL)”

Poster Session

The poster session was effective in introducing the focus of the Retreat and interests of the trainees, faculty and the guests. [Andrew Duncan, PhD](#), Assistant Professor in the Department of Pathology, Division of Experimental Pathology, University of Pittsburgh, and his committee organized the session and judged the posters. The winners of the poster session were:



Category: Cellular Therapy

Winner: Rebecca Ball
Mentor: [Kathryn Whitehead, PhD](#)
Title: Lipidoid siRNA Nanoparticles for Intestinal Disease Therapeutics Department of Chemical Engineering (Carnegie Mellon)



Runner-up: Elizabeth Stahl
Mentor: [Johnny Huard, PhD](#)
Title: Controlled Delivery of Hepatocyte Growth Factor by Heparin-based Coacervate Reduces Necrosis and Fibrosis in Dystrophic Muscle Department of Orthopaedic Surgery (Pitt)

Category: Computation and Modeling

Winner: Shibin Mathew
Mentor: [Ipsita Banerjee, PhD](#)
Title: Mechanistic insights into early endoderm differentiation of human embryonic stem cells using systems level analysis of signaling interactions Department of Chemical and Petroleum Engineering (Pitt)

Runner-up: Kory Blose
Mentor: [David Vorp, PhD](#)
Title: Elastin Production Slows Aneurysm Enlargement in a Constrained Mixture Model of Aneurysm Growth and Remodeling (Department of Bioengineering, Pitt)

Category: Medical Devices

Winner: Megan Jamiolkowski
Mentor: [William Wagner, PhD](#)
Title: The effect of crevice size on thrombus formation on Ti6Al4V (Department of Bioengineering, Pitt)

Runner-up: Kathryn Farraro
Mentor: [Savio Woo, PhD, DSc, DEng](#)
Title: A Novel Magnesium Ring for Regeneration of an Injured Anterior Cruciate Ligament -- In Vitro and In Vivo Studies in Goats (Department of Bioengineering, Pitt)



Category: Tissue Engineering

Winner: Denver Faulk

Mentor: [Stephen Badylak, DVM, PhD, MD](#)

Title: Engineering Functional Hepatic Tissue Using Biologic Scaffolds Composed of Liver Extracellular Matrix (Department of Bioengineering, Pitt)

Runner-up: Mark Langhans

Mentor: [Rocky Tuan, PhD](#)

Title: Wdpcp suppresses hedgehog signaling to facilitate cartilage condensation in the limb bud (Center for Cellular and Molecular Engineering, Department of Orthopaedic Surgery, Pitt)

Runner-up: Aneesh Ramaswamy

Mentor: [David Vorp, PhD](#)

Title: Smooth Muscle Cell Elastin Generation Stimulated by Adipose-Derived Mesenchymal Stem Cells (Department of Bioengineering, Pitt)

CATER Poster Session Winners:

Winner (first place): Ricardo Londono

Mentor: [Stephen Badylak, DVM, PhD, MD](#)

Title: Evaluation of Biomaterials as Lumpectomy Fillers (McGowan Institute, Pitt)



Runner-up 1 (second place): Mehwish Khaliq

Mentor: [Donghun Shin, PhD](#)

Title: Id2a regulates hepatic outgrowth during liver development and biliary epithelial cell number in biliary driven liver regeneration in zebrafish (Department of Cell Biology, Pitt)

Runner-up 2 (third place): Megan Jamiolkowski

Mentor: [William Wagner, PhD](#)

Title: The effect of crevice size on thrombus formation on Ti6Al4V (Department of Bioengineering, Pitt)

Runner-up 3 (fourth place): Samuel LoPresti

Mentor: [Bryan Brown, PhD](#)

Title: Effects of Age-Related Changes in Biochemical Properties Upon Host Response to ECM (Department of Bioengineering, Pitt)



Winners of the door prizes were [Charles Sfeir, DDS, PhD](#), Sayuri Yoshizawa, DDS, PhD, DMD, and Ilea Swinehart. Prizes were courtesy of Nemacolin Woodlands.

A special thank you is extended to all who made this year's Retreat a success!

See the full Retreat Program [here](#).

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