Sunday, March 6

2:00- Retreat Registration

**Hotel Check-In**  
Marquis Foyer

**(Room availability guaranteed at 4 PM;**  
Bell Captain will hold luggage if room is not ready)

All who have rooms in the Lodge or the Chateau: Check-in @ the Lodge (faculty and guests)  
All who have rooms in the Town Houses: Check-in @ Falling Rock (trainees)

**Short Courses**

3:00-5:00  
**Supporting Science Reproducibility and Rigor with Research:**  
Grand Ball Room  
**Quality Assurance for Academic Environments**

Session Chair: Shawn Bengtson, RQAP-GLP  
Quality Systems and Program Manager  
McGowan Center for Preclinical Studies

“*Welcome and Introduction*” (3:00-3:10 pm)  
Shawn Bengtson, RQAP-GLP

“*Training the Next Generation of Scientists to Use Principles of Research Quality Assurance (QA) to Improve Data Reliability and Reproducibility*” (3:10-3:40 pm)  
Rebecca Davies, PhD  
Associate Professor - Comparative Endocrinology  
Director, Quality Central  
College of Veterinary Medicine  
University of Minnesota

"*Introducing the Concept of GRP to Academic Labs; Lessons Learned*" (3:40-4:10 pm)  
Michael W. Jamieson, DRSc  
Associate Director  
International Center for Regulatory Sciences  
Assistant Professor, Clinical Pharmacy, School of Pharmacy  
University of Southern California
“Enhancing Quality in Translational Science: Normalizing a Culture of Quality for Academic Research” (4:10-4:40 pm)
Joan Adamo, PhD
Associate Director, Regulatory Support Services
Clinical & Translational Science Institute
University of Rochester Medical Center

Panel Discussion (4:40-5:00 pm)

3:00-4:00

The Innovation Institute – We are Here to Help You….Commercialize

Presenter: Evan Facher, PhD, MBA
Director, Enterprise Development
University of Pittsburgh, Innovation Institute

DESCRIPTION: The University of Pittsburgh’s innovation commercialization activities have evolved dramatically since Pitt established its technology transfer office in 1996. That year, the University received 46 invention disclosures, received patents on 10 inventions and executed six licenses for its technologies, including licenses to two startup companies that were formed around Pitt technologies. With a steadily increasing focus on these activities, 2015 saw 307 invention disclosures, 66 patents issued, 116 licenses executed and the formation of 11 startup companies based on Pitt innovations. The Innovation Institute, formed on campus in November 2013, serves as a catalyst for the commercialization of University innovations. With a large collection of individuals, programs and classes focused on moving ideas to the market, the Innovation Institute is here to help faculty, staff and students translate their discoveries into products on the market that deliver their intended societal benefit.

3:00-5:00

CATER Session
Closed session for CATER trainees and guests (by invitation only)

Session Chair: Satdarshan Singh Monga, MD
Endowed Research Chair in Experimental Pathology
Vice-Chair of the Division of Experimental Pathology
Professor of Pathology and a Professor of Medicine
University of Pittsburgh School of Medicine
3:00-5:00  **R-34: Dental, Oral and Craniofacial Tissue Regeneration**  
**Nemacolin 1-6**  
**Consortium Resource Center Planning Session**  
Internal planning session for the participants of the R-34; participation is by invitation

Session Chair: Charles Sfeir, DDS, PhD  
Associate Dean of Research-Dental Medicine  
Associate Professor, Clinical and Translational Science Institute  
School of Dental Medicine, School of Engineering; and  
Founding Director, Center for Craniofacial Regeneration

3:30-5:00  **“Pediatric Device Development – ‘Making the Connection’”**  
**Sequoia Room**

Session Chair: George Gittes, MD  
Benjamin R. Fisher Chair of Pediatric Surgery and Surgeon-in-Chief  
Director, Pediatric Surgical Research  
Professor, Department of Surgery  
University of Pittsburgh School of Medicine

McGowan’s activity in the pediatric device development space continues to evolve and advance rapidly. The partnership with the Children’s Hospital of Pittsburgh is rich with new opportunities, new innovations and new commitments towards creating cross sectorial approaches to delivering therapies for unmet clinical needs. This session is designed to “make the connection” between clinicians and faculty at Children’s Hospital and the McGowan Institute. It will provide a unique opportunity to interact, exchange ideas and create collaborations.

Session outline:

3:30 – 4:00 pm – Meet and Greet (beverages and light hors d’oeuvres)  
4:00 – 4:15 pm – Initiative Update  
4:15 – 5:00 pm - “Challenge Pitches”

- Luis De la Torre, MD  
  “Electro-identifier of perineal muscles: A critical and genuine necessity of a new device for the surgical treatment of patients with imperforate anus”

- Cuneyt Alper, MD  
  “Development of a Testing/Treatment device for Eustachian Tube Dysfunction”

- Paul Szabolcs, MD  
  “Impact of Hematopoietic Stem Cell Dose in Blood and Marrow Transplantation: Challenges and Opportunities”

- Jay Kolls, MD  
  “IL-22 and Acute Lung Injury”

- Ken Nischal, MD  
  “Adapting Intra-ocular implant technology for the Infant”
Patrick Bosch, MD  
“Congenital dislocated hip tether”

Steven Docimo, MD  
- “Missing the Point: Preventing Sharps Injuries From Needle-Tipped Electrocautery Devices”  
- “(Don’t) Feel the Burn! A Passive Light Cord Safety System”

Stefan Scholz MD, PhD  
- “Dynamic pressure-guided bracing for chest wall deformities”  
- “Facilitating mucous fistula refeeding for neonates”

Stephanie Greene, MD  
“Prenatal Treatment of Isolated Aqueductal Stenosis”

4:00-5:00  
“Strategies for Winning Department of Defense (DoD) Funding”  
Joseph’s

Presenters:  
Ronald Poropatich, MD  
Executive Director--Center for Military Medicine Research,  
Professor of Medicine--Division of Pulmonary, Allergy, and Critical Care Medicine, University of Pittsburgh

Ann Gleeson, MS  
Managing Director, Center for Military Medicine Research, University of Pittsburgh

DESCRIPTION: The DoD is an important funding source for military medical R&D and the University of Pittsburgh’s Center for Military Medicine Research is committed to helping investigators successfully compete for funds. This session will highlight important DoD agencies and processes that will be beneficial for all investigators to consider before submitting research proposals.

Of special note, the Center for Military Medicine Research (CMMR) has facilitated the University of Pittsburgh as the sole academic partner for one of the consortia (“Engility”) selected for a DoD Medical Product Research Development Award (MPRD). The MPRD will be a principal contract vehicle for the U.S. Army to seek specific capabilities and competencies relating to medical product areas such as combat casualty care, brain health, vision restoration, infectious disease, vaccine development, clinical trials and other medical product development efforts required to address gaps in the full spectrum of medical support for warfighter missions - pre-hospital care, combat support hospital and in-route care. In addition to the MPRD program, additional programs will be presented including the Medical Technology Enterprise Consortium (MTEC) and the Medical Countermeasure Systems Consortium (MCSC).
5:00-7:00  **Poster Session and Reception**        Marquis Ballroom

Poster Session Chair:
Andrew Duncan, PhD
Assistant Professor
Department of Pathology and Department of Bioengineering
University of Pittsburgh

**Reception:** Carving stations, themed stations, dessert/coffee bar,
cash bar (non-alcoholic beverages are complimentary)

7:15  **Opening Keynote Session**  Marquis Ballroom

Moderator: William Wagner, PhD
Director-McGowan Institute for Regenerative Medicine
Professor of Surgery, Bioengineering and Chemical Engineering
University of Pittsburgh

“Welcome and Opening Remarks”
William Wagner, PhD

7:30-8:30  “Tribute to Artificial Heart Program”

Moderator: William Wagner, PhD

**Contributors:**
- Harvey Borovetz, PhD
- Robert Kormos, MD
- Richard Schaub, PhD
- Peter Wearden, MD, PhD
- Steve Winowich

**Program:**
- Highlights of the clinical program/technical issues presented, and the solutions that were devised
- Highlighting the reach of the program in terms of lives, careers and the national/international impact.
- Highlights of key clinical milestones
- Video: Feedback from patients
Monday, March 7

7:00-8:00  Breakfast  Marquis Ballroom

8:00-11:30  Concurrent Sessions

Session 1: Personalized Medicine  Lecture Hall

Session Chair: Yoram Vodovotz, PhD
Professor, Departments of Surgery; Computational & Systems Biology; Bioengineering; Immunology; Communication Science and Disorders; and
The Clinical and Translational Science Institute; and
Director of the Center for Inflammation and Regenerative Modeling-McGowan Institute for Regenerative Medicine

"Theory-Driven Biology: The Real Path Towards "Precision Medicine"
Gary An, MD (8:00-8:30 am)
Associate Professor of Surgery
Department of Surgery
University of Chicago Medicine

“Sepsis Phenotyping” (8:30-8:55 am)
Hernando Gomez, MD, MPH
Assistant Professor
Department of Critical Care Medicine, Emergency Medicine and Clinical and Translational Research Center for Critical Care Nephrology
University of Pittsburgh Medical Center

“Translational Research in Precision Medicine” (8:55-9:20 am)
Dietrich Stephan, PhD
Professor and Chairman of Human Genetics-University of Pittsburgh

“Predictions with Clinical Data: Disease Risk, Progression and Pathway Analysis” (9:20-9:45 am)
Rema Padman, PhD
Professor of Management Science & Healthcare Informatics
The H. John Heinz III College
Carnegie Mellon University

9:45-10:00  Refreshment Break  Lobby
10:00-11:30 Session 1: Personalized Medicine (continued) | Lecture Hall

‘The Human Microbiome: Beyond the Person in Personalized Medicine” (10:00-10:25 am)
Alison Morris, MD, MS
Vice Chair of Clinical Research, Department of Medicine
Associate Professor of Medicine and Immunology
Division of Pulmonary, Allergy & Critical Care Medicine

“Computational Modeling in Critical Illness: From Data Deluge to Discovery” (10:25-10:50 am)
Yoram Vodovotz, PhD

Rapid-Fire Trainee Presentation* (10:50-11:00 am)
“Encapsulation of Donor Hemoglobin in Autogenic RBCs for Potential Treatment of Sickle Cell Disease”
Luke Ziegler, Research Fellow
Mentor: Marina Kameneva, PhD
Department of Bioengineering and McGowan Institute for Regenerative Medicine, University of Pittsburgh

Panel Discussion (11:00-11:30 am)

8:00-11:30 Session 2: Enabling Technologies-I | Grand Ballroom

Session Chair: Vijay Gorantla, MD, PhD
Associate Professor of Surgery-Department of Plastic Surgery, and the Administrative Medical Director of the Pittsburgh Reconstructive Transplant Program-University of Pittsburgh Medical Center, and Deputy Director at the McGowan Institute

and

Michael Davis, MD
Deputy Commander
U.S. Army Institute of Surgical Research

“Tunable, Refillable, On-Demand Drug Delivery Systems” (8:00-8:45 am)
David Mooney, PhD
Robert P. Pinkas Family Professor of Bioengineering
Wyss Institute for Biologically Inspired Engineering
Harvard University

“Trials and Triumphs of an Entrepreneurs Journey”
Rudy A. Mazzocchi, CEO (8:45-9:10 am)
Elenza, Inc. – Florida
“Nanobiosensors and Nanoscale Applications in Transplantation” (9:10-9:35 am)
Tarek Fahmy, PhD
Associate Professor of Biomedical Engineering and Immunobiology
Yale University

“RNA Nanobiomaterials: Promise and Potential” (9:35-10:00 am)
Kathryn Whitehead, PhD
Assistant Professor, Departments of Chemical Engineering and Biomedical Engineering
Carnegie Mellon University

10:00-10:15 Refreshment Break Lobby

10:15-11:30 Session 2: Enabling Technologies-I (continued) Grand Ballroom

“Magnesium Stent for Dental Applications” (10:15-10:40 am)
Charles Sfeir, DDS, PhD
Associate Dean of Research-Dental Medicine
Associate Professor, Clinical and Translational Science Institute
Associate Professor, School of Dental Medicine, School of Engineering; and
Founding Director, Center for Craniofacial Regeneration

“Non-Invasive Negative-Pressure Ventilation” (10:40-11:05 am)
Sylvia E. Szentpetery, MD
Pediatric Pulmonology Fellow
Children’s Hospital of Pittsburgh of UPMC

Rapid-Fire Trainee Presentation* (11:05-11:15 am)
“Biomimetic Microparticles can Establish Dominant Tolerance in Vascularized Composite Allotransplantation via Endogenous Regulatory T Cell Enrichment”
James Fisher, MD/PhD Student
Mentors: Steven Little, PhD and Vijay Gorantla, MD, PhD
Departments of Bioengineering and Immunology
University of Pittsburgh

Discussion (11:15-11:30 am)

11:30-1:15 Lunch Marquis Ballroom
Concurrent Sessions

Session 3: Military-Relevant Injury Research

Session Chairs:
R. Wayne Matheny Jr, PhD
Research Physiologist
Military Performance Division
U.S. Army Research Institute of Environmental Medicine

Plenary Speaker: (1:15-1:45 pm)
“Strategies for Improving Skeletal Muscle Repair”
Elisabeth Barton, PhD
Professor
College of Health & Human Performance
Applied Physiology & Kinesiology
University of Florida

Session Speakers
"Mechanisms of Musculoskeletal Injury in Warfighters" (1:45-2:15 pm)
R. Wayne Matheny Jr., PhD
Research Physiologist
Military Performance Division
U.S. Army Research Institute of Environmental Medicine

"IL-17 signaling in Kidney: Two Sides of the Same Coin" (2:15-2:45 pm)
Partha Biswas, BVSc, MVSc, PhD
Assistant Professor
Division of Rheumatology & Clinical Immunology
Department of Medicine
University of Pittsburgh

“Can We Predict Cognitive Performance Decrements Due to Sleep Loss and the Recuperative Effects of Caffeine?” (2:45-3:15 pm)
Jaques Reifman, PhD
Senior Research Scientist (Advanced Medical Technology)
U.S. Army Medical Research and Materiel Command
Director, Biotechnology HPC Software Applications Institute
Fort Detrick, Maryland
“Musculoskeletal, Biomechanical, and Physiological Gender Differences in the U.S. Military” (3:15-3:45 pm)
Katelyn Fleishman Allison, PhD, ACSM-HFS
Assistant Professor
Neuromuscular Research Laboratory (NMRL)
University of Pittsburgh

“Adipose Based Soft Tissue Regeneration for Trauma” (3:45-4:15 pm)
J. Peter Rubin, MD FACS
UPMC Endowed Professor and Chair of Plastic Surgery
Professor of Bioengineering
University of Pittsburgh

and

Sydney R. Coleman, MD
TribeCa Plastic Surgery

Rapid-Fire Trainee Presentation* (4:15-4:25 pm)
“Poloxamer Hydrogel Delivery of Adipose-derived Stem Cells for Repair of Transecting Peripheral Nerve Injury: Positive Effects on Regenerative Gene Expression Programs in Re-innervating Muscle”
Kassandra Allbright, Medical Student
Mentor: Kacey Marra, PhD
Department of Plastic Surgery and Physician Scientist Training Program
University of Pittsburgh

1:15-4:30 Session 4: Regenerative Rehabilitation  Lecture Hall

Session Chair: Fabrisia Ambrosio, PhD, MPT
Associate Professor-Department of Physical Medicine & Rehabilitation; Departments of Physical Therapy, Orthopaedic Surgery, and Microbiology &Molecular Genetics, University of Pittsburgh

“Combining Cell Therapy and Rehabilitation in Stroke Clinical Trials”
(1:15-1:45 pm)
Lawrence Wechsler, MD
Henry B. Higman Professor of Neurology/Neurosurgery
Chair, Department of Neurology;
Vice President, Telemedicine
Physician Services Division, UPMC
“Recent Progress Toward a High-Performance Neural Prosthetic” (1:45-2:15 pm)
Andrew Schwartz, PhD
Professor of Neurobiology, University of Pittsburgh
Adjunct Professor, Center for Neural Basis Cognition
Adjunct Professor, The Robotics Institute
Carnegie Mellon University;
Adjunct Professor, Departments of Bioengineering and of Physical Medicine and Rehabilitation
University of Pittsburgh

“Treatment of Extremity Compartment Syndrome Using Autologous Bone Marrow Mononuclear Cells with Rehabilitation Exercises” (2:15-2:45 pm)
Kenton Gregory, MD
Director, Center for Regenerative Medicine
Oregon Health & Science University

“Cortical Reintegration in Amputees & Hand Transplants” (2:45-3:15 pm)
Scott H. Frey, PhD, EdM
Professor, Program in Occupational Therapy
Department of Neurology & Department of Psychological and Brain Sciences
Chair, Rehabilitation and Participation Science PhD Program
Washington University School of Medicine

“BrainPort and Sensory Substitution in Pediatric Patients” (3:15-3:45 pm);
Ellen Mitchell, MD
Clinical Assistant Professor of Ophthalmology
Children’s Hospital of Pittsburgh of UPMC
Fox Center for Vision Restoration

“The Alliance for Regenerative Rehabilitation Research & Training” (3:45-4:15 pm)
Michael Boninger, MD
UPMC Endowed Chair and Professor,
Department of Physical Medicine & Rehabilitation
University of Pittsburgh
Rapid-Fire Trainee Presentation* (4:15-4:25 pm)
“In Vivo Tracking of the Meningeal Response to Chronically Implanted Neural Electrode Arrays”
James Eles, PhD Graduate Student
Mentor: Tracy Cui, PhD
Department of Bioengineering
University of Pittsburgh

4:30-5:00  Open for Networking

5:00-7:00  Poster Session and Reception  Marquis Ballroom

Reception: Carving stations, themed stations, dessert/coffee bar, cash bar (non-alcoholic beverages are complimentary)

Tuesday, March 8

7:00-8:00  Breakfast  Marquis Ballroom

8:00-10:30  Session 5: Regenerative Medicine Across the Life Span  Grand Ballroom

Session Chair: George Gittes, MD
Benjamin R. Fisher Chair of Pediatric Surgery & Surgeon-in-Chief
Director, Pediatric Surgical Research
Professor, Department of Surgery
University of Pittsburgh School of Medicine

“Cellular Senescence: At the Crossroads of Aging and Rejuvenation” (8:00-8:30 am)
Nathan K. LeBrasseur, MS, PhD
Associate Professor and Co-Chair of Research
Department of Physical Medicine and Rehabilitation
Mayo Clinic

“Computational Modeling in Pediatric Acute Liver Failure” (8:30-8:55 am)
Ruben Zamora, PhD
Research Associate Professor
Department of Surgery
University of Pittsburgh
“Collagen Architecture: Taking a Closer Look at Eye Biomechanics” (8:55-9:20 am)
Ian Sigal, PhD
Assistant Professor--Laboratory of Ocular Biomechanics,
Department of Ophthalmology
University of Pittsburgh School of Medicine

“MRI Ultra High Field Imaging in the Aging Brain” (9:20-9:45 am)
Tamer Ibrahim, PhD
Associate Professor and Director of the Radio Frequency Research Facility
Departments of Bioengineering and Radiology
University of Pittsburgh

“Growth Factor Injection for the Treatment of Heart Failure: Development of a Regenerative Medicine Based Delivery System” (9:45-10:10 am)
Bernard Kuhn, MD
Director of Research
Richard King Mellon Institute for Pediatric Research
Division of Pediatric Cardiology

Rapid-Fire Trainee Presentation* (10:10-10:20 am)
“CFD Modeling of Cerebral Aneurysms: Hemodynamic Sensitivity to Choice of Waveform in the Elderly Population”
Michael Durka, PhD Graduate Student
Mentor: Anne Robertson, PhD
Department of Mechanical Engineering & Materials Science
University of Pittsburgh

8:00-10:30  Session 6: Enabling Technologies-II  Lecture Hall
Additive Manufacturing in Regenerative Medicine

Session Chair: David Vorp, PhD
Associate Dean for Research, Swanson School of Engineering, University of Pittsburgh
William Kepler Whiteford Professor of Bioengineering, Departments of Cardiothoracic Surgery, Surgery, and the Clinical & Translational Sciences Institute
“3D Printing Human Cells and Tissues with DNA Velcro”
(8:00-8:30 am)
Zev Gartner, PhD
Associate Professor
School of Pharmacy
Department of Pharmaceutical Chemistry
University of California San Francisco

“Engineering Soft Tissues and Organs from the Bottom-Up Using 3D Bioprinting” (8:30-8:55 am)
Adam Feinberg, PhD
Associate Professor in the Departments of Biomedical Engineering and Materials Science and Engineering
Carnegie Mellon University

"Bioprinting Immune Microenvironments" (8:55-9:20 am)
Phil Campbell, PhD
Research Professor,
Institute for Complex Engineered Systems
Carnegie Mellon University

“3-D printing & Metallic Biomaterials“ (9:20-9:45 am)
DaTren Chou, PhD
Swanson School of Engineering

“Enabling Technologies for Muscle Repair” (9:45-10:10 am)
George Christ, PhD
Professor of Biomedical Engineering and Orthopaedic Surgery
Mary Muilenburg Stamp Professor of Orthopaedic Research
Director of Basic and Translational Research in Orthopaedic Surgery
Head, Laboratory of Regenerative Therapeutics
University of Virginia

Rapid-Fire Trainee Presentation* (10:10-10:20 am)
“Using Micropatterned Extracellular Matrix Cues to Guide Murine and Human Myotube Formation”
Rebecca Duffy, PhD Graduate Student
Mentor: Adam Feinberg, PhD
Department of Biomedical Engineering
Carnegie Mellon University

10:20-11:00 Refreshment Break Lobby
11:00-12:30 **Critical Interfaces of Regenerative Medicine**  
Lecture Hall

Session Chair: Julie Phillippi, PhD  
Assistant Professor Department of Cardiothoracic Surgery, School of Medicine, and the Department of Bioengineering, Swanson School of Engineering, University of Pittsburgh

Presenters:

*“Five Years of Successful Interdisciplinary, Inter-University Collaboration Between an Engineer and a Veterinarian”* (11:00am-11:30 pm)

Bryan Brown, PhD  
Assistant Professor  
Departments of Bioengineering and Obstetrics, Gynecology and Reproductive Sciences, University of Pittsburgh

and

Jon Cheetham, VetMB, PhD, DACV  
Associate Professor of Large Animal Surgery  
Cornell University College of Veterinary Medicine

*“Autologous Skin Stem Cell Transplantation and Spray Grafting”*  
(11:30-12:00 pm)

Alain Corcos, MD  
Clinical Assistant Professor of Surgery  
University of Pittsburgh  
Chief, Division of Multisystem Trauma  
Department of Surgery  
UPMC Mercy

and

Jörg Gerlach, MD, PhD  
Professor  
Departments of Surgery and Bioengineering  
University of Pittsburgh
"PIVOTing to Market: The Importance of Academia/Industry Partnerships"
(12:00-12:30 am)

Volker Musahl, MD
Associate Professor
Departments of Orthopedics and Bioengineering
University of Pittsburgh
Medical Director, UPMC Center for Sports Medicine, South Side

and

Charlie Batch
Founder, Best of the Batch Foundation
Co-Founder, Impellia
Former NFL Quarterback
Vice President, Executive Committee, NFL Players Association

12:30-1:45  **Lunch and Poster Session Awards**  Marquis Ballroom

Poster Session Chair:
Andrew Duncan, PhD
Assistant Professor
Department of Pathology and Department of Bioengineering
University of Pittsburgh

CATER Poster Session Chair:
Satdarshan Singh Monga, MD
Endowed Research Chair in Experimental Pathology,
Vice-Chair of the Division of Experimental Pathology
Professor of Pathology and a Professor of Medicine
University of Pittsburgh School of Medicine

*Rapid-Fire Trainee Presentation*
Each technical session includes an invited presentation from a trainee. The identification of these presenters was made following a review of the poster session abstracts and also seeking alignment with the theme of the respective session. The trainee has 5 minutes for the presentation, and there is 5 minutes allocated for questions.