

**2016 Annual McGowan Scientific Retreat
March 6-8, 2016
Nemacolin Woodlands Resort**

Sunday, March 6

2:00-	<u>Retreat Registration</u>	Marquis Foyer
	<u>Hotel Check-In</u> (Room availability guaranteed at 4 PM; Bell Captain will hold luggage if room is not ready)	Lodge Lobby
	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)	
	<u>Short Courses</u>	
3:00-5:00	<i>Supporting Science Reproducibility and Rigor with Research: Quality Assurance for Academic Environments</i>	Grand Ball Room
	Session Chair: Shawn Bengtson, RQAP-GLP Quality Systems and Program Manager McGowan Center for Preclinical Studies	
	<i>"Welcome and Introduction"</i> (3:00-3:10 pm) Shawn Bengtson, RQAP-GLP	
	<i>"Training the Next Generation of Scientists to Use Principles of Research Quality Assurance (QA) to Improve Data Reliability and Reproducibility"</i> (3:10-3:40 pm) Rebecca Davies, PhD Associate Professor - Comparative Endocrinology Director, Quality Central College of Veterinary Medicine University of Minnesota	
	<i>"Introducing the Concept of GRP to Academic Labs; Lessons Learned"</i> (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

Joseph’s

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

Nemacolin 2-3

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 Consortium Resource Center Planning Session*** **Nemacolin 1-6**
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

“Visual Prostheses: Technology Advancements for Vision Restoration” (8:00-8:45 am)

Shawn K. Kelly, PhD

Research Faculty

Institute for Complex Engineered Systems

Carnegie Mellon 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 Devices for Dental and orthopedic 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

and

Stephen LeBeau

President

nanoMAG, LLC

“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**

1:15-4:30 **Concurrent Sessions**

Session 3: Military-Relevant Injury Research

Grand Ballroom

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)

“Ploxadamer 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
Additive Manufacturing in Regenerative Medicine

Lecture Hall

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

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.