Gwendolyn A. Sowa, MD, PhD
Professor and Chair
http://www.rehabmedicine.pitt.edu
The department is very proud to be ranked 2nd in NIH funding to physical medicine and rehabilitation programs (2014, the latest ranking available from The Blue Ridge Mountain Institute). The rank is further proof of the value placed on research by the department administration and faculty. Our investigations follow the guidelines set by the NIH Roadmap: medical research should be designed to deepen our understanding of biology, stimulate interdisciplinary research teams, and reshape clinical research to accelerate medical discovery and improve people’s health.

The department is at the forefront of national rehabilitation trends in both basic and clinical research.

- Traumatic Brain Injury
- Regenerative Medicine
- Neuroprosthetics
- Brain-computer interface
- Assistive Technology
- Musculoskeletal regeneration
- Cognitive studies
- Stem cell research
- Spinal cord regeneration research.

A number of basic laboratory investigations have led to clinical investigations including:

- Development of advanced biomimetic upper limb prosthetics
- Electrical stimulation used to enhance regenerative capabilities in aged muscle
- Neuroprosthetics and sensorimotor functions
- Brain-computer interface studies to restore hand function
- Ultrasound used to determine rotator cuff changes associated with wheelchair propulsion

Students at all levels and from a wide range of departments and specialties have received valuable instruction from our faculty in the various laboratories and shared spaces in UPMC and the University of Pittsburgh. A number of students have presented at national conferences, and received awards and scholarships as a result of their work with our faculty.

**PMR - SOM RESEARCH EXPERTS**

School of Medicine Associate Dean of Medical Student Research, and Chair of the Department of Physical Medicine & Rehabilitation, Gwen Sowa, MD, PhD, is an alumnus of the University of Wisconsin and the Rehabilitation Institute of Chicago. Dr. Sowa is internationally recognized for her research in degenerative disc disease, back pain, and the mechanisms of exercise based treatments. 

sowaga@upmc.edu

School of Medicine Assistant Dean of Medical Student Research, Brad Dicianno, MD, an alumnus of the University of Pittsburgh, its School of Medicine, and this department’s residency program, is committed to matching interested medical students with the right PMR research investigations. As an SoM alumni he is well informed of the requirements of the medical school research requirement. 

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visit us at [www.rehabmedicine.pitt.edu](http://www.rehabmedicine.pitt.edu)
RESEARCH FACULTY AND RESEARCH INTERESTS

Fabrisia Ambrosio, PhD, MPT
Associate Professor (ambrosiof@upmc.edu)
- Regenerative Medicine
- Duchenne’s Muscular Dystrophy
- Stem Cell Research
Dr. Ambrosio has gained international recognition for her work in regenerative rehabilitation. Her research uses molecular, cellular, and functional analyses to investigate the development of approaches to harness the body’s natural healing capacity.

Corina Bondi, PhD
Assistant Professor (bondico@upmc.edu)
- Traumatic Brain Injury
- Neuropsychopathology
- Neurotransmitters
Dr. Bondi’s current research focuses on therapeutic strategies, such as pharmacotherapies and environmental enrichment, to improve complex cognitive processing deficits and distinct neurobehavioral and neurochemical alterations relevant to psychiatric disorders after traumatic brain injury.

Michael L. Boninger, MD
Professor and Vice Chair for Research (boninger@upmc.edu)
- Adaptive Sports
- Assistive Technology
- Spinal Cord Injury
- Medical Research Careers
Dr. Boninger is the director of the University of Pittsburgh Model Center on Spinal Cord Injury, a National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR) Center of Excellence. He is world renowned for his research in spinal cord injury, assistive technology and neuroprosthetics and related brain computer interface technology.

Jennifer Collinger, PhD
Assistant Professor (collingr@pitt.edu)
- Brain Computer Interface (BCI)
- Neurehabilitation
- Assistive Technology
Dr. Collinger’s research is related to neurorehabilitation and brain-computer interface technology for individuals with motor impairments due to spinal cord injury and disease. Her groundbreaking work using BCI technology to translate thought to action has garnered international attention.
Research Faculty and Research Interests

Brad Dicianno, MD
Associate Professor (dicianno@pitt.edu)
Assistant Dean of Medical Student Research
  Adaptive Sports
  Assistive Technology
  Spina Bifida
  Spinal Cord Injury
  Telemedicine
Dr. Dicianno’s research interests focus on developing and studying interventions targeted to improving health and wellness in individuals with complex disabilities resulting from conditions such as spina bifida, cerebral palsy and spinal cord injury.

Lee Fisher, PhD
Assistant Professor (lef44@pitt.edu)
  Neuroprosthetics
  Bioengineering
  Somatosensory System
Dr. Fisher’s current research interests involve the development of neuroprostheses for sensory and motor function to restore deficits after neural damage or disease.

Robert Gaunt, PhD
Assistant Professor (rag53@pitt.edu)
  Neuroprosthetics
  Functional Electrical Stimulation
  Sensory Motor Control
Dr. Gaunt is presently investigating the integration of advanced technology with movement and sensory functions in upper limb neuroprostheses. The goal of this research is to produce an upper limb prosthetic that mimics the sensory and functional actions of a natural arm.

Amy Houtrow, MD, MPH, PhD
Associate Professor (houtrow@upmc.edu)
Vice Chair of Pediatric Rehabilitation Medicine
  Sociological impact of disabilities
  Children with disabilities
  Pediatric Rehabilitation Medicine
Dr. Houtrow recognizes the impact raising children with disabilities has on families and her research focuses on developing channels to improve delivery of medical services.
RESEARCH FACULTY AND RESEARCH INTERESTS

Anthony E. Kline, PhD
Professor (klinae@upmc.edu)
  Traumatic Brain Injury
  Antipsychotics and TBI
  Cognitive Recovery
Dr. Kline investigates various therapeutic strategies, such as pharmacotherapies and environmental enrichment, in an attempt to restore function and/or reduce TBI-induced deficits in rodents who have sustained motor and cognitive injury mimicking those seen in human TBI patients.

Michael Munin, MD
Professor (muninmc@upmc.edu)
Vice Chair of Clinical Program Development
  Chemodenervation
  Prosthetic Rehabilitation
Dr. Munin is involved in industry-funded clinical research. Research has included testing ultrasound guided delivery of chemodenervation agents used to reduce the effects of spasticity.

Gwendolyn Sowa, MD, PhD
Professor and Chair (sowaga@upmc.edu)
Associate Dean of Medical Student Research
  Invertebral Disc Degeneration
  Molecular Biomarkers of Pain
  Low Back Pain
Dr. Sowa currently performs molecular laboratory based, translational, and clinical research, investigating the effect of motion on inflammatory pathways and the beneficial effects of exercise on managing low back pain. She has won national and international recognition for her research of intervertebral disc degeneration and the development of biological and biomechanical therapies.

Amy Wagner, MD
Associate Professor (wagnerak@upmc.edu)
Director, Translational Research
  Traumatic Brain Injury
  Rehabilomics and Genetics
  Gender and Recovery after TBI
  Hormone physiology and Inflammation
  Neuroendocrine Dysfunction, epilepsy, mental health, cognition and behavior
Dr. Wagner is investigating the impact of an individual’s genetics and biomarkers on deficit progression and the development of secondary injury after TBI. Her research is laying solid groundwork for a “personalized medicine” approach to treatment and improving patient outcomes.
TRAINING AND RESEARCH OPPORTUNITIES AT THE DEPARTMENT OF PHYSICAL MEDICINE AND REHABILITATION. Since 2000 department faculty has instructed more than 50 medical students in our various laboratories across the university. We support projects through several research mechanisms.

MEDICAL STUDENT TRAINING

The Area of Concentration (AOC): Disabilities Medicine prepares interested medical students for health care careers serving children and adults with disabilities. Disabilities Medicine encompasses the body of knowledge about disabilities at multiple levels of analysis: the biological basis of disability, recommended clinical practices, functional impacts of disability and its treatment, environmental, social and community determinants of outcomes, and public health. The AOC promotes the development of skills in person- and family-centered practice, collaborative decision-making, functional assessments, cultural competence, and chronic care delivery. Participants learn about community resources and policies that interact with health care to improve clinical and functional outcomes for people with disabilities. Students who participate in the AOC in Disabilities Medicine support the inclusion of individuals with disabilities in all aspects of community life. Dr. Betty Liu, MD, is the Director of the AOC.

Integrative Medicine refers to the incorporation of evidence-based complementary therapies into conventional treatments for patients. Integrativemedicine is meant to work in conjunction with traditional medicine, providing a more holistic approach to healing — mind, body, and spirit. This AOC provides an opportunity for future physicians, no matter their career choice to explore and train in integrative medicine as well as conduct scholarly review and investigation of integrative medicine contributing to evidence based medicine. It will also provide the opportunity to develop tools that can provide a foundation of knowledge and skills that can be used in caring for one’s-self as well as allowing the physician-in-training to counsel patients appropriately regarding complementary modalities and self-care practices. The directors of this AOC are Dr. Brad Dicianno and Dr. Ronald Glick.

PM&R Interest Group allows students interested in the field of physiatry to learn more about the field, network with faculty and residents, and attend workshops and social events. The faculty director of this group is Dr. Brad Dicianno.

Resuscitation provides students a longitudinal experience in the multi-disciplinary field of acute-care medicine of critical illness beginning at initial patient contact in the Emergency Department, stabilization in the Intensive Care Unit, and rehabilitation to return to pre-morbid ability. The ResusAOC includes clinical experiences, didactic experiences, Student Portfolio, and a Scholarly Work. For more information contact Dr. Julie Lanphere (lanphereja@upmc.edu) or visit the AOC/resuscitation website.

MEDICAL STUDENT RESEARCH

Med Student Scholarly Projects. The intent of this effort is to expose students to the mechanics of scientific investigation; teach them how to develop a hypothesis and how to collect, analyze, and interpret data to support it.

Dean’s Summer Research Program (DSRP) is the major source of student (MS-1, MS-2) stipend support for summer research activity. The program is funded primarily by the dean and various NIH training grants and is directed by Drs. Don DeFranco and Gwen Sowa.

Rehabilitation Research Experience for Medical Students (RREMS). Sponsored by The Association of Academic Physiatrists (AAP) and the Foundation for PM&R, this eight-week summer externship offers first year medical students experience in scholarly research within the specialty of Physical Medicine & Rehabilitation. The RREMS was developed for medical students with strong research interests. The program provides a structured research experience while exposing the medical student to some of the most successful and respected faculty mentors in the field of PM&R. In addition to working with experts in the field the elected student receives:

- $4000 stipend
- Paid travel to attend and present at the annual assembly

http://www.physiatry.org/?rrems_programs

visit us at www.rehabmedicine.pitt.edu