Recently published

Following is a sample of recently published scholarly works by IRR faculty researchers.

Peer-reviewed papers


IRR has key role in Principles and Practice

Several IRR faculty members have made major contributions to publishing of the latest edition of the premier textbook on rehabilitation for patients with traumatic brain injury. Ross D. Zafonte, DO, is one of three editors of Brain Injury Medicine: Principles and Practice, along with Nathan D. Zeiler, MD, and Douglas I. Katz, MD. Joseph H. Ricker PhD, and Patricia M. Arend, PhD, contributed the chapter on “Functional Neuroimaging in Medical Rehabilitation Populations.” C. Edward Dixon, PhD, and Anthony E. Kline, PhD, co-authored a chapter on “Advances in Innovative Therapies to Enhance Neural Recovery,” and Amy K. Wagner, MD, contributed the chapter “Conducting Research in Traumatic Brain Injury: Current Concepts and Issues.” The book, which will roll off the presses this fall, is published by Demos Medical Publishers.

Published by Demos Medical Publishing. Brain Injury Medicine is the definitive work on comprehensive care for patients with TBI.

More book chapters


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New tech center to engineer improved quality of life for disabled individuals

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Mobility matters — NIDRR reviews Model Systems Center grant for UPMC SCI’s mobility technology studies

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Show for the stars — IRR welcomes a researcher-novelist and a survivor-astrometron; young investigators earn honors on IRRDay2006

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Best in the field — Drs. Munin and Zafonte singled out for excellence

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On the road again — Faculty members cover the map in conference participation

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Island bound — IRR faculty members off to the 50th annual conference in November

Upward bound — Michael Boninger promoted to associate dean

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Recently published — IRR faculty members produce peer-reviewed papers, textbooks

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More book chapters


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Ross D. Zafonte, DO

Chairman

Department of Physical Medicine and Rehabilitation

University of Pittsburgh
Research funding moves up the ranks

The University of Pittsburgh Department of Physical Medicine and Rehabilitation (UPMC-PM) has received a $2.25 million grant from the National Institute of Disability and Rehabilitation Research (NIDRR) to fund cutting-edge research on spinal cord injury. This is the largest single grant to UPMC-PM, and the first of its kind for over 10 years.

The NIDRR grant will support UPMC-PM’s efforts to develop innovative technologies for spinal cord injury rehabilitation. The grant will fund research on a variety of technologies, including robotic exoskeletons, virtual reality, and neural stimulation.

The grant will be used to support a team of researchers led by Dr. Rory A. Cooper, who is a professor and director of the QoLT-ERC. The team will work closely with patients and caregivers to develop technologies that can help people with spinal cord injuries recover more quickly and live more independently.

The grant will also fund the development of new technologies that can help people with spinal cord injuries to improve their mobility and independence. The team will work with patients and caregivers to develop new technologies that can help people with spinal cord injuries to improve their mobility and independence.

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IRR celebrates research

The Department of Physical Medicine and Rehabilitation at the University of Pittsburgh Medical Center (UPMC) has enjoyed meteoric growth and development during its relatively brief history. Before the arrival of department chairman Ross D. Zafonte, DO, physical rehabilitation services resided within the Division of Physical Medicine and Rehabilitation, under the umbrella of the Department of Orthopaedic Surgery. In 2000, as the newly seated chairman of the now full-fledged Department of Physical Medicine and Rehabilitation, Dr. Zafonte highlighted the importance of research in physical medicine by instituting an annual “Research Day.”

In light of last year’s consolidation of multiple clinical services, departments, and laboratories within the UPMC Institute for Rehabilitation and Research (IRR), Research Day — originally a department-centered activity — was renamed IRRDay. The new name highlights the broad scope of IRR research, through UPMC, the University of Pittsburgh departments of Physical Medicine & Rehabilitation and Rehabilitation Science & Technology, and the affiliated research centers, including the Human Engineering Research Laboratories and the Center for Assistive Technology. IRRDay includes presentations by national and international leaders in rehabilitation sciences and medicine and spotlights exemplary research through oral presentations.

The event provides an opportunity for young investigators to compete for awards by submitting abstracts of completed research for consideration by a rehabilitation science review board, consisting of Michael L. Boninger, MD, associate dean for medical student research in the University of Pittsburgh School of Medicine, and vice chairman for research, Department of Physical Medicine and Rehabilitation; and Clifford E. Brubaker, PhD, dean, School of Health and Rehabilitation Sciences; as well as Dr. Zafonte. The board conferred “Best Research” awards to young investigators in several categories at both pre- and postdoctoral levels of training.

IRRDay2006 convened on June 1 in the Thomas E. Starzl Biomedical Sciences Tower, University of Pittsburgh. Dr. Zafonte opened the program by welcoming more than 120 physicians, research scientists, and trainees. He then introduced the first of two special guest speakers, Daniel T. Barry, MD, PhD.

Dr. Barry is a physiatrist, a retired astronaut, and a veteran of three Space Shuttle flights, including the first mission to dock to the International Space Station. His research has involved work with biological signal processing and prosthetic design. Using his experiences — both as an astronaut and as a contestant on the CBS television series Survivor — as illustration, Dr. Barry spoke about the body’s ability to adapt to extreme conditions.

Next to address the group was Randall Bradtton, MD, MS, clinical professor, University of Medicine and Dentistry of New Jersey and Robert Wood Johnson Medical School, New Brunswick, N.J. Dr. Bradtton is a renowned physician and researcher who has authored several books including the widely used text *Physical Medicine & Rehabilitation* (1st, 2nd, and 3rd Editions; WB Saunders, Philadelphia, Pa.), a handbook of physical medicine and rehabilitation, a textbook on pain management in physical medicine, and even a pair of mystery novels.

Presentation of research awards followed Dr. Bradtton’s lively talk on differential diagnosis of upper-extremity peripheral-nerve injuries. A total of 43 abstracts were submitted in this year’s awards competition. Winners are listed in the box on Page 5.

For those who were unable to attend the event in person, IRRDay2006 was available by Internet simulcast using streaming video technology. To protect the intellectual property of visiting speakers, it was necessary to register in advance for the simulcast event, and the program was not archived on the Department’s website.

Archived sessions of Panther Rehab Rounds — Physical Medicine and Rehabilitation Grand Rounds lectures — are always available. We invite you to participate in Panther Rehab Rounds, track for updates on next year’s IRRDay2007 or other upcoming events, and learn more about the clinical, educational, and research programs of the University of Pittsburgh Department of Physical Medicine and Rehabilitation by visiting http://www.rehabmedicine.pitt.edu

If a loved one needed a physiatrist, to whom would you refer them?

The current listing is the result of a survey in which more than 30,000 physicians throughout the United States were asked: "If a loved one needed a doctor in your specialty, to whom would you refer them?" Evaluations of the doctors named were weighed, scored, and filtered for bias. Only those physicians who earned the consensus support of their peers were included on the "Best Doctors" list.

### IRRDay2006 Rehabilitation Research Awards

**Best Rehabilitation Research by a Postdoctoral Fellow in the School of Health and Rehabilitation Sciences**

A virtual-reality telerehabilitation system for analyzing accessibility of the built environment: field evaluation.

- **Jongbae Kim,** PhD, adviser: David M. Brienzo, PhD

**Best Rehabilitation Research by a Predoctoral Student in the School of Health and Rehabilitation Sciences**

The impact of pain and age on physical performance measures in older adults.

- **Sonali B. Shenoy,** MS; advisers: Thomas E. Rudy, PhD; Jill Blaboda, MS; Susan Lieber, MS; DTR; Debby K. Weiner, MD

**Honorable Mention**

Jeanne Zanca

**William Hula**

**Best Rehabilitation Research by a Predoctoral Fellow**

Chronic regional adrenergic receptor characterization in rat after controlled cortical impact.

- **Xiangbai Chen,** MD, adviser: Amy Wagner, MD

**Honorable Mention**

Diane Collins, PhD

From left, residents Maria Christy Reyes-Littaua, MD; Jose Ramirez-Del Toro, MD; and Heather Walker, MD; and Ross Zafonte

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**Best Rehabilitation Research by a Postdoctoral Student**

Muscle-based decoding of limb kinematics from ensemble firing rates of primary afferent neurons recorded in the dorsal root ganglia.

- **Jost B. Wagenaar** MS (Department of Bioengineering); adviser: Douglas Weber, PhD

**Honorable Mention**

Emily Rogers

Madiar El Hahri

**Best Rehabilitation Research by a Resident in Physical Medicine and Rehabilitation**

Muscle loading as a key to muscle stem-cell mediated dystrophic delivery and physiological functioning: a pilot study.

- **Brad Kurowski,** MD, advisers: Fabrilia Ambrioso, PhD, MPT; Subha Nagasubramanian, BPT; Kelley Fitzgerald, PhD, PT, OCS; Michael L. Boninger, MD; Johnny Huard, PhD

**Honorable Mention**

Heather Walker, MD

From left, residents Maria Christy Reyes-Littaua, MD; Jose Ramirez-Del Toro, MD; and Heather Walker, MD; and Ross Zafonte

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Recent conference participation

The IRR is visible at many national and international meetings. Following is a sample of topics recently presented by some of our faculty.

Talks, symposia, keynotes
Gilbert Breeze, MD, presented “Measurements of Outcomes in SCI – Gait and Ambulation, Wheelchair Circuit and Wheelchair Skill Test” as part of the conference pre-course at the American Spinal Injury Association meeting in Boston on June 24.

Anthony E. Kline, PhD, co-chaired the session on “Cellular and Molecular Modifications of Glutamate Receptors” at the 24th Annual National Neurotrauma Society Symposium on July 8 in St. Louis.

Joseph H. Ricker, PhD, gave several invited presentations recently, including the keynote address “Neurofunctional Substrates of Cognitive Impairment, Recovery, and Rehabilitation” at the annual conference of CERNEC: L’Ecole de Recherche in Neuropsychopathologie et Cognition de l’Université de Montréal, March 31 in Montreal, Quebec; a talk, “Functional Brain Imaging in Neurorehabilitation”, on June 17 at the American Academy of Clinical Neurophysiology Annual Meeting in Philadelphia; and two additional invited presentations at the 115th Annual Meeting of the American Psychological Association Aug. 10 and 11 in New Orleans.


Abstracts and Proceedings

International Conference on Aging, Disability, and Independence
Feb. 2-4
St. Petersburg, Fla.
Hudson S, Fitzgerald SG, Baker D, Boninger ML, Cooper RA, Kasel LE. Health-related quality of life and wheelchair use.

Association of Academic Physiatrists Annual Meeting
March 1-4
Daytona Beach, Fla.
The following abstracts can be found in The American Journal of Physical Medicine & Rehabilitation, vol. 85, no. 3; page numbers are indicated.

Baker KK, Boninger ML, Crews RW. Lifestyle factors of individuals who use wheelchairs. p. 281.


Walker H, Boninger ML, Impink BG, Cooper RA. Correlation between ulnar nerve sensory characteristics and clinical symptoms in wheelchair users. p. 279.

International Society for the Study of the Lumbar Spine
June 13–17
Bergen, Norway

Snow GA, Angelimia NA, Angenol, SA. A molecular basis for the beneficial effects of motion: Mechanical signaling through the Nf-kB pathway in intervertebral discs.

29th Annual RESNA Conference
June 22-26
Boston

The following abstracts can be found in Proceedings of the 29th Annual RESNA Conference.


Chaves ES, Cooper RA. Community participation assessment of individuals with spinal cord injury.

Koontz AM, Yang TDR, Mencer JL, Fitzgerald SG, Cooper RA, Boninger ML. Surface electrical stimulation of trunk musculature during wheelchair propulsion.

Leister E, Ding D, Cooper RM, Khalife AR, Fitzgerald SG, Boninger ML. Effectiveness and use of 6k and reclining power wheelchairs: preliminary data analysis.

Mencer JL, Boninger ML, Koontz AM, Cooper RA. Relationship of shoulder pathology and shoulder kinetics during wheelchair propulsion.

Song A, Ding D, Cooper RM, Cooper RA, Khalife AR, Fitzgerald SG, Boninger ML. Usability of powered wheelchair assistive devices among people with tetraplegia.

Tolson M, Ding D, Cooper RA, Fitzgerald SG, Cooper RM, Khalife AR, Spaeth DM, Boninger ML. Assessing the activity levels of manual wheelchair users.

American Spinal Injury Association
June 24-26
Boston


24th Annual National Neurotrauma Society Symposium
July 7-9
St. Louis

The following abstracts have been published in The Journal of Neurotrauma vol.23, no. 8; page numbers are indicated.


IRR faculty members on their way to Hawaii

Department Chairman Ross D. Zafonte, DO, was selected by the American Academy of Physical Medicine and Rehabilitation as the recipient of this year’s Walter J. Zeiter Lecture Award. The award honors the memory of the physician who served for 20 years as executive director of the American Academy of Physical Medicine and Rehabilitation and the American Congress of Rehabilitation Medicine. The annual lectureship acknowledges physiatrists who have made consistent contributions to the field of physical medicine and rehabilitation and who have earned the esteem of colleagues and peers for outstanding accomplishments in the specialty.

Dr. Zafonte will present the Walter J. Zeiter Lecture before the 67th Annual Assembly of the American Academy of Physical Medicine and Rehabilitation in Honolulu, on Friday, Nov. 10.

IRR researchers to give presentations

In addition to Dr. Zafonte’s lecture, several IRR faculty members will be in Honolulu this November to present research reports and to participate in panel discussions at the AAPMR Annual Assembly.


Ross D. Zafonte, DO, will be a member of an expert panel in Neurological Rehabilitation — Neuropharmacology of Traumatic Brain Injury: Update, Case Discussion, and Ask the Experts.

Ross D. Zafonte, DO, will be a discussant in the presentation Neurological Rehabilitation — Clinical Pearls and Scientific Paper Presentations.

Atmoneelisa as a neostimulant agent for the treatment of post-concussive cognitive impairment: A case report. Poster, presented by Lisa A. Lombard, MD (Lombard LA, Collins MW, Zafonte RD).

Dr. Boninger promoted to associate dean

Michael L. Boninger, MD, professor and vice chairman for research in the Department of Physical Medicine and Rehabilitation, has been promoted to associate dean for medical student research in the University of Pittsburgh School of Medicine. The School of Medicine has a new requirement that each medical student complete a scholarly project during the second through fourth years. This requirement is linked with specific preparatory course work during the first and second years of medical school. Dr. Boninger is responsible for this program, as well as a large summer research program run by the medical school.

Dr. Boninger was selected for this position because of his long track record of excellence in mentorship. He has served as the associate director for the Rehabilitation Medicine Scientist Training Program (RMSTP) for four years. Students and residents working under Dr. Boninger’s supervision have won more than 35 national awards.

Michael L. Boninger, MD, associate dean for medical student research