



McKay Orthopaedic Research Laboratory Update

Louis J. Soslowsky, PhD



The McKay Orthopaedic Research Laboratory of the Department of Orthopaedic Surgery in the School of Medicine continues to explore important problems in musculoskeletal research. The research facility, including labs and offices, occupies just over 11,000 square feet of space on the 4th and 3rd Floors of Stemmler Hall. We are currently in renovation of just over 4,000 square feet of additional space of the 5th floor of Stemmler which will be available in March 2010 in support of our Penn Center for Musculoskeletal Disorders. The lab is a common-use, shared facility in that each faculty member has access to all the rooms and suites. Use of each facility is permissible as long as the appropriate expertise exists. There are over 70 full- and part-time staff and trainees now in the labs. It is an active, thriving research and educational environment.

Currently, the lab has an annual research budget from extramural grants, gifts, and endowments over \$6,000,000 and remains the 5th ranked Department of Orthopaedic Surgery in the country in terms of funding from the National Institutes of Health (NIH). This past year has seen a very impressive and continued rise in new grant activity amongst the faculty.

We have had several new grants awarded this year. These are:

Dawn Elliott, PhD

- PI of a sub-contract from the NIH with the University of Florida for a grant titled "Formation of the Intervertebral Disk: A Molecular Approach"
- PI of an AARA "Stimulus" Challenge Grant titled "Image-based Modeling of Nonlinear and Anisotropic Intervertebral Disc Mechanics"
- PI of a grant from the Orthopaedic Research Society in support of the 5th Annual Philadelphia Spine Research Symposium

Robert Mauck, PhD

- PI with Jason Burdick, PhD (Bioengineering) of an NIH R01 grant titled "Engineering Developmental Microenvironments: Cartilage Formation and Maturation"
- PI with Jason Burdick, PhD (Bioengineering) of an NIH R01 grant titled "Dynamic Fibrous Scaffolds for Engineering Dense Connective Tissues"
- Co-PI of a grant from Human Frontier Science Program titled "Mechanoregulation Nuclear Architecture and Genome Function: A Novel Mechanism in Stem Cell Fate"
- PI of an AARA "Stimulus" Summer Research Experience Grant titled "Dynamic Fibrous Scaffolds for Engineering Dense Connective Tissues"

Frederick Kaplan, MD

- PI of an IFOPA grant renewed titled "Fibrodysplasia Ossificans Progressiva Program Project"

- PI of a NIH R01 grant title "The Cellular and Molecular Basis of FOP Lesions"

Ling Qin, PhD

- PI of a Susan G. Komen Breast Cancer Foundation grant titled "Osteoblastic EGFR Signaling in Breast Cancer Bone Metastasis"
- PI of Bone and Cancer Foundation grant title "Epidermal Growth Factor Receptor in Osteosarcoma Development and Treatment"

Eileen Shore, PhD

- PI of an AARA "Stimulus" Supplement Grant titled "Molecular Genetics of Progressive Osseous Heteroplasia"
- PI of a Rita Allen Foundation grant titled "Center for Research in Fibrodysplasia Ossificans Progressiva (FOP) and Related Disorders"

Louis Soslowsky, PhD

- PI of a new NIH R01 grant titled "Mature & Aging Tendon: Extracellular Matrix Interactions in the Injury Response"
- PI of a new NIH R01 grant titled "Mechanisms of Joint Damage Following Tendon Injury"
- PI of a sub-contract from the NIH with CHOP for a grant titled "Extracellular Matrix Structure and Function in Diabetic Wound Healing"

In addition to the above-mentioned new grants this year, each of the McKay Laboratory faculty remains well-funded through existing research grants not identified in this new grants list. Further, there were several new grants for our surgeon faculty and residents this year. These are:

Jaimo Ahn, MD, PhD

- PI of a Orthopaedic Research and Education Foundation grant titled "Characterization and Modulation of BMP Activity and Antagonist Expression in a Murine Fracture Model"

Jonathan Garino, MD

- PI of a Veterans Affairs grant titled "Injectable Synthetic Bone Grafts to Promote Bone Regeneration"
- PI of a Veterans Affairs grant titled "Timed-release of Local Anesthetic from Sol Gels for Post-Op Pain Control"

Richard Lackman, MD

- PI of grants from Stryker Corporation titled "Long-term Results Comparing Prosthetic vs. Allograft Reconstruction for Extremity Bone Sarcomas" and "Refining Surgical Indications for Segmental Replacement in Large Giant Cell Tumors of the Proximal"
- PI of a grant from the Desmoid Tumor Research Foundation titled "The Role of Hydroxyurea as First Line Treatment for Primary Desmoid Tumors in Adults"
- PI of a grant from the Orthopaedic Research and

Education Foundation with Stephan Pill, MD titled, "Residency Enhancement Award"

Samir Mehta, MD

- PI of a grant from the Foundation for Orthopedic Trauma titled "Internet Usage Amongst Orthopaedic Trauma Patients"
- PI of a subcontract from the NIH with the University of Minnesota titled "Fixation using Alternative Implants for the Treatment of Hip Fractures (FAITH)"

Jason Hsu, MD, Resident

- PI of a grant from the Orthopaedic Trauma Association titled "Oxygen Partial Pressure Monitoring in Impending Compartment Syndrome Associated with Diaphyseal Tibia Fractures"

Stuart Melvin, MD, Resident

- PI of a grant from the Orthopaedic Trauma Association titled "A Prospective Evaluation of Brain Oxygenation and Neurological Outcomes after Intramedullary Nailing in Patients with Long Bone Fractures and Head Injury"

Mara Schenker, MD, Resident

- PI of a grant from the Orthopaedic Education and Research Foundation titled "In Vivo and In Vitro Integration of Engineered Nanofibrous Scaffolds in Meniscal Defects"

Roshan Shah, MD, JD, Resident

- PI of a grant from the Orthopaedic Trauma Association titled "The Effect of Low Magnitude Mechanical Signals on Tibial Shaft Fracture Healing"

And finally, the following faculty received internal pilot grants from various entities at the University of Pennsylvania: Drs. Nader Hebel, Rob Mauck, Samir Mehta, Ling Qin, Eileen Shore, and Lou Soslowky.

This year, we began recruitment for additional research faculty through funds provided by the School of Medicine, in coordination with our Penn Center for Musculoskeletal Disorders. Growing musculoskeletal research, not only within the Department of Orthopaedic Surgery, but across the Penn campus has been a primary objective for our program this year and these efforts have been particularly successful thus far. We look forward to another exciting year.



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