



## McKay Orthopaedic Research Laboratory Update

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Director of the McKay Orthopaedic Research Laboratory



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 15,000 sq. ft. of space on the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> Floors of Stemmler Hall (including just over 4,000 sq. ft. of additional space of the 5<sup>th</sup> floor of Stemmler 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 80 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 \$8,000,000 and remains the 4<sup>th</sup> 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, Ph.D.

- PI of a DOD grant (with Robert Mauck, Ph.D. and Nader Hebel, M.D.) titled "Development of Translation of a Tissue-Engineered Disc in a Preclinical Rodent Model"
- PI of a NIH equipment grant titled "Microscope for Microstructural Characterization of Orthopaedic Tissues"
- PI of a NIH equipment grant titled "Mechanical System for Low Force Fatigue Tissue Testing"
- PI of a grant from the Orthopaedic Research Society in support of the 5th Annual Philadelphia Spine Research Symposium

Robert Mauck, Ph.D.

- PI of a grant (with Dawn Elliott, Ph.D. and Nader Hebel, M.D.) from the DOD titled "Development of Translation of a Tissue-Engineered Disc in a Preclinical Rodent Model"

Frederick Kaplan, M.D.

- PI (with Eileen Shore, Ph.D.) of a NIH grant titled "The Cellular and Molecular Basis of FOP Lesions"

Ling Qin, Ph.D.

- PI of a Bone and Cancer Foundation grant titled "Epidermal Growth Factor Receptor in Osteosarcoma Development and Treatment"

Eileen Shore, Ph.D.

- PI (with Frederick Kaplan, M.D.) of a NIH grant titled "The Cellular and Molecular Basis of FOP Lesions"

Louis Soslowsky, Ph.D.

- PI of a NIH R01 grant titled "Mechanisms of Joint Damage following Tendon Injury"
- PI of a SRA with Advanced BioHealing titled "The Evaluation of Dermagraft to Accelerate the Healing of Acute Rotator Cuff Injuries in a Rat Model"

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 and clinical trials for our surgeon faculty this year. These are:

Jaimo Ahn, M.D., Ph. D.

- PI of grant from the Foundation of Orthopedic Trauma titled "BMP-Antagonist Interactions: Pilot Expression Profiling and Development of a Small Scale Binding Assay"
- PI of a grant from the Orthopaedic Research and Education Foundation titled "Characterization and Modulation of BMP Activity and Antagonist Expression in a Murine Fracture Model"

John Esterhai, M.D.

- PI of grant from the VA titled "Engineered Multi-Functional Nanofibrous Meniscus Implants"

Jonathan Garino, M.D.

- PI of an Omega Fellowship titled "Adult Reconstruction Fellowship"
- PI of a VA grant titled "Timed-release of Local Anesthetic from Sol Gels for Post-Op Pain Control"

David Glaser, M.D.

- PI of a grant from DePuy titled "Shoulder and Elbow Fellowship"

Nader Hebel, M.D.

- PI of a grant from the VA titled "Disc degeneration in the lumbar spine of a small animal model"
- PI of a grant (with Dawn Elliott, Ph.D. and Robert Mauck, Ph.D.) from the DOD titled "Development of Translation of a Tissue-Engineered Disc in a Preclinical Rodent Model"

Jason Hsu, M.D.

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

Gwo-Chin Lee, M.D.

- PI of a R01 subcontract with NIH titled "Behavioral & Social Science Research on Understanding and Reducing Health Disparities"
- PI of a clinical trial with Zimmer, Inc. titled "Hedrocel Ceramic Bearing THR IC002-99"

- PI of a clinical trial with Zimmer, Inc. titled “Prospective Multicenter Study of the Trilogy AB Acetabular Hip System 06-300”

Samir Mehta, M.D.

- PI of a clinical trial from AMGEN, Inc. titled “Qualitative Patient Interviews to Increase the Understanding of the Patient’s Experience with Hip or Tibia Fracture”
- PI of a clinical trial from AMGEN, Inc. titled “A Multi-center, Randomized, Double-blind, Placebo-controlled Study of AMG 785 in Skeletally Mature Adults with a Fresh Unilateral Tibial Diaphyseal Fracture Status Post Definitive Fracture Fixation with an Intramedullary Nail”
- PI of a grant from DOD titled “Notch Signaling in Bone Regeneration”

Mara Schenker, M.D.

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

Roshan Shah, M.D.

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

Jessie Torbert, M.D.

- PI of a grant from Orthopaedic Research and Education Foundation grant titled “Residency Enhancement Grant”

And finally, the following faculty received internal pilot grants from various entities at the University of Pennsylvania: Drs. Jaimo Ahn, Andrea Evenski, David Glaser, Nader Hebel, Russell Huffman, Craig Israelite, John Kelly, Samir Mehta, Ling Qin, Eileen Shore, Lou Soslowsky and Fotios Tjournakaridis.

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.



Mauck Lab



Soslowsky Lab