



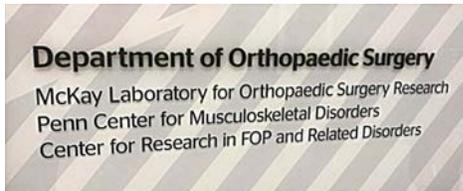
McKay Orthopaedic Research Laboratory

Robert L. Mauck, PhD and Louis J. Soslowsky, PhD



The McKay Orthopaedic Research Laboratory of the Department of Orthopaedic Surgery in the Perelman School of Medicine continues to explore important problems in musculoskeletal research. The research facility, including labs and offices, occupies over 22,000 sq. ft. of newly renovated space on the 3rd Floor of Stemmler Hall. There are more than 120 full- and part-time staff and trainees now in the labs. McKay is an active, thriving research and educational community committed to advancing basic and translational musculoskeletal research.

The McKay labs have recently completed a transformation both in terms of physical space and faculty. Our home,



Stemmler Hall, underwent a >\$120 million renovation, completed in late 2019, which resulted in a fully modernized facility in which to grow our laboratory space, faculty, and research and training endeavors. We were also excited this year to recruit Dr. Sarah Gullbrand as our newest Assistant Professor, who is developing a program studying mechanisms of spine degeneration and regeneration, supported by both a Career Development Award and SPiRE Award from the Department of Veterans Affairs. We were equally excited, after an exhaustive search, to successfully recruit and welcome Dr. Ernestina Schipani, MD, PhD, in November 2020 as the inaugural WW Smith Professor of Orthopaedic Surgery! Dr. Schipani brings outstanding expertise in cartilage and bone development, hypoxia, and metabolism, and is already establishing herself as a leader in the lab and across the campus. Welcome to McKay, Sarah and Stina! Working in conjunction with the newly formalized departmental strategic plan, we are excited to continue to strategically grow our faculty in the coming years to spur new innovations in musculoskeletal research and education.

With respect to funding, current research expenditures in support of our McKay research programs are >\$15M USD annually, a number that has grown by >12.8% since 2016, despite flat and/or decreasing NIH pay lines. McKay has also ranked in the 'top five' of orthopaedic research for more than a dozen years, with Dr. Soslowsky has ranked in the top 5 individually for over a decade, and several other faculty members now ranked in the top 50 in the field. Our McKay Lab and research division is 1 of only 2 programs in the nation to be positioned in the top five over this time period, and Dr. Soslowsky is the only investigator to consistently rank in the top five over the last decade. Notably, a number of our younger and/or newly recruited faculty have been very successful in establishing and growing their research funding base as well. For instance, Drs. Boerckel, Mourkioti, Baxter and Dymont together have brought in 6 new NIH R01 awards as PI to the Department over the last two years, and the recruitment of Dr. Schipani brought an additional 3 R01s. At the same time, existing faculty have renewed and/or added many additional NIH R01s, R21s, VA Merit Awards, and other federal funding to further support and grow the research base. Just as importantly, we have continued to support our young faculty towards 'K'-type Awards from the NIH and Career Development Awards from the VA, with two K01s (Baxter, Heo), one CDA-2 (Gullbrand), and one K25 (Hast, fundable score in March 2021) over just the last two years. As these new research programs continue to mature, we expect that the Department will continue to rank in the top five and will increase in ranking relative to other programs. Finally, our Penn Center of Musculoskeletal Disorders (PCMD),

located within the McKay Labs and supported by an NIH P30, scored a '13' on its most recent renewal application (reviewed March 2021), and we are optimistic for its continued funding for another five years (years 16-20)! In addition to the above-mentioned new grants this year awarded to our faculty, each of the McKay Laboratory faculty members remains well-funded through ongoing and newly awarded research grants from federal agencies and industrial sponsors.

Our McKay faculty and trainees also continue to represent the department at major international meetings and via national and international recognitions and high impact publications. For example, Robert Mauck and Lou Soslowsky were named a Fellows of the Orthopaedic Research Society at the 2021 annual meeting. Our trainees also won numerous awards and prizes over the last year, including multiple Section Awards and New Investigator Recognition Awards at the 2021 Orthopaedic Research Society Meeting, Young Investigator Awards at the 2020 American Society for Bone and Mineral Research Annual Meeting, and multiple PhD and Masters' Competition selections at the 2020 Summer Bioengineering Conference, to name just a few. Faculty and trainees also regularly publish high profile papers in the leading journals of the field, and this is regularly promoted in the lay press.

Growing musculoskeletal research in the Department of Orthopaedic Surgery and across the Penn campus has been a primary objective for our program. Towards this end we have, over the last dozen years, more than doubled in terms of lab faculty, lab personnel, lab space, and research

expenditures. Over the last year, we also initiated two new sub-committees within the McKay Labs. The first is the McKay Diversity, Equity, and Inclusion Committee. This committee (<https://www.med.upenn.edu/orl/mckay-dei-committee.html>) organizes activities aimed at increasing awareness and engagement of all McKay members to broaden our vision and expand diversity and equity in our research community. Likewise, we recently formed a McKay International Outreach Committee (<https://www.med.upenn.edu/orl/international-outreach-committee>). This committee's mission is to help the McKay Lab present a welcoming face to our international trainees and collaborators, and to promote cultural awareness across McKay and share knowledge with members of the international community joining the group. Finally, to promote and expand our educational mission we hold a monthly internal seminar series, the 'McKay Young Investigator' Seminar. This event provides an opportunity for trainees to present their work to the entire group and develop presentation skills. The goal of our collective work remains the same as when the Laboratory was founded more than 40 years ago, to carry out the most cutting edge fundamental and translational research in the field of orthopaedics, to train the next generation of scientists and surgeon-scientists, and to improve the health and quality of life of those who suffer from musculoskeletal conditions. With our 40 years of leadership, training, and scientific contributions to musculoskeletal research and building a vibrant and inclusive community of scholars, we are excited for what the future will bring.