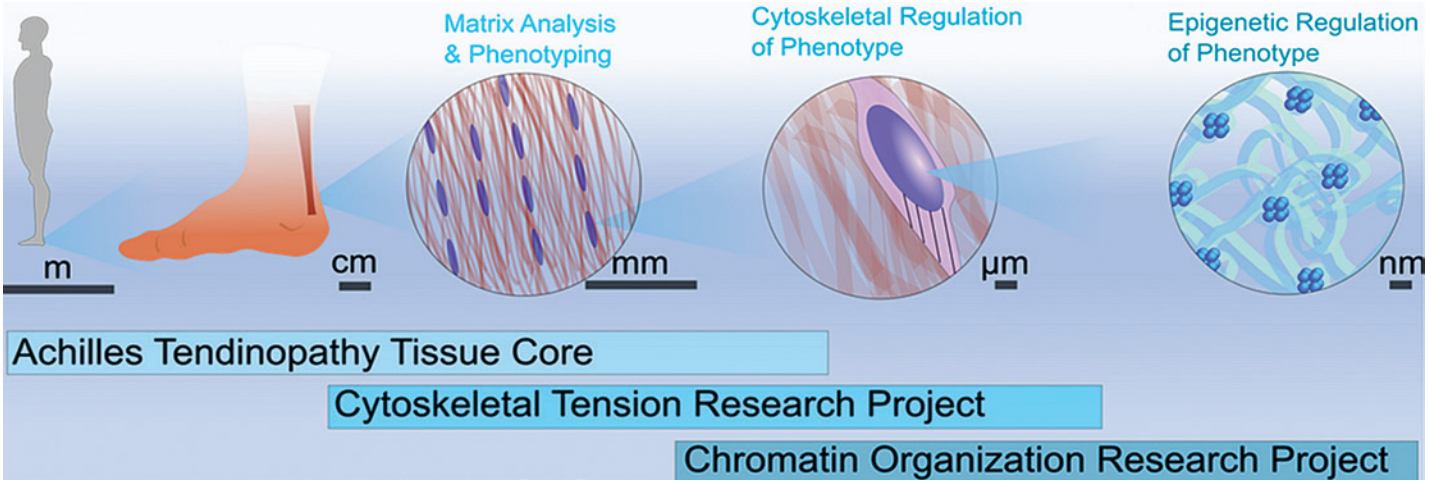
Penn Achilles Tendinopathy Center of Research Translation

Louis J. Soslowsky, PhD

Founding Director of the Penn Achilles Tendinopathy Center of Research Translation

The Penn Achilles Tendinopathy Center of Research Translation (PAT-CORT) was initiated in 2023 with a goal to foster fundamental discovery research to guide translation, as well as employ and develop translational resources, models and technologies, to address the highly significant research and unmet clinical challenge of Achilles tendinopathy. The Center's research will discover fundamental physiologic processes to guide translation. It will also as serve as a test bed for defining the role, as well as the scientific and translational rigor, of a repetitive use Achilles tendinopathy animal model through implementation of an exciting series of in vivo longitudinal assays to be conducted in parallel in both animal and human subjects. At the University of Pennsylvania, we are uniquely positioned with a critical mass of multidisciplinary scientists and clinicians with strong interest and expertise in these and related areas. In 2023, the National Institute of Arthritis and Musculoskeletal Skin Diseases of the NIH funded our center proposal with an $8M grant P50 AR080581.

The overall goal of the PAT-CORT is to develop new insight and technologies that uncover the mechanobiologic basis of Achilles tendinopathy across length scales, from the nucleus, to the cell, to the tissue microenvironment, to pre-clinical animal models, to patients. We will assess these critical elements during disease onset and progression, informed by both animal models that replicate disease processes and source material and real-world loading data from living human subjects. The PAT-CORT (see Figure) is comprised of four independent and yet interactive elements, including an Administrative Core to oversee and guide interactions and primary Research Projects focused on the transfer of information from the external tendon cell microenvironment through the cytoskeleton (Project 1) and on chromatin remodeling and mechano-epigenetic regulation of tendon cell phenotype (Project 2). Using cells, tissue, and loading information derived from both human and animal tendinopathic models (Tissue Core), these research projects will advance our knowledge of the origins of tendinopathic disease and define new avenues for therapeutic intervention. Together, our highly interdisciplinary team, innovative tools, and outstanding and interactive Research Projects and Cores will dramatically advance knowledge, develop innovative tools and insight, and provide new directions for translation of novel therapies to treat Achilles tendinopathy.

The PAT-CORT held its annual retreat on December 4, 2024, and was a great success. The focus of this retreat was "*Defining Achilles tendon health: translating between the bench and bedside.*" Dr. Karin Silbernagel from the University of Delaware was our keynote speaker. The retreat included 3 interactive breakout sessions which included external experts in rehabilitation, large animal science/care, imaging expertise, physical therapists, orthopaedic surgeons and the PAT-CORT leaders and trainees. Preparations for the next retreat are well underway and will be held December 10, 2025. The topic is *"Imaging tendon across length scales: from the macroscale to the nanoscale."*

For more information on the PAT-CORT, please visit our website at www.med.upenn.edu/patcort/.