

Postdoc Opportunities in the Translational Spine and Joint Research Laboratory

The Translational Spine and Joint Research Lab at the University of Pennsylvania conducts basic, preclinical and clinical studies focused on the pathophysiology and treatment of disorders affecting the spine and synovial joints. Our research is primarily in the translational space, and bridges the fields of tissue engineering, biomaterials, drug delivery, and stem cells. This is an exciting opportunity to join a dynamic, multidisciplinary team of basic scientists and clinicians focused on conducting high impact, clinically-relevant musculoskeletal research. Specific project areas are described below.

If you are interested in joining our team, please send an email along with your CV to Dr Lachlan Smith: lachlans@pennmedicine.upenn.edu

Research Areas

- **Injectable Therapies for Intervertebral Disc Degeneration and Low Back Pain**

Intervertebral disc degeneration is a major cause of low back pain, the leading cause of disability world-wide. Current treatment options focus on alleviation of symptoms, without restoring native disc structure and function, and thus have poor long-term efficacy. In our lab, we are seeking to develop a minimally-invasive treatment for disc degeneration that has both acute and long-term efficacy, by combining stem cells, biomaterials and sustained delivery of bioactive factors. To progress this therapy towards clinical application, we have established a clinically-relevant large animal model that mimics key characteristics of human disc degeneration.

- **Biomarkers and Targeted Therapies for Bone and Joint Disease in the Mucopolysaccharidoses**

The mucopolysaccharidoses (MPS) are inherited disorders characterized by deficient activity of enzymes that degrade glycosaminoglycans (GAGs). Children with MPS exhibit crippling skeletal deformities that are unresponsive to current treatments. Our research is focused on identifying tissue-specific biomarkers and functional correlates of skeletal disease in MPS, and using stem cell, small molecule and gene therapy-based approaches to target hard-to-reach cells in bone and cartilage. To ensure maximum clinical impact, we conduct preclinical studies using novel, naturally occurring large animals of MPS, and clinical studies working directly with patients at the Children's Hospital of Philadelphia.

Training Environment

We are located within the newly-renovated lab space of the McKay Orthopaedic Research Laboratory of the Department of Orthopaedic Surgery at the University of Pennsylvania (<https://www.med.upenn.edu/orl>). The McKay lab, home to more than a dozen world-renowned investigators and over 100 research personnel, strives to provide a collaborative and supportive training environment with an emphasis on diversity, equity and inclusion. Postdocs are provided with extensive, structured mentoring to prepare them for an independent academic career.