HARVARD MEDICAL SCHOOL | BLAVATNIK INSTITUTE BIOLOGICAL CHEMISTRY & MOLECULAR PHARMACOLOGY

NIH-funded Postdoctoral position available in the Lassar lab at Harvard Medical School to study the transcriptional regulatory network that controls the formation of the synovial joint and the entheses, with a goal to develop novel regenerative approaches to treat degenerative joint pathology in murine models of osteoarthritis and inflammatory joint disease.

Prior work in the Lassar lab has determined that Prg4/lubricin expressing cells in the embryo constitute a progenitor cell population for the articular cartilage. Building on this knowledge, we recently identified the transcription factor Creb5 as being critical to drive Prg4/lubricin expression in the articular cartilage; and have found that Creb5 plays a larger role in directing the formation of all tissues that constitute the synovial joint, including the articular cartilage (see: https://www.nature.com/articles/s41467-022-35010-0).

Our goal is to elucidate how Creb5 coordinates the formation of differing tissues in the synovial joint (i.e., articular cartilage, synovial fibroblasts, and ligaments) and maintains synovial joint homeostasis. The lab seeks to understand the logic of the gene regulatory network that controls synovial joint formation and the formation of the entheses, which lie at the interface of bones and tendons/ligaments. Future studies will seek to both identify the Creb5-dependent gene regulatory network in various tissues of the synovial joints and the enthesis; and elucidate how inflammatory signaling impacts this gene network. Additional projects aim to elucidate the factors that control the formation and growth of these tissues, with the goal of leveraging this knowledge to develop novel regenerative approaches to treat degenerative joint pathology.

Our approach is to elucidate both how both the synovial joint tissue and entheses are generated during development and how gene expression in the synovial joint, ligaments and tendons is altered in murine models of either osteoarthritis or inflammatory arthritis. We will employ novel strains of mice that have been genetically engineered by the lab to express fluorescent reporters in Creb5-expressing cells, isolation of Creb5-P2A-tdTomato/CreERt2 expressing articular chondrocytes, conditional knock-out or tissue-specific expression of either transcription factors or signaling molecules in the articular cartilage or entheses of transgenic mice, and employment of either bulk or single cell RNA-Seq, ATAC-Seq, and Cut & Run-Seq technologies.

Applicants should possess a Ph.D. and/or M.D. degree in Molecular Biology, Cell Biology, Biochemistry, Genetics or a related field. In addition, the applicant should be highly motivated, have an excellent working knowledge of molecular biology techniques and be able to work constructively with others with both honesty and enthusiasm. The applicant should have a record of accomplishment that has either been published or is in press in international journals. Prior work with genetically engineered mice and/or transcriptional regulation of gene expression is highly desirable.

Interested individuals should send a cover letter, curriculum vitae, and the names/e-mail addresses of three people who could provide letters of reference to Andrew_Lassar@hms.harvard.edu.

Harvard is an Affirmative Action/Equal Opportunity Employer. Applications from women and minority candidates are strongly encouraged. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, disability status, protected veteran status, gender identity, sexual orientation, pregnancy and pregnancy-related conditions or any other characteristic protected by law.

Salary: Commensurate with prior research experience and following NIH guidelines

For more information visit: https://bcmp.hms.harvard.edu/faculty-staff/andrew-b-lassar