



Fully funded PhD Opportunity

The effects of mechanical loading on articular cartilage development

We seek an enthusiastic student interested in the development and healing of articular cartilage to join the Developmental Biomechanics group at University College Dublin, Ireland. The PhD project will investigate how mechanical loading affects postnatal development of articular cartilage in a large animal translational model system. The research program aims to identify the mechanisms underlying the mechanoregulation of the emergence and maturation of the zonal properties of articular cartilage. A more thorough understanding of how mechanical loading regulates the emergence of the zonal complexity of AC over development has the potential to revolutionise cartilage regenerative medicine by enabling recapitulation of developmental processes leading to true regeneration of AC. The PhD project will involve multi-scale analysis of developing cartilage tissue, with analyses possibilities including multi-scale techniques such as atomic force microscopy, nanoindentation, Raman spectroscopy, helium ion microscopy, phase contrast tomographic imaging, RNA sequencing and proteomics. The project is adaptable to a degree to the interests of the PhD researcher.

On offer: A four year PhD studentship including stipend of €19,000 per annum (tax free) and stipend covered (any nationality) for four years, starting September 2023.

About the supervisory team: Niamh Nowlan is Full Professor of Biomedical Engineering in the School of Mechanical and Materials Engineering at UCD. Her research focuses on the role of mechanical forces in prenatal and postnatal development of the bones, joints and spine. Prof Pieter Brama, who will co-supervise this PhD project, is Full Professor of Veterinary Surgery in the School of Veterinary Medicine at UCD. His key clinical interests are lameness and surgery in general and his orthopaedic research interests are in cartilage repair and joint disease.

Minimum qualifications: Master's degree (or equivalent) in Biomedical Engineering, Molecular Bioengineering, Medicine, Veterinary Medicine, Biomedical Sciences or a closely related area. In receipt of, or on track to receive, an upper second class or first class honours. Candidates should have a keen interest in working with translational animal models, and also in the biomechanics of the musculoskeletal system.

If you are interested, please send an email attached with a CV introducing yourself, stating your previous experience, interest in this specific position and your future goals to Prof Nowlan (she/her) at niamh.nowlan@ucd.ie. More information about Prof Nowlan's group is available here: <https://developmental-biomechanics.org/>.