Position: Postgraduate research scholarship (PhD) in Equine Clinical Genomics

Start date: January 2021
Duration: Four-years, full time
Background: Veterinary Medicine
Project PIs: Prof Emmeline Hill & Prof Lisa Katz
Primary Supervisor: Prof Lisa Katz
Salary: €18,000 per annum (stipend, tax exempt) and an annual contribution of €5,500 towards fees

Are you interested in pursuing a research degree?
Would you like to work at the cutting-edge of equine science?
Would you like to work with world class Thoroughbreds?

A post-graduate (PhD) research student is required to join a Science Foundation Ireland funded research programme in Equine Exercise Genomics. The University College Dublin (UCD) based programme stems from the success of the development of the world's first academic research programme dedicated to understanding genetic contributions to exercise related traits in Thoroughbred racehorses. For more information see scientific publications in *Nature Communications, Science, PLoS ONE, PLoS Genetics, BMC Genomics, Animal Genetics, Journal of Applied Physiology and Equine Veterinary Journal.* The research has led to the development and introduction of genomics-based tests in the Thoroughbred industry.

Project background:
The benefits of exercise for health and well-being are well established, positively influencing clinical presentation and resolution of a variety of neurological, musculoskeletal and metabolic diseases. The Thoroughbred horse is highly adapted for exercise and provides a unique animal model to investigate the relationship between exercise and behaviour/disease traits. Some Thoroughbreds do not perform well as racehorses because of their temperament, which is considered to be influenced both by inherited factors and management of the horse. Stressful early life events have long-lasting effects into adulthood in humans while exercise is known to have a beneficial influence on stress. By using an animal model highly adapted to exercise the project will attempt to distinguish the influence of the genome and the maternal environment and exercise on the adaptation to stress by analysing biological samples from foals taken immediately after birth and during the first year of race training.

This new research programme will use the latest genomic technologies to investigate genetic and epigenetic contributions to exercise, disease and behaviour traits in racehorses. A major component of the project is to investigate the influence of the early life environment of the foal on the genetic potential of an individual, employing an epigenetics approach. Genetics (DNA) is fixed from birth, but epigenetics is dynamic and responsive to external inputs and influences the expression of genes. This may be particularly relevant to the Thoroughbred where the management of a horse is considered as important as genetics in the success on the racetrack.

PhD research project:
The PhD student will be involved in field and laboratory work aimed towards mapping epigenetic regulatory elements in equine skeletal muscle. The student will produce a systematic analysis of Thoroughbred muscle transcriptional regulation in exercise, disease (Recurrent Exercise Rhabdomyolysis, 'tying up') and behavioural phenotypes by tracking study subjects from the neonatal foal to the athletic racehorse. The PhD student will also contribute to functional genome-wide association studies for the genomic prediction of related traits of importance to the Thoroughbred industry. Tasks will include biological sample collection, sample preparation and phenotyping. The PhD student will also receive training in bioinformatics and genomics.

The PhD student will be expected to participate in research at an active stud farm and race training yard and therefore the successful candidate must be flexible and comfortable working in a demanding environment with Thoroughbred horses.

The PhD student will enter a four-year UCD Structured PhD Programme. They will be provided with formal mentoring and additional supervision through Doctoral Studies Panels (DSPs) and a Stage Transfer Assessment (STA) process.

The PhD student may also be required to contribute to other team projects.

The project team will include two PIs, two PhD students, a postdoctoral researcher and a research assistant.

Requirements	**Desirable**
Veterinary degree which can be registered with the Veterinary Council of Ireland (www.vci.ie)	Knowledge of the Thoroughbred industry and experience in an equine practice
First or upper second-class bachelor's degree in veterinary medicine	Good computer skills and a sound knowledge of Microsoft Office
Motivated with a strong focus on research	Ability to work effectively as a team member
High level of spoken and written English	Above-average academic achievement in veterinary school
Excellent communication and inter-personal skills	
Experience working with horses	
Full clean drivers' licence	

Please direct any informal enquiries about the position to either Prof Emmeline Hill (Emmeline.Hill@ucd.ie) or Prof Lisa Katz (Lisa.Katz@ucd.ie).

To apply for the position, please send a *curriculum vitae* (incl. names of two referees) and a letter of interest to Professor Lisa Katz Email: Lisa.Katz@ucd.ie before October 31st 2020