



Position: Postgraduate research scholarship (PhD) in Equine Bioenergetics

Start date: September 2012

Duration: Four year full time

Location: Trinity College, Dublin and University College Dublin, Ireland

Background: Biochemistry, Genetics, Molecular Biology, Veterinary Medicine or related discipline

Salary: €18,000 per annum (stipend) and an annual contribution of €5,500 towards fees (non-EU citizens will be required to supplement fees) is available.

Background: A postgraduate researcher is required to join a Science Foundation Ireland funded research programme in Equine Exercise Genomics. The PI is based at University College Dublin (UCD), Ireland and the student will be placed at UCD and at the School of Biochemistry and Immunology, Trinity College Dublin. The programme stems from the success of the development of the world’s first academic research programme dedicated to understanding genetic contributions to exercise related phenotypes in Thoroughbred racehorses. For more information see recent publications (Hill EW, 2009-2012) in *Nature Communications, Science, PLoS ONE, PLoS Genetics, BMC Genomics, Animal Genetics, Journal of Applied Physiology and Equine Veterinary Journal*. A five year research programme will use the latest genomic technologies to investigate in a large cohort of Thoroughbred horses in training genetic contributions to physiological performance measures.

PhD research project: In comparison to other species of similar size, the aerobic capacity or maximal oxygen uptake of Thoroughbreds is superior and is achieved by a remarkable oxygen carrying capacity and delivery facilitated by structural and functional adaptations involving the skeletal muscle, respiratory and cardiovascular systems. Elements of the post-exercise machinery in skeletal muscle involved in mitochondrial biogenesis are becoming clear and primary roles have been established for PCG-1 α , Tfam and NRF-1, with early gene expression being associated with NRF-1 dependent CYTC and COX4 expression as well as GLUT4 transporter, δ -aminolevulininate and citrate synthase expression.

This project will involve mitochondrial functional phenotyping to test the hypothesis that genetic variation contributes to functional micro-adaptations that are influenced by exercise and cumulatively increase aerobic capacity in the horse. The project will investigate qualitative and quantitative differences in skeletal muscle mitochondria obtained from skeletal muscle biopsies including variation in mitochondrial volume, mitochondrial oxygen consumption, mitochondrial ROS generation, protein and gene expression. Genotyping technologies will be used to identify genetic associations with mitochondrial phenotypes.

Requirements	Desirable
First or upper second class Bachelors degree in Biochemistry, Molecular Biology, Genetics, Veterinary Medicine, other related discipline.	Experience working with horses
High level of spoken and written English	Ability to work effectively as a team member
	Full clean drivers’ licence

If you are interested in this position please send a *curriculum vitae* (incl. names of two referees) and a letter of interest to Prof Richard Porter and Dr Emmeline Hill at the following address: Email: Emmeline.Hill@ucd.ie Tel: 01-7166231 before May 31st 2012