3 Year PhD Studentship available for September 2019

**Department:** Genetics and Genome Biology

**Supervisors:** Dr Tim Beck and Prof Anthony Brookes

**Eligibility:** UK and EU candidates only

**Project Title:** Using bioinformatics and ontologies to bridge between healthcare, human genetics and model organism research

**Project Description:**

This project will build on a major public database of disease genetics (GWAS Central, https://www.gwascentral.org) to provide new methods and interfaces to: (a) visually and programmatically interrogate GWAS Central data using a range of research and clinical terms; and (b) integrate and compare GWAS Central data with similar data from other public sources including those of other species. Possible extensions include: (i) GWAS data publishing and linking via the semantic web of ‘Linked Data’; (ii) natural language processing of GWAS publications to extract genotype and phenotype information; and (iii) developing and implementing an application ontology for GWAS summary-level metadata.

More specifically, genome-wide association studies (GWAS) identify genetic variants associated with phenotypes. The comprehensive and widely used GWAS Central database (Beck et al, 2014) collates published summary-level GWAS findings from thousands of studies. The phenotype descriptions in GWAS Central are standardised with the use of publicly available “ontologies”. Ontologies are controlled vocabularies where the terms are precisely defined and related to each other in meaningful ways, and they are widely used by bioinformaticians to integrate and compare heterogeneous datasets. GWAS Central currently uses ontologies that have been developed with a research-focus. However, greater integration with clinical datasets will be achieved by additionally using ontologies that have a clinical-focus, such as those used by the NHS. Furthermore, GWAS data will be integrated with genetic data from other mammalian species, such as mouse, by mapping the human phenotype to the mouse equivalent. International efforts to map between ontologies provide a foundation for enabling this.
References:

Funding details:
This fully-funded studentship is available to Home/EU students and covers UK/EU tuition fees plus an annual tax-free stipend for 3 years (for 2018/19 the stipend rate is £14,777). The studentship would be held in the Department of Genetics and Genome Biology in the College of Life Sciences at the University of Leicester and commence 23 September 2019.

Entry requirements:
The ideal applicant will have a detailed understanding of Computer Science or Bioinformatics and hold/or expect to obtain a UK Bachelor Degree 2:1 or better in a relevant subject. Applicants with degrees in Biological Sciences would need to demonstrate advanced computing skills including working with databases (relational or non-relational) and have the ability to code original applications in languages commonly used in bioinformatics, such as Python or Perl.

The University of Leicester English language requirements apply where applicable.

How to apply:
You should submit your application using our online application system.
Apply for a PhD in Genetics
In the funding section of the application please indicate you wish to be considered for a CLS/GGB Studentship
In the proposal section please provide the name of the supervisor and project title. You do not need to submit a proposal but we do require a personal statement detailing why you are interested in the project.

Project / Funding Enquiries:
You are encouraged to make informal enquiries in the first instance, by contacting Dr Tim Beck timbeck@leicester.ac.uk

Application enquiries to pgradmissions@le.ac.uk

Closing date for applications 29 March 2019