

PhD Opportunity

Integration of health informatics: 'big data' for clinical translation in paediatric inflammatory bowel disease

Project description: This project involves the analysis of 'big data' in a cohort of children diagnosed with autoimmune disease. The supervisory group have access to one of the largest and best clinically characterised cohorts of children diagnosed with inflammatory bowel disease and recruited through close partnership with Southampton Children's Hospital. The project utilises detailed clinical characteristics for these paediatric patients in addition to 'omic research data. Genomic data represent one of the central data types for analysis. We have applied next generation sequencing to sequence the whole exomes of these children in addition to generating transcriptomic, microbiome and metabolomic data. Our goal is to better integrate and interpret these complex data by applying existing pipelines and machine learning methods with a view to understanding what causes disease on a patient-by-patient basis. By working closely with the clinical teams, we always aim to bring our findings from bench back to bedside to help inform patient treatment.

This PhD studentship will train a talented postgraduate in key areas of bio- and health informatics, genomics and mathematical modelling of 'omics data. The successful candidate will: apply programming skills to process genomic data; learn and apply machine learning methodologies to generate and integrate data from genomics, transcriptomics, microbiome and metabolomics; interpret and translate key findings back to clinical research staff and the wider scientific community.

Informal enquires relating to the project: Sarah Ennis (S.Ennis@soton.ac.uk)

Closing date: Friday 15th June 2018

Person Specification: <http://bit.ly/pers-spec>

Funding Notes: This is 3-year full-time PhD and is a fully-funded to cover student fees and stipend (Research Council 2017/18 standard current rate £14,553.00).

Requirements: The successful candidate will have either excellent qualifications in bioinformatics or a firm mathematical background, with a degree in a quantitative discipline such as bioinformatics, mathematics, physical sciences, or computer sciences coupled with a strong interest in genetics and genomics of human disease. The project encompasses mainly "dry lab" experimentation and computational modelling but requires excellent communication skills to join a multidisciplinary team. Complementary skills in statistical analysis and computer programming will be a distinct advantage. A genuine excitement for, and interest in mathematical modelling of biological processes to address complex biomedical questions is essential for this project.

The successful candidate is likely to have the following qualifications:

- A 1st or 2:1 degree in a relevant discipline and/or second degree with a related Masters.

How to apply: <http://bit.ly/apply-phd>

You should enter Professor Sarah Ennis as your proposed supervisor. To support your application provide an academic CV (including contact details of two referees), official academic transcripts and a personal statement (outlining your suitability for the studentship, what you hope to achieve from the PhD and your research experience to date).