3 Year PhD Studentship available for September 2019

Department:
Health Sciences

Supervisors:
Dr Chiara Batini and Professor Martin Tobin

Eligibility:
Available for UK/EU applicants only

Project Title:
Harnessing large-scale genomic sequencing data to understand smoking behaviour

Project Description:
In 2018 it has been announced that both whole exome sequences and whole genome sequences will be analysed in the 500K individuals in UK Biobank over the next two to five years. Not even a month ago the UK Secretary of State for Health and Social Care has launched the plan of the NHS to sequence up to 5M genomes over the next few years by expanding the 100K Genomes and offering whole genome analysis from 2019 for rare diseases and cancers that are difficult to treat, highlighting the importance of genomics in the future of medical care.

Smoking is one of the leading risk factors of the top five causes of death worldwide, including heart and respiratory diseases, killing around 6 million people a year. The number of smokers varies among world regions, and of the 1 billion smokers worldwide, 80% live in low and middle-income countries. Genome-wide association studies have identified up to 14 loci associated with smoking behaviour. These implicate genes for nicotine receptors (CHRNA5-A3-B4 gene cluster on 15q25, and 8p11), nicotine-metabolizing enzymes and
proteins involved in neurotransmission (DBH, BDNF). However, no study so far has used sequencing data to investigate the full genomic architecture of smoking behaviour.

This project will aim at (i) understanding the contribution of rare variants to the genetics of smoking behaviour, with a special focus on nicotine dependence and smoking cessation; and (ii) fine-mapping causal variants in newly-discovered and previously described genetic loci associated with smoking phenotypes. Potential extensions, depending on skill development and progress, include (i) harnessing primary care data to derive nicotine dependence variables; (ii) extending this approach to other substance use disorders; (iii) evaluating the impact of ascertainment bias in GWAS of non-European populations by analysing sequencing data in non-European individuals living in the UK.

This project will provide specific training in bioinformatics, analysis of sequencing data from large-scale resources, genetic epidemiology, understanding and harnessing primary care data, and the basics of population genetics. More general training will include using a high-performance computing cluster, data and project management, presentation skills (e.g. internal seminars, conference talks, posters), writing skills (e.g. report, publications), and public engagement.

You will join the Genetic Epidemiology Group, led by Prof. Tobin, which comprises 27 staff and students and has hosted award-winning PhD students and externally funded early career fellows. You will be expected to participate in all the regular meetings of the group, including weekly team meetings, fortnightly journal clubs and ideas session, and joint weekly seminars with the Biostats group. You will be encouraged to benefit from the training opportunities offered at University of Leicester as well as other institutions in UK or abroad. You will be expected to attend meetings relevant to human genomics in the UK and abroad to present your work and network with other researchers in the field.

References:

Funding details:
- Fees - full-time registration covering full UK/EU tuition fees for three years.
- Stipend - an annual tax-free stipend equivalent to Research Council rates (for 2018/19 the stipend rate is £14,777)
- Research Training Support Grant - a research training support grant (including travel allowance) of £1,300 pa.
**Entry requirements:**

Applicants are required to hold/or expect to obtain a UK Bachelor Degree 2:1 (or overseas equivalent) or better in a relevant subject. The University of Leicester [English language](#) requirements apply where applicable.

**How to apply:**

You should submit your application using our [online application system](#).

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In the funding section of the application please indicate you wish to be considered for a [CLS Studentship](#)

In the proposal section please provide the name of the supervisor and project you want to be considered for.

**Project / Funding Enquiries:**

Dr Chiara Batini: [cb334@le.ac.uk](mailto:cb334@le.ac.uk) or Telephone: 0116 229 7251

Application enquiries to [pgradmissions@le.ac.uk](mailto:pgradmissions@le.ac.uk)