



Exploring the Effects of Microbiota and Genome Regulation in the Intestinal Epithelium and Brain

There are more bacterial cells living in our gut than the number of human cells that make up our body. Many of these bacteria are 'good bacteria' by helping us in digesting food, warding off pathogenic bacteria and training our immune system. How these bacteria interact with their host's cells, e.g., the stem cells in the intestinal epithelium and how they affect gene expression and genome functions are important questions. The Varga-Weisz lab has recently revealed novel mechanisms involving chromatin dynamics by which the microbiota crosstalk to the host's genome (Fellows *et al.*, Nature Communications 105, 2018, DOI: 10.1038/s41467-017-02651-5, direct link: <http://rdcu.be/EntB>). The PhD project will build and extend on this work and will probe how the microbiota affect our genome function, in the intestinal epithelium and possibly other organs, such as the brain.

We employ many approaches in our research, including biochemistry, cell biology, epigenomics, transcriptomics and the ensuing bioinformatic analyses. Techniques that we use routinely are gut organoid culture, chromatin immunoprecipitation sequencing (ChIP-seq), RNA sequencing (RNA-seq). We work in collaboration with several laboratories and there might be an opportunity for a 3-6 months training period in the lab of our Brazilian or Italian collaborators.

The ideal candidate would have prior laboratory experience, e.g., through a master degree or a practical year in a research laboratory and interests in genome regulation, chromatin biology, microbiology and other relevant fields. Skills in bioinformatic approaches are also welcome.

The Varga-Weisz lab is part of the new Functional Genomics section of the School of Biological Sciences (University of Essex, <http://genomics.essex.ac.uk/>) led by Prof Leonard C. Schalkwyk (Psychiatric and Environmental Epigenomics) and including the labs of Prof Meena Kumari (Biological and Social Epidemiology), Dr Pradeepa M. Madapura (Chromatin, Gene-regulation), Dr Antonio Marco (Evolutionary Genetics), Dr Jordi Paps (Evolutionary Genomics), Dr Vladimir Teif (Chromatin and Epigenetics), and Dr Radu Zabet (Computational and theoretical models of gene regulation). This section is the result of an initiative to strengthen the area of genomics in the School. On top of the state-of-the-art infrastructures and facilities available in the School, the section also has access to new labs, a cluster of servers, a MiSeq machine, as well as other major molecular biology equipment.

Entry requirements and application procedures

Applications should be submitted electronically by Monday 12th March 2018, see here for details <https://www.essex.ac.uk/pgapply/enter.aspx>

The target start date for this 3-year, fully-funded PhD studentship is 8th October 2018. This studentship will be to the value of £14,553 per annum plus UK tuition fees. Please note: International students need to have additional funding to cover the difference in tuition fees which is £11,815, evidence will be requested that you have these additional funds.

Additional questions and queries about the studentship can be addressed to:
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For general information about the School of Biological Sciences at the University please visit our webpages
<http://www.essex.ac.uk/bs/>.

The University of Essex

In the recent Research Excellence Framework 77% of research at the University of Essex research is 'world leading' or 'internationally excellent' (REF 2014). We offer world-class supervision and training opportunities and our research students work at the heart of an internationally-acknowledged and well-connected research community. In the 2013 Postgraduate Research Experience Survey, 84% of respondents said that they were satisfied with the quality of their research degree. At Essex we win awards for our pioneering student support schemes. We are the most recent winners of the prestigious *Times Higher Education* award for Outstanding Support for Students. Essex is a genuine global community. With more than 130 countries represented within our student body, and 40% of our students from overseas, we are one of the most internationally-diverse universities in the UK.