



seeks for

PhD student in Evolutionary Genetics

Deadline: 15.01.2024

Who we are

The Institute of Genomics (IG) is a leading centre for genomic-based research in Estonia, affiliated with the University of Tartu. IG brings together world-class expertise in medical, population, evolutionary and statistical genetics and genomics for internationally competitive research in high-tech demanding fields of natural sciences and medicine, focusing on interdisciplinary genomic research with the aim of finding and explaining the causes and associations of genetic variability in mental and physical health. IG hosts, develops and manages a population-based, longitudinal Estonian Biobank (EstBB, <https://genomics.ut.ee/en/content/estonian-biobank>) that today represents approximately 20% of Estonia's adult population (211,000 participants) and is regularly linked with national electronic health records, National Health Insurance Fund's database and hospital databases for up-to-date phenotypic information. The institute also hosts a dedicated state-of-the-art ancient DNA laboratory, we have a core facility for DNA/RNA sequencing and genotyping and have access to IT infrastructure for large-scale bioinformatic analyses (www.hpc.ut.ee).

The Centre of Genomics, Evolution and Medicine (cGEM) was founded in 2018 within IG with the aim to develop a centre with world-leading expertise in personalized medicine to manage the risks, prevention, and diagnostics of diseases for contemporary populations by considering the unique evolutionary history of the human genome. cGEM has also launched the development of a functional studies lab for induced pluripotent stem cell (iPSC) research.

Web page of our institute: <https://www.genomics.ut.ee/en>
and of the Center for Genomics, Evolution and Medicine (cGEM): <https://cgem.ut.ee>

Position description

We are looking for a motivated PhD student with a background in archaeology, genetics, medical genomics, statistics and/or bioinformatics who is interested in completing their PhD program at the University of Tartu and in being part of the cGEM research group.

Pathogens have presented a continuous environmental pressure throughout human history with their ability to change their prevalence and genetic makeup swiftly. Consequently, genomic regions in humans associated with the immune response have been identified as prime targets of various modes of natural selection and significant contributions from diverse ancestral components. Continuous efforts have been put into the reconstruction of the role of particular pathogens in these evolutionary processes.

This project focuses on the impact of pathogen exposure on shaping the genomic makeup of humans throughout their recent history. In order to approach this research question, the project will take advantage of the ever growing number of existing genomic and phenotypic information, including numerous datasets from the Estonian Biobank, in combination with experimental immune profile data exclusively generated for this project.

The main aim is to systematically analyse genomic and immunological datasets to identify genomic regions associated with pathogen-specific immune response processes and use this information to explore the role of evolutionary processes such as selection and admixture on these regions. By combining this information, the project aims at identifying how pathogens exposure has shaped the genomes of humans throughout their history.

The outcome of this project will substantially improve our understanding of the role of pathogens in human evolution. At the same time, these insights have the potential to serve as the basis for future strategies to personalise the prediction, prevention and treatment of pathogen-induced diseases.

Duties and responsibilities

The PhD student will be carrying out research activity in the field of evolutionary genomics including but not limited to curation and analysis of matching genetic and phenotypic datasets and writing publications.

Required qualifications

MSc in archaeogenetics, biological anthropology, genetics, medical genomics, molecular biology, bioinformatics, biostatistics or related subjects. Basic knowledge and experience in programming would be ideal.

Required language skills

Estonian and/or English

Starting at

September 1st 2024

Stipend (per month):

from 1700 € / the position is funded for 4 years

Application documents and notification of results

In order to be considered for the PhD student position, the candidate must submit an application by e-mail to: michael.dannemann@ut.ee and merit.kreitsberg@ut.ee OR the Institute of Genomics, Estonian Biocentre (postal address: Riia 23b, 51010, Tartu, Estonia) the following documents:

- 1) a letter of application/motivation;
- 2) a curriculum vitae;
- 3) name and contact information of at least 1 reference
- 4) other materials considered relevant by the candidate.

Shortlisted candidates will be contacted for interviews.

Further Information

Michael Dannemann (michael.dannemann@ut.ee) or Merit Kreitsberg (merit.kreitsberg@ut.ee)

Supervisor

Associate professor of Evolutionary and Population Genomics **Michael Dannemann**



This position is announced within the frames of H2020 ERA Chairs program grant no 810645, cGEM