



seeks for

PhD student in Evolutionary Genetics

Deadline: 10.02.2020

Who we are

The Institute of Genomics of the University of Tartu was formed in 2018 through a merger of the Estonian Genome Center and the Estonian Biocentre, bringing together world class expertise in medical, population and evolutionary genomics. We host the Estonian Biobank (www.geenivaramu.ee) which has 200,000 participants and is connected to national health registries for phenotypic information. Starting in May 2018, we opened a brand-new ancient DNA laboratory, we have a core facility for DNA/RNA sequencing and genotyping and have access to a High- Performance Computing Cluster (www.hpc.ut.ee). The Centre of Genomics, Evolution and Medicine (cGEM) was founded in 2018 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. We publish widely in top journals and sport a vibrant and international research community of 70 researchers and students.

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 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.

Recent methodological advances to extract ancient DNA from human fossils have provided an opportunity to study genetic variation and selection over time. The growing number of large cohorts with genotype and phenotype data (such as biobanks) has provided resources to link this genetic variation to disease phenotypes. Recent studies that have connected diseases to selective pressures have shown that in some instances an advantage in the past may have come with a price for present-day populations: for example, many genetic variants associated with immune-mediated, cardiovascular and metabolic diseases show signs of having been recently favoured by natural selection.

This project focuses on genetic adaptations to environmental and cultural changes in human populations of West Eurasia during the last 20,000 years, a time period that covers major shifts in climate, diet and pathogen exposures in this region. The project will take advantage of high-quality genetic and biomedical datasets, including ancient DNA from dated human fossils, whole genome sequences from modern populations, and case-control and biobank datasets with associated genetic, biomarker and health information (such as the Estonian Biobank).

The main aim of this project is to systematically map how natural selection has shaped human genetic variation during this time period and the consequences of these adaptations for health in

present-day populations. With some of the genetic variation in present-day non-Africans being inherited from admixture with Neandertals ~55,000 years ago, the project will further investigate which role this admixture has played in shaping these adaptive processes.

The outcome of this project will (1) provide important information about the role of selection and admixture in the interplay between genetics and environments over long time scales, which are difficult to obtain from contemporary populations and environments. The project will (2) help resolving the role of different dietary and environmental (life-style) factors in the susceptibility for metabolic and cardiovascular diseases in present-day populations, which are important when using genetic information to personalise the prediction, prevention and treatment of these diseases.

Duties and responsibilities

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, environmental and biomedical datasets and writing publications.

Required qualifications

MSc in archaeogenetics, biological anthropology, genetics, medical genomics, molecular biology or related subjects. Having some basic knowledge of basic knowledge and experience of bioinformatic analysis and of current software use would be ideal.

Starting at

September 1st 2020

Stipend (per month):

1,100- 1,300 € / 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 to the Institute of Genomics, Estonian Biocentre (postal address: Riia 23b, 51010 Tartu, Estonia) OR e-mail to: michael.dannemann@ut.ee, anders.eriksson@ut.ee and merilin.raud@ut.ee) the following documents:

- 1) a letter of application/motivation;
- 2) a curriculum vitae;
- 3) a copy of a document (including its annexes) which shows the candidate to hold the required qualification (authorized translation into Estonian or English if the credential is not in one of these languages), or examination transcripts if the qualification is yet to be obtained. A candidate can be required to submit the original or a certified copy of the document (including its annexes) showing the candidate to hold the required qualification;
- 4) other materials considered relevant by the candidate.

Shortlisted candidates will be contacted for interviews. The candidate will be notified of results within a week following the decision

Further Information

Anders Eriksson (anders.eriksson@ut.ee) or Merilin Raud, (ph. no. +372 737 5063, merilin.raud@ut.ee)



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