Postdoc in Applied Machine Learning
University of Copenhagen

Job Title	Postdoc in Applied Machine Learning
Department	Globe Institute
Institution	University of Copenhagen Copenhagen, Zealand, Denmark
Date Posted	Mar. 21, 2024
Application Deadline	Apr. 21, 2024
Position Start Date	Aug. 1, 2024
Job Categories	Post-Doc
Academic Field(s)	Statistics & Actuarial Science Computer/Information Sciences
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Job Description	

We are looking for a highly motivated and dynamic postdoc for a postdoctoral researcher for two years, starting on the 1 August 2024. The postdoc will join BarleyMicroBreed, a large European Commission

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funded project containing 12 different commercial and academic partners across Europe and North Africa. The goal of the project is to identify genes in barley that can ultimately be selected for in breeding programmes to promote drought tolerance (by them using microbes more effectively). The candidate in this position will be responsible for applying statistical learning approaches on barley genome data, microbial communities and plant phenotypic data to identify links between them that can be later explored in the lab.

Information on the department can be found at www.globe.ku.dk.

Our research
This project will be hosted within The Plant Hologenome group led by Associate Professor Christopher Barnes (https://globe.ku.dk/research/hologenomics/4122044/), which operates within the Centre for Evolutionary Hologenomics (CEH) (https://ceh.ku.dk). In our centre, we believe that microbes are essential to the life of multi-cellular organisms, and if we are to fully understand the differences between individuals, both the host genome and the microbiome effects need to be considered. However, these interactions are so complex, we generate large datasets (multi-omic data) and develop methods for their integration. This area is so expansive, we rely upon collaboration to for projects to succeed, and we therefore emphasise this within a work environment. The CEH is a diverse and vibrant environment, with researchers having various different research and personal histories. Furthermore, within the CEH we have access to world class molecular laboratories (for data production) and a new custom-built server for processing massive -omics era datasets.

The project
Barley is the ‘last crop before the desert’, meaning if barley cannot grow, the land be quickly become unusable for the foreseeable future. While there are barley lines that are extremely drought tolerant, they are not the most productive ones. We hypothesise that some of the toughest barley lines’ resilience comes from their root microbiome, where they cultivate microbes that then help in surviving drought. If we can therefore identify the genes and microbes associated with enhanced drought tolerance and breed them into highly productive lines, we can ensure future production even in light of increasing drought severity and intensity with climate change.

Your job
Specifically, you will take barley genome data (and SNPs, SNVs, indels etc.) and integrate it with metagenomic data from roots and phenotypic data (root morphological traits and total biomass) which were collecting from multiple field sites. You will take the lead in performing this, which can be performed in many ways. However ongoing projects within the centre are using variance auto-encoders and structural causal modelling, which could serve as a basis for the analyses here. The candidate will be able to work with bioinformaticians, statisticians and plant biologists across different

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research groups within the centre in order to achieve this. We will later test the effects of your predicted gene-microbiome interactions by manipulating the genomes of barley plants with CRISPR/Cas and growing mutants in controlled environments. If successful, we will eventually breed these genes into high yielding barley lines to improve their drought tolerance (i.e. without genetic medication).

Profile
We are looking for a highly motivated and enthusiastic scientist with the following competencies and experience:

Essential experience and skills:

- You have a PhD (or equivalent) in one or more of the following areas: statistics, data science, statistical genetics, computations biology, bioinformatics, computer science, and/or mathematics.
- Demonstrate a working proficiency in one or more programming language(s) commonly used in data science (e.g. Python, R, C/C++, Java or Julia) and have experience working in UNIX and high-performance computing.
- Proficient communication skills and ability to work in teams
- Excellent English skills written and spoken

Desirable experience and skills:

- Experience working with large-scale biological datasets, such as genomic, metagenomic, multi-omics etc.
- Understanding of FAIR data principles and an interest in making data interoperable.
- Interest in scientific communication and/or public outreach.

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Place of employment
The place of employment is at the Centre of Hologenomics, the Globe Institute, University of Copenhagen. We offer creative and stimulating working conditions in dynamic and international research environment. Our research facilities include world class modern laboratories, various next generation sequencing platforms, high performance computing clusters, in house bioinformaticians and biostatisticians.

About Globe Institute
The Globe Institute is part of the Faculty of Health and Medical Sciences at the University of Copenhagen. The Institute's main purpose is to address basic scientific questions through interdisciplinary approaches. The institute operates at the intersection of natural and medical sciences and the humanities. Information on the institute can be found at: http://www.globe.ku.dk/.

The Globe Institute is committed to creating an inclusive and diverse environment where employees and students can belong and thrive. See website for more information. All qualified applicants will receive full consideration. Candidates who, through their research, teaching, and/or service, contribute to diversity and competencies of our Institute are encouraged to apply. The University of Copenhagen strives to offer a family friendly and flexible working environment with a sustainable balance between work- and private life, including parental leave schemes (up to 47 weeks for both parents) and up to six weeks of paid holidays per year. Researchers that have not been tax liable in Denmark for the last 10 years can apply for a special (reduced) tax scheme. The university offers a variety of services for international researchers and accompanying families.

Terms of employment
The average weekly working hours are 37 hours per week.

The position is a fixed-term position limited to a period of 2 years. The starting date is the 1 August 2024.

Salary, pension and other conditions of employment are set in accordance with the Agreement between the Ministry of Taxation and AC (Danish Confederation of Professional Associations) or other relevant organisation. The monthly salary is approx 36,400 DKK/approx. 4,800 EUR (October 2023 level). Depending on qualifications, a supplement may be negotiated. The employer will pay an additional 17.1 % to your pension fund.

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Foreign and Danish applicants may be eligible for tax reductions, if they hold a PhD degree and have not lived in Denmark the last 10 years.

The position is covered by the Job Structure for Academic Staff at Universities 2020.

Questions
For further information please contact Associate Professor Christopher Barnes (c.barnes@sund.ku.dk).

Foreign applicants may find this link useful: www.ism.ku.dk (International Staff Mobility).

Application procedure
Your online application must be submitted in English by clicking ‘Apply now’ below. Furthermore, your application must include the following documents/attachments – all in PDF format:

1. Motivated letter of application (max. one page).
2. CV incl. education, work/research experience, language skills and other skills relevant for the position.
3. A certified/signed copy of **a)** PhD certificate and **b)** Master of Science certificate. If the PhD is not completed, a written statement from the supervisor will do.
4. List of publications.

Deadline for applications: 21 april 2024, 23:59 CET
We reserve the right not to consider material received after the deadline, and not to consider applications that do not live up to the abovementioned requirements.

The further process
After the expiry of the deadline for applications, the authorized recruitment manager selects applicants for assessment on the advice of the hiring committee. All applicants are then immediately notified whether their application has been passed for assessment by an unbiased assessor. Once the assessment work has been completed each applicant has the opportunity to comment on the part of the assessment that relates to the applicant him/herself.

You can read about the recruitment process at http://employment.ku.dk/faculty/recruitment-process/

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The applicant will be assessed according to the Ministerial Order no. 242 of 13 March 2012 on the Appointment of Academic Staff at Universities.

The University of Copenhagen wish to reflect the diversity of society and encourage all qualified candidates to apply regardless of personal background.

Part of the International Alliance of Research Universities (IARU), and among Europe's top-ranking universities, the University of Copenhagen promotes research and teaching of the highest international standard. Rich in tradition and modern in outlook, the University gives students and staff the opportunity to cultivate their talent in an ambitious and informal environment. An effective organisation – with good working conditions and a collaborative work culture – creates the ideal framework for a successful academic career.

Contact Information

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

Contact

Denmark