



DOCTORAL RESEARCHERS, THE CENTRE OF EXCELLENCE IN TREE BIOLOGY

The University of Helsinki, founded in 1640, is one of the world's leading universities for multidisciplinary research. The university has an international academic community of 40,000 students and staff members. The University of Helsinki offers comprehensive services to its employees, including occupational health care and health insurance, sports facilities, and opportunities for professional development.

The Centre of Excellence in Tree Biology

(<https://www.helsinki.fi/en/researchgroups/centre-excellence-tree-biology>)

brings together ten PIs from the University of Helsinki (UH) and two from the Natural Resources Institute Finland (Luke), who together with a large network of international collaborators form a multidisciplinary team of experts in plant genetics, physiology and computational modelling of whole tree physiology. TreeBio is funded by the Academy of Finland to provide for an exceptional centre of excellence focused on studying carbon sequestration in trees as a holistic, physiological process, and to provide detailed molecular and genomic information for breeding birch as a better carbon sink. The research programme is situated in the Viikki Biocentre (VB) of UH, which is the largest concentration of molecular plant biology in Finland, comparable to the best research centres abroad. The VB has exceptional research facilities, including state-of-the-art core facilities such as several next generation sequencing platforms, plant growth chambers, greenhouses, and a high-throughput plant phenotyping facility.

The Centre of Excellence in Tree Biology invites applications for

7 DOCTORAL RESEARCHER POSITIONS in the following research projects

- Project 1: Stomatal function and vascular connections. The project aims at molecular-level understanding of guard cell signalling and function in response to environmental stimuli. We will also address molecular connections between stomatal regulation and vascular function (e.g., water transport, systemic signals). We will utilize proteomics, biochemical and molecular genetics approaches in Arabidopsis and physiological measurements of stomatal and vascular parameters in Arabidopsis and trees. Supervisors: Kangasjärvi, Sierla, Shapiguzov, Waszczak
- Project 2: The role of energy metabolism in carbon source effects. The project aims at: (i) dissecting metabolic and signalling interactions between chloroplasts and mitochondria and (ii) developing new methods for phenotyping photosynthesis and respiration (including advanced chlorophyll fluorometry, gas exchange and oxygen microsensor approaches). Supervisors: Kangasjärvi, Shapiguzov, Sierla
- Project 3: Morphogenesis and functionality of phloem. Following our extensive previous work of phloem development, we are taking various genetic and molecular approaches to deepen our understanding of phloem at cellular and functional levels. Supervisors: Helariutta, Mähönen, Hölttä, Sierla
- Project 4: Cambial factors. Guided with a comparative single cell transcriptome analysis of Arabidopsis, birch and poplar cambia, the aim in this project is to identify through molecular genetics key loci driving enhanced growth and carbon sink in trees. Supervisors: Mähönen, Kucukoglu-Topcu
- Project 5: Source-sink. By combining computational modelling and experimentation, in this project, we will explore how mutations affecting function of stomata, conductive tissue or cambium and thus, consequently, carbon sequestration in wood, will potentially feedback to each other, and to other aspects in tree physiology. Supervisors: Hölttä, Mähönen, Kucukoglu-Topcu
- Project 6: Distribution and role of open chromatin in silver birch and Scots pine genomes. Open chromatin sequencing (ATAC-seq) allows identification of

regulatory active regions of the genome. In this project, the aim is to study regulatory genomic regions in conjunction with gene expression and population genetic data from both functional genetics and/or evolutionary point of view depending on the interests of the candidate. Supervisors: Pyhäjärvi, Salojärvi

- Project 7: Genomic breeding. By combining our understanding of physiology and genetics in both trees and Arabidopsis with the phenotypic and genomic data of the current silver birch breeding population in Finland, our aim is to develop a model for genomic breeding in this economically highly important boreal tree species. Supervisors: Nieminen, Pyhäjärvi, Salojärvi

The doctoral researchers will be employed full-time for a fixed term of 4 years in one of the CoE research groups. The earliest starting date is 1 April 2022.

We seek highly motivated candidates with excellent communicational skills, who can work both independently and in a team. Fluency in English is expected. The candidate should have MSc degree in genetics, molecular biology, evolutionary biology, biology or related fields and to have proven academic ability to take initiative and think independently as well as experience in working with plants. The background and interests of the successful candidates will determine their specific lines of research within the CoE.

For general information, contact the CoE Coordinator Karolina Blajecka: karolina.blajecka@helsinki.fi

For science related questions, contact the CoE PIs:

Ykä Helariutta (yrjo.helariutta@helsinki.fi), Jaakko Kangasjärvi (jaakko.kangasjarvi@helsinki.fi), Ari Pekka Mähönen (aripekka.mahonen@helsinki.fi), Teemu Hölttä (teemu.holтта@helsinki.fi), Tanja Pyhäjärvi (tanja.pyhajarvi@helsinki.fi), Jarkko Salojärvi (jarkko.salojarvi@helsinki.fi), Kaisa Nieminen (kaisa.p.nieminen@luke.fi), Alexey Shapiguzov (alexey.shapiguzov@helsinki.fi), Melis Kucukoglu-Topcu (melis.kucukoglu@helsinki.fi), Maija Sierla (maija.sierla@helsinki.fi), Cezary Waszczak (cezary.waszczak@helsinki.fi)

The position is fixed-term (4 years) with a six-month probation period. Salary is based on levels 1–4 of the demands level chart for teaching and research personnel in the salary system of Finnish universities. In addition, the appointee will be paid a salary component based on personal performance with the overall salary amounting to approximately 2200–3000 €/month (gross) depending on the stage of the doctoral studies and work performance. Standard Finnish pension benefits, occupational health care and health insurance are provided for the University employees. The University offers comprehensive services including sports facilities, and opportunities for professional development. The International Staff Services office (<https://www.helsinki.fi/en/about-us/careers/welcome>) assists employees from abroad with their transition to work and life in Finland. To learn more about what the University of Helsinki has to offer please visit this site <https://www.helsinki.fi/en/about-us/careers/why-helsinki>.

PhD degree consists of the student's own research work and studies specific to the doctoral candidate's discipline or research field, as well as transferable skills training, and career orientation and guidance (40 ECTS). English is the primary language of study in doctoral education. The University has 4,700 doctoral researchers, one-fourth of them international, and awards approximately 500 doctoral degrees annually. The successful candidate will apply for the right to study for a doctoral degree in a PhD program of the Faculty of Biological and Environmental Sciences or Faculty of Agriculture and Forestry (see Doctoral Programmes <https://www.helsinki.fi/en/admissions-and-education/apply-doctoral-progr...>).

Application should include the following documents as a single pdf file: Motivation Letter (max 1 page) and CV (max 2 pages). Include also contact information of two persons who can provide a reference letter based on request. Please upload only one Motivation Letter (as part of a single pdf) during the application process. Start your letter from specifying which project(s) listed above you are interested in and why.

Please submit your application using the University of Helsinki Recruitment System via the Apply link. Applicants who are employees of the University of Helsinki are requested to leave their application via the SAP HR portal. The deadline for submitting the application is 11 March 2022. Updates on the recruitment process will be posted in the News section of the CoE website(<https://www.helsinki.fi/en/researchgroups/centre-excellence-tree-biology...>).

Due date

11.03.2022 23:59 EET

Apply for the position

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Updated: 26.2.2022