Dear Search Committee,

I am writing to apply for the position of assistant professor / associate professor / full professor in forest genomics and breeding. The position is very appealing to me because throughout my academic career, I have focused on how different plants are adapted to environmental challenges and how the adaptations are manifested in the genome. My work on this and related topics has resulted in 23 publications in journals including Nature Genetics, PLoS Genetics, GBE and Molecular Ecology. I have several collaborators and I have visited University of Helsinki multiple times and enjoyed the atmosphere of scientific enthusiasm there. There is a concentration of life-sciences in Viikki campus and I would enjoy the environment and fit well in the community there.

My research has two main aspects: addressing basic evolutionary genomics questions and applying that knowledge to current forest tree breeding and climate change mitigation challenges. Most of my research has been conducted on forest trees, especially Pinus sylvestris (Scots pine), which has a rich history of experimental forestry research and strong local adaptation. In my PhD study at the University of Oulu, supervised by Professor Outi Savolainen, I studied the local adaptation and effect of past demographic history on current genetic diversity of P. sylvestris, utilizing coalescent based simulations.

During my Academy of Finland postdoctoral fellowship I studied genomics of teosinte local adaptation and the effects of domestication, breeding and hybridization on their genetic diversity. Work with maize's ample genomics resources broadened my view on the possibilities of plant genomics, especially in non-coding, regulatory and structural variation's roles in adaptation. Subsequently, I worked two years as a Senior Research Fellow in Finland and in 2014 I obtained a 5-year fellowship from the Academy of Finland for starting my own research group.

During the past 5 years, I have applied, participated and had leadership roles in multiple European Union -funded Horizon 2020 projects targeted on the genomics and climate change effects on European forest tree species (ProCoGen, GenTree, B4EST). These projects have been international and interdisciplinary, combining genomics, breeding, ecology, physiology and niche modeling. In these projects we have put a special effort on the dissemination of our results to the general public and forestry professionals.

At Univeristy of Helsinki I would continue working on evolutionary genomics and understanding the basis of clinal variation in P. sylvestris, but expand the study to a truly genome-wide level, that also addresses structural and regulatory variation. In addition, I will expand the set of forest tree species to address more general trends of plant adaptation genomics: the role of genome size and life-history traits.

I have a formal pedagogic education, and I am a licensed high school level biology teacher. I have experience in designing courses on Population Genetics and Bioinformatics for both Finnish and international students. I have co-supervised four graduated PhD students and am

currently the main supervisor of two graduate students. Based on this experience, I am prepared to participate in education and curriculum design at Department of Forest Sciences.

Sincerely,
Tanja Pyhäjärvi