Postdoc: Statistical Genetics of Sugar Kelp – Cornell University

The position is in the lab of Jean-Luc Jannink, Section of Plant Breeding and Genetics at Cornell, and is part of a large ARPA-E grant to develop open-ocean grown sugar kelp (*Saccharina latissima*). *Saccharina latissima* is a brown algae or kelp. It is phylogenetically distant from both plants and animals, having diverged from green algae early in the evolution of eukaryotes. The project will explore its genome, the population history of New England sugar kelp, and take advantage of its biphasic lifecycle to rapidly domesticate it using cutting edge genomic selection methods.

The Jannink lab works with several crop species (wheat, oat, barley, cassava, and now kelp) to develop new genomic prediction methods and integrate them optimally within breeding schemes. These efforts source tools from genomics, quantitative, statistical, and population genetics, and from machine learning and operations research.

In research for this project the postdoc will collaborate with scientists at the Woods Hole Oceanographic Institute, the University of Connecticut, and the HudsonAlpha Institute for Biotechnology. Primary tasks include the bioinformatic analysis of a large panel of resequenced haploid kelp gametophytes to identify variants, use the panel as an imputation reference population, and estimate important population genetic parameters of New England sugar kelp. Individuals from this panel will be mated for evaluation by collaborators. The postdoc will prepare and communicate mating and field designs for estimation of inbreeding depression and various quantitative genetic parameters. The postdoc will analyze these experiments for genome wide association and for training genomic prediction models. Data generated from the project will also enable research on linear models to predict heterosis in breeding and the identification of evolutionary conservation and signatures of selection in the sugar kelp genome.

Term is one year renewable to three years contingent on performance.

**Anticipated Division of Time**

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<th>Task</th>
<th>Percentage</th>
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<tr>
<td>Experimental and breeding program design and data analysis</td>
<td>60%</td>
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<td>Communication, coordination, and training with collaborators</td>
<td>30%</td>
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<td>Preparation of quarterly reports to ARPA-E</td>
<td>10%</td>
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**Position Requirements**

Ph.D. in statistical, population or quantitative genetics with experience or interest breeding applications, or Ph.D. in plant or animal breeding with emphasis on genomics, or population and quantitative genetics. Proven scientific writing ability and communication skills.

**Preferred Specific Skills**


**How to Apply**

A letter of interest in the position, CV, and contact information for three references should be emailed to Jean-Luc Jannink: jeanaluc.work@gmail.com
Review of applications will begin immediately and continue until the position is filled. Complete Information on the position can be found here: bit.ly/KelpStatGen