

Sex chromosome evolution in liverworts

Abstract: Evolution of sex chromosomes is well-studied in organisms in which sex is expressed in the diploid phase. In such organisms the lack of recombination and the asymmetry in haploidy are assumed to lead to the progressive decay of the Y chromosome. In organisms in which sex is expressed in the haploid phase both U and V chromosomes are equally devoid of recombination and show no asymmetry in recombination suppression. This provides a unique opportunity to tease apart the effect of these two factors on the evolutionary trajectory of sex chromosomes. We are using a combination of classical genetic and comparative genomic approaches to test hypotheses concerning sex chromosome evolution in haploid dioecy using liverworts as a suitable model system (*Marchantia polymorpha*, *Preissia quadrata* and many more).

Job Description: The goal of this project is to (1) develop a new methodology for capturing and sequencing complete sex chromosomes in plant model systems and (2) to reconstruct their evolutionary history both at the gene and structural levels. Therefore, this position involves molecular laboratory work to develop and optimize capturing and sequencing protocols; bioinformatics work to analyze and interpret the generated next-generation sequencing data; and evolutionary and functional genetic analysis of the evolution of sex chromosomes in the model plant *Marchantia polymorpha* and other liverwort species. This project is aimed at addressing one of the fundamental questions of evolutionary biology, the genetic makeup of sex chromosomes in a haploid plant model organism, via developing a new cutting-edge method for third-generation sequencing.

The successful candidate will have a M.Sc. degree in plant molecular systematics, plant evolution, plant molecular biology/genetics as well as strong analytical skills and excellent skills in plant molecular biology. Experience in generating, handling, and analysing next-generation sequencing data including programming skills in R/Python/Perl is highly recommended. Proficient oral and written English skills are expected.

The successful candidate will be matriculated at University of Zurich and work 18 months at University of Zurich, Switzerland. The other 18 months at BaseClear, The Netherlands. Peter Szovenyi, University of Zurich; Prof. Elena Conti, University of Zurich, Prof. Michael Lenhard, University of Potsdam; Dr. Walter Pirovano, Dr. Adalberto Costessi and Dr. Daniël Duijsings, BaseClear BV, The Netherlands will jointly supervise the successful candidate. The fellowship period includes frequent periods of trans-national mobility. The complete 36 months will be under 100% working contracts.

Application documents: 1) Curriculum Vitae with list of publications (if applicable); 2) transcripts of University courses with grades and grading scale applied at the respective degree-granting University; 3) certificate of language proficiency in English (if available); 4) motivation letter explaining why the applicant is suitable for the position and indicating preferred starting date; maximum length: one page; 5) two letters of recommendation sent DIRECTLY to peter.szoevenyi@uzh.ch by each referee. **Send the application documents listed above (1-4) as ONE PDF DOCUMENT to peter.szoevenyi@uzh.ch using “PlantHUB” in the subject line.**

Review of applications will begin immediately and continue until the position is filled. Application deadline: 31st of September 2017.

This project is conducted in the framework of **PlantHUB**. PlantHUB is funded by the H2020 PROGRAMME Marie Curie Actions – People, Initial Training Networks (ITN). PlantHUB offers challenging and exciting research positions in an international, multidisciplinary research network. The employers are leading European universities and leading global companies. All PlantHUB ESR will follow a doctoral programme that is ground-breaking. The doctoral training is placed into an entrepreneurial environment of leading public and private organisations. It combines practical hands-on R&D and technology transfer in plant breeding and production with a PhD Program that concentrates on Responsible Research and Innovation training and practice.

Latest possible starting date of the working contract: **30.11.2017**

Eligibility: Early stage researcher in the first 4 years (full-time equivalent) of their research careers, including the period of research training, starting at the date of obtaining the degree which would formally entitle them to embark on a doctorate either in the country in which the degree was obtained or in the country in which the initial training activities are provided.

At the time of recruitment (=first day of the employment) by the host organisation, researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of their host organisation for more than 12 months in the 3 years immediately before the reference date. Compulsory national service and/or short stays such as holidays are not taken into account.