



## Open PhD Position in

### PlantHUB

“Boosting technology transfer and responsible research and innovation in plant sciences”  
H2020-MSCA-ITN-2016

## ESR5: “EFFICIENT CAPTURING AND THIRD-GENERATION SEQUENCING OF COMPLEX GENOMIC REGIONS”.

**Ph.D. position for 36 months: partnership between academia and industry**

**This open Ph.D. position offers a unique opportunity to gain valuable experience in both academia and industry, opening up excellent prospects for employment.**

**Summary.** Sequencing of complex genomic regions can be achieved by direct sequencing of long single molecules via third-generation sequencing. However, targeted sequencing of long DNA stretches of interest is challenging, because current capturing methods are inefficient and too expensive to be used in every-day research. Multiple biological traits of both fundamental and commercial interest are determined by complex genomic regions (supergenes), yet their genomic sequences remain unknown, hindering their functional analysis. We aim to establish a protocol allowing us to specifically capture very long DNA stretches that could be directly fueled into commercially available third-generation sequencers (Pacific Biosciences and Oxford Nanopore). We will use this methodology to reveal the full sequence of the *S*-locus in *Primula veris* and to study its evolution and molecular genetics in a wide range of primrose species.

**Job Description:** One of the key goals of this project is to develop a new methodology for capturing and sequencing complex genomic regions in a targeted way. Therefore, this position involves molecular laboratory work to develop and optimize capturing and sequencing protocols; bioinformatics work to analyse and interpret next-generation sequencing data; and evolutionary and functional genetic analyses of the *S*-locus (heterostyly supergene) in primroses. Building on published work by Elena Conti and Michael Lenhard, the project uses state-of-the-art third generation sequencing technology to generate long sequencing reads, coupled with custom made bioinformatics pipelines to assemble and annotate these sequences. Recent development by Oxford Nanopore technology in combination with the methodology we will develop in this project may be used for future in-field screening applications. This project is aimed at addressing one of the fundamental questions of evolutionary biology, namely, the detailed genetic makeup of the *S*-locus in primroses, via developing a new cutting-edge method for third-generation sequencing. This PhD position offers a unique opportunity to combine the experience of working for a market-leading private company that provides solutions for life sciences (BaseClear VB) with an academic research environment at the University of Zurich, offering world-leading expertise in evolutionary biology research and cutting-edge improvements of technological advances in genomic sequencing.

The selected candidate will pursue the doctoral degree through the University of Zurich (Switzerland), and will be based 18 months at said University (including a stay of 6 months at the University of Potsdam, Germany) and 18 months at BaseClear BV, in the Netherlands, which will operate the working contract for the entire duration of the fellowship (36 months). Prof. Elena Conti (University of Zurich), Prof. Michael Lenhard (University of Potsdam), Dr. Peter Szovenyi (University of Zurich); Dr. Walter Pirovano and Dr. Daniël Duijsings (BaseClear BV, the Netherlands) will jointly supervise the selected candidate.

**Application deadline:** **January 30, 2017** (or until position is filled)

**How to apply:** 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) motivation letter explaining why the applicant is suitable for the position and indicating preferred starting date; maximum length: one page; 4) two names of referees or letters of recommendation sent DIRECTLY to [ContiElena@access.uzh.ch](mailto:ContiElena@access.uzh.ch) by each referee. **Send the application documents listed above as ONE PDF DOCUMENT to: ContiElena@access.uzh.ch using “PlantHUB application” in the subject line.**

**Qualifications:** The ideal candidate will have a M.Sc. degree with knowledge in one (or more) of the following subject areas: molecular biology/genetics, evolutionary biology, genomics, bioinformatics. Some experience in generating, handling, and analysing next-generation sequencing data including programming skills in R/Python/Perl is desirable.

**Language requirement:** Proficient oral and written English skills

**Starting date:** May-August, 2017 (negotiable)

**Benefits:** This program offers a three-year, full-time position at BaseClear BV with varying workplaces as researcher with a salary and allowances according to EU regulations for Marie Skłodowska-Curie Early Stage Researchers.

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 ESRs 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.

**Main Research Field:** *GENOMICS/EVOLUTION/ BIOINFORMATICS*

**Sub Research Field:**

PLANT EVOLUTINARY BIOLOGY

BIOINFORMATICS

GENOMICS

PlantHUB is open to **applicants of any nationality**.

**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.

The mobility requirement will apply to the beneficiary where the researcher is recruited for the first time in the PlantHUB, in this case: the Netherlands.