

TWO PHD POSITIONS IN ORCHID ECOLOGY AND EVOLUTION

Two PhD positions are open in 2016 to 2019 at the University of Gdansk, within an international network focusing on orchid symbiosis and metabolism, ORCHIDOMICS (funded by the Polish National Science Centre; Maestro7-NZ to M.-A. Selosse, 2016 to 2020).

Fields of interest and research objective: Prof. M.-A. Selosse's team is based in Brazil (Viçosa), France (National Museum of Natural History, MNHN-Paris) and Poland (Gdansk) and studies the ecology and evolution of mycorrhizal symbiosis, i.e. the association of plant roots with soil fungi, in tropical and temperate regions. The current project focuses on our special interest in mycorrhizae of temperate orchids and their role in plant physiology. In most cases, fungi provide soil minerals to the plant, in exchange for photosynthetic sugar. Yet, during orchid germination, the fungi provide carbon to germinating seedlings that have no reserve. Moreover, in some orchid species, adult plants also recover carbon from their fungi: some are achlorophyllous and non-photosynthetic (mycoheterotrophic species) while others are green and mix photosynthesis with exploitation of fungal carbon (mixotrophic species). We aim to study these various nutritional strategies (germination, adult autotrophy, mycoheterotrophy and mixotrophy) within several evolutionary and ecological frameworks, using metabolomic and transcriptomic approaches in situ. These original approaches open the way to a new integrated vision of plant biology.

Research environment: The core team is at the Department of Plant Taxonomy and Nature Conservation, University of Gdansk (UG, Poland). Here, the ORCHIDOMICS team encompasses 5 full researchers, including one postdoctoral researcher working on bioinformatics. The PhD candidates, based at UG, will be part of the international network of renowned European scientific institutions involved in ORCHIDOMICS. This includes Adam Mickiewicz University in Poznań (Prof. I. Makalowska), the Faculty of Biotechnology of UG and the Medical University of Gdańsk (Prof. E. Łojkowska), MNHN in Paris (Prof. M.-A. Selosse) and its Molecular Facilities (Dr. R. Debruyne), and the University of Fribourg (P.-E. Courty). After developing their respective skills, the PhD candidates may contribute as co-authors to other projects within this network and in Brazil. The PhDs include scientific training (internship) at MNHN or other universities of the network, and a cotutelle (joint PhD programme) will be considered upon request.

Position description: ORCHIDOMICS explores nutritional traits of orchids along ecological gradients and evolutionary diversification of terrestrial orchids, based on field sampling and using cutting-edge omics methods. The positions open will involve the candidate in:

- field sampling and field data collection (as part of the team),
- generating transcriptomic or metabolomic data (on their respective samples),
- interacting with colleagues for bioinformatics analyses and paper writing.

PhD #1 will investigate how nutrition and physiology respond to abiotic conditions in situ throughout the orchid's lifespan. The candidate must have an interest in and basic knowledge of plant ecology and ecophysiology. The candidate will especially learn and develop metabolomic analyses, but will receive training in all omics.

PhD #2 will investigate the evolution of metabolism in taxa where mycoheterotrophy emerged. The candidate must have an interest in and basic knowledge of evolution and/or symbiotic interactions. The candidate will especially learn and develop transcriptomic analyses, but will receive training in all omics.

The PhD candidates will work together and with the team on a basis allowing first authorships for each of them. Candidates must have earned a Master's Degree in the life sciences. We value a background in molecular biology and an interest in team working. We require a good level of spoken and written English.

Duration: 3 years, from 01.10.2016 to 30.9.2019.

Salary: Competitive scholarship on the basis of local standards.

How to apply: Prepare a cover letter in English explaining your interest. Indicate which PhD (ecological or evolutionary focus, i.e. #1 or #2) you are applying for and why. Give the names and email addresses of two people with first-hand knowledge of your skills and past research experience. Add a curriculum-vitae (2 pages maximum). Send your completed application in a single pdf file to the principal investigator (ma.selosse@wanadoo.fr).

Call for applications open until the positions are filled. For full consideration, apply by July 10th, 2016.