



The department of Natural Product Biosynthesis (Prof. Dr. Sarah E. O'Connor) at the Max Planck Institute for Chemical Ecology invites highly motivated candidates to apply for a

3-year PhD position to study alkaloid biosynthesis, evolution and engineering in medicinal plants

Project description: Plants produce countless chemically diverse natural products, or specialized metabolites. Alkaloids are a type of natural product that are widely used as medicines. If we discover the biosynthetic genes and enzymes that are responsible for the production of these medicinally important alkaloids, then we can use synthetic biology or engineering approaches to enable better access to these medicines. Ipecac alkaloids have been widely used pharmacological agents for many years. Interestingly, these compounds occur in two evolutionary distant plants suggesting that the biosynthetic pathways evolved independently; in other words, nature developed two different biosynthetic pathways for these molecules.

The aim of this PhD project is to discover the genes of the biosynthetic pathways of ipecac alkaloids in these two distantly related medicinal plant species. Then, the pathways can be compared, contrasted, and recombined using state of the art plant-based production platforms. The PhD candidate will use cutting edge metabolomics and transcriptomics approaches to identify enzyme candidates, screen for activities, characterize active enzymes *in vitro* and *in vivo* and reconstitute both natural and synthetic pathways.

Candidate requirements: We are looking for a highly motivated candidate with training in biochemistry and molecular biology. Experience and good experimental skills in molecular techniques and mass spectrometry are an advantage. Knowledge about plant natural products, specialized metabolism or biochemistry is desirable but not essential. A Master's degree (or equivalent) in Biology, Biochemistry, Chemistry, Biotechnology or related disciplines is required for this position.

We are offering a 4-year PhD position. Payment will be based on the tariff contracts for the public service (65% TVöD E13). We provide an excellent research environment with enthusiastic scientists from different nationalities in the department of Natural Product Biosynthesis led by Prof. S.E. O'Connor (www.sarahoconnor.org) at the Max Planck Institute for Chemical Ecology in Jena, Germany (www.ice.mpg.de). The PhD student will be associated with the International Max Planck Research School (IMPRS, <http://imprs.ice.mpg.de>).

The Max Planck Society is one of Europe's leading research organizations and conducts basic research in the natural sciences, life sciences, and humanities. The Max Planck Institute for Chemical Ecology in Jena carries out fundamental research on how organisms communicate with each other via chemical signals. We analyze ecological interactions with molecular, chemical and neurobiological techniques. In the Institute, organic chemists, biochemists, ecologists, entomologists, behavioral scientists, insect geneticists and physiologists work in collaboration to unravel the complexity of chemical communication that occurs in nature.

The Max Planck Society and the Max Planck Institute for Chemical Ecology are very committed to equal opportunities, diversity as well as gender equality. We actively support a healthy work-life balance compatibility and the compatibility of work and family and have set ourselves the goal of employing more severely disabled people as well as groups that are underrepresented in science and especially in the given field of activity. Therefore, we explicitly encourage them to apply and welcome applications from all backgrounds.

Have we sparked your interest? Please apply. We are looking forward to getting your complete application documents.

Website: www.ice.mpg.de



How to apply: Please send your application as a **single pdf** in English including a letter of motivation and research interests, CV, relevant certificates (degree certificates etc.) and the name and address of at least one referee to Prof. O'Connor: phd-alkaloid@ice.mpg.de

Review of applications will begin on **August 31st, 2022**, and continue until the position is filled. The position is available from October 1st, 2022.

