

Department of Biotechnology

Institute of Bioprocess Sciences and Engineering

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To interested Master students
in Biology, Biotechnology and (Bio)Engineering

Vienna, 2023-06-07

Production and analysis of snake venom proteins

Research internship and **Master thesis**
at the **Institute of Bioprocess Sciences and Engineering**
in cooperation with the P4EU consortium

Dear interested Students,

Abstract: Snake bites are a major health risk in many countries of the southern hemisphere, but potent antivenoms are rare because snake toxins are composed of many different proteins. Furthermore, applying individual snake venom proteins can be a new form of targeted therapy for different diseases. A challenge when producing snake venom proteins for either analysis or therapy development is their structural complexity (>10 disulfide bonds) and inherent toxicity, which cannot be handled by conventional host systems. Here, we will produce a set of ~5 snake venom proteins in plants and plant cells, purify them and subjected them to initial activity testing. And you can be part of this exciting development.

Your tasks:

1. Clone the coding sequence of the toxins into different expression vectors
2. Express the proteins in plants and plant cells
3. Extract and purify the protein to a relevant level facilitating initial activity testing
4. Optional: conduct in initial activity testing in cooperation with P4EU partners
5. Write a glorious thesis and publication (the latter is optional of course) 😊

Duration: The initial internship will take 1-3 months (depending on your availability) and the master thesis will be 6 months. In the course of the project, weekly meetings with your supervisor as well as flexible on-demand meetings and intensive exchange with colleagues will ensure the success of your work.

Requirements: The student successfully applying for this project has good basic knowledge in biotechnology and protein analytics and is keen to gain more insights into innovative plant molecular farming methods in the context of sustainable manufacturing. S/He is skilled in written and spoken English to familiarize herself/himself with the relevant protocols and to fluently communicate within the international environment at IBSE.

Contact: For further questions and applications, please contact Johannes Buyel

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