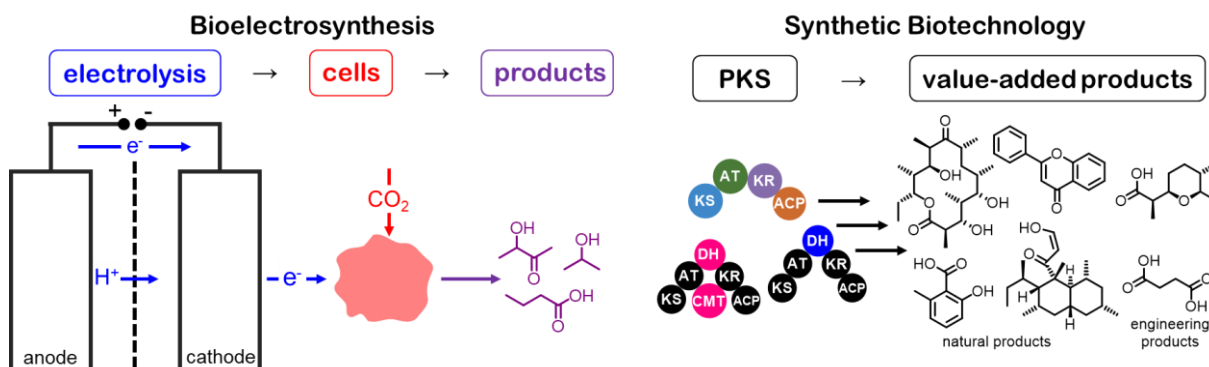


Postdoctoral positions available

Postdoctoral positions are available in the Hahn research group to work on a long-term-funded project of the *VolkswagenStiftung*. The positions are available at the earliest possible date.

Scientific background

The goal of the project is to merge **bioelectrosynthesis** with the **biotechnology of polyketide synthases**.



Bioelectrosynthesis is a potential key-technology of a future **bioeconomy** that promises to make **chemical and pharmaceutical production processes** much more sustainable and less dependent on fossil fuels. In contrast to traditional biotechnology, electricity is used as the driving force for microbial or enzymatic reaction networks designed for highly efficient **conversion of electrical energy into chemical bond energy**. **Metabolic or enzymatic cascade engineering** can be used to direct the flow toward the targeted formation of specific products.

Polyketide synthases (PKSs) are the major enzymes involved in the **biosynthesis of polyketide natural products**. Naturally occurring PKSs form products of enormous structural diversity. The emerging possibility of **PKS engineering** promises to extend their scope even further to non-natural compounds. PKS therefore have enormous potential for a **biotechnological application**, not only in the field of **natural product and drug synthesis**, but also for the preparation of fine chemicals and other chemical **value-added products**.

This project will establish the hitherto missing link between bioelectrosynthesis and PKS biotechnology. It will develop a **platform** of integrated systems that can be used **for the bioelectrosynthesis** of a wide range of **value-added products**. Key milestones will include

- developing suitable chassis organisms through metabolic engineering.
- design of electrosynthesis-compatible enzyme cascades.
- general adaption of electrosynthetic process conditions for use with PKS.

Competence profile of candidates

- a degree in chemistry, biology, biotechnology or a similar natural science discipline
- a completed doctorate in one of the above-mentioned fields
- high motivation and openness towards interdisciplinary research
- good knowledge of English to work in an international team

Due to the interdisciplinary nature of the project, existing experience in at least one of the following areas is highly desirable as a basis

- molecular biology and genetic manipulation of microorganisms
- metabolic engineering and optimisation of metabolite production profiles
- heterologous protein production
- electrosynthesis

Further information

Information on the project can be found under

<https://portal.volkswagenstiftung.de/search/projectDetails.do?ref=98701>

Coverage in other publications (paywalls apply, articles available upon request):

<https://www.heise.de/select/tr/2021/8/2128408582676675356>

<https://www.biospektrum.de/magazine/6-2022>