2019 Helmholtz – OCPC – Program
for the involvement of postdocs in bilateral collaboration projects

PART A

Title of the project: Development of an electrochemistry-based artifical cytochrome system for drug modulation

Helmholtz Centre and institute: Institute of Medicinal Chemistry

Project leader: Prof. Dr. Oliver Plettenburg

Web-address: https://www.helmholtz-muenchen.de/en/imc/index.html

Description of the project (max. 1 page)**:**
The liver is capable of effectively metabolizing xenobiotics to enable their detoxification and excretion. This involves regioselective oxidation of the respective drugs to increase their polarity. The regioselectivity of the conversion can be tuned depending on the cytochrome isoform used.

In this project we will design and establish effective electrochemistry-based systems to mimic these processes. We will explore different aspects like the influence of the electrode materials, solvents and additives on conversion, regioselectivity and stereoselectivity of these conversions, the dependency of steric and electronic properties of the substrate.

We will optimize the conversion to yield single isomers in near quantitative yield to make them preparatively useful in a semi-preparative scale (100's of mgs). We will explore conversion in batch mode and in carefully designed flow systems.

In a second stage of the project we will extend the scope of the optimized reaction conditions to perform chemical functionalization beyond oxidation.

Description of existing or sought Chinese collaboration partner institute (max. half page)**:**

Institute with high reputation in drug discovery, chemical biology or organic chemistry with applications in the area of drug discovery. Experience in organic electrochemistry is highly attractive, but not a requirement. Building a collaboration with future exchange of personal and a continued and intense exchange is highly desirable.

Required qualification of the post-doc:

- PhD in organic chemistry
- Experience in contemporary organic chemistry,

- Preferably practical experience in radical chemistry, photochemistry or electrochemistry.
- Experience in flow chemistry is a plus
- Good knowledge of analytical methods (HPLC-MS, NMR etc.)
- Basic knowledge in medicinal chemistry and drug discovery
- Willingness to work in a dynamic young interdisciplinary team
- High degree of self-organization
- Excellent communication and presentation skills

PART B

Documents to be provided by the post-doc, necessary for an application to OCPC via a postdoc-station:

- Detailed description of the interest in joining the project (motivation letter)
- Curriculum vitae, copies of degrees
- List of publications
- 2 letters of recommendation
- Proof of command of English language

PART C

Additional requirements to be fulfilled by the post-doc:

- Max. age of 35 years
- PhD degree not older than 5 years
- Very good command of the English language
- Strong ability to work independently and in a team