

## DC 10 | Biocatalytic cascade combining N-N and C-C ligation

### ORGANISATION

Shaping change: This is what drives us at Forschungszentrum Jülich. As a member of the Helmholtz Association with more than 7,000 employees, we conduct research into the possibilities of a digitized society, a climate-friendly energy system, and a resource-efficient economy. We combine natural, life and engineering sciences in the fields of information, energy, and the bioeconomy with specialist expertise in high-performance computing and we also use unique scientific infrastructure. The position offered will be embedded in the team 'Synthetic enzyme cascade' within the Institute of Bio- and Geosciences 1: Biotechnology (IBG-1). The development of biotechnological processes for the production of pharmaceutical and chemical products is the overarching goal of the work in IBG-1. Here, systems biotechnology deals with biochemical engineering. In the 'Synthetic enzyme cascades' team we build complex products from optimally renewable raw materials using synthetic enzyme cascades. For this purpose, we combine - in a modular and flexible way - enzymes that do not occur together in nature. Rational enzyme engineering, reaction optimization and process design are used to obtain economically and ecologically efficient cascades.

### ROLES AND RESPONSIBILITIES

The main part of your PhD research (3 years in total) will be carried out at **Forschungszentrum Jülich** (FZJ, Germany) under the supervision of **Prof. Dr. Dörte Rother** in the team 'Synthetic enzyme cascades' at IBG-1: Biotechnology. As Dörte Rother is Professor at RWTH Aachen University, the PhD is assigned to this University of Excellence, located in the far west of Germany. Within 36 months, two academic research stays (in total 5 months) will take place at the **Ruhr-University Bochum** (RUB, Germany) under the supervision of **Prof. Dirk Tischler** and in the Department of Chemical and Pharmaceutical Biology at the Groningen Research Institute of Pharmacy under supervision of **Assist. Prof. Dr. Sandy Schmidt**. Additionally, an industrial secondment at **SpinChem** (Umeå, Sweden) is foreseen. The Horizon Europe Marie Skłodowska-Curie Actions (MSCA) – Doctoral Network (DN) project starts in January 2023. The date of recruitment and start of the PhD project is planned for May 2023 and latest in December 2023. Your **PhD degree** will be awarded based on successful completion of the research work from **RWTH Aachen University** (Germany). You will also be required to participate in the **training events and workshops** organized by the DN program. As a MSCA fellow, you are also expected to **contribute your time in the dissemination of your PhD project's result** through public engagement and other scientific platforms.

#### The PhD research will focus on:

- (i) Screening of the (in-house) CCzyme collection for carbonylase activity towards aromatic aldehydes
- (ii) Production, purification and biochemical characterization of best hits
- (iii) Elucidation of the structure of the most potent catalyst (in cooperation with University of Göttingen)
- (iv) Adapting N-hydroxylation for cascade integration (1<sup>st</sup> academic secondment)
- (v) Screening NNzymes for cascade integration (2<sup>nd</sup> academic secondment)
- (vi) Setting-up and optimising a cascade combining C-C and N-N ligation
- (vii) Process intensification from an industrial point of view (industrial secondment)

Primary supervisor: Prof. Dr. Dörte Rother ([do.rother@fz-juelich.de](mailto:do.rother@fz-juelich.de) / <https://www.fz-juelich.de/en/ibg/ibg-1/research/systems-biotechnology/synthetic-enzyme-cascades>)

Recruiting Institution: Forschungszentrum Jülich GmbH (Germany)

### QUALIFICATIONS

- An outstanding M.Sc. degree in Biotechnology, Biochemistry, Biology, Chemistry or related field
- Eligible as a graduate student at RWTH Aachen University and Forschungszentrum Jülich (Germany)
- Research experience in molecular biology, analytical methods (HPLC, GC, etc.), biocatalysis and bioprocess optimisation
- Interest in working from basic research to application-oriented research
- Ability to work in an international team; inter- and multidisciplinary thinking
- High motivation
- An integrative and cooperative personality with excellent communication and social skills
- Fluency in English – written and oral

## CONDITIONS OF EMPLOYMENT

We offer you

- a PhD position for 36 month
- end-of-year bonus
- A PhD training program is part of the agreement. Further, the successful candidate will be enrolled in the PhD-program of the IBG-1 at FZJ and RWTH Aachen University.

The appointment is temporary for a specified period of three years. The preferred starting date is between May 1<sup>st</sup> and July 1<sup>st</sup> 2023. Candidates should comply with the mobility rules for doctoral networks: in general, you must not have resided or carried out your main activity (work, studies, etc.) in the country of the recruiting organisation for more than 12 months in the 36 months immediately before the recruitment date. <https://marie-skłodowska-curie-actions.ec.europa.eu/actions/doctoral-networks>

## APPLICATION PROCEDURE

To apply for the position, kindly provide:

- (i) A letter of motivation including a statement of your research interests, relevant skills and experience and an explanation for the choice of position(s);
- (ii) A CV including publication list (if applicable);
- (iii) Names and contact details of three referees willing to write confidential letters of recommendation;
- (iv) Copies of relevant diplomas including explanation of international grades.

Please upload applications only according to instructions at [www.biodeccodinng.eu](http://www.biodeccodinng.eu).

Address applications to: Prof. Dr. Dörte Rother

The Forschungszentrum Jülich strives to be a research institution of the Helmholtz association in which students and staff are respected and feel at home, regardless of differences in background, experiences, perspectives, and identities. We believe that working on our core values of inclusion and equality are a joint responsibility and we are constructively working on creating a socially safe environment. Diversity among students and staff members enriches academic debate and contributes to the quality of our teaching and research. We therefore invite applicants from underrepresented groups in particular to apply. For more information, see also our diversity policy webpage: <https://www.fz-juelich.de/en/bfc>. Our selection procedure follows the guidelines of the European Commission's European Code of Conduct for recruitment of researchers, <https://euraxess.ec.europa.eu/jobs/charter/code>. Unsolicited marketing is not appreciated.

## APPLICATION DEADLINE

You may apply until 10<sup>th</sup> of January 11:59 pm / before 11<sup>th</sup> of January 2023 central European local time (CET) for this position by means of the online application form (click on "Apply" below on the advertisement on the BiodeCCodiNNG website).

MARIE SKŁODOWSKA-CURIE ACTIONS  
Doctoral Networks (DN)



**Funded by  
the European Union**

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.