

11 PhD positions (Early Stage Researchers) in Marie Skłodowska Curie ITN “ConCO₂rde” (Training network on the conversion of CO₂ by smart autotrophic biorefineries)

ConCO₂rde (www.conco2rde.eu) is a Marie Skłodowska Curie Innovative Training Network (EJD) funded by the European Commission, which aims to develop processes for the utilization of renewable resources by CO₂-fixing microorganisms. The ConCO₂rde EJD will train 11 ESRs in cutting edge research projects on

- (i) the combination of synthetic biology approaches with metabolic and process engineering to create an efficient route from CO₂ fixation to the production of chemicals,
- (ii) H₂/CO₂/O₂-based fermentation and process intensification in order to optimize commercially relevant processes together with industry,
- (iii) defining a road-map for the industrial implementation of autotrophic biotransformations.

The double degree program allows in-depth training in two complementary disciplines, further strengthened by a transferable skills training with strong industry participation.

The ConCO₂rde consortium consists of one translational institute, six universities, nine industrial partners and one cluster, providing the ideal environment to foster complementary expertise in synthetic biology, metabolic engineering, biocatalysis, process engineering and analytics. As a double degree program, the EJD allows 11 ESRs to explore two of these disciplines in-depth and collaborate with scientists from the other fields, which would be very difficult to realize otherwise. ConCO₂rde thus provides a critical mass and a carefully selected consortium for a successful innovative implementation of processes utilizing H₂ as energy-source for (bio)catalytic reactions, and CO₂ as exclusive carbon source, which will stimulate progress on the way to improve sustainability implementing ‘Green Chemistry’ in the chemical industry, a key sector in Europe.

This pioneering EJD program will train the first generation of scientists in autotrophic biotransformations with skills in synthetic biology, enzyme catalysis and process engineering to address the development of most advanced gas-driven whole-cell reactions for chemical manufacturing at large scales. That requires an interdisciplinary and intersectoral approach and training, which will involve both female and male executives in the academic research and industrial environment.

ROLES AND RESPONSIBILITIES

The main part of the PhD research will be carried out at the home institution and an academic secondment (6 to 12 months depending on the project) will be spent at the double degree awarding host institution. Additionally, some Early Stage Researchers (ESRs) will spend additional secondments of 3-4 months to an industrial partner organisation.

The H2020 Marie Skłodowska-Curie Actions (MSCA) – Innovative Training Network (ITN) project starts in January 2021. The date of recruitment and start of the PhD project is planned for May 2021 and latest on December 2021. Your PhD degree will be awarded based on successful completion of the research work from two universities with two PhD certificates (double-degree). You will also be required to participate in the training events and workshops organized by the ITN-European Joint Doctorates (EJD) program. As a Marie Skłodowska-Curie Actions (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.

QUALIFICATIONS

We are looking for highly motivated and talented PhD students

- Holding an outstanding M.Sc. degree in Synthetic Biology, Biological chemistry, Biotechnology, Biochemistry, or related field
- 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.

Open positions:

ESR1: Synthetic biology to streamline the metabolism of *C. necator* toward the production of rare amino acids and proteins (WP1)

1st Supervisor: Dr. Sandy Schmidt

2nd Supervisor: Prof. Lars M Blank

Location: University of Groningen, The Netherlands

ESR2: Metabolic strategies for the synthesis of isotope-labeled amino acids in *C. necator* (WP1)

1st Supervisor: Dr. Sandy Schmidt

2nd Supervisor: Dr. Lars Lauterbach

Location: University of Groningen, The Netherlands

ESR3: Metabolic Engineering of *C. necator* to exploit lipid de novo synthesis for OH-fattyacid ester production (WP1)

1st Supervisor: Prof. Lars M Blank

2nd Supervisor: Dr. Sandy Schmidt

Location: RWTH Aachen, Germany

ESR4: Transport engineering in *C. necator* (WP1)

1st Supervisor: Prof. Dr. Robert Kourist

2nd Supervisor: Prof. Dr. Stéphane Guillouet

Location: acib GmbH, Austria

ESR5: H₂-driven production of substituted piperidines in *C. necator* (WP2)

1st Supervisor: Dr. Lars Lauterbach

2nd Supervisor: Dr. Sandy Schmidt

Location: TU Berlin, Germany

ESR6: Engineering of *C. necator* for H₂-driven production of functionalized piperazines (WP2)

1st Supervisor: Dr. Lars Lauterbach

2nd Supervisor: Prof. Dr. Stéphane Guillouet

Location: TU Berlin, Germany

ESR7: Electrophotoautotrophic production of *N*-heterocycles by an enzymatic cascade in *Rhodospseudomonas palustris* (WP2)

1st Supervisor: Prof. Dr. Ricardo Louro

2nd Supervisor: Dr. Sandy Schmidt

Location: University of Lisbon, Portugal

ESR8: Impacts of high pressure for efficient biomolecules production from CO₂: from reactor design to microbial physiology (WP3)

1st Supervisor: Prof. Dr. Stéphane Guillouet

2nd Supervisor: Prof. Lars M. Blank

Location: INSA Toulouse, France

ESR9: Impact of gas delivering membrane systems on the production of biomolecules from CO₂: from reactor design to microbial physiology (WP3)

1st Supervisor: Prof. Dr. Stéphane Guillouet

2nd Supervisor: Dr. Regina Kratzer

Location: INSA Toulouse, France

ESR10: Dynamic analysis of subpopulation distributions of engineered *C. necator* for biomolecules production from CO₂: determination of the strain robustness under the constraints of gas fermentation (WP3)

1st Supervisor: Dr. Nathalie Gorret

2nd Supervisor: Prof. Robert Kourist

Location: INSA Toulouse, France

ESR11: Gas fermentation to match microbial requirements and technological feasibilities (WP3)

1st Supervisor: Dr. Regina Kratzer

2nd Supervisor: Prof. Dr. Stéphane Guillouet

Location: acib GmbH, Austria

Benefits

We are offering a competitive, interdisciplinary environment with a track record of intense mutual collaboration. In addition to the individual training-through-research our programme includes further elements such as workshops, summer schools, internships and secondments to the partners' laboratories.

Eligibility criteria

- **ESRs must not have resided in the country of the recruiting beneficiary for more than 12 months in the 3 years immediately before the recruitment date** (and not have carried out their main activity (work, studies, etc.) in that country) — **unless as part of a procedure for obtaining refugee status** under the Geneva Convention 1. In addition, local regulations of the host countries may apply. The salary is based on standard living, mobility and family allowances which are adapted to the respective country of recruitment.
- **ESRs must be at the date of recruitment an 'early stage researcher' (i.e. in the first four years (full-time equivalent research experience) of his or her research career)**
- **ESRs must not hold a doctoral degree**

Selection process

Based upon application input a selection of eligible candidates will be invited to a first round of online interviews with the primary supervisors of the envisaged ESR positions. Highest ranked candidates will be invited for an online recruitment event in spring 2021 where the thesis boards for each ESR position under contribution of the gender committee will decide on final job offers. For further details please visit the project homepage www.conco2rde.eu

Employment conditions

We offer temporary work contracts (3-4 years) for PhD candidates at the hiring institutions for full time positions with salaries according to the Marie Curie-Sklodowska innovative training network regulations.

Application procedure

Do you meet our Qualification criteria? If yes, please apply according to instructions on our website (www.conco2rde.eu). You will need:

- a letter of motivation including a one-page statement of your research interests, relevant skills and experience;
- a full curriculum vitae (including a list of publications);
- contact details of three academic referees who are familiar with your work, and referees willing to write confidential letters of recommendation

Application deadline **31st February 11:59pm CET**

Please follow this link to access the application homepage: www.conco2rde.eu

Interviews will be scheduled for March/April 2021.

We are an equal opportunity employer and value diversity. We are committed to building a diverse project team so you are encouraged to apply. Our selection procedure follows the guidelines on recruitment of the European Charter for Researchers and the European Code of Conduct for recruitment of researchers.



Innovative Training Network – European Joint Doctorates

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