11 PhD positions (Early Stage Researchers) available within the MSCA-ITN EJD Project ConCO2rde - A Training network on the conversion of CO2 by smart autotrophic biorefineries

OFFER DESCRIPTION

The newly funded ConCO2rde (www.conco2rde.eu) project is a Marie Skłodowska Curie Innovative Training Network (EJD). ConCO2rde 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 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.

Following positions are offered:

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: H$_2$-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 H$_2$-driven production of functionalized piperazines (WP2)
1st Supervisor: Dr. Lars Lauterbach
2nd Supervisor: Prof. Dr. Stéphane Guillouet
Location: TU Berlin, Germany

ESR7: Engineering of *C. necator* for H$_2$-driven production of functionalized piperazines (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 CO$_2$: 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 CO$_2$: 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 CO$_2$: determination of the strain robustness under the constraints of gas fermentation (WP3)
1st Supervisor: Prof. 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

Log on [www.conco2rde.eu](http://www.conco2rde.eu) for eligibility criteria, recruiting process