

Post-doctoral position Engineering of Autotrophic Bacteria for efficient Gas Fermentation

ORGANISATION

The position we offer will be embedded at the Toulouse Biotechnology Institute (TBI) located on INSA Toulouse Campus within the Physiology and engineering of microbial metabolism research department (METASYS/PHYGE teams). With its highly developed competences in Life Sciences and Engineering Sciences, TBI implements a scientific strategy that is multi-scale, multidisciplinary and interdisciplinary in order to take up the challenges of bioeconomics with a worldwide collaborative network of public and private contributors (<https://www.toulouse-biotechnology-institute.fr/>)

RESEARCH PROGRAM

The main contributor to climate change is anthropogenic CO₂, with 40.9 billion tons of emissions generated annually. To achieve carbon neutrality by 2050, CO₂ capture, storage, and utilization technologies are essential. In this scenario, the advent of third-generation (3G) biorefineries, which exploit autotrophic microorganisms to convert CO₂ from industrial off-gases and renewable energy into fuels and chemicals, represents a promising step toward a circular bioeconomy. However, several obstacles must be overcome before these processes can be implemented at scale, including gas transfer limitations, thermodynamic metabolic constraints, and the development of robust genetically modified strains. *Cupriavidus necator* is the most efficient aerobic lithoautotrophic bacterium in terms of converting CO₂ into products of interest. In this context, the project will focus on improving robustness and stability of engineered strains for *C. necator* to further optimize transformation on CO₂ into biofuels and chemicals.

Join us on this Interdisciplinary project on synthetic biology, microbial physiology and gas fermentation

You will part of the European HORIZON-RIA project: BIOVAL

REQUIREMENTS

- An outstanding PhD degree in Synthetic Biology, Molecular Biology or related field
- Research experiences in genetic engineering, microbiology, analytical methods (HPLC, GC, MS, NMR etc.)
- Experience on single cell analysis or fermentation (bioreactor) will be a plus,
- 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.

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;
- II. A CV
- III. Names and contact details of referees willing to deliver recommendation letter.

Please send applications to : guillouet@insa-toulouse.fr and : ngorret@insa-toulouse.fr

APPLICATION DEADLINE 20th of September 2025