PHD FELLOWSHIP IN “IDENTIFICATION AND CHARACTERIZATION OF THE ANTIBACTERIAL ACTIVITY OF NEW PYRIMIDINE DERIVATIVES” AT CMD-COAT SA IN COLLABORATION WITH THE GIGA BIOMEDICAL RESEARCH INSTITUTE

AREA: BIOMEDICAL APPLICATION
START DATE: 01/02/2024 | DEADLINE: 19/01/2024

The University of Liège is the biggest French-speaking public university in Belgium. It employs more than 5,700 staff members across four campuses, including 3,600 active teachers and researchers in all fields of the human and social sciences, science and technology, and health sciences. It hosts nearly 27,000 students of 123 different nationalities in one of the most multicultural and dynamic cities in Europe, less than an hour from Brussels and Cologne, two hours from Paris, and three hours from London and Amsterdam.

Active in the social and environmental transition, ULiège supports students to fulfil their roles as responsible citizens (training in sustainable development, Green Office, etc.) and promotes ethical, multidisciplinary and open research. ULiège is committed to the region in which it operates and contributes towards local socio-economic development. It has developed numerous partnerships, notably with the university hospital. International and united, it participates in the European University of Post-Industrial Cities, UNIC initiative and has one of the most extensive collaborative networks in the world.

ULiège offers attractive career prospects in a high-quality working environment, promoting well-being, diversity and equality of opportunity. Since 2011, ULiège has been proud to display the European Human resources strategy for researchers (HRS4R) label, which reflects its commitment to open, transparent and merit-based procedures. In addition, it recognises the quality and diversity of research in line with the recommendations of the Coalition for Advancing Research Assessment (CoARA). ULiège encourages its academic staff to travel internationally and welcomes international researchers through its EURAXESS centre.

ABOUT THE PROJECT

The PhD is part of the EU funded “Cell Envelope Anti-bacterials” Doctoral Network (CLEAR) www.clear.ku.dk

The CLEAR Doctoral Network

The discovery of penicillin initiated the antibiotic era and saved millions from dying of life-threatening bacterial infections such as tuberculosis, and pneumonia. Antibiotics also paved
the way for complex medical interventions such as organ transplants or cancer treatments. Today, these progresses are challenged by the world-wide spread of drug resistant bacteria no longer responding to antibiotic treatment. The effects of antibiotic resistance are already devastating with at least 1.2 million yearly deaths worldwide. The aim of the EU funded Doctoral Network “Cell Envelope Anti-bacterials” (CLEAR) is to train 10 PhD students to become outstanding researchers in the field of antimicrobial resistance (AMR). All projects are embedded in a tight and synergistic academic-industrial collaboration focusing on developing novel leads or alternative strategies to combat drug resistant bacterial pathogens.

The project

Cécile Oury research team discovered that the antiplatelet drug ticagrelor possesses bactericidal and anti-biofilm activity against a broad range of Gram-positive bacteria including major challenging antibiotic resistant pathogens such resistant Gram-positive bacteria such as methicillin-resistant S. aureus (MRSA). Ticagrelor is an orally active cyclopentyl-triazolopyrimidine antiplatelet drug acting by reversibly inhibiting the platelet P2Y12 receptor. It has been approved for the prevention of myocardial infarction and stroke in patients with coronary artery disease. Since this discovery, clinical observations in large patient populations have demonstrated that patients on ticagrelor therapy have significantly reduced risk of bacterial infections as compared to patients taking similar antiplatelet drugs (clopidogrel or prasugrel). Due to its antiplatelet activity and related risk of bleeding, the administration of ticagrelor as antibiotherapy will hardly be possible in patients who do not need this treatment. The team therefore set out to find a way of exploiting the antibacterial properties of ticagrelor while ensuring the absence of its potentially harmful antiplatelet activity. They proceeded iteratively by synthetizing a series of pyrimidine derivatives. Some of them possessed antibacterial properties without inhibiting platelets. The present project aims at selecting and characterizing the antibacterial activity of these compounds (patented by ULiège) in vitro using a broad panel of bacterial strains, and relevant murine infections models (bacteremia, implant infection, endocarditis). The mechanisms of action will be determined thanks to a collaboration with the University of Tuebingen (Germany). The stability and efficacy of selected molecules will also be examined in a gut model available at the University College Cork (Ireland).

CMD-COAT’s team

Cécile Oury, PhD, Research Director at the University of Liège and CEO of CMD-COAT SA has extensive expertise in platelet biology, infection, immunology and thrombosis, including the interactions between these processes. She has strong experience in mouse models of S. aureus infection. The CMD-COAT’s team also comprises experts in polymer chemistry and coating technologies. The company develops drug-releasing coatings to prevent infection and thrombosis of blood-contacting medical devices, such as catheters, pacemaker leads or prosthetic heart valves. The use of innovative antimicrobial agents causing no or limited resistance is being evaluated. www.cmd-coat.com

The institution

CMD-COAT SA is hosted in the GIGA Biomedical Research Institute of the University of Liège. GIGA is an interdisciplinary research center aiming at providing advanced medical solutions
from cutting-edge academic research with a real impact on health. The PhD candidate will be registered at the Doctoral School of Pharmaceutical and Biomedical Sciences, Faculty of Medicine, University of Liège.

**JOB DESCRIPTION**

During your PhD Fellowship in the framework of CLEAR Doctoral Network, you will participate to the screening and characterization of antibacterial activity of compounds, patented by ULiege, against MRSA and C. difficile in vitro using a broad panel of strains, and relevant murine infections models (bacteremia, implant infection, endocarditis). You will work in closed collaboration with other PhD of the CLEAR project for the determination of the mechanisms of action of these new compounds thanks to a collaboration with the University of Tuebingen (Germany) and examined their stability and efficacy in an in vitro gut model available at the University College Cork (Ireland).

**SPECIFIC DUTIES & ACTIVITIES**

- Synthesis and analysis of pyrimidines
- Performing antibacterial assays
- Characterization of antibacterial mechanisms in collaboration with partner laboratories
- Realization of mouse models of infectious diseases
- Writing of scientific articles
- Following 3rd cycle courses
- Active participation in national and international congresses

**YOUR PROFILE**

- **Required skills:**
  - Master’s degree in biomedical, biological or pharmaceutical sciences. Please note that your master’s degree must be equivalent to a Belgian master’s degree (two years 120 ECTS/2 FTE MSc + 180 ECTS/3 FTE BSc).
  
  In addition, applicants will also be required to meet the MSCA Doctoral Network eligibility criteria, notably:
  - You must not have resided or carried out your main activity (work, studies, etc.) in Belgium for more than 12 months in the 36 months immediately before the start of your employment. Compulsory national service, short stays such as holidays, and time spent as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account.
  - You must not be in possession of a doctoral degree when starting your employment.
Desirable skills:

- Enthusiasm for research
- Collaborative, interactive mindset but capable of working independently
- Experience in pharmacology, cellular biology, or medical chemistry is of advantage.

Languages:

- Good English skills, written and spoken.

EMPLOYMENT TERMS

- The position as PhD fellow is full time and lasts 3 years. It is funded by Horizon Europe and will start the 1st of February 2024 (or 1st of April 2024 at the latest).

- The employment is conditioned upon the applicant’s successful enrolment as a PhD student at the Doctoral School at the Faculty of Medicine, University of Liège. This requires submission and acceptance of an application for the specific project to the Doctoral School.

- The PhD study must be completed in accordance with the Faculty’s rules on achieving the degree.

OUR OFFER

Salary, pension and terms of employment are in accordance with the requirements from the European Commission related to the MSCA programme.

The monthly salary is around 3,100 EUR (taxable) plus benefits in kind offered by the company. In addition, a mobility allowance (gross amount 600 EUR per month from the EU to CMD-COAT) and (if eligible) also a family allowance (gross amount 660 EUR per month from the EU to CMD-COAT).

WHAT ABOUT TRAININGS?


WORK ENVIRONMENT

CMD-COAT SA is hosted in the GIGA Biomedical Research Institute of the University of Liège (University Hospital, Sart-tilman). In addition to its own lab facilities, CMD-COAT SA works in closed collaboration with the Laboratory of Cardiology, GIGA-Cardiovascular Sciences Unit with specific access to its laboratory facilities.
HOW TO APPLY

Your application, written in English, must be submitted by email to cecile.oury@cmd-coat.com and should include the following documents in PDF format:

- Letter of motivation
- CV
- Master of Science diploma and transcript of records in the original language, including an authorized English translation if not in French
- Publication list
- Letters of reference (optional)

SELECTION PROCEDURE

- The deadline for applications is January 19, 23.59pm CET.
- Applicants will only be considered for the position if they fulfil the MSCA Doctoral Network eligibility criteria described above.
- Candidates will be assessed and short listed for interviews, which are supposed to take place mid-January. All candidates will be informed of the outcome of their application.

CONTACT DETAILS AND FURTHER INFORMATION

Informal inquiries about the project are welcome. Please feel free to contact Cécile OURY by email (cecile.oury@cmd-coat.com).

Release date: 08/01/2024
Information on the processing of your personal data

The personal data collected follow your application will be processed by Cécile OURY of the University of Liege for the purpose of organizing the selection and recruitment.

These data will be processed based on the execution of pre-contractual measures (art. 6-1, b. of the RGPD)

These data will be kept for the duration of the selection procedure and, at the most, 9 months after the publication of the job offer. This data will not be passed on to third parties.

In accordance with the provisions of the General Data Protection Regulation (EU 2016/679), you may exercise your rights relating to this personal data (right of access, rectification, deletion, limitation, and portability) by contacting the ULiège Data Protection Officer (dpo@uliege.be - Mr. Data Protection Officer, Bât. B9 Cellule "GDPR", Quartier Village 3, Boulevard de Colonster 2, 4000 Liège, Belgium). You also have the right to lodge a complaint with the Data Protection Authority (https://www.autoriteprotectiondonnees.be, contact@apd-gba.be).