PhD fellowship in "Molecular Mechanisms of Antibacterial Action and Resistance of Novel Antibacterial Agents" at the Department of Microbial Bioactive Compounds, Interfaculty Institute of Microbiology and Infection Medicine, University of Tübingen

The PhD project is part of the EU funded "Cell Envelope Anti-bacterials" Doctoral Network (CLEAR)

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

Staphylococcus aureus an important pathogen which can cause life-threatening diseases such as pneumonia, endocarditis and sepsis. Multidrug resistance necessitates new treatment options. Ticagrelor is a platelet aggregation inhibitor used as a medication for the prevention of stroke and cardiac illnesses. Our collaborators at the University Liege discovered that ticagrelor has also antibacterial activity against *S. aureus* und preliminary data on the mode of action exist. In this PhD project we will use our established mode of action analysis platform, comprising an array of microbiological, biochemical, biophysical, microscopic and genetic techniques, to compare the molecular antibacterial mode of action of ticagrelor with those of novel ticagrelor derivatives discovered at the University Liege as well as other antibacterial agents. A mechanism causing ticagrelor resistance will also be investigated. The project will be conducted in close collaboration with the universities of Liege and Copenhagen.

The group

The Brötz-Oesterhelt Lab has extensive expertise in the characterization antibacterial agents with new modes of action, active against multi-resistant bacterial pathogens. The discovery of new antibacterial mechanisms is a particular strength of the group. A mode of action technology platform has been established in the group that will be used in the current project and new techniques will also be developed. More information about the Brötz-Oesterhelt Lab can be found at:
https://uni-tuebingen.de/en/faculties/faculty-of-science/departments/interfaculty-facilities/imit/research-groups/microbial-bioactive-compounds/

The institution

The department of Microbial Bioactive Compounds is focused on microbial natural product identification, isolation, production optimization and characterization. It is part of the Interfaculty Institute of Microbiology and Infection Medicine (IMIT) with 11 sections and a coherent strength in infection biology/medicine, antibiotics, bacterial metabolism and microbiome research. (https://uni-tuebingen.de/en/faculties/faculty-of-science/departments/interfaculty-facilities/imit/). The IMIT forms the core unit of the Cluster of Excellence 'Controlling Microbes to Fight Infection', one out of three microbiological excellence clusters in Germany.

Required qualifications

- Master degree in life sciences (microbiology, biochemistry, molecular biology or a related subject). Please note that your master's degree must be equivalent to a German master's degree corresponding to 300 ECTS jointly for BSc plus MSc (i.e., 3 years BSc + 2 years MSc or alternatively 4 years BSc + 1 year MSc).
- Enthusiasm for research

- Strong work ethics
- Very good English skills, written and spoken
- Collaborative, interactive mindset but capable of working independently
- Experience in working with pathogenic bacteria or microscopic techniques is of advantage

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 Germany for more than 12 months in the 36 months immediately before the start of your employment at the University of Tübingen (EKUT).** 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 at EKUT.

Applicants will only be considered for the position if they fulfil both of the above eligibility criteria.

Terms of employment

The position as PhD fellow is full time and lasts 3 years. It is funded by Horizon Europe and will start on **1 March 2024**. The place of work is Tübingen. Two lab rotations of 1 to 3 months with the collaboration partners in Liege and Copenhagen are envisioned.

The employment is conditioned upon the applicant's successful enrolment as a PhD student at the Interfaculty Graduate School of Infection Biology and Microbiology (IGIM), University of Tübingen. This requires submission and acceptance of an application for the specific project to the IGIM. The PhD study must be completed in accordance with the rules of the Faculty of Science, University of Tübingen on achieving the degree.

Salary, pension and terms of employment are in accordance with the requirements from the European Commission related to the MSCA programme. The monthly salary will be in the range of TV-L (collective agreement for public employees of the German federal states) 65%. In addition, a mobility allowance and (if eligible) also a family allowance will be paid. Further benefits include, e.g., visa and onboarding assistance, 30 days/year of paid vacation, flexible working hours. International students will be supported by the Welcome Center before and during their stay at the University of Tuebingen and offered guidance and help with visa housing issues.

Application procedure

Your application, written in English, must be submitted electronically to heike.broetz-oesterhelt@uni-tuebingen.de and should include the following documents in one PDF file:

- Letter of motivation
- CV
- Master of Science diploma and transcript of records in the original language, including an authorised English translation if not in German
- Summary of Master's thesis
- Bachelor of Science diploma and transcript of records in the original language, including an authorised English translation if not in German
- Publication list
- List of technical expertise (laboratory methods you are confident in)
- Letters of reference or contact information of two previous supervisors or employers

The deadline for applications is Jan 15th, 2024. Candidates will be assessed and short listed for interviews. All candidates will be informed of the outcome of their application

For specific questions please contact heike.broetz-oesterhelt@uni-tuebingen.de.