HZI HELMHOLTZ Centre for Infection Research

HIPS HELMHOLTZ Institute for Pharmaceutical Research Saarland

Job advertisement no. 016/2024

The department **MICA - Anti-infectives from Microbiota**, led by Prof. Christine Beemelmanns at the Helmholtz-Institute for Pharmaceutical Research Saarland (HIPS) in Saarbrücken, is offering a position as

Doctoral Researcher (f/m/d)
Project title: Design and metabolic analysis of bacterial communities (META-NAT)

The Helmholtz Institute for Pharmaceutical Research Saarland (HIPS) focusses on identifying and developing new treatment options for infectious diseases with an emphasis on natural product research. HIPS was jointly started in August 2009 by the HZI in Braunschweig and Saarland University on Campus Saarbrücken.

In 2015 HIPS moved into a new 4500 m^2 research building in which currently 220 international employees work. HIPS represents the first and only publicly funded extra-university research unit in Germany dedicated to pharmaceutical research. The Institute collaborates with universities and various industries both nationally and internationally. Researchers in the department **Anti-infectives from Microbiota** are analyzing and identifying **novel natural products from unique bacterial species and microbial consortia** applying diverse approaches and methods mainly from the field of biotechnology, microbiology, molecular biology and biochemistry.

The **PhD project META-NAT** focusses on the identification of novel bacterial natural product producers and the metabolic analysis of communities thereof. The project will make use of state-of-the art microbiological techniques and sequencing technologies, and combine bacterial cultivation with natural product discovery efforts to understand the natural functions of secondary metabolite.
The PhD project is structured in **three interconnected research pillars**:

1. **Isolation and genome sequencing of (marine) bacterial symbionts**
    - Isolation and cultivation of bacterial strains
    - Testing of different microbial (co-)cultivation techniques
    - Isolation of DNA and whole genome sequencing

2. **Metabolic analysis of (marine) wild-type natural product producers**
    - Focus on the secondary metabolome of bacterial producers
    - In collaboration, isolation of novel natural products
    - Utilizing high-resolution mass spectrometry to monitor and optimize product formation

3. **Design and analysis of bacterial co-cultures**
    - Design and metabolic analysis of multitrophic bacterial co-cultures.
    - Optimizing cultivation conditions of bacterial co-cultures
    - If possible, establish RNA-sequencing protocols of bacterial co-cultures

In this project, the successful candidate will contribute to cultivating novel bacterial species and spearhead genome-sequencing efforts for genome mining and comparative studies. Analysis of fermentation conditions and co-cultures will ignite studies into the natural product repertoire. A particular focus should be set on multi-trophic co-culture settings. The PhD candidate will have the chance to be trained on state-of-the-art analytical instruments and use this knowledge for natural product identification efforts. This multi-faceted approach will enable the candidate to gain expertise in microbial cultivation techniques and apply advanced molecular biological and analytical tools for the identification of novel natural products. This multi-faceted approach will enable the candidate to gain expertise in microbial cultivation techniques as well as advanced molecular biological and analytical tools for the identification of novel natural products.

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Qualifications:

- Master degree or equivalent in Life Sciences, Biotechnology, Pharmacy Chemistry, or related fields.
- Strong hands on experience in laboratory and in particular microbiological cultivation techniques.
- General understanding of molecular biological approaches, sequencing technologies, chemical and biochemical transformations
- Ability to pay attention to details, pursue research independently and work in a goal-oriented manner.
- Willingness to work in a plural, collegial, international and interdisciplinary environment.
- Excellent English communication skills (written and spoken); very good skills in scientific writing

Advantageous for this position:

- Experience in next-generation sequence methods/techniques
- Experience in DNA isolation, PCR and cloning techniques
- Isolation of bacterial strains, microbial cultivation techniques, phylogenomic analyses

Disabled persons are given preference in the case of equal professional qualification. The HIPS aims for professional equality between women and men. The position is suitable for part-time work.

We offer:

- Modern laboratories and state-of-the-art instrumentation, a dynamic and international research environment
- Extensive further training opportunities and the opportunity to enroll in a structured PhD program
- Unique network of excellent partners to support your research endeavors
- 30 days vacation (24.12. & 31.12. are considered as completely free days)
- An annual additional payment (Weihnachtsgeld) analogue to § 20 TVöD
- Social security included
- Flexible working hours
- A corporate culture of appreciation and promotion of equal opportunities
- Support for a better balance between work and private life through our family office

Starting date:	**as soon as possible,** 2024 - initial contract for 3 years.
Salary:	alike E13 TVöD/Bund (55%)
Probation period:	6 months
Working place:	Saarbrücken
Published:	**22 February, 2024**
Closing date:	**24 March, 2024**
Application:	Applicants are required to complete the online application form here: https://hzi.opencampus.net/ (Please select Job No. **016/2024**)

For further information, please contact Prof. Christine Beemelmanns directly by email: christine.beemelmanns@helmholtz-hips.de

Further information about the institute and the research group can be found on our website: https://www.helmholtz-hips.de/en/research/teams/team/anti-infectives-from-microbiota/.