PhD Position Membrane Biophysics

Naturwissenschaftliche Fakultät, Erlangen, TV-L E 13, Teilzeit, Befristete Anstellung: bis 31.10.2028, Bewerbungsschluss: 29.09.2025

Your Workplace

We are seeking enthusiastic candidates for a PhD position in our lab specializing in cutting-edge theoretical and computational membrane biophysics. Our research delves into the complex interplay between the composition, structure, organization, and dynamics of cell membranes and its cellular function. We are located at the Friedrich-Alexander University of Erlangen-Nürnberg, a vibrant academic center with a focus on immunobiology and home to the National High-Performance Computing Center NHR@FAU. We are member of NHR@FAU and of the International Max Planck Research School (IMPRS) Physics and Medicine.

The Research Project: Unraveling the Membrane-Selective Mechanism of Lugdunin: Insights into Specificity for Gram-Positive Bacteria and Antimicrobial Activity

The project aims to investigate the membrane-selective mechanism of Lugdunin, a cyclic heptapeptide produced by Staphylococcus lugdunensis. Lugdunin exhibits remarkable activity against multi-resistant gram-positive bacteria while showing no toxic effects on gram-negative bacteria or human cells. Previous studies suggest that Lugdunin disrupts the membrane potential of pathogens such as Staphylococcus aureus by making the membrane permeable to protons—a mechanism that remains only partially understood.

Interdisciplinary Approach to Molecular Mechanism Research
The specificity of Lugdunin for gram-positive bacteria is hypothesized to result from their unique membrane lipid composition, which facilitates the peptide's integration and antimicrobial activity. To unravel this mechanism, the study combines in collaboration with Prof. Claudia Steinem's group in Göttingen cutting-edge experimental and computational methods. Together, the teams investigate the interactions of Lugdunin with membranes that mimic the characteristics of gram-positive, gram-negative, and eukaryotic cells.

The project aims to identify the molecular interactions and structural determinants underlying the antimicrobial activity and membrane selectivity of Lugdunin. These findings could pave the way for the development of novel antimicrobial peptides and innovative approaches to combat infections caused by multi-resistant bacteria.

Collaborative Research Strengthens Antimicrobial Science
The collaboration between FAU Erlangen-Nürnberg and the University of Göttingen represents a significant step toward addressing fundamental questions in antimicrobial research. The DFG's funding highlights the importance of this project in the global fight against multi-resistant bacterial infections while offering new therapeutic perspectives.

Application Process:

Interested candidates should submit a PDF document comprising a cover letter, CV, and certificates.

Benefits: We Have a Lot To Offer

- Regular promotion to the next level and increase in salary pursuant to the collective bargaining agreement for the public service of the German Länder (TV-L) or remuneration pursuant to the Bavarian Public Servants Remuneration Act (BayBesG) plus an additional annual bonus
- 30 days annual leave at five working days per week with additional free days on December 24 and 31
- Occupational pension scheme and asset accumulation savings scheme

Your Tasks

Research

Your Profile

- **Educational Background:** Ideally, you hold a master's degree in bio-/physics, theoretical/computational chemistry, life sciences, or a related field.
- **Interdisciplinary Interest:** Strong passion for interdisciplinary projects and collaboration with medical and immunology groups.
- **Communication Skills:** High proficiency in English and effective communication skills.
- **Team Player:** Ability to thrive in a collaborative and dynamic research environment.

Interessiert?

Die vollständige Stellenausschreibung sowie alle Infos zum Bewerbungsverfahren finden Sie hier: