



The Department of Biology at the FAU Erlangen-Nürnberg is offering a

**PhD position (TVL E13, 65% – for three years) in  
Plant-pathogen interactions**

with the topic: **Mechanistic diversification within the microbial NLP cytolysin family.**

**Research topic**

Plant immunity and plant-biotic interactions are the central research areas of our group. In this project, we focus on widespread virulence factors/effector proteins from fungi, oomycetes and bacteria, called NEP1-like Proteins (NLPs).

NLPs are key factors determining the fate of the infection. On the one hand, they contribute to the colonization of host plants in their function as cytolytic phytotoxins that cause necrosis in susceptible host plant tissues. This toxic activity is achieved by the formation of complexes with plant-specific sphingolipids, followed by a disruption of the plasma membrane (1). On the other hand, some plants are able to reduce disease by PAMP-triggered immunity upon NLP recognition, e.g., via the detection of the NLP-derived peptide epitope nlp20 (2).

The advertised project focuses on the characterization of the NLP-induced pore formation as well as the interaction mechanism and specificities of NLP with host membranes. The project spans a broad range of techniques: cloning, protein expression and purification, plant immunity assays, lipid-protein interaction studies, patch-clamp analysis, membrane integrity assays.

- (1) Lenarcic, T., Albert, I., Böhm, H., Hodnik, V., Pirc, K., Zavec, A. B., . . . Nürnberger, T. (2017). Eudicot plant-specific sphingolipids determine host selectivity of microbial NLP cytolysins. **Science** 358(6369): 1431-1434.
- (2) Albert, I., Böhm, H., Albert, M., Feiler, C. E., Imkamp, J., Wallmeroth, N., . . . Nürnberger, T. (2015). An RLP23-SOBIR1-BAK1 complex mediates NLP-triggered immunity. **Nature Plants** 1(10).

**Qualification profile**

We are looking for an excellent, highly motivated candidate with knowledge in molecular biology and/or protein/lipid biochemistry who is interested in studying the interaction of NLPs with plant membranes. Applicants should hold a Master's degree in molecular biology or biochemistry. Previous work on plant/pathogen interactions is not required but of advantage. The candidates should be creative, willing to be(come) independent researchers and also to work co-operatively within a team. Good communication skills and fluently spoken and written English is required.

**We offer**

The duration of the funding period is 3 years, salary will be within the TV-L E13 (65%). The PhD candidate can be integrated (voluntary) in the graduate program "Life@FAU" (<https://www.life.fau.de/>).

The deadline for applications is 15<sup>th</sup> of May 2023. Please send a cover letter, CV, your transcripts and certificates as well as contact details of two referees in one **single pdf** to:

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