

The Chair of Phytopathology at the Technical University of Munich, TUM School of Life Sciences, hires a

Doctoral student in the field of plant innate immune signaling

We study the regulation of pattern recognition receptor (PRR) signaling in the model species *Arabidopsis thaliana*. In particular, we are interested in how endogenous plant signaling peptides, usually implicated in the regulation of plant growth, development and reproduction, fine-tune immune responses conferred by PRRs. An important example are RALF peptides, that were shown to regulate PRR-triggered immunity (PTI) by regulating the ligand-induced PRR-co-receptor associations via FER-LLG1 heterocomplexes at the plasma membrane. We have now evidence for novel immunomodulatory peptides, also referred to as phytocytokines, and are interested to mechanistically dissect their function to regulate PTI.

Therefore, we are looking for an enthusiastic doctoral student to study the mechanistic basis for phytocytokine activity. The project will involve methods to assess immune signaling outputs, phytopathology and biochemistry to dissect protein complexes *in vivo* and *in vitro*. The project is based at the intersection of plant growth/development and immunity and thus similarly involves bioassays covering these disciplines. The applicant must have a very good MSc in biology or related subjects. A strong interest in receptor biology and plant immune signaling is required. Knowledge and practical experience in *Arabidopsis* work and protein work is desirable. Furthermore, English skills, both written and spoken, are essential.

The project will be carried out in the group of Dr. Martin Stegmann at the Chair of Phytopathology (Prof. Dr. Ralph Hüchelhoven). The chair hosts several research groups studying molecular biology of plant immunity and plant-plant pathogen evolution. In addition, we have several ongoing collaborations both international and on campus and direct access to state of the art technology for studying receptor kinase signaling outputs, protein-protein interactions (*in vivo* and *in vitro*, including Microscale thermophoresis and FRET-FLIM), diverse molecular biology techniques and high quality plant growth room and glass house facilities.

The Technical University of Munich is an equal opportunity employer and particularly welcomes applications from qualified women and individuals with disabilities. The salary is according to German/Bavarian income level TV-L E13 (55-65%).

Please send your comprehensive application including a letter of motivation (1 page), your CV, certificates, list of publications, and names of 2 potential referees as a single pdf file by email to: martin.stegmann@tum.de. Applications will be reviewed regularly from Febr. 20th 2020 on but accepted until a suitable candidate is found.

Website of [Chair of phytopathology](#)

Related publications

Xiao, Y.*, Stegmann, M.*, Han, Z.*, DeFalco, T., Parys, K., Xu, L., Belkhadir, Y., Zipfel, C. and Chai, J. (2019). Mechanisms of RALF peptide perception by a heterotypic receptor complex. **Nature** 572: 270–274. *equal contribution

Smakowska-Luzan, E. *, Mott, G. A. *, Parys, K. *, Stegmann, M., Howton, T. C., Layeghifard, M., Neuhold, J., Lehner, A., Kong, J., Grünwald, K., Weinberger, N., Satbhai, S. B., Mayer, D., Busch, W., Madalinski, M., Stolt-Bergner, P., Provart, N. J., Shahid Mukhtar, M., Zipfel, C., Desveaux, D., Guttman, D. S. and Belkhadir, Y. (2018). An extracellular network of *Arabidopsis* leucine-rich repeat receptor kinases. **Nature** 553: 342.

Stegmann, M., Monaghan, J., Smakowska-Luzan, E., Rovenich, H., Lehner, A., Holton, N., Belkhadir, Y., and Zipfel, C. (2017). The receptor kinase FER is a RALF-regulated scaffold controlling plant immune signaling. **Science** 355:287-289.