

**PhD proposal under joint supervision
REIMS (FRANCE) – GOETTINGEN (GERMANY)**

Role of bacterial rhamnolipids in plant tolerance to abiotic stresses (BRhamS)

Summary

All countries are confronted with the consequences of intensive use of chemical pesticides, which can be detrimental to human and environmental health. Therefore, development of a more **environmentally friendly agriculture** is becoming a necessity. The use of natural molecules (especially derived from beneficial microorganisms) capable of stimulating plant defenses and/or acting directly against phytopathogenic agents is a promising alternative to conventional chemical control. Among them, **rhamnolipids** (RLs) are amphiphilic compounds with strong plant immunity eliciting properties. The environment in which plants grow has a strong influence on its functioning and metabolism but also on disease development. Only few studies analyzed **biocontrol agent** efficacy under extreme environments. It is therefore essential to study the impact of RLs in inducing tolerance to stress such as drought, for example.

To carry out this work, a **transdisciplinary approach** including biochemistry, proteomics molecular biology and phytopathology will be engaged. Physiological responses, including photosynthetic activity, will also be evaluated.

This project is based on an **international collaboration** between the RIBP lab (University of Reims Champagne Ardenne, France) and the Department of Plant Biochemistry (University of Goettingen, Germany), 18 months in each lab. The project will benefit from an excellent scientific environment, and state of the art equipment (<https://www.uni-goettingen.de/en/188278.html> and <https://www.univ-reims.fr/ribp/resistance-induite-et-bio-protection-des-plantes/accueil,10089,37692.html>).

Key words: plant abiotic stress tolerance, proteomics, photosynthesis, elicitor

Related articles:

Varnier AL *et al.* (2009) *Plant Cell & Environment* **32**: 178-193.

Vatsa P *et al.* (2010) *International Journal of Molecular Sciences* **11**: 5095-5108.

Sanchez L *et al.* (2012) *Plant Physiology* **160**: 1630-1641.

Tarazona P *et al* (2015) *The Plant Journal* **84**: 621-633.

Su F *et al.* (2017) *Photosynthesis Research* **134**(2) : 201-214.

Selection criteria: The candidate must have a Master in Biology, Biochemistry or related fields and should be highly motivated to work in plant sciences. Experience in analytical chemistry, plant genetics, and molecular biology are desirable. The position requires knowledge in physiology, biochemistry, plant-microbe interactions, a high level of communication skills (oral and written) (English certification).

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Your application including a CV and cover letter should be sent until April 18th as one pdf-file to Sandrine Dhondt-Cordelier and Ivo Feussner.