MiRA: Microbe induced Resistance to Agricultural pests

PhD scholarship in Ecology of Plant-Microbe-Insect Interactions (MiRA)
INOQ GmbH, Schnega, Germany

INOQ GmbH is offering a PhD scholarship in Plant-Microbe-Insect Interactions with expected commencement 1st April 2018 or as soon as possible thereafter. The PhD will be awarded by the Faculty of Life Sciences, Humboldt University, Berlin.

Project title: ESR12: Using insects as vectors for inoculation of beneficial resistance-inducing microbes in plants

Project description
Different insect species must be tested for their ability as vectors for the integration of resistance-inducing microbes such as fungal and bacterial endophytes into host plants. Phloem-sucking and leaf-chewing insect species must be bred, fungal and bacterial endophytes propagated and in experiments with host plants investigated if insects have the ability to transfer resistance-inducing microbes into host plants. A production system for the insect vectors should be developed as well as a transfer-system for the resistance-inducing microbes. Tracing of the microbes in the host plant is necessary as well as the proof of efficiency for resistance induction.
Results will be integrated with parallel experiments done by other ESRs to evaluate context dependency of microbe-induced plant resistance. Candidates should have a strong background in plant, microbe and/or insect ecology and experimentation.
The PhD position is associated to a larger European training network, MiRA: www.miraitn.eu, with 14 other PhD positions at other participating institutions. We strongly encourage candidates to also apply for other similar positions within the MiRA network, see www.miraitn.eu.

Principal supervisor: Imke Hutter, hutter@inoq.de, phone +49 5842 981672 and Dr. Philipp Rödel, roedel@inoq.de, phone +49 5842 981672

Planned secondments: CNRS, France: work with aphids (2 months); Koppert, Netherlands: Composition of MOs in inocula (2 months); IGZ, Großbeeren: Co-supervisor guidance and microbial analysis (4 months); UBO, Germany: Marketing prospects and constraints of MiR (2 months)

MiRA
MiRA is an International Training Network (ITN) funded by the European Union’s Horizon 2020 research and innovation programme under Marie Skłodowska-Curie grant agreement.

Plants are intimately associated with a diversity of beneficial microorganisms in their root zone, some of which can enhance the plant’s resistance to insect pests. Thus, the use of Microbe-induced Resistance (MiR) to reduce pest losses in agriculture has emerged as a promising possibility to improve crop resilience and reduce use of harmful pesticides. European companies have therefore started to develop and market beneficial microbes. However, MiR appears to be strongly context dependent, with reduced benefits under certain biotic and abiotic conditions and in some crop varieties. Further, it is a challenge to deliver and ensure stable associations of beneficial microbes and plants, and avoid undesired effects on beneficial insects. Thus we absolutely must improve our understanding of MiR mechanisms and context-dependency, in order to improve context stability of MiR and promote the use of MiR for crop protection. The MiRA project will train early stage researchers in basic and applied research on context-dependency of MiR, mechanisms, and impacts on plant performance and other biocontrol organisms, and use this understanding to improve our ability to predict the effectiveness of MiR under different conditions, to select plant and microbial strains with improved context-stability, and to develop better methods for the formulation of microbial inoculants and their application in agriculture. Finally, we will analyse economic prospects and constraints for MiR development and use. We have assembled a consortium of academic institutions and companies, including microbial inoculant producers and agricultural
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advisors. Our ESRs will be trained within this multi-sectoral interdisciplinary network for a future career in research, product and service development in European horticulture and agriculture, pushing boundaries in European research and innovation.

Job description
The position is available for a period of 36 months on these terms. Your key tasks as a PhD student in MiRA are:

- Participate in the research environment at INOQ and the network activities of MiRA
- Manage and carry through your research project
- Take PhD courses
- Write scientific articles and your PhD thesis
- Participate in congresses
- Teach and disseminate your research

Key criteria for the assessment of candidates

- A master’s degree related to the subject area of the project including a reviewed Master thesis
- The grade point average achieved should be more than 75% of the maximum
- Professional qualifications relevant to the PhD programme
  - Primary skills: experimental experience with plants, microorganisms, and/or insects, plant ecology, statistical analysis
  - Relevant skills: plant physiology, microbiology, insect biology
- Previous research publications
- Other professional activities
- Language skills: fluency in English

Formal requirements and eligibility
At the time of commencement, it is required that the candidate has not been awarded a doctorate degree and are within the first 4 years (full-time equivalent) of their research careers. Furthermore, the candidate must not have resided or carried out their main activity (work, studies, etc.) in Germany for more than 12 months in the 3 years immediately prior to their recruitment. Short stays, such as holidays, are not taken into account. The candidate is required to spend part of their project period at other institutions in the MiRA consortium on secondments.

Terms of employment
Recruitment and Terms of appointment will be done according to the rules and regulations of INOQ GmbH and according to the rules and regulations laid down by European Union’s Horizon 2020 Marie Curie Initial Training Networks.

Place of Employment
INOQ GmbH, Solkau 2, 29465 Schnega, Germany.

Please notice that this PhD fellowship entails secondments, see above.

Application Procedure
The application, in English, must be submitted by mail to hutter@inoq.de

Please include

- Cover Letter, stating which PhD project you are applying for and detailing your motivation and background for applying for the specific PhD project.
- A statement if (and which) you have applied for other MiRA PhD fellowships
- Max 1-page proposal for research activities to pursue in the PhD study program
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- CV
- Diploma and transcripts of records (BSc and MSc)
- 1-3 professional referees (Name, address, telephone & email)
- Documentation of English language qualifications
- Other information for consideration, e.g. list of publications (if any)

INOQ GmbH wishes our staff to reflect the diversity of society and thus welcomes applications from all qualified candidates regardless of age, gender, race, religion or ethnic background.

The deadline for applications is 01.02.2018. Applications received later than this date will not be considered.

After the expiry of the deadline for applications, the authorized recruitment manager selects applicants for assessment on the advice of the Interview Committee. Afterwards an assessment committee will be appointed to evaluate the selected applications. The applicants will be notified of the composition of the committee and the final selection of a successful candidate will be made by INOQ GmbH based on the recommendations of the assessment committee and the interview committee.

The main criterion for selection will be the research potential of the applicant and the above mentioned skills.

Questions
For specific information about the PhD scholarship, please contact the principal supervisors Imke Hutter, hutter@inoq.de, Phone: +49 5842 981672 and Dr. Philipp Rödel, roedel@inoq.de