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DFG Deutsche Forschungsgemeinschaft

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IRTG 2172 PRoTECT Vancouver Göttingen

International Research Training Group 2172

‚PRoTECT' – Plant Responses To Eliminate Critical Threats

GEORG-AUGUST-UNIVERSITÄT GÖTTINGEN

a place of mind
THE UNIVERSITY OF BRITISH COLUMBIA

About PRoTECT

The International Research Training Group is a cooperative PhD program between research groups of the Georg August University Goettingen (UGOE, Germany) and research groups of the University of British Columbia in Vancouver (UBC, Canada). It started in Goettingen in June 2016 funded by the German Research Foundation (DFG).

Some pathogens and pests being investigated in the research projects of the IRTG

Focus

With the human population exceeding seven billion and growing, new solutions are urgently needed to ensure food security for the global community in a sustainable manner. The very active research field of plant-microbe interaction can help to contribute to this challenge. A better understanding of how plants interact with their biotic environment will lead to improved and environmentally friendly crop protection strategies to fend off pathogen and insect threats and support sustainable agriculture. The consortium aims to elucidate defense mechanisms that are operational in different cellular and extracellular compartments of model and crop plants.

The IRTG 2172 provides a unique and appealing program on plant defense mechanisms against microbes and insects. The program is designed to prepare doctoral researchers for addressing their own research questions in an independent and professional way and to be qualified for leading positions in academic institutions and enterprises.

Research program

The research of PRoTECT focuses on molecular mechanisms of plant defense mechanisms. Genetic, cell biological and biochemical tools will be applied to answer questions in the main areas: barriers, metabolites and signal transduction.

Current topics of the IRTG

Barriers

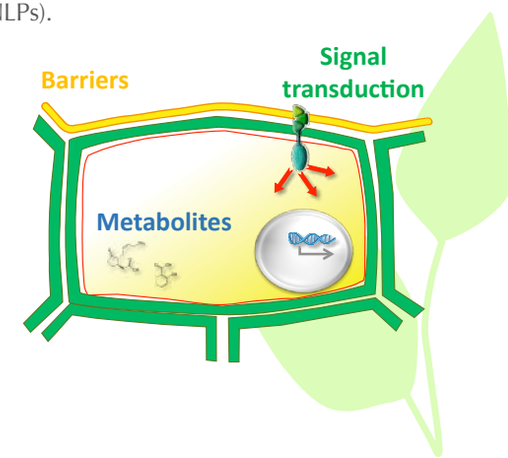
- Function of plant wax esters
- DAMP-creating activities of fungal enzymes that attack the plant cell wall
- Pseudomonas-induced plant pectin modifying enzymes

Metabolites

- Fungal sensing of the plant environment
- Chemical signals of systemic acquired resistance (SAR)
- Modulation of aboveground defense and growth responses in poplar by mycorrhizal, insect and nutrient signaling

Signal transduction

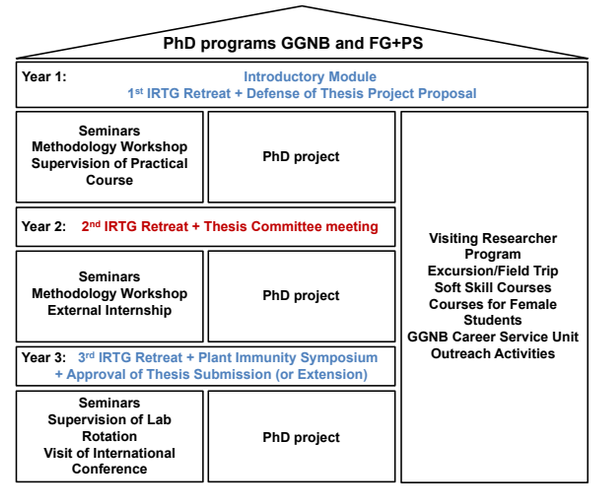
- Molecular pathways that coordinate defense and growth of the infected plant after recognition of pathogens through either PRRs or NLR proteins.
- Signaling components that lead to establishment of SAR.
- Characterization of specific members of the fungal protein family of necrosis and ethylene inducing proteins (NLPs).



Qualification program

The PhD program is part of GGNB (Göttingen Graduate School for Neurosciences, Biophysics and Molecular Biosciences) and consists of the individual research project and of participation in the qualification program.

The qualification program provides mandatory elements (seminars, methodology courses, soft skill courses) that can be combined with individual optional elements (key skills and methods, courses for females, excursions, etc.):



Collaboration between the partners

- Research projects are carried out together, at least by one UGOE and one UBC PhD student
  - → Internship of 6 month in the partner lab
- Introductory module on plant-microbe interaction for all PhD students
- Joint thesis committees: in each thesis committee one member of the partner institution
- Joint seminars via Skype
- Joint retreats