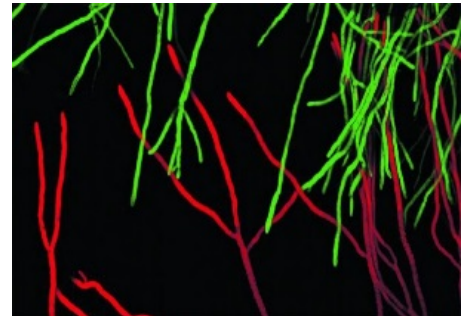
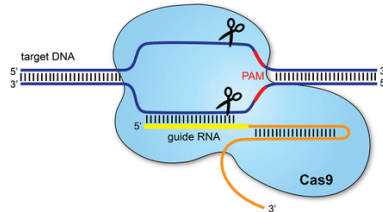


Master Thesis Microbiology

Inducible gene expression systems in mycoparasitic *Trichoderma* species



Mycoparasitic species of the fungal genus *Trichoderma* have high antagonistic activity against plant pathogenic fungi and hence are applied as biocontrol agents in plant protection. Detailed knowledge of the properties and mode of action of *Trichoderma* can ensure its effective application as a biofungicide.

Genetic manipulation is a widely-used approach for obtaining mechanistic insights into cell and gene function. The aim of this Master thesis project is the development of new molecular tools to genetically manipulate the biocontrol fungus *Trichoderma atroviride*. To this end, inducible gene expression systems shall be optimized for *Trichoderma*, their tunability tested by using a reporter protein and finally the system of choice verified by replacing the endogenous promoter of a gene of interest.

The applied methods/tasks include:

- Fungal and bacterial cultivation
- PCRs/ gel electrophoresis
- Plasmid design and generation (assembly or Phusion PCR)
- Transformation of fungal protoplasts
- CRISPR/Cas9 mediated transformation of *Trichoderma atroviride*
- Fluorescence-based reporter assay (microscopy/plate reader)

The Master thesis project is available in the working group *Molecular Mycology and Mycoparasitism* (<https://www.uibk.ac.at/de/microbiology/forschung/mykologie/molekulare-mykologie/>). Duration: 6-8 months, flexible working hours.

If you are interested, please contact Clara.Baldin@uibk.ac.at or susanne.zeilinger@uibk.ac.at. We are looking forward to your application!