In the context of the DFG-funded Research Group (Forschergruppe) FOR5116 “Plant-microbe communication through exRNA: system-level approaches to study molecular mechanisms and agronomic applications” we currently offer a 3-year position for a

**PhD student**

for the following research project:

**Cross-kingdom RNA transfer in the barley-powdery mildew interaction**

Powdery mildew fungi are fungal (ascomycete) phytopathogens that can infect a broad range of angiosperm plants and cause substantial damage on crop and ornamental plants. They thrive on the basis of an obligate biotrophic lifestyle, i.e. they require living host plants for growth and reproduction. The interaction between barley (*Hordeum vulgare*) and its powdery mildew pathogen, *Blumeria graminis* f.sp. *hordei* (*Bgh*), is highly-coevolved, agronomically relevant and well-characterized at the phytopathological, genetic, molecular and cellular level. The recent discovery of small RNAs (sRNAs) with cross-kingdom RNA transfer potential in both partners of the interaction raises the intriguing possibility that extracellular sRNAs modulate the plant-powdery mildew warfare. Here, we propose a research program that aims at elucidating the supposed role of extracellular sRNAs in the barley-*Bgh* interaction. In particular, we wish to identify sRNAs of the respective interaction partners and functionally characterize them in the context of infection. In addition, we want to clarify whether extracellular vesicles mediate the presumed mutual exchange of extracellular sRNAs and further analyze the putative role of the abundant *Bgh* RNase-like effector proteins (termed RALPHs) therein. Our studies will reveal whether and to which extent extracellular sRNAs play a role in the interaction of a crop plant with an obligate biotrophic pathogen and if host and microbial sRNA targets are conserved in comparison to other pathosystems studied within our consortium.

The project has a strong focus on plant molecular cell biology in the context of plant-microbe interactions; accordingly, a solid background in cell biology, biochemistry and molecular phytopathology is desired. Work in the framework of this project will be predominantly carried out at RWTH Aachen University. However, the willingness to participate in short-term research stays in the laboratories of our collaborators within the Research Group is expected.

In case you are interested in this position, please contact:

Prof. Dr. Ralph Panstruga, phone +49 (0)241 8026655, e-mail panstruga@bio1.rwth-aachen.de)

**Closing date for applications: 15.09.2020**