



# Green Student Lab

## *Micro RNA discovery in various market relevant plant species*

Recent years have shown a tremendous increase in the identification of all types of small RNA molecules (sRNAs) due to the advent of powerful next-generation sequencing technologies. One class of sRNAs of interest comprises the micro RNAs (miRNAs) that are implicated in the regulation of gene expression. In their mature form, the miRNAs are ~22 nucleotide molecules long and target via specific binding of particular mRNAs and thus effectively silence mRNA expression. miRNAs have been found to be important players in plant responses and development to abiotic and biotic stress and are therefore of potential interest to breeding companies that would like to optimize their crops.

The students on this project will acquire small RNA next-generation sequencing (NGS) data (Ion Proton platform) of a plant X. From these small RNA sequences known plant X small RNAs are removed, after which new miRNAs can be discovered using advanced bioinformatics approaches, such as comparison with miRNA from other species to identify conserved miRNAs. Finally, we will try to identify potential target mRNAs by bioinformatics and wet lab techniques.

Involved company

- Rijk Zwaan

Research questions:

- What are the miRNAs of plant X? (*plant species depends on the company's interest*)
- Which newly identified miRNAs are conserved in other species?
- What are the mRNA targets of the miRNAs?

Techniques:

- NGS (Ion Proton)
- Bioinformatics analyses
- Molecular biology techniques