

Activation of the plant cell cycle by sugars; pathways involved in stimulation of CYCD expression by carbohydrates

Supervisory team:

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Project description:

Plant growth on land, including the production of our food and non food crops, is ultimately the result of cell production and cell growth. These processes are energy demanding. The energy required for this is provided by the oxidation of sugars during respiration, and hence it is quite important that critical processes such as cell division are not started before sufficient sugars are available to execute the process effectively. This control is achieved by linking the levels and/ or activity of cell cycle regulators to the sugar levels. We uncovered that a regulator of cell cycle entry, CYCD2;1 is under control of sugars. If we understand the mechanism behind this, we might be able to improve the response of the cell cycle machinery to the sugars produced during photosynthesis, potentially stimulating plant growth. You will perform a genetic screen in *Arabidopsis thaliana*, a genetic model system, to identify candidate genes and pathways implicated in the stimulation of CYCD2;1 expression by sugars. The mutations will be identified by next generation sequencing of the entire genome. You will test the effect of these candidate regulators on cell cycle progression and plant growth under different growth conditions. This project will provide you with expertise in genome sequencing by next generation sequencing, bioinformatics, mutant screens, confocal imaging and molecular biology.

[Hear about the project from Dr Walter Dewitte directly >>](#)