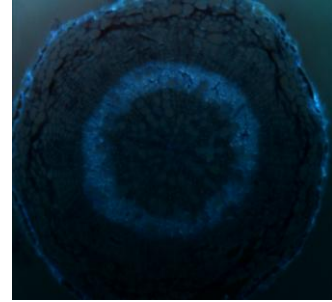
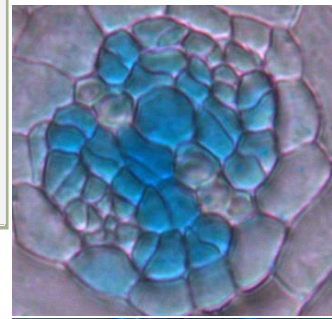


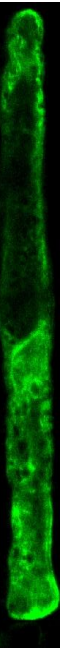
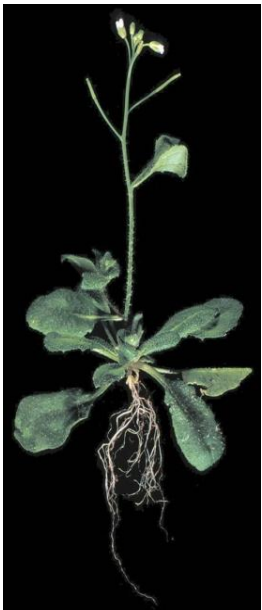
# THESIS IN PLANT DEVELOPMENT

*Erasmus Exchange Student –  
University of Helsinki*

## The role of Auxin and Cytokinins in Cambium Development



The **vascular cambium** is a secondary meristem producing phloem centrifugally and xylem centripetally. It has been demonstrated that the cambial activity depends on the role of different phytohormones like auxin, cytokinins, gibberellins and ethylene, even though the molecular mechanisms by which these hormones regulate cambium activity have remained largely poorly understood. In tree studies, an auxin maximum was found in the stem cambium ring, and it has been widely demonstrated that cytokinins are required for the correct activity of cambium in tree stem and **Arabidopsis** root. The crosstalk between auxin and cytokinins has been identified as a central driver of tissue patterning in Arabidopsis, such as in embryo development, root meristem size maintenance, shoot stem-cell niche control, lateral root formation and primary patterning of the root vasculature. During the primary development of root vasculature **auxin and cytokinins** show distinct domains: auxin response is focused in the xylem axis, while cytokinin response is present in procambial cells, and these domains are maintained by mutual interaction between them. It is currently unknown whether similar auxin-cytokinin crosstalk regulates secondary development as well.



Our laboratory is searching for highly-motivated Erasmus Exchange students for an MSc thesis (at least 6 months) supporting my PhD project related to auxin and cytokinins in cambium development of *Arabidopsis thaliana*.

In our laboratory we use the following techniques:

- Arabidopsis thaliana growth and transformation methods
- Molecular Biology (Cloning, PCR, etc...)
- Bright-Field Microscopy and Confocal Microscopy
- Plastic sections

Unfortunately our laboratory cannot provide extra funding for the student. For any question, please do not hesitate to contact me ([riccardo.siligato@helsinki.fi](mailto:riccardo.siligato@helsinki.fi)).

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