

How plants time their flowering

October 24 2016, by Ingrid Söderbergh



Credit: Umea University

The onset of flowering is a central event in the life cycle of a plant and ensures reproduction. From an agricultural perspective, it is important that flowering takes place at the right time to optimise harvests. Professor Markus Schmid is leading a project to find out how flowering time is regulated on cell level.

Flowering is controlled by a complex regulatory genetic network. At present, several genes have been identified and these are controlled by various factors, such as the metabolic and hormonal state, length of day and temperature. However, we only partly understand how plants interpret these signals to decide whether they should flower or not.

The decision to flower takes place in a dedicated tissue located at the growing tip of the plant, the so-called shoot apical meristem. Cells in this tissue have not yet specialised but can still develop into different cell types. The shoot apical meristem consists of only a few hundred cells and it has so far been too small to analyse, but present-day technological advances have now made it possible to study them.

"By using advanced gene sequencing and metabolomics, we are hoping to gain new insights into the function of the genetic, regulatory networks, and also more knowledge on what controls the time of flowering. That is, when cells go from producing leaves to starting the production of flowers," says Markus Schmid, professor at Umeå University.

Climate effect on flowering

The basic research project will be conducted on the [model plant](#) thale cress (*Arabidopsis thaliana*) but eventually also on hybrid aspen. Thale cress has in itself no economic value, but information from this model plant can in many instances be directly translated to crops.

The results of these studies can be used to enable predictions about how plants will react to environmental changes.

"In times of climate change, it is particularly important to understand how these changes will affect plant growth and productivity."

Provided by Umea University

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