

P016 Control of cell cycle activation during germination
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We have shown previously that there are four phases of cell division activation during germination in *Arabidopsis* and that these phases are related to external morphological changes. Cell division initiates in the root apical meristem prior to root protrusion, followed by sequential activation of cell division in the cotyledons, shoot apical meristem and secondary meristems. Furthermore, we found that major changes in transcript levels of >2000 genes precede root emergence, including core cell cycle genes such as D-type cyclins. The CYCDs that are activated early in germination were found to play key roles in regulating the extent of cell division, since loss-of-function alleles of these CYCDs display reduced division activation and consequential delayed root emergence.

To investigate which hormone plays a specific role during germination we analysed first in detail transcript profiles of those genes implied in hormone signalling. Further bioinformatic analysis was performed to compare our data to published microarray data of hormone treated seedlings and we found that sequential waves consist of hormone-regulated genes that are expressed during germination. To validate observed results, we applied various hormone treatments to stratified seeds and followed the effects during early germination and the activation of cell division. Finally, we studied the germination of mutant plants under different hormonal conditions to dissect the putative roles of specific genes during cell cycle activation in germination.