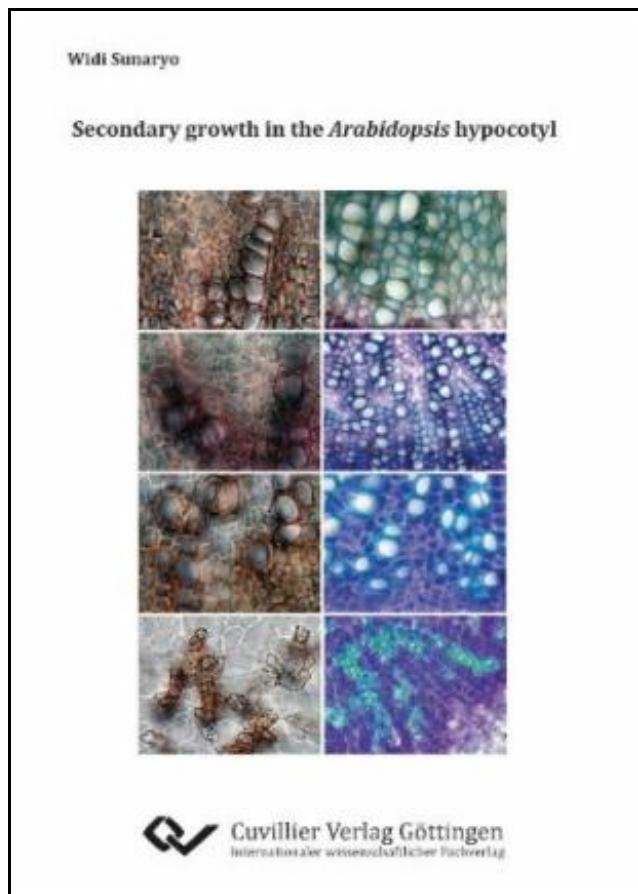


Secondary growth in the *Arabidopsis* hypocotyl



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Reviews

This is basically the very best publication i actually have go through until now. It really is loaded with knowledge and wisdom I realized this publication from my i and dad encouraged this publication to discover.

(Bryana Klocko III)

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Cuvillier Verlag Dez 2010, 2010. Buch. Book Condition: Neu. 216x146x4 mm. Neuware - Secondary growth results from cell division and differentiation in the vascular cambium and gives rise to secondary xylem and phloem. Xylem of trees, commonly referred to as wood, is an important carbon source used for woody materials and industrial purposes such as timber, pulp, furniture, fibers, and also as a energy source. Although abundant data has been collected to address the genetic control of cambial activity and differentiation, the mechanism behind is still little known. The Arabidopsis hypocotyl has previously been shown to be a suitable model for secondary growth and xylem differentiation similar as it occurs in angiosperm trees. Plant development requires a tightly controlled balance between undifferentiated dividing cells and cells, which are subjected to undergo differentiation. In the shoot apical meristem of Arabidopsis, this process is governed by a complex signaling network involving several classes of transcription factors, which are often expressed in highly distinct patterns. Key-players of differentiation control are the KNOX genes (Knotted-1 like genes; e.g. KNAT1, KNAT2, STM), which comprise a small gene family with eight members in *Arabidopsis thaliana*. This project was aimed to investigate the role of KNOX genes in secondary growth and differentiation of xylem using the Arabidopsis hypocotyl as a model. T-DNA insertion mutants for all *Arabidopsis* KNOX genes were isolated. Mutants of *stm* and *knat1* showed reduced xylem diameter and xylem fiber formation. The double mutant *stm-GK;knat1bp-9* had a strongly enhanced phenotype. STM and KNAT1 were expressed in the cambial zone and their expression was not dependent on each other. Taken together this shows that STM and KNAT1 have overlapping function and act synergistically on cambial activity and differentiation of xylem derivates. Neither constitutive nor inducible overexpression of KNAT1 led to overproduction of xylem. Moreover, overexpression...

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