P11

DRL1 Regulates Adaxial Leaf Patterning and Shoot Apical Meristem Activity

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Leaf shape is controlled early on by initiation at the shoot apical meristem (SAM), as well as by changes in the rates and planes of cell division and the polarity-dependent differentiation of leaf cells. Therefore, the mechanism by which SAM is maintained is essential to leaf formation. Here, we report the isolation of a novel recessive mutant *356-2*, a new *drl1* mutant allele of *Arabidopsis*. The *drl1-101* mutant produces narrow, filamentous leaves and defetive meristems. Its palisade cells have a spongy cell-like structure and are fewer in number, indicating that the leaves are abaxialized. Our study indicates that *DRL1* play a crucial role in SAM activity, vascular tissue formation, and leaf polarity.

P12

Purification of α-Keto Ester Reductase

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The biological activities of chiral compounds as pharmaceuticals or pheromones often depend upon their configuration. Synthesis of enantiomerically pure products is often difficult and one of important subjects in organic synthesis. Chiral hydroxy esters are useful building blocks in organic synthesis. Therefore the asymmetric reduction of keto esters is of great importance. Biocatalytic reduction with enzymes or microbes could be a useful method for the preparation of optically active compounds. α-Keto ester reductase was purified to electrophoretic homogeneity, and the subunit molecular mass of the enzyme was estimated to be 34 kDa. In addition to the ethyl 2-oxo-4-phenyl-butyrate, the enzyme also catalyzed the reduction of oxalacetic acid and 3-chloro-2,4-pentanedione. The enzyme utilized either NADH or NADPH as a source of reducing equivalents. The activity of the enzyme was markedly inhibited by Zn^{2+} ion. The purified enzyme was inactivated by treatment with N-bromosuccinimide, a reagent that modifies tryptophan residue.