Plant Physiology®

August 2011 • Vol. 156 • No. 4

The electronic form of this issue, available as of August 11, 2011, at www.plantphysiol.org, is considered the journal of record.

On the Cover: The identification of the genetic network controlling progress through the plant cell cycle has opened the doors to numerous investigations in which expression of these genes has been altered and the outcome on plant development observed. These investigations have addressed the fundamental question of the relationship between overall size and shape of an organ and the proliferation of an organ's constituent cells. An underlying assumption of these investigations has been that the altered frequency of cell division resulting from these manipulations causes the changes in organ size and shape observed. In this issue, Kuwabara et al. (2196–2206) have manipulated the expression of genes involved in the G1/S phase transition of the plant cell cycle and performed a quantitative temporal and spatial analysis of the patterns of cell division and the changes in leaf morphology that occur. Their results indicate that although changes of cell division frequency are induced, these changes occur after changes in leaf shape. In contrast, there was a tight correlation between the timing of altered cell size resulting from these manipulations and altered leaf form. The results indicate that altered cell division frequency does not underpin leaf morphogenesis but that the influence of cell cycle regulators on the cell size at which division occurs may play an important role in mediating the genetic control of leaf shape. The image shows an Arabidopsis (*Arabidopsis thaliana*) leaf in which new cell plates are visualized by aniline blue staining. Quantification of cell plate distribution by Asuka Kuwabara, coupled with the use of image analysis tools developed by Andreas Backhaus and the analysis of patterns in different genetic backgrounds generated by Robert Malinowski, enabled this work.

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