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The endodermal cell to cell contact is required for the spatial control of Casparian band development

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The aim of this study was to elucidate the development of apoplastic barriers in endodermal cells of Arabidopsis thaliana primary roots based on comparison of 7-days old plants of the wild type Ler and genotypes with changed endodermal development.

The apoplastic barriers develop in two stages. In the first the Casparian bands develop on the anticlinal cell walls closer than 2 mm from the root apex. Detail TEM analysis of this process was performed. The most important data is that the endodermal cell to cell contact is required for the spatial control of Casparian band development. This finding is based on scr3 genotype analysis. In the second stage suberin lamellae develop on the inner surface of primary cell walls. This process starts either with position effect opposite to the phloem poles in the distance of 8 – 10 mm from the root apex or even earlier preferentially opposite to the xylem pole where the lateral root primordia develop. Thereafter on the base of lateral root the endodermal cells of morphologically different shape form a collet, which connects the endodermis of lateral and primary root.

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