

STRUCTURAL DIVERSITY OF STOMATAL RINGS AND PERISTOMATAL RIMS

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Stomatal rings and peristomatal rims are structural elements of stomatal complex cells. The stomatal rings are located on the guard cells, the peristomatal rims are located on the subsidiary and neighbouring cells. Light, scanning and transmission electron microscopy were used to study their structure and location on the cells of stomatal complexes in 38 species of flowering plants. The types of stomatal complexes, the positions of guard and subsidiary cells in them, the sizes of the stomata, and wall geometry of the guard cells were also determined. Typically, the stomatal rings are formed by cuticle folds. The subcuticular space of such folds is filled with pectin. The peristomatal rims can have the same structure. They can also be formed by local thickening of the cuticle, papillae, cellulose cell walls. The morphological diversity of stomatal rings and peristomatal rims is discussed. The relations between the presence of stomatal rings, the positions of stomata on subsidiary cells and wall geometry of the guard cells, as well as those between the stomatal ring morphology and the sizes of stomata are noted as a trend. The possibility of formation of peristomatal rims from lateral stomatal folds, i.e. from the folds diverging from the stomata, is shown.

Keywords: stoma, guard cell, subsidiary cell, stomatal complex, stomatal ring, peristomatal rim, cell wall, cuticle

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