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The Cytoskeleton

Diverse Roles in a Plant's Life

Springer

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Preface

The cytoskeleton, microtubules, and actin filaments together have been found to play diverse roles in the growth and development of plants. The role of cytoskeleton is well established in providing shape and size to plants cells. Be it the jigsaw shape of pavement cells or the conical shape of petal epidermis or the grain shape of rice, it is all brought about by the coordination of the cytoskeleton. The plant cell uses microtubules for trafficking CESA to the cell wall. The orientation of microfibrils corresponds to the microtubular orientation, thereby giving a functional role to the microtubules in context to cell wall structure. The cytoskeleton not only provides for the geometric dimensions but is also very important in physiological processes. Actin filaments are known to play roles in dynamics of stomata and chloroplast, both of which have physiological consequences which are related to adaptations pertaining to abiotic stresses. Recent studies show the interactions between microtubules and actin filaments. Also, it is evident from hormonal cross talks that the cytoskeleton in plants is needed for proper distribution of hormones. Advances in imaging techniques have made the functional studies of cytoskeleton more fascinating in plants. In this book, the authors would like to bring out the role of plant cytoskeleton in context to its interactions and functional affinity to other cellular organelles.

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