

Plant Cell Monographs

Volume 24

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Karlsruhe, Germany

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The Cytoskeleton

Diverse Roles in a Plant's Life

 Springer

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ISSN 1861-1370

Plant Cell Monographs

ISBN 978-3-030-33527-4

<https://doi.org/10.1007/978-3-030-33528-1>

ISSN 1861-1362 (electronic)

ISBN 978-3-030-33528-1 (eBook)

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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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Contents

1	Cortical Region of Diffusively Growing Cells as a Site of Actin–Microtubule Cooperation in Cell Wall Synthesis	1
	Kateřina Schwarzerová and Judith García-González	
2	Insights into the Cell Wall and Cytoskeletal Regulation by Mechanical Forces in Plants	23
	Yang Wang, Ritika Kulshreshtha, and Arun Sampathkumar	
3	Chloroplast Actin Filaments Involved in Chloroplast Photorelocation Movements	37
	Masamitsu Wada and Sam-Geun Kong	
4	Diversity of Plant Actin–Myosin Systems	49
	Takeshi Haraguchi, Zhongrui Duan, Masanori Tamanaha, Kohji Ito, and Motoki Tominaga	
5	Actin Cytoskeleton and Action Potentials: Forgotten Connections . . .	63
	F. Baluška and S. Mancuso	
6	The Actomyosin System in Plant Cell Division: Lessons Learned from Microscopy and Pharmacology	85
	Einat Sadot and Elison B. Blancaflor	
7	Cooperation Between Auxin and Actin During the Process of Plant Polar Growth	101
	Jie Liu and Markus Geisler	
8	Interactions Between the Plant Endomembranes and the Cytoskeleton	125
	Pengfei Cao and Federica Brandizzi	