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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Overview of G Proteins (GTP binding proteins) in Eukaryotes -- Overview of Small GTPase Signaling Proteins in Plants -- Identification and Classification of Rho GTPases in Plants -- Sequence, Structure and Domain Analysis of GTPases in Plants -- Expression of Small GTPases Under Stress and Developmental Conditions in Plants -- Emerging Roles of Rho GTPases in Plants -- Cellular Localization of Small GTPases -- Functional Genomic Perspective of Small GTPases -- Systemic Approaches to Resolve Spatio-Temporal Regulation of GTPase Signaling -- Key Questions and Future Prospects.
Sommario/riassunto	G proteins are the key regulators for a wide range of cellular processes in animals and plants. In comparison to animals and yeast, plants have a single Rho-GTPase subfamily called Rho-like GTPases (ROPs). The ROP family of monomeric GTPases has emerged as a versatile and key regulator in plant signal transduction processes. During the past few years' studies on plant RHO-type (ROP) GTPase have generated new insights into their role in diverse processes ranging from cytoskeletal organization, polar growth, development to stress and hormonal

responses. Studies have shown that plants have evolved specific regulators and effector molecules. ROP GTPases possess the ability to interact with these multiple regulator and effector molecules that ultimately determines their signaling specificity. Recently, genome wide studies in plants have shown that the Arabidopsis genome encodes 93, and rice has nearly 85 small GTPase homologs. And we have been able to identify four new homologs in the rice genome. Here, we focus on the complete phylogenetic, domain, structural and expression analysis during stress and various developmental processes of small GTPases in plants. The comparison of gene expression patterns of the individual members of the GTPase family may help to reveal potential plant specific signaling mechanisms and their relevance. Also, we are summarizing the role of currently known ROP GTPases and their interacting proteins with brief description, simultaneously, comparing their expression pattern based on microarray data. Overall, we will be discussing the functional genomic perspective of plant Rho like GTPases and their role in regulating several physiological processes such as stress, hormonal, pollen tube, root hair-growth and other developmental responses.
