
Preface

As sessile organisms, plants have evolved elaborate mechanisms to perceive and respond to a myriad of environmental cues, thereby increasing their chances of reproduction and survival. Their extraordinary phenotypic plasticity allows them to grow towards or away from stimuli, orchestrate their metabolism according to 24-h light–dark cycles, endure extremely harsh climatic and soil conditions, or defend themselves against pathogenic agents. Elucidating the mechanisms by which plant systems sense and respond to external signals is not only an interesting fundamental biological question in itself, but may also have attractive practical implications for agriculture by opening new avenues in the development of efficient strategies to improve the performance of crop plants.

Divided into four distinct parts—*Tropisms*, *Photoperiodism and Circadian Rhythms*, *Abiotic Stress Responses*, and *Plant-Pathogen Interactions*—this *Methods in Molecular Biology* volume describes different up-to-date methodological approaches, ranging from physiological assays to imaging and molecular techniques, to study a wide variety of plant responses to environmental cues. Aimed at plant physiologists, biochemists, or cell and molecular biologists, the book includes detailed protocols to investigate some of the many key biological processes underlying plant environmental responses, mostly in the model organism *Arabidopsis thaliana* but also in *Physcomitrella patens* and in different crop species such as rice, potato, barley, or tomato. It will hopefully be of great use to the numerous plant biologists worldwide interested in this exciting and fast-growing research topic.

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Methods and Protocols

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