

1. Record Nr.	UNINA9910373919003321
Titolo	Sensory Biology of Plants // edited by Sudhir Sopory
Pubbl/distr/stampa	Singapore : , : Springer Singapore : , : Imprint : Springer, , 2019
ISBN	981-13-8922-5
Edizione	[1st ed. 2019.]
Descrizione fisica	1 online resource (XXXIV, 651 p. 67 illus., 61 illus. in color.)
Disciplina	571.2
Soggetti	Plant physiology Plant anatomy Plant development Molecular ecology Developmental biology Environmental management Plant Physiology Plant Anatomy/Development Molecular Ecology Developmental Biology Environmental Management Fisiologia vegetal Biologia del desenvolupament Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Chapter 1. Plant Diversity and Adaptation -- Chapter 2. The Light Awakens! Sensing Light and Darkness -- Chapter 3. Nutrient Perception and Signaling in Plants -- Chapter 4. Gravitropism of Plant Organs Undergoing Primary Growth -- Chapter 5. Gravitropism of Plant Organs Undergoing Primary Growth -- Chapter 6. Plant Cognition: Ability to Perceive 'Touch' and 'Sound' -- Chapter 7. Perception of Stress Environment in Plants -- Chapter 8. Heterotrimeric G-protein Signaling in Plants -- Chapter 9. Plant Hormones – Some Glimpses on Biosynthesis, Signaling Networks and Cross Talk -- Chapter 10. The Two-component System: Transducing Environmental and Hormonal

Signals -- Chapter 11. Calcium Signaling: A Communication Network that Regulates Cellular Processes -- Chapter 12. Nitric Oxide a Tiny Decoder and Transmitter of Information -- Chapter 13. A Tale of Sugars and Hormones: Perception and Responses -- Chapter 14. ROS Signaling and its Role in Plants -- Chapter 15. Extracellular ATP Signaling in Animals and Plants: Comparison and Contrast -- Chapter 16. Mammalian Neurotransmitter are Important Signals Mediating Plant Morphogenesis -- Chapter 17. The Plant Cell Wall: Barrier and Facilitator of Environmental Perception -- Chapter 18. Plastid Retrograde Signals: More to Discover -- Chapter 19. Electric Signaling and Long Distance Communication in Plants -- Chapter 20. How Plants Respond to Pathogen Attack: Interaction and Communication -- Chapter 21. Integration of Multiple Signalling Cues -- Chapter 22. Plant Death: Short and Long Life Span to Immortality -- Chapter 23. Sentient Nature of Plants: Memory and Awareness.-.

Sommario/riassunto

Plants provide a source of survival for all life on this planet. They are able to capture solar energy and convert it into food, feed, wood and medicines. Though sessile in nature, over many millions of years, plants have diversified and evolved from lower to higher life forms, spreading from sea level to mountains, and adapting to different ecozones. They have learnt to cope with challenging environmental conditions and various abiotic and biotic factors. Plants have also developed systems for monitoring the changing environment and efficiently utilizing resources for growth, flowering and reproduction, as well as mechanisms to counter the impact of pests and diseases and to communicate with other biological systems, like microbes and insects. This book discusses the “awareness” of plants and their ability to gather information through the perception of environmental cues, such as light, gravity, water, nutrients, touch and sound, and stresses. It also explores plants’ biochemical and molecular “computing” of the information to adjust their physiology and development to the advantage of the species. Further, it examines how plants communicate between their different organs and with other organisms, as well as the concepts of plant cognition, experience and memory, from both scientific and philosophical perspectives. Lastly, it addresses the phenomenon of death in plants. The epilogue presents an artist’s view of the beauty of the natural world, especially plant “architecture”. The book provides historical perspectives, comparisons with animal systems where needed, and general biochemical and molecular concepts and themes. Each chapter is selfcontained, but also includes cross talk with other chapters to offer an integrated view of plant life and allow readers to appreciate and admire the functioning of plant life from within and without. The book is a tribute by the Editor to his students, colleagues and co-workers and to those in whose labs he has worked.
