

Signaling and Communication in Plants





Vadim Demidchik Frans Maathuis Editors

Ion Channels and Plant Stress Responses



Contents

Ion Channels and Plant Stress: Past, Present, and Future	1
The Role of Ion Channels in Plant Salt Tolerance	23
Cation Channels and the Uptake of Radiocaesium by Plants Philip J. White, Lea Wiesel, and Martin R. Broadley	47
Ion Channels in Plant Development	69
Potassium and Potassium-Permeable Channels in Plant Salt Tolerance Sergey Shabala and Igor I. Pottosin	87
Regulation of Ion Channels by the Calcium Signaling Network in Plant Cells Weihua Wu, Yi Wang, Sung Chul Lee, Wenzhi Lan, and Sheng Luan	111
The Role of Cyclic Nucleotide-Gated Channels in Cation Nutrition and Abiotic Stress Christen Y.L. Yuen and David A. Christopher	137
The Function of Cyclic Nucleotide-Gated Channels in Biotic Stress Wei Ma, Keiko Yoshioka, Chris Gehring, and Gerald A. Berkowitz	159

New Approaches to Study the Role of Ion Channels in Stress-Induced Signalling: Measuring Calcium Permeation in Plant Cells and Organelles Using Optical and Electrophysiological Techniques Armando Carpaneto, Paul Vijay Kanth Gutla, and Franco Gambale	175
Vacuolar Ion Channels: Roles as Signalling Mechanisms and in Plant Nutrition	191
Reactive Oxygen Species, Oxidative Stress and Plant Ion Channels Vadim Demidchik	207
Index	233