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function 3.5 Subcellular localization of NB-LRRs 3.6 NB-LRRs can function in pairs 3.7 Common immune signaling events downstream of R protein activation 3.8 Conclusions 4 The roles of salicylic acid and jasmonic acid in plant immunity Pradeep Kachroo and Aardra Kachroo 4.1 Introduction 4.2 Biosynthesis of SA 4.3 Derivatives of SA 4.4 SA and systemic acquired resistance 4.5 SA signaling pathway 4.6 Jasmonates mediate plant immunity 4.7 JA biosynthetic mutants are altered in microbial defense 4.8 A receptor protein complex perceives JA 4.9 Transcription factors regulate JA-derived signaling 4.10 JA regulates defense gene expression 5 Effectors of bacterial pathogens: modes of action and plant targets Feng Feng and Jian-Min Zhou 5.1 Introduction 5.2 Overview of plant innate immunity 5.3 Overview of type III effectors 5.4 Host targets and biochemical functions 5.5 Concluding remarks 6 The roles of transcription activator-like (TAL) effectors in virulence and avirulence of Xanthomonas Aaron W. Hummel and Adam J. Bogdanove 6.1 Introduction 6.2 TAL effectors are delivered into and may dimerize in the host cell 6.3 TAL effectors function in the plant cell nucleus 6.4 AvrBs4 is recognized in the plant cell cytoplasm 6.5 TAL effectors activate host gene expression 6.6 The central repeat region of TAL effectors determines DNA binding specificity 6.7 TAL effectors wrap around DNA in a right-handed superhelix 6.8 TAL effector targets include different susceptibility and candidate susceptibility genes 6.9 The MtN3 gene family is targeted by multiple TAL effectors 6.10 Promoter polymorphisms prevent S gene activation to provide disease resistance 6.11 The nature of the rice bacterial blight resistance gene xa5 suggests TAL effector interaction with plant transcriptional machinery 6.12 Executor R genes exploit TAL effector activity for resistance 6.13 The diversity of TAL effectors in Xanthomonas populations is largely unexplored 6.14 TAL effectors are useful tools for DNA targeting 6.15 Summary 7 Effectors of fungi and oomycetes: their virulence and avirulence functions, and translocation from pathogen to host cells Brett M. Tyler and Thierry Rouxel 7.1 Introduction 7.2 Identification of fungal and oomycete effectors 7.3 Defensive effectors: effectors that interfere with plant immunity 7.4 Offensive effectors: effectors that debilitate plant tissue 7.5 Entry of intracellular effectors 7.6 Genome location and consequences on adaptation/dispensability 7.7 Concluding remarks 8 Plant-virus interaction: defense and counter-defense Amy Wahba Foreman, Gail J. Pruss and Vicki Vance 8.1 Introduction 8.2 RNA silencing as an antiviral defense pathway - the beginning of the story 8.3 Small regulatory RNA biogenesis and function 8.4 The silencing mafia - the protein families 8.5 The defense: anti-viral RNA silencing pathways 8.6 The counterdefense: viral suppressors of silencing and their targets 8.7 Viral suppressors of silencing and endogenous small regulatory RNA pathways 9 Molecular mechanisms involved in the interaction between tomato and Pseudomonas syringae pv. tomato Andre C. Velasquez and Gregory B. Martin 9.1 Introduction 9.2 PAMP-triggered immunity in the Solanaceae 9.3 Pseudomonas syringae pv. tomato virulence mechanisms 9.4 Effector-triggered immunity in the Solanaceae 9.5 Races of Pseudomonas syringae pv. tomato 9.6 ETI is involved in nonhost resistance to Pseudomonas syringae pathovars 9.7 ETI signaling pathways in the Solanaceae 9.8 Conclusions and future prospects 10 The Cladosporium fulvum-tomato pathosystem: fungal infection strategy and plant responses Bilal O<U+00cc>kmen and Pierre J.G.M. de Wit 10.1 Introduction 10.2 History of the interaction between Cladosporium fulvum and tomato 10.3 Compatible and incompatible interactions 10.4 Tomato Cf resistance proteins 10.5 Cf-mediated downstream signaling 10.6 Effectors in other fungi with similar

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Sommario/riassunto	"Molecular Plant Immunity provides an integrated look at both well- established and emerging concepts in plant disease resistance providing the most current information on this important vitally important topic within plant biology. Understanding the molecular basis of the plant immune system has implications on the development of new varieties of sustainable crops, understanding the challenges plant life will face in changing environments, as well as providing a window into immune function that could have translational appeal to human medicine.Molecular Plant Immunity opens with chapters reviewing how the first line of plant immune response is activated followed by chapters looking at the molecular mechanisms that allow fungi, bacteria, and oomycetes to circumvent those defenses. Plant resistance proteins, which provide the second line of plant immune defense, are then covered followed by chapters on the role of hormones in immunity and the mechanisms that modulate specific interaction between plants and viruses. The final chapters look at model plant-pathogen systems to review interaction between plants and fungal, bacterial, and viral pathogens. Written by a leading team of international experts, Molecular Plant Immunity will provide a needed resource to diverse research community investigated plant immunity"