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Nota di contenuto	Cell Cycle Control and Plant Development; Contents; Contributors; Preface; 1 The growing family of plant cyclin-dependent kinases with multiple functions in cellular and developmental regulation; 1.1 Introduction; 1.2 Structural diversity in the family of plant CDKs; 1.3 Expression profiles of CDK genes: structures and functions of promoters; 1.4 Diverse functions of CDK protein complexes in multiple regulatory mechanisms; 1.5 Developmental consequences of altered CDK functions; 1.6 Perspectives; Acknowledgments; References; 2 The plant cyclins; 2.1 Introduction 2.1.1 Cyclins and the cell cycle oscillator 2.2 The plant cyclin family; 2.2.1 Phylogenetic relationships between animal and plant cyclins; 2.2.2 Cyclin domains; 2.2.3 A-type cyclins; 2.2.4 B-type cyclins; 2.2.5 D-type cyclins; 2.2.6 Other cyclins; 2.3 Expression of cyclins during the cell cycle; 2.3.1 The G1 checkpoint; 2.3.2 S phase; 2.3.3 G2-M; 2.4 Cyclins in plant development; 2.5 Concluding remarks;

Acknowledgments; References; 3 CDK inhibitors; 3.1 Introduction; 3.2 Plant CDK inhibitors and sequence uniqueness; 3.3 Expression; 3.4 Interactions with cell cycle proteins and CDK inhibition
3.5 Protein stability and modifications
3.6 Cellular localization; 3.7 CDK inhibitors and plant growth and development; 3.8 Cell cycle phase transitions; 3.9 Cell cycle exit and endoreduplication; 3.10 Concluding remarks; Notes added at proofing stage; Acknowledgments; References; 4 The UPS: an engine that drives the cell cycle; 4.1 The molecular machinery mediating ubiquitin-dependent proteolysis; 4.1.1 Ubiquitylation reaction; 4.1.2 Ubiquitin protein ligases; 4.2 The SCF and APC/C: the two master E3s regulating the cell cycle; 4.2.1 The SCF: an E3 regulating the G1/S transition
4.2.2 The APC/C: the E3 coordinating cell cycle progression through mitosis and G1
4.3 Cell cycle targets of the proteolytic machinery; 4.3.1 The transition from G1 to S phase; 4.3.2 Regulators that control DNA replication licensing; 4.3.3 Metaphase to anaphase transition; 4.3.4 Mitotic cyclin destruction: the essential step to exit mitosis; 4.3.5 APCCDC20 versus APCCDH1/CCS52; 4.3.6 Regulation of endoreduplication by the APC/C; 4.4 Conclusion; References; 5 CDK phosphorylation; 5.1 Introduction; 5.2 Overview of CAKs in yeasts and vertebrates; 5.3 Vertebrate-type CAK in plants
5.3.1 CDKD, cyclin H and MAT15
5.3.2 CDKD protein complexes; 5.3.3 CDKD in cell cycle regulation and transcriptional control; 5.4 Plant-specific CAK; 5.4.1 Unique features of CDKF; 5.4.2 CAK-activating kinase activity of CDKF; 5.5 Manipulation of in vivo CDK activities by CAK; 5.6 Inhibitory phosphorylation of yeast and vertebrate CDKs; 5.7 Inhibitory phosphorylation of plant CDKs; 5.7.1 Plant WEE1 kinases; 5.7.2 Requirement for tyrosine dephosphorylation in plant cell division; 5.7.3 A CDC25-like phosphatase and an antiphosphatase in Arabidopsis; 5.8 Conclusion and perspectives
Acknowledgments

Sommario/riassunto

The cell cycle in plants consists of an ordered set of events, including DNA replication and mitosis, that culminates in cell division. As cell division is a fundamental part of a plant's existence and the basis for tissue repair, development and growth, a full understanding of all aspects of this process is of pivotal importance. Cell Cycle Control and Plant Development commences with an introductory chapter and is broadly divided into two parts. Part 1 details the basic cell machinery, with chapters covering cyclin-dependent kinases (CDKs), cyclins, CDK inhibitors, proteolysis, CDK ph

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