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Titolo	Cyanidioschyzon merolae [[electronic resource] ] : A New Model Eukaryote for Cell and Organelle Biology // edited by Tsuneyoshi Kuroiwa, Shinya Miyagishima, Sachihito Matsunaga, Naoki Sato, Hisayoshi Nozaki, Kan Tanaka, Osami Misumi
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Descrizione fisica	1 online resource (365 pages) : illustrations
Disciplina	570
Soggetti	Microbiology Microbial genetics Microbial genomics Plant physiology Plant genetics Cell cycle Eukaryotic Microbiology Microbial Genetics and Genomics Plant Physiology Applied Microbiology Plant Genetics and Genomics Cell Cycle Analysis
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Preface -- Part I. Birth, evolution and structure of primary eukaryote -- Chapter 1. The Genus Cyanidiales: evolution and habitat -- Chapter 2. Cellular structure of Cyanidioschyzon merolae : minimum set of organelles -- Part II. Synchronous culture of Cyanidioschyzon merolae and isolation of organelles -- Chapter 3. Cultivation, observation and application of conventional experimental procedures -- Chapter 4. Isolation of (dividing) organelles -- Part III. Genome and post-genomic analyses of Cyanidioschyzon merolae -- Chapter 5. 100% complete nuclear and organellar genome sequences -- Chapter 6. "Omics"

analyses of Cyanidioschyzon merolae based on complete genome information -- Chapter 7. Procedures for transformation and their application -- Part IV. Techniques for Morphological and Structural Biology -- Chapter 8. Basic techniques for fluorescence and electron microscopy -- Chapter 9. Cytological analyses by advanced electron microscopy -- Chapter 10. Structural analyses by cryogenic coherent X-ray diffraction imagingPart V. Proliferation of Eukaryotic Cell -- Chapter 11. Cell cycle and organelle division cycle -- Chapter 12. Synchronization of cell cycle by light and circadian rhythms -- Chapter 13. Control of cell nuclear DNA replication by chloroplast and mitochondrion -- Chapter 14. Double-membrane-bounded organelles -- Chapter 15. Single-membrane-bounded organelles -- Chapter 16. Control of organelle division -- Part VI. Metabolism -- Chapter 17. Photosynthesis -- Chapter 18. Nitrogen metabolism -- Chapter 19. Carbon metabolism -- Part VII. Application -- Chapter 20. Application of the tolerance to extreme environment to other organisms -- Chapter 21. Metabolic engineering -- Appendix -- Index.

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### Sommario/riassunto

This comprehensive book highlights the importance of Cyanidioschyzon merolae (*C. merolae*), an ultrasmall unicellular red alga, as a model eukaryote organism. The chapters introduce recent studies on *C. merolae*, from culture, synchronization and isolation methods of nucleic acids, proteins and organelles for molecular biological and cytological analyses, as well as its application in genetic engineering of environmental-stress-tolerant crops and oil production. In addition to discussing recent advances based on the complete genome information and molecular biological techniques such as genetic modifications and bioinformatics, the book includes visualization aids demonstrating that both classical and recent imaging techniques of fluorescent and electron microscopy can be applied to analyses of *C. merolae*. This publication offers a definitive resource for both beginners and professionals studying *C. merolae*, particularly in the field of molecular biology, evolutionary biology, morphology, biochemistry and cell biology, as well as those interested in its applications in medical sciences and agriculture.

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