1. Record Nr. UNINA9910908372503321

Autore	Burch-Smith Tessa M
Titolo	Chloroplast Gene Expression: Regulation, Stress Signaling and Biotechnology / / edited by Tessa M. Burch-Smith
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2024
ISBN	9783031700989 9783031700972
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (226 pages)
Collana	Nucleic Acids and Molecular Biology, , 1869-2486 ; ; 37
Disciplina	571.65
Soggetti	Cell organelles Plant genetics Plant cells and tissues RNA - Metabolism Genetic transcription Organelles Plant Genetics Plant Cell Biology RNA Metabolism Gene Transcription
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Chapter 1. RNA Binding Proteins Regulating Chloroplast RNA Metabolism -- Chapter 2. The Roles of mTERF Proteins in Chloroplast Gene Expression -- Chapter 3. Light Control of Plastid Gene Expression -- Chapter 4. Chloroplast Translation Machinery -- Chapter 5. Chloroplast Stress Signals: Control of Retrograde Signaling, Chloroplast Turn-Over, and Cell Fate Decisions -- Chapter 6. The Genetic Engineering Toolbox for Transformation of Higher Plant Plastids.
Sommario/riassunto	This book provides an insightful journey into the realm of chloroplast biology. Chloroplasts are the organelles that perform photosynthesis and many of the metabolic processes in plant cells. They are a specialized form of plastids, whose differentiation is dependent on environmental and developmental signaling. Descended from a lineage

of free-living, photosynthesizing prokaryotes, chloroplasts and other plastids contain remnants of their ancient genomes and chloroplast gene expression is essential for establishing functional organelles. Chloroplast gene expression has features of the prokaryotic gene expression but now involves large suites of nuclear proteins. Topics discussed are: the identification of these nuclear factors how chloroplast RNA is processed to produce functional organelles translation in chloroplasts and its regulation the environmental factors that influence chloroplast development and how plants deal with defective chloroplasts. The book also highlights the evolving landscape of chloroplast engineering in biotechnology, recent breakthroughs and their implications for the future. A valuable resource for researchers, students, and enthusiasts alike, this book is a compelling testament to the fascinating world of chloroplasts and their burgeoning role in scientific innovation.