1. Record Nr. UNINA9910808692603321

Titolo	The cell biology of cyanobacteria / / edited by Enrique Flores and Antonia Herrero, Instituto de Bioquimica Vegetal y Fotosintesis CSIC and Universidad de Sevilla, Seville, Spain
Pubbl/distr/stampa	Norfolk, England : , : Caister Academic Press, , [2014] ©2014
ISBN	1-908230-92-4
Descrizione fisica	1 online resource (320 p.)
Disciplina	579.39
Soggetti	Cyanobacteria - Molecular aspects Cyanobacteria - Cytology Cyanobacteria - Physiology Cyanobacteria
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Contents; Contributors ; Current books of interest; Preface; 1: A Brief History of Cyanobacterial Research: Past, Present, and Future Prospects; 2: Cell Division in Cyanobacteria; Introduction; Peptidoglycan synthesis and hydrolysis; The cytoskeleton and peptidoglycan synthesis; Identification and analysis of cyanobacterial cell division proteins that are not present in E. coli and B. subtilis; Cyanobacteria-derived components of the chloroplast division machinery; Concluding remarks; 3: The Cell Envelope; The structural properties of the cell envelope The outermost layer of the cyanobacterial cell wallThe lipid composition of cyanobacterial membranes; The protein composition of the cyanobacterial cell envelope; Concluding remarks; 4: Proteomics in Revealing the Composition, Acclimation and Biogenesis of Thylakoid Membranes; Introduction; Membrane organization in cyanobacteria; Challenges in proteomic analysis of thylakoids; Proteomic investigations of thylakoid proteins; Proteomics of thylakoid protein complexes; Quantitative proteomics: response of the thylakoid membrane proteome to changes in environmental conditions

Biogenesis of the thylakoid membrane and protein complexesFuture perspectives; 5: Protein Targeting, Transport and Translocation in Cyanobacteria; Subcellular organization of cyanobacterial cells - the sorting problem; How to establish protein heterogeneity in cyanobacteria?; Protein translocation and membrane integration in bacteria and chloroplasts - a brief overview; Protein translocation systems in cyanobacteria: a genetic perspective; Protein translocation systems in cyanobacteria: subcellular localization of translocases and integrases; Targeting signals
Interactions with soluble factors and targeting proteinsType I signal peptidases; Proteins involved in membrane formation; Transient and/or permanent membrane connections: thylakoid centre and PratA-defined membranes; Models of protein targeting and translocation in cyanobacteria; Epilogue: a heterogenic protein distribution in cyanobacterial subcompartments?; 6: Chromatic Acclimation: a Many-coloured Mechanism for Maximizing Photosynthetic Light Harvesting Efficiency; Introduction; Studies delineating the variation in the types of CA; Cyanobacterial phycobilisomes
Physiology and regulation of CA3Physiology and regulation of CA2; Physiology and regulation of CA4; Conclusions and future studies; 7: The Carboxysome: Function, Structure and Cellular Dynamics; Introduction; Carboxysome function; Structural and catalytic elements of the carboxysome; Cellular organization and dynamics of carboxysomes; Conclusions and future directions; 8: Glycogen, a Dynamic Cellular Sink and Reservoir for Carbon; Introduction; Structures of glycogen and starch-like reserves in cyanobacteria; Enzymology of glycogen metabolism in cyanobacteria
Regulation of cyanobacterial glycogen metabolism

Sommario/riassunto

The cyanobacteria are a fascinating group of bacteria that have adapted to colonize almost every environment on the planet. They are the only prokaryotes capable of oxygenic photosynthesis, responsible for up to 20-30% of Earth's photosynthetic productivity. They can attune their light-harvesting systems to changes in available light conditions, fix nitrogen, and have circadian rhythms. In addition, many cyanobacteria species exhibit gliding mobility and can differentiate into specialized cell types called heterocysts, and some are symbiotic. Thanks to their simple nutritional requirements, th