Spirulina platensis (Arthrospira): Physiology, Cell-biology and Biotechnology

Edited by Avigad Vonshak



<u>Spirulina Platensis Arthrospira Physiology Cell Biology</u> <u>And Biotechnology</u>

J.G. Burgess, R. Osinga, R.H. Wijffels

Spirulina Platensis Arthrospira Physiology Cell Biology And Biotechnology:

Spirulina Platensis Arthrospira Avigad Vonshak, 1997-05-21 This text contains detailed descriptions of both the biology and the biotechnological uses of Spirulina Platensis a blue green algae which has been recognized and used worldwide as a traditional source of protein in the food **Algal Culturing Techniques** Robert A. Andersen, 2005-01-21 A comprehensive reference on all aspects of the isolation and cultivation of marine and freshwater algae Cyanobacteria B.A. Whitton, M. Potts, 2007-05-08 Cyanobacteria make a major contribution to world photosynthesis and nitrogen fixation but are also notorious for causing nuisances such as dense and often toxic blooms in lakes and the ocean The Ecology of Cyanobacteria Their Diversity in Time and Space is the first book to focus solely on ecological aspects of these organisms Its twenty two chapters are written by some thirty authors who are leading experts in their particular subject The book begins with an overview of the cyanobacteria or blue green algae for those who are not specialists then looks at their diversity in the geological record and goes on to describe their ecology in present environments where they play important roles Why is one of the key groups of organisms in the Precambrian still one of the most important groups of phototrophs today The importance of ecological information for rational management and exploitation of these organisms for commercial and other practical purposes is also assessed Accounts are provided of nuisances as well as the ecology of the commercially successful Spirulina and the role of cyanobacteria in ecosystem recovery from oil pollution Many chapters include aspects of physiology biochemistry geochemistry and molecular biology where these help general understanding of the subject In addition there are three chapters dealing specifically with molecular ecology Thirty two pages of colour photos incorporate about seventy views and light micrographs These features make the book valuable to a wide readership including biologists microbiologists geologists water managers and environmental consultants The book complements the highly successful The Molecular Biology of Cyanobacteria already published by Kluwer Spirulina in Human Nutrition and Health M. E. Gershwin, Amha Belay, 2007-10-08 Astonishingly rich in nutrients Spirulina is one of the most popular and well researched functional foods in the multi billion dollar global food supplement market This ancient species provides readily bioavailable protein along with carotenoids essential fatty acids vitamins and minerals and has therapeutic applications in non **Ecology of Cyanobacteria II** Brian A. Whitton, 2012-07-05 Cyanobacteria have existed for 3 5 billion communicable di years yet they are still the most important photosynthetic organisms on the planet for cycling carbon and nitrogen The ecosystems where they have key roles range from the warmer oceans to many Antarctic sites They also include dense nuisance growths in nutrient rich lakes and nitrogen fixers which aid the fertility of rice fields and many soils especially the biological soil crusts of arid regions Molecular biology has in recent years provided major advances in our understanding of cyanobacterial ecology Perhaps for more than any other group of organisms it is possible to see how the ecology physiology biochemistry ultrastructure and molecular biology interact This all helps to deal with practical problems such as the control

of nuisance blooms and the use of cyanobacterial inocula to manage semi desert soils Large scale culture of several organisms especially Spirulina Arthrospira for health food and specialist products is increasingly being expanded for a much wider range of uses In view of their probable contribution to past oil deposits much attention is currently focused on their potential as a source of biofuel Please visit http extras springer com to view Extra Materials belonging to this volume This book complements the highly successful Ecology of Cyanobacteria and integrates the discoveries of the past twelve years Blue Biotechnology Stephane La Barre, Stephen S. Bates, 2018-12-10 With its integral with the older literature treatment of ecosystem and resource management this is the only overview of the field to address current thinking and future trends All contributions have been written with the novice in mind explaining the basics and highlighting recent developments and achievements Unmatched in scope this two volume reference covers both traditional and well established areas of marine biotechnology such as biomass production alongside such novel ones as biofuels biological protection of structures and bioinspired materials In so doing it ties together information usually only found in widely dispersed sources to assemble a grand unified view of the current state of and prospects for this multi faceted discipline The combination of the breadth of topics and the focus on modern ideas make this introductory book especially suitable for teaching purposes and for guiding newcomers to the many possibilities offered by this booming field **Biotechnology of Bioactive Compounds** Vijai Kumar Gupta, Maria G. Tuohy, Anthonia O'Donovan, Mohtashim Lohani, 2015-04-20 Bioactive compounds play a central role in high value product development in the chemical industry Bioactive compounds have been identified from diverse sources and their therapeutic benefits nutritional value and protective effects in human and animal healthcare have underpinned their application as pharmaceuticals and functional food ingredients The orderly study of biologically active products and the exploration of potential biological activities of these secondary metabolites including their clinical applications standardization quality control mode of action and potential biomolecular interactions has emerged as one of the most exciting developments in modern natural medicine Biotechnology of Bioactive Compounds describes the current stage of knowledge on the production of bioactive compounds from microbial algal and vegetable sources In addition the molecular approach for screening bioactive compounds is also discussed as well as examples of applications of these compounds on human health The first half of the book comprises information on diverse sources of bioactive compounds ranging from microorganisms and algae to plants and dietary foods The second half of the book reviews synthetic approaches as well as selected bioactivities and biotechnological and biomedical potential The bioactive compounds profiled include compounds such as C phycocyanins glycosides phytosterols and natural steroids An overview of the usage of bioactive compounds as antioxidants and anti inflammatory agents anti allergic compounds and in stem cell research is also presented along with an overview of the medicinal applications of plant derived compounds Biotechnology of Bioactive Compounds will be an informative text for undergraduate and graduate students of bio medicinal chemistry who are keen to explore the potential of

bioactive natural products It also provides useful information for scientists working in various research fields where natural products have a primary role Phycobiliproteins: Recent Developments and Future Applications Vinod K. Kannaujiya, Shanthy Sundaram, Rajeshwar P. Sinha, 2017-12-22 Phycobiliproteins are water soluble brilliantly colored accessory light harvesting macromolecules organized in a supramolecular complexes on photosynthetic apparatus in cyanobacteria red algae and cryptomonads The objective of this book is to provide state of the art knowledge and highlight the recent developments and future biotechnological and biomedical applications of phycobiliproteins This book will be highly useful for students researchers professionals and experts in the field of Life Sciences and Biomedical Sciences as well as industries for potential applications of phycobiliproteins **Proceedings of the National Seminar on Biomarkers:** From Research to Clinical Practice (BRCP-2017) Mrs. M. Divya, Dr. K.S. Lakshmi, Dr. L. Inbathamizh, Dr. T. Eljeeva Devakumari, 2018-01-04 In medicine a biomarker can be a traceable substance that is introduced into an organism to examine organ function or other aspects of health Biomarkers are compounds isolated from serum urine or other fluids They can be used as an indicator of the presence or severity of a particular disease Biomarkers help in disease prevention early diagnosis drug target identification drug response etc Biomarkers play a critical role in improving the drug development process and biomedical research To throw light on these perspectives and to understand the role of biomarkers in clinical research this seminar is organized Thrust areas of the seminar are Disease related biomarkers Clinical drug development biomarkers Novel biomarkers Composites and Their Applications Ning Hu, 2012-08-22 Composites are a class of material which receives much attention not only because it is on the cutting edge of active material research fields due to appearance of many new types of composites e g nanocomposites and bio medical composites but also because there are a great deal of promise for its potential applications in various industries ranging from aerospace to construction due to its various outstanding properties This book mainly describes some potential applications and the related properties of various composites by focusing on the following several topics health or integrity monitoring techniques of composites structures bio medical composites and their applications in dental or tissue materials natural fiber or mineral filler reinforced composites and their property characterization catalysts composites and their applications and some other potential applications of fibers or composites as sensors etc This book has been divided into five sections to cover the above contents **Approaches** to Disaster Management John Tiefenbacher, 2013-04-17 Approaches to Disaster Management regards critical disaster management issues Ten original research reports by international scholars centered on disaster management are organized into three general areas of hazards and disaster management The first section includes discussions of perspectives on vulnerability and on evolving approaches to mitigation The second section highlights approaches to improve data use and information management in several distinct applications intended to promote prediction and communication of hazard The third section regards the management of crises and post event recovery in the private sector in the design of urban space

and among the victims of disaster This volume contributes both conceptual and practical commentary to the disaster Journey to Diverse Microbial Worlds Joseph Seckbach, 2012-12-06 In this Journey to Microbial management literature Worlds we present the diversity of microorganisms from the state of fossil microbes in Archaean age rocks to the possibilities of extraterrestrial life This volume discusses the extremophiles living in harsh environments from our anthropocentric point and describes them in considerable detail Some chapters also review topics such as symbiosis bacterial luminescence methanogens and petroleum grown cells The final chapters of this book shed new light on astrobiology and speculate on extremophiles as candidates for extraterrestrial life All chapters are updated to the latest research level Source of Bioenergy: Products, Processes and Economics José Carlos Magalhães Pires, 2017-09-27 Microalgae could play an important role in the achievement of sustainability goals related to the generation of renewable energy and greenhouse gas GHG emissions These photosynthetic microorganisms are able to capture CO2 and therefore can be used to produce biofuels such as ethanol methane and green diesel Other factors such as their high growth rate ability to use wastewater as a culture medium and the ability to grow on non arable land makes them a potentially economical source of biofuel production on a large scale This monograph introduces the reader to the basic and applied science of microalgal biofuel production Chapters in the volume give information about bioethanol and biogas production from microalgal sources the fermentation process optimization of culture parameters and industrial applications of biomass projects The book is a useful reference for biotechnology and environmental science graduates and professionals interested in biofuel production Biofuels and Energy Michael A. Borowitzka, Navid R. Moheimani, 2012-12-11 Microalgae are one of the most studied potential sources of biofuels and bioenergy This book covers the key steps in the production of renewable biofuels from microalgae strain selection culture systems inorganic carbon utilisation lipid metabolism and quality hydrogen production genetic engineering biomass harvesting extraction Greenhouse gas and techno economic modelling are reviewed as is the 100 year history of microalgae as sources of biofuels and of commercial scale microalgae culture A summary of relevant basic standard methods used in the study of microalgae culture is provided The book is intended for the expert and those starting work in the field Industrial Microbiology Michael J. Waites, Neil L. Morgan, John S. Rockey, Gary Higton, 2009-04-01 Of major economic environmental and social importance industrial microbiology involves the utilization of microorganisms in the production of a wide range of products including enzymes foods beverages chemical feedstocks fuels and pharmaceuticals and clean technologies employed for waste treatment and pollution control Aimed at undergraduates studying the applied aspects of biology particularly those on biotechnology and microbiology courses and students of food science and biochemical engineering this text provides a wide ranging introduction to the field of industrial microbiology The content is divided into three sections key aspects of microbial physiology exploring the versatility of microorganisms their diverse metabolic activities and products industrial microorganisms and the technology required for large scale cultivation

and isolation of fermentation products investigation of a wide range of established and novel industrial fermentation processes and products Written by experienced lecturers with industrial backgrounds Industrial Microbiology provides the reader with groundwork in both the fundamental principles of microbial biology and the various traditional and novel applications of microorganisms to industrial processes many of which have been made possible or enhanced by recent developments in genetic engineering technology A wide ranging introduction to the field of industrial microbiology Based on years of teaching experience by experienced lecturers with industrial backgrounds Explains the underlying microbiology as well as the industrial application Content is divided into three sections 1 key aspects of microbial physiology exploring the versatility of microorganisms their diverse metabolic activities and products 2 industrial microorganisms and the technology required for large scale cultivation and isolation of fermentation products 3 investigation of a wide range of established and novel industrial fermentation processes and products **Basic Research Advancement for Algal Biofuels Production** Neha Srivastava, P.K. Mishra, 2023-02-10 The edited book presents sustainable adopting options in basic research for improving algal biofuels production This book is probably first book on algal biofuels which is focused on improving the primary basic research to enhance mass scale technological production of algal biofuels The book explores significance of basic bench top research to increase pilot scale production of algal biofuels The books also targeting the most sustainable and economical algal biofuels option with in depth details Further it highlights the existing roadblock their analysis and eco friendly solution to control them in most greenery way This book is highly useful for academician researchers and industries professionals and of high interest for students of bioenergy sustainable practices and renewable energy Handbook of Microalgal Culture Amos Richmond, 2008-04-15 Handbook of Microalgal Culture is truly a landmarkpublication drawing on some 50 years of worldwide experience inmicroalgal mass culture This important book comprises comprehensive reviews of the current available information onmicroalgal culture written by 40 contributing authors from aroundthe globe The book is divided into four parts with Part I detailing biological and environmental aspects of microalgae with reference to microalgal biotechnology and Part II looking in depth at majortheories and techniques of mass cultivation Part III comprises chapters on the economic applications of microalgae including coverage of industrial production the use of microalgae in humanand animal nutrition and in aquaculture in nitrogen fixation hydrogen and methane production and in bioremediation of pollutedwater Finally Part IV looks at new frontiers and includeschapters on genetic engineering microalgae as platforms forrecombinant proteins bioactive chemicals heterotrophic production microalgae as gene delivery systems for expressing mosquitocidal toxins and the enhancement of marine productivity forclimate stabilization and food security Handbook of Microalgal Culture is an essential purchasefor all phycologists and also those researching aquatic systems aquaculture and plant sciences There is also much of great use toresearchers and those involved in product formulation withinpharmaceutical nutrition and food companies Libraries in alluniversities and research establishments teaching and

researchingin chemistry biological and pharmaceutical sciences food sciences and nutrition and aquaculture will need copies of this book ontheir shelves Amos Richmond is at the Blaustein Institute for DesertResearch Ben Gurion University of the Biotechnological Processes for Green Energy, and High Value Bioproducts by Microalgae, and Cyanobacteria Cultures Alfredo de Jesús Martínez-Roldán, 2024-04-25 Microalgae and cyanobacteria are a very diverse group of photosynthetic microorganisms with many applications Some of them are related to the accumulation of molecules involved in specific metabolic pathways such as pigments fatty acids polyunsaturated fatty acids carbohydrates amino acids etc Also there are uses of the biomass related to the exploitation of physiological necessities such as the absorption of essential nutrients the removal of nitrogen and phosphorus from wastewater the capture of CO2 from the fixation of nitrogen etc Nevertheless the evaluation in financial and life cycle aspects is necessary to ensure the industrial application of the processes The objective of the book is to analyze innovative applications of microalgae and cyanobacteria to develop environmental friendly processes for removal of pollutants wastewater treatment production of high value products or bioenergy and finally evaluate the feasibility of the processes both ineconomic and sustainability aspects Microalgae Zvi Cohen, 2002-09-11 The production of chemicals from microalgae is becoming a significant area of biological research Chemicals from Microalgae seeks to cover the various aspects that relate to the use of microalgae as a source of chemicals The chapters discuss the occurrence and physiological role of these chemicals and concentrates on the methods aimed at enhancin Marine Bioprocess Engineering J.G. Burgess, R. Osinga, R.H. Wijffels, 1999-11-19 This book contains full papers of both oral and poster presentations of the international symposium Marine Bioprocess Engineering which was held in Noordwijkerhout The Netherlands 1998 The symposium focused on the bioprocessing of marine natural products Bioprocess engineering has been the key to success in the commercialization of biotechnology especially with respect to biopharmaceuticals In marine biotechnology both new and existing biotechnological techniques are developed an applied to organisms from marine sources For marine biotechnology bioprocess engineering represents the link between discovery and commercialization The diversity of marine life points to a myriad of new bioproducts waiting to be discovered and developed commercially The volume begins to bridge the gap between the isolation of products from marine organisms in the laboratory and industrial applications by focusing on the bioprocess engineering aspects Reviews and recent developments in product discovery bio energy production cultivation of marine organisms scale up and product recovery are presented This publication should ensure that the engineering aspects of marine biotechnology will receive further attention in the future Exploration of new bioproducts from the ocean should be followed up by a sustainable exploitation of these valuable resources

Adopting the Track of Appearance: An Emotional Symphony within **Spirulina Platensis Arthrospira Physiology Cell Biology And Biotechnology**

In some sort of eaten by monitors and the ceaseless chatter of immediate connection, the melodic elegance and mental symphony developed by the written word often diminish into the backdrop, eclipsed by the persistent sound and interruptions that permeate our lives. But, nestled within the pages of **Spirulina Platensis Arthrospira Physiology Cell Biology And Biotechnology** an enchanting literary prize overflowing with organic feelings, lies an immersive symphony waiting to be embraced. Crafted by an outstanding composer of language, this captivating masterpiece conducts visitors on a mental trip, skillfully unraveling the hidden tunes and profound impact resonating within each cautiously constructed phrase. Within the depths with this moving examination, we can explore the book is central harmonies, analyze their enthralling writing style, and surrender ourselves to the profound resonance that echoes in the depths of readers souls.

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