The Chlamydomonas Sourcebook

The Chlamydomonas SourcebookThe Chlamydomonas SourcebookThe Chlamydomonas SourcebookThe Chlamydomonas Sourcebook: Organellar and Metabolic ProcessesThe Chlamydomonas Sourcebook: Introduction to Chlamydomonas and Its Laboratory UseThe Chlamydomonas SourcebookThe Chlamydomonas Sourcebook 3-Vol SetThe Chlamydomonas Sourcebook: Organellar and Metabolic ProcessesThe Chlamydomonas SourcebookThe Chlamydomonas Sourcebook: Cell Motility and BehaviorThe Chlamydomonas SourcebookFunctional Genomics and Evolution of Photosynthetic SystemsOptogeneticsThe chlamydomonas sourcebookThe Chlamydomonas SourcebookLow-Oxygen Stress in PlantsThe ChlamydomonasThe Chlamydomonas Sourcebook: Organellar and Metabolic ProcessesChlamydomonas SourcebookThe Chlamydomonas Sourcebook: Organellar and Metabolic Processes Elizabeth H. Harris Ursula Goodenough Ursula Goodenough David Stern Elizabeth H. Harris Elizabeth H. Harris Elizabeth H. Harris David Stern Arthur Grossman George Witman Susan Dutcher Robert Burnap Hiromu Yawo David B. Stern Susan Dutcher Joost T. van Dongen David B. Stern David Stern George Witman David Stern

The Chlamydomonas Sourcebook The Chlamydomonas Sourcebook The Chlamydomonas Sourcebook The Chlamydomonas Sourcebook: Organellar and Metabolic Processes The Chlamydomonas Sourcebook: Introduction to Chlamydomonas and Its Laboratory Use The Chlamydomonas Sourcebook The Chlamydomonas Sourcebook 3-Vol Set The Chlamydomonas Sourcebook: Organellar and Metabolic Processes The Chlamydomonas Sourcebook The Chlamydomonas Sourcebook: Cell Motility and Behavior The Chlamydomonas Sourcebook Functional Genomics and Evolution of Photosynthetic Systems Optogenetics The chlamydomonas sourcebook The Chlamydomonas Sourcebook Low-Oxygen Stress in Plants The Chlamydomonas The Chlamydomonas Sourcebook: Organellar and Metabolic Processes Chlamydomonas Sourcebook The Chlamydomonas Sourcebook: Organellar and Metabolic Processes *Elizabeth H. Harris Ursula Goodenough Ursula Goodenough David Stern Elizabeth H. Harris Elizabeth H. Harris Elizabeth H. Harris David Stern Arthur Grossman George Witman Susan Dutcher Robert Burnap Hiromu Yawo David B. Stern Susan Dutcher Joost T. van Dongen David B. Stern David Stern George Witman David Stern*

the green alga chlamydomonas is widely used as an experimental model system for studies in cellular and molecular biology and in particular plant molecular biology this book is the only single modern compendium of information on its biology and in particular its molecular biology and genetics included in addition to much information on the basic biology is material of a very practical nature namely methods for culture preservation of cultures preparation of media lists of inhibitors and other additives to culture media help with common laboratory problems such as contamination student demonstrations and properties of particular strains and mutants casual users as well as specialists will find the book to be useful in many ways provides access to previously unpublished data from genetic analysis provides descriptions of mutant strains depicts

summary tables comparing properties of different species and their mutant strains explains detailed methods for laboratory procedures of general utility furnishes comparisons of culture media presents lists of inhibitors mutagens and other additives to culture media assists with common laboratory problems such as contamination and storage of strains demonstrates protocols for laboratory demonstrations available for undergraduate teaching

the chlamydomonas sourcebook 3rd edition introduction to chlamydomonas and its laboratory use volume 1 the gold standard reference covering the basic biology of the chlamydomonas alga and techniques for its laboratory analysis originally published as the standalone chlamydomonas sourcebook then expanded as the first volume in a three part comprehensive gold standard reference the chlamydomonas sourcebook introduction to chlamydomonas and its laboratory use has been fully revised and updated to include a wealth of new resources for the chlamydomonas community early chapters cover current understandings of its taxonomy ultrastructure cell and life cycles and nuclear and organelle genomes followed by technique oriented chapters covering such topics as cell culture mutagenesis genetic analysis construction of mutant libraries and protein localization using immunofluorescence this volume presents the latest in research and best practices making it a must have resource for researchers and students working in plant science and photosynthesis fertility mammalian vision and biochemistry crop scientists plant physiologists and plant molecular and human disease biologists remains the only complete reference to provide both the historical background and the most up to date information and applications on chlamydomonas includes best practices for applications in research including methods for culture genetic analysis genomic and transcriptomic analysis and mutant screening helps researchers solve common laboratory problems provides details on the properties of particular strains and offers a comprehensive survey of molecular approaches provides a broad perspective for studies in cell and molecular biology genetics plant physiology and related fields

this second volume of the chlamydomonas sourcebook provides the background and techniques for using this important organism in plant research from biogenesis of chloroplasts and mitochondria and photosynthesis to respiration and nitrogen assimilation this volume introduces scientists to the functions of the organism the volume then moves on to starch biosynthesis sulfur metabolism response to heavy metals and hydrogen production describes molecular techniques analysis of the recently sequenced genome and reviews of the current status of the diverse fields in which chlamydomonas is used as a model organism includes contributions from leaders in particular areas of research provides methods for chlamydomonas research and best practices for applications in research including methods for culture preservation of cultures preparation of media lists of inhibitors and other additives to culture media assists researchers with common laboratory problems such as contamination includes valuable student demonstrations and properties of particular strains and mutants edited by the leading researcher in chlamydomonas science

dr harris has played a major role in the development of this organism as a model system her previous version of the chlamydomonas sourcebook which published in 1989 has been a classic in the field and is considered required reading for anyone working with this organism this latest edition has been expanded to include three volumes providing molecular techniques analysis of

the recently sequenced genome and reviews of the current status of the diverse fields in which chlamydomonas is used as a model organism methods for chlamydomonas research and best practices for applications in research including methods for culture preservation of cultures preparation of media lists of inhibitors and other additives to culture media are included additions to this volume also include help with common laboratory problems such as contamination student demonstrations and properties of particular strains and mutants this volume is part of a 3 volume set isbn 978 0 12 370873 1 and is also sold individually expanded revision of gold standard reference includes latest advances in research including completion of the genome provides broad perspective with studies in cell and molecular biology genetics plant physiology and related fields available as part of a 3 volume set or sold individually

in recent years chlamydomonas reinhardtii c reinhardtii has proved to be an outstanding model for investigation of signal transduction rhodopsin based vision and the evolution of sexual processes the chlamydomonas sourcebook first published in 1989 summarized the development of this alga as a laboratory system beginning in the 1940s since the first edition published chlamydomonas research has grown significantly this revised three volume set which includes the sourcebook chlamydomonas metabolic processes and chlamydomonas motility and taxis responses stands as the most comprehensive reference for this important research organism this set retains historical material and culture methods and illustrations from the original book while adding molecular techniques analysis of the recently sequenced genome and reviews of the current status of the diverse fields in which chlamydomonas is used as a model organism edited by the leading researcher in chlamydomonas science includes best practices for applications in research including methods for culture preservation of cultures preparation of media lists of inhibitors and more aids researchers with common laboratory problems such as contamination and details on properties of particular strains and mutants the latest advances in research including completion of the genome a broad perspective for studies in cell and molecular biology genetics plant physiology and related fields

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originally published as the stand alone chlamydomonas sourcebook then expanded as the second volume in a three part comprehensive gold standard reference the chlamydomonas

sourcebook organellar and metabolic processes has been fully revised and updated to include a wealth of new knowledge and resources for the chlamydomonas community it details the tremendous progress recently made with respect to imaging the ultrastructure of cells dissecting acclimation and biosynthetic responses and elucidating molecular processes underlying the biology of organelles in particular this volume includes exciting new developments in the use of imaging technologies for examining supramolecular organization of the chloroplast defining mechanisms of branched electron transfer pathways in photosynthesis dissecting the organization of pyrenoids and co2 concentration mechanisms presenting the intricacies associated with acclimation to environmental conditions and providing new insights into dark metabolism and the network of fermentative metabolism this book thus presents the latest advances in both the research and uses of new experimental approaches and technologies making this a must have resource for researchers and students working in plant science and photosynthesis fertility mammalian vision aspects of human disease acclimation to environmental change and the biogenesis of cellular complexes describes molecular techniques analysis of the recently sequenced genome reviews of the current status of the diverse fields in which chlamydomonas is used as a model organism provides methods for chlamydomonas research and best practices for their applications this includes methods for cell culture preservation of cultures preparation of media lists of inhibitors and other additives to culture media classical genetic manipulation and new approaches for gene transfer and editing technologies assists researchers with common laboratory problems such as contamination

this volume reviews virtually everything that is known about cell motility and behavior in chlamydomonas world experts in each area focus on mitosis and cytokinesis flagellar assembly and motility intraflagellar transport and more will use this reference as a guide for understanding human diseases of the cilium the volume is richly illustrated and is supplemented by a website containing both classic and previously unpublished videos of cell motility in chlamydomonas because chlamydomonas has been the premier model for investigating the function and behavior of cilia and flagella the chapters summarize the current state of knowledge in these areas as it applies to all ciliated organisms thus this volume will be an essential source for all students and researchers interested in cell motility this volume is part of a 3 volume set isbn 978 0 12 370873 1 and is also sold individually includes a table listing the known proteins with ncbi accession numbers for each structure discussed and the known mutations that affect each structure and process essential reference to a model species for the study of mechanisms of motility in free living cells includes methods for chlamydomonas motility research companion website with videos illustrates the marvels of the chlamydomonas flagella in action

the chlamydomonas sourcebook 3rd edition cell motility and behavior volume 3 the gold standard reference introducing this multidisciplinary science fully revised and updated with the latest discoveries originally published as the standalone chlamydomonas sourcebook then expanded as the third volume in a three part comprehensive gold standard reference the chlamydomonas sourcebook cell motility and behavior has been fully revised and updated to include the wealth of new resources for the chlamydomonas community reflecting the significant advancement in the understanding of the role of basal bodies and cilia play in human diseases this volume employs

quantitative proteomics and mass spectroscopy as well as cryo em tomography and single particle cryo em other topics such as current insights on mitosis and cytokinesis ciliary assembly and motility intraflagellar transport and more help build an understanding of human diseases of the cilium cell motility and behavior presents the latest in research and best practices making this a must have resource for researchers and students working in plant science and photosynthesis fertility mammalian vision and biochemistry crop scientists plant physiologists and plant molecular and human disease biologists provides an essential reference to a model species for the study of mechanisms of motility in free living cells includes methods for chlamydomonas motility research includes a table listing the known proteins with ncbi accession numbers for each structure discussed and the known mutations that affect each structure and process

new possibilities have been brought about by the stunning number of genomic sequences becoming available for photosynthetic organisms this new world of whole genome sequence data spans the phyla from photosynthetic microbes to algae to higher plants these whole genome projects are intrinsically interesting but also inform the variety of other molecular sequence databases including the recent meta genomic sequencing efforts that analyze entire communities of organisms as impressive as they are are obviously only the beginning of the effort to decipher the biological meaning encoded within them this book aims to highlight progress in this direction this book aims toward a genome level understanding of the structure function and evolution of photosynthetic systems and the advantages accrued from the availability of phyletically diverse sets of gene sequences for the major components of the photosynthetic apparatus while not meant to be fully comprehensive in terms of the topics covered it does provide detailed views of specific cases and thereby illustrates important new directions that are being taken in this fast moving field a field that involves the integration of bioinformatics molecular biology physiology and ecology

this book now in a thoroughly revised second edition offers a comprehensive review of the rapidly growing field of optogenetics in which light sensing proteins are genetically engineered into cells in order to acquire information on cellular physiology in optical form or to enable control of specific network in the brain upon activation by light light sensing proteins of various living organisms are now available to be exogenously expressed in neurons and other target cells both in vivo and in vitro cellular functions can thus be manipulated or probed by light the new edition documents fully the extensive progress since publication of the first edition to provide an up to date overview of the physical chemical and biological properties of light sensing proteins and their application in biological systems particularly in neuroscience but also in medicine and the optical sciences underlying principles are explained and detailed information provided on a wide range of optogenetic tools for the observation and control of cellular signaling and physiology gene targeting technologies and optical methods for biological applications in presenting the current status of optogenetics and emerging directions this milestone publication will be a must read for all involved in research in any way related to optogenetics

during the last ten years knowledge about the multitude of adaptive responses of plants to low oxygen stress has grown immensely the oxygen sensor mechanism has been discovered the knowledge about the interaction network of gene expression is expanding and metabolic

adaptations have been described in detail furthermore morphological changes were investigated and the regulative mechanisms triggered by plant hormones or reactive oxygen species have been revealed this book provides a broad overview of all these aspects of low oxygen stress in plants it integrates knowledge from different disciplines such as molecular biology biochemistry ecophysiology and agricultural horticultural sciences to comprehensively describe how plants cope with low oxygen stress and discuss its ecological and agronomical consequences this book is written for plant scientists biochemists and scientists in agriculture and ecophysiology

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a classic model organism in ciliary and flagella research

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