

Metal Ion Homeostasis Molecular Biology And Chemistry Proceedings Of A Ucl

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Metal Ion Homeostasis Dean H. Hamer 1989-01-10 Discusses how metals are routed and incorporated into regulatory and catalytic proteins and how their pathways are regulated. Describes the diverse strategies that organisms have adopted to acquire, utilize, and store essential metals while protecting themselves against metal toxicity. Metal ion homeostasis and detoxification are considered in terms of structure and regulation. Covers the role of metals in DNA-binding proteins and gene regulation, the chemistry and biology of metal-binding peptides, and methods of metal detoxification. Also includes structural and functional studies of metalloproteins, and a section on the physiology and diseases of unbalanced metal ion homeostasis.

Biological Inorganic Chemistry Robert R. Crichton 2012-01-25 Biological Inorganic Chemistry: A New Introduction to Molecular Structure and Function, Second Edition, provides a comprehensive discussion of the biochemical aspects of metals in living systems. Beginning with an overview of metals and selected nonmetals in biology, the book then discusses the following concepts: basic coordination chemistry for biologists; structural and molecular biology for chemists; biological ligands for metal ions; intermediary metabolism and bioenergetics; and methods to study metals in biological systems. The book also covers metal assimilation pathways; transport, storage, and homeostasis of metal ions; sodium and potassium channels and pumps; magnesium phosphate metabolism and photoreceptors; calcium and cellular signaling; the catalytic role of several classes of mononuclear zinc enzymes; the biological chemistry of iron; and copper chemistry and biochemistry. In addition, the book discusses nickel and cobalt enzymes; manganese chemistry and biochemistry; molybdenum, tungsten, vanadium, and chromium; non-metals in biology; biomineralization; metals in the brain; metals and neurodegeneration; metals in medicine and metals as drugs; and metals in the environment. Winner of a 2013 Textbook Excellence Awards (Texty) from the Text and Academic Authors Association Readable style, complemented by anecdotes and footnotes Enables the reader to more readily grasp the biological and clinical relevance of the subject Color illustrations enable easy visualization of molecular mechanisms

Metal Ions in Gene Regulation Simon Silver 2012-12-06 This is the first volume on the role of metal ions in regulating genes to focus not only on toxicity effects of metals but also on the role of metal ions in normal metabolisms, in both prokaryotes and in eukaryotes. This book is a comprehensive treatment of the role of metal ions in gene regulation, and it will be of great utility for those doing basic biological and biomedical research.

Metallomics and the Cell Lucia Banci 2013-04-18 Metallomics and the Cell provides in an authoritative and timely manner in 16 stimulating chapters, written by 37 internationally recognized experts from 9 nations, and supported by more than 3000 references, several tables, and 110 illustrations, mostly in color, a most up-to-date view of the "metallomes" which, as defined in the "omics" world, describe the entire set of biomolecules that interact with or are affected by each metal ion. The most relevant tools for visualizing metal ions in the cell and the most suitable bioinformatic tools for browsing genomes to identify metal-binding proteins are also presented. Thus, MILS-12 is of relevance for structural and systems biology, inorganic biological chemistry, genetics, medicine, diagnostics, as well as teaching, etc.

Bioinorganic Chemistry of Copper K.D. Karlin 2012-12-06

Bioinorganic Chemistry of Copper focuses on the vital role of copper ions in biology, especially as an essential metalloenzyme cofactor. The book is highly interdisciplinary in its approach--the outstanding list of contributors includes coordination chemists, biochemists, biophysicists, and molecular biologists. Chapters are grouped into major areas of research interest in inorganic copper chemistry, spectroscopy, oxygen chemistry, biochemistry, and molecular biology. The book also discusses basic research of great potential importance to pharmaceutical scientists. This book is based on the first Johns Hopkins University Copper Symposium, held in August 1992. Researchers in chemistry, biochemistry, molecular biology, and medicinal chemistry will find it to be an essential reference on its subject.

Handbook of Metal-Microbe Interactions and Bioremediation Surajit Das 2017-04-07 Around the World, metal pollution is a major problem. Conventional practices of toxic metal removal can be ineffective and/or expensive, delaying and exacerbating the crisis. Those communities dealing with contamination must be aware of the fundamentals advances of microbe-mediated metal removal practices because these methods can be easily used and require less remedial intervention. This book describes innovations and efficient applications for metal bioremediation for environments polluted by metal contaminates.

Metallomics Wolfgang Maret 2016-05-12 Metallomics is an integrated biometal science as it unifies different disciplines into a mainstream subject that can be taught to students of the biological and biomedical sciences. Metallomics bridges chemistry and the biological sciences from a global and quantitative systems approach, while the biological context provides new insights into the functions of metals in biological cells. The book challenges the traditional view of relating biochemistry only to organic chemistry, and discusses the structure and function of metal ions in the context of their environment in organisms. This is an essential read for undergraduate and graduate students in the fields of biochemistry, cell biology, nutrition (trace element research), toxicology, pharmacology and ecology.

Biochemistry of the Ferric Uptake Regulation Protein Mark James Coy 1993

Handbook of Nutritionally Essential Mineral Elements Boyd L. O'Dell 1997-03-07 "Offers comprehensive, definitive information on all of the essential mineral elements--focusing on biochemical and physiological processes. Describes in detail the function of the nutritionally necessary elements revealed through the latest techniques in molecular biology as well as traditional research methods."

The Molecular Biology of Cyanobacteria D.A. Bryant 2006-05-31 More than twenty years ago, as a fledgling graduate some peculiar aspects of the genetics of these student who was just starting to learn about these organisms but to pay respects to the two volumes of organisms that would become my primary research Carr of Whitton that played important roles in my focus, the publication of Noel Carr and Brian own thinking about cyanobacteria (and no doubt in Whitton's The Biology of the Blue-Green Algae in the development of many others as well). Contri 1973 was an event of great significance. Until the buting authors were asked to describe not only what appearance of this treatise, there was no single volume we know at present, but also to point out things we available that presented a broad overview of the don't know yet. I have attempted to assemble a book biology and biochemistry of these organisms. Nearly that would stimulate

graduate students and other ten years later, I was privileged to be a contributing researcher in the same way that I was affected by the author to Carr and Whitton's sequel volume *The books mentioned above. Biology of the Cyanobacteria*. Although the It appears that cyanobacterial molecular biologists intervening period had been marked by heated debates have indeed paid attention to the admonition of their over the taxonomy and taxonomic position of the erstwhile colleague, W Ford Doolittle, to 'study organisms, it was also a time when the comparative those things that cyanobacteria do well.

Neurodegeneration Danilo Milardi 2011-06-24 Since Alois Alzheimer described the results of his postmortem studies in 1906, significant strides have been made in understanding the pathogenesis of neurodegenerative diseases. Substantial evidence has accumulated indicating that diverse neurodegenerative disorders might share a common pathological mechanism: the misfolding, aggregation and accumulation of proteins (termed "amyloid") in the brain. Metal ions have long been thought to catalyze protein misfolding initiating a cascade of events resulting in oxidative damage and neurodegeneration. They have, consequently, been seen as a suitable pharmacological target. However, drugs aimed at simply removing excess metals or interfering in amyloid deposition were unsuccessful and scientists have been forced to review the classical hypothesis. The latest advances suggest that deficiencies in protein homeostasis may lead to cell dysfunction and disease. Furthermore, small molecules with the potential to control metal homeostasis, or metallostasis, are expected to provide the framework for the design of novel proteostasis regulators. This book provides an up-date on the latest developments in this fast moving field. Traditional views concerning the relationship between the physio-pathological cycles of copper, zinc, iron, aluminium and the evolution of life, are compared with emerging ideas in the neuroscience of metal ions. Topics covered emphasize the importance of metals and oxidation chemistry to neuroscientists as well as providing a wider, multidisciplinary background to chemists who are attracted by these fascinating subjects. The text starts with a chapter on chemical evolution, the brain and metallomics which describes the brain's natural defences to adverse conditions. It then goes on to cover the chemistry and biology of proteostasis, environmental factors, and the role played by membranes in protein misfolding. The remaining chapters cover the role of metals and oxidative stress in Alzheimer's Disease, Parkinsonism, ALS and other neurodegenerative diseases. The book is suitable for academics, those working in industry, and postgraduate students.

Metals Ions in Biological System Astrid Sigel 2002-03-06 Volume 39: Molybdenum and Tungsten: Their Roles in Biological Processes is devoted solely to the vital research area on molybdenum and tungsten and their role in biology. It offers a comprehensive and timely account of this fascinating topic by 40 distinguished international authorities. Topics include: transport, homeostasis, regulation and binding

Progress in Nucleic Acid Research and Molecular Biology

1991-05-02 Progress in Nucleic Acid Research and Molecular Biology

Molecular Biology of Metal Homeostasis and Detoxification

Markus J. Tamás 2006-07-07 One of the challenges faced by every cell as well as by whole organisms is to maintain appropriate concentrations of essential nutrient metals while excluding nonessential toxic metals. Toward that end, all organisms have developed mechanisms for metal homeostasis and detoxification to maintain metal levels within physiological limits. This book brings together current knowledge of the molecular basis of metal homeostasis and detoxification in various eukaryotic model systems, including yeasts, plants, and mammals. It focuses on the cellular systems controlling metal transport, intracellular distribution, and immobilization as well as on systems regulating metal-dependent transcription. In addition to environmental aspects (including phytoremediation), the book treats the pathophysiology of metal deficiency and overload in relation to disease.

Principles of Bioinorganic Chemistry Stephen J. Lippard 1994 As one of the most dynamic fields in contemporary science, bioinorganic chemistry lies at a natural juncture between chemistry, biology, and medicine. This rapidly expanding field

probes fascinating questions about the uses of metal ions in nature. Respiration, metabolism, photosynthesis, gene regulation, and nerve impulse transmission are a few of the many natural processes that require metal ions, and new systems are continually being discovered. The use of unnatural metals - which have been introduced into human biology as diagnostic probes and drugs - is another active area of tremendous medical significance. This introductory text, written by two pioneering researchers, is destined to become a landmark in the field of bioinorganic chemistry through its organized unification of key topics. Accessible to undergraduates, the book provides necessary background information on coordination chemistry, biochemistry, and physical methods before delving into topics that are central to the field: What metals are chosen and how are they taken up by cells? How are the concentrations of metals controlled and utilized in cells? How do metals bind to and fold biomolecules? What principles govern electron transfer and substrate binding and activation reactions? How do proteins fine-tune the properties of metals for specific functions? For each topic discussed, fundamentals are identified and then clarified through selected examples. An extraordinarily readable writing style combines with chapter-opening principles, study problems, and beautifully rendered two-color illustrations to make this book an ideal choice for instructors, students, and researchers in the chemical, biological, and medical communities.

Metallothionein in Biology and Medicine Curtis D. Klaassen

1991-08-27 This book brings together work from leading researchers to present the most recent advances in research on metallothionein. This protein interests toxicologists because it is thought that metallothionein protects against metal toxicity and possibly against oxidative stress. It is of interest to pharmacologists because modification of metallothionein levels might have a role in cancer chemotherapy. Nutritionists have an interest in this protein because it appears to be a major storage protein for zinc. Biochemists and molecular biologists will be interested in the mechanisms of regulation of this protein because it is extremely inducible.

Metal Ion Homeostasis Dean H. Hamer 1989

The Role of Metal Ions in Biology, Biochemistry and

Medicine Michael Moustakas 2021-09-06 Metal ions are fundamental elements for the maintenance of the lifespan of plants, animals and humans. Their substantial role in biological systems was recognized a long time ago. They are essential for the maintenance of life and their absence can cause growth disorders, severe malfunction, carcinogenesis or death. They are protagonists as macro- or microelements in several structural and functional roles, participating in many bio-chemical reactions, and arise in several forms. They participate in intra- and intercellular communications, in maintaining electrical charges and osmotic pressure, in photosynthesis and electron transfer processes, in the maintenance of pairing, stacking and the stability of nucleotide bases and also in the regulation of DNA transcription. They contribute to the proper functioning of nerve cells, muscle cells, the brain and the heart, the transport of oxygen and to many other biological processes up to the point that we cannot even imagine a life without metals. In this book, the papers published in the Special Issue "The Role of Metal Ions in Biology, Biochemistry and Medicine" are summarized, providing a picture of metal ion uses in biology, biochemistry and medicine, but also pointing out the toxicity impacts on plants, animals, humans and the environment.

Biotechnology and Environmental Science P.S. Lovett 2007-06-30

Reviews recent research in eukaryotic, agricultural, environmental, and microbial biotechnology with a view to keeping scientists, government officials, and industrialists up to date on trends and advances in subspecialties adjacent to their own. Some of the specific topics are moveable elements in the human genome, agricultural applications of coat protein mediated protection, and the analysis of epitope in the cholera family of enterotoxins. The 29 papers were presented at a conference in Bangkok, Thailand, August 1990. Annotation copyright by Book News, Inc., Portland, OR

Cellular and Molecular Biology of Metals Rudolfs K. Zalups

2010-05-21 With chapter contributions from more than 30 metal biology experts, Cellular and Molecular Biology of Metals explains

the role of key divalent metal ions involved in the molecular and cellular biology of various target cell populations. Although it primarily focuses on homeostatic metals, such as nickel, zinc, and chromium, the text also discusses a few environmentally pertinent, toxic divalent cations, including mercury, cadmium, and arsenic. This authoritative resource reviews the physiological mechanisms underlying the handling of essential and toxic metal ions, including metal ion homeostasis, metals and enzyme activity, metals and transcriptional regulation, and metal ion transport. It also analyzes other functions designed to avoid metal-induced toxicity and mediate the metal enhancement of cellular function. The role of metal ions and their effect on mammalian cells and organs are only beginning to be truly defined. Cellular and Molecular Biology of Metals arms metals toxicologists and cellular and molecular biologists with the necessary knowledge they need to take the research effort to the next level.

Iron Metabolism Robert Crichton 2009-02-25 Iron is of fundamental importance to the growth, development and well-being of almost all living organisms. Multiple biological systems have evolved for the uptake, utilisation, storage, and homeostasis of iron in microbes, plants and mammals. Both iron deficiency and iron overload are found extensively in humans; the intimate links between iron and oxidative stress are associated with a wide range of pathologies. Iron has a well established role in infections by a range of microorganisms and parasites. Other metals such as copper and zinc are also closely linked with iron metabolism. Iron overloads and deficiencies are important factors in the health of humans and are therefore a key target in drug development. **Iron Metabolism: From Molecular Mechanisms to Clinical Consequences**, 3rd Edition presents a comprehensive overview of this important field. Topics covered include: Solution chemistry of iron in biological media The importance of iron for biological systems Microbial iron transport and metabolism Iron uptake by plants and fungi Cellular iron uptake and export in mammals Intracellular iron storage and biomineralization Intracellular iron metabolism and cellular iron homeostasis Iron absorption in mammals, with particular reference to man, and regulation of systemic iron balance Pathophysiology of iron deficiency and iron overload in man Iron and oxidative stress Brain iron homeostasis and its perturbation in various neurodegenerative diseases Interactions between iron and other metals Written in a lively style by one of the leaders in the field and presented in full colour, this third, expanded edition of **Iron Metabolism** has been fully updated with the latest discoveries. Major additions include recent information on mitochondrial iron metabolism and the role of frataxin; transcriptional control of iron homeostasis; orally active iron chelators; the roles of hepcidin and erythropoietin; the increasing number of types of iron overload; and the importance of iron in Alzheimer's disease. **Iron Metabolism** is essential reading for researchers and students in biochemistry, molecular biology, microbiology, cell biology, nutrition and the medical sciences. It will also find space on the bookshelves of bioinorganic chemists with an interest in iron metabolism, health professionals with an interest in diseases of iron metabolism, and pharmacologists in the pharmaceutical industry interested in developing novel iron-binding drugs.

Current Catalog National Library of Medicine (U.S.) First multi-year cumulation covers six years: 1965-70.

Metal Ions in Fungi Gunther Winkelmann 2020-08-27 Presents the latest advances in the study of the intracellular fate and transport of metal ions in fungi, emphasizing the mechanisms that regulate cellular concentration. The book explains the expanding relationship between molecular genetics and inorganic biochemistry.

Biological Inorganic Chemistry Robert R. Crichton 2007-12-11 The importance of metals in biology, the environment and medicine has become increasingly evident over the last twenty five years. The study of the multiple roles of metal ions in biological systems, the rapidly expanding interface between inorganic chemistry and biology constitutes the subject called Biological Inorganic Chemistry. The present text, written by a biochemist, with a long career experience in the field (particularly iron and copper) presents an introduction to this exciting and dynamic field. The book begins with introductory chapters, which together constitute an overview of the concepts, both chemical

and biological, which are required to equip the reader for the detailed analysis which follows. Pathways of metal assimilation, storage and transport, as well as metal homeostasis are dealt with next. Thereafter, individual chapters discuss the roles of sodium and potassium, magnesium, calcium, zinc, iron, copper, nickel and cobalt, manganese, and finally molybdenum, vanadium, tungsten and chromium. The final three chapters provide a tantalising view of the roles of metals in brain function, biomineralization and a brief illustration of their importance in both medicine and the environment. Relaxed and agreeable writing style. The reader will not only find the book easy to read, the fascinating anecdotes and footnotes will give him pegs to hang important ideas on. Written by a biochemist. Will enable the reader to more readily grasp the biological and clinical relevance of the subject. Many colour illustrations. Enables easier visualization of molecular mechanisms. Written by a single author. Ensures homogeneity of style and effective cross referencing between chapters

Binding, Transport and Storage of Metal Ions in Biological Cells

Wolfgang Maret 2014-07-30 Metal ions play key roles in biology. Many are essential for catalysis, for electron transfer and for the fixation, sensing, and metabolism of gases. Others compete with those essential metal ions or have toxic or pharmacological effects. This book is structured around the periodic table and focuses on the control of metal ions in cells. It addresses the molecular aspects of binding, transport and storage that ensure balanced levels of the essential elements. Organisms have also developed mechanisms to deal with the non-essential metal ions. However, through new uses and manufacturing processes, organisms are increasingly exposed to changing levels of both essential and non-essential ions in new chemical forms. They may not have developed defenses against some of these forms (such as nanoparticles). Many diseases such as cancer, diabetes and neurodegeneration are associated with metal ion imbalance. There may be a deficiency of the essential metals, overload of either essential or non-essential metals or perturbation of the overall natural balance. This book is the first to comprehensively survey the molecular nature of the overall natural balance of metal ions in nutrition, toxicology and pharmacology. It is written as an introduction to research for students and researchers in academia and industry and begins with a chapter by Professor R J P Williams FRS.

Biological Inorganic Chemistry Robert R. Crichton 2018-05-26 **Biological Inorganic Chemistry: A New Introduction to Molecular Structure and Function**, Third Edition, provides a comprehensive discussion of the biochemical aspects of metals in living systems. The fascinating world of the role of metals in biology, medicine and the environment has progressed significantly since the very successful Second Edition of the book published in 2012.

Beginning with an overview of metals and selected nonmetals in biology, the book supports the interdisciplinary nature of this vibrant area of research by providing an introduction to basic coordination chemistry for biologists and structural and molecular biology for chemists. Having built this accessible foundation, the book progresses to discuss biological ligands for metal ions, intermediary metabolism and bioenergetics, and methods to study metals in biological systems. The book also covers metal assimilation pathways; transport, storage, and homeostasis of metal ions; sodium and potassium channels and pumps; magnesium phosphate metabolism and photoreceptors; calcium and cellular signaling; the catalytic role of several classes of mononuclear zinc enzymes; the biological chemistry of iron; and copper chemistry and biochemistry. In addition, the book discusses nickel and cobalt enzymes; manganese chemistry and biochemistry; molybdenum, tungsten, vanadium, and chromium; non-metals in biology; biomineralization; metals in the brain; metals and neurodegeneration; metals in medicine and metals as drugs; and metals in the environment. Now in its Third Edition, this popular and award-winning resource highlights recent exciting advances and provides a thorough introduction for both researchers approaching the field from a variety of backgrounds, as well as advanced students. Includes a thorough survey of metals in biological systems: in the human body, in medicine and in the environment Previous winner (Second Edition) of the 2013 Textbook Excellence Award (Texty) from the Text and Academic Authors Association Features new sections: an overview of the

different functions of essential metal ions; toxic metals in diagnosis and therapeutics; crystal and ligand field theory and their limitations; molecular orbital theory; genetic and molecular biological approaches to study metals; more complex cofactors and their biosynthesis; photosynthetic oxidation of water; man-made environmental pollution; and metals as poisons

Metal Ions in Biology and Medicine Philippe Collery 2000 The objective of the 6th ISMIBM is to foster exchange of opinions between professionals and specialists working on analysis, research and applications of metal ions, trace elements and minerals in biological, biochemical, medical sciences, toxicology and environmental health. The scientific program, composed of plenary and concurrent sessions, and poster presentations is designed to promote intensive and productive dialogue among experts in these fields. A special program with short courses and mini-symposia have also been organised, featuring specialised areas including toxicology, analysis, pathology, remediation strategies, and environmental medicine. Original contributions (oral and/or poster presentations) are invited on the following themes: Metals and Environmental Health; Molecular Toxicology of Metals; Carcinogenicity of Metals; Speciation of Metals and Other Elements; Uses of Metals in Clinical Applications; Metals and Disease: Environmental and Toxicologic Pathology; Epidemiology and Occupational Health; Metals and Aging; Metals and Homeostasis; Effects of Low and High Nutritional Trace Element Status; Metals and Hormone Actions; Metals and Enzyme Activity; Metals and Chelation Therapy; Health Effects of Arsenic; Risk Assessment of Trace Element Status and Health; Advanced Methods for the Analysis of Trace Elements and Metal Ions.

Molecular Microbiology of Heavy Metals Dietrich H. Nies 2007-03-24 This book covers allocation of metals in cells, metal transporter, storage and metalloregulatory proteins, cellular responses to metal ion stress, transcription of genes involved in metal ion homeostasis, uptake of essential metals, metal efflux and other detoxification mechanisms. The book also discusses metal bioreporters for the nanomolar range of concentration and tools to address the metallome. In addition, coverage details specific metals.

Metal Transporters Svetlana Lutsenko 2012 This volume of Current Topics in Membranes focuses on metal transmembrane transporters and pumps, a recently discovered family of membrane proteins with many important roles in the physiology of living organisms. The book summarizes the most recent advances in the field of metal ion transport and provides a broad overview of the major classes of transporters involved in homeostasis of heavy metals. Various families of the transporters and metal specificities are discussed with the focus on the structural and mechanistic aspects of their function and regulation. The reader will access information obtained through a variety of approaches ranging from X-ray crystallography to cell biology and bioinformatics, which have been applied to transporters identified in diverse biological systems, such as pathogenic bacteria, plants, humans and others. Field is cutting-edge and a lot of the information is new to research community Wide breadth of topic coverage Contributors of high renown and expertise

Metals in Cells Valeria Culotta 2016-03-16 Over the last three decades a lot of research on the role of metals in biochemistry and medicine has been done. As a result many structures of biomolecules with metals have been characterized and medicinal chemistry studied the effects of metal containing drugs. This new book (from the EIBC Book Series) covers recent advances made by top researchers in the field of metals in cells [the "metallome"] and include: regulated metal ion uptake and trafficking, sensing of metals within cells and across tissues, and identification of the vast cellular factors designed to orchestrate assembly of metal cofactor sites while minimizing toxic side reactions of metals. In addition, it features aspects of metals in disease, including the role of metals in neuro-degeneration, liver disease, and inflammation, as a way to highlight the detrimental effects of mishandling of metal trafficking and response to "foreign" metals. With the breadth of our recently acquired understanding of metals in cells, a book that features key aspects of cellular handling of inorganic elements is both timely and important. At this point in our understanding, it is worthwhile to step back and take an expansive view of how far our understanding has come, while also

highlighting how much we still do not know. The content from this book will publish online, as part of EIBC in December 2013, find out more about the Encyclopedia of Inorganic and Bioinorganic Chemistry, the essential online resource for researchers and students working in all areas of inorganic and bioinorganic chemistry.

Metal Ions in Biological Systems Astrid Sigel 1998-01-09 "Volume 35 covers the biological cycling of iron in oceans; the transport of iron in microorganisms, fungi, and plants; the roles and properties of siderophores; the regulation of iron transport and uptake in animals, plants, and microorganisms, and more. "

Metalloproteins—Advances in Research and Application: 2012 Edition 2012-12-26 Metalloproteins—Advances in Research and Application: 2012 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Metalloproteins. The editors have built Metalloproteins—Advances in Research and Application: 2012 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Metalloproteins in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Metalloproteins—Advances in Research and Application: 2012 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

Interrelations between Essential Metal Ions and Human Diseases Astrid Sigel 2014-01-27 MILS-13 provides an up-to-date review on the relationships between essential metals and human diseases, covering 13 metals and 3 metalloids: The bulk metals sodium, potassium, magnesium, and calcium, plus the trace elements manganese, iron, cobalt, copper, zinc, molybdenum, and selenium, all of which are essential for life. Also covered are chromium, vanadium, nickel, silicon, and arsenic, which have been proposed as being essential for humans in the 2nd half of the last century. However, if at all, they are needed only in ultra-trace amounts, and because of their prevalence in the environment, it has been difficult to prove whether or not they are required. In any case, all these elements are toxic in higher concentrations and therefore, transport and cellular concentrations of at least the essential ones, are tightly controlled; hence, their homeostasis and role for life, including deficiency or overload, and their links to illnesses, including cancer and neurological disorders, are thoroughly discussed. Indeed, it is an old wisdom that metals are indispensable for life. Therefore, Volume 13 provides in an authoritative and timely manner in 16 stimulating chapters, written by 29 internationally recognized experts from 7 nations, and supported by more than 2750 references, and over 20 tables and 80 illustrations, many in color, a most up-to-date view on the vibrant research area of the Interrelations between Essential Metal Ions and Human Diseases.

Microbiology of Metal Ions 2017-05-18 Advances in Microbial Physiology, Volume 70 continues the long tradition of topical, important, cutting-edge reviews in microbiology. Contains contributions from leading authorities in microbial physiology Informs and updates on all the latest developments in the field of microbial physiology

Metal Speciation in the Environment J.A.C. Broekaert 2013-06-29 Proceedings of the NATO Advanced Study Institute on Metal Speciation in the Environment held in Cesme, Turkey, October 9-20, 1989

Metals Ions in Biological System Astrid Sigel 2002-03-06 Volume 39: Molybdenum and Tungsten: Their Roles in Biological Processes is devoted solely to the vital research area on molybdenum and tungsten and their role in biology. It offers a comprehensive and timely account of this fascinating topic by 40 distinguished international authorities. Topics include: transport, homeostasis, regulation and binding of molybdate and tungstate to proteins, crystallographic characterization, coordination of complexes, and biosynthesis.

Advances in Sulfur Chemistry Eric Block 2013-10-22 Advances in Sulfur Chemistry, Volume 1 provides information pertinent to the

four key aspects of sulfur chemistry. This book illustrates the great utility of sulfur in organic synthesis as applied to the synthesis of cyclic compounds, most of which serve as intermediates in the total synthesis of natural products. Organized into five chapters, this volume begins with an overview of desulfurization using Raney nickel. This text then highlights the extensive research done on compounds containing both phosphorus and sulfur attached to the same carbon atom, revealing synergism involving these adjacent second row heteroatoms. Other chapters consider the significant class of thiaheterocycles and include a discussion of the chemistry of disulfur. The final chapter deals with the chemistry of metal complexes of thiols, with focus on the chemistry, structure, and chemical modeling of the nitrogenase

enzyme system, whereby dinitrogen is ultimately reduced to ammonia. This book is a valuable resource for graduate students, postdoctoral fellows, industrial chemists, and those teaching specialized topics to graduate students.

Metal Ions in Biological Systems Helmut Sigel 1994-02-08 This volume is devoted solely to the research area of metalloenzymes involving amino acid-residue and related radicals. Topics covered include: general considerations; structure, function and engineering of peroxidases; and ribonucleotide reductase in mammalian systems.

Metal Ion Homeostasis 1983

National Library of Medicine Current Catalog National Library of Medicine (U.S.) 1989