

## Biochemistry Research Paper Topics

National Institutes of Health Lectures in Biomedical Sciences: Current Topics in Biochemistry is based on a series of lectures dealing with current topics in biochemistry and more biologically or medically oriented topics. These lectures were organized for the benefit of young physicians who had just finished their clinical training but were several years out-of-date with respect to basic scientific research. The lecturers were asked, therefore, to present not only their own contributions to the field but also a broad review of recent developments in a large area of science. The lectures were surprisingly well attended not only by the associates for whom they had originally been designed but also by a large fraction of the NIH research community, specialists and nonspecialists alike. The lectures in this volume cover the following topics: genetic control of lipid metabolism; mammalian RNA-containing tumor viruses; current directions in research on cyclic AMP; the chemistry and biology of collagen; properties of the protein complex of striated muscle involved in the contractile process; cell surface receptor sites; and membrane structure and function.

A collection of biographical notes of some 350 men who were physiologists in the years 1885-1914. The notes are grouped under the University or Medical School in which the men worked and together with brief explanatory paragraphs, the biographies aim to provide a history of the development of medical science in each institution over the years before the Great War of 1914-1918. The biographies extend to the end of each man's life, providing some account of physiology in the 1920s and 1930s and even longer.

The editors invited selected authors who had participated in or observed developments in biochemistry and molecular biology, particularly in the second half of this century, to record their personal recollections of the times and circumstances in which they worked. Having been given free reign, both content and style of the contributions reflect the flavour of the personality of the author. The book reflects the explosive development of biochemistry and molecular biology and related sciences that had led to the almost unique situation of these fields coming of age at a time when their founding fathers, or their scientific children, were alive and well. The contributions in this volume encompass a wide variety of experiences in many different countries and in very different fields of biochemistry.

Let the Author's Handbook of Styles for Life Science Journals save you time and trouble by providing a one-stop resource for all your manuscript writing requirements. No more plowing through your journal collection or wandering the library stacks to get those elusive journal pages containing instructions to authors. This unique book contains all the information you need to know: whether the journal will consider your manuscript; the journal's submission address; how to construct the abstract, illustrations, tables, and references; and specific information on copyright, multiple authorship, statistical analyses, and page

charges. The Author's Handbook of Styles for Life Science Journals gives all this information for 440 of the most important English-language, life science journals. Titles were selected from the "Journal Rankings by Times Cited" list in the Science Citation Index Journal Citation Report. Because this report is heavily weighted toward the medical sciences, other life science journals are incorporated into the book based on general level of prestige and reputation. In addition, some new titles that promise to be important to their fields, like Nature Medicine and Emerging Infectious Diseases are also included. Organized by journal title, the handbook's entries are uniformly arranged to allow direct comparison between journals. Information is presented in an easy-to-use, easy-to-read format with clear and explicitly stated instructions. The Author's Handbook of Styles for Life Science Journals gives authors in the life sciences all the information necessary for the correct and complete compilation of a manuscript for submission to their journal of choice.

The 2009-10 volume of the formal governing regulations of the University of Cambridge, annually updated.

Nuclear Architecture and Dynamics provides a definitive resource for (bio)physicists and molecular and cellular biologists whose research involves an understanding of the organization of the genome and the mechanisms of its proper reading, maintenance, and replication by the cell. This book brings together the biochemical and physical characteristics of genome organization, providing a relevant framework in which to interpret the control of gene expression and cell differentiation. It includes work from a group of international experts, including biologists, physicists, mathematicians, and bioinformaticians who have come together for a comprehensive presentation of the current developments in the nuclear dynamics and architecture field. The book provides the uninitiated with an entry point to a highly dynamic, but complex issue, and the expert with an opportunity to have a fresh look at the viewpoints advocated by researchers from different disciplines. Highlights the link between the (bio)chemistry and the (bio)physics of chromatin Deciphers the complex interplay between numerous biochemical factors at task in the nucleus and the physical state of chromatin Provides a collective view of the field by a large, diverse group of authors with both physics and biology backgrounds

Plant Biochemistry provides students and researchers in plant sciences with a concise general account of plant biochemistry. The edited format allows recognized experts in plant biochemistry to contribute chapters on their special topics. Up-to-date surveys are divided into four sections: the cell, primary metabolism, special metabolism, and the plant and the environment. There is a strong emphasis on plant metabolism as well as enzymological, methodological, molecular, biological, functional, and regulatory aspects of plant biochemistry. Illustrations of metabolic pathways are used extensively, and further reading lists are also included. The coverage of the subject is divided into four sections The plant cell-describing both molecular components and function Primary

metabolism-including the pathways of carbohydrate, lipid, nitrogen, nucleic acid and protein metabolism as well as gene regulation Special metabolism-chapters on phenolics, isoprenoids and secondary nitrogen compounds The plant and the environment-discussions of pathology, ecology and biotechnology at the molecular level

This book is a printed edition of the Special Issue "Feature Papers" that was published in Processes

Covering theoretical methods and computational techniques in biomolecular research, this book focuses on approaches for the treatment of macromolecules, including proteins, nucleic acids, and bilayer membranes. It uses concepts in free energy calculations, conformational analysis, reaction rates, and transition pathways to calculate and interpret b

Membrane Physiology (Second Edition) is a soft-cover book containing portions of Physiology of Membrane Disorders (Second Edition). The parent volume contains six major sections. This text encompasses the first three sections: The Nature of Biological Membranes, Methods for Studying Membranes, and General Problems in Membrane Biology. We hope that this smaller volume will be helpful to individuals interested in general physiology and the methods for studying general physiology. THOMAS E. ANDREOLI JOSEPH F. HOFFMAN DARRELL D. FANESTIL STANLEY G. SCHULTZ vii Preface to the Second Edition The second edition of Physiology of Membrane Disorders represents an extensive revision and a considerable expansion of the first edition. Yet the purpose of the second edition is identical to that of its predecessor, namely, to provide a rational analysis of membrane transport processes in individual membranes, cells, tissues, and organs, which in turn serves as a frame of reference for rationalizing disorders in which derangements of membrane transport processes play a cardinal role in the clinical expression of disease. As in the first edition, this book is divided into a number of individual, but closely related, sections. Part V represents a new section where the problem of transport across epithelia is treated in some detail. Finally, Part VI, which analyzes clinical derangements, has been enlarged appreciably.

Advances in biochemistry directly influence medicine and the field of human health. The field of biochemistry is constantly changing with new discoveries being made all the time. This new book covers a range of advances in the field of biochemistry, including new research techniques and methods, a classification system, new research, and more.

This title includes a number of Open Access chapters. Nutrition is becoming ever more central to our understanding of metabolic processes. Nutritional biochemistry offers insight into the mechanisms by which diet influences human health and disease. This book focuses on five aspects of this complex field of study: nutritional genomics, clinical nutrition and biochemistry, vitamins and minerals, macronutrients and energy, and cell function and metabolism.

Collected in this research compendium are recent studies within each of these

topics. Each chapter contributes to a well-rounded and up-to-date picture of nutritional biochemistry. Appropriate for graduate-level and post-doctorate students, this book will stimulate further study into this important field of research. With the encroachment of the Internet into nearly all aspects of work and life, it seems as though information is everywhere. However, there is information and then there is correct, appropriate, and timely information. While we might love being able to turn to Wikipedia® for encyclopedia-like information or search Google® for the thousands of links on a topic, engineers need the best information, information that is evaluated, up-to-date, and complete. Accurate, vetted information is necessary when building new skyscrapers or developing new prosthetics for returning military veterans. While the award-winning first edition of *Using the Engineering Literature* used a roadmap analogy, we now need a three-dimensional analysis reflecting the complex and dynamic nature of research in the information age. *Using the Engineering Literature, Second Edition* provides a guide to the wide range of resources available in all fields of engineering. This second edition has been thoroughly revised and features new sections on nanotechnology as well as green engineering. The information age has greatly impacted the way engineers find information. Engineers have an effect, directly and indirectly, on almost all aspects of our lives, and it is vital that they find the right information at the right time to create better products and processes. Comprehensive and up to date, with expert chapter authors, this book fills a gap in the literature, providing critical information in a user-friendly format.

Research on the biochemistry and molecular biology of lipids and lipoproteins has experienced remarkable growth in the past 20 years, particularly with the realization that many different classes of lipids play fundamental roles in diseases such as heart disease, obesity, diabetes, cancer and neurodegenerative disorders. The 5th edition of this book has been written with two major objectives. The first objective is to provide students and teachers with an advanced up-to-date textbook covering the major areas of current interest in the lipid field. The chapters are written for students and researchers familiar with the general concepts of lipid metabolism but who wish to expand their knowledge in this area. The second objective is to provide a text for scientists who are about to enter the field of lipids, lipoproteins and membranes and who wish to learn more about this area of research. All of the chapters have been extensively updated since the 4th edition appeared in 2002. Key Features:

- \* Represents a bridge between the superficial coverage of the lipid field found in basic biochemistry text books and the highly specialized material contained in scientific review articles and monographs.
- \* Allows scientists to become familiar with recent developments related to their own research interests, and will help clinical researchers and medical students keep abreast of developments in basic science that are important for subsequent clinical advances.
- \* Serves as a general reference book for scientists studying lipids, lipoproteins and membranes and as an advanced and up-to-date textbook for teachers and students who are familiar with the basic

concepts of lipid biochemistry.

A Dictionary of Biochemistry

Selected Topics in the History of Biochemistry: Personal Recollections, I presents selected topics in the history of biochemistry based on the authors' personal recollections. These topics range from the isolation of Cori ester and the discovery of sugar nucleotides to the work of Frederick Gowland Hopkins (1861-1947). Ion-coupled membrane processes are also discussed, along with fructose and fructose-2,6-bisphosphate as well as lysosomes and glycogen. Comprised of 12 chapters, this volume begins with the discovery of Cori ester and the concept of phosphorylation before turning to the discovery of sugar nucleotides and research on ion-coupled membrane processes. The reader is then introduced to studies of fructose, fructose-2,6-bisphosphate, lysosomes, and glycogen; the contributions of Frederick Gowland Hopkins in biochemistry; and a short autobiography of Juda Hirsch Quastel, with emphasis on his research work on the concept of active centers as a possible explanation of enzyme action and his investigation of the effects of malonic acid and substituted malonic acids on bacterial dehydrogenases. The remaining chapters focus on a biochemist's approach to autopharmacology; the early development of modern protein chemistry in Uppsala, Sweden; and the biographies of two Russian scientists, A. N. Bach and Sergei E. Severin. This monograph will be of interest to students, practitioners, and researchers in the field of biochemistry.

Contents. List of Contributors. Acknowledgements. Antibody Specificity and Diversity Part II: The Genes (L.A. Steiner). From Transplant to Transcript (C. Tickle). The Discovery of Repair in DNA (B. Cox). Evolution in an RNA World (P. Schuster). Biological Nitrogen Fixation (P.S. Nutman). Plant Hormones: A History of Discovery and Scientific Fashion (D.J. Osborne). Pumps, Channels, and Carriers: From "Active Patches" to Membrane Transport Proteins (R. Boyd). Biochemistry Then and Now (M.G. Ord and L.A. Stocken). Subject Index.

The Proceedings of the Second International Symposium on Biochemistry of Exercise are centered on the effects of long lasting exercise and training. In the years following the first symposium which was held in Brussels in 1968, biochemistry of exercise has gained more importance in view of the increasing number of laboratories and scientific papers which are dealing with this field. From the topic of the first symposium - humoral modifications occurring during physical activity - our points of interest have been turned to a more limited area, namely long term exercise and training. It was important to investigate these subjects because everyone knows that in to-day's sport a good performance means hours of weekly or even daily training. Therefore, it was of considerable interest to stimulate discussions and to clarify ideas in this particular field of human activity. Our knowledge of biochemistry of exercise at the cellular level has highly progressed during the last five years. Researchers have focused their interests on the sequential utilization of fuels, the adaptive responses of the enzyme machinery, the different types of muscle fibers. The topics of the Proceedings include: general subjects, metabolism of carbohydrates, lipids, and proteins, hormonal regulations, electrolytes, ultrastructure and fiber types of muscle, cellular enzymes. In the symposium, the current knowledge was summarized as an introductory lecture to each of these topics by prominent authors, namely: J. KEUL (Freiburg i. Br.), M. SCHERRER (Bern), B. SALTIN (Copenhagen), P.

This monograph is neither a historical outline of the development of the concepts of protein biosynthesis and the structure and functions of the ribosomes, nor an exhaustive survey of the literature on these questions. The monograph is based upon an analysis of the modern trends in this field. The purpose of the monograph was to formulate more or less generalized representations of the structure and function of the ribosome, as we envision it at the present day. It may be that this attempt is premature for a number of reasons, and the concepts outlined here will very soon be revised. Nonetheless, despite this risk, we believe it to be

advisable to undertake this attempt for the following reasons: firstly, the undertaken analysis could aid in the comprehension of the substantial mass of extremely scattered experimental data on the ribosomes presently available; secondly, in any event, even if most of the concepts outlined rapidly become obsolete, they can still serve as a stimulus for a whole series of experiments; and thirdly, we hope that some of the concepts outlined will still remain essentially correct and relatively stable. In view of the aforementioned, we should make the following reservations. First of all, we made no attempt to cite all the literature on the problems discussed, but considered it sufficient to illustrate the various premises with one or several sample references.

Below the soil surface, the rhizosphere is the dynamic interface among plant roots, soil microbes and fauna, and the soil itself, where biological as well as physico-chemical properties differ radically from those of bulk soil. The Rhizosphere is the first ecologically-focused book that explicitly establishes the links from extraordinarily small-scale processes in the rhizosphere to larger-scale belowground patterns and processes. This book includes chapters that emphasize the effects of rhizosphere biology on long-term soil development, agro-ecosystem management and responses of ecosystems to global change. Overall, the volume seeks to spur development of cross-scale links for understanding belowground function in varied natural and managed ecosystems. First cross-scale ecologically-focused integration of information at the frontier of root, microbial, and soil faunal biology Establishes the links from extraordinarily small-scale processes in the rhizosphere to larger-scale belowground patterns and processes Includes valuable information on ecosystem response to increased atmospheric carbon dioxide and enhanced global nitrogen deposition Chapters written by a variety of experts, including soil scientists, microbial and soil faunal ecologists, and plant biologists In the time since the second edition of The ACS Style Guide was published, the rapid growth of electronic communication has dramatically changed the scientific, technical, and medical (STM) publication world. This dynamic mode of dissemination is enabling scientists, engineers, and medical practitioners all over the world to obtain and transmit information quickly and easily. An essential constant in this changing environment is the requirement that information remain accurate, clear, unambiguous, and ethically sound. This extensive revision of The ACS Style Guide thoroughly examines electronic tools now available to assist STM writers in preparing manuscripts and communicating with publishers. Valuable updates include discussions of markup languages, citation of electronic sources, online submission of manuscripts, and preparation of figures, tables, and structures. In keeping current with the changing environment, this edition also contains references to many resources on the internet. With this wealth of new information, The ACS Style Guide's Third Edition continues its long tradition of providing invaluable insight on ethics in scientific communication, the editorial process, copyright, conventions in chemistry, grammar, punctuation, spelling, and writing style for any STM author, reviewer, or editor. The Third Edition is the definitive source for all information needed to write, review, submit, and edit scholarly and scientific manuscripts. The National Science Foundation funded a synthesis study on the status, contributions, and future direction of discipline-based education research (DBER) in physics, biological sciences, geosciences, and chemistry. DBER combines knowledge of teaching and learning with deep knowledge of discipline-specific science content. It describes the discipline-specific difficulties learners face and the specialized intellectual and instructional resources that can facilitate student understanding. Discipline-Based Education Research is based on a 30-month study built on two workshops held in 2008 to explore evidence on promising practices in undergraduate science, technology, engineering, and mathematics (STEM) education. This book asks questions that are essential to advancing DBER and broadening its impact on undergraduate science teaching and learning. The book provides empirical research on undergraduate teaching and learning in the sciences, explores the extent to which this

research currently influences undergraduate instruction, and identifies the intellectual and material resources required to further develop DBER. Discipline-Based Education Research provides guidance for future DBER research. In addition, the findings and recommendations of this report may invite, if not assist, post-secondary institutions to increase interest and research activity in DBER and improve its quality and usefulness across all natural science disciplines, as well as guide instruction and assessment across natural science courses to improve student learning. The book brings greater focus to issues of student attrition in the natural sciences that are related to the quality of instruction. Discipline-Based Education Research will be of interest to educators, policy makers, researchers, scholars, decision makers in universities, government agencies, curriculum developers, research sponsors, and education advocacy groups.

*Reflections on Biochemistry: In Honour of Severo Ochoa* offers reflections on a wide range of topics relating to biochemistry, including energy metabolism, lipids and saccharides, regulation, nucleic acids and the genetic code, protein biosynthesis, and cell biology. The essays celebrate Severo Ochoa's outstanding contributions to biochemistry spanning nearly half a century. This book is comprised of 47 chapters and begins with a biography of Ochoa and his scientific work in the field of biochemistry, particularly his research on intermediary metabolism, RNA synthesis, and the genetic code. The discussion then turns to energy metabolism, photosynthesis, and fermentation, touching on topics such as the role of lactic acid in the development of biochemistry and the biosynthesis of cell components from acetate. The next section is devoted to lipids, saccharides, and cell walls and includes chapters that deal with biotin, sulfur biochemistry, and dipicolinic acid. Subsequent chapters explore hormonal regulation of adipose tissue lipolysis; the structural relationship between genes and enzymes; bacteriophages, colicins, and ribosomes; and cell biology and neurobiology. This monograph will be of interest to biochemists and students of biochemistry.

*Biochemistry of Brain* is a collection of articles dealing with the developments in the biochemistry of the brain. This book gives a comprehensive and critical discussion of important developments in studies concerning the above subject. This text discusses the structure, function, and metabolism of glycosphingolipids, which are related to the study of sphingolipid storage diseases. Inborn defects of metabolism are found in Gaucher's and Fabry's disease, which are characterized by lipid accumulation in the brain. Another paper reviews the chemical and genetics of critically lysosomal hydrolase deficiencies that can cause the storage of sphingolipids. This book then explains the role of myelin basic protein in lipids in vivo that the weak bonding of the protein is not a major component of myelin stability. Another paper discusses the procedures for isolating subfractions of myelin and myelin-related membranes, with some attention given on the alterations in the subfractionation of myelin in pathological hypomyelinating and demyelinating conditions. Another article discusses the biochemical and enzymatic composition of lysosomes and the biosynthesis, intracellular transport, storage, and the degradation of lysosomal constituents. This collection of papers will benefit scientists doing research in microbiology, microchemistry, molecular genetics, and neurochemistry.

Everything students need to know to succeed on the Biochemistry portions of the MCAT exam (Medical College Admission Test) including 3 full-length practice tests.

This highly illustrated, step-by-step guide gives detailed instructions for dozens of different manipulation techniques, covering all levels of the spine, thorax, and pelvis. It also includes a helpful overview of the principles and theory of spinal manipulation and its use in clinical practice. The accompanying DVD contains video clips demonstrating the techniques described in the book. The new edition is a highly illustrated, step-by-step guide to 41 manipulation techniques commonly used in clinical practice. The book also provides the related theory essential for safe and effective use of manipulation techniques.

This penetrating case study of institution building and entrepreneurship in science shows how

a minor medical speciality evolved into a large and powerful academic discipline. Drawing extensively on little-used archival sources, the author analyses in detail how biomedical science became a central part of medical training and practice. The book shows how biochemistry was defined as a distinct discipline by the programmatic vision of individual biochemists and of patrons and competitors in related disciplines. It shows how discipline builders used research programmes as strategies that they adapted to the opportunities offered by changing educational markets and national medical reform movements in the United States, Britain and Germany. The author argues that the priorities and styles of various departments and schools of biochemistry reflect systematic social relationships between that discipline and biology, chemistry and medicine. Science is shaped by its service roles in particular local contexts: This is the central theme. The author's view of the political economy of modern science will be of interest to historians and social scientists, scientific and medical practitioners, and anyone interested in the ecology of knowledge in scientific institutions and professions.

One of the most exciting developments in biological sciences has been their merging with chemistry and physics resulting in the new disciplines of biochemistry, biophysics and molecular biology. As the developments of these new disciplines has been so rapid many of the key discoveries have occurred within the life-time of a number of prominent scientists in the field. The chapters in this and in future volumes are meant to complement with personal recollections by these scientists, the History of Biochemistry in this series (vols. 30-33 by M. Florkin and Vol. 34 by P. Laszlo). These bibliographic and autobiographic chapters convey to the reader lively, albeit at times subjective, views on both the scientific and social environments of the authors. The editor considered it presumptuous to give the authors narrow guidelines or to suggest changes in the chapters he received. The contributions assembled in this volume will convey the flavour of each author's particular personality.

TRAC: Trends in Analytical Chemistry, Volume 8 provides information pertinent to the trends in the field of analytical chemistry. This book presents a variety of topics related to analytical chemistry, including protein purification, biotechnology, Raman spectroscopy in pharmaceutical field, electrokinetic chromatography, and flow injection analysis. Organized into 50 chapters, this volume begins with an overview of scientometric investigations that enable the quantitative study of the evolution of its various components and can thereby uncover how information is utilized to diffuse and generate knowledge. This text then discusses the economic significance of sensing and control as being the main factors in determining process economics and in offering products and business opportunities. Other chapters consider the important relationship between Raman spectroscopy and other analytical methods. This book discusses as well the interfaces between a gas chromatograph and a Fourier transform infrared spectrometer. The final chapter deals with chemometrics routines. This book is a valuable resource for analytical chemists, and biochemists.

This book is the latest volume in a highly successful series within Comprehensive Biochemistry and provides a historical and autobiographical perspective of the development of the field through the contributions of leading individuals who reflect on their careers and their impact on biochemistry. The book is essential reading for everybody, from graduate student to professor, placing in context major advances not only in biochemical terms but in relation to historical and social developments. Readers will be delighted by the lively style and the insight into the lives and careers of leading scientists of their time.

Part A.: Overviews of biological inorganic chemistry : 1. Bioinorganic chemistry and the biogeochemical cycles -- 2. Metal ions and proteins: binding, stability, and folding -- 3. Special cofactors and metal clusters -- 4. Transport and storage of metal ions in biology -- 5. Biominerals and biomineralization -- 6. Metals in medicine. -- Part B.: Metal ion containing biological systems : 1. Metal ion transport and storage -- 2. Hydrolytic chemistry -- 3. Electron

transfer, respiration, and photosynthesis -- 4. Oxygen metabolism -- 5. Hydrogen, carbon, and sulfur metabolism -- 6. Metalloenzymes with radical intermediates -- 7. Metal ion receptors and signaling. -- Cell biology, biochemistry, and evolution: Tutorial I. -- Fundamentals of coordination chemistry: Tutorial II.

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