Metabolic Regulation A Human Perspective

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Dietary Sugar, Salt and Fat in Human Health

Divided into four main sections, Dietary Sugar, Salt and Fat in Human Health explores the biochemical, pharmacological and medicinal aspects related to the overindulgence of dietary salt, sugar, and fat, along with possible remedies. Beginning with a general overview, the text outlines aspects associated with advancing age and human physiology, such as different aspects of insulin resistance, the advancing age phenomenon, central fat accumulation and metabolic perturbations and the role of the modern Western diet and the influence of dietary sugar, salt, and fat, with particular focus on their relation to multiple biochemical pathophysiological pathways. The second section of the book focuses on the roles of dietary sugars and their correlation with the chronic disease epidemic, with an emphasis on carbohydrate metabolism and its biochemistry, GI absorption, the glycemic index and the influence of fructose. The historical background of dietary sugars is discussed alongside Atkin’s hypothesis, and an overview of the correlation between dietary fibre and the glycemic index, including a chapter on sugar addiction. Section three contains an exhaustive review of the influence of dietary salt and its diverse mechanistic aspects, including salt-sensitive hypertension, contribution of two steroid receptor pathways, vascular NO, intrarenal RAAS system and angiotensin. The fourth section highlights the biochemistry of dietary saturated, polyunsaturated and trans fat and its influence on human health and various diseases, and further explores NAFLD and gender specific problems. Chapters in this section also investigate the benefits of the Mediterranean diet as well as myths related to cholesterol. Collected and carefully organized for researchers in nutrition, physiology, epidemiology, or sensory science, this book will also benefit general practitioners, surgeons, nurses, health professionals and practitioners, and students studying the role of diet in cardiometabolic disorders and disease. Demonstrates how a healthy lifestyle impacts lifespan Provides a general overview and outlines aspects associated with advancing age and human physiology Focuses on the roles of dietary sugars and their correlation with the chronic disease epidemic Contains an exhaustive review

of the influence of dietary salt and its diverse mechanistic aspects Highlights the biochemistry of dietary saturated, polyunsaturated and trans fat and its influence on human health and various diseases

Glucose Homeostasis

During the fifteen years since the bestselling first edition of Folate in Health and Disease was published, there have been thousands of new research studies related to folate and its role in health and disease. The second edition of the book uniquely bridges the gap between basic science and public health/clinical medicine.Presents Groundbreaking

Principles of Animal Nutrition

A valuable reference tool for professionals involved in the industry, Drug Metabolism in Pharmaceuticals covers new tools such as LC-MS and LC-MS-NMR along with experimental aspects of drug metabolism. This work fills a gap in the literature by covering the concepts and applications of pharmaceutical research, development, and assessment from the point of view of drug metabolism. By providing both a solid conceptual understanding of the drug metabolism system, and a well illustrated, detailed demonstration and explanation of cutting edge tools and techniques, this book serves as a valuable reference tool for bench scientists, medical students, and students of general health sciences.

Nutritional Genomics

A multidisciplinary analysis of the role of nutrition in generating hierarchical societies and cultivating a global epidemic of chronic diseases.

Fat Detection

The Scientists Guide to Cardiac Metabolism combines the basic concepts of substrate metabolism, regulation, and interaction within the cell and the organism to provide a comprehensive introduction into the basics of cardiac metabolism. This important reference is the perfect tool for newcomers in cardiac metabolism, providing a basic understanding of the metabolic processes and enabling the newcomer to immediately communicate with the expert as substrate/energy metabolism becomes part of projects. The book is written by established experts in the field, bringing together all the concepts of cardiac metabolism, its regulation, and the impact of disease. Provides a quick and comprehensive introduction into cardiac metabolism Contains an integrated view on cardiac metabolism and its interrelation in metabolism with other organs Presents insights into substrate metabolism in relation to intracellular organization and structure as well as whole organ function Includes historical perspectives that reference important investigators that have contributed to the development of the field

Phosphate Metabolism

Presents the State-of-the-Art in Fat Taste Transduction A bite of cheese, a few

potato chips, a delectable piece of bacon – a small taste of high-fat foods often draws you back for more. But why are fatty foods so appealing? Why do we crave them? Fat Detection: Taste, Texture, and Post Ingestive Effects covers the many factors responsible for the sensory appeal of foods rich in fat. This well-researched text uses a multidisciplinary approach to shed new light on critical concerns related to dietary fat and obesity. Outlines Compelling Evidence for an Oral Fat Detection System Reflecting 15 years of psychophysical, behavioral, electrophysiological, and molecular studies, this book makes a well-supported case for an oral fat detection system. It explains how gustatory, textural, and olfactory information contribute to fat detection using carefully designed behavioral paradigms. The book also provides a detailed account of the brain regions that process the signals elicited by a fat stimulus, including flavor, aroma, and texture. This readily accessible work also discusses: The importance of dietary fats for living organisms Factors contributing to fat preference, including palatability Brain mechanisms associated with appetitive and hedonic experiences connected with food consumption Potential therapeutic targets for fat intake control Genetic components of human fat preference Neurological disorders and essential fatty acids Providing a comprehensive review of the literature from the leading scientists in the field, this volume delivers a holistic view of how the palatability and orosensory properties of dietary fat impact food intake and ultimately health. Fat Detection represents a new frontier in the study of food perception, food intake, and related health consequences.

Chromatin Regulation and Dynamics

We present to our readers the proceedings of the Second International Workshop on Phosphate. A short account of the history of the effort led to the Phosphate Workshops is appro priate and can be of interest to the reader. The idea for Phosphate Workshops was born in the early days of November, 1974. One of us (S. G. M.) suggested the thought to a group of scientists gathered for a luncheon in one of the attrac tive small restaurants in Weisbaden, Germany. The purpose of the workshop was to bring together interested scientists to discuss the newer developments and the recent advances in the field of phosphate metabolism and the other related minerals. An Organizing Committee made of Shaul G. Massry (USA), Louis V. Avioli (USA), Philippe Bordier (France), Herbert Fleisch (Switzerland), and Eduardo Slatopolsky (USA) was formed. The First Workshop was held in Paris during June 5-6, 1975 and was hosted by Dr. Philippe Bordier. Its proceeding was already published. The Second Workshop took place in Heidelberg during June 28-30, 1976 and was hosted by Dr. Eberhard Ritz. Both of these workshops were extremely successful scientific endeavors, and the need for them was demonstrated by the great interest they generated among the scientific community. The Or ganizing Committee, therefore, decided to continue with the tradi tion to hold additional Workshops annually or every other year.

Nutrition and Epigenetics

The first edition of this innovative book brought a new perspective to the metabolic and therapeutic aspects of amino acids in clinical nutrition. Since its publication, a number of very important advances have been made in the field and interesting new findings have emerged. Until now, no reference has fully explored the

promising new developments

Healthy Kids

RNA-based Regulation in Human Health and Disease offers an in-depth exploration of RNA mediated genome regulation at different hierarchies. Beginning with multitude of canonical and non-canonical RNA populations, especially noncoding RNA in human physiology and evolution, further sections examine the various classes of RNAs (from small to large noncoding and extracellular RNAs), functional categories of RNA regulation (RNA-binding proteins, alternative splicing, RNA editing, antisense transcripts and RNA G-quadruplexes), dynamic aspects of RNA regulation modulating physiological homeostasis (aging), role of RNA beyond humans, tools and technologies for RNA research (wet lab and computational) and future prospects for RNA-based diagnostics and therapeutics. One of the core strengths of the book includes spectrum of disease-specific chapters from experts in the field highlighting RNA-based regulation in metabolic & neurodegenerative disorders, cancer, inflammatory disease, viral and bacterial infections. We hope the book helps researchers, students and clinicians appreciate the role of RNA-based regulation in genome regulation, aiding the development of useful biomarkers for prognosis, diagnosis, and novel RNA-based therapeutics. Comprehensive information of non-canonical RNA-based genome regulation modulating human health and disease Defines RNA classes with special emphasis on unexplored world of noncoding RNA at different hierarchies Disease specific role of RNA - causal, prognostic, diagnostic and therapeutic Features contributions from leading experts in the field

Muscle Cell and Tissue

The updated bestselling guide to human metabolism and metabolic regulation The revised and comprehensively updated new edition of Human Metabolism (formerly Metabolic Regulation – A Human Perspective) offers a current and integrated review of metabolism and metabolic regulation. The authors explain difficult concepts in clear and concise terms in order to provide an accessible and essential guide to the topic. This comprehensive text covers a wide range of topics such as energy balance, body weight regulation, exercise, and how the body copes with extreme situations, and illustrates how metabolic regulation allows the human body to adapt to many different conditions. This fourth edition has been revised with a new full colour text design and helpful illustrations that illuminate the regulatory mechanisms by which all cells control the metabolic processes necessary for life. The text includes chapter summaries and additional explanatory text that help to clarify the information presented. In addition, the newly revised edition includes more content on metabolic pathways and metabolic diseases. This important resource: Is a valuable tool for scientists, practitioners and students across a broad range of health sciences including medicine, biochemistry, nutrition, dietetics, sports science and nursing Includes a full colour text filled with illustrations and additional diagrams to aid understanding Offers a companion website with additional learning and teaching resources. Written for students of medicine, biochemistry, nutrition, dietetics, sports science and nursing, Human Metabolism has been revised and updated to provide a comprehensive review of metabolism and metabolic regulation.

Drug Metabolism Handbook

We all want our children to be fit and healthy, but the current invasion of fast food, sugary snacks, and oversize portions are creating an epidemic of overweight, inactive, and unhealthy kids. The powerful influences of the fast-food industry, omnipresent junk food advertising, and the vicious cycle of TV, computer games, and Internet addictions only make our children more susceptible to a sedentary lifestyle and a lifetime of bad habits and obesity. Now, health pioneer and dedicated mom Marilu Henner says it's time to say good-bye to sugarcoated cereals, artificially colored cheese puffs, oceans of sugary soft drinks, nutritionally deficient school lunches, and fastfood supermeals! As Marilu explains, parents who want the best for their children need to feed them fresh, whole foods to grow by. In Healthy Kids she shows you how to create a healthy, balanced lifestyle for your kids and how to make the transition from dairy-, fat-, sugar-, and chemical-laden foods to the vibrant, natural, nourishing foods we were all meant to eat. Healthy Kids offers a proven plan to help parents and kids alike learn to eat healthier and feel better. Inspiring and enjoyable to read, it features: More than 100 mouthwatering recipes your children will love Helpful, creative suggestions on getting your child into the habit of exercise Scores of tips on transitioning from dead food to live food A special For Kids Only section with fabulous food-based puzzles, games, and challenges Age-specific recommendations for what foods your children might like Timesaving shopping lists and helpful food preparation charts Expert advice from pediatricians, physical trainers, teachers, and expert nutritionists on all aspects of nourishing your family As Marilu says, Healthy Food = Healthy Children. And Healthy Kids provides the essential information on creating a lifetime of nutritional eating habits for your growing children.

Functional Biochemistry in Health and Disease

Metabolism at a Glance

Protein carbonylation has attracted the interest of a great number of laboratories since the pioneering studies at the Earl Stadtman’s lab at NIH started in early 1980s. Since then, detecting protein carbonyls in oxidative stress situations became a highly efficient tool to uncover biomarkers of oxidative damage in normal and altered cell physiology. In this book, research groups from several areas of interest have contributed to update the knowledge regarding detection, analyses and identification of carbonylated proteins and the sites where these modifications occur. The scientific community will benefit from these reviews since they deal with specific, detailed technical approaches to study formation and detection of protein carbonyls. Moreover, the biological impact of such modifications in metabolic, physiologic and structural functions and, how these alterations can help understanding the downstream effects on cell function are discussed. Oxidative stress occurs in all living organisms and affects proteins and other macromolecules: Protein carbonylation is a measure of oxidative stress in biological systems Mass spectrometry, fluorescent labelling, antibody based detection, biotinylated protein selection and other methods for detecting protein carbonyls and modification sites in proteins are described Aging,

neurodegenerative diseases, obstructive pulmonary diseases, malaria, cigarette smoke, adipose tissue and its relationship with protein carbonylation Direct oxidation, glycoxidation and modifications by lipid peroxidation products as protein carbonylation pathways Emerging methods for characterizing carbonylated protein networks and affected metabolic pathways

Secondary Metabolites

Most tissues and organs, such as the brain, need glucose constantly, as an important source of energy. The low blood concentrations of glucose (hypoglycemia) can cause seizures, loss of consciousness, and death. On the other hand, long lasting elevation of blood glucose concentrations (hyperglycemia) can result in blindness, renal failure, cardiac and peripheral vascular disease, and neuropathy. Therefore, blood glucose concentrations need to be maintained within narrow limits. The process of maintaining blood glucose at a steady-state level is called glucose homeostasis. This is accomplished by the finely hormone regulation of peripheral glucose uptake (glucose utilization), hepatic glucose production and glucose uptake during carbohydrates ingestion.

Metabolic Regulation

Nutrition and Epigenetics presents new information on the action of diet and nutritional determinants in regulating the epigenetic control of gene expression in health and disease. Each chapter gives a unique perspective on a different nutritional or dietary component or group of components, and reveals novel mechanisms by which dietary factors modulate the epigenome and affect development processes, chronic disease, and the aging process. This pivotal text: Documents the epigenetic effect of antioxidants and their health benefits Adds to the understanding of mechanisms leading to disease susceptibility and healthy aging Illustrates that the epigenetic origins of disease occur in early (fetal) development Synthesizes the data regarding nutrient and epigenomic interactions Nutrition and Epigenetics highlights the interactions among nutrients, epigenetics, and health, providing an essential resource for scientists and clinical researchers interested in nutrition, aging, and metabolic diseases.

Seldin and Giebisch's The Kidney

Carbohydrates are the most abound macromolecules on earth, and they serve different functions within the cell. The purpose of the book is to provide a glimpse into various aspects of carbohydrates by presenting the research of some of the scientists who are engaged in the development of new tools and ideas used to reveal carbohydrate metabolism in health and diseases and as material to mimic the carbohydrate surfaces that take part in molecular recognition, often from very different perspectives. This book covers broad topics in carbohydrate including quality carbohydrates on the prevention and therapy of noncommunicable diseases, lactate, and glycolysis, as biomass in biofuel production, targets for cancer treatment and as biomaterial.

The Scientist's Guide to Cardiac Metabolism

Functional Biochemistry in Health and Disease provides a clear and straightforward account of the biochemistry that is necessary to understand the physiological functions of tissues or organs essential to the life of human beings. Focusing on the dynamic aspects of biochemistry and its application to the basic functions of the body, the book bridges the gap between biochemistry and medical practice. Carefully structured within five sections, each biochemical, physiological or medical subject that is covered in the book is presented in one complete chapter. Consequently, each subject can be read and studied in isolation although cross-sectional links between the subjects are included where necessary. Background material, both biochemical and medical, that is necessary for an understanding of the subject, is included at the start of each chapter and clear, relevant diagrams enhance students' understanding. Focuses on medically relevant aspects of biochemistry written from a physiological rather than a chemical perspective. Clear presentation that minimises the use of jargon. Each chapter contains boxes on related topics, relevant diagrams and a brief glossary. Coverage includes athletic performance, apoptosis and the immune system. Key historical developments are included to show how modern biochemistry has evolved. By linking biochemistry, medical education and clinical practice this book will prove invaluable to students in medical and health sciences, biomedical science and human biology taking an introductory biochemistry course. In addition it will appeal to biochemistry and biology students interested in clinical applications of biochemistry.

Metabolic & Therapeutic Aspects of Amino Acids in Clinical Nutrition

This "real-world" approach allows students to come away with a realistically informed view of the basis for much of our understanding of nutritional biochemistry.

New Perspectives in Adipose Tissue

Nutrient Metabolism, Second Edition, provides a comprehensive overview of the supply and use of nutrients in the human body and how the body regulates intake. Chapters detail the principles determining digestion and absorption of food ingredients and how these compounds and their metabolites get into the brain, cross the placenta and pass through the kidneys. Each nutrient’s coverage contains a nutritional summary that describes its function, its food sources, dietary requirements, potential health risks if deficient, and impact of excessive intake. This handbook contains the latest information on the scope of structures, processes, genes and cofactors involved in maintaining a healthy balance of nutrient supplies. Of interest to a wide range of professionals because nutrient issues connect to so many audiences, the book contains a useful link to dietary supplements. Latest research findings on health and clinical effects of nutrients and of interventions affecting nutrient supply or metabolism Each nutrient covered contains a nutritional summary describing its function, food sources, dietary requirements, potential health risks if deficient, and impact of excessive intake. Nutrient information immediately accessible--from source to effect--in one volume

Cell Biology

The Encyclopedia of Food and Health provides users with a solid bridge of current and accurate information spanning food production and processing, from distribution and consumption to health effects. The Encyclopedia comprises five volumes, each containing comprehensive, thorough coverage, and a writing style that is succinct and straightforward. Users will find this to be a meticulously organized resource of the best available summary and conclusions on each topic. Written from a truly international perspective, and covering of all areas of food science and health in over 550 articles, with extensive cross-referencing and further reading at the end of each chapter, this updated encyclopedia is an invaluable resource for both research and educational needs. Identifies the essential nutrients and how to avoid their deficiencies Explores the use of diet to reduce disease risk and optimize health Compiles methods for detection and quantitation of food constituents, food additives and nutrients, and contaminants Contains coverage of all areas of food science and health in nearly 700 articles, with extensive cross-referencing and further reading at the end of each chapter

Brain Energy Metabolism

This book consists of an introductory overview of secondary metabolites, which are classified into four main sections: microbial secondary metabolites, plant secondary metabolites, secondary metabolites through tissue culture technique, and regulation of secondary metabolite production. This book provides a comprehensive account on the secondary metabolites of microorganisms, plants, and the production of secondary metabolites through biotechnological approach like the plant tissue culture method. The regulatory mechanisms of secondary metabolite production in plants and the pharmaceutical and other applications of various secondary metabolites are also highlighted. This book is considered as necessary reading for microbiologists, biotechnologists, biochemists, pharmacologists, and botanists who are doing research in secondary metabolites. It should also be useful to MSc students, MPhil and PhD scholars, scientists, and faculty members of various science disciplines.

Plant Metabolites and Regulation under Environmental Stress

In order to complete tissue regeneration, various cells such as neuronal, skeletal, smooth, endothelial, and immune (e.g., macrophage) interact smoothly with each other. This book, Muscle Cells and Tissues, offers a wide range of topics such as stem cells, cell culture, biomaterials, epigenetics, therapeutics, and the creation of tissues and organs. Novel applications for cell and tissue engineering including cell therapy, tissue models, and disease pathology modeling are discussed. The book also deals with the functional role of autophagy in modulating muscle homeostasis and molecular mechanism regulating skeletal muscle mass. The chapters can be interesting for graduate students, postdocs, teachers, physicians, and for executives in biotech and pharmaceutical companies, as well as researchers in the fields of molecular biology and regenerative medicine.

Folate in Health and Disease

A classic nephrology reference for over 20 years, Seldin & Giebisch’s The Kidney, is

the acknowledged authority on renal physiology and pathophysiology. The fourth edition follows the changed focus of nephrology research to the study of how individual molecules work together to affect cellular and organ function, emphasizing the mechanisms of disease. With over 40 new chapters and over 1000 illustrations, this edition offers the most in-depth discussion anywhere of the physiologic and pathophysiologic processes of renal disease. Comprehensive, authoritative coverage progresses from molecular biology and cell physiology to clinical issues regarding renal function and dysfunction. If you research the development of normal renal function or the mechanisms underlying renal disease, Seldin & Giebisch's The Kidney is your number one source for information. * Offers the most comprehensive coverage of fluid and electrolyte regulation and dysregulation in 51 completely revised chapters unlike Brenner & Rector's The Kidney which devotes only 7 chapters to this topic. * Includes 3 sections, 31 chapters, devoted to regulation and disorders of acid-base homeostasis, and epithelial and nonepithelial transport regulation. Brenner & Rector's only devotes 5 chapters to these topics. * Previous three editions edited by Donald Seldin and Gerhard Giebisch, world renowned names in nephrology. The title for the fourth edition has been changed to reflect their considerable work on previous editions and they have also written the forward for this edition. * Over 20 million adults over age 20 have chronic kidney disease with the number of people diagnosed doubling each decade making it America's ninth leading cause of death.

Carbohydrate

The important Third Edition of this successful book conveys a modern and integrated picture of metabolism and metabolic regulation. Explaining difficult concepts with unequalled clarity, author Keith Frayn provides the reader with an essential guide to the subject. Covering topics such as energy balance, body weight regulation and how the body copes with extreme situations, this book illustrates how metabolic regulation allows the human body to adapt to many different conditions. Changes throughout the new edition include: Extensive chapter updates Clear and accessible 2-color diagrams Q&A sections online at www.wiley.com/go/frayn to facilitate learning Frayn has written a book which will continue to be an extremely valuable tool for scientists, practitioners and students working and studying across a broad range of allied health sciences including medicine, biochemistry, nutrition, dietetics, sports science and nursing.

Metabolic Control

Brain Energy Metabolism addresses its challenging subject by presenting diverse technologies allowing for the investigation of brain energy metabolism on different levels of complexity. Model systems are discussed, starting from the reductionist approach like primary cell cultures which allow assessing of the properties and functions of a single brain cell type with many different types of analysis, however, at the expense of neglecting the interaction between cell types in the brain. On the other end, analysis in animals and humans in vivo is discussed, maintaining the full complexity of the tissue and the organism but making high demands on the methods of analysis. Written for the popular Neuromethods series, chapters include the kind of detailed description and key implementation advice that aims to support reproducible results in the lab. Meticulous and authoritative, Brain

Energy Metabolism provides an ideal guide for researchers interested in brain energy metabolism with the hope of stimulating more research in this exciting and very important field.

Human Metabolism

The HEP issue on Metabolic Control provides a state-of the art overview over both classical concepts and emerging areas in metabolism and associated disorders. In this context, metabolic control is highlighted at various levels of complexity ranging from transcriptional mechanisms in metabolic pathway control over metabolic communication routes in physiology and pathophysiology to current treatment modalities and options in metabolic disorders, including type 2 diabetes and obesity. Dedicated chapters by leading experts in their fields provide a concise overview over important areas in metabolic research at a molecular level, including the role of the central nervous system in metabolism, inflammation and metabolism, pancreatic hormone signaling, brown adipose tissue, and therapeutic concepts.

The Metabolic Ghetto

Metabolic Regulation looks in detail at how molecules, cells and tissues operate collectively in human health and disease, using an approach that has become known as ‘integrative physiology’. Since the publication of the first edition of this extremely well received book, the understanding of how metabolism is regulated has developed substantially in several ways, for example with the discovery of the hormone leptin, and also in the continuing advances in the understanding of gene expression. Full details of these and other new advances are included in this fully updated edition. Carefully laid out with relevant and clearly explained examples, and containing much new material, this new edition covers in an integrated way: concepts and mechanisms, digestion and intestinal absorption, organs and tissues, endocrine organs and hormones, the integration of carbohydrate, fat and protein metabolism, the nervous system and metabolism, lipoprotein metabolism, diabetes mellitus, energy balance and body weight regulation and how the body copes with some extreme situations. The author, Keith Frayn, who has many years’ experience teaching and researching in this subject, has written a book of great clarity, which is an extremely valuable tool for scientists, practitioners and students working and studying across a broad range of allied health sciences including nutrition, dietetics, sports science and nursing. Students of medicine, physiology, biochemistry and biological sciences will also find much of great use and interest in this book. All libraries in research establishments, universities and medical schools where these subjects are studied and taught should have multiple copies of this excellent book on their shelves. Keith Frayn is Professor of Human Metabolism at the University of Oxford, UK.Reviews of the First Edition ‘This is an excellent textbook’: Trends in Endocrinology and Metabolism ‘The coverage is excellent for students following courses such as nutrition and human biology’:Biologist ‘This book is ideal for medical students’:Australian Society for Biochemistry and Molecular Biology

Protein Carbonylation

Liver Regeneration: Basic Mechanisms, Relevant Models and Clinical Applications presents cutting-edge information on liver regeneration research through an integrated, systems-wide perspective. The book addresses discoveries on hepatic progenitor cells, liver regeneration after chemical damage, and liver regeneration as a prime therapy for liver failure and disease. By addressing the urgent need for translating basic research findings into clinically relevant modalities and potential therapeutic applications, the book provides the data needed to improve liver patient management. Hundreds of full-color, graphic photographs and illustrations underline key elements and show researchers and students important aspects of liver transplantation, immunofluorescence, and other techniques used in liver regeneration. Summarizes current liver regeneration studies and discussions on expected discoveries Provides an overview of standard scientific and cutting-edge technologies to study liver regeneration Presents details on the molecular mechanisms that affect liver regeneration Highly illustrated, with hundreds of full-color, graphic photographs and illustrations to enhance the learning process

Nutritional Biochemistry

B-group vitamins are involved in numerous metabolic reactions and their widespread deficiency can cause a large series of health problems. The aim of this book is to provide an update on the current use and perspectives of B-group vitamins. Novel methods to detect folates in pregnant women, the use and role of folate dentistry, the use of genotype notification to modify food intake behavior, thiamin metabolism in Archaea and its role in plants and in crop improvement, the use of riboflavin in blood safety and niacin in metabolic stress and resistance in dairy cows are some of the subjects that are described in this multitopic book written by authors from seven different countries.

Metabolic Regulation in Mammals

Metabolism at a Glance presents a concise, illustrated summary of metabolism in health and disease. This essential text is progressively appropriate for introductory through to advanced medical and biochemistry courses. It also provides a succinct review of inborn errors of metabolism, and reference for postgraduate medical practitioners and biomedical scientists who need a resource to quickly refresh their knowledge. Fully updated and extensively illustrated, this new edition of Metabolism at a Glance is now in full colour throughout, and includes new coverage of sports biochemistry; the metabolism of lipids, carbohydrates and cholesterol; glyceroneogenesis, α-oxidation and ω-oxidation of fatty acids. It also features the overlooked “Krebs Uric Acid Cycle”. Metabolism at a Glance offers an accessible introduction to metabolism, and is ideal as a revision aid for students preparing for undergraduate and USMLE Step 1 exams.

Protein Nutrition and Mineral Absorption

Plant Metabolites and Regulation Under Environmental Stress presents the latest research on both primary and secondary metabolites. The book sheds light on the metabolic pathways of primary and secondary metabolites, the role of these metabolites in plants, and the environmental impact on the regulation of these

metabolites. Users will find a comprehensive, practical reference that aids researchers in their understanding of the role of plant metabolites in stress tolerance. Highlights new advances in the understanding of plant metabolism Features 17 protocols and methods for analysis of important plant secondary metabolites Includes sections on environmental adaptations and plant metabolites, plant metabolites and breeding, plant microbiome and metabolites, and plant metabolism under non-stress conditions

RNA-Based Regulation in Human Health and Disease

New Perspectives in Adipose Tissue: Structure, Function and Development reviews the state of knowledge on adipose tissue. The book begins with discussions of the anatomy and morphology of adipose tissue. This is followed by separate chapters on the nervous control of circulation and metabolism in white adipose tissue; hormonal regulation of biosynthetic activities in white adipose tissue; hormonal control of lipid degradation; and plasma membrane properties and receptors in white adipose tissue. Subsequent chapters cover topics such as lipoproteins and adipose tissue; brown adipose tissue thermogenesis and energy balance in animals and man; methodological approaches to the study of the adipose tissues; adipose tissue growth following lipectomy; the adipocyte precursor cell; and adipose tissue dysfunction and its consequences. In addition to being authoritative source material, the chapters presented in this book are wide in their coverage and appeal.

Liver Regeneration

Animals are biological transformers of dietary matter and energy to produce high-quality foods and wools for human consumption and use. Mammals, birds, fish, and shrimp require nutrients to survive, grow, develop, and reproduce. As an interesting, dynamic, and challenging discipline in biological sciences, animal nutrition spans an immense range from chemistry, biochemistry, anatomy and physiology to reproduction, immunology, pathology, and cell biology. Thus, nutrition is a foundational subject in livestock, poultry and fish production, as well as the rearing and health of companion animals. This book entitled Principles of Animal Nutrition consists of 13 chapters. Recent advances in biochemistry, physiology and anatomy provide the foundation to understand how nutrients are utilized by ruminants and non-ruminants. The text begins with an overview of the physiological and biochemical bases of animal nutrition, followed by a detailed description of chemical properties of carbohydrates, lipids, protein, and amino acids. It advances to the coverage of the digestion, absorption, transport, and metabolism of macronutrients, energy, vitamins, and minerals in animals. To integrate the basic knowledge of nutrition with practical animal feeding, the book continues with discussion on nutritional requirements of animals for maintenance and production, as well as the regulation of food intake by animals. Finally, the book closes with feed additives, including those used to enhance animal growth and survival, improve feed efficiency for protein production, and replace feed antibiotics. While the classical and modern concepts of animal nutrition are emphasized throughout the book, every effort has been made to include the most recent progress in this ever-expanding field, so that readers in various biological disciplines can integrate biochemistry and physiology with nutrition, health, and

disease in mammals, birds, and other animal species (e.g., fish and shrimp). All chapters clearly provide the essential literature related to the principles of animal nutrition, which should be useful for academic researchers, practitioners, beginners, and government policy makers. This book is an excellent reference for professionals and a comprehensive textbook for senior undergraduate and graduate students in animal science, biochemistry, biomedicine, biology, food science, nutrition, veterinary medicine, and related fields.

Encyclopedia of Food and Health

Metabolic Regulation in Mammals presents the basic principles of metabolic control, based on investigations conducted during the past twenty years. It explains the impact of recent advances in cell biology, molecular biology and genetics on the field. Beginning with the basic concepts, this text covers all angles of metabolic regulation, including blood caloric homeostasis, cardiac and skeletal muscle, adipose tissue, and liver metabolism. Review questions, summary sections and worked examples help break down the complexity of the subject and allow the reader to review the principles and concepts presented. Details of metabolic pathways are provided for each body system, with accompanying charts to provide the reader with an overall perspective. This text is ideal for undergraduates across a range of biological and health science disciplines, particularly those taking one or two semester courses in metabolic regulation.

Integrative Human Biochemistry

This volume presents information regarding the mechanisms of protein absorption under normal and pathologic conditions, in addition to reviewing changes that occur at various stages of life. General modifiers of intestinal absorption, such as the processing of foods, the nutritional status of the individual, and disease, are explored with reference to both proteins and minerals. Inorganic macronutrients, namely calcium, magnesium and phosphorus, are discussed in relation to protein ingestion. The book also explores the concept of essential trace elements (e.g., iron, zinc, copper, and iodine) and their link to protein sufficiency. The relationship of ultratrace elements with the content of proteins in food is examined, and the book offers a fresh view of the role of certain elements, particularly zinc, on the conformation of proteins linked to DNA, hormone receptors, and gene products. Protein Nutrition and Mineral Absorption is packed with 2,300 references, 100 figures and graphs, plus 25 tables. Nutritionists and physicians will find this book to be an invaluable reference source for rationalizing nutritional interventions and diet modifications for their patients.

Metabolic Regulation

The Encyclopedia of Cell Biology offers a broad overview of cell biology, offering reputable, foundational content for researchers and students across the biological and medical sciences. This important work includes 285 articles from domain experts covering every aspect of cell biology, with fully annotated figures, abundant illustrations, videos, and references for further reading. Each entry is built with a layered approach to the content, providing basic information for those

new to the area and more detailed material for the more experienced researcher. With authored contributions by experts in the field, the Encyclopedia of Cell Biology provides a fully cross-referenced, one-stop resource for students, researchers, and teaching faculty across the biological and medical sciences. Fully annotated color images and videos for full comprehension of concepts, with layered content for readers from different levels of experience Includes information on cytokinesis, cell biology, cell mechanics, cytoskeleton dynamics, stem cells, prokaryotic cell biology, RNA biology, aging, cell growth, cell Injury, and more In-depth linking to Academic Press/Elsevier content and additional links to outside websites and resources for further reading A one-stop resource for students, researchers, and teaching faculty across the biological and medical sciences

B Group Vitamins

Cell biology is a multidisciplinary scientific field that its modern expansion in new knowledge and applications owes to important support of new technologies with the rapid development, such as ICTs. By integrating knowledge from nano-, molecular, micro-, and macroareas, it represents a strong foundation for almost all biological sciences and disciplines, as well as for biomedical research and application. This book is a compilation of inspiring reviews/original studies, which are divided into sections: New Methods in Cell Biology, Molecular and Cellular Regulatory Mechanisms, and Cellular Basis of Disease and Therapy. The book will be very useful for students and beginners to gain insight into new area, as well as for experts and scientists to find new facts and expand their scientific horizons through biological sciences and biomedicine.

Encyclopedia of Cell Biology

Chromatin Regulation and Dynamics integrates knowledge on the dynamic regulation of primary chromatin fiber with the 3D nuclear architecture, then connects related processes to circadian regulation of cellular metabolic states, representing a paradigm of adaptation to environmental changes. The final chapters discuss the many ways chromatin dynamics can synergize to fundamentally contribute to the development of complex diseases. Chromatin dynamics, which is strategically positioned at the gene-environment interface, is at the core of disease development. As such, Chromatin Regulation and Dynamics, part of the Translational Epigenetics series, facilitates the flow of information between research areas such as chromatin regulation, developmental biology, and epidemiology by focusing on recent findings of the fast-moving field of chromatin regulation. Presents and discusses novel principles of chromatin regulation and dynamics with a cross-disciplinary perspective Promotes crosstalk between basic sciences and their applications in medicine Provides a framework for future studies on complex diseases by integrating various aspects of chromatin biology with cellular metabolic states, with an emphasis on the dynamic nature of chromatin and stochastic principles Integrates knowledge on the dynamic regulation of primary chromatin fiber with 3D nuclear architecture, then connects related processes to circadian regulation of cellular metabolic states, representing a paradigm of adaptation to environmental changes

Nutrient Metabolism

This book covers in detail the mechanisms for how energy is managed in the human body. The basic principles that elucidate the reactivity and physical interactions of matter are addressed and quantified with simple approaches. Three-dimensional representations of molecules are presented throughout the book so molecules can be viewed as unique entities in their shape and function. The book is focused on the molecular mechanisms of cellular processes in the context of human physiological situations such as fasting, feeding and physical exercise, in which metabolic regulation is highlighted. Furthermore the book uses key historical experiments that opened up new concepts in Biochemistry to further illustrate how the human body functions at molecular level, helping students to appreciate how scientific knowledge emerges. This book also: Elucidates the foundations of the molecular events of life Uses key historical experiments that opened up new concepts in Biochemistry to further illustrate how the human body functions at molecular level, helping students to appreciate how scientific knowledge emerges Provides realistic representations of molecules throughout the book Advance Praise for Integrative Human Biochemistry “This textbook provides a modern and integrative perspective of human biochemistry and will be a faithful companion to health science students following curricula in which this discipline is addressed. This textbook will be a most useful tool for the teaching community.” –Joan Guinovart Director of the Institute for Research in Biomedicine, Barcelona, Spain President-elect of the International Union of Biochemistry and Molecular Biology, IUBMB

Anatomy and Physiology

The notion of matching diet with an individual's genetic makeup is transforming the way the public views nutrition as a means of managing health and preventing disease. To fulfill the promise of nutritional genomics, researchers are beginning to reconcile the diverse properties of dietary factors with our current knowledge of genome structure and g