Amino Acid Metabolism Hardcover

Get Free Amino Acid Metabolism Hardcover

comprehensive text covering all the latest findings in amino acid metabolism research Written by an authority in the metabolic and other disturbances of relevance to human biochemistry and health. Completely revised edition of this book the emphasis is on the nutritional importance of amino acids, integration and control of metabolism and catabolism (again mainly in human metabolism). There is also discussion of regulatory mechanisms for all these aspects. The book then details other major nitrogenous compounds in micro-organisms, plants and animals. Contents include a succinct review of hundreds of studies on the regulation of protein mass and protein turnover in the human body. The book summarizes the biochemistry of protein synthesis and breakdown, and explains the methods that are used to examine protein metabolism in humans, together with their limitations. Chapters review the effects of nutrition, hormones, metabolic substrates, and physical activity, while various topics of clinical interest include cancer, diabetes, tissue injury, pregnancy, renal disease, muscular dystrophies, and other conditions. Normal values are presented for turnover of proteins in the whole body and individual organs, and for turnover of many individual proteins. This is thus a valuable resource for physiologists, nutritionists, and clinicians interested in the regulation of body protein stores in health and disease. For scientists primarily interested in the basic aspects of protein metabolism, it shows how the basic knowledge is being applied to the study of humans.

High levels of homocysteine have been identified as a very important risk factor in cardiovascular disease. Homocysteine-related abnormalities are also thought to contribute to birth defects and dementia, and there are many common acquired diseases, drugs and genetic disorders which adversely affect the metabolism of homocysteine. In this book a multidisciplinary team of experts in the field give a clear analysis of the biochemistry, genetics, epidemiology, clinical settings, causes, impact and treatment of homocysteine disorders. This is an unusually comprehensive account of the broad range of medical, nutritional and methodological implications of homocysteine in health and disease.

A succinct review of hundreds of studies on the regulation of protein mass and protein turnover in the human body. The book summarizes the biochemistry of protein synthesis and breakdown, and explains the methods that are used to examine protein metabolism in humans, together with their limitations. Chapters review the effects of nutrition, hormones, metabolic substrates, and physical activity, while various topics of clinical interest include cancer, diabetes, tissue injury, pregnancy, renal disease, muscular dystrophies, and other conditions. Normal values are presented for turnover of proteins in the whole body and individual organs, and for turnover of many individual proteins. This is thus a valuable resource for physiologists, nutritionists, and clinicians interested in the regulation of body protein stores in health and disease. For scientists primarily interested in the basic aspects of protein metabolism, it shows how the basic knowledge is being applied to the study of humans.

Sulfur is one of the most versatile elements in life. This book provides, for the first time, an in-depth and integrated coverage of the functions of sulfur in phototrophic organisms including bacteria, plants and algae. It bridges gaps between biochemistry and cellular biology of sulfur in these organisms, and of biology and environments dominated by them. The book therefore provides a comprehensive overview of plant sulfur relations from genome to environment.

Amino Acid Metabolism, 3rd Edition covers all the aspects of the biochemistry and nutritional biochemistry of the amino acids. Starting with an overview of nitrogen fixation and the incorporation of inorganic nitrogen into amino acids, the book then details other nitrogenous compounds in micro-organisms, plants and animals. Contents include a discussion of the catabolism of amino acids and other nitrogenous compounds in animals, and the microbiological reactions involved in release of nitrogen gas back into the atmosphere. Mammalian (mainly human) protein and amino acid requirements are considered in detail, and the methods that are used to determine them. Chapters consider individual amino acids, grouped according to their metabolic origin, and discussing their biosynthesis (in plants and micro-organisms for those that are dietary essentials for human beings), major metabolic roles (mainly in human metabolism) and catabolism (again mainly in human metabolism). There is also discussion of regulatory mechanisms for all these metabolic pathways, and of metabolic and genetic diseases affecting the (human) metabolism of amino acids. Throughout the book the emphasis is on the nutritional importance of amino acids, integration and control of metabolism and metabolic and other disturbances of relevance to human biochemistry and health. Completely revised edition of this comprehensive text covering all the latest findings in amino acid metabolism research Written by an authority in the field Covers new advances in structural biology Clear illustrations of all structures and metabolic pathways Full list
of recommended further reading for each chapter and bibliography of papers cited in the text.

This book presents the current knowledge of fundamental as well as applied microbiology of amino acids. Coverage details the amino acid biosynthetic pathways, their genetic and biochemical regulation, transport of amino acids and genomics of producing microorganisms. The book also examines the metabolic engineering of microorganisms for the biotechnological production of amino acids for use as pharmaceuticals and as food and feed additives.

Collected Papers from the Seventh International Symposium on Biochemical Aspects of Kidney Function, Bratislava, 9-12 April 1984

This proceedings volume contains the invited and a selection of the contributed papers of the 8th International Workshop on Sulfur Metabolism in Higher Plants, which was held at Department of Forest and Ecosystem Science, University of M Offenburg, Water Street, Creswick, Victoria 3363, Australia from November 22-27, 2010. Content of the volume shows that the understanding of sulfur metabolism in plants and the interaction of the environment are rapidly progressing. This volume covers various aspects of the regulation of sulfate uptake and assimilation in plants, from a cellular to a whole plant level, and additionally emphasizes interactions with other minerals. It provides the significance of sulfur metabolism in biotic and abiotic stress responses, in food security and quality, and in relation to interactions with global change factors is discussed in detail.

Containing all the new as well as classical methodologies used in the investigation of amino acid and protein metabolism in human and animal models, this book is needed because of the dramatic increase in research in this field. There is no other book currently on the market that covers these methods of investigation. Methods for Investigation of Amino Acid and Protein Metabolism explores areas such as amino acid transfer across tissue membranes, past and new applications using stable isotopes, protein synthesis in organs and tissues, and more. Because of the importance of research methods in the field of amino acid and protein nutrition and metabolism, this book facilitates the reader's integration of the concepts involved in these investigative research methods and their corollaries. In addition to helping any nutrition investigator design and conduct appropriate research protocols in this area of nutrition, this book assists students who are planning to investigate amino acid and protein metabolism in humans or laboratory animals.

This volume is based on papers presented by invited speakers at a symposium entitled "Plant Nitrogen Metabolism" held in conjunction with the 28th Annual Meeting of the Phytochemical Society of North America. The meeting took place on the campus of the University of Iowa at Iowa City during June 26-30, 1988, and attracted 110 participants from 11 countries. The goal of the symposium was to trace the pathway by which nitrogen passes from soil and atmosphere into both primary and secondary nitrogenous metabolites, focusing upon areas which were felt to be most rapidly expanding. From nodulin (nodule specific proteins) and GS/GOGAT mutants to sugar mimics (polyhydroxalkaloids) and herbicide inhibitors of amino acid metabolism, research in nitrogen metabolism has expanded into areas barely envisioned only a few years ago. Both the newer specialists and the general plant biologist will be pleased by the range of topics covered here. Following an overview in Chapter 1 of plant nitrogen metabolism, the remaining chapters are loosely organized into three groups. Chapters 2-6 deal primarily with the biochemistry and molecular biology of nitrogen assimilation and transport, Chapters 7-9 with amino acid metabolism, and Chapters 10-12 with secondary metabolites.

This book explains about amino acids (A As) which are not only building blocks of protein, but are also signaling molecules as well as regulators of gene expression and the protein phosphorylation cascade. Additionally, A As are key precursors for syntheses of hormones and low-molecular-weight nitrogenous substances with each having enormous biological importance. For example, physiological concentrations of A As (e.g., nitric oxide, polyamines, glutathione, taurine, thyroid hormones, and serotonin) are required for cell functions. Growing evidence shows that humans and animals have dietary requirements for all proteinogenic A As. Mammals, birds, and fish also have species- and age-dependent needs for some A A-related substances. However, elevated levels of other products (e.g., ammonia, homocysteine, H2S, and asymmetric dimethylarginine) are pathogenic factors for neurological disorders, oxidative stress, and cardiovascular disease. Thus, optimal amounts of A A and their ratios in diets and circulation are crucial for whole-body homeostasis and health. Adequate provision of one or a mixture of functional A As or metabolites may be beneficial for ameliorating health problems at various stages of the life cycle (e.g., fetal growth restriction, neonatal morbidity and mortality, weaning-associated intestinal dysfunction and wasting syndrome, obesity, diabetes, cardiovascular disease, the metabolic syndrome, and infertility). Dietary supplementation of these nutrients can also optimize the efficiency of metabolic transformations to enhance muscle growth, milk production, and athletic performance, while preventing excess fat deposition and reducing adiposity. Therefore, functional A As hold great promise in improving the growth, health, and well-being of individuals.

This volume covers some of the most widely used protocols on noncanonical amino acids, providing detailed advice and advice for users to get each method up and running for their chosen application. Chapters have been divided into three parts describing methods for protein production in the test tube, in prokaryotes, and in eukaryotes. Written in the highly successful Methods in Molecular Biology series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Authoritative and practical, Noncanonical Amino Acids: Methods and Protocols aims to provide readers with techniques that enable them to design new experiments and create new areas of research.

Biochemistry Second Edition, is a single-semester text designed for undergraduate non-biochemistry majors. Accessible, engaging, and informative, it is the perfect introduction to the subject for students who may approach chemistry with apprehension. Its unique emphasis on metabolism and its kinetic underpinnings gives the text up-to-the-minute relevance for students investigating current public health concerns, such as obesity and diabetes. Biochemistry Second Edition will encourage students to explore the basics of chemistry and its influence on biological problems. Key Features: Provides an understanding of (mostly) enzymatic reactions that are responsible for the function and maintenance of living things. This innovative text for non-biochemistry majors includes introductory material at the beginning of each chapter that contextualizes chapter themes in real-life scenarios. Online supporting materials with further opportunities for research. Synthesis questions at the end of each chapter that encourage students to make connections between concepts and ideas, as well as develop critical-thinking skills. About the Authors: Raymond S. Ochs is a biochemist with a career-long specialty in metabolism spanning 30 years. Previously, he has written textbooks on biochemistry, contributed the metabolism chapters to another text, Principles of Biochemistry, and co-edited a collection of articles published as Metabolic Regulation, and the recent monograph Metabolic Structure and Regulation. His research interests concern major pathways of liver and muscle metabolism, including glycolysis, gluconeogenesis, ureagenesis, fatty acid metabolism, glycoprotein metabolism, and control by AMP, CAMP, Ca2+, diacylglycerol, and AMPK. He is currently professor of pharmacy at St. John's University in New York, teaching biochemistry, physiology, and medicinal chemistry.

Extensively updated with all chapters rewritten and double the information and references, Amino Acid Cids and Proteins for the Athlete: The Anabolic Edge, Second Edition reflects the nearly exponential increase in data and knowledge in the
past few years regarding the use of amino acids and proteins to enhance athletic performance. This groundbreaking book is written by physician Mauro Di Pasquale, two-time Pan American, two-time North American, and eight-time Canadian Powerlifting Champion. Dr. Di Pasquale served as an advisor to the World Wrestling and World Bodybuilding Federations, has written for numerous health and bodybuilding publications, and has published several books and newsletters on sports-related issues. In this volume, he imparts his scientific knowledge as well as lessons learned from his own athletic achievement to give professional and recreational athletes the tools they need to improve performance using nutrition and natural performance-enhancing alternatives to drug use. The book begins with a brief review of energy and protein metabolism before describing the positive impact of supplementation on athletic performance, health, disease, and longevity. It reveals the actions of protein and amino acid supplements on muscle size and strength and energy metabolism as well as the role of specific amino acid supplements. The second part of the book, the practical how-to section, Naturally Anabolic, advises the athlete on ways to achieve maximum progress while avoiding the use of anabolic drugs. It provides the inspiration to use nutrition to manipulate anabolic/hormones naturally, and how to lose body fat without sacrificing muscle. The final chapter reveals the secrets of powerful nutritional supplements that can enhance an athlete’s performance. By following Dr. Di Pasquale’s time-tested advice, athletes will get the inside edge over the competition and take their achievement to the next level.

This book summarizes 20 years of work on the kinetics of blood-brain transfer and metabolism mechanisms in mammalian brain. The substances affiliated with these mechanisms include glucose, amino acids, monocarboxylic acids, and oxygen. These substances are important to energy metabolism and neurotransmission in the mammalian brain at rest and during activation. To understand these mechanisms, the book examines the kinetics of compartmental and compartmental analysis, particularly as it relates to transporter, enzyme, and receptor function. Compartments are subsets of substances separated by transporters and receptors in membranes, and enzymes in cells. This book is divided in six major chapters covering compartmental analysis, kinetic analysis of transport and metabolism, blood-brain transfer and metabolism of glucose, amino acids, and oxygen, and amino acid metabolism and interaction of amino acid metabolites with receptors.

The complex roles of glutathione and sulfur amino acids in human health Glutathione (GSH) is a major antioxidant acting as a free radical scavenger that protects the cell from reactive oxygen species (ROS). Sulfur-containing amino acids (SCAA), such as methionine and cysteine, play a critical role in the maintenance of health. GSH depletion as well as alterations of SCAA metabolism are linked to a host of disease states including liver cirrhosis, various pulmonary diseases, myocardial ischemia and reperfusion injury, aging, Parkinson’s disease, Alzheimer’s disease, sepsis, and others. This book provides researchers with a comprehensive review of the biochemistry, absorption, metabolism, biological activities, disease prevention, and health promotion of glutathione and sulfur amino acids. The twenty-two chapters explore such topics as: Chemistry, absorption, transport, and metabolism of GSH and sulfur amino acids Antioxidant and detoxification properties of GSH and sulfur amino acids, highlighting the enzymatic systems involved in antioxidant defenses Biological activities of GSH and sulfur amino acids and their role in modulating cell processes: Role of GSH and sulfur amino acids in the onset of diseases and in aging Protective effects exerted by GSH and sulfur amino acids when used as drugs, functional foods, and nutraceuticals in humans and animal’s Special attention is paid to the molecular mechanisms for the modulation of transcription factors and enzyme activities, as well as the nutritional and therapeutic significance of dietary sulfur amino acids as shown in human and animal models. With more than 2,000 scientific references, this book provides food scientists, nutritionists, biochemists, food technologists, chemists, molecular biologists, and public health professionals with a comprehensive and up-to-date examination of glutathione and sulfur amino acids in human health and disease.

This book is indispensable to researchers in fields as diverse as Molecular Biology and Biophysics. It covers the important role that mitochondria play in a variety of biochemical spheres. It analyses how mitochondria affect metabolic pathways, how they are active in the regulation of cytosolic constituents, and their role in initiating signal pathways. A iso covered are the way mitochondria help to regulate apoptosis, and how they modulate cellular hypertrophy and proliferation. It gives an overview of the emergence of mitochondria as an important regulator of cell signaling, with a particular focus on their pathophysiology.

Glutamine is the most abundant amino acid and is a major contributor to whole body nitrogen metabolism and is considered to be “conditionally essential.” Glutamine in Health and Disease presents the application of current nutritional knowledge by physicians and dietitians and incorporates emerging fields of science and important discoveries. Section 1 covers glutamine function, glutamine synthetase, glutamine binding protein, glutamine transport, glutamine-rich activation domains and transcription, glutamine transaminase and cell biochemistry. Section 2 covers glucose-independent glutamine metabolism, intestinal barrier function, thyroid-stimulating hormone, glutamine reabsorptions, focal ischemia, plasma glutamine, metabolic stress, cancer and absorption. Section 3 covers dipeptide-bound glutamine, DNA protection, oxidative stress, N-acetylglucosamine, the inflammatory response, the lung, kidney, G1 tract and liver, autophagy, ethanol and diabetes. Finally, Section 4 covers the use of glutamine in preoperative states, enteral and parenteral nutrition, pulmonary infections, cancer, hypoxic injury, arginyl-glutamine, paediatrics, pancreatic surgery, the elderly, gastric emptying gastric bypass and use glutamine cocktails. Written by authors of international and national standing, leaders in the field and trendsetters, Glutamine in Health and Disease is essential reading for nutritionists and dietitians, public health scientists, physicians, epidemiologists, policy makers, and health care professionals of various disciplines.

Bridges the gap between nutrition research and its practical application to children with developmental and chronic disorders. A look at the role of nutrition in prenatal and postnatal growth, and the evaluation of nutritional status, the authors provides succinct accounts of a wide range of pediatric disorders that present special nutritional problems. Each chapter is organized to cover biochemical and clinical abnormalities, techniques in nutrition evaluation, nutritional management, and follow-up procedures. Among the diverse conditions covered in this volume is neurogenetic disorders, behavioral disorders, drug toxicity, obesity, cancer, diabetes, and iron deficiency of nutrition. A companion study guide is available from the author.

This is the first volume in a 2-volume compendium that is the go-to source for both research- and practice-oriented information on branched chain amino acids in maintaining the nutritional status and overall health of individuals, especially those with certain disease conditions. Over 150 well recognized and respected contributors have come together to compile these up-to-date and well-referenced works. The volumes will serve the reader as the benchmarks in this complex area of interrelationships between dietary protein intake and intestinal amino acid supplementation, the unique role of the branched chain amino acids in the synthesis of brain neurotransmitters, collagen formation, insulin and glucose modulation and the functioning of all organ systems that are involved in the maintenance of the body’s metabolic integrity. Moreover, the physiological, genetic and pathological interactions between plasma levels of branched chain amino acids and aromatic amino acids are clearly delineated so that students as well as practitioners can better understand the complexities of these interactions. Branched Chain Amino Acids in Clinical Nutrition: Vol 1 covers basic processes at the cellular level, inherited defects in branched chain amino acid metabolism, and experimental models of growth and disease states.
Discusses the general metabolism of amino acids and other nitrogenous compounds and the detailed metabolism of individual amino acids with special reference to problems of human nutrition, medical biochemistry and disease.

Fundamental biochemical studies of basic brain metabolism focusing on the neurotransmitter amino acids glutamate and GABA combined with the seminal observation that one of the key enzymes, glutamine synthetase is localized in astroglial cells but not in neurons resulted in the formulation of the term “The Glutamate-Glutamine Cycle.” In this cycle glutamate released from neurons is taken up by surrounding astrocytes, amidated by the action of glutamine synthetase to glutamine which can be transferred back to the neurons. The conversion of glutamate to glutamine is like a stealth technology, hiding the glutamate molecule which would be highly toxic to neurons due to its excitotoxic action. This series of reactions require the concerted and precise interaction of a number of enzymes and plasma membrane transporters, and this volume provides in-depth descriptions of these processes. Obviously such a series of complicated reactions may well be prone to malfunction and therefore neurological diseases are likely to be associated with such malfunction of the enzymes and transporters involved in the cycle. This aspect is also discussed in several chapters of the book. A number of leading experts in neuroscience including intermediary metabolism, enzymology and transporter physiology have contributed to this book which provides comprehensive discussions of these different aspects of the functional importance of the glutamate-glutamine cycle coupling homeostasis of glutamatergic, excitatory neurotransmission to basic aspects of brain energy metabolism. This book will be of particular importance for students as well as professionals interested in these fundamental processes involved in brain function and dysfunction.

This edited volume comprehensively highlights recent advances in the metabolism, nutrition, physiology, and pathobiology of amino acids in all the systems of human bodies and other animals (including livestock, poultry, companion animals, and fish). It enables readers to understand the crucial roles of amino acids and their metabolites in the health and diseases of the circulatory, digestive, endocrine, immune, muscular, nervous, reproductive, respiratory, skeletal, and urinary systems, as well as the sense organs (eyes, ears, nose, skin, and tongue). Readers will learn that amino acids are not only the building blocks of proteins, but are also signalling molecules, as well as regulators of gene expression, metabolic processes and developmental changes in the body. This knowledge will guide nutritional practices to improve the growth, development and health of humans and other animals, as well as prevent and treat chronic (e.g., obesity, diabetes, and cardiovascular disorders) and infectious (e.g., bacterial, fungal, parasite, and viral) diseases. Each disease-related chapter begins with a detailed description of the patient and the delineating symptoms used for diagnosis, according to type of disorder, organ system affected (e.g., liver, kidney, etc) or phenotype (e.g., neurological, hepatic, muscular, etc). The clinical and laboratory data characteristic of rare metabolic conditions can be found in the appendix of each chapter. The book presents the latest findings on amino acid fermentation and reviews the 50-year history of their development. Amino Acid Analysis (AAA) is an integral part of analytical biochemistry. In a relatively short time, the variety of AAA methods has evolved dramatically with more methods shifting to the use of mass spectrometry (MS) as a detection method. Amino acid fermentation and related aspects of brain energy metabolism. This book will be of particular importance for students as well as professionals interested in these fundamental processes involved in brain function and dysfunction.

This book presents the latest findings on amino acid metabolism and reviews the 55-year history of their development. The book is divided into four parts, the first of which presents a review of amino acid fermentation, past and present. The second part focuses on recent advances in amino acid metabolism and functional genomics. The third part introduces new topics for future research directions in amino acid production systems. The new field, “amino acid production”, was created by the progress of academic research and industrial development. In 1968, the Japanese researcher K. Ikunaga (Ike) discovered glutamate as an Umanai substance. Then a new season, M5G (monosodium glutamate), was commercialized. Although glutamate was extracted from the hydrolyzed wheat or soybean in the early days, a new production method was subsequently invented - “fermentation” - in which glutamate is produced from sugars such as glucose by a certain bacterium called Corynebacterium. The topic of this volume is particularly connected in a significant way with biochemical, biotechnological, and microbial fields. Both professionals in industry and an academic audience will understand the importance of this volume.

This book, combining and updating two previous editions, is a unique reference work on the diagnosis, treatment, and follow-up of metabolic diseases. The clinical and laboratory data characteristic of rare metabolic conditions can be bewildering for both clinicians and laboratory personnel. Reference laboratory data are scattered, and clinical descriptions may be obscure. The Physician’s Guide documents the features of more than five hundred conditions, grouped according to type of disorder, organ system affected (e.g., liver, kidney, etc) or phenotype (e.g., neurological, hepatic, etc). Relevant clinical findings are provided and pathological values for diagnostic metabolites highlighted. Guidance on appropriate biochemical genetic testing is provided. Established experimental therapeutic protocols are described, with recommendations on follow-up and monitoring. The authors are acknowledged experts, and the book will be a valuable desk reference for all who deal with inherited metabolic diseases.

Each disease-related chapter begins with a detailed description of the patient and the delineating symptoms used for establishing the differential diagnosis. The highly detailed figures illustrate the metabolic derangement in a uniform way, together with essential aspects of the involved pathways, thus affording clarification and better understanding of the treatment. Topics covered range from general aspects such as the clinical approach, emergency treatment, diagnostic procedures, and psychosocial care for the child and the family, to specific discussions of new modes of treatment, including liver, bone marrow transplantation and somatic gene therapy.

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.

This book presents a comprehensive overview of the roles of 7-amino acids and latest research findings, to reveal their fascinating aspects and to facilitate better understanding of their important roles in physiology and diseases. It also provides useful hints for the development of drugs and functional foods. 7-Amino acids were once called unnatural amino acids and were considered to be insignificant for eukaryotes especially in mammals. However, different 7-amino acids have been revealed to be distributed in various mammalian tissues and to bear important physiological roles. For example, 7-serine is implicated in memory formation and learning, and its normal concentration in tissues have been reported in neurological diseases such as schizophrenia and amyotrophic lateral sclerosis. 7-Sparate is found in a variety of mammalian tissues, particularly in the central nervous system and the genitals. 7-Sparate facilitates the endocrine secretion of prolactin, inhibits the secretion of melatonin, and plays a peculiar role in the control of reproductive functions in mammals, including the stimulation of testosterone synthesis. Written by the leading scientists in the field, this book is a valuable source of information for researchers in biochemistry, physiology, and neuroscience, as well as in the pharmaceutical and food industries.

Functional Metabolism of Cells is the first comprehensive survey of metabolism, offering an in-depth examination of metabolism and regulation of carbohydrates, lipids, and amino acids. It provides a basic background on metabolic regulation and adaptation as well as the chemical logic of metabolism, and covers the interrelationship of metabolism to life processes of the whole organism. This book lays out a structured approach to the metabolic basis of disease, including discussion of the normal pathways of metabolism, altered pathways leading to disease, and use of molecular genetics in diagnosis and treatment of disease. It also takes a unique comparative approach in which human metabolism is a reference for metabolism in microorganisms and plant design, and presents novel coverage of development and aging, and human health and animal adaptation. The final chapter reviews the past and future promise of new genetic approaches to treatment and prevention. The most exhaustive treatment of metabolism currently available, it is a useful text for advanced undergraduates and graduates in biochemistry, cell/molecular biology, and biomedicine, as well as biochemistry instructors and investigators in related fields.

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 color. It includes new coverage of sports biochemistry, the metabolism of lipids, carbohydrates and cholesterol; glyceroneogenesis, 7-oxidation and 7-oxidation of fatty acids. It also features the overlooked “k rebs 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.

Human health issues relating to amino acids are extremely broad and include metabolic disorders of amino acid metabolism as well as their presence in food and use as supplements. This book covers the biochemistry of amino acid metabolism in the context of health and disease. It discusses their use as food supplements, in clinical therapy and nutritional support and focuses on major recent developments, highlighting new areas of research that will be needed to sustain further interest in the field.

This text is intended for an introductory course in bio metabolism concludes with photosynthesis. The last sec chemistry. While such a course draws students from various disciplines of the book, Part IV, TRANSFER OF GENETIC INFOR chemistry and organic chem explore the expression of genetic information, replication, expression, translation, and translation are covered in this or my main goal in writing this book was to produce such a text. To allow for varying student backgrounds and for possible needs of refreshers, a number of topics are included as parts with a basic body of biochemical knowledge and a thorough exposition of fundamental biochemical con four appendixes. These cover acid-base calculations, principles of cept, including full definitions of key terms. My aim has been to present this material in a reasonably balanced oxidation-reduction reactions, form by neither deluging central topics with excessive de Each chapter includes a summary, a list of selected tail nor slighting secondary topics by extreme brevity. Readings, and a comprehensive study section that consists of every author of an introductory text struggles with of three types of review questions and a large number of the problem of what to include in the coverage. My guide problems.

Life has evolved as a unified system; no organism exists similar role also has been suggested for fatty acids from alone, but each is in intimate contact with other organisms. Nonprotein amino acids, catabolic glyco and its environment. Historically, it was easier for workers sides, and the non-fatty-acid portion of cyano-compounds also are in various disciplines to delimit artificially their respective incorporated into primary metabolites during germination. Areas of research, rather than attempt to understand the entire Secondary metabolites of these structural types are accumu system of living organisms. This was a pragmatic and necessary in large quantities in the seeds of several plants, and it has an understanding for the various parts, where they probably fulfill an additional function as deterre We are now at a point, however, where we need to invest rents to general predation. gate those things common to the parts and, specifically, those The second type of relationship involves interaction of things that unify the parts. The fundamental aspects of many plants with other organisms and with their environment. Bio of these interactions are chemical in nature. Plants constitute logical interactions must be viewed in the light of evolution an essential part of all life systems; phytochemistry provides any change and the coadaptation, or perhaps coevolution, of a medium for linking several fields of study.

Following its predecessor, the second edition of Amino Acid Metabolism, this book presents a comprehensive overview of amino acids in the nutrition, metabolism and health of humans and other animals. Substantially revised, expanded and updated to reflect scientific advances, this book introduces the basic concepts of amino acid biochemistry and nutrition, while highlighting the current knowledge of the field and its future possibilities. The book begins with the basic chemical concepts of amino acids, peptides and proteins, and their digestion and absorption. Subsequent chapters cover cell- and tissue-specific synthesis and catabolism of amino acids and related bioactive metabolites, and the use of isotopes to study amino acids metabolism in cells and the body. The book details protein turnover, physiological functions of amino acids, as well as both the regulation and inborn errors of amino acid metabolism. The book concludes with a presentation on human and animal dietary requirements of amino acids and evaluates dietary protein quality. Features: Encompasses a comprehensive coverage of basic to applied concepts in amino acid metabolism in humans and other animals. Highlights important roles of dietary amino acids and protein intake in growth, physical performance.
and health, including sarcopenia mitigation and immunity. Discusses concerns over the excess intakes of amino acids or protein in the development of diseases, including cardiovascular disorders, diabetes and cancers, as well as bone integrity. Each chapter contains select references to provide comprehensive reviews and original experimental data on the topics discussed. Each chapter is backed by original experimental data on various topics discussed and contains select references to aid the reader further in research. Written by Distinguished Professor of Animal Nutrition, Guoyao Wu, Ph.D., this book is an authoritative reference for students and researchers in both biomedicine and agriculture.

This book provides developmental data regarding piglets (with a focus on the gastrointestinal tract), data related to amino acid metabolism in pigs, data related to nutritional and physiological functions of amino acids in pigs, nutritional requirements for amino acids in pigs, signaling roles of amino acids, methodological aspects in amino acid research and the pig model for studying amino acid-related human diseases.

Amino acid biochemistry and nutrition spans a broad range of fields including biochemistry, metabolism, physiology, immunology, reproduction, pathology, and cell biology. In the last half-century, there have been many conceptual and technical advancements, from analysis of amino acids by high-performance liquid chromatography and mass spectrometry to molecular cloning of transporters for amino acids and small peptides. Amino Acids: Biochemistry and Nutrition presents comprehensive coverage of these scientific developments, providing a useful reference for students and researchers in both biomedicine and agriculture.

The text begins with the discoveries and basic concepts of amino acids, peptides, and proteins, and then moves to protein digestion and absorption of peptides and amino acids. Additional chapters cover cell-, tissue-, and species-specific synthesis and catabolism of amino acids and related nitrogenous substances, as well as the use of isotopes to study amino acid metabolism in cells and the body. The book also details protein synthesis and degradation, regulation of amino acid metabolism, physiological functions of amino acids, and inborn errors of amino acid metabolism. The final chapter discusses dietary requirements of amino acids by humans and other animals. While emphasizing basic principles and classical concepts of amino acid biochemistry and nutrition, the author includes recent progress in the field. This book also provides concise coverage of major historical developments of the scientific discipline, so that readers will appreciate the past, understand the current state of the knowledge, and explore the future of the field. Each chapter contains select references to provide comprehensive reviews and original experimental data on the topics discussed.

Amino Acid - New Insights and Roles in Plant and Animal provides useful information on new aspects of amino acid structure, synthesis reactions, dietary application in animals, and metabolism in plants. Section 1 includes chapters that describe the therapeutic uses, antiinflammatory effects, new aspects in the D-amino acid structure, historical background of desmosines, and stereoselective synthesis of L-aminophosphonic acids. Section 2 presents the role of amino acids in plants, which includes new insights and aspects of D-amino acids, metabolism and transport in soybean, changes during energy storage compound accumulation of microalgae, and determination of amino acids from natural compounds. Section 3 describes the chapters on methodologies and requirement of dietary amino acids for Japanese quails, laying hens, and finishing pigs. The final chapter identifies potential importance of glutathione S-transferase activity for generating resistance to triclabendazole in Fasciola hepatica.

Amino acid transport is a part of each of two larger subjects, amino acid metabolism and the biomembrane transport of various small molecules and ions. Nevertheless in this volume we treat amino acid transport as more than a fragment of either of these two larger subjects. A more comprehensive approach is justified when we remember two historic and ongoing aspects of the title subject. First, amino acid transport had its beginning and acquired a distinct momentum (even if somewhat interrupted from 1913 until about 1945) as amino acid metabolism with the central and pioneer work of Van Slyke and Meyer in 1913. The reviews in this volume will show that it steadily becomes a larger aspect of amino acid metabolism, broadly perceived. These chapters will show for how many organelles, cells, tissues, organs and organ systems, the transmembrane compartmentations and flows of amino acids play very large parts in their fundamental biological relations. The authors here are tending collectively to evaluate an understanding of amino acid flows across biomembranes, and the regulation of these flows, as necessary to an ultimate understanding of the full range of development and metabolism. Such an understanding goes far beyond the purely substrate-destabilizing contributions by enzymes, which have often been arbitrarily limited to that conceptual entity, "the cell", and which for so long a splendid time had most of biochemical research attention.