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Nutrigenomics and Nutrigenetics in Functional Foods and Personalized Nutrition Principles of Nutrigenetics and Nutrigenomics Nutrigenetics and Nutrigenomics Recent Advances in Nutrigenetics and Nutrigenomics Nutrigenetics Nutrigenetics and Nutrigenomics in The Cardiovascular System Science, Society, and the Supermarket Nutrigenomics and the Future of Nutrition Personalized Nutrition Nutrigenetics and Nutrigenomics in the Cardiovascular System: a Volume in the Molecular Nutrition Series Genetic Variation and Dietary Response Role of Nutrigenomics in Modern-day Healthcare and Drug Discovery Molecular Nutrition and Genomics Nutrition and Genomics Nutrigenetics Environmental Epigenetics Impact of Nutritional Epigenomics on Disease Risk and Prevention The Genomic Kitchen: Your Guide To Understanding And Using The Food-Gene Connection For A Lifetime Of Health Nutrigenomics and Nutraceuticals Design of human nutrigenomics studies Nutrigenomics - Nutrigenetics Genes and Nutrition CANINE NUTRIGENOMICS Nutrient Metabolism Nutrigenomics and Beyond 2nd Congress of the International Society of Nutrigenetics, Nutrigenomics (ISNN) Personalized Nutrition Modern Nutrition in Health and Disease Advances in Nutraceutical Applications in Cancer: Recent Research Trends and Clinical Applications 4th Congress of the International Society of Nutrigenetics,

Nutrigenomics (ISNN) Genomic Medicine The 3rd Congress of International Society of Nutrigenetics/Nutrigenomics: Program Book Nutrient Metabolism Nutrigenomics Genetic and Nutritional Determinants of the Metabolic Syndrome Nutritional Genomics Nutritional Oncology Cancer Treatment 8th Congress of the International Society of Nutrigenetics, Nutrigenomics (ISNN) Genetic Variants and Omega-6, Omega-3 Fatty Acids: Their Role in the Determination of Nutritional Requirements and Chronic Disease Risk

Nutritional oncology is an increasingly active interdisciplinary field where cancer is investigated as both a systemic and local disease originating with the changes in the genome and progressing through a multi-step process which may be influenced at many points in its natural history by nutritional factors that could impact the prevention of cancer, the quality of life of cancer patients, and the risk of cancer recurrence in the rapidly increasing population of cancer survivors. Since the first edition of this book was published in 1999, the idea that there is a single gene pathway or single drug will provide a cure for cancer has given way to the general view that dietary/environmental factors impact the progression of genetic and cellular changes in common forms of cancer. This broad concept can now be investigated within a basic and clinical research context for specific types of cancer. This book attempts to cover the current available knowledge in this new field of nutritional oncology written by invited experts. This book attempts to provide not only the theoretical and research basis for nutritional oncology, but will offer the medical oncologist and other

members of multidisciplinary groups treating cancer patients practical information on nutrition assessment and nutritional regimens, including micronutrient and phytochemical supplementation. The editors hope that this volume will stimulate increased research, education and patient application of the principles of nutritional oncology. NEW TO THIS EDITION: * Covers hot new topics of nutrigenomics and nutrigenetics in cancer cell growth * Includes new chapters on metabolic networks in cancer cell growth, nutrigenetics and nutrigenomics * Presents substantially revised chapters on breast cancer and nutrition, prostate cancer and nutrition, and colon cancer and nutrition * Includes new illustrations throughout the text, especially in the breast cancer chapter * Includes integrated insights into the unanswered questions and clearly defined objectives of research in nutritional oncology * Offers practical guidelines for clinicians advising malnourished cancer patients and cancer survivors on diet, nutrition, and lifestyle * Provides information on the role of bioactive substances, dietary supplements, phytochemicals and botanicals in cancer prevention and treatment Nutrient Metabolism defines the molecular fate of nutrients and other dietary compounds in humans, as well as outlining the molecular basis of processes supporting nutrition, such as chemical sensing and appetite control. It focuses on the presentation of nutritional biochemistry; and the reader is given a clear and specific perspective on the events that control utilization of dietary compounds. Slightly over 100 self-contained chapters cover all essential and important nutrients as well as many other dietary compounds with relevance for human health. An essential read for

*healthcare professionals and researchers in all areas of health and nutrition who want to access the wealth of nutrition knowledge available today in one single source. Key Features * Highly illustrated with relevant chemical structures and metabolic pathways * Foreword by Steven Zeisel, Editor-in-chief of the Journal of Nutritional Biochemistry * First comprehensive work on the subject The key to exploiting links between diet and health is to have a better understanding of how our bodies respond to what we eat. In the past, many food constituents were regarded as unimportant because they lacked a specific nutritional role. More recently nutritional research has been limited to a few dietary compounds, a handful of relevant biochemical pathways and a small number of genes pertinent to specific diseases. These studies have given rise to specific examples of benefits provided by individual/ groups of food compounds including non-nutrients, and demonstrated that whilst poor diet can accelerate age-related degeneration, a diet rich in fruits and vegetables, cereals and plant oils significantly reduces our risk of chronic disease. However, the benefits of dietary and lifestyle choices are not the same for everyone. Nutrigenomics offers a more holistic approach to nutritional research. It considers not only our genes and the effect they have on our response to diet but, also how diet affects our genes and proteins to alter our metabolism and our risk of disease as we age. However, the logistics associated with human study design and interpretation of the data generated, using these technologies, is complex. The European Network of Excellence NuGO was established in 2004 with the specific aim of developing and integrating omic*

technologies for European nutritional research. This has meant focusing on technical problems specific to nutrition as well as training existing and new researchers to use the technology alongside existing and new approaches. The workshop, Design of human nutrigenomic studies, reviewed examples of successful human nutrition studies using post-genomics technologies (transcriptomics, metabolomics, and proteomics) and the issues discussed are described in detail in this publication. Nutrition expert Amanda Archibald's groundbreaking resource for learning about the relationship between our genes and the food we eat and how to put it into practice in your kitchen for your best health. The fascinating area of Nutrigenomics describes this daily communication between diet, food and nutrients, their metabolites and our genome. This book describes how nutrition shapes human evolution and demonstrates its consequences for our susceptibility to diseases, such as diabetes and atherosclerosis. Inappropriate diet can yield stress for our cells, tissues and organs and then it is often associated with low-grade chronic inflammation. Overnutrition paired with physical inactivity leads to overweight and obesity and results in increased burden for a body that originally was adapted for a life in the savannas of East Africa. Therefore, this textbook does not discuss a theoretical topic in science, but it talks about real life, and our life-long “chat” with diet. We are all food consumers, thus each of us is concerned by the topic of this book and should be aware of its mechanisms. The purpose of this book is to provide an overview on the principles of nutrigenomics and their relation to health or disease. We are not aiming to

compete with more comprehensive textbooks on molecular nutrition, evolutionary biology, genomics, gene regulation or metabolic diseases, but rather will focus on the essentials and will combine, in a compact form, elements from different disciplines. In order to facilitate the latter, we favor a high figure-to-text ratio following the rule “a picture tells more than thousand words”. The content of this book is based on the lecture course “Nutrigenomics”, which is held since 2003 once per year by Prof. Carlberg at the University of Eastern Finland in Kuopio. The book is subdivided into three sections and twelve chapters. Following the "Introduction" there are sections on the "Molecular genetic basis" and the "Links to disease", which take a view on nutrigenomics from the perspective of molecular mechanisms or from the causes of metabolic diseases, respectively. Besides its value as a textbook, Nutrigenomics will be a usefull reference for individuals working in biomedicine. Dietary supplements and nutraceuticals such as Vitamin A and D, Omega-3 and probiotics are used as part of the cancer treatment as complimenting the main therapy. Several Nutraceuticals have shown to boost the immune responses, while emerging clinical studies and other research suggests that some plant-based agents may, indeed, impact late-stage cancer, influencing molecular processes corrupted by tumor cells to evade detection, expand clonally, and invade surrounding tissues. Advances in Nutraceutical Applications in Cancer: Recent Research Trends and Clinical Applications is an attempt to collect evidence and related clinical information of application of Nutraceuticals to be used in cancer treatment or compliment the cancer treatment. It contains 16 chapters

written by experts in related field's and covers many different aspects of the formulation and development of Nutraceuticals for cancer applications. This book covers efficacy, safety and toxicological aspects of nutraceuticals. It also addresses various novel drug delivery systems of nutraceuticals with anticancer properties, as well as nutraceuticals as supplements for cancer prevention. Features: Offers a comprehensive view of neutraceuticals' role in cancer prevention and treatment Covers the applications and implications of neutraceuticals in prostate, colorectal, breast and gynecological cancers Discusses the principles of neutrigenomics and neutrigenetics in cancer prevention Explors the role of probiotics and micronutrients in cancer treatment and prevention Nutraceuticals can alter the gut microbiota. Gut microbiome undergoes changes during the disease status and followed by the cancer treatment. Nutraceutical's role in proliferation and prevention of gynecological cancers, nutraceutical's role in proliferation and prevention of prostate cancer and role of micronutrients in cancer prevention, both pros and cons, are some of the topics discussed in various chapters in this book. This book is addressed to scientists, clinicians, and students who are working in the area of Nutraceutical applications in cancer treatment. From one person to the next, optimal health is governed by a huge array of minor genetic differences. When modulated by a variety of food bioiactives, these differences result in changes in gene expression and subsequent phenotypic expression. Combining biomedical and social science with contributions from leaders in both fields, Personalized Nutrition: Principles and Applications illustrates

molecular, physiological, epidemiological, and public health aspects with examples from major diseases and discusses the behavioral, ethical, and consumer perspectives that will influence a successful introduction of personalized nutrition. Divided into three sections, the book answers pertinent questions crucial to the mainstream acceptance of personalized nutrition: to what extent is this personal diet-and-health relationship practically valid? how can nutrition science demonstrate this? And what is the proposition of stakeholders in society, including the consumer? The book begins with an overview of the state-of-the-science in nutrigenomic technologies including transcriptomics, proteomics, and metabolomics. It covers the use of genomics technology for a better understanding of the molecular mechanisms involved in major diet-related chronic disorders such as chronic inflammation, cardiovascular disease, diabetes, cancer, and obesity. Section two compares the practices and opinions of scientists, food companies, consumers, competitive athletes, and health care providers on the subject of personalized nutrition. It reviews marketing potential, consumer attitudes, and the ethical issues surrounding personalized advice. The final section focuses on humanitarian concerns related to developing countries and calls for international efforts to develop best practices, collaboration, and dataset sharing. The authors also consider ongoing innovations in food technology, nutrigenomics, and food delivery systems. This book is a printed edition of the Special Issue "Nutrigenetics" that was published in Nutrients Principles of Nutrigenetics and Nutrigenomics: Fundamentals for Individualized Nutrition is the most comprehensive

foundational text on the complex topics of nutrigenetics and nutrigenomics. Edited by three leaders in the field with contributions from the most well-cited researchers conducting groundbreaking research in the field, the book covers how the genetic makeup influences the response to foods and nutrients and how nutrients affect gene expression. Principles of Nutrigenetics and Nutrigenomics: Fundamentals for Individualized Nutrition is broken into four parts providing a valuable overview of genetics, nutrigenetics, and nutrigenomics, and a conclusion that helps to translate research into practice. With an overview of the background, evidence, challenges, and opportunities in the field, readers will come away with a strong understanding of how this new science is the frontier of medical nutrition. Principles of Nutrigenetics and Nutrigenomics: Fundamentals for Individualized Nutrition is a valuable reference for students and researchers studying nutrition, genetics, medicine, and related fields. Uniquely foundational, comprehensive, and systematic approach with full evidence-based coverage of established and emerging topics in nutrigenetics and nutrigenomics Includes a valuable guide to ethics for genetic testing for nutritional advice Chapters include definitions, methods, summaries, figures, and tables to help students, researchers, and faculty grasp key concepts Companion website includes slide decks, images, questions, and other teaching and learning aids designed to facilitate communication and comprehension of the content presented in the book Nutrigenomics is the new science of how diet affects gene expression at the cellular level, creating vibrant health or chronic disease. Optimum health begins in the cells—and this book shows you how to

achieve it for your dog! Nutrigenomics is the rapidly developing field of science that studies nutrient-gene interaction. This field has broad implications for understanding the interaction of human genomics and nutrition, but can also have very specific implications for individual dietary recommendations in light of personal genetics. Predicted applications for nutrigenomics include genomics-based dietary guidelines and personalized nutrition based on individual genetic tests. These developments have sweeping ethical, legal and regulatory implications for individuals, corporations and governments. This book brings together experts in ethics, law, regulatory analysis, and communication studies to identify and address relevant issues in the emerging field of nutritional genomics. Contributing authors are experts in the social aspects of biotechnology innovation, with expertise in nutrigenomics. From addressing the concern that nutrigenomics will transform food into medicine and undermine pleasures associated with eating to the latest in the science of nutrigenomics, this book provides a world-wide perspective on the potential impact of nutrigenomics on our association with food. *Explores the rapidly developing, yet not fully understood, impact of nutrigenomics on the relationship to food medicalization, genetic privacy, nutrition and health. *Provides ground for further exploration to identify issues and provide analysis to aid in policy and regulation development *Provides ethical and legal insights into this unfolding science, as well as serving as a model for thinking about issues arising in other fields of science and technology For the first time, international scientists describe the advances in genetics and nutrition by combining methods

of molecular biology with those of functional genetics, also known as systems biology. This book provides the latest data on genetic variation and dietary response, nutrients and gene expression, and the contribution molecular biology has given to systems biology. It also includes a comprehensive critique of genetic association studies in defining the risk of chronic diseases and concludes that molecular diagnostic tests will eventually affect every area of health care from individual risk prediction, early diagnosis of disease, and determination of optimal treatment regimens, to monitoring treatment effectiveness. The appendix contains an extensive glossary of the newly emerging terminology, as well as recommendations for genetic screening. This publication is an essential tool for the future work of all physicians, nutritionists, dietitians, geneticists, physiologists, molecular biologists, anthropologists, food technologists, policy makers, ethicists and educators. While functional foods have become a reasonably well-established concept, personalized nutrition is still treated with skepticism by many. The recognition that people would have different nutrient requirements, or perceive foods in different ways, raises several concerns-some real, some not so real. Nutrigenomics and Nutrigenetics in Functional Foo Awareness of the influence of our genetic variation to dietary response (nutrigenetics) and how nutrients may affect gene expression (nutrigenomics) is prompting a revolution in the field of nutrition. Nutrigenetics/Nutrigenomics provide powerful approaches to unravel the complex relationships among nutritional molecules, genetic variants and the biological system. This publication contains selected papers from

the '3rd Congress of the International Society of Nutrigenetics/Nutrigenomics' held in Bethesda, Md., in October 2009. The contributions address frontiers in nutrigenetics, nutrigenomics, epigenetics, transcriptomics as well as non-coding RNAs and posttranslational gene regulations in various diseases and conditions. In addition to scientific studies, the challenges and opportunities facing governments, academia and the industry are included. Everyone interested in the future of personalized medicine and nutrition or agriculture, as well as researchers in academia, government and industry will find this publication of the utmost interest for their work. Cancer Treatment: Conventional and Innovative Approaches is an attempt to integrate into a book volume the various aspects of cancer treatment, compiling comprehensive reviews written by an international team of experts in the field. The volume is presented in six sections: i) Section 1: Cancer treatment: Conventional and innovative pharmacological approaches; ii) Section 2: Combinatorial strategies to fight cancer: Surgery, radiotherapy, backytherapy, chemotherapy, and hyperthermia; iii) Section 3: The immunotherapy of cancer; iv) Section 4: Multidisciplinarity in cancer therapy: nutrition and beyond; v) Section 5: Supportive care for cancer patients; vi) Section 6: Perspectives in cancer biology and modeling. Ultimately, we hope this book can enlighten important issues involved in the management of cancer, summarizing the state-of-the-art knowledge regarding the disease control and treatment; thus, providing means to improve the overall care of patients that daily battle against this potentially lethal condition. This book

examines the toxicological and health implications of environmental epigenetics and provides knowledge through an interdisciplinary approach. Included in this volume are chapters outlining various environmental risk factors such as phthalates and dietary components, life states such as pregnancy and ageing, hormonal and metabolic considerations and specific disease risks such as cancer cardiovascular diseases and other non-communicable diseases. Environmental Epigenetics imparts integrative knowledge of the science of epigenetics and the issues raised in environmental epidemiology. This book is intended to serve both as a reference compendium on environmental epigenetics for scientists in academia, industry and laboratories and as a textbook for graduate level environmental health courses. Environmental Epigenetics imparts integrative knowledge of the science of epigenetics and the issues raised in environmental epidemiology. This book is intended to serve both as a reference compendium on environmental epigenetics for scientists in academia, industry and laboratories and as a textbook for graduate level environmental health courses. On December 5, 2017, the National Academies of Sciences, Engineering, and Medicine hosted a public workshop titled Nutrigenomics and the Future of Nutrition in Washington, DC, to review current knowledge in the field of nutrigenomics as it relates to nutrition. Workshop participants explored the influence of genetic and epigenetic expression on nutritional status and the potential impact of personalized nutrition on health maintenance and chronic disease prevention. This publication summarizes the presentations and discussions from the workshop. At

present, two important factors contributing to diseases are environmental and genetic factors. The gene is a well defined component distributing to many disorders. This is important genetic parameter. Focusing on environmental factor, nutrition is an important parameter. The interrelationship between gene and nutrition is well defined. The focus on gene and nutrition leads to new emerging sciences, nutrigenetics and nutrigenomics. In the book, the authors focus on research and report on these aspects. The subjects in nutrigenetics and nutrigenomics are presented and discussed. This timely volume focuses on genetics and nutrition, and their interaction in the development of chronic diseases. Knowledge of genetic susceptibility to disease will not only help to identify those at higher risk for disease but also to ascertain their response to diet. The prospect of targeting specific dietary treatment at those predicted to gain the most therapeutic benefit clearly has important clinical and economic consequences, particularly in diseases of high prevalence. This book is unique in considering genetic variation in susceptibility to disease, and the importance of specific diets in influencing lipid levels in cardiovascular disease and bone density in osteoporosis. The contributions emphasize that dietary response is dependent on the genetic variant and that specific dietary recommendations rather than universal ones are needed for the prevention and management of chronic diseases. Bringing together vital information for the first time, this book is important reading for physicians, nutritionists, dietitians, geneticists, physiologists, molecular biologists, food technologists and policymakers. Nutritional genomics paves the way for

novel applications in medicine and human nutrition, and this volume presents the latest data on how genetic variation is associated with dietary response and how nutrients influence gene expression. In so doing, it brings together the various disciplines involved in this field of research, making this essential reading for nutritionists, biochemists and molecular biologists. This special topic issue of 'Journal of Molecular Microbiology and Biotechnology' contains contributions discussing the subject in-depth. 'Journal of Molecular Microbiology and Biotechnology' is a well-respected, international peer-reviewed journal in Microbiology. Special topic issues are included in the subscription. Role of Nutrigenomics in Modern-day Healthcare and Drug Discovery presents novel insights into how these tools can be applied in the study of nutrient-gene interaction for the management of certain disease conditions without using synthetic drugs or other treatments that come with side effects. Divided into three parts, Part I presents chapters that give background information of the subject while laying a framework for other chapters to follow. Part II presents chapters that discuss the role of nutrigenomics in healthcare, while Part III presents chapters that discuss the role of nutrigenomics in modern day drug discovery. Written by a global team of experts from key institutions around the world, this book is useful for drug developers, medicinal chemists, public health scientists, molecular biologists, biochemists, toxicologists and food scientists. Provides readers with background information on the role of nutrigenomics in healthcare, with a focus on emerging topics in nutrigenetics and nutrigenomics Presents chapters that discusses the role of nutrigenomics in the

modern day drug discovery for the treatment and management of diseases Includes a wide array of definitions, methods, summaries, figures and tables to aid readers with understanding and application Recent Advances in Nutrigenetics and Nutrigenomics. Chapters cover energy and specific dietary components. The role of nutrition in relation to integrated biologic systems is reviewed. Methods of nutritional assessment are discussed as are dietary and nutritional interrelations with diseases. The new science of nutrigenomics and its ethical and societal challenges Gene-diet interactions--which underlie relatively benign lactose intolerance to life-threatening conditions such as cardiovascular disease--have long been known. But until now, scientists lacked the tools to fully understand the underlying mechanisms that cause these conditions. In recent years, however, strides in human genomics and the nutritional sciences have allowed for the advancement of a new science--dubbed nutrigenomics. Although this science may lead to personalized nutrition and dietary recommendations that can mitigate, prevent, or cure sickness, current oversight mechanisms and regulations for emerging direct-to-public nutrigenomic tests are still in their infancy. Science, Society, and the Supermarket: The Opportunities and Challenges of Nutrigenomics discusses the many ethical, legal, and social challenges presented by nutrigenomics. Concerning itself with the basic uses of nutrigenomic research as well as its clinical and commercial aspects, this text sheds light on such issues as: * Opportunities and challenges for nutrigenomics * The science of nutrigenomics * The ethics of nutrigenomic tests and information both in a

clinical setting and by private third parties * Alternatives for nutrigenomics service delivery * Nutrigenomics and the regulation of health claims for foods and drugs * Equity and access to nutrigenomics in industrialized and developing countries * Intellectual property issues By taking a proactive bioethical stance on the subject, Science, Society, and the Supermarket offers a thorough and timely analysis on both the benefits and risks of nutrigenomics. Along with a thought-provoking examination of the issues, this book provides ethical guidelines and recommendations for further study in policy and regulatory development. Preceded by Genomics and clinical medicine / edited by Dhavendra Kumar. [First edition]. 2008. Genomics and related areas of research have contributed greatly to the understanding of the cellular and molecular mechanisms underlying diet–disease relationships. In the past decade, the evidence has become stronger for a direct link between genome/epigenome damage and increased risk for adverse health outcomes. It is now exceedingly clear that micronutrients are critical as cofactors for many cellular functions, including DNA repair enzymes, methylation of CpG sequences, DNA oxidation, and/or uracil incorporation into DNA. Nutrigenomics and Nutraceuticals: Clinical Relevance and Disease Prevention brings new perspectives on disease prevention strategy based on the genomic knowledge and nutraceuticals of an individual and the diet he or she receives. This book discusses the integration and application of genetic and genomics technology into nutrition research and paves the way for the development of nutrition research programs that are aimed at the prevention and control of

chronic disease through genomics-based nutritional interventions. In this book, the editors bring together a wide spectrum of nutritional scientists worldwide to contribute to the growing knowledge in the field of nutrigenomics and nutraceuticals. 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 The integration of biology, genomics, and health has opened the possibility of applying genomics technology to nutrition. In 2001, scientists associated with the Human Genome Project announced the successful mapping of the reference

sequence of the human genome. Since then, a body of information has emerged. Genomics and related areas of research have contributed greatly to efforts to understand the cellular and molecular mechanisms underlying diet-disease relationships. Integration and application of genetic and genomics technology into nutrition research is, therefore, needed to develop nutrition research programs that are aimed at the prevention and control of chronic disease through genomics-based nutritional interventions. Of interest is the integration of relevant computational methods into nutritional genomics research; the enhancement of tools applicable to systems biology; and the effective dissemination of genomics-derived information to scientists, policy makers, and the interested public. To address these issues, a workshop was held on June 1 and 2, 2006. The workshop included presentations that were structured around three focus sessions: human genetic variation, epigenetics, and systems biology. A fourth session presented discussions on the implications of nutrigenomics for the future of nutrition science research. Numerous themes emerged from the workshop presentations. First, nutrigenomics is a complex field because it addresses issues related to multigenetic traits that can be modified by a number of nutritional and other environmental factors. Such complexity presents a challenge to the field; and the ensuing research opportunities will require cooperative work among scientific disciplines and across government, academic, and industrial centers, as well as adequate funding, to be realized. Additionally, the ability to stretch the limits of conventional research methodologies afforded by new genetic and genomic applications at the

level of the individual opens the door to a wealth of potential benefits to areas such as disease prevention and wellness, bearing in mind the necessity of ethical safeguards. This potential, however, must be wisely exploited to avoid the pitfalls of overpromising research results and prematurely setting unrealistic expectations for beneficial outcomes. Finally, careful and rigorous research must be employed to optimize outcomes and assure acceptance by the scientific community. In summary, nutrition science is uniquely poised to serve as the crossroads for many disciplines and, using genomics tools, can bring this knowledge together to better understand and address diet-related chronic diseases and molecular responses to dietary factors. Nutritional epigenomics is an emerging subject that has been implicated in disease risk and prevention. Epigenetics has been a concern in cancer research for the last 3 decades, but only in recent years has interest in its connection to other fields developed, including cardiovascular and neurodegenerative diseases, obesity, diabetes and nutrition. Epigenetics is generally used to refer to heritable changes in gene expression that are not accompanied by alterations in DNA sequence. Because epigenetic marks are potentially reversible and are implicated in the pathogenesis of diverse non-communicable diseases representing major public health problems in both developed and developing countries, the epigenome is an attractive target for nutritional intervention. Indeed, accumulating evidence shows that epigenetic processes can be influenced by nutritional components; Nutritional modulation of epigenetic processes thus adds a further layer of complexity to gene-

nutrient interactions and should be considered for the definition of strategies for health promotion and disease prevention. This publication presents four review papers that address the impact of nutritional epigenomics on disease risk and prevention in various settings. It thus provides stimulating reading for anyone interested in the field. Achieve better health, beauty, wellness in just six steps! Feel great, lose the excess weight, learn more about the essential factors that will actually work for you: Optimal, individualized diet following the principles Nutritional Therapy, Nutrigenomics. Proper nutrients in the form of specific supplements of natural origin. Positive attitude, harmonious lifestyle. Maintain the right weight. Also learn how to: Improve your stomach and intestinal functions. Boost your immune system and your detoxifying mechanism. Balance your hormonal system. Achieve better health. With easy health tests, to help you find out which of your systems malfunction so that you can apply the principles of nutrigenomics that work for you! The book contains useful links for more information. This fascinating book draws it subject matter from a range of relevant disciplines that extend from molecular nutrition, nutritional sciences, and nutrition dietetics through to genetics, genomics, and anthropology. It presents a vital portrait of the absolutely fundamental role that nutrition has played and continues to play in shaping who and what human beings are, as well as where they evolved from, and where they may be heading as a species. Molecular Nutrition: Nutrition and the Evolution of Humankind: Blends coverage of the molecular mechanisms that underpin nutrient-gene interactions with evolutionary theory Takes a molecular biological

approach to problem solving, and moves nutrition away from its dietetic and anthropological origins to the front lines of genomic research Covers key concepts in molecular biology; the –omics revolution and bioinformatics; recent human evolution; molecular mechanisms of gene-nutrient interactions; the importance of nutrients and genomics in disease; the evolution of micronutrient metabolism, protein structure, and human disease; nutrients and the human lifecycle; contemporary dietary patterns; leading-edge laboratory tools in nutrigenomics and human evolutionary studies Written by an internationally recognised expert in the field, Molecular Nutrition: Nutrition and the Evolution of Humankind is an invaluable text and reference book for a wide range of teachers, students, and researchers. Nutrigenetics: Applying the Science of Personal Nutrition provides a fully referenced, readable guide to understanding the rationale and importance of nutrigenetic applications and explains why single nutrition recommendations will not fit everybody or even a majority of modern humans. This books explains how genetic variation shapes individual nutrition requirements and sensitivities, presents questions to ask about reported gene-nutrient interactions, and what needs to be done before putting nutrigenetic tests to practical use. This book blends key concepts from the fields of genetics, biochemistry, epidemiology, public health, and clinical medicine to give a rich perspective on the genetically diverse nutritional needs and sensitivities of individuals in health and disease. A steadily increasing number of people order genetic tests to find out what they should eat for better health, well being and performance, and an

even greater number asks their healthcare providers about such tests. Most of the currently offered tests are not grounded in current knowledge, often absurdly so, but few professionals can explain why they are misguided. On the other hand, there are more evidence-supported genetic variants that can guide nutrition decisions, but again most healthcare providers know little about them, much less use them in their daily practice. There is a great need for a solidly evidence-based yet accessible book that explains the science of nutrigenetics and provides the tools to evaluate new nutrigenetic tests. Comprehensive coverage of the emerging science of nutritional genetics and its promise for individually tailored nutrition guidance Presents practical examples to enhance comprehension and spur additional research Offers a logical progression from what nutrigenetics is, to its possibilities in enhancing health Nutrigenetics and Nutrigenomics in The Cardiovascular System

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