Mechanisms of Carcinogenesis

Elizabeth K. Weisburger 2012-12-06

but also the possibility of intervention in specific stages. In human behavior, including stress and other factors, plays an important role in neoplasia, although too little is known addition, variables which affect cancer development as well on the reasons for such development. Carcinogens, which as some endogenous factors can be better delineated help initiate the neoplastic process, may be either synthetic through such investigations. The topics of this volume encompass premalignant non or naturally-occurring. Cancer causation may be ascribed to invasive lesions, species-specific aspects of carcinogenicity, certain chemicals, physical agents, radioactive materials, viruses, parasites, the genetic make-up of the organism, and radiation, viruses, a quantum theory of carcinogenesis, onco bacteria. Humans, eumetazoan animals and vascular plants genes, and selected environmental carcinogens. are susceptible to the first six groups of cancer causes, whereas the last group, bacteria, seems to affect only vascular plants. Neoplastic development may begin with impairment of Jmdy defenses by a toxic material (carcinogen) which acts as an initiator, followed by promotion and progression to an overt neoplastic state. Investigation of these processes Series Editor Volume Editor allows not only a better insight into the mechanism of action Hans E. Kaiser Elizabeth K. Weisburger VII ACKNOWLEDGEMENT Inspiration and encouragement for this wide ranging project on cancer distribution and dissemination from a comparative biological and clinical point of view, was given by my late friend E. H. Krokowski.
relating fiber intake to disease patterns, subsequently broadened to include nutritional science in recent history if not in all time, but epidemiologic studies made it perhaps the most rapidly developing aspect of within the decade 1968-1978. Not only has the growth of interest in and published articles increasing 40-fold, from around ten to over 400 per year, of diet has been reflected by a veritable explosion of scientific literature, with extraordinary development of interest in a hitherto largely neglected component and in different parts of the world; the conference of which the present volume is considered an extremely unlikely, and in fact an unthinkable, event. Yet in recent dietary fiber

George V. Vahouny 2012-12-06 Only 15 years ago a conference on dietary fiber, let alone an international conference, would have been considered an extremely unlikely, and in fact an unthinkable, event. Yet in recent years a number of such conferences have taken place at the international level and in different parts of the world; the conference of which the present volume is an outgrowth is the second to have been held in Washington, D. C. This extraordinary development of interest in a hitherto largely neglected component of diet has been reflected by a veritable explosion of scientific literature, with published articles increasing 40-fold, from around ten to over 400 per year, within the decade 1968-1978. Not only has there been a growth of interest in and knowledge of fiber made it perhaps the most rapidly developing aspect of nutritional science in recent history if not in all time, but epidemiologic studies relating fiber intake to disease patterns, subsequently broadened to include other food components, have been largely responsible for the current concept of diseases characteristic of modern Western culture and lifestyle. The potential importance of this realization is forcefully underlined by the considered judgment of Thomas MacKeown, epidemiologist and medical historian of Birmingham University, England.

Nutrition and Cancer Prevention

Thomas Moon 1988-10-21 Scientific advances have led to the recognition that many chronic diseases such as cancer may be preventable. In this volume, 36 contributions test cancer prevention hypotheses, attempt to interpret their results, and provide a guide to the background, rationale, and selection of cancer prevention a

Molecular Interrelations of Nutrition and Cancer

Symposium on Fundamental Cancer Research Staff 1982-01-01


Histochemical and Immunohistochemical Techniques

Peter H. Bach 2012-12-06 Toxicological and pharmacological effects arise when chemicals interact with biophysiological functions in discrete cell types. There is a continuing need to screen novel compounds for their potential therapeutic effects, and once these have been “discovered” to understand their molecular actions, as the basis of using such compounds safely and for rational drug design. Pharmacology now uses all of the sophisticated molecular research techniques that are available for the development of safer and more efficacious drugs. Histochemistry has been usefully applied to developing new drugs (and assessing chemical safety) and is potentially cost effective. The need to test novel substances for their potential adverse effects has raised many questions. Toxicological pathology has moved away from the cataloging of lesions towards understanding the basis of the events that underly cell injury, especially for those secondary consequences of chemical injury that lead to malignancy and chronic disease. The focal nature of toxicologic lesions demands the use of microtechniques to provide data to help understand these questions. Histochemistry is under-utilized, but offers one of the key approaches necessary to address the problem of understanding interactions between a cell population and a chemical, the modulation of cellular biochemistry. Istrory the presence of a lesion in a test animal can be rationalised in terms of species differences that have no relevance to man as opposed to those that are of clinical significance or represent a warning of dire consequences to man.

Departments of Labor, Health and Human Services, Education, and Related Agencies Appropriations for 1983

Nutritional Aspects Of Aging Linda H. Chen 2018-01-18 In the first section of Volume 2, toxicological factors affecting nutritional status are discussed. Medications and alcohol may affect nutritional status. Section 2 provides a discussion of nutrition-related diseases which occur more frequently among the elderly. Cardiovascular diseases including coronary heart disease and cerebrovascular disease are the leading causes of death in the U.S. The relative importance of cardiovascular diseases, in terms of all deaths for the given age group, rises steadily with age. The death rate from these diseases is 28% for the middle age group (35 to 44) and is 69% for the old age group (age 75 and above). This reflects the continued progression of arteriosclerosis with aging. Cancer is the second leading cause of death in the U.S. The death rate from cancer also rises steadily with age. The death rate from diabetes mellitus increases progressively with age and more rapidly after the age of 45. The incidence of diabetes mellitus is 0.23% under age 25 and 6.2% over 45.

Mediterranean Diets Artemis P. Simopoulos 2000-01-01 Contrary to popular belief, there is no such thing as one Mediterranean diet: This geographic region includes several nations with varied cultures, traditions, incomes and dietary habits, resulting in a wide variation of dietary patterns. The present volume focuses on the latest research data from basic science and clinical intervention studies that indicate that a balanced ratio of omega-6 and omega-3 fatty acids and a high antioxidant intake from fruits and vegetables, along with olive oil, contribute to a lower rate of heart disease and increased longevity. These benefits are especially pronounced in the population of Crete, indicating that this diet is particularly healthy. Moreover, descriptions of the diets of Greece, Italy, Spain and the Maghreb are given for the first time, pointing to their differences as well as to their common dietary patterns; these are followed by chapters on the nutritional and metabolic contributions of antioxidants, wine, olive oil and fatty acids.

Nutritional and Toxicological Aspects of Food Safety Mendel Friedman 2012-12-06 Naturally occurring antinutrients and food toxicants, and those formed during food processing, adversely affect the nutrional quality and safety of foods. Because of the need to improve food quality and safety by plant breeding, fortification with appropriate nutrients, and processing methods, and because of the growing concern about possible direct relationships between diet and diseases, research is needed to: (1) evaluate the nutritive quality and safety of crops and fortified, supplemented, and processed foods; (2) define conditions that favor or minimize the formation of nutritionally antagonistic and toxic compounds in foods; and (3) define the toxicology, metabolism, and mechanisms of the action of food ingredients and their metabolites. As scientists interested in improving the safety of the food supply, we are challenged to respond to the general need for exploring: (1) possible adverse consequences of antinutrients and food toxicants; and (2) factors which contribute to the formation and inactivation of undesirable compounds in foods. Medical research offers an excellent analogy. Studies on causes and mechanisms of disease processes are nearly always accompanied by parallel studies on preventive measures and cures. Such an approach offers the greatest possible benefits to the public.

Molecular Interrelations of Nutrition and Cancer Marilyn S. Arnott 1982 Advances in Nutritional Research Harold H. Draper 2012-12-06 Volume 7 of Advances in Nutritional Research continues the theme of this series in providing authoritative accounts of the current state of knowledge regarding major topics of research in the nutritional sciences. The topics have been selected for their interest to researchers, students, and teachers in medicine, agriculture, and the various branches of the biological sciences which relate to nutritional health. The authenticity of the accounts is assured by the widely recognized contributions of the authors to research on their respective topics. vii Contents 1 Chapter 1. Food Allergy .......... David J. Pearson and Alison McKee 1. Introduction................................. 1.1. General Introduction 1.1.1. Classification and Time Course of Allergic Reactions 1.2. The Atopic Syndrome 2 2.1. Atopy 2.1.1. Presenting Complaints 2.1.2. Frequency 2.1.3. Classification and Time Course of Allergic Reactions 4 2.2. IgE (Reaginic) Antibodies 6 3. The Diagnosis of Food Allergy 8 3.1. Provocative Feeding Tests 8 3.2. Skin Tests 10 3.3. Measurement of Specific Antibodies 10 3.3.1. IgE Antibodies 10 3.3.2. Non-IgE Antibodies 11 3.4. Controversial Techniques 11 3.5. Summary of Diagnostic Procedures 11 3.6. Clinical Food Allergic Syndromes 11 4.1. Classical Reaginic Syndromes 13 4.1.1. Presenting Complaints 13 4.1.2. Frequency 13 ...
Antioxidant vitamins may be important in preventing not only acute deficiency symptoms, but also chronic disorders such as heart disease and certain types of cancer. This book, therefore, is not only for scientists and doctors, but also for health writers, journalists, and informed lay people. The text focuses on several human conditions for which there is now good scientific evidence that oxidation is an important etiological component. Specifically, antioxidants may prevent or slow down the progression of: cancer, cardiovascular disease, immune system disorders, cataracts, neurological disorders, degeneration due to aging.

**Interrelationship Among Aging, Cancer, and Differentiation**

A. Pullman 2012-12-06 In 1980, a distinguished group of scientists gathered in Washington, D.C. for an International Symposium on Aging and Cancer. Among the recommendations of this Symposium was to convene a future meeting to discuss the molecular basis for interrelationships between aging and cancer when the appropriate scientific knowledge was available. That same year, the 13th Jerusalem Symposium on Quantum Chemistry and Biochemistry entitled 'Carcinogenesis: Fundamental Mechanisms and Environmental Effects' was held, attended by some 50 International Authorities in this field. At this meeting, it became clear that the fundamental process of carcinogenesis is intimately associated with differentiation, which must also be mechanistically related to aging. It was therefore proposed that the next Jerusalem Symposium on Cancer could provide the appropriate forum for the study of the interrelationship among cancer, aging, and differentiation. The Impressive advances in our knowledge of the nature of the genome through molecular genetic and physical chemical techniques have now provided the opportunity to examine the interrelationships between these complex biological processes. Through the isolation, cloning, and rearranging of genes we are able to dissect and manipulate the genome in a fashion that was unanticipated only a decade ago. At the same time, the increase in longevity and the increased numbers of individuals entering the last decades of life where cancer incidences are highest raise the profound and practical question of whether aging and cancer are linked through common mechanisms.

**Chemical Carcinogenesis**

Francisco Feo 2013-11-11 About two centuries after the communication by Sir Percival Pott that the "chimney sweeper disease" was a cancer and its suggestion that active compounds of soot were the causative agents, and about one century after the description of urinary bladder cancer in dye workers, an enormous number of substances have been synthesized and have probably come into contact with man. Research in cancer prevention is of primary importance, and may receive continuous support from new discoveries on cancer etiology and pathogenesis. If one accepts the multistage model of chemical carcinogenesis, one has also to accept that many events occur between the contact of carcinogenic compounds and their specific targets and the development of a clinically recognizable neoplasm. Thus, animal studies become essential to elucidate the different steps by which chemical carcinogens induce neoplasia. The analysis of these steps and the comparative evaluation of experimental models is essential to an understanding of pathogenesis.

**Cancer and Nutrition**

Roselyn B. Alfin-Slater 2013-11-11 The role of nutrition in neoplasia has been of longstanding concern. The subject was addressed by investigators in the first decade of this century, but was dropped. Vigorous attention was paid to this area of oncology in the 1940s, primarily due to the efforts of Dr. A. Tannenbaum at the Michael Reese Hospital in Chicago and the group at the University of Wisconsin in Madison. However, interest waned again until the 1970s when the question of diet and cancer was addressed and it has since been at the forefront of cancer research. The present volume (7) of Human Nutrition: A Comprehensive Treatise summarizes current knowledge in the area of nutrition and cancer. The first chapter is an overview written by John Higgenson, whose contribution to understanding of cancer and nutrition spans several decades. The next essays cover epidemiology and physiology. The ensuing chapters address, in turn, those dietary factors relating to nutrition and cancer, namely, carbohydrates, protein, fat, cholesterol, calories, lipotropic factors, fiber, fruits and vegetables, vitamins, and alcohol. In a field moving as rapidly as this one is now, we can expect to miss a few late-breaking developments, but generally, the literature has been well covered through some time in 1988. Work relating to the effects of diet on oncogenes is in its very early development and has not been addressed as an entity per se.

**Human Nutrition and Parasitic Infection**

Volume 107, Parasitology Supplement 1993 D. W. T. Crompton 1994-07-06 This wide-ranging collection covers such topics as: nutrition support and HIV; malarial parasites and antioxidant nutrients; the impact of schistosomiasis on human nutrition; ascariosis and childhood malnutrition; and hookworm infections and human iron metabolism. Nutrition, Toxicity, and Cancer Ian R. Rowland 1991-08-26 Nutrition, Toxicity, and Cancer provides practical guidance on methodology for formulating diets and designing nutritional studies in animals and humans, in addition to valuable information on how nutrition influences specific biological processes such as biotransformation of foreign and endogenously produced compounds. The book also presents sample diets and advice on the layout of metabolic suites. Other topics discussed include the complex interactions between nutrition and carcinogenic processes, teratogenesis and mutagenesis. Toxicologists, cancer researchers, nutritionists, and biochemists should consider Nutrition, Toxicity, and Cancer to be an invaluable reference resource that provides up-to-date reviews on the effect of diet on mammalian and
molecular-interrelations-of-nutrition-and-cancer

microbial metabolic processes in the body.

Journal of the National Cancer Institute 1998

Improving the Sensory and Nutritional Quality of Fresh Meat Joseph Kerry

2009-01-22 Understanding of the scientific basis of quality attributes in meat is becoming more advanced, providing more effective approaches to the control of meat eating and technological quality. This important collection reviews essential knowledge of the mechanisms underlying quality characteristics and methods to improve meat sensory and nutritional quality. Part one analyses the scientific basis of meat quality attributes, such as texture and tenderness, colour, water-holding capacity and flavour development. Chapters on the nutritional quality of meat and meat sensory evaluation complete the section.

Part two discusses significant insights into the biology of meat quality obtained from genomic and proteomic perspectives, with chapters focussing on different types of meat. Parts three and four then review production and processing strategies to optimise meat quality, considering aspects such as production practices and meat nutritional quality, dietary antioxidants and antimicrobials, carcass interventions, chilling and freezing and packaging. Methods of meat grading and quality analysis are also included. With its distinguished editors and international team of contributors, Improving the sensory and nutritional quality of fresh meat is a standard reference for those industrialists and academics interested in optimising meat quality. Reviews methods to improve meat sensory and nutritional quality considering the effects of different production practices such as chilling, freezing and packaging. Analyses the scientific basis of meat quality attributes covering texture, tenderness, colour and water-holding capacity. Examines production and processing strategies to optimise meat quality, including the current state of development and future potential.

Influence of Tumor Development on the Host L.A. Liotta 2012-12-06 Recent experimental evidence has made it increasingly clear in particular, this volume reviews the discrete steps involved that the properties of invasive, malignant cells during tumor in metastatic invasion: the interaction of invasive tumor cells development substantially impact on the host. This is under with extracellular matrices, the basement membrane, attac scored by a variety of biochemical properties of tumor cells ment to extracellular matrices, local proteolytic degradation during their differentiation and metastatic dissemination. of matrices, and the locomotion of invasive tumor cells. These properties can be analyzed at different stages of tumor through such areas of localized degradation. The critical growth and progression and this volume explores the role of the cell surface in secondary tumor formation is characteristics of primary tumors as well as the shared reviewed as are important advances in the molecular biology characteristics of both primary and secondary tumors. of metastasis initiation and maintenance. Recent advances in the generation of tumor preneoplastic biochemical and cellular events that ultimate cell heterogeneity and tumor progression are also critically result in malignant transformation. Various aspects of summarized. Chapters in this volume also review molecular metabolism, predetermined by nutritional status, often play aspects of metastatic progression, and the use of the tech a basic role. Obesity, for example, is cancer-promoting. Cell nologies of DNA transfection and somatic cell fusion in the surface carbohydrates, cytoskeletal proteins, glycoproteins, exploration of molecular aspects of metastatic progression.

Essential Nutrients in Carcinogenesis Lionel A. Poirier 2012-12-06 For more than 50 years, it has been recognized that diet influences cancer formation both in humans and in experimental animals. In fact, early investigators successfully retarded the onset of tumors in animals by dietary manipulation. Such findings led to an early optimism that cancer would prove to be yet another disease resulting from dietary imbalances and might thus be amenable to prevention or cure by appropriate nutritional changes. Subsequent studies showed that the influence of diet on cancer formation was not only very complex, it also did not appear to play a direct causative role in carcinogenesis. Thus during the mid-1950s scientific interest in diet and cancer greatly waned. By the early 1970s, however, a resurging interest in diet and cancer became evident. This field of activity has continued to grow. Yet for over 20 years, no comprehensive meeting has been held to summarize the major developments concerning dietary modification of carcinogenesis over a broad range of essential nutrients. To fill this void, a workshop was held on the role of essential nutrients in carcinogenesis from January 30 to February 1, 1985, in Bethesda, Maryland, under the auspices of the National Cancer Institute. This volume is a compilation of the presentations made at that meeting.

Federally-Supported Human Nutrition Research and Training, FY 1980 - FY 1982

Mutagens in Food Veikko Hayatsu 2018-05-04 This book describes many different kinds of mutagens that are detected in food, and also discusses various ways to suppress their formation and activities. The mutagens discussed include those of natural origin, those caused by human manipulation of food (e.g., cooking and adding preservatives), and those formed after food has been consumed (e.g., nitrosamines). Other topics include mutagenesis and mutagen-formation inhibitors, contemporary mutagen detection methods, the fate of ingested mutagens, and risk assessments for mutagens as human carcinogens. The book emphasizes cooked-food mutagens, especially the heterocyclic amines, because of their potential as human carcinogens. Researchers and students concerned with mutagens in food will consider this book to be valuable additions to their reference libraries.


Antimutagenesis and Anticarcinogenesis Mechanisms Delbert M. Shankel 2013-03-13


Gerard Meurant 2013-07-19 Dietary fats and carbohydrates represent some eighty to ninety percent of food energy uptake in man; fatty acids play a critical role in human development, health and disease. In affluent populations high fat consumption contributes to heart disease, obesity and type II diabetes mellitus, while in non-affluent groups, the generally poor nutritional state found in young children can be partially attributed to a low intake of fats. This book reviews our current understanding of essential fatty acids and their role in human nutrition. The topics addressed include the analysis of dietary fatty acids, dietary fats and fish oils in health and in the prevention of heart disease, linoleic acid in the treatment of diabetes, and the role of essential fatty acids in early human development.


National Library of Medicine Current Catalog National Library of Medicine (U.S.) 1982

Role of Fats in Human Nutrition