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CORINNE HARVEY*Network Pharmacology Methods in Molecular Biology*

Genome research will certainly be one of the most important and exciting scientific disciplines of the 21st century. Deciphering the structure of the human genome, as well as that of several model organisms, is the key to our understanding how genes function in health and disease. With the combined development of innovative tools, resources, scientific know-how, and an overall functional genomic strategy, the origins of human and other organisms' genetic diseases can be traced. Scientific research groups and developmental departments of several major pharmaceutical and biotechnological companies are using new, innovative strategies to unravel how genes function, elucidating the gene protein product, understanding how genes interact with others—both in health and in the disease state. Presently, the impact of the applications of genome research on our society in medicine, agriculture and nutrition will be comparable only to that of communication technologies. In fact, computational methods, including networking, have been playing a substantial role even in genomics and proteomics from the beginning. We can observe, however, a fundamental change of the paradigm in life sciences these days: research focused until now mostly on the study of single processes related to a few genes or gene products, but due to technical developments of the last years we can now potentially identify and analyze all genes and gene products of an organism and clarify their role in the network of life processes.

Birds, Beasts and Relatives Springer Science & Business Media

Tumor progression is driven by mutations that confer growth advantages to different subpopulations of cancer cells. As a tumor grows, these subpopulations expand, accumulate new mutations, and are subjected to selective pressures from the environment, including anticancer interventions. This process, termed clonal evolution, can lead to the emergence of therapy-resistant tumors and poses a major challenge for cancer eradication efforts.

Written and edited by experts in the field, this collection from Cold Spring Harbor Perspectives in Medicine examines cancer

progression as an evolutionary process and explores how this way of looking at cancer may lead to more effective strategies for managing and treating it. The contributors review efforts to characterize the subclonal architecture and dynamics of tumors, understand the roles of chromosomal instability, driver mutations, and mutation order, and determine how cancer cells respond to selective pressures imposed by anticancer agents, immune cells, and other components of the tumor microenvironment. They compare cancer evolution to organismal evolution and describe how ecological theories and mathematical models are being used to understand the complex dynamics between a tumor and its microenvironment during cancer progression. The authors also discuss improved methods to monitor tumor evolution (e.g., liquid biopsies) and the development of more effective strategies for managing and treating cancers (e.g., immunotherapies). This volume will therefore serve as a vital reference for all cancer biologists as well as anyone seeking to improve clinical outcomes for patients with cancer.

Perspectives Cshl

This book comprehensively covers the mechanisms of action and inhibitor design for HIV-1 integrase. It serves as a resource for scientists facing challenging drug design issues and researchers in antiviral drug discovery. Despite numerous review articles and isolated book chapters dealing with HIV-1 integrase, there has not been a single source for those working to devise anti-AIDS drugs against this promising target. But this book fills that gap and offers a valuable introduction to the field for the interdisciplinary scientists who will need to work together to design drugs that target HIV-1 integrase.

Self-Congruity Springer Nature

The unexpected story of how genetic testing is affecting race in America We know DNA is a master key that unlocks medical and forensic secrets, but its genealogical life is both revelatory and endlessly fascinating. Tracing genealogy is now the second-most popular hobby amongst Americans, as well as the second-most visited online category. This billion-dollar industry has spawned popular television shows, websites, and Internet communities, and a booming heritage tourism circuit. The tsunami of interest in genetic ancestry tracing from the African American community

has been especially overwhelming. In *The Social Life of DNA*, Alondra Nelson takes us on an unprecedented journey into how the double helix has wound its way into the heart of the most urgent contemporary social issues around race. For over a decade, Nelson has deeply studied this phenomenon. Artfully weaving together keenly observed interactions with root-seekers alongside illuminating historical details and revealing personal narrative, she shows that genetic genealogy is a new tool for addressing old and enduring issues. In *The Social Life of DNA*, she explains how these cutting-edge DNA-based techniques are being used in myriad ways, including grappling with the unfinished business of slavery: to foster reconciliation, to establish ties with African ancestral homelands, to rethink and sometimes alter citizenship, and to make legal claims for slavery reparations specifically based on ancestry. Nelson incisively shows that DNA is a portal to the past that yields insight for the present and future, shining a light on social traumas and historical injustices that still resonate today. Science can be a crucial ally to activism to spur social change and transform twenty-first-century racial politics. But Nelson warns her readers to be discerning: for the social repair we seek can't be found in even the most sophisticated science. Engrossing and highly original, *The Social Life of DNA* is a must-read for anyone interested in race, science, history and how our reckoning with the past may help us to chart a more just course for tomorrow.

HIV-1 Integrase Harvard University Press

The first book to provide a comprehensive overview of the relationship between nutrition and mental health for clinicians.

CRISPR-Cas Systems BoD – Books on Demand

Psychoendocrinology covers the advances in the field of biology and the development of highly refined measurement techniques for hormones. The book discusses the partitioning of neuroendocrine steroids and peptides between vascular and cerebral compartments; the mechanisms of the female reproductive behavior; and the sensory, hormonal, and neural determinant of maternal behavior. The text describes the effects of sexual behavior on gonadal function in rodents; the hormonal regulation of learning performance; and the hormonal modulation of memory. The psychobiological perspective on the

psychoneuroendocrinology of stress and the behavioral effects of the endogenous opioids are also considered. The book further tackles the hormonal interactions on temperature regulation and temperature regulation under modified physiological states. Endocrinologists, psychobiologists, neurologists, neurobiologists, and students taking related courses will find the book useful.

Plant Hormones and Climate Change U of Minnesota Press
Orchids are fascinating, with attractive flowers that sell in the markets and an increasing demand around the world. Additionally, some orchids are edible or scented and have long been used in preparations of traditional medicine. This book presents recent advances in orchid biochemistry, including original research articles and reviews. It provides in-depth insights into the biology of flower pigments, floral scent formation, bioactive compounds, pollination, and plant-microbial interaction as well as the biotechnology of protocorm-like bodies in orchids. It reveals the secret of orchid biology using molecular tools, advanced biotechnology, multi-omics, and high-throughput technologies and offers a critical reference for the readers. This book explores the knowledge about species evolution using comparative transcriptomics, flower spot patterning, involving the anthocyanin biosynthetic pathways, the regulation of flavonoid biosynthesis, which contributes to leaf color formation, gene regulation in the biosynthesis of secondary metabolites and bioactive compounds, the mechanism of pollination, involving the biosynthesis of semiochemicals, gene expression patterns of volatile organic compounds, the symbiotic relationship between orchids and mycorrhizal fungi, techniques using induction, proliferation, and regeneration of protocorm-like bodies, and so on. In this book, important or model orchid species were studied, including *Anoectochilus roxburghii*, *Bletilla striata*, *Cymbidium sinense*, *Dendrobium officinale*, *Ophrys insectifera*, *Phalaenopsis 'Panda'*, *Pleione limprichtii*.

Proteomics and Systems Biology University of Pennsylvania Press
"Trends in Biochemistry and Molecular Biology" provides the essential information necessary for students in the life and health sciences. The book adopts a readable, student-friendly style that helps introduce students to this fascinating and often-times daunting subject. Each chapter begins with a summary of essential facts followed by descriptions of the subjects that focus on core information with clear, simple diagrams that are easy for

students to understand and recall in essays. The extensive use of cross-referencing makes it possible for students to return to individual sections for review purposes without difficulty. Whether students interests lie in biological, chemical, or medical aspects of biochemistry and molecular biology, "Trends Biochemistry and Molecular Biology" will help make students able, excited, and eager to read more widely and more deeply on this engaging subject. This important new book not only covers an extensive set of topics of current and special interest, but includes more traditional areas in biochemistry as well. Covering a wide range of topics, from classical biochemistry to proteomics and genomics, it also details the properties of commonly used biochemicals, laboratory solvents, and reagents. Coverage is expanded to include a section on stem cells, chapters on immunochemical techniques and spectroscopy techniques, and additional chapters on drug discovery and development, and clinical biochemistry. Moreover, a number of techniques used in molecular biology, for example, molecular cloning, gel electrophoresis, polymerase chain reaction, microarrays, etc. are also explained with practical examples. It also includes some of the vital pieces of work being conducted across the world, on various topics related to molecular biology. Through it, we attempt to further enlighten the readers about the new concepts in this field. Altogether, presented in an organized, concise, and simple-to-use format, "Trends in Biochemistry and Molecular Biology" allows quick access to the most frequently used data. There is an emphasis on biological aspects of biochemistry and new topics are introduced in their biological context wherever possible. Experimental design and the statistical analysis of data are emphasized at the end to ensure students are equipped to successfully plan their own experiments and examine the results obtained.

The Social Life of DNA Springer

Since the original publication of *Allogeneic Stem Cell Transplantation: Clinical Research and Practice*, *Allogeneic hematopoietic stem cell transplantation (HSC)* has undergone several fast-paced changes. In this second edition, the editors have focused on topics relevant to evolving knowledge in the field in order to better guide clinicians in decision-making and management of their patients, as well as help lead laboratory investigators in new directions emanating from clinical observations. Some of the most respected clinicians and

scientists in this discipline have responded to the recent advances in the field by providing state-of-the-art discussions addressing these topics in the second edition. The text covers the scope of human genomic variation, the methods of HLA typing and interpretation of high-resolution HLA results. Comprehensive and up-to-date, *Allogeneic Stem Cell Transplantation: Clinical Research and Practice, Second Edition* offers concise advice on today's best clinical practice and will be of significant benefit to all clinicians and researchers in allogeneic HSC transplantation. **Molecular Biology of Plants** Free Radicals in Biology and Medicine
Recent major advances in the field of comparative genomics and cytogenomics of plants, particularly associated with the completion of ambitious genome projects, have uncovered astonishing facets of the architecture and evolutionary history of plant genomes. The aim of this book was to review these recent developments as well as their implications in our understanding of the mechanisms which drive plant diversity. New insights into the evolution of gene functions, gene families and genome size are presented, with particular emphasis on the evolutionary impact of polyploidization and transposable elements. Knowledge on the structure and evolution of plant sex chromosomes, centromeres and microRNAs is reviewed and updated. Taken together, the contributions by internationally recognized experts present a panoramic overview of the structural features and evolutionary dynamics of plant genomes. This volume of *Genome Dynamics* will provide researchers, teachers and students in the fields of biology and agronomy with a valuable source of current knowledge on plant genomes.

Free Radicals in Biology and Medicine National Academies Press

A Smithsonian Book of the Year A Nature Book of the Year
"Provides much-needed foundation of the relationship between museums and Native Americans." —Smithsonian
"How did our museums become great storehouses of human remains? What have we learned from the skulls and bones of unburied dead? *Bone Rooms* chases answers to these questions through shifting ideas about race, anatomy, anthropology, and archaeology and helps explain recent ethical standards for the collection and display of human dead." —Ann Fabian, author of *The Skull Collectors*
"Details the nascent views of racial science that evolved in U.S. natural history, anthropological, and medical

museums...Redman effectively portrays the remarkable personalities behind [these debates]...pitting the prickly Aleš Hrdlička at the Smithsonian...against ally-turned-rival Franz Boas at the American Museum of Natural History.” —David Hurst Thomas, *Nature* “In exquisite detail...Bone Rooms narrates the rise and fall of racial science in America...This complicated and engrossing story is filled with unexpected twists and significant implications for the history of anthropology...and intellectual history of race in the United States, and American intellectual history more generally.” —Matthew Dennis, author of *Seneca Possessed* “A beautifully written, meticulously documented analysis of [this] little-known history.” —Brian Fagan, *Current World Archeology* In 1864 a U.S. army doctor dug up the remains of a Dakota man who had been killed in Minnesota and sent the skeleton to a museum in Washington that was collecting human remains for research. In the “bone rooms” of the Smithsonian, a scientific revolution was unfolding that would change our understanding of the human body, race, and prehistory. Seeking evidence to support new theories of racial classification, collectors embarked on a global competition to recover the best specimens of skeletons, mummies, and fossils. As the study of these discoveries increasingly discredited racial theory, new ideas emerging in the budding field of anthropology displaced race as the main motive for building bone rooms. Today, debates about the ethics of these collections have taken on a new urgency as a new generation seeks to learn about the indigenous past and to return objects of spiritual significance to native peoples.

Stereotactic Body Radiation Therapy Humana
Stereotactic body radiation therapy (SBRT) has emerged as an important innovative treatment for various primary and metastatic cancers. This book provides a comprehensive and up-to-date account of the physical/technological, biological, and clinical aspects of SBRT. It will serve as a detailed resource for this rapidly developing treatment modality. The organ sites covered include lung, liver, spine, pancreas, prostate, adrenal, head and neck, and female reproductive tract. Retrospective studies and prospective clinical trials on SBRT for various organ sites from around the world are examined, and toxicities and normal tissue constraints are discussed. This book features unique insights from world-renowned experts in SBRT from North America, Asia, and Europe. It will be necessary reading for

radiation oncologists, radiation oncology residents and fellows, medical physicists, medical physics residents, medical oncologists, surgical oncologists, and cancer scientists.

The Cell Cycle and Cancer John Wiley & Sons

In October 2003 the U.S. Agency for International Development (USAID) and the National Research Council (NRC) entered into a cooperative agreement. The agreement called for the NRC to examine selected aspects of U.S. foreign assistance activities—primarily the programs of the USAID—that have benefited or could benefit from access to strong science, technology, and medical capabilities in the United States or elsewhere. After considering the many aspects of the role of science and technology (S&T) in foreign assistance, the study led to the publication of *The Fundamental Role of Science and Technology in International Development*. In the book special attention is devoted to partnerships that involve the USAID together with international, regional, U.S. governmental, and private sector organizations in fields such as health care, agriculture and nutrition, education and job creation, and energy and the environment. This book explores specific programmatic, organizational, and personnel reforms that would increase the effective use of S&T to meet the USAID's goals while supporting larger U.S. foreign policy objectives.

Psychoendocrinology Springer Science & Business Media

CRISPR/Cas is a recently described defense system that protects bacteria and archaea against invasion by mobile genetic elements such as viruses and plasmids. A wide spectrum of distinct CRISPR/Cas systems has been identified in at least half of the available prokaryotic genomes. On-going structural and functional analyses have resulted in a far greater insight into the functions and possible applications of these systems, although many secrets remain to be discovered. In this book, experts summarize the state of the art in this exciting field.

Genomics, Proteomics, and Metabolomics Springer Science & Business Media

Molecular Biology of Plants presents the formal scientific presentations delivered on the symposium on plant molecular biology, held at the University of Minnesota in 1976. The topics in this book are organized around the central dogma of molecular biology. Section I describes the organization and replication of DNA in plant chromosomes, including chloroplast genomes; Section II discusses molecular aspects of transcription and

translation, ribosomal RNA gene systems and hormonal control of protein synthesis. Section III examines plant viruses and bacterial agents, in particular the crown gall system, viroids, and the replication of plant RNA viruses. Each of these specific topics contributes to an integrated knowledge of plant molecular biology. The book will be of interest to geneticists, cell biologists, plant breeders, plant physiologists, plant pathologists, and biochemists.

Lactogenesis Springer Nature

Self-Congruity provides a comprehensive understanding of the self-concept, integrating the many references to it in the psychological literature. Using his previous findings, the author considers cognitive-versus-affective phenomena, and intrapersonal, interpersonal, situational, and analytic modes. He then applies his integrated theory to the problem of change in self-concept and behavior.

Breathing Race into the Machine MDPI

This book introduces “network pharmacology” as an emerging frontier subject of systematic drug research in the era of artificial intelligence and big data. Network Pharmacology is an original subject of fusion system biology, bioinformatics, network science and other related disciplines. It emphasizes on starting from the overall perspective of the system level and biological networks, the analysis of the laws of molecular association between drugs and their treatment objects, reveals the systematic pharmacological mechanisms of drugs, and guides the research and development of new drugs and clinical diagnosis and treatment. After it was proposed, network pharmacology has been paid attention by researchers, and it has been rapidly developed and widely used. In order to systematically reveal the biological basis of diagnosis and treatment in traditional Chinese medicine and modern medicine, we proposed a new concept of “network target” for the first time, which has become the core theory of “network pharmacology”. The core principle of a network target is to construct a biological network that can be used to decipher complex diseases. The network is then used as the therapeutic target, to which multicomponent remedies are applied. This book mainly includes four parts: 1) The concept and theory of network pharmacology; 2) Common analysis methods, databases and software in network pharmacological research; 3) Typical cases of traditional Chinese medicine modernization and

modern drug research based on network pharmacology; 4) Network pharmacology practice process based on drugs and diseases.

Genomics and Proteomics Academic Press

Science in secondary schools has tended to be viewed mainly as a 'practical subject', and language and literacy in science education have been neglected. But learning the language of science is a major part of science education: every science lesson is a language lesson, and language is a major barrier to most school students in learning science. This accessible book explores the main difficulties in the language of science and examines practical ways to aid students in retaining, understanding, reading, speaking and writing scientific language. Jerry Wellington and Jonathan Osborne draw together and synthesize current good practice, thinking and research in this field. They use many practical examples, illustrations and tried-and-tested materials to exemplify principles and to provide guidelines in developing language and literacy in the learning of science. They also consider the impact that the growing use of information and communications technology has had, and will have, on writing, reading and information handling in science lessons. The authors argue that paying more attention to language in science classrooms is one of the most important acts in improving the quality of science education. This is a significant and very

readable book for all student and practising secondary school science teachers, for science advisers and school mentors. *Role of TCTP in Cell Biological and Disease Processes* Wiley
Free Radicals in Biology and Medicine has become a classic text in the field of free radical and antioxidant research. Now in its fifth edition, the book has been comprehensively rewritten and updated whilst maintaining the clarity of its predecessors. Two new chapters discuss 'in vivo' and 'dietary' antioxidants, the first emphasising the role of peroxiredoxins and integrated defence mechanisms which allow useful roles for ROS, and the second containing new information on the role of fruits, vegetables, and vitamins in health and disease. This new edition also contains expanded coverage of the mechanisms of oxidative damage to lipids, DNA, and proteins (and the repair of such damage), and the roles played by reactive species in signal transduction, cell survival, death, human reproduction, defence mechanisms of animals and plants against pathogens, and other important biological events. The methodologies available to measure reactive species and oxidative damage (and their potential pitfalls) have been fully updated, as have the topics of phagocyte ROS production, NADPH oxidase enzymes, and toxicology. There is a detailed and critical evaluation of the role of free radicals and other reactive species in human diseases, especially cancer, cardiovascular, chronic inflammatory and neurodegenerative diseases. New aspects of ageing are discussed in the context of

the free radical theory of ageing. This book is recommended as a comprehensive introduction to the field for students, educators, clinicians, and researchers. It will also be an invaluable companion to all those interested in the role of free radicals in the life and biomedical sciences.

Bioelectronic Medicine Mdpi AG

This book provides thorough coverage of high-throughput OMICs technologies for the monitoring of stem cells and regenerative medicine. Specific topics covered include the genomics, proteomics, and metabolomics aspects of regenerative medicine, metabolic profiling of mesenchymal stem cells, genome profiling of mesenchymal stem cells, OMICs monitoring of stem cell-derived exosomes, stem cell proteomics, lipidomics, OMICs profiling of cancer (stem) cells, and finally ethical considerations of OMICs-based investigations. Chapters are authored by world-renowned scientists who have valuable expertise in the field of OMICs and regenerative medicine. *Genomics, Proteomics, and Metabolomics: Stem Cells Monitoring in Regenerative Medicine*, part of Springer's Stem Cell Biology and Regenerative Medicine series, is essential reading for researchers, clinicians, biologists, biochemists, and pharmaceutical experts conducting research in the fields of stem cell biology, molecular aspects of stem cell research, tissue engineering, regenerative medicine, cellular therapy, OMICs, bioinformatics, and ethics.

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