

Circular Rnas Biogenesis And Functions Advances I

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Aging and Aging-Related Diseases - Zhao Wang
2018-09-19

This book provides an overview of recent advances in the study of aging and aging related diseases, discussing the topics at individual, organ, tissue, cell, and molecular levels. It also presents studies on the biomarkers of aging and anti-aging interventions. Aging has been becoming a global health problem. However it was not possible to determine aging as we usually diagnose a disease because there are few biomarkers for age estimation. Since ancient times, people have been seeking anti-aging substances and methods for achieving immortality, while the scientific study of aging has only existed for 100 years. This book appeals to researchers both in institutes and in pharmaceutical companies interested in further studies in this field.

RNA-protein Interactions - Kiyoshi Nagai
1994

The study of RNA-protein interactions is crucial to understanding the mechanisms and control of gene expression and protein synthesis. The realization that RNAs are often far more biologically active than was previously appreciated has stimulated a great deal of new research in this field. Uniquely, in this book, the world's leading researchers have collaborated to produce a comprehensive and current review of RNA-protein interactions for all scientists

working in this area. Timely, comprehensive, and authoritative, this new Frontiers title will be invaluable for all researchers in molecular biology, biochemistry and structural biology.

RNA Bioinformatics - Ernesto Picardi
2015-01-11

This volume provides an overview of RNA bioinformatics methodologies, including basic strategies to predict secondary and tertiary structures, and novel algorithms based on massive RNA sequencing. Interest in RNA bioinformatics has rapidly increased thanks to the recent high-throughput sequencing technologies allowing scientists to investigate complete transcriptomes at single nucleotide resolution. Adopting advanced computational technics, scientists are now able to conduct more in-depth studies and present them to you in this book. Written in the highly successful Methods of Molecular Biology series format, chapters include introductions to their respective topics, lists of the necessary materials and equipment, step-by-step, readily reproducible bioinformatics protocols, and key tips to avoid known pitfalls. Authoritative and practical, RNA Bioinformatics seeks to aid scientists in the further study of bioinformatics and computational biology of RNA.

Recent Advances in Potential Biomarkers for Rheumatic Diseases and in Cell-based Therapies in the Management of

Inflammatory Rheumatic Diseases - Eric Toussiroot 2022-02-18

Computational Non-coding RNA Biology - Yun Zheng 2018-09-14

Computational Non-coding RNA Biology is a resource for the computation of non-coding RNAs. The book covers computational methods for the identification and quantification of non-coding RNAs, including miRNAs, tasiRNAs, phasiRNAs, lariat originated circRNAs and back-spliced circRNAs, the identification of miRNA/siRNA targets, and the identification of mutations and editing sites in miRNAs. The book introduces basic ideas of computational methods, along with their detailed computational steps, a critical component in the development of high throughput sequencing technologies for identifying different classes of non-coding RNAs and predicting the possible functions of these molecules. Finding, quantifying, and visualizing non-coding RNAs from high throughput sequencing datasets at high volume is complex. Therefore, it is usually possible for biologists to complete all of the necessary steps for analysis. Presents a comprehensive resource of computational methods for the identification and quantification of non-coding RNAs Introduces 23 practical computational pipelines for various topics of non-coding RNAs Provides a guide to assist biologists and other researchers dealing with complex datasets Introduces basic computational methods and provides guidelines for their replication by researchers Offers a solution to researchers approaching large and complex sequencing datasets

Advances in Molecular Targeted Therapies of Urologic Cancers - Bianca Nitzsche 2022-11-24

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Advances in Clinical Chemistry - Gregory S. Makowski 2020-11-01

Advances in Clinical Chemistry, Volume 99, the latest installment in this internationally acclaimed series, contains chapters authored by world-renowned clinical laboratory scientists, physicians and research scientists. The serial

discusses the latest and most up-to-date technologies related to the field of clinical chemistry, with this release including chapters on Extracellular vesicle associated proteins as potential biomarkers, Molecular and non-molecular approaches to etiologic diagnosis of gastroenteritis, Circular RNAs and cancer: Opportunities and challenges, Mass spectrometry-based metabolomics for an in-depth questioning of human health, Application of microfluidic technology in cancer research and therapy, Advances in aptasensor technology, and much more. Covers the most up-to-date technologies in clinical chemistry and clinical laboratory science Authored by world renowned clinical laboratory scientists, physicians and research scientists Provides the international benchmark for novel analytical approaches in the clinical laboratory

Advances in Diagnostics and Treatment of Functional Neurological Disorders: Neurogenomics, Neuromodulation and Machine-Learning - Guohui Lu 2022-11-03

Promoter Associated RNA - Sara Napoli 2018-06-09

This volume is divided in four sections; covering genome wide approaches, techniques for characterize of paRNA structural features are described, selecting pa-RNA, and paRNA therapeutic potential. Chapters describe how siRNAs directed against paRNAs can be applied in vivo to modulate transcription of important genes controlled by paRNAs. 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 cutting-edge, *Promoter Associated RNA: Methods and Protocols* aims to demonstrate paRNAs as new class of regulatory molecules, to further investigate and value as tools for fine transcriptional tuning.

Transcriptional and Post-transcriptional Regulation - Ghedira Kais 2018-10-10

This book focuses on the transcriptional and post-transcriptional gene regulations and presents a detailed portrait of many novel aspects related to highlighting the importance of

key TFs in some vital biological processes, the role of certain TFs to control some infectious diseases, the role of non-coding RNAs in controlling mRNA expression, the involvement of these non-coding RNAs in diseases, and the interplay between TFs and microRNAs as key players for gene expression regulation giving a complete picture of how genes are regulated at the cellular level. The editor embarked upon this writing project entitled "Transcriptional and Post-transcriptional Regulation" to make pertinent contributions accessible to the scientific community. Hopefully, a large audience will enjoy reading and benefit from the chapters of this book.

MicroRNAs - Krishnarao Appasani 2008

A wide-ranging reference on microRNA technology, integrating basic science with applications in biotechnology and pharmaceutical industry.

Progress in Molecular Biology and Translational Science - David B. Teplow 2018-10-16

Progress in Molecular Biology and Translational Science, Volume 159, provides the most topical, informative and exciting monographs available on a wide variety of research topics related to prions, viruses, bacteria and eukaryotes. The series includes in-depth knowledge on molecular biological aspects of organismal physiology, along with insights on how this knowledge may be applied to understand and ameliorate human disease. New chapters in this release discuss timely topics, such as Targeting recently deorphanized GPR83 for the treatment of infection, stress, and drug addiction, Arrestin Structure-Function, Arrestins in the Cardiovascular System, Analysis of biased agonism, and more. Includes comprehensive coverage of molecular biology Presents ample use of tables, diagrams, schemata, and color figures to enhance the reader's ability to rapidly grasp the information provided Contains contributions from renowned experts in the field

Kaposi Sarcoma Herpesvirus: New Perspectives - Chris Boshoff 2006-10-13 will follow

Systems Medicine - 2020-08-24

Technological advances in generated molecular and cell biological data are transforming biomedical research. Sequencing, multi-omics and imaging technologies are likely to have deep

impact on the future of medical practice. In parallel to technological developments, methodologies to gather, integrate, visualize and analyze heterogeneous and large-scale data sets are needed to develop new approaches for diagnosis, prognosis and therapy. **Systems Medicine: Integrative, Qualitative and Computational Approaches** is an innovative, interdisciplinary and integrative approach that extends the concept of systems biology and the unprecedented insights that computational methods and mathematical modeling offer of the interactions and network behavior of complex biological systems, to novel clinically relevant applications for the design of more successful prognostic, diagnostic and therapeutic approaches. This 3 volume work features 132 entries from renowned experts in the fields and covers the tools, methods, algorithms and data analysis workflows used for integrating and analyzing multi-dimensional data routinely generated in clinical settings with the aim of providing medical practitioners with robust clinical decision support systems. Importantly the work delves into the applications of systems medicine in areas such as tumor systems biology, metabolic and cardiovascular diseases as well as immunology and infectious diseases amongst others. This is a fundamental resource for biomedical students and researchers as well as medical practitioners who need to need to adopt advances in computational tools and methods into the clinical practice. Encyclopedic coverage: 'one-stop' resource for access to information written by world-leading scholars in the field of Systems Biology and Systems Medicine, with easy cross-referencing of related articles to promote understanding and further research Authoritative: the whole work is authored and edited by recognized experts in the field, with a range of different expertise, ensuring a high quality standard Digitally innovative: Hyperlinked references and further readings, cross-references and diagrams/images will allow readers to easily navigate a wealth of information

Gene Expression and Phenotypic Traits -

Yuan-Chuan Chen 2020-04-01

Gene expression is the most fundamental level at which genotype gives rise to phenotype, which is an obvious, observable, and measurable trait.

Phenotype is dependent on genetic makeup of the organism and influenced by environmental conditions. This book explores the significance, mechanism, function, characteristic, determination, and application of gene expression and phenotypic traits.

[Advanced Molecular Targets in the Diagnosis and Treatment of Gastrointestinal Cancers](#) - Zsolt Kovács 2022-11-17

Pre-mRNA Processing - Angus I. Lamond
2013-11-11

The past fifteen years have seen tremendous growth in our understanding of the many post-transcriptional processing steps involved in producing functional eukaryotic mRNA from primary gene transcripts (pre-mRNA). New processing reactions, such as splicing and RNA editing, have been discovered and detailed biochemical and genetic studies continue to yield important new insights into the reaction mechanisms and molecular interactions involved. It is now apparent that regulation of RNA processing plays a significant role in the control of gene expression and development. An increased understanding of RNA processing mechanisms has also proved to be of considerable clinical importance in the pathology of inherited disease and viral infection. This volume seeks to review the rapid progress being made in the study of how mRNA precursors are processed into mRNA and to convey the broad scope of the RNA field and its relevance to other areas of cell biology and medicine. Since one of the major themes of RNA processing is the recognition of specific RNA sequences and structures by protein factors, we begin with reviews of RNA-protein interactions. In chapter 1 David Lilley presents an overview of RNA structure and illustrates how the structural features of RNA molecules are exploited for specific recognition by protein, while in chapter 2 Maurice Swanson discusses the structure and function of the large family of hnRNP proteins that bind to pre-mRNA. The next four chapters focus on pre-mRNA splicing.

Clinical Epigenetics - Luke B. Hesson
2019-08-31

In genetic pathology, epigenetic testing is rare and under utilised. In this book, we introduce epigenetics to a non-expert scientific audience

and describe current and future clinical utility of epigenetic testing. By focussing on epigenetics in human disease this book will guide professionals (scientists and clinicians) to understand how epigenetics is relevant in a clinical context, and to implement epigenetic testing in diagnostic laboratories. The book begins with a historical perspective of genetics and epigenetics and describes the work of pioneers who have helped shape these fields. The various mechanisms by which epigenetics can regulate the function of the genome is described. These include DNA methylation, histone modifications, histone variants, nucleosome positioning, cis-regulatory elements, non-coding RNAs and the three-dimensional organisation of chromatin in the nucleus. These are discussed in the context of embryological development, cancer and imprinting disorders, and include examples of epigenetic changes that can be used in diagnosis, prediction of therapeutic response, prognostication or disease monitoring. Finally, for those wishing to implement epigenetic testing in a diagnostic setting, the book includes a case study that illustrates the clinical utility of epigenetic testing.

Circular RNAs - Christoph Dieterich
2018-01-10

This volume provides established approaches for identifying, characterizing, and manipulating circRNAs in vitro, in vivo, and in silico. Chapters highlight the breakthroughs and the challenges in this new field of research. 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, *Circular RNAs: Methods and Protocols* aims to be useful and informative for further study into this vital field. *Cancer and Noncoding RNAs* - Jayprokas Chakrabarti 2017-10-13

Cancer and Noncoding RNAs offers an in-depth exploration of noncoding RNAs and their role in epigenetic regulation of complex human disease, most notably cancer. In addition to examining microRNAs, this volume provides a unique evaluation of more recently profiled noncoding

RNAs now implicated in carcinogenesis, including lncRNAs, piRNAs, circRNAs, and tRNAs, identifying differences in function between these noncoding RNAs and how they interact with the rest of the epigenome. A broad range of chapters from experts in the field detail epigenetic regulation of various cancer types, along with recent next generation sequencing technologies, genome-wide association studies (GWAS) and bioinformatics approaches. This book will help researchers in genomic medicine and cancer biology better understand the role of noncoding RNAs in epigenetics, aiding in the development of useful biomarkers for diagnosis, prognosis and new RNA-based disease therapies. Provides a comprehensive analysis of noncoding RNAs implicated in epigenetic regulation of gene expression and chromatin dynamics Educates researchers and graduate students by highlighting, in addition to miRNAs, a range of noncoding RNAs newly associated with carcinogenesis Applies current knowledge of noncoding RNAs and epigenomics towards developing cancer and RNA-based disease therapies Features contributions by leading experts in the field

Non-coding RNAs in Cardiovascular Diseases - Junjie Xiao 2020-04-13

This book presents the latest research on non-coding RNAs in cardiovascular disease, a major cause of death worldwide. Non-coding RNAs play a significant role in development, proliferation, differentiation and apoptosis. Since altered non-coding RNA expression is often associated with various diseases, their potential use in diagnostics, prognostics and therapeutics is an important current area of study. The book consists of six parts: 1) An overview of non-coding RNAs and cardiovascular system, 2) Bioinformatics and interactions, 3) Non-coding RNA regulation in cardiovascular system, 4) Non-coding RNAs and cardiovascular diseases, 5) Potential biomarkers and therapeutic implications, 6) Future prospects. It is particularly useful for researchers and students in the field of non-coding RNA and cardiovascular biology, as well as for cardiologists, pharmacologists and physiologists.

The Molecular Biology of Cancer - Stella Pelengaris 2009-03-12

This comprehensive text provides a detailed

overview of the molecular mechanisms underpinning the development of cancer and its treatment. Written by an international panel of researchers, specialists and practitioners in the field, the text discusses all aspects of cancer biology from the causes, development and diagnosis through to the treatment of cancer. Written by an international panel of researchers, specialists and practitioners in the field Covers both traditional areas of study and areas of controversy and emerging importance, highlighting future directions for research Features up-to-date coverage of recent studies and discoveries, as well as a solid grounding in the key concepts in the field Each chapter includes key points, chapter summaries, text boxes, and topical references for added comprehension and review Supported by a dedicated website at www.blackwellpublishing.com/pelengaris An excellent text for upper-level courses in the biology of cancer, for medical students and qualified practitioners preparing for higher exams, and for researchers and teachers in the field

Long Non Coding RNA Biology - M.R.S. Rao 2017-08-16

This contributed volume offers a comprehensive and detailed overview of the various aspects of long non-coding RNAs and discusses their emerging significance. Written by leading experts in the field, it motivates young researchers around the globe, and offers graduate and postgraduate students fascinating insights into genes and their regulation in eukaryotes and higher organisms.

Breast Cancer Metastasis and Drug Resistance - Aamir Ahmad 2019-08-27

Resistance to therapies, both targeted and systemic, and metastases to distant organs are the underlying causes of breast cancer-associated mortality. The second edition of *Breast Cancer Metastasis and Drug Resistance* brings together some of the leading experts to comprehensively understand breast cancer: the factors that make it lethal, and current research and clinical progress. This volume covers the following core topics: basic understanding of breast cancer (statistics, epidemiology, racial disparity and heterogeneity), metastasis and drug resistance (bone metastasis, trastuzumab

resistance, tamoxifen resistance and novel therapeutic targets, including non-coding RNAs, inflammatory cytokines, cancer stem cells, ubiquitin ligases, tumor microenvironment and signaling pathways such as TRAIL, JAK-STAT and mTOR) and recent developments in the field (epigenetic regulation, microRNAs-mediated regulation, novel therapies and the clinically relevant 3D models). Experts also discuss the advances in laboratory research along with their translational and clinical implications with an overarching goal to improve the diagnosis and prognosis, particularly that of breast cancer patients with advanced disease.

Handbook of RNA Biochemistry - Roland K. Hartmann 2015-06-22

The second edition of a highly acclaimed handbook and ready reference. Unmatched in its breadth and quality, around 100 specialists from all over the world share their up-to-date expertise and experiences, including hundreds of protocols, complete with explanations, and hitherto unpublished troubleshooting hints. They cover all modern techniques for the handling, analysis and modification of RNAs and their complexes with proteins. Throughout, they bear the practising bench scientist in mind, providing quick and reliable access to a plethora of solutions for practical questions of RNA research, ranging from simple to highly complex. This broad scope allows the treatment of specialized methods side by side with basic biochemical techniques, making the book a real treasure trove for every researcher experimenting with RNA.

Advances in Swarm Intelligence - Ying Tan 2020-07-12

This book constitutes the proceedings of the 11th International Conference on Advances in Swarm Intelligence, ICSI 2020, held in July 2020 in Belgrade, Serbia. Due to the COVID-19 pandemic the conference was held virtually. The 63 papers included in this volume were carefully reviewed and selected from 127 submissions. The papers are organized in 12 cohesive topical sections as follows: Swarm intelligence and nature-inspired computing; swarm-based computing algorithms for optimization; particle swarm optimization; ant colony optimization; brain storm optimization algorithm; bacterial foraging optimization; genetic algorithm and

evolutionary computation; multi-objective optimization; machine learning; data mining; multi-agent system and robotic swarm, and other applications.

Circular RNAs - Junjie Xiao 2018-12-29

This book provides an essential overview of the rapidly advancing field of circular RNAs - newly discovered RNAs that are generated by back-splicing precursor mRNA and perform regulatory functions in many biological processes. Although many aspects of circular RNAs' biology and mechanisms of gene regulation remain unclear, they have been found to be abundant, evolutionally conserved, and stable in cells; further, they have numerous potential functions. The book consists of eight parts: 1) An overview of circular RNAs, 2) Bioinformatics for circular RNAs, 3) Biogenesis of circular RNAs, 4) Molecular mechanisms and gene regulation of circular RNAs, 5) Circular RNAs as potential disease biomarkers, 6) Circular RNAs and human diseases, 7) Circular RNAs in Plants and in Archaea, and 8) Future prospects. Given its focus, the book will be especially useful for researchers and students in the fields of biochemistry, molecular biology, cell biology, and medicine.

Cancer Evolution - Charles Swanton 2017

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.

Structural and Functional Characterization of Circular RNAs - Amaresh Chandra Panda
2022-01-04

Bladder Cancer – A Cinderella Cancer: Advances and Remaining Research Questions - Mieke Van Hemelrijck 2020-11-18

This eBook is a collection of articles from a Frontiers Research Topic. Frontiers Research Topics are very popular trademarks of the Frontiers Journals Series: they are collections of at least ten articles, all centered on a particular subject. With their unique mix of varied contributions from Original Research to Review Articles, Frontiers Research Topics unify the most influential researchers, the latest key findings and historical advances in a hot research area! Find out more on how to host your own Frontiers Research Topic or contribute to one as an author by contacting the Frontiers Editorial Office: frontiersin.org/about/contact.

Molecular Biology of the Cell - Bruce Alberts
2004

Novel Therapies for Combating Bone Diseases through Advances in Bone Remodeling - Chao Liang 2022-01-17

Plant Epigenetics - Nikolaus Rajewsky
2017-04-27

This book presents, in 26 chapters, the status quo in epigenomic profiling. It discusses how functional information can be indirectly inferred and describes the new approaches that promise functional answers, collectively referred to as epigenome editing. It highlights the latest important advances in our understanding of the

functions of plant epigenomics and new technologies for the study of epigenomic marks and mechanisms in plants. Topics include the deposition or removal of chromatin modifications and histone variants, the role of epigenetics in development and response to environmental signals, natural variation and ecology, as well as applications for epigenetics in crop improvement. Discussing areas ranging from the complex regulation of stress and heterosis to the precise mechanisms of DNA and histone modifications, it presents breakthroughs in our understanding of complex phenotypic phenomena.

A Roadmap to Nonhematopoietic Stem Cell-Based Therapeutics - Xiao-Dong Chen
2018-08-31

A Roadmap to Non-hematopoietic Stem Cell-Based Therapeutics: From the Bench to the Clinic is a resource that provides an overview of the principles of stem cell therapy, the promises and challenges of using stem cells for treating various clinical conditions, and future perspectives. The overall goal is to facilitate the translation of basic research on stem cells to clinical applications. The properties of stem cells from various sources are reviewed and the advantages and disadvantages of each for clinical use are discussed. Modifying stem cell properties through preconditioning strategies using physical, chemical, genetic, and molecular manipulation to improve cell survival, increase cell differentiation potential, enhance production of paracrine factors, and facilitate homing to the site of injury or disease upon transplantation are reviewed. Various routes of stem cell administration and dosing, and the duration of effects, are explored. Individual chapters are written by experts in the field and focus on the use of stem cells in treating various degenerative diseases, autoimmune diseases, wound healing, cardiovascular disease, spinal cord injury, oral and dental diseases, and skeletal disorders. Finally, experts in the regulatory arena discuss mechanisms used in different countries for approving the use of stem cells to treat diseases and many common issues that are typically encountered while seeking approval for this class of therapeutic agent. Offers advanced students, as well as new researchers, an overview of the principles of

stem cell therapy Discusses a wide array of pressing clinical issues with stem cell-based therapies so that new ideas in the laboratory can be efficiently translated to the clinic through better designed clinical trials Helps clarify current regulatory mechanisms so that the safe use of stem cells for treating a variety of diseases can move forward Fosters cross-disciplinary dialogue between research scientists and physicians to accelerate the safe implementation of efficacious cell therapies

Chloroplast Biogenesis - Udaya C. Biswal
2013-04-17

Chloroplast is the organelle where the life-giving process photosynthesis takes place; it is the site where plants and algae produce food and oxygen that sustain our life. The story of how it originates from proplastids, and how it ultimately dies is beautifully portrayed by three authorities in the field: Basanti Biswal, Udaya Biswal and M. K. Raval. I consider it a great privilege and honor to have been asked to write this foreword. The book 'Chloroplast biogenesis: from proplastid to gerontoplast' goes much beyond photosynthesis. The character of the book is different from that of many currently available books because it provides an integrated approach to cover the entire life span of the organelle including its senescence and death. The books available are mostly confined to the topics relating to the 'build up' or development of chloroplast during greening. The story of organelle biogenesis without description of the events associated with its regulated dismantling during genetically programmed senescence is incomplete. A large volume of literature is available in this area of chloroplast senescence accumulated during the last 20 years. Although some of the findings in this field have been organized in the form of reviews, the data in the book are generalized and integrated with simple text and graphics. This book describes the structural features of proplastid and its transformation to fully mature chloroplast, which is subsequently transformed into gerontoplast exhibiting senescence syndrome. The book consists of five major chapters.

MiRNA Biogenesis - Ulf Andersson Ørom 2018

Sirna Design - Debra J. Taxman 2016-05-01

A fresh addition to Springer's successful series *Methods in Molecular Biology*, this publication updates researchers and technicians with the latest protocols in RNA interference, the gene silencing methodology that is revolutionizing biological research."

Bioinformatics in Rice Research - Manoj Kumar Gupta 2021-09-24

This book provides an up-to-date review of classic and advanced bioinformatics approaches and their utility in rice research. It summarizes databases and tools for analyzing DNA, proteins and gene expression profiles, mapping genetic variations, annotation of protein and RNA molecules, phylogenetic analysis, and pathway enrichment. In addition, it presents high-throughput technologies that are widely used to provide deep insights into the genetic architecture of important traits in the rice genome. The book subsequently discusses techniques for identifying RNA-protein, DNA-protein interactions, and molecular markers, including SNP and microsatellites, in the contexts of rice breeding and genetics. Lastly, it explores various tools that are used to identify and characterize non-coding RNA in rice and their potential role in rice research.

Circular RNAs - Junjie Xiao 2018-09-27

This book provides an essential overview of the rapidly advancing field of circular RNAs - newly discovered RNAs that are generated by back-splicing precursor mRNA and perform regulatory functions in many biological processes. Although many aspects of circular RNAs' biology and mechanisms of gene regulation remain unclear, they have been found to be abundant, evolutionally conserved, and stable in cells; further, they have numerous potential functions. The book consists of eight parts: 1) An overview of circular RNAs, 2) Bioinformatics for circular RNAs, 3) Biogenesis of circular RNAs, 4) Molecular mechanisms and gene regulation of circular RNAs, 5) Circular RNAs as potential disease biomarkers, 6) Circular RNAs and human diseases, 7) Circular RNAs in Plants and in Archaea, and 8) Future prospects. Given its focus, the book will be especially useful for researchers and students in the fields of biochemistry, molecular biology, cell biology, and medicine.

Oncogene-Induced Senescence: Methods and

Protocols - Mikhail A. Nikiforov 2018-11-17

This book offers in a single volume a unique collection of the state-of-the-art experimental procedures utilized for the induction, detection, and modeling of this complex cellular program of oncogene-induced senescence. The book encompasses protocols for studying this multi-step program in human specimens and a variety of experimental models including cultured mammalian cells, laboratory mice, and *Drosophila melanogaster*, as well as offering a description of high throughput approaches.

Written for the highly successful *Methods in Molecular Biology* series, 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, *Oncogene-Induced Senescence: Methods and Protocols* represents a valuable asset for a wide audience of medical oncologists and researchers in the fields of oncology, molecular and cellular biology, biochemistry, and animal development.