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Springer Protocols

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Cell Senescence

Methods and Protocols

 Humana Press

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John M. Davis



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Cellular Senescence Marco Demaria, 2018-11-24 This book describes current methods for the identification and characterization of the major hallmarks of senescent cells Chapters focus on the high heterogeneity of the senescence phenotypes and techniques to induce and identify specific senescence programs Additional chapters describe cellular and mouse models in which is possible to study the complex cell and non cell autonomous functions of senescent cells 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 Cellular Senescence Methods and Protocols aims to ensure successful results in the further study of this vital field

Cell Senescence Lorenzo Galluzzi, Ilio Vitale, Oliver Kepp, Guido Kroemer, 2016-05-01 This Methods in Molecular Biology book details methods for studying cell senescence in bacteria fungi worms flies and mammalian cells Covers morphological biochemical and functional manifestations and offers protocols for population analyses and and more

Oncogene-Induced Senescence Vassilis G. Gorgoulis, Maria Cavinato, Konstantinos Evangelou, 2025-03-13 This volume explores a collection of the most recent experimental approaches for the detection modelling characterization and in depth computational analysis of the biological phenomenon known as Oncogene Induced Senescence OIS The chapters in this book cover topics such as protocols to study OIS in two dimensional three dimensional and in vivo animal and human settings analyzing OIS using high throughput bioinformatics and discriminate OIS from aging Published 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 and readily reproducible laboratory protocols and tips on troubleshooting to avoid known pitfalls Comprehensive and authoritative Oncogene Induced Senescence Methods and Protocols is a valuable resource for basic researchers and clinicians in the oncology field and a great guide for computational scientists

Plant Senescence Yongfeng Guo, 2018

Immunosenescence Roberta Amoriello, Clara Ballerini, Alice Mariottini, 2024-09-30 This detailed book explores the interactions between different types of cells and immune cells focusing on how their functionality is affected by immunosenescence Beginning with traditional approaches such as quantifying TRECs and measuring telomere lengths the book continues with chapters on characterization of immune cell populations in aging immune cell signaling transcription factors gene expression profiles and the production of soluble factors such as cytokines as well as computational approaches and more 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 and readily reproducible laboratory protocols as well as tips on troubleshooting and avoiding known pitfalls Authoritative and practical Immunosenescence Methods and Protocols serves as an ideal guide for researchers working in this vital area of immunology and cell biology

Biological Aging Trygve O. Tollefsbol, 2008-02-03 Biological

Aging Methods and Protocols investigates the various processes that are affected by the age of an organism. Several new tools for the analysis of biological aging have been introduced recently and this volume provides methods and protocols for these new techniques in addition to its coverage of established procedures. The editors have carefully selected only those topics that are considered mainstays of the field or are showing promise in revolutionizing this relatively new science. The three main areas of focus in this cutting edge compendium of biological aging research are methods that are basic to understanding the fundamental mechanisms of cellular aging, techniques used to intervene in the aging process, and approaches to analyzing the many molecular processes of biological aging. Researchers seeking new technology and techniques will find this volume of tremendous benefit as they move towards new directions in the exciting and expanding field of biological aging.

The Surfaceome Csaba Matta, Ali Mobasheri, Roland Takács, 2025-04-30. This volume explores a collection of methodologies used to study the complexities of biological membranes and the associated surfaceome. The chapters in this book aim to facilitate the adoption of innovative methods to help researchers advance their understanding of the biology of membranes and their role in health and disease. 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 trouble shooting and avoiding known pitfalls. Comprehensive and cutting edge. The Surfaceome Methods and Protocols is a valuable resource for both novice and expert researchers looking to learn more about this important and developing field.

Nanotoxicity Susai Rajendran, Anita Mukherjee, Chandraiah Godugu, Ritesh K. Shukla, Tuan Anh Nguyen, 2020-04-09. Nanotoxicity: Prevention and Antibacterial Applications of Nanomaterials focuses on the fundamental concepts for cytotoxicity and genotoxicity of nanomaterials. It sheds more light on the underlying phenomena and fundamental mechanisms through which nanomaterials interact with organisms and physiological media. The book provides good guidance for toxic prevention methods and management in the manufacture, application, disposal. The book also discusses the potential applications of nanomaterials based antibiotics. The potential toxic effects of nanomaterials result not only from the type of base materials but also from their size, ligands, surface chemical modifications. This book discusses why different classes of nanomaterials display toxic properties and what can be done to mitigate this toxicity. It also explores how nanomaterials are being used as antimicrobial agents, being used to purify air and water, and counteract a range of infectious diseases. This is an important reference for materials scientists, environmental scientists, and biomedical scientists who are seeking to gain a greater understanding of how nanomaterials can be used to combat toxic agents and how the toxicity of nanomaterials themselves can best be mitigated. Explains the underlying phenomena and fundamental mechanisms through which nanomaterials interact with organisms and physiological media. Outlines major methods for mitigating and prevention of nanotoxicity. Discusses the applications of nanomaterials based antibiotics.

Autophagy and Senescence in Cancer Therapy, 2021-04-13. Advances in Cancer Research Volume 150. The

latest release in this ongoing series covers the relationships between autophagy and senescence how they are defined and the influence of these cellular responses on tumor dormancy and disease recurrence Specific sections in this new release include Autophagy and senescence converging roles in pathophysiology Cellular senescence and tumor promotion role of the unfolded protein response autophagy and senescence in cancer stem cells Targeting the stress support network regulated by autophagy and senescence for cancer treatment Autophagy and PTEN in DNA damage induced senescence mTOR as a senescence manipulation target A forked road and more Addresses the relationship between autophagy and senescence in cancer therapy Covers autophagy and senescence in tumor dormancy Explores autophagy and senescence in disease recurrence

Animal Cell Culture John M. Davis, 2011-03-21 This is a comprehensive research guide that describes both the key new techniques and more established methods Every chapter discusses the merits and limitations of the various approaches and then provides selected tried and tested protocols as well as a plethora of good practical advice for immediate use at the bench It presents the most accessible and comprehensive introduction available to the culture and experimental manipulation of animal cells Detailed protocols for a wide variety of methods provide the core of each chapter making new methodology easily accessible This book is an essential laboratory manual for all undergraduates and graduates about to embark on a cell culture project It is a book which both experienced researchers and those new to the field will find invaluable

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