Plant Cell Culture Protocols

Basic Cell Culture ProtocolsEpithelial Cell Culture ProtocolsProtocols for Neural Cell CultureHuman Cell Culture ProtocolsPlant Cell Culture ProtocolsPlant Cell Culture ProtocolsBasic Cell Culture Protocols, 3E (With Cd)Cancer Cell CultureNeuronal Cell CultureDrosophila ProtocolsMouse Cell CultureEpithelial Cell Culture Protocols. Methods in Molecular BiologyEpithelial Cell CultureCulture of Immortalized CellsMethods in Molecular Biology: Basic cell culture protocolsMaterials and Technologies for Sustainable ProductionBiochemicals and Reagents3D Cell CultureUses and Standardization of Vertebrate Cell CulturesCulture of Epithelial Cells Jeffrey W. Pollard Clare Wise Sergey Fedoroff Joanna Picot Robert D. Hall V ctor M. Loyola-Vargas Cheryl D. Helgason Dania Movia Shohreh Amini William Sullivan Andrew Ward Clare Wise Mario Baratta R. Ian Freshney John M. Walker Yurii Otrosh Zuzana Sumbalova Koledova Elliot M. Levine R. Ian Freshney

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now completely revised and updated from the original much acclaimed and bestselling first edition basic cell culture protocols 2nd ed offers today s most comprehensive collection of easy to follow cutting edge protocols for the culture of a wide range of animal cells its authoritative contributors provide explicit step by step instructions along with extensive notes and tips that allow both experts and beginners to successfully achieve their desired results topics range from basic culture methodology to strategies for culturing previously uncultured cell types and hard to culture differentiated cells methods are also provided for the analysis of living cells by facs video microscopy and confocal microscopy like the first edition this book should be in every cell culture laboratory and be of use to all who use cell cultures in research

there have been significant advances in research involving the isolation and culture of epithelial cells in the past decade and many new techniques have been developed monolayer cultures can be used to evaluate the nature and behavior of cells while the use of epithelial cells in model systems has allowed a deeper understanding of cellular and molecular mechanisms and interactions the aim of this book is to provide a comprehensive step by step guide to many techniques for epithelial cell culture combining in one volume the more commonly used protocols along with many that are more speci ized epithelial cell culture protocols should help those who are new to this field and want to learn the basic culture techniques as well as those needing to use more wide ranging and specific protocols it should be a useful resource on its own and also complement the other volumes that have been written about cell culture in the methods in molecular biology series epithelial cell culture protocols covers a wide variety of protocols mostly aimed at the researcher but also a few aimed at clinicians the est lishment and maintenance of primary cultures derived from many different tissues and different species is covered particular emphasis has been placed on protocols needed to further analyze and assess epithelial cells for example by looking at apoptosis and integrins and by measuring membrane capa tance and confluence using different co culture techniques it is possible also to develop models to investigate many different systems in vitro

the first edition of protocols for neural cell culture was published in 1992 and the second edition in 1997 originally the publication grew outofprotocols used in the tissue culture course given at the university of saskatchewan the course was patterned on those given by the tissue cultureassociation first in toronto canada in 1948 then in cooperstown ny then denver co and finally in madison wi where the course ended in 1964 the course in saskatchewan began in 1963 as a month long international course that included both animal and plant tissue cultures over the years the course underwent specialization first being limited to animal tissue culture then to an intensive one week general course this led to one week courses especially designed for tissue culture for the study of cancer or of the cardiovascular or the nervous system in 1989 the saskatchewan course became part of the tissue culture training facility of the neuroscience network of the canadian network of centres of excellence the course and the training facility ceased to exist in 1997 the faculty for the saskatchewan course was drawn from the best labora tories in the world and laboratory protocols from those centers were thoroughly tested in a student laboratory setting for many years

a thoroughly revised and updated collection readily reproducible techniques for culturing human cells this new edition includes a wide range of human cell types relevant to human disease and new chapters on fibroblasts schwann cells gastric and colonic epithelial cells and parathyroid cells the protocols follow the successful methods in molecular medicinetm series format each offering step by step laboratory instructions an introduction outlining the principle behind the technique lists of the necessary equipment and reagents and tips on troubleshooting and avoiding known pitfalls

robert hall and a panel of expert researchers present a comprehensive collection of the most frequently used and broadly applicable techniques for plant cell and tissue culture readily reproducible and extensively annotated the methods cover culture initiation maintenance manipulation application and long term storage with emphasis on techniques for genetic modification and micropropagation many of these protocols are currently used in major projects designed to produce improved varieties of important crop plants plant cell culture protocols s state of the art techniques are certain to make the book today s reference of choice an indispensable tool in the development of new transgenic plants and full scale commercial applications

a comprehensive state of the art collection of the most frequently used techniques for plant cell and tissue culture readily reproducible and extensively annotated the methods range from general methodologies such as culture induction growth and viability evaluation and contamination control to such highly specialized techniques as chloroplast transformation involving the laborious process of protoplast isolation and culture most of the protocols are currently used in the research programs of the authors or represent important parts of business projects aimed at the generation of improved plant materials two new appendices explain the principles for formulating culture media and the composition of the eight most commonly used media formulations and list more than 100 very useful internet sites

this volume explores the latest collection of cell models that are used in preclinical cancer research and covers both two dimensional and three dimensional culturing techniques the chapters in this book are divided into two parts part one discusses two dimensional cancer cell culture cell models at the air liquid interface and the latest advancements in three dimensional complex spheroid models and dedicated disease animal models part two contains technical chapters that illustrate step by step methodologies for specific cancer cell culture methods the methods discussed range from the generation of isogenic cancer cell lines the use of serum free growth conditions and three dimensional cell cultures and their specific assays for the efficacy assessment of new anticancer therapies 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 cutting edge and comprehensive cancer cell culture methods and protocols is a valuable tool to help researchers involved in this important field to further improve or advance their models for cancer research

in neuronal cell culture methods and protocols the latest aspects of the culture of neural cells are explored by experts in the field who also explain the practical and theoretical considerations of the techniques involved starting with a general overview of the neuronal culturing principles that are described this detailed volume covers cell line models for neural cells the isolation and propagation of primary cultures stem cells transfection and transduction of neural cultures and other more advanced techniques written for the 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 practical and easy to use neuronal cell culture methods and protocols will be of interest to scientists at all levels developing cell culture models for neuroscientific studies

cultured cells have combined accessibility and the ability to expand a homogeneous cell population from a relatively limited source thus opening up a wealth of possibilities for researchers in mouse cell culture methods and protocols expert researchers provide a number of methods for the culture of a wide range of specific cells and tissues isolated from the key genetic model of the fetal or adult mouse including protocols for the explant of fetal tissues and stem cells that allow developmental processes to be followed ex vivo as well as protocols for the culture of isolated cell types that allow for the study of relatively homogeneous cell populations this volume brings together a selection of the most current methods in order to make them available in one convenient source written in the highly successful methods in molecular biologytm series format chapters include introductions to their respective topics lists of the necessary materials and reagents step by step readily reproducible laboratory protocols and notes on troubleshooting and avoiding known pitfalls practical and authoritative mouse cell culture methods and protocols serves as an immediately applicable springboard for the development of new tissue culture methods in order to advance the study and treatment of human disorders

well versed experimenters and clinical researchers share their best methods for establishing and maintaining epithelial cell cultures for analyzing and studying their characteristics and for using them to set up models of critical biological systems the emphasis is on the analysis and assessment of epithelial cells for example by looking at apoptosis and integrins or by measuring membrane capacitance and confluence also described in step by step detail are co culture techniques valuable in developing models for investigating many different in vitro systems including the blood brain barrier drug uptake and the interaction of epithelial cells with bacteria epithelial cell culture protocols offers a step by step guide toward a deeper understanding of cellular and molecular mechanisms as well as a set of robust techniques for specifically evaluating the nature and behavior of epithelial cells

back cover copy this second edition volume expands on the previous edition with in depth discussions on the rapid advancements in epithelial cell biology and the cutting edge research and techniques used by researchers in the field the chapters in this book cover topics such as detailed methodologies applicable to epithelial cells derived from primates pigs bovines and laboratory animals the manipulation and differentiation of epithelial cells and epithelial cell models in the gastroenteric system in human medicine and nutrition 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 comprehensive and cutting edge epithelial cell culture methods and protocols second edition is a valuable resource for researchers in the scientific community educators and students who

are interested in unraveling the complexities of epithelial cell biology cultivating curiosity and inspiring the next generation of groundbreaking research

this is a detailed yet concise manual which provides the most up to date in vitro methods safety procedures for the immortalization of primary cultures for various cell types each method is accompanied by step by step protocols instructions

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since the publication of the previous edition the use of 3d cell and organoid cultures has become more widespread across laboratories this second edition volume expands on the previous edition with discussions about the latest organoid models developed for many more organs new hydrogels and devices for 3d culture and the organoid systems that have been improved by incorporating more components of tissue microenvironments in the in vitro culture the chapters in this book are organized into five parts and cover topics such as biofabrication organoids microfluidic systems bioprinting and image analysis 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 thorough and cutting edge 3d cell culture methods and protocols second edition is a valuable resource that will stimulate new ideas foster interdisciplinary collaborations and contribute to the improvement of human health and well being

designed for cell and molecular biologists this reference work covers many of the most commonly used epithelia it presents in a practical fashion the specific protocols for their cultivation and characterization

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