A Practical Guide To Monoclonal Antibodies

A Practical Guide to Monoclonal AntibodiesMonoclonal AntibodiesMonoclonal AntibodiesMonoclonal AntibodiesClinical Applications of Monoclonal AntibodiesMonoclonal Antibody and Immunosensor TechnologyBiosimilars of Monoclonal AntibodiesA Practical Guide to Monoclonal AntibodiesMonoclonal Antibodies: Important Role in Medical Diagnosis and TherapiesMonoclonal AntibodiesApplications And Engineering Of Monoclonal AntibodiesCurrent Trends in Monoclonal Antibody Development and ManufacturingMonoclonal Antibodies and Functional Cell LinesMonoclonal Antibodies in CancerMonoclonal Antibodies in BiotechnologyTrends in Monoclonal Antibody ResearchMonoclonal AntibodiesMonoclonal AntibodiesMonoclonal AntibodiesMonoclonal Antibodies J. Eryl Liddell J. R. Birch Nima Rezaei Marie A. Simmons Ron Hubbard A.M. Campbell Cheng Liu J. Eryl Liddell Logan Watts Steven Shire David J. King Steven J. Shire Roger H. Kennett Stewart Sell Kenneth C. McCullough Marie A. Simmons Heddy Zola Maher Albitar Karol Sikora Technical Insights, Inc
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includes all of the information required to produce monoclonal antibodies in the laboratory and to prepare them for use in a multitude of given

applications production procedures are treated in chronological order beginning with basic tissue culture techniques immunization strategies and screening test design followed by production of hybridoma cell lines and basic antibody characterization purification and labeling each chapter contains explanatory text on each step with comparative analysis of methods where appropriate all necessary experimental protocols are presented in a self contained format that is easy to follow in the laboratory alternative protocols are provided where relevant for others not included in full source references are presented surveys the current status of human hybridoma production and antibody engineering using molecular biology techniques

general introduction applications genetic manipulation and expression of antibodies modification of antibodies by chemical methods the production of monoclonal antibodies blosafety considerations antibody patents

immune based therapies are being studied extensively in a variety of immunological conditions due to their high precision and sensitivity monoclonal antibody mab technology is a major advancement in the treatment of several infectious diseases malignancies and immunological disorders this book provides comprehensive information about technologies characterization and application of mabs in the clinic and laboratory

this new and important international source of information beings together leading edge research dedicated to monoclonal antibodies monoclonal antibodies mabs are antibodies of exceptional purity and specificity components of the immune system able to recognise and bind to a specific antigen monoclonal antibodies are currently utilised in many diagnostic procedures including measuring protein and drug levels in serum typing tissue and blood identifying infectious agents identifying clusters of differentiation for the classification and follow up therapy of leukaemias and lymphomas identifying tumour antigens and auto antibodies identifying the specific cells involved in the immune response identifying and quantifying hormones for example monoclonal antibodies mabs or moabs work on cancer cells in the same way natural antibodies work by identifying and binding to the target cells they then alert other cells in the immune system to the presence of the cancer cells mabs are specific for a particular antigen one designed for a b cell lymphoma will not work on cells for ovarian cancer cells for example

immunology has come a long way in the hundred or so years since the general concepts were first enuciated by metchnikoff ehrlich von bebring and others one of the landmarks in this progress was the invention and development of monoclonal antibody secreting hybridomas by milstein and bis co workers in cambridge unlike most modern inventions of this importance that of monoclonal antibody production was made available to the scientific community tbroughout the world unimpeded by patent protection this may explain tbe unusual rapidity witb which it has been applied to the benefit of mankind in general this book representing as it does the proceedings of tbe first international symposium to be held on the clinical appli cations of monoclonal antibodies shows just how much bas been achieved within the space of little more than a decade the enormaus promise of monoclonal antibody technology which became apparent soon after its discovery has already progressed a long way towards fulfillment the contributors to tbis volume all of whom are actively engaged in monoclonal antibody development and application represent the state of the art professor vincent marks v introduction it has been some twelve years since the pioneering experiments of köhler and milstein led to the discovery of monoclonal antibodies single molecular species antiborlies with desired specificities could be produced by the fusion of antibody producing cells with neoplastic cells

this highly practical book and successor to volume 13 in the laboratory techniques series explores further and provides more comprehensive autoritative information on the production of mabs much new and illuminating material has been included covering the concepts behind the application of recombinant dna technology and biosensor technology to monoclonal antibodies and all the human mab technology facilitated by pcr of antibody genes also included in this latest volume is a section focussing on other methods of obtaining b cell clones such as short term culture and oncogene transformation and an interesting section on mab patents

addressing a significant need by describing the science and process involved to develop biosimilars of monoclonal antibody mab drugs this book covers all aspects of biosimilar development preclinical clinical regulatory manufacturing guides readers through the complex landscape involved with developing biosimilar versions of monoclonal antibody mab drugs features flow charts tables and figures that clearly illustrate processes and makes the book comprehensible and accessible includes a review of fda approved mab drugs as a quick reference to facts and useful information examines new technologies and strategies for improving biosimilar mabs

a monoclonal antibody refers to an antibody formed through cloning a distinctive white blood cell antibodies are glycoproteins produced through differentiated b lymphocytes known as plasma cells in response to exposure to antigens the range of antibody responses to different target antigens occurs due to gene recombination process in the hyper variable areas of antibodies monoclonal antibodies mabs are formed through the similar clones of b lymphocytes in response to a specific antigen there are numerous properties of mabs including antigen binding site region identical downstream functional effects protein sequence and binding affinity for their targets these antibodies are often given through the subcutaneous route they are helpful in diagnosing various diseases such as cancer and hormonal disorders these antibodies are also useful in treating various other conditions like asthma and aids this book elucidates the prospective developments with respect to monoclonal antibodies it presents researches and studies performed by experts across the globe scientists and students actively engaged in the therapeutic applications of antibodies will find this book full of crucial and unexplored concepts

monoclonal antibodies mabs are currently the major class of protein bio therapeutic being developed by biotechnology and pharmaceutical companies monoclonal antibodies discusses the challenges and issues revolving around development of a monoclonal antibody produced by recombinant dna technology into a therapeutic agent this book covers downstream processing which includes design of processes to manufacture the formulation formulation design fill and finish into closure systems and routes of administration the characterization of the final drug product is covered where the use of biophysical methods combined with genetic engineering is used to understand the solution properties of the formulation the latter has become very important since many indications such as arthritis and asthma require the development of formulations for subcutaneous delivery sc the development of formulations for iv delivery is also important and comes with a different set of challenges the challenges and strategies that can overcome these limitations are discussed in this book starting with an introduction to these issues followed by chapters detailing strategies to deal with them subsequent chapters explore the processing and storage of mabs development of delivery device technologies and conclude with a chapter on the future of mabs in therapeutic remedies discusses the challenges to develop mabs for intravenous iv and subcutaneous delivery sc presents strategies to meet the challenges in development of mabs for sc and iv administration discusses the use of biophysical analytical tools coupled with mab engineering to understand what governs mab properties at high concentration

a valuable resource for researchers and workers in the fields of both pharmaceuticals and biotechnology as well as undergraduates in biochemistry applied biology biomedical sciences and pharmacy this book compares established techniques of antibody production with the new antibody structure and the implications of antibody engineering are fully discussed and a case study approach illustrates how antibodies are finding increasing use in the diagnosis and treatment of disease the volume ends with commercial expression purification and large scale manufacture of antibodies and their future potential particularly as therapeutic agents

monoclonal antibodies represent one of the fastest growing areas of new drug development within the pharmaceutical industry several blockbuster products have been approved over the past several years including rituxan remicade avastin humira and herceptin in addition over 300 new drugs are currently in clinical trials with both large established biotechnology companies and small start ups involved in the development of this important class of molecules monoclonal antibodies products will become increasingly prevalent over the next decade recently the regulatory review of monoclonal antibodies has been moved from center for biologics and research to the center for drug evaluation and research cder division of the us food and drug administration it is anticipated that cder will expect a certain minimal amount of data to be provided as more of these products move through the regulatory pipeline current trends in monoclonal antibody development and manufacturing will provide readers with an understanding of what is currently being done in the industry to develop manufacture and release monoclonal antibody products and what will be required for a successful regulatory submission

this volume serves as a follow up to our previous book monoclonalantibodies hybridomas a new dimension in biological analyses we continue the theme of monoclonal antibodies and their applications attempting to cover some of the areas not covered in the previous volume we again include an appendix de scribing methods useful to those who ar e beginning to apply these techniques in their own laboratories this volume will be followed by another concentrating on the combination of monoclonal antibody techniques with molecular genetic techniques to study structure function relationships at the level of both the gene and gene product roger h kennett kathleen b bechtol philadelphia pennsylvania thomas j mckearn princeton new jersey ix acknowledgments roger kennett acknowledges the patience and support of his wife carol and his family friends and colleagues during the work on this volume and again thanks above all the lord jesus christ kathleen bechtol wishes to thank colleagues and friends for their support and understanding during the months of preparation of this volume tom mckearn acknowledges and

thanks his wife pat and his family for their support and encouragement xl contents part i introduction 1 introduction reflections on nine years of monoclonal antibodies from hybridomas 3 roger h kennett kathleen b bechtol and thomas j mckearn 1 biotechnology s coming of age 3 ii monoclonal antibodies an overview of applications 6 iii commercialization of monoclonal antibody technology 10 references 13

this represents the third volume in a series on cancer markers pub lished by the humana press the first volume published in 1980 stressed the relationship of development and cancer as reflected in the production of markers by cancer that are also produced by normal cells during fetal development the concept that cancer represents a problem of differentiation was introduced by barry pierce in describing differenti ation of teratocarcinomas highlighted were lymphocyte markers alphafetoprotein carcinoembryonic antigen ectopic hormones enzymes and isozymes pregnancy proteins and fibronectin the second volume published in 1982 and coedited with britta wahren focused on the diagnostic use of oncological markers in human cancers which were systematically treated on an organ by organ basis at that time the application of monoclonal antibodies to the identification of cancer markers was still in a very preliminary stage a general introduc tion to monoclonal antibodies to human tumor antigens was given there by william raschke and other authors included coverage of those mark ers then detectable by monoclonal antibodies in their chapters

monoclonal antibodies are one of the most exciting developments in biotechnology in recent years this book provides a comprehensive description of principles methodologies and applications of this powerful technology to modern science and industry

this new and important international source of information brings together leading edge research dedicated to monoclonal antibodies monoclonal antibodies mabs are antibodies of exceptional purity and specificity components of the immune system able to recognise and bind to a specific antigen monoclonal antibodies are currently utilised in many diagnostic procedures including measuring protein and drug levels in serum typing tissue and blood identifying infectious agents identifying clusters of differentiation for the classification and follow up therapy of leukaemias and lymphomas identifying tumour antigens and auto antibodies identifying the specific cells involved in the immune response identifying and quantifying hormones for example monoclonal antibodies mabs or moabs work on cancer cells in the same way natural antibodies work by identifying and binding to the target cells they then alert other cells in the immune system to the presence of the cancer

cells mabs are specific for a particular antigen one designed for a b cell lymphoma will not work on cells for ovarian cancer cells for example

monoclonal antibodies the basics provides detailed coverage of the classical methods of antibody production including hybridization and cloning and describes the latest techniques for genetically engineering antibodies and their derivatives the book considers the major applications of these reagents and discusses how to select the most appropriate antibodies for particular applications monoclonal antibodies the basics is essential reading for new research workers in biology and biomedicine including graduate students it will also be valuable to experienced researchers who need to apply antibody based techniques in their work but whose primary expertise is not with antibodies

this book examines a collection of state of the art methods that employ monoclonal antibodies in a clinical setting the chapters offer in depth description for generating mouse and recombinant humanized antibodies and a comprehensive review of how antibodies are being used in bead based methods for measuring proteins this field will continue to expand and provide new and innovative techniques in the laboratory and as a basis that complements targeted therapy

what is a monoclonal antibody making a monoclonal antibody biochemistry histology microbiology haematology cell biology cancer localization cancer therapy human monoclonal antibodies

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