



BLOW UP YOUR GENOMICS WORKFLOW.

Automate nucleic acid QC and get on with your life sciences.

If sample QC takes you more than two minutes, it's too manual. Fragment Analyzer™ takes the job off your hands—streamlining lab operations and wiping out errors. Just pipette once and it delivers truly reliable results via automated capillary electrophoresis.

No chips. No tapes. No compromises.

- Setup in seconds
- Get resolution down to 2 base pairs
- Detection starts at 5 pg/µL

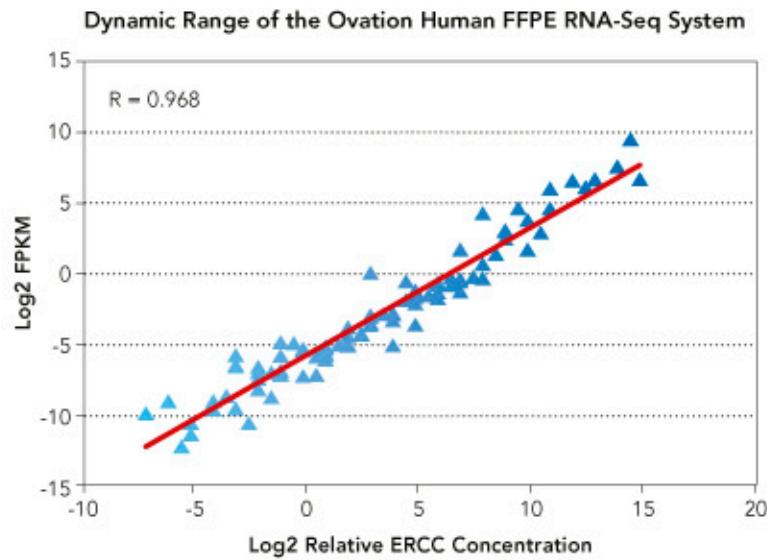
DITCH YOUR TIRED OLD WORKFLOW AT FRAGMENTANALYZER.COM.



Simply Better Access.

Ovation® Human FFPE RNA-Seq System

Insert Dependent Adaptor Cleavage (InDA-C) technology provides targeted depletion of rRNA transcripts in human tissue or cell lines for accurate representation of the transcripts you want to study.



One tube. One day. It's that simple.

Have other unwanted transcripts in high abundance?
Contact us about a customized InDA-C solution for your samples.



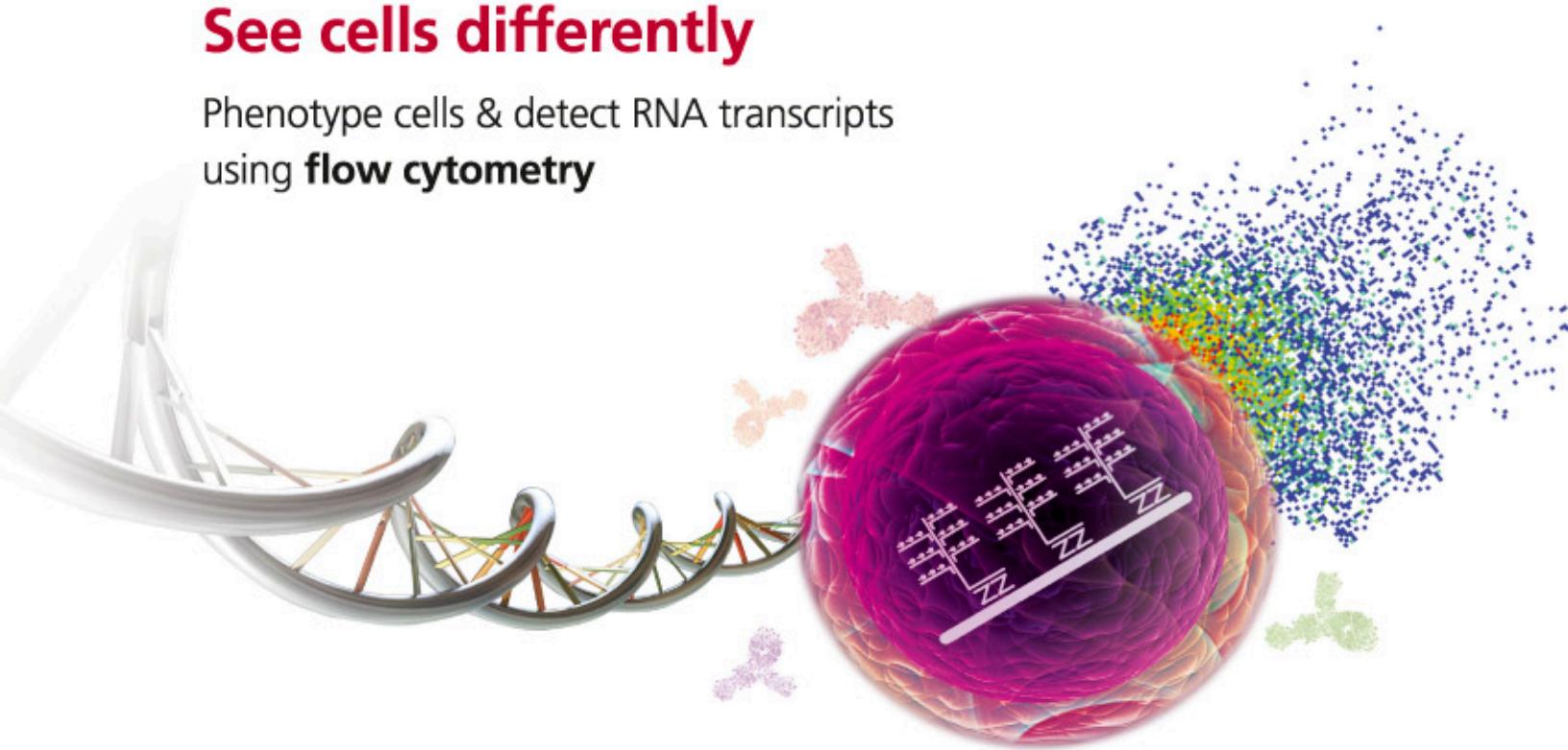
www.nugen.com

©2013 NuGEN Technologies, Inc. All rights reserved. The Encore®, Ovation® and Applause® families of products and methods of their use are covered by several issued U.S. and International patents and pending applications (www.nugen.com). NuGEN, Ovation, SPIA, Ribo-SPIA, Applause, Encore, Prelude, Mondrian and Imagine More From Less are trademarks or registered trademarks of NuGEN Technologies, Inc. Other marks appearing in these materials are marks of their respective owners.

For Research Use Only.

See cells differently

Phenotype cells & detect RNA transcripts
using **flow cytometry**



Need to take a closer look at your cell's signature? Want to understand transcription regulation and patterns? Is RNA expressed intermittently or consistently?

Gain insight into single cell analysis with the QuantiGene® FlowRNA Assay,
a novel multiplex RNA hybridization protocol using a standard flow cytometer. Choose
from a catalog of more than 4,000 probes or request a custom set at no additional charge.

Show
Me
Data

Download scientific poster at ebioscience.com/FlowRNA-Genes

eBioscience, an Affymetrix company, provides innovative solutions to researchers and clinicians worldwide looking to answer questions driving today's life science community.

Biology for a better world.

NORTH AMERICA: 888.999.1371 ■ EUROPE: +43 1 796 40 40-304 ■ JAPAN: +81 (0)3 6430 4020 ■ INQUIRIES: info@ebioscience.com

©Affymetrix, Inc. All rights reserved. For Research Use Only. Not for use in diagnostic or therapeutic procedures.

eBioscience

GeneChip

Panomics

USB

Transcriptome analysis from as little as 10 pg of RNA?



AGTTATGAGTGTCCATTTCGAGACCGCAGGCCGATCTT
GCCCTGGTATTGAGGCCGGCGTCTAGCTATCGGAGACCTT
CGGTATGACATGGAGGCCAGGGCGTCTAGCTATTAAGCC
CGGTAGGCGTTGTATGCAGGCCAGAATCGTAGGGCTATTAAG
AGTTATGAGTGTCCATTTCGAGACCGCAGGCCGATCAATCGA
GCCCTGGTATTGAGGCCGGCGTCTAGCTATCGGAGACTT
CGGTATGACATGGAGGCCAGGGCGTCTAGCTATTAAGCTT
CGGTAGGCGTTGTATGCAGGCCAGGGCGTCTAGCTATTAAG

Webinar Series

cDNA SYNTHESIS FOR NEXT GEN SEQUENCING

Learn how to sequence the SMARTer® way!

Watch the SMARTer Webinar Series:

Capture Transcriptome Complexity from Extremely Small Samples



Extreme sensitivity. Robust performance. Reproducible data.

SMART™ technology has been adopted as the industry standard for experiments that require exceptional sensitivity and complete transcriptome coverage. SMARTer products use patented SMART technology that incorporates template switching at the 5' end to ensure synthesis of full-length cDNA. SMARTer cDNA synthesis kits are ideal for preparing small and unique samples for transcriptome analysis, including stem cells, sorted cells, circulating tumor cells, FFPE-preserved tissue, brain tissue biopsies, and LCM samples.

Learn how SMARTer products can enhance your RNA-seq experiments today.

[View the webinar series.](#)

www.clontech.com/SMARTerWebinars



Scan to sign up
for our webinars.



Takara



Clontech

Clontech Laboratories, Inc. • A Takara Bio Company

United States/Canada: +1.800.662.2998 • Asia Pacific: +1.650.919.7300 • Europe: +33.011.3904.6690 • Japan: +81.0177.543.7247
For Research Use Only. Not for use in diagnostic or therapeutic procedures. Not for resale. Clontech®, the Clontech logo, SMART, SMARTer, and that's GOOD science! are trademarks of Clontech Laboratories, Inc. Takara and the Takara logo are trademarks of TAKARA HOLDINGS, Kyoto, Japan. All other marks are the property of their respective owners. Certain trademarks may not be registered in all jurisdictions. © 2014 Clontech Laboratories, Inc.

www.clontech.com

01.14 US 633648

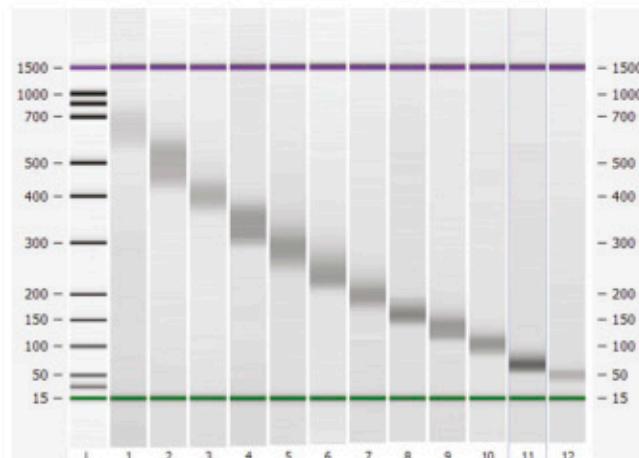
Introducing the SageELF.

Multiple insert sizes.
Just one sample.



Get the most comprehensive view of your DNA with the SageELF™ whole sample fractionator, our latest DNA size-selection tool for NGS library construction. Ideal for:

- **Mate-pair libraries.**
Study genomic rearrangements
- **cDNAs.**
Identify rare splice variants
- **Precious samples.**
Sequence and preserve



Collect 12 contiguous fractions from one sample.

Brought to you by



sage science

Historical Breakthroughs



Breathtaking Progress

Radical Reinvention

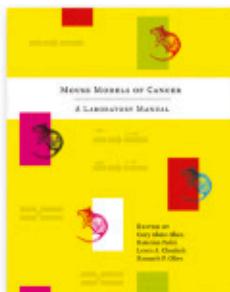


Introducing **NextSeq™**
A Whole Human Genome on Your Desktop



MOUSE MODELS OF CANCER

A LABORATORY MANUAL



Edited by Cory Abate-Shen, *Herbert Irving Comprehensive Cancer Center, Columbia University College of Physicians and Surgeons, Columbia University Medical Center*, Katerina Politi, *Yale Cancer Center, Yale University School of Medicine*, Lewis Chodosh, *Abramson Cancer Center, Perelman School of Medicine, University of Pennsylvania*, and Kenneth P. Olive, *Herbert Irving Comprehensive Cancer Center, Columbia University Medical Center*

The laboratory mouse is an important model for studying cancer and its treatment. This book includes both background information and step-by-step protocols for generating mouse models that accurately recapitulate many features of human cancer. It covers genetic models, including transgenic germline models, gene knockouts and knockins, and conditional and inducible systems, as well as models derived using chemical carcinogens, RNA interference, tissue recombination, and other strategies. Techniques to characterize tumor development, progression, and metastasis in these mice using state-of-the-art imaging, histopathological, surgical, and other approaches are described. The uses of these models in preclinical and translational research are also discussed.

2014, 536 pp., illus., index
Hardcover \$240 £150
Paperback \$165 £104

ISBN 978-1-621820-04-8
ISBN 978-1-621820-03-1

Contents

Preface

INTRODUCTION

Of Model Pets and Cancer Models: An Introduction to Mouse Models of Cancer
Andrea Lunardi, Caterina Nardella, John G. Clohesy, and Pier Paolo Pandolfi

PART 1: ORIGINS AND HISTORY OF MOUSE MODELS OF CANCER

CHAPTER 1

Transgenic Mouse Models—A Seminal Breakthrough in Oncogene Research
Hatrey W. Smith and William J. Muller

CHAPTER 2

Analyses of Tumor-Suppressor Genes in Germline Mouse Models of Cancer
Jingqiang Wang and Cory Abate-Shen

CHAPTER 3

Conditional Knockout Mouse Models of Cancer
Chu-Xia Deng

CHAPTER 4

Animal Models of Chemical Carcinogenesis: Driving Breakthroughs in Cancer Research for 100 Years
Christopher J. Kemp

CHAPTER 5

The Effects of Genetic Background of Mouse Models of Cancer: Friend or Foe?
Karlyne M. Reilly

PART 2: RECENT APPROACHES TO MODELING CANCER IN MICE

CHAPTER 6

Genetically Engineered Knock-In and Conditional Knock-In Mouse Models of Cancer
Amy Rappaport and Leisa Johnson

CHAPTER 7

Strategies to Achieve Conditional Gene Mutation in Mice
Jessica J. Gieria, Tyler E. Jacks, and Kevin M. Haigis

CHAPTER 8

Tetracycline-Regulated Mouse Models of Cancer
Elizabeth S. Yeh, Ann Vernon-Grey, Heather Martin, and Lewis A. Chodosh

CHAPTER 9

The Estrogen Receptor Fusion System in Mouse Models: A Reversible Switch
Jonathan Whitfield, Trevor Littlewood, Gerard J. Evan, and Laura Soucek

CHAPTER 10

Using the RCAS-TVA System to Model Human Cancer in Mice
Leanne G. Abronian and Brian C. Lewis

CHAPTER 11

Transposon Insertional Mutagenesis Models of Cancer
Karen M. Mann, Nancy A. Jenkins, Neal G. Copeland, and Michael B. Marin

CHAPTER 12

Accelerating Cancer Modeling with RNAi and Nongermline Genetically Engineered Mouse Models
Geulab Livshits and Scott W. Lowe

CHAPTER 13

Chimeric Tumor and Organ Transplantation Models
Michael Hemann

CHAPTER 14

Tissue Recombination Models for the Study of Epithelial Cancer
Yang Zong, Andrew S. Goldstein, and Owen N. Witte

CHAPTER 15

Human Cancer Growth and Therapy in Immunodeficient Mouse Models
Leonard D. Shultz, Neal Goodwin, Fumihiko Ishikawa, Vishnu Hosur, Bonnie L. Lyons, and Dale L. Greiner

PART 3: ANALYZING MOUSE CANCER PHENOTYPES

CHAPTER 16

Analysis of Mouse Model Pathology: A Primer for Studying the Anatomic Pathology of Genetically Engineered Mice
Robert D. Cardiff, Clanamae H. Miller, and Robert J. Munn

CHAPTER 17

Imaging Mouse Cancer Models In Vivo Using Reporter Transgenes
Scott K. Lyons, P. Stephen Patrick, and Kevin M. Brindle

CHAPTER 18

Noninvasive Imaging of Tumor Burden and Molecular Pathways in Mouse Models of Cancer
Yuchuan Wang, Jen-Chieh Tieng, Yanping Sun, Andrew H. Beck, and Andrew L. Kung

CHAPTER 19

Methods to Study Metastasis in Genetically Modified Mice
Farhia Kabber, Levi J. Beverly, Guillaume Darrasse-jeze, and Katrina Podlypanina

CHAPTER 20

Methods for Analysis of the Immune System in Mouse Cancer Models
Lauren J. Bayne and Robert H. Vonderheide

CHAPTER 21

Culturing Mouse Tumor Cells
Andrew D. Rhim, Martin Jechlinger, and Anil K. Rustgi

CHAPTER 22

Translational Therapeutics in Genetically Engineered Mouse Models of Cancer
Kenneth P. Olive and Katerina Politi

APPENDICES

A. APPLICATIONS FOR GEMMs IN CLINICAL RESEARCH

APPENDIX A1

Effective Utilization and Appropriate Selection of Genetically Engineered Mouse Models for Translational Integration of Mouse and Human Trials
Cory Abate-Shen and Pier Paolo Pandolfi

APPENDIX A2

Infrastructure Needs for Translational Integration of Mouse and Human Trials
John G. Clohesy and Elisa de Stanchina

APPENDIX A3

Structured Reporting in Anatomic Pathology for Coclinical Trials: The caELMIR Model
Robert D. Cardiff, Clanamae H. Miller, Robert J. Munn, and Jose J. Galvez

APPENDIX A4

Mouse to Human Blood-Based Cancer Biomarker Discovery Strategies
Samir M. Hanash and Ayumu Taguchi

APPENDIX A5

Evaluation of Cancer Immunity in Mice
Mary L. Disis and Karolina Palucka

APPENDIX A6

Cross-Species Analysis of Mouse and Human Cancer Genomes
Carla Daniela Robles-Espinoza and David J. Adams

B. GENERAL SAFETY AND HAZARDOUS MATERIAL INFORMATION

APPENDIX B

General Safety and Hazardous Material Information
Index



www.cshlpress.org

Sequencing power for every scale.



The HiSeq X Ten contains 10 sequencing systems.

NEW
HiSeq X™ Ten

Population power.

\$1000 human genome and extreme throughput for population-scale sequencing.



HiSeq® 2500

Production power.

Power and efficiency for large-scale genomics.



NEW
NextSeq™ 500

Flexible power.

Speed and simplicity for whole-genome, exome, and transcriptome sequencing.



MiSeq®

Focused power.

Speed and simplicity for targeted and small-genome sequencing.



MiSeqDx™

Focused Dx power.

The first and only FDA-cleared *in vitro* diagnostic next-generation sequencing system.

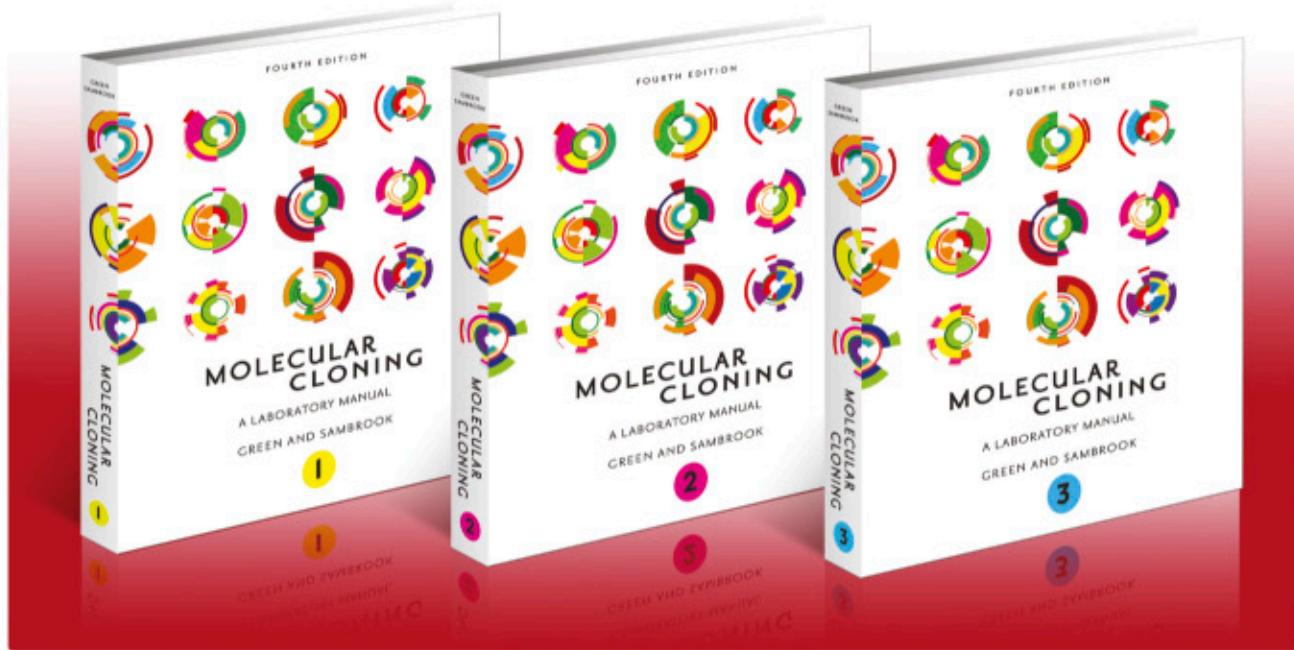
Find the right sequencer to fit your every need. www.illumina.com/power

©2014 Illumina, Inc. All rights reserved.

illumina®



MOLECULAR CLONING 4



By Michael R. Green, *Howard Hughes Medical Institute, University of Massachusetts Medical School* and Joseph Sambrook, *Peter MacCallum Cancer Institute, Melbourne, Australia*

Molecular Cloning: A Laboratory Manual has always been the one indispensable molecular biology laboratory manual for protocols and techniques. The fourth edition of this classic manual preserves the detail and clarity of previous editions as well as the theoretical and historical underpinnings of the techniques presented. Ten original core chapters reflect developments and innovation in standard techniques and introduce new cutting-edge protocols. Twelve entirely new chapters are devoted to the most exciting current research strategies, including epigenetic analysis, RNA interference, genome sequencing, and bioinformatics. This manual is essential for both the inexperienced and the advanced user.

2012, 2,028 pp., illus., appendices, index

Cloth (three-volume set)

\$395

Paperback (three-volume set)

\$365

ISBN 978-1-936113-41-5

ISBN 978-1-936113-42-2

Contents

VOLUME 1

Part 1 Essentials

1. Isolation and Quantification of DNA
2. Analysis of DNA
3. Cloning and Transformation with Plasmid Vectors
4. Gateway Recombinational Cloning
5. Working with Bacterial Artificial Chromosomes and Other High-Capacity Vectors
6. Extraction, Purification, and Analysis of RNA from Eukaryotic Cells
7. Polymerase Chain Reaction
8. Bioinformatics

VOLUME 2

Part 2 Analysis and Manipulation of DNA and RNA

9. Quantification of DNA and RNA by Real-Time Polymerase Chain Reaction
10. Nucleic Acid Platform Technologies
11. DNA Sequencing
12. Analysis of DNA Methylation in Mammalian Cells
13. Preparation of Labeled DNA, RNA, and Oligonucleotide Probes
14. Methods for In Vitro Mutagenesis

Part 3 Introducing Genes into Cells

15. Introducing Genes into Cultured Mammalian Cells
16. Introducing Genes into Mammalian Cells: Viral Vectors

VOLUME 3

Part 4 Gene Expression

17. Analysis of Gene Regulation Using Reporter Systems
18. RNA Interference and Small RNA Analysis
19. Expressing Cloned Genes for Protein Production, Purification, and Analysis

Part 5 Interaction Analysis

20. Cross-Linking Technologies for Analysis of Chromatin Structure and Function
21. Mapping of In Vivo RNA-Binding Sites by UV-Cross-Linking Immunoprecipitation (CLIP)
22. Gateway-Compatible Yeast One-Hybrid and Two-Hybrid Assays

Appendices

1. Reagents and Buffers
2. Commonly Used Techniques
3. Detection Systems
4. General Safety and Hazardous Material

Index



WWW.CSHLPRESS.ORG



Manipulating the Mouse Embryo

A Laboratory Manual, Fourth Edition

By Richard Behringer, *University of Texas, M.D. Anderson Cancer Center*, Marina Gertsenstein, *Toronto Centre for Phenogenomics, Transgenic Core*, Kristina Vintersten Nagy, *Samuel Lunenfeld Research Institute, Mount Sinai Hospital, Toronto*, and Andras Nagy, *Samuel Lunenfeld Research Institute, Mount Sinai Hospital, Toronto*

This fourth edition of "The Mouse Manual" is once again the definitive reference source on mouse development, transgenesis techniques, and molecular biology. Its preeminent authors Richard Behringer, Marina Gertsenstein, Kristina Nagy, and Andras Nagy have reorganized and updated this edition to include new information and protocols on:

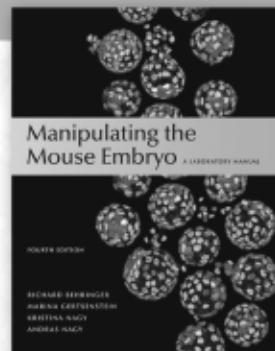
- generation of induced pluripotent stem cells
- RNA microinjections
- lentiviral microinjections and infection
- assisted reproduction techniques for sperm and embryo cryopreservation
- isolation, generation, and transplantation of spermatogonial stem cell lines
- in utero electroporation of gene constructs into postimplantation embryos
- vibratome sectioning of live and fixed tissues for imaging thick tissue sections
- whole-mount fluorescent staining methods for three-dimensional visualization

Recombinant DNA techniques and methods for studies of mouse embryonic development have been updated from previous editions, as has the wealth of information on mouse laboratory strains, mouse housing and breeding, surgical procedures, assisted reproduction, handling of embryos, and micromanipulation setups. The first edition of this classic work appeared more than 20 years ago, with authors that included Brigid Hogan, Rosa Beddington, Frank Costantini, and Elizabeth Lacy. The field's technological sophistication has grown exponentially but the manual remains the essential practical and theoretical guide for all students, lab technicians, and investigators who work with mice.

2013, 814 pp., illus. (42 4C, 134 BW), index

Hardcover \$240

Paperback \$165



ISBN 978-1-936113-00-2
ISBN 978-1-936113-01-9

Contents

Preface

Chapter 1 Genetics and Embryology of the Mouse: Past, Present, and Future

Chapter 2 Summary of Mouse Development

Chapter 3 A Mouse Colony for the Production of Transgenic and Chimeric Animals

Chapter 4 Recovery and In Vitro Culture of Preimplantation Embryos

Chapter 5 Isolation, Culture, and Manipulation of Postimplantation Embryos

Chapter 6 Surgical Procedures

Chapter 7 Production of Transgenic Mice by Pronuclear Microinjection

Chapter 8 Embryo-Derived Stem Cell Lines

Chapter 9 Germline-Competent Stem Cells Derived from Adult Mice

Chapter 10 Vector Designs for Pluripotent Stem Cell-Based Transgenesis and Genome Alterations

Chapter 11 Introduction of Foreign DNA into Embryonic Stem Cells

Chapter 12 Production of Chimeras

Chapter 13 Genotyping

Chapter 14 Parthenogenesis, Pronuclear Transfer, and Mouse Cloning

Chapter 15 Assisted Reproduction: Ovary Transplantation, In Vitro Fertilization, Artificial Insemination, and Intracytoplasmic Sperm Injection

Chapter 16 Cryopreservation, Rederivation, and Transport of Mouse Strains

Chapter 17 Techniques for Visualizing Gene Products, Cells, Tissues, and Organ Systems

Chapter 18 Setting Up a Micromanipulation Laboratory

Appendices:

- Buffers and Solutions
- WWW Resources
- General Safety and Hazardous Material Information
- Index

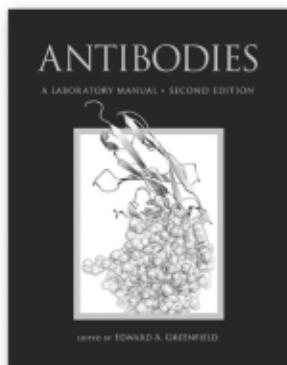


www.cshlpress.org



ANTIBODIES

A Laboratory Manual, Second Edition



Edited by Edward A. Greenfield, *Dana-Farber Cancer Institute*

The second edition of the now-classic lab manual *Antibodies*, by Harlow and Lane, has been revised, extended, and updated by Edward Greenfield of the Dana-Farber Cancer Center, with contributions from other leaders in the field. This manual continues to be an essential resource for molecular biology, immunology, and cell culture labs on all matters relating to antibodies. The chapters on hybridomas and monoclonal antibodies have been recast with extensive new information and there are additional chapters on characterizing antibodies, antibody engineering, and flow cytometry. As in the original book, the emphasis in this second edition is on providing clear and authoritative protocols with sufficient background information and troubleshooting advice for the novice as well as the experienced investigator.

2013, 847 pp., illus. (32 4C, 103 B&W), appendices, index

Hardcover \$260

Paperback \$175

ISBN 978-1-936113-80-4

ISBN 978-1-936113-81-1

Contents

Preface

1 Antibody Production by the Immune System
Stefanie Sarantopoulos

2 The Antibody Molecule
Stefanie Sarantopoulos

3 Antibody-Antigen Interactions
Stefanie Sarantopoulos

4 Antibody Responses
Stefanie Sarantopoulos

5 Selecting the Antigen
Edward A. Greenfield, James DeCaprio, and Mohan Brahmandam

6 Immunizing Animals
Edward A. Greenfield

7 Generating Monoclonal Antibodies
Edward A. Greenfield

8 Growing Hybridomas
Edward A. Greenfield

9 Characterizing Antibodies
Frances Weis-Garcia and Robert H. Carnahan

10 Antibody Purification and Storage
Jordan B. Fishman and Eric A. Berg

11 Engineering Antibodies
James Dasch and Amy Dasch

12 Labeling Antibodies
Eric A. Berg and Jordan B. Fishman

13 Immunoblotting
Larisa Litovchick

14 Immunoprecipitation
James DeCaprio and Thomas O. Kohl

15 Immunoassays
Thomas O. Kohl and Carl A. Ascoli

16 Cell Staining
Scott J. Rodig

17 Antibody Screening Using High Throughput Flow Cytometry
Thomas D.L. Duensing and Susan R. Watson

Appendix I: Electrophoresis

Appendix II: Protein Techniques

Appendix III: General Information

Appendix IV: Bacterial Expression

Appendix V: Cautions

Index



www.cshpress.org