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to Mammalian Cells


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Gene Delivery to Mammalian Cells

Volume 2: Viral Gene Transfer Techniques

Edited by

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Preface

The efficiency of delivering DNA into mammalian cells has increased tremendously since DEAE dextran was first shown to be capable of enhancing transfer of RNA into mammalian cells in culture. Not only have other chemical methods been developed and refined, but also very efficient physical and viral delivery methods have been established. The technique of introducing DNA into cells has developed from transfecting tissue culture cells to delivering DNA to specific cell types and organs in vivo. Moreover, two important areas of biology—assessment of gene function and gene therapy—require successful DNA delivery to cells, driving the practical need to increase the efficiency and efficacy of gene transfer both in vitro and in vivo.

These two volumes of the *Methods in Molecular Biology* series, *Gene Delivery to Mammalian Cells*, are designed as a compendium of those techniques that have proven most useful in the expanding field of gene transfer in mammalian cells. It is intended that these volumes will provide a thorough background on chemical, physical, and viral methods of gene delivery, a synopsis of the myriad techniques currently available to introduce genes into mammalian cells, as well as a practical guide on how to accomplish this. It is my expectation that it will be useful to the novice in the field as well as to the scientist with expertise in gene delivery.

*Volume 1: Nonviral Gene Transfer Techniques* discusses delivery of DNA into cells by nonviral means, specifically chemical and physical methods. *Volume 2: Viral Gene Transfer Techniques* details procedures for delivering genes into cells using viral vectors. Each volume is divided into sections; each section begins with a chapter that provides an overview of the basis behind the delivery system(s) described in that section. The succeeding chapters provide detailed protocols for using these techniques to deliver genes to cells in vitro and in vivo. Many of these techniques have only been in practice for a few years and are still being refined and updated. Some are being used not only in basic science, but also in gene therapy applications.

I wish to express my thanks to all of the authors who made *Gene Delivery to Mammalian Cells: Volume 1: Nonviral Gene Transfer Techniques* and *Volume 2: Viral Gene Transfer Techniques* possible. I would especially like to thank those who contributed the overview chapter to each section. They provided invaluable discussions, suggestions, and assistance on organizing those sec-
tions. I would particularly like to mention Joanne Douglas, Tom Daly, and Bill Goins for their suggestions on topics and authors, Daxi Liu and Shan Lu for their helpful discussions, and Mark Jaroszeski for his suggestions on organizing the entire editing process.

William C. Heiser
# Contents

Preface ........................................................................................................................... v
Contributors ................................................................................................................ xiii

## Part I. Delivery Using Adenoviruses

1. Adenovirus-Mediated Gene Delivery: An Overview  
   Joanne T. Douglas .......................................................... 3

2. DNA Delivery to Cells in Culture: Generation of Adenoviral Libraries for High-Throughput Functional Screening  
   Miroslava Ogorelkova, Seyyed Mehdy Elahi, David Gagnon, and Bernard Massie .......................................................... 15

3. Adenovirus-Mediated Gene Delivery to Skeletal Muscle  
   Joanne T. Douglas .......................................................... 29

4. Delivery of Adenoviral DNA to Mouse Liver  
   Sheila Connelly and Christine Mech .......................................................... 37

5. Delivery of DNA to Lung Airway Epithelium  
   Daniel J. Weiss .......................................................... 53

6. Delivery of DNA to Pulmonary Endothelium Using Adenoviral Vectors  
   Paul N. Reynolds .......................................................... 69

   Joseph M. Alisky and Beverly L. Davidson .................................................. 91

8. Adenovirus-Mediated Gene Transfer to Tumor Cells  
   Manel Cascalló and Ramon Alemany .................................................. 121

9. Adenovirus-Mediated Gene Delivery to Dendritic Cells  
   Laura Timares, Joanne T. Douglas, Bryan W. Tillman, Victor Krasnykh, and David T. Curiel .................................................. 139

## Part II. Delivery Using Adeno-Associated Viruses

10. Overview of Adeno-Associated Viral Vectors  
    Thomas M. Daly .......................................................... 157

11. AAV Vector Delivery to Cells in Culture  
    Andrew Smith, Roy Collaco, and James P. Trempe ........................................... 167

12. AAV-Mediated Gene Transfer to Skeletal Muscle  
    Roland W. Herzog .......................................................... 179
Contents

13. AAV-Mediated Gene Transfer to the Liver
   Thomas M. Daly ................................................................. 195

14. AAV-Mediated Gene Transfer to Mouse Lungs
   Christine L. Halbert and A. Dusty Miller ............................. 201

15. Gene Delivery to the Mammalian Heart Using AAV Vectors
   Danny Chu, Patricia A. Thistlethwaite, Christopher C. Sullivan,
   Mirta S. Grifman, and Matthew D. Weitzman ........................ 213

16. Gene Delivery to the Mouse Brain with Adeno-Associated Virus
   Marco A. Passini, Deborah J. Watson, and John H. Wolfe ........ 225

17. Delivery of DNA to Tumor Cells In Vivo Using
   Adeno-Associated Virus
   Selvarangan Ponnazhagan and Frank Hoover ......................... 237

18. Gene Delivery to Human and Murine Primitive Hematopoietic
   Stem and Progenitor Cells by AAV2 Vectors
   Arun Srivastava .................................................................. 245

PART III. DELIVERY USING HERPES SIMPLEX VIRUSES

19. Delivery Using Herpes Simplex Virus: An Overview
   William F. Goins, Darren Wolfe, David M. Krisky, Qing Bai,
   Ed A. Burton, David J. Fink, and Joseph C. Glorioso ............... 257

20. Gene Transfer to Skeletal Muscle Using Herpes Simplex
    Virus-Based Vectors
    Baohong Cao and Johnny Huard .......................................... 301

21. Delivery of Herpes Simplex Virus-Based Vectors
    to the Nervous System
    James R. Goss, Atsushi Natsume, Darren Wolfe, Marina Mata,
    Joseph C. Glorioso, and David J. Fink ................................. 309

22. Gene Transfer to Glial Tumors Using Herpes Simplex Virus
    Ajay Niranjan, Darren Wolfe, Wendy Fellows, William F. Goins,
    Joseph C. Glorioso, Douglas Kondziolka,
    and L. Dade Lunsford ...................................................... 323

23. Delivery of Herpes Simplex Virus-Based Vectors to Stem Cells
    Darren Wolfe, James B. Wechuck, David M. Krisky, Julie P. Goff,
    William F. Goins, Ali Ozuer, Michael E. Epperly,
    Joel S. Greenberger, David J. Fink, and Joseph C. Glorioso .... 339
PART IV. DELIVERY USING BACULOVIRUSES
24. Baculovirus-Mediated Gene Delivery into Mammalian Cells
   Raymond V. Merrihew, Thomas A. Kost, and J. Patrick Condreay ........................................ 355

PART V. DELIVERY USING LENTIVIRUSES
25. Gene Delivery by Lentivirus Vectors: An Overview
   Tal Kafri .................................................................................................................. 367
26. Lentiviral Vectors for the Delivery of DNA into Mammalian Cells
   Roland Wolkowicz, Garry P. Nolan, and Michael A. Curran .......... 391
27. Stable Gene Delivery to CNS Cells Using Lentiviral Vectors
   Deborah J. Watson, Brian A. Karolewski, and John H. Wolfe ........ 413
28. Gene Delivery to Hematopoietic Stem Cells Using Lentiviral Vectors
   Hiroyuki Miyoshi ................................................................................................. 429
29. Delivery of Genes to the Eye Using Lentiviral Vectors
   Masayo Takahashi ............................................................................................... 439
30. Lentiviral Transduction of Human Dendritic Cells
   Roland Schroers and Si-Yi Chen ........................................................................... 451

PART VI. DELIVERY USING RETROVIRUSES
   Nikunj Somia ......................................................................................................... 463
32. Gene Delivery to Cells in Culture Using Retroviruses
   Nikunj Somia ......................................................................................................... 491
33. Retrovirus-Mediated Gene Transfer to Tumors: Utilizing the Replicative Power of Viruses to Achieve Highly Efficient Tumor Transduction In Vivo
   Christopher R. Logg and Noriyuki Kasahara ........................................... 499
34. Delivery of Genes to Hematopoietic Stem Cells
   Masafumi Onodera ............................................................................................... 527

PART VII. DELIVERY USING ALPHAVIRUSES
35. Delivery and Expression of Heterologous Genes in Mammalian Cells Using Self-Replicating Alphavirus Vectors
   Gunilla B. Karlsson and Peter Liljestøm ................................................... 543

Index .............................................................................................................................. 559
CONTENTS OF THE COMPANION VOLUME
Volume I: Nonviral Gene Transfer Techniques

PART I. DELIVERY USING CHEMICAL METHODS
1. Chemical Methods for DNA Delivery: An Overview
   Dexi Liu, Evelyn F. Chiao, and Hui Tian
2. Gene Transfer into Mammalian Cells Using Calcium Phosphate and DEAE-Dextran
   Gregory S. Pari and Yiyang Xu
3. DNA Delivery to Cells in Culture Using Peptides
   Lei Zhang, Nicholas Ambulos, and A. James Mixson
4. DNA Delivery to Cells in Culture Using PNA Clamps
   Todd D. Giorgio and Shelby K. Wyatt
5. Dendrimer-Mediated Cell Transfection In Vitro
   James R. Baker, Jr., Anna U. Bielinska, and Jolanta F. Kukowska-Latallo
6. DNA Delivery to Cells in Culture Using Cationic Liposomes
   Shelby K. Wyatt and Todd D. Giorgio
7. Formulation of Synthetic Gene Delivery Vectors for Transduction of the Airway Epithelium
8. Cationic Liposome-Mediated DNA Delivery to the Lung Endothelium
   Young K. Song, Guisheng Zhang, and Dexi Liu
9. Delivery of DNA to Tumor Cells Using Cationic Liposomes
   Duen-Hwa Yan, Bill Spohn, and Mien-Chie Hung
10. Delivery of Transposon DNA to Lungs of Mice Using Polyethyleneimine-DNA Complexes
    Lalitha R. Belur and R. Scott McIvor

PART II. DELIVERY USING PHYSICAL METHODS
    Te-hui W. Chou, Subhabrata Biswas, and Shan Lu
12. Gene Delivery to Mammalian Cells by Microinjection
    Robert King
13. Delivery of DNA to Cells in Culture Using Particle Bombardment
    William C. Heiser
14. Delivery of DNA to Skin by Particle Bombardment
   Shixia Wang, Swati Joshi, and Shan Lu

15. Biolistic Transfection of Cultured Organotypic Brain Slices
   A. Kimberley McAllister

16. Efficient Electroporation of Mammalian Cells in Culture
   Peter A. Barry

17. Delivery of DNA to Skin by Electroporation
   Nathalie Dujardin and Véronique Préat

18. In Vivo DNA Electrotransfer in Skeletal Muscle
   Guenhaël Sanz, Saulius Šatkus, and Lluis M. Mir

19. Electrically Mediated Plasmid DNA Delivery to Solid Tumors In Vivo
   Mark J. Jaroszeski, Loree C. Heller, Richard Gilbert, and Richard Heller

20. Hydrodynamic Delivery of DNA
   Joseph E. Knapp and Dexi Liu

21. Naked DNA Gene Transfer in Mammalian Cells
   Guofeng Zhang, Vladimir G. Budker, James J. Ludtke, and Jon A. Wolff

22. Microparticle Delivery of Plasmid DNA to Mammalian Cells
   Mary Lynne Hedley and Shikha P. Barman

23. DNA Delivery to Cells in Culture Using Ultrasound
   Thomas P. McCreery, Robert H. Sweitzer, and Evan C. Unger

24. DNA Delivery to Cells In Vivo by Ultrasound
   Thomas P. McCreery, Robert H. Sweitzer, Evan C. Unger, and Sean Sullivan
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