
Contents

Preface v

Contributors xiii

PART I. DNA VACCINE DESIGN

1 DNA Vaccine Design
Janet L. Brandsma 3

2 Design of Plasmid DNA Constructs for Vaccines
Donna L. Montgomery and Kristala Jones Prather 11

3 Vaccination With Messenger RNA
Steve Pascolo 23

4 A Stress Protein-Facilitated Antigen Expression System
for Plasmid DNA Vaccines
*Petra Riedl, Nicolas Fissolo, Jörg Reimann,
and Reinhold Schirmbeck* 41

5 In Vitro Assay of Immunostimulatory Activities
of Plasmid Vectors
Weiwen Jiang, Charles F. Reich, and David S. Pisetsky 55

PART II. DNA VACCINE DELIVERY SYSTEMS

6 Delivery of DNA Vaccines Using Electroporation
*Shawn Babiuk, Sylvia van Drunen Littel-van den Hurk,
and Lorne A. Babiuk* 73

7 Needle-Free Injection of DNA Vaccines: A Brief Overview
and Methodology
Kanakatte Raviprakash and Kevin R. Porter 83

8 Needle-Free Delivery of Veterinary DNA Vaccines
*Sylvia van Drunen Littel-van den Hurk, Shawn Babiuk,
and Lorne A. Babiuk* 91

9 Surface-Modified Biodegradable Microspheres
for DNA Vaccine Delivery
Mark E. Keegan and W. Mark Saltzman 107

10 A Dendrimer-Like DNA-Based Vector for DNA Delivery:
A Viral and Nonviral Hybrid Approach
Dan Luo, Yougen Li, Soong Ho Um, and Yen Cu 115

- 11 Identification of Compartments Involved in Mammalian Subcellular Trafficking Pathways by Indirect Immunofluorescence
Anne Doody and David Putnam 127

PART III. DNA VACCINE ADJUVANTS AND ACTIVITY ENHANCEMENT

- 12 Adjuvant Properties of CpG Oligonucleotides in Primates
Daniela Verthelyi 139
- 13 Complexes of DNA Vaccines With Cationic, Antigenic Peptides Are Potent, Polyvalent CD8⁺ T-Cell-Stimulating Immunogens
Petra Riedl, Jörg Reimann, and Reinhold Schirmbeck 159
- 14 Prime-Boost Strategies in DNA Vaccines
C. Jane Dale, Scott Thomson, Robert De Rose, Charani Ranasinghe, C. Jill Medveczky, Joko Pamungkas, David B. Boyle, Ian A. Ramshaw, and Stephen J. Kent 171
- 15 Modifying Professional Antigen-Presenting Cells to Enhance DNA Vaccine Potency
Chien-Fu Hung, Mu Yang, and T. C. Wu 199
- 16 Replicase-Based DNA Vaccines for Allergy Treatment
Sandra Scheiblhofer, Richard Weiss, Maximilian Gabler, Wolfgang W. Leitner, and Josef Thalhamer 221

PART IV. DNA VACCINE APPLICATIONS

- 17 Immunological Responses of Neonates and Infants to DNA Vaccines
Martha Sedegah and Stephen L. Hoffman 239
- 18 DNA Vaccines for Allergy Treatment
Richard Weiss, Sandra Scheiblhofer, and Josef Thalhamer 253
- 19 Protection From Autoimmunity by DNA Vaccination Against T-Cell Receptor
Thorsten Buch and Ari Waisman 269
- 20 The Use of Bone Marrow-Chimeric Mice in Elucidating Immune Mechanisms
Akiko Iwasaki 281

PART V. DNA VACCINE PRODUCTION, PURIFICATION, AND QUALITY

- 21 A Simple Method for the Production of Plasmid DNA in Bioreactors
Kristin Listner, Laura Kizer Bentley, and Michel Chartrain 295

22 Practical Methods for Supercoiled pDNA Production
John Ballantyne 311

23 Production of Plasmid DNA in Industrial Quantities According
to cGMP Guidelines
**Joachim Schorr, Peter Moritz, Astrid Breul,
and Martin Scheef 339**

24 Large-Scale, Nonchromatographic Purification of Plasmid DNA
**Jason C. Murphy, Michael A. Winters,
and Sangeetha L. Sagar 351**

25 Assuring the Quality, Safety, and Efficacy of DNA Vaccines
James S. Robertson and Elwyn Griffiths 363

Index 375

C. elegans

Methods and Applications

Strange, K. (Ed.)

2006, XII, 292 p. 42 illus., Hardcover

ISBN: 978-1-58829-597-2

A product of Humana Press