

---

## Contents

Preface .....	v
Contributors .....	ix

### PART I DNA VACCINE DESIGN AND ENHANCEMENT

1 A Blueprint for DNA Vaccine Design .....	3
<i>Sandra Iurescia, Daniela Fioretti, and Monica Rinaldi</i>	
2 Enhancement of Plasmid-Mediated Transgene Expression .....	11
<i>Daniela Fioretti, Sandra Iurescia, and Monica Rinaldi</i>	
3 Strategies for Improving DNA Vaccine Performance .....	21
<i>Sandra Iurescia, Daniela Fioretti, and Monica Rinaldi</i>	
4 Enhancement of DNA Vaccine Efficacy by Intracellular Targeting Strategies .....	33
<i>Elisabete Borges Freitas, Ana Margarida Henriques, Miguel Fevereiro, Duarte Miguel Prazeres, and Gabriel Amaro Monteiro</i>	
5 Progresses in DNA-Based Heterologous Prime-Boost Immunization Strategies .....	61
<i>Ronald J. Jackson, David B. Boyle, and Charani Ranasinghe</i>	
6 Development of Antibiotic-Free Selection System for Safer DNA Vaccination .....	91
<i>Jeremy M. Luke, Aaron E. Carnes, and James A. Williams</i>	

### PART II DELIVERY SYSTEM

7 Electroporation-Based DNA Delivery Technology: Methods for Gene Electrotransfer to Skin .....	115
<i>Anita Gothelf and Julie Gehl</i>	
8 DNA Vaccination in Skin Enhanced by Electroporation .....	123
<i>Kate E. Broderick, Amir S. Khan, and Niranjan Y. Sardesai</i>	
9 Intradermal Vaccination by DNA Tattooing .....	131
<i>Joost H. van den Berg, Koen Oosterhuis, Ton N.M. Schumacher, John B.A.G. Haanen, and Adriaan D. Bins</i>	
10 Microneedle Applications for DNA Vaccine Delivery to the Skin .....	141
<i>Hae-yong Seok, Hyemee Sub, SungHyun Baek, and Yeu-Chun Kim</i>	
11 Multivalent DNA-Based Vectors for DNA Vaccine Delivery .....	159
<i>Young Hoon Roh, Kwang Lee, Jessica Jane Ye, and Dan Luo</i>	

12	Superparamagnetic Nanoparticle Delivery of DNA Vaccine . . . . .	181
	<i>Fatin Nawwab Al-Deen, Cordelia Selomulya, Charles Ma, and Ross L. Coppel</i>	
<b>PART III PRODUCTION, PURIFICATION, AND QUALITY</b>		
13	Plasmid Fermentation Process for DNA Immunization Applications . . . . .	197
	<i>Aaron E. Carnes and James A. Williams</i>	
14	Pharmaceutical Grade Large-Scale Plasmid DNA Manufacturing Process . . . . .	219
	<i>Marco Schmeer and Martin Schleef</i>	
<b>PART IV NEW VACCINE APPLICATIONS</b>		
15	Protective and Therapeutic DNA Vaccination Against Allergic Diseases . . . . .	243
	<i>Almedina Isakovic, Richard Weiss, Josef Thalhamer, and Sandra Scheiblhofer</i>	
16	Immunotherapy for Alzheimer's Disease: DNA- and Protein-Based Epitope Vaccines . . . . .	259
	<i>Hayk Davtyan, Irina Petrushina, and Anabit Ghochikyan</i>	
17	Tetravalent DNA Vaccine Product as a Vaccine Candidate Against Dengue . . . . .	283
	<i>Kevin R. Porter, Nimfa Tenesa-Mora, and Kanakatte Raviprakash</i>	
18	DNA Vaccination as a Treatment for Chronic Kidney Disease . . . . .	297
	<i>Yuan Min Wang and Stephen I. Alexander</i>	
<i>Index</i> . . . . .		305