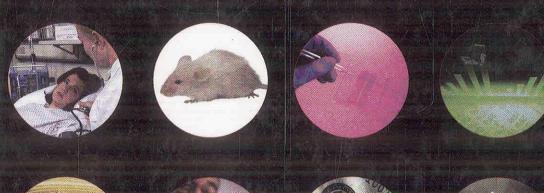


Concepts in Genetic Medicine







BORO DROPULIC • BARRIE CARTER

CONTENTS

CONTRIBUTORS		ix
PR	PREFACE	
INTRODUCTION		
1	The Evolution of Human Gene Therapy: A Journey from Excessive Hype to Excessive Diffidence to Reality Theodore Friedmann	1
VE	CTOR SYSTEMS	
2	Murine Leukemia Virus-Based Retroviral Vectors Kenneth Cornetta	7
3	Lentivirus Vectors Gwendolyn K. Binder and Boro Dropulic	19
4	Adenoviral Vectors: History and Perspective Douglas J. Jolly, Estuardo Aguilar-Cordova, and Laura K. Aguilar	39
5	Adeno-Associated Virus Vectors Barrie J. Carter	61
6	SV40 Virus-Derived Vectors David S. Strayer	69
7	Herpes Simplex Virus Vectors Anna-Maria Anesti and Robert S. Coffin	85
8	Nonviral Gene Delivery Systems Takeshi Suda and Dexi Liu	103

APPLICATIONS

9	Therapeutic Gene Transfer to Skeletal Muscle Paul Gregorevic and Jeffrey S. Chamberlain	123
10	Gene Therapy for Cardiovascular Disease Christina A. Pacak, Kerry O. Cresawn, and Barry J. Byrne	129
11	Intraarticular Vector Delivery for Inflammatory Joint Disease Haim Burstein	137
12	The Respiratory System as a Platform for Gene Delivery Barrie J. Carter	145
13	The Brain as a Target for Gene Therapy Pedro R. Lowenstein and Maria G. Castro	153
14	Immune Responses to Viral Vectors Injected Systemically or into the CNS Pedro R. Lowenstein and Maria G.Castro	167
15	Cancer Vaccines Rimas J. Qrentas	181
16	Genetically Modified T Cells for Human Gene Therapy James L. Riley and Carl H. June	193
17	Lentiviral Vector Delivery of RNAi for the Treatment of HIV-1 Infection Kevin V. Morris and John J. Rossi	207
18	Vector Targeting Qiana L. Matthews and David T. Curiel	223
TH	E MANUFACTURE OF GENE THERAPY PRODUCTS	
19	The Manufacture of Genetic Viral Vector Products Douglas J. Jolly and Estuardo Aguilar-Cordova	229
20	The Manufacture of Adeno-Associated Viral Vectors Richard Peluso	245

21	Lentivirus Vector Manufacturing Gwendolyn K. Binder and Boro Dropulic	253
SA	FETY AND REGULATORY CONSIDERATIONS	
22	Assays for the Release of Viral Vector Gene Therapy Products for Human Clinical Trials Flavia Borellini	269
23	Safety of Retroviral Vectors: Regulatory and Technical Considerations Kenneth Cornetta and Carolyn A. Wilson	277
24	Assays for the Quality Control of Lentiviral Vectors James E. Miskin, Susan M. Kingsman, and Kyriacos A. Mitrophanous	289
25	Assays for Nonviral Vectors Ralph W. Paul	29 9
26	Assays for the Release of Cellular Gene Therapy Products Philip J. Cross and Bruce L. Levine	307
27	Toxicology for Gene Therapy Products: Concepts and Challenges Russette M. Lyons	319
28	Regulatory Aspects of Gene Therapy Medicinal Products in the European Union Matthias Schweizer, Christian J. Buchholz, and Klaus Cichutek	329
FIN	NANCE AND REIMBURSMENT	
29	Venture Capital and Biotechnology Startups Douglas D. Lind	341
30	The Role of Investment Banking in the Growth of Biotechnology Companies Douglas J. Swirsky	351
31	Managing Reimbursement for Gene Therapy Products Martin Gold	355