

# Contents

Contributors	<i>page</i> vii
Foreword by Sir Gregory Winter	xi
Preface	xiii
<b>PART I. HUMANIZED ANTIBODIES</b>	
1 Humanization of Recombinant Antibodies <i>José W. Saldanha</i>	3
2 Immunogenicity Assessment of Antibody Therapeutics <i>Philippe Stas, Jurgen Pletinckx, Yannick Gansemans, and Ignace Lasters</i>	20
3 In Vitro Screening for Antibody Immunogenicity <i>Frank J. Carr and Matthew P. Baker</i>	43
<b>PART II. GENERATION AND SCREENING OF ANTIBODY LIBRARIES</b>	
4 Antibody Libraries from Naïve V Gene Sources <i>Gerald Beste and David Lowe</i>	55
5 Antibodies from IgM Libraries <i>Stefan Knackmuss and Vera Molkenthin</i>	66
6 Generation and Screening of the Synthetic Human Combinatorial Antibody Library HuCAL GOLD <i>Ingo M. Klagge</i>	75
<b>PART III. TRANSGENIC HUMAN ANTIBODY REPERTOIRES</b>	
7 Therapeutic Antibodies from XenoMouse Transgenic Mice <i>Aya Jakobovits</i>	89
8 VelocImmune: Immunoglobulin Variable Region Humanized Mice <i>Andrew Murphy</i>	100
<b>PART IV. ANTIBODY EFFECTOR FUNCTION</b>	
9 Mechanisms of Tumor Cell Killing by Therapeutic Antibodies <i>Ross Stewart and Carl Webster</i>	111
10 Optimization of Fc Domains to Enhance Antibody Therapeutics <i>Greg A. Lazar and Aaron K. Chamberlain</i>	124
11 Glycoengineered Therapeutic Antibodies <i>Peter Brünker, Peter Sondermann, and Pablo Umana</i>	144

**PART V. ARMING ANTIBODIES**

- |    |   |     |
|----|---|-----|
| 12 | Monoclonal Antibodies for the Delivery of Cytotoxic Drugs<br><i>David J. King</i>                     | 157 |
| 13 | Immunotherapy with Radio-immune Conjugates<br><i>Christina A. Kousparou and Agamemnon A. Epenetos</i> | 174 |
| 14 | Immunotherapeutic Antibody Fusion Proteins<br><i>Nigel S. Courtenay-Luck and David Jones</i>          | 190 |

**PART VI. NOVEL ANTIBODY FORMATS**

- |    |  |     |
|----|--|-----|
| 15 | Alternative Antibody Formats<br><i>Fabrice Le Gall and Melvyn Little</i>                                 | 203 |
| 16 | Single-Domain Antibodies<br><i>Serge Muyldermans, Gholamreza Hassanzadeh Ghassabeh, and Dirk Saerens</i> | 216 |
| 17 | Engineering of Non-CDR Loops in Immunoglobulin Domains<br><i>Florian Rüker and Gordana Wozniak-Knopp</i> | 231 |

**PART VII. ANTIGEN-BINDING REPERTOIRES OF NON-IMMUNOGLOBULIN PROTEINS**

- |    |  |     |
|----|--|-----|
| 18 | Alternative Scaffolds: Expanding the Options of Antibodies<br><i>Andreas Plückthun</i> | 243 |
|----|--|-----|

**PART VIII. PROLONGATION OF SERUM HALF-LIFE**

- |    |  |     |
|----|--|-----|
| 19 | Polymer Fusions to Increase Antibody Half-Lives:<br>PEGylation and Other Modifications<br><i>Sam P. Heywood and David P. Humphreys</i> | 275 |
| 20 | Extending Antibody Fragment Half-Lives with Albumin<br><i>Jan Terje Andersen and Inger Sandlie</i>                                     | 293 |

**PART IX. INNOVATIVE IMMUNOTHERAPEUTIC APPROACHES**

- |    |  |     |
|----|--|-----|
| 21 | A Stem Cell-Based Platform for the Discovery and Development of Antitumor Therapeutic Antibodies to Novel Targets<br><i>Jennie P. Mather, Claudia Fieger, Tony W. Liang, Kathleen L. King, Jonathan Li, Peter Young, Claude Beltejar, Beverly Potts, Monica Licea, and Deryk Loo</i> | 313 |
| 22 | Antibody Directed Enzyme Prodrug Therapy (ADEPT)<br><i>Helen L. Lowe, Surinder K. Sharma, Kenneth D. Bagshawe, and Kerry A. Chester</i>  | 336 |
| 23 | Immune Privilege and Tolerance – Therapeutic Antibody Approaches<br><i>Daron Forman, Paul Ponath, Devangi Mehta, Joe Ponte, Jessica Snyder, Patricia Rao, Herman Waldmann, and Michael Rosenzweig</i>  | 350 |

**PART X. MARKET OVERVIEW AND OUTLOOK**

- |    |  |     |
|----|--|-----|
| 24 | Antibody Therapeutics: Business Achievements and Business Outlook<br><i>Christophe Bourrilly</i> | 373 |
|----|--|-----|

Index 403

Color plates follow page xvi.