

Contents

| | | |
|-----------|---|------------|
| 1 | Cell Line Development | 1 |
| | Hansjoerg Hauser | |
| 2 | Transient Recombinant Protein Expression in Mammalian Cells . . . | 27 |
| | Volker Jäger, Konrad Büssow, and Thomas Schirrmann | |
| 3 | Production of Antibodies in Hybridoma and Non-hybridoma Cell Lines | 65 |
| | Susan McDonnell | |
| 4 | Bioreactors for Mammalian Cells | 89 |
| | R. Pörtner | |
| 5 | Mass Transfer and Mixing Across the Scales in Animal Cell Culture | 137 |
| | Alvin W. Nienow | |
| 6 | Hydrodynamic Damage to Animal Cells | 169 |
| | Jeffrey J. Chalmers and Ningning Ma | |
| 7 | Monitoring of Cell Culture | 185 |
| | Sebastian Schwamb, Robert Puskeiler, and Philipp Wiedemann | |
| 8 | Serum and Protein Free Media | 223 |
| | Michael Butler | |
| 9 | Glycosylation in Cell Culture | 237 |
| | Maureen Spearman and Michael Butler | |
| 10 | Modelling of Mammalian Cell Cultures | 259 |
| | Nishikant P. Shirsat, Niall J. English, Brian Glennon, and Mohamed Al-Rubeai | |
| 11 | Mammalian Cell Line Selection Strategies for High-Producers . . . | 327 |
| | Darrin Kuystermans and Mohamed Al-Rubeai | |

| | |
|---|------------|
| 12 Building a Cell Culture Process with Stable Foundations: Searching for Certainty in an Uncertain World | 373 |
| Peter M. O’Callaghan and Andrew J. Racher | |
| 13 Perfusion Processes | 407 |
| Véronique Chotteau | |
| 14 Single-Use Bioreactors for Animal and Human Cells | 445 |
| Stephan C. Kaiser, Matthias Kraume, Dieter Eibl, and Regine Eibl | |
| 15 An Overview of Cell Culture Engineering for the Insect Cell-Baculovirus Expression Vector System (BEVS) | 501 |
| Laura A. Palomares, Mauricio Realpe, and Octavio T. Ramírez | |
| 16 Metabolic Flux Analysis: A Powerful Tool in Animal Cell Culture | 521 |
| João V. Sá, Tiago M. Duarte, Manuel J.T. Carrondo, Paula M. Alves, and Ana P. Teixeira | |
| 17 Cell Immobilization for the Production of Viral Vaccines | 541 |
| Ana Carina Silva, António Roldão, Ana Teixeira, Paulo Fernandes, Marcos F.Q. Sousa, and Paula M. Alves | |
| 18 Cell Engineering for Therapeutic Protein Production | 565 |
| Eric Baek, Che Lin Kim, Jin Hyoung Park, and Gyun Min Lee | |
| 19 Proteomics in Cell Culture: From Genomics to Combined ‘Omics for Cell Line Engineering and Bioprocess Development . . . | 591 |
| Kelley Heffner, Christian Schroeder Kaas, Amit Kumar, Deniz Baycin-Hizal, and Michael Betenbaugh | |
| 20 Metabolomics in Animal Cell Culture | 615 |
| Miroslava Čuperlović-Culf | |
| 21 Process Analytical Technology and Quality-by-Design for Animal Cell Culture | 647 |
| Stephen Craven and Jessica Whelan | |
| 22 Biosafety Recommendations on the Handling of Animal Cell Cultures | 689 |
| Philippe Herman and Katia Pauwels | |
| 23 Biopharmaceutical Products from Animal Cell Culture | 717 |
| Darrin Kuystermans and Mohamed Al-Rubeai | |
| Index | 759 |

Animal Cell Culture

Al-Rubeai, M. (Ed.)

2015, XII, 763 p. 106 illus., 73 illus. in color.,

ISBN: 978-3-319-10320-4