Contents

Part I  Organisms

Gene Expression Systems in Industrial Ascomycetes:
Advancements and Applications ................................................................. 3
Jonas Ramoni, Verena Seidl-Seiboth, Robert H. Bischof, and Bernhard Seiboth

Production of Industrial Enzymes in Trichoderma reesei ..................... 23
Marja Paloheimo, Thomas Haarmann, Susanna Mäkinen, and Jari Vehmaanperä

The Renaissance of Neurospora crassa: How a Classical Model
System is Used for Applied Research ........................................................ 59
Tanja Seibert, Nils Thieme, and J. Philipp Benz

Improvement of Industrially Relevant Biological Activities
in Mucoromycotina Fungi .............................................................................. 97
Tamás Papp, Ildikó Nyilasi, Árpád Csernetics, Gábor Nagy, Miklós Takó, and Csaba Vágvölgyi

Homologous and Heterologous Expression of Basidiomycete
Genes Related to Plant Biomass Degradation ......................................... 119
Sara Casado López, Outi-Maaria Sietiö, Kristiina Hildén, Ronald P. de Vries, and Miia R. Mäkelä

Prospects for Bioprocess Development Based on Recent Genome
Advances in Lignocellulose Degrading Basidiomycetes ......................... 161
Chiaki Hori and Daniel Cullen

The Corn Smut Fungus Ustilago maydis as an Alternative
Expression System for Biopharmaceuticals ........................................... 183
Parveen Sarkari, Michael Feldbrügge, and Kerstin Schipper

Fungi Gene Expression Systems: Applications and Advancements ........ 201
Nada Kraševec and Mojca Benčina
Yeast Expression Systems for Industrial Biotechnology ................................. 227
Pramote Chumnanpuen, Kanokarn Kocharin, and Wanwipa Vongsangnak

Part II Tools

High-Throughput Construction of Genetically Modified Fungi .................. 241
Gyungsoon Park, Shouqiang Ouyang, and Katherine A. Borkovich

Awakening of Fungal Secondary Metabolite Gene Clusters ...................... 253
Juliane Fischer, Volker Schroeckh, and Axel A. Brakhage

Understanding the Mechanism of Carbon Catabolite Repression to Increase Protein Production in Filamentous Fungi ......................... 275
Daniel Kiesenhofer, Astrid R. Mach-Aigner, and Robert L. Mach

Inteins and Their Use in Protein Synthesis with Fungi ........................... 289
Skander Elleuche and Stefanie Pöggeler

Relevance of Signal Transduction Pathways for Efficient Gene Expression in Fungi ................................................................. 309
Eva Stappler, Aroa Rodriguez-Iglesias, Hoda Bazafkan, Guofen Li, and Monika Schmoll

Sexual Development in Fungi and Its Uses in Gene Expression Systems ........ 335
George D. Ashton and Paul S. Dyer

Hybrid Infertility: The Dilemma or Opportunity of Applying Sexual Development to Improve Trichoderma reesei Industrial Strains ......................... 351
Wan-Chen Li, Yu-Chien Chuang, Chia-Ling Chen, and Ting-Fang Wang

Boosting Research and Industry by Providing Extensive Resources for Fungal Research ................................................................. 361
Kevin McCluskey

Systems Biological Applications for Fungal Gene Expression ..................... 385
Gunseli Bayram Akcapinar and Osman Ugur Sezerman

Fungal Biotechnology for Industrial Enzyme Production: Focus on (Hemi)cellulase Production Strategies, Advances and Challenges .......... 395
Loreta Gudynaite-Savitch and Theresa C. White

On the Safety of Filamentous Fungi with Special Emphasis on Trichoderma reesei and Products Made by Recombinant Means .......... 441
Anna Gryshyna, Liisa Kautto, Robyn Peterson, and Helena Nevalainen

Applications and Benefits of Thermophilic Microorganisms and Their Enzymes for Industrial Biotechnology ........................................ 459
Eleni Gomes, Angelica Rodrigues de Souza, Guillermo Ladino Orjuela, Roberto Da Silva, Tássio Brito de Oliveira, and Andre Rodrigues

Index .................................................................................................................. 493
Gene Expression Systems in Fungi: Advancements and Applications
Schmoll, M.; Dattenböck, C. (Eds.)
2016, XV, 499 p. 38 illus., 19 illus. in color., Hardcover
ISBN: 978-3-319-27949-7