

---

# Contents

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

## PART I DESIGN AND COMPUTATIONAL STRATEGIES FOR PROTEIN ENGINEERING

1 Combinatorial Protein Design Strategies Using Computational Methods <b>Hidetoshi Kono, Wei Wang, and Jeffery G. Saven .....</b>	<b>3</b>
2 Global Incorporation of Unnatural Amino Acids in <i>Escherichia coli</i> <b>Jamie M. Bacher and Andrew D. Ellington .....</b>	<b>23</b>
3 Considerations in the Design and Optimization of Coiled Coil Structures <b>Jody M. Mason, Kristian M. Müller, and Katja M. Arndt .....</b>	<b>35</b>
4 Calcium Indicators Based on Calmodulin–Fluorescent Protein Fusions <b>Kevin Truong, Asako Sawano, Atsushi Miyawaki, and Mitsuhiro Ikura .....</b>	<b>71</b>
5 Design and Synthesis of Artificial Zinc Finger Proteins <b>Wataru Nomura and Yukio Sugiura .....</b>	<b>83</b>
6 Monobodies: Antibody Mimics Based on the Scaffold of the Fibronectin Type III Domain <b>Akiko Koide and Shohei Koide .....</b>	<b>95</b>
7 Engineering Site-Specific Endonucleases <b>Peter Friedhoff and Alfred Pingoud .....</b>	<b>111</b>

## PART II EVOLUTIONARY STRATEGIES FOR PROTEIN ENGINEERING

8 Protein Library Design and Screening: <i>Working Out the Probabilities</i> <b>Michel Denault and Joelle N. Pelletier .....</b>	<b>127</b>
9 Protein Design by Binary Patterning of Polar and Nonpolar Amino Acids <b>Luke H. Bradley, Yinan Wei, Peter Thumfort, Christine Wurth, and Michael H. Hecht .....</b>	<b>155</b>
10 Versatile DNA Fragmentation and Directed Evolution With Nucleotide Exchange and Excision Technology <b>Sabine C. Stebel, Katja M. Arndt, and Kristian M. Müller .....</b>	<b>167</b>

11	Degenerate Oligonucleotide Gene Shuffling <b>Peter L. Bergquist and Moreland D. Gibbs.....</b>	<b>191</b>
12	M13 Bacteriophage Coat Proteins Engineered for Improved Phage Display <b>Sachdev S. Sidhu, Birte K. Feld, and Gregory A. Weiss .....</b>	<b>205</b>
13	Ribosome-Inactivation Display System <b>Satoshi Fujita, Jing-Min Zhou, and Kazunari Taira.....</b>	<b>221</b>
14	Compartmentalized Self-Replication: A Novel Method for the Directed Evolution of Polymerases and Other Enzymes <b>Farid J. Ghadessy and Philipp Holliger .....</b>	<b>237</b>
15	Synthesis of Degenerated Libraries of the Ras-Binding Domain of Raf and Rapid Selection of Fast-Folding and Stable Clones With the Dihydrofolate Reductase Protein Fragment Complementation Assay <b>François-Xavier Campbell-Valois and Stephen W. Michnick .....</b>	<b>249</b>
16	A General Method of Terminal Truncation, Evolution, and Re-Elongation to Generate Enzymes of Enhanced Stability <b>Jochen Hecky, Jody M. Mason, Katja M. Arndt, and Kristian M. Müller .....</b>	<b>275</b>
	Index .....	305

Protein Engineering Protocols

Müller, K.; Arndt, K. (Eds.)

2007, 328 p. 65 illus., 1 illus. in color., Hardcover

ISBN: 978-1-58829-072-4

A product of Humana Press