

Contents

<i>Preface</i>	<i>v</i>
<i>Contributors</i>	<i>xi</i>
1 A New Method to Predict Ion Effects in RNA Folding	1
<i>Li-Zhen Sun and Shi-Jie Chen</i>	
2 Computational Generation of RNA Nanorings	19
<i>Rishabh Sharan, Eckart Bindewald, Wojciech K. Kasprzak, and Bruce A. Shapiro</i>	
3 Protocols for Molecular Dynamics Simulations of RNA Nanostructures	33
<i>Taejin Kim, Wojciech K. Kasprzak, and Bruce A. Shapiro</i>	
4 Rolling Circle Transcription for the Self-Assembly of Multimeric RNAi Structures and Its Applications in Nanomedicine	65
<i>Mihue Jang and Hyung Jun Ahn</i>	
5 Computational Prediction of the Immunomodulatory Potential of RNA Sequences	75
<i>Gandharva Nagpal, Kumardeep Chaudhary, Sandeep Kumar Dhanda, and Gajendra Pal Singh Raghava</i>	
6 Cotranscriptional Production of Chemically Modified RNA Nanoparticles	91
<i>Maria L. Kireeva, Kirill A. Afonin, Bruce A. Shapiro, and Mikhail Kashlev</i>	
7 Supported Fluid Lipid Bilayer as a Scaffold to Direct Assembly of RNA Nanostructures	107
<i>Aleksandra P. Dabkowska, Agnes Michanek, Luc Jaeger, Arkadiusz Chworos, Tommy Nylander, and Emma Sparr</i>	
8 Evaluation of Thermal Stability of RNA Nanoparticles by Temperature Gradient Gel Electrophoresis (TGGE) in Native Condition	123
<i>Kheiria Benkato, Benjamin O'Brien, My N. Bui, Daniel L. Jasinski, Peixuan Guo, and Emil F. Khisamutdinov</i>	
9 Design and Crystallography of Self-Assembling RNA Nanostructures	135
<i>Mark A. Boerneke and Thomas Hermann</i>	
10 X-Aptamer Selection and Validation	151
<i>Ganesh L. Lokesh, Hongyu Wang, Curtis H. Lam, Varatharasa Thiviyathanan, Nancy Ward, David G. Gorenstein, and David E. Volk</i>	
11 Design and Preparation of Aptamer-siRNA Chimeras (AsiCs) for Targeted Cancer Therapy	175
<i>Sven Kruspe and Paloma H. Giangrande</i>	

12	Cellular Delivery of siRNAs Using Bolaamphiphiles.....	187
	<i>Kshitij Gupta</i>	
13	Preparation and Optimization of Lipid-Like Nanoparticles for mRNA Delivery	207
	<i>Bin Li and Yizhou Dong</i>	
14	Chitosan Nanoparticles for miRNA Delivery	219
	<i>Merve Denizli, Burcu Aslan, Lingegowda S. Mangala, Dabai Jiang, Cristian Rodriguez-Aguayo, Gabriel Lopez-Berestein, and Anil K. Sood</i>	
15	Synthesis of PLGA-Lipid Hybrid Nanoparticles for siRNA Delivery Using the Emulsion Method PLGA-PEG-Lipid Nanoparticles for siRNA Delivery.....	231
	<i>Lei Wang, Benjamin Griffel, and Xiaoyang Xu</i>	
16	Oxime Ether Lipids as Transfection Agents: Assembly and Complexation with siRNA	241
	<i>Anu Puri, Serena Zampino, Mathias Viard, and Bruce A. Shapiro</i>	
17	Polycationic Probe-Guided Nanopore Single-Molecule Counter for Selective miRNA Detection	255
	<i>Kai Tian, Ruicheng Shi, Amy Gu, Michael Pennella, and Li-Qun Gu</i>	
18	Intracellular Reassociation of RNA-DNA Hybrids that Activates RNAi in HIV-Infected Cells.....	269
	<i>Angelica N. Martins, Weina Ke, Vaishnavi Jawahar, Morriah Striplin, Caryn Striplin, Eric O. Freed, and Kirill A. Afonin</i>	
19	Construction and In Vivo Testing of Prokaryotic Riboregulators	285
	<i>Alexander A. Green</i>	
20	Preparation of a Conditional RNA Switch	303
	<i>Paul Zakrevsky, Lorena Parlea, Mathias Viard, Eckart Bindewald, Kirill A. Afonin, and Bruce A. Shapiro</i>	
21	Rational Engineering of a Modular Group I Ribozyme to Control Its Activity by Self-Dimerization	325
	<i>Takabiro Tanaka, Yoshiya Ikawa, and Shigeyoshi Matsumura</i>	
22	CRISPR-Cas RNA Scaffolds for Transcriptional Programming in Yeast	341
	<i>Jesse G. Zalatan</i>	
23	Using Planar Phi29 pRNA Three-Way Junction to Control Size and Shape of RNA Nanoparticles for Biodistribution Profiling in Mice.....	359
	<i>Farzin Haque, Congcong Xu, Daniel L. Jasinski, Hui Li, and Peixuan Guo</i>	
	<i>Index</i>	381

RNA Nanostructures

Methods and Protocols

Bindewald, E.; Shapiro, B.A. (Eds.)

2017, XV, 383 p. 95 illus., 75 illus. in color., Hardcover

ISBN: 978-1-4939-7137-4

A product of Humana Press