

Contents

1 Classic Circadian Characteristics: Historical Perspective and Properties Relative to the <i>Synechococcus elongatus</i> PCC 7942 Model	1
Jayna L. Ditty and Shannon R. Mackey	
2 Speculation and Hoopla: Is Diversity Expected in Cyanobacterial Circadian Timing Systems?	19
Stanly B. Williams	
3 Circadian Rhythm of <i>Cyanothece</i> RF-1 (<i>Synechococcus</i> RF-1)	39
Tan-Chi Huang and Rong-Fong Lin	
4 The Decade of Discovery: How <i>Synechococcus elongatus</i> Became a Model Circadian System 1990–2000	63
Carl Hirschbie Johnson and Yao Xu	
5 The Kai Oscillator	87
Tokitaka Oyama and Takao Kondo	
6 NMR Studies of a Timekeeping System	103
Ioannis Vakonakis and Andy LiWang	
7 Structural Aspects of the Cyanobacterial KaiABC Circadian Clock	121
Martin Egli and Phoebe L. Stewart	
8 Mechanisms for Entraining the Cyanobacterial Circadian Clock System with the Environment	141
Shannon R. Mackey, Jayna L. Ditty, Gil Zeidner, You Chen, and Susan S. Golden	
9 Factors Involved in Transcriptional Output from the Kai-Protein-Based Circadian Oscillator	157
Hideo Iwasaki	

10	Chromosome Compaction: Output and Phase	169
	Rachelle M. Smith and Stanly B. Williams	
11	Cell Division Cycles and Circadian Rhythms	183
	Tetsuya Mori	
12	The Adaptive Value of the Circadian Clock System in Cyanobacteria	205
	Mark A. Woelfle and Carl Hirschie Johnson	
13	Stability and Noise in the Cyanobacterial Circadian Clock	223
	Irina Mihalcescu	
14	The Circadian Clock Gear in Cyanobacteria: Assembled by Evolution	241
	Volodymyr Dvornyk	
15	Circadian Clocks of <i>Synechocystis</i> sp. Strain PCC 6803, <i>Thermosynechococcus elongatus</i>, <i>Prochlorococcus</i> spp., <i>Trichodesmium</i> spp. and Other Species	259
	Setsuyuki Aoki and Kiyoshi Onai	
16	Mathematical Modeling of the In Vitro Cyanobacterial Circadian Oscillator	283
	Mark Byrne	
17	A Synthetic Biology Approach to Understanding Biological Oscillations: Developing a Genetic Oscillator for <i>Escherichia coli</i>	301
	Alexander J. Ninfa, Mariette R. Atkinson, Daniel Forger, Stephen Atkins, David Arps, Stephen Selinsky, Donald Court, Nicolas Perry, and Avraham E. Mayo	
	Index	331