
Contents

<i>Preface</i>	<i>v</i>
<i>Contributors</i>	<i>ix</i>
 PART I FLAGELLAR TYPE III PROTEIN EXPORT, ASSEMBLY AND GENE REGULATION IN <i>SALMONELLA ENTERICA</i>	
1 Fuel of the Bacterial Flagellar Type III Protein Export Apparatus <i>Tobru Minamino, Miki Kinoshita, and Keiichi Namba</i>	3
2 Interactions of Flagellar Structural Subunits with the Membrane Export Machinery <i>Lewis D.B. Evans, Paul M. Bergen, Owain J. Bryant, and Gillian M. Fraser</i>	17
3 Fluorescent Microscopy Techniques to Study Hook Length Control and Flagella Formation <i>Marc Erhardt</i>	37
4 Coupling of Flagellar Gene Expression with Assembly in <i>Salmonella enterica</i> <i>Fabienne F.V. Chevance and Kelly T. Hughes</i>	47
5 Dynamic Measures of Flagellar Gene Expression <i>Santosh Koirala and Christopher V. Rao</i>	73
 PART II STRUCTURE OF THE BACTERIAL FLAGELLUM	
6 Purification and Characterization of the Bacterial Flagellar Basal Body from <i>Salmonella enterica</i> <i>Shin-Ichi Aizawa</i>	87
7 Design and Preparation of the Fragment Proteins of the Flagellar Components Suitable for X-Ray Crystal Structure Analysis <i>Katsumi Imada</i>	97
8 Structural Analysis of the Flagellar Component Proteins in Solution by Small Angle X-Ray Scattering <i>Lawrence K. Lee</i>	105
9 Structural Study of the Bacterial Flagellar Basal Body by Electron Cryomicroscopy and Image Analysis <i>Akihiro Kawamoto and Keiichi Namba</i>	119
10 Structure of the MotA/B Proton Channel <i>Akio Kitao and Yasutaka Nishihara</i>	133
11 Mechanism of Stator Assembly and Incorporation into the Flagellar Motor. . . . <i>Seiji Kojima</i>	147

PART III DYNAMICS OF THE BACTERIAL FLAGELLAR MOTOR

12	Rotation Measurements of Tethered Cells	163
	<i>Yuichi Inoue</i>	
13	Tracking the Movement of a Single Prokaryotic Cell in Extreme Environmental Conditions	175
	<i>Masayoshi Nishiyama and Yoshiyuki Arai</i>	
14	Measurements of the Rotation of the Flagellar Motor by Bead Assay	185
	<i>Taishi Kasai and Yoshiyuki Sowa</i>	
15	Measurements of Ion-Motive Force Across the Cell Membrane	193
	<i>Tsai-Shun Lin, Yi-Ren Sun, and Chien-Jung Lo</i>	
16	Stoichiometry and Turnover of the Stator and Rotor	203
	<i>Yusuke V. Morimoto and Tobru Minamino</i>	
17	Direct Imaging of Intracellular Signaling Molecule Responsible for the Bacterial Chemotaxis	215
	<i>Hajime Fukuoka</i>	

PART IV STRUCTURAL DIVERSITY OF THE BACTERIAL FLAGELLAR
MOTORS DERIVED FROM DIFFERENT BACTERIAL SPECIES

18	In Situ Structural Analysis of the Spirochetal Flagellar Motor by Cryo-Electron Tomography	229
	<i>Shiwei Zhu, Zhuan Qin, Juyun Wang, Dustin R. Morado, and Jun Liu</i>	
19	Motility of Spirochetes	243
	<i>Shuichi Nakamura and Md. Shafiqul Islam</i>	
20	Structure of the Sodium-Driven Flagellar Motor in Marine <i>Vibrio</i>	253
	<i>Yasuhiro Onoue and Michio Homma</i>	
21	Chemotactic Behaviors of <i>Vibrio cholerae</i> Cells	259
	<i>Ikuro Kawagishi and So-ichiro Nishiyama</i>	
22	Purification of Fla2 Flagella of <i>Rhodobacter sphaeroides</i>	273
	<i>Javier de la Mora, Laura Camarena, and Georges Dreyfus</i>	
23	Dynamics in the Dual Fuel Flagellar Motor of <i>Shewanella oneidensis</i> MR-1 . . .	285
	<i>Susanne Brenzinger and Kai M. Thormann</i>	
24	Ion Selectivity of the Flagellar Motors Derived from the Alkaliphilic <i>Bacillus</i> and <i>Paenibacillus</i> Species	297
	<i>Yuka Takahashi and Masahiro Ito</i>	
25	Measurement of Free-Swimming Motility and Magnetotactic Behavior of <i>Magnetococcus massalia</i> Strain MO-1	305
	<i>Wei-Jia Zhang, Sheng-Da Zhang, and Long-Fei Wu</i>	
	<i>Index</i>	321

The Bacterial Flagellum

Methods and Protocols

Minamino, T.; Namba, K. (Eds.)

2017, XI, 326 p. 79 illus., 44 illus. in color. With online
files/update., Hardcover

ISBN: 978-1-4939-6926-5

A product of Humana Press