

# ***Borrelia***

## Molecular Biology, Host Interaction and Pathogenesis

Edited by

D. Scott Samuels

Division of Biological Sciences  
The University of Montana  
Missoula, MT  
USA

and

Justin D. Radolf

Department of Medicine and  
Department of Genetics and Developmental Biology  
University of Connecticut Health Center  
Farmington, CT  
USA

---

# Contents

	List of Contributors	v
	Preface	xi
	Introduction	1
	David A. Haake	
1	The Worldwide Saga of Lyme Borreliosis	7
	Jorge L. Benach and Juan Carlos García-Moncó	
2	<i>Borrelia</i> Genomics: Chromosome, Plasmids, Bacteriophages and Genetic Variation	27
	Sherwood R. Casjens, Christian H. Eggers and Ira Schwartz	
3	Replication of the <i>B. burgdorferi</i> Genome and Scrambling of the Linear Replicons through Reverse Telomere Resolution	55
	George Chaconas	
4	Gene Regulation, Transcriptomics and Proteomics	67
	Jon T. Skare, James A. Carroll, X. Frank Yang, D. Scott Samuels and Darrin R. Akins	
5	Metabolism and Physiology of <i>Borrelia</i>	103
	Frank Gherardini, Julie Boylan, Kevin Lawrence and Jon Skare	
6	Structure, Function and Biogenesis of the <i>Borrelia</i> Cell Envelope	139
	Sven Bergström and Wolfram R. Zückert	
7	The Chic Motility and Chemotaxis of <i>Borrelia burgdorferi</i>	167
	Stuart F. Goldstein, Chunhao Li, Jun Liu, Michael Miller, Md. Abdul Motaleb, Steven J. Norris, Ruth E. Silversmith, Charles W. Wolgemuth and Nyles W. Charon	
8	Genetic Manipulation of <i>Borrelia burgdorferi</i>	189
	Patricia A. Rosa, Felipe Cabello and D. Scott Samuels	
9	Evolutionary Genetics of <i>Borrelia burgdorferi</i> sensu lato	221
	Daniel Dykhuizen and Dustin Brisson	

10	<b>Ecology of Borreliae and Their Arthropod Vectors</b>	251
	Joseph Piesman and Tom G. Schwan	
11	<b>Tick Interactions</b>	279
	Utpal Pal and Erol Fikrig	
12	<b>Pathobiology of Lyme Disease <i>Borrelia</i></b>	299
	Steven J. Norris, Jenifer Coburn, John M. Leong, Linden T. Hu and Magnus Höök	
13	<b>Pathogenesis of Relapsing Fever</b>	333
	Alan G. Barbour and Betty P. Guo	
14	<b>Animal Models of Borreliosis</b>	359
	Stephen W. Barthold, Diego Cadavid and Mario T. Philipp	
15	<b>Host Response</b>	413
	Janis J. Weis and Linda K. Bockenstedt	
16	<b>Detection of <i>Borrelia burgdorferi</i></b>	443
	Guiqing Wang, Maria E. Agüero-Rosenfeld, Gary P. Wormser and Ira Schwartz	
17	<b>Lyme Disease Vaccines</b>	467
	Richard T. Marconi and Christopher G. Earnhart	
18	<b>Lyme Disease in Humans</b>	487
	Justin D. Radolf, Juan C. Salazar and Raymond J. Dattwyler	
	<b>Index</b>	535
	<b>Colour Plates</b>	A1