

Metabolism and Bacterial Pathogenesis

Groundbreaking thinking on how bacterial metabolism is foundational to pathogenesis

For too long, bacterial metabolism and bacterial pathogenesis have been studied as separate entities. However, the scientific community is beginning to realize that not only are bacterial nutrient acquisition and utilization essential for pathogenesis, but that interfering with the pathogen-specific metabolic pathways used during infection can regulate virulence factor expression and might lead to effective breakthroughs in a variety of treatments.

Editors Paul Cohen and Tyrrell Conway, who pioneered the use of metabolic mutants in competitive colonization assays, an approach now widely used to investigate the nutrition of pathogens *in vivo*, are uniquely qualified to advance our knowledge of this integrative field of research. They convened a group of contributors who are breaking new ground in understanding how bacterial metabolism is foundational to pathogenesis to share their expert perspectives and outlook for the future.

Beginning with overviews, *Metabolism and Bacterial Pathogenesis* covers

- a wide range of diseases and both Gram-positive and -negative bacteria that serve as model systems for *in vitro* and *in vivo* investigations
- intracellular, respiratory, and enteric pathogens
- pathogen-specific nutrient acquisition in hosts
- mechanisms of host-driven metabolic adaptation by pathogens
- metabolic regulation of virulence gene expression

Useful for specialists in bacterial pathogenesis and specialists in metabolism as well as molecular biologists, physicians, veterinarians, dentists, graduate and undergraduate students, and laboratory technicians, *Metabolism and Bacterial Pathogenesis* is also essential reading for scientists studying the microbiome.

"Within these pages, leading experts in the field summarize research on a timely topic that connects research on the pathogenesis of infectious diseases to bacterial physiology. Metabolism and Bacterial Pathogenesis is great addition for bacteriologists from both medical schools and colleges of biological sciences."

—Andreas Bäumler

Professor and Vice Chair of Research

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Paul Cohen recently retired from his professorship in the Department of Cell and Molecular Biology at the University of Rhode Island. During most of his career, Dr. Cohen conducted research on various strains of *E. coli*, and is currently involved in studies related to *E. coli* colonization in the large intestines of mice. He is coeditor of *Colonization of Mucosal Surfaces* (ASM Press).

Tyrrell Conway is Professor and Head of the Department of Microbiology and Molecular Genetics at Oklahoma State University. Among his several scientific discoveries, Dr. Conway is the co-inventor of U.S. Patent number 5,000,000 for genetically engineering *E. coli* to make biofuels, and he published the first DNA microarray paper on *E. coli*.



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