Escherichia coli is an important member of the normal healthy microbiome of humans and other mammals. In addition, some strains are thought to be probiotic, and therefore beneficial to the host. However, other strains of E. coli have evolved into highly versatile, and frequently deadly, pathogens, the resultant diseases causing significant economic loss and public health burdens worldwide. Recent studies have shown that the E. coli genome has a high plasticity allowing it to adapt to new niches and survive in stressful conditions and to evolve into new hybrid strains with shared genes, including virulence genes. Omics and whole genome sequencing approaches have transformed research in this field allowing fascinating new insights into the molecular and cellular biology of the bacterium thus paving the way for the development of novel therapeutic strategies.

Under the expert guidance of the editors in this book, renowned international authors provide timely and up-to-date reviews of current cutting-edge E. coli omics, molecular- and cellular-biology research. Topics range from E. coli genome plasticity and evolution to the application of omics technologies for in silico modeling to understand stress-triggered physiological responses.

This authoritative volume is essential reading for scientists, both experts and students, working on pathogenic E. coli in academia, government, and biotechnology companies. It is also a must-read for anyone with an interest in bacterial pathogenesis and an important acquisition for all microbiology libraries.
CURRENT BOOKS OF INTEREST

☞ Pathogenic *Escherichia coli*: Evolution, Omics, Detection and Control
Edited by: Pina M. Fratamico, Yanhong Liu and Christopher H. Sommers (Published: 2018)

☞ Postgraduate Handbook: A Comprehensive Guide for PhD and Master's Students and their Supervisors
Author: Aceme Nyika (Published: 2018)

☞ Enteroviruses: Omics, Molecular Biology, and Control
Edited by: William T. Jackson and Carolyn B. Coyne (Published: 2018)

☞ Molecular Biology of Kinetoplastid Parasites
Edited by: Hemanta K. Majumder (Published: 2018)

☞ Bacterial Evasion of the Host Immune System
Edited by: Pedro Escoll (Published: 2017)

☞ Illustrated Dictionary of Parasitology in the Post-Genomic Era
Author: Hany M. Elsheikha and Edward L. Jarroll (Published: 2017)
"a guide for students, academic staff, medical and veterinarian professionals" (ProtoView); "an extensive and comprehensive glossary of contemporary concepts, terminologies, and vocabulary in modern parasitology" (Doodys)

☞ Next-generation Sequencing and Bioinformatics for Plant Science
Edited by: Vijai Bhadouria (Published: 2017)

☞ The CRISPR/Cas System: Emerging Technology and Application
Edited by: Muhammad Jamal (Published: 2017)
"reviews recent advances" (ProtoView)

☞ Brewing Microbiology: Current Research, Omics and Microbial Ecology
Edited by: Nicholas A. Bokulich and Charles W. Bamforth (Published: 2017)
"a valuable information source ... an authoritative overview" (IMA Fungus)

☞ Metagenomics: Current Advances and Emerging Concepts
Edited by: Diana Marco (Published: 2017)

☞ *Bacillus*: Cellular and Molecular Biology (Third edition)
Edited by: Peter L. Graumann (Published: 2017)
"a one-stop shop for a huge range of *Bacillus*-focused molecular biology" (Microbiology Today)

☞ Cyanobacteria: Omics and Manipulation
Edited by: Dmitry A. Los (Published: 2017)
"a treasure trove of valuable information" (Biospektrum)

☞ Brain-eating Amoebae: Biology and Pathogenesis of *Naegleria fowleri*
Author: Ruqaiyyah Siddiqui, Ibne Karim M. Ali, Jennifer R. Cope and Naveed Ahmed Khan (Published: 2016)
"explains the current knowledge and research" (ProtoView)

☞ Foot-and-Mouth Disease Virus: Current Research and Emerging Trends
Edited by: Francisco Sobrino and Esteban Domingo (Published: 2017)
"important comprehensive review reference" (JAVMA)

☞ *Staphylococcus*: Genetics and Physiology
Edited by: Greg A. Somerville (Published: 2016)
"The editor has done a masterful job" (JAVMA); "a reference book for the active researcher" (Biospektrum)

☞ Chloroplasts: Current Research and Future Trends
Edited by: Helmut Kirchhoff (Published: 2016)
"a comprehensive guide" (ProtoView); "well and clearly written" (J. Plant Physiol.); "state-of-the-art overviews" (Biotechnol. Agron. Soc. Environ.)

☞ Microbial Biodegradation: From Omics to Function and Application
Edited by: Jerzy Diugo&nacute;ski (Published: 2016)
"a valuable companion to both early and established researchers" (Micro. Today); "review(s) the most important current research" (Biotechnol. Agron. Soc. Environ.)

☞ Influenza: Current Research
Edited by: Qinghua Wang and Yizhi Jane Tao (Published: 2016)

☞ MALDI-TOF Mass Spectrometry in Microbiology
Edited by: Markus Kostrzewa and Sören Schubert (Published: 2016)

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