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Clostridium difficile

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With 20 Figures and 11 Tables



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Cover Illustration: Biopsy specimen from a patient with pseudo-membranous colitis induced by Clostridium difficile. Focal superficial necrosis of the colonic mucosa with a typical mushroom-like disposition of fibrin with a few granulocytes. [Courtesy of Prof. Dr. E.-H. Schaefer, Pathologisches Institut (Ludwig-Aschoff-Haus) der Universität Freiburg, Germany]

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Preface

Since *Clostridium difficile* was recognized as a major pathogen for a wide range of enteric diseases including antibiotic-associated diarrhea and pseudomembranous colitis, it has become a major focus of intensive research. Scientific contributions on *Clostridium difficile* come from remarkably diverse fields including clinical and epidemiological research, microbiology, molecular biology, pharmacology, and cell biology. These concerted efforts have resulted in significant progress in the understanding of the role and action of *Clostridium difficile* as a pathogen. Progress in the molecular biology and toxinology of *Clostridium difficile* has been especially fruitful. Characterization of the mode of action of *Clostridium difficile* toxins A and B, which are the crucial virulence factors of the pathogens, has opened up a scientific treasure trove. The toxins have become the prototypes of a new family of clostridial cytotoxins that modify eukaryotic targets by glucosylation. The specific targets for the toxins are Rho GTPases, which regulate the actin cytoskeleton and act as molecular switches to control a large array of signaling processes. The unique activity and specificity of these toxins make them useful pharmacological and cell biological tools for studying signaling pathways in which Rho GTPases are involved.

This volume gives a review and update of recent developments and progress in this exciting field of research. We hope that the various contributions from different scientific fields will inspire further studies on *Clostridium difficile* and clostridial toxins.

KLAUS AKTORIES and TRACY D. WILKINS

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