# Preface

The recent and rapid expansion of information on mechanisms of bacterial pathogenesis has led to this third volume in the *Methods in Enzymology* series on this topic. Part A (Volume 235) covered methods for the isolation and identification of bacterial pathogens and their associated virulence factors, while Part B (Volume 236) dealt with interactions between bacterial pathogens and their hosts. Since then new methods have been developed to identify virulence factors and to assess their mode of action. In addition, it has become apparent that most virulence factors are coordinately regulated. Thus, the methods described in this volume represent new approaches to identify virulence factors, to determine the spectrum of gene regulation under different environmental conditions, and to identify the mechanism of pathogenesis.

The first section of Part C deals with the use of nonmammalian hosts to assess virulence of a pathogen. It has been demonstrated that many pathogens are able to infect organisms of different kingdoms, which allows the more rapid identification of bacterial factors important in virulence by the use of high throughput screens using genetically manipulable hosts such as plants, nematodes, or insects. The remarkable conservation of many host defense mechanisms also allows the identification of genes important in preventing bacterial pathogenesis. The second section of this volume describes new genetic methods to identify bacterial genes essential and/or involved in virulence. This is followed by a section detailing the use of microarrays and proteomics to determine differences in global gene expression under different environmental conditions. The next three sections describe methods used to identify the function of bacterial virulence factors in pathogenesis. The final section is a brief introduction to methods involved in investigations of the role of gene regulation by quorum sensing. For a more complete description of this topic we refer you to Volumes 310, 336, and 337 of *Methods in Enzymology* that deal with various aspects of bacterial quorum sensing and biofilm formation.

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