
Preface

The field of bacterial diagnostics has seen unprecedented advances in recent years. The increased need for accurate detection and identification of bacteria in human, animal, food, and environmental samples has fueled the development of new techniques. The field has seen extensive research aided by the information from bacterial genome sequencing projects. Although traditional methods of bacterial detection and identification remain in use in laboratories around the world, there is now a growing trend toward the use of nucleic acid-based diagnostics and alternative biochemically and immunologically based formats.

The ultimate goal of all diagnostic tests is the accurate detection, identification, or typing of microorganisms in samples of interest. Although the resulting information is of obvious use in the areas of patient management, animal health, and quality control, it is also of use in monitoring routes of infection and outlining strategies for infection control. There is, therefore, a need to ensure that the information being provided is of the highest standard and that any new technique is capable of delivering this.

Diagnostic Bacteriology Protocols, Second Edition is designed to highlight new technologies of potential use in a diagnostic setting and to outline the technological advances that have recently been made in the field of diagnostic testing. In this respect, it is hoped that *Diagnostic Bacteriology Protocols, Second Edition* will provide ideas and aid in decision making for those intending to introduce novel identification, detection, or typing technologies into their laboratories. The main considerations when implementing such new technologies include ease of use and shortened turnaround time without compromising test sensitivity or specificity. Newly developed techniques offer these advantages; in addition, they provide significant potential for multi-parameter testing and automation.

Included in *Diagnostic Bacteriology Protocols, Second Edition* are contributions by scientists at the forefront of diagnostic test development. Reviews treating current and future molecular diagnostic tests and accompanying nucleic acid extraction methods, of ultimate importance in the implementation of any molecular-based assay, are included. The protocols described in the remaining chapters range from advanced molecular detection, quantification, and typing systems to protocols for diagnostic protein identification, serological testing, and cell culture-based assays. In certain instances, the

protocols describe specific organisms that nevertheless may be easily modified for detection of other species of interest.

By including a broad range of techniques for detection of pathogens from the four main categories of bacteriology *Diagnostic Bacteriology Protocols, Second Edition* will prove of interest to microbiologists, clinicians, veterinary surgeons, and investigators involved in the field of bacterial pathogen detection and identification.

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