PREFACE

Research on bacterial adhesion and its significance is a major field involving many different aspects of nature and human life, such as marine science, soil and plant ecology, the food industry, and most importantly, the biomedical field. The adhesion of bacteria to human tissue surfaces and implanted biomaterial surfaces is an important step in the pathogenesis of infection.

*Handbook of Bacterial Adhesion: Principles, Methods, and Applications* is an outgrowth of the editors’ own quest for information on laboratory techniques for studying bacterial adhesion to biomaterials, bone, and other tissues and, more importantly, a response to significant needs in the research community.

This book is designed to be an experimental guide for biomedical scientists, biomaterials scientists, students, laboratory technicians, or anyone who plans to conduct bacterial adhesion studies. More specifically, it is intended for all those researchers facing the challenge of implant infections in such devices as orthopedic prostheses, cardiovascular devices or catheters, cerebrospinal fluid shunts or extradural catheters, thoracic or abdominal catheters, portosystemic shunts or bile stents, urological catheters or stents, plastic surgical implants, oral or maxillofacial implants, contraceptive implants, or even contact lenses. It also covers research methods for the study of bacterial adhesion to tissues such as teeth, respiratory mucosa, intestinal mucosa, and the urinary tract. In short, it constitutes a handbook for biomechanical and bioengineering researchers and students at all levels.

*Handbook of Bacterial Adhesion: Principles, Methods, and Applications* is the first inclusive and organized reference book on how to conduct studies on bacterial adhesion to biomaterials and tissues, a topic that has not been covered adequately by existing works. The book also complements other reference titles on bacterial adhesion. The book has six parts: Part I (6 chapters), Mechanisms of Microbial Adhesion and Biofilm Formation; Part II (6 chapters), General Considerations for Studying Microbial Adhesion and Biofilm; Part III (7 chapters), Techniques for Studying Microbial Adhesion and Biofilm; Part IV (7 chapters), Studying Microbial Adhesion to Biomaterials; Part V (8 chapters), Studying Microbial Adhesion to Host Tissue; and Part VI (5 chapters), Strategies for Prevention of Microbial Adhesion. Since yeasts are also a major factor in implant and/or tissue infections, the book includes a chapter covering Candida adhesion and related infections (Chapter 33).

*Handbook of Bacterial Adhesion: Principles, Methods, and Applications* is designed to be concise as well as inclusive, and more practical than theoretical. The text is simple and straightforward. A large number of diagrams, tables, line drawings, and photographs is used to help readers better understand the content. Full bibliographies at the end of each chapter guide readers to more detailed information. Although a work of this length cannot discuss every aspect of bacterial adhesion that has been studied over the years, it is hoped that all the major principles, methods, and applications have been included.

Yuehui H. An, MD