SECOND EDITION

ORAL MICROBIOLOGY AND IMMUNOLOGY

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Preface

In the seven years since the first edition of this book, the world of microbiology and immunology has seen incredible technological and conceptual advances. It is now almost routine to sequence the genome of a bacterium, and for that matter, a community of bacteria; the catalog of proteins for which the crystal structure is known has increased apace; knockout mice deficient in numerous components of the innate and adaptive immune system are widely available; and the regulatory interplay between the innate and adaptive arms of immunity is now better understood. Development of high resolution and 3D imaging techniques has allowed novel studies of communities growing in biofilms, as well as the more intimate interactions between microbes and host cells. High-throughput techniques and extended computer power have made population biology and epidemiology research more comprehensive. This burgeoning knowledge has changed our understanding of both the etiology of oral diseases and the nature of the pathogenic mechanisms and host responses. These changing perceptions are reflected in the updated and expanded chapters. What has (disappointingly) not improved over the last seven years is the incidence of caries and periodontal disease. It is more important than ever for dental practitioners and the clinical scientists to understand the basic science underlying oral health and disease in order for such knowledge to be translated into future health improvements.

As with the first edition, each chapter is self contained and represents the particular insights and priorities of the authors. Taken separately or together, we hope that the chapters provide the reader with the basic facts as well as with the ecological and biological context.
About the Editors

**Richard J. Lamont** received a bachelor of science degree in bacteriology from the University of Edinburgh; he received a doctorate from the University of Aberdeen in 1985. After a postdoctoral fellowship at the University of Pennsylvania focusing on streptococcal adherence mechanisms, he joined the faculty at the University of Washington, in 1989. He is currently the Delta Dental Endowed Professor of oral microbiology at the University of Louisville. His research interests include the molecular mechanisms of polymicrobial synergy and the cellular interactions between oral bacteria and the host epithelium. He has taught microbiology and immunology to dental students and residents for over 25 years.

**George Hajishengallis** was originally trained as a dentist (DDS, 1989, University of Athens, Greece) before pursuing doctoral studies in cellular and molecular biology (PhD, 1994, University of Alabama at Birmingham). His postdoctoral training combined research in mucosal immunology (University of Alabama at Birmingham) and periodontal pathogenesis (State University of New York at Buffalo). He has held faculty appointments at the Louisiana State University, the University of Louisville, and, most recently, the University of Pennsylvania, which he joined in 2012 as a Professor of Microbiology. His field of interest lies at the host-microbe interface focusing on mechanisms of periodontal immunopathogenesis and inflammation. He has taught microbiology and immunology to dental students and residents since 1997.

**Howard F. Jenkinson** received his bachelor’s degree in microbiology and virology from the University of Warwick, England. He completed his PhD training in 1978 at the University of Nottingham. He worked at the University of Oxford for five years as a postdoctoral researcher on the biochemistry and genetics of sporulation in *Bacillus subtilis*. He was appointed Lecturer in Oral Biology at the University of Otago, New Zealand, in 1983 and progressed through the ranks to Professor of Molecular Oral Biology at Otago (1996). He was a visiting Commonwealth
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