ORAL MICROBIOLOGY AND IMMUNOLOGY
THIRD EDITION

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Preface

The past few years since the 2nd edition of *Oral Microbiology and Immunology* have witnessed fundamental changes to the conceptual bases of oral microbiology and immunology. Expanding from the traditional exclusive focus on individual species in isolation, researchers now recognize heterotypic plaque biofilm communities as the fundamental etiological unit in microbially driven diseases such as caries and periodontitis. In this regard, “nososymbiocity” is a newly coined term for a microbial community’s collective pathogenic potential that depends both on the outcome of interbacterial (and, remarkably, even bacterial-fungal) interactions and on host susceptibility. Advances in imaging technology have revealed that the microbial inhabitants of these communities are spatially constrained and that specific organisms tend to be associated with particular partner species. Moreover, the active role of extracellular polymeric matrices in establishing physical structure and creating chemical microenvironments is increasingly appreciated.

Study of oral microbial communities has been at the forefront in deciphering the functional specialization that has arisen within structured communities. We can now distinguish categories of pathogenic potential along the continuum that ranges from commensalism to virulence. Accessory pathogens aid and abet the activity of more overt pathogens. Keystone pathogens exert their influence at low abundance by modulating both the composition and levels of community participants and by manipulating host responses. Pathobionts exploit disrupted host homeostasis to flourish and promote disease. Perhaps surprisingly, at least for traditional oral microbiologists, increased understanding of pathogenic processes has revealed striking similarities between caries and periodontal diseases. Despite their different etiologies, periodontitis and caries are each driven by a feed-forward loop between the microbiota and host factors (inflammation and dietary sugars, respectively) that induces a pathogenic disruption of homeostasis and maintains the disease.

It is against this backdrop that the 3rd edition of *Oral Microbiology and Immunology* has been substantially expanded and rewritten. We also
hope that students’ comprehension will be enhanced by a more extensive use of illustrations. What has not changed, however, is the focus on integration of microbial and host components and their relationships to both health and disease. We have also maintained the format of previous editions, in which the chapters are self-contained so that individual topics can be examined separately or in conjunction with others. With succinct Key Points at the end of each chapter, the text is aimed primarily at dental students. However, graduate students, residents, researchers, and clinicians alike will find Oral Microbiology and Immunology, 3rd Edition, to be a complete resource.

We express our gratitude to ASM Press, in particular Greg Payne for his encouragement and support over a number of years, and Larry Klein and Ellie Tupper for their heroic efforts to assemble and bring coherence to the text.

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