Preface

In the 1980's, Rolf Freter, a true pioneer in the field of intestinal colonization, concluded that although several factors could theoretically contribute to a microorganism's ability to colonize the intestinal ecosystem, effective competition for nutrients is paramount to success. Freter considered this concept to apply equally to bacterial commensals and pathogens. He considered nutrient acquisition to be as critical for the success of a bacterial pathogen in its host as its ability to produce virulence factors. Despite the general acceptance of Freter's ideas, until recently, metabolism and bacterial pathogenesis were considered to be two distinctly different fields of study. Even the title of this book: ***Metabolism and Bacterial Pathogenesis*** might be interpreted as meaning that these fields are separate entities. Nothing could be further from the truth. There is no doubt that the discovery of pathogen-specific virulence factors such as fimbriae that allow adhesion to mucosal surface receptors, secreted toxins, iron acquisition systems, motility, mechanisms geared to avoid immune responses etc., have been instrumental in understanding bacterial pathogenesis and in some instances in devising ways to interfere with the pathogenic process. Nevertheless, it is becoming increasingly clear that bacterial metabolism, while not a virulence factor per se, is essential for pathogenesis and that interfering with pathogen specific metabolic pathways used during infection might lead to effective treatments. Moreover, recent studies have shown that nutrient acquisition and pathogenesis can be intimately associated, i.e., utilization of specific nutrients for growth can also regulate virulence factor expression.

Although this integrative field of research is in its infancy, it is time to bring together the current thinking of scientists breaking new ground in understanding how bacterial metabolism is foundational to pathogenesis. This book begins with a chapter devoted to an overview of bacterial metabolism and a chapter devoted to an overview of bacterial pathogenesis. Ensuing chapters describe the role of metabolism in the pathogenesis of many different bacterial pathogens in many different host environments. The contents of this book should be beneficial to specialists in bacterial pathogenesis and specialists in metabolism as well as to molecular biologists, physicians, veterinarians, dentists, graduate and undergraduate students and technicians. Finally, we would like to express our sincere gratitude to the authors for their willingness to contribute to this book and their hard work in producing their excellent chapters.

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