

Preface

Proceedings of several conferences that have included rhizobial aspects of nitrogen fixation have recently been published. Good soil microbiology texts are also available, but not single volume has been entirely devoted to *Rhizobium*. This is an important omission since the legume-*Rhizobium* symbiosis is assuming ever increasing importance in parallel with better management of our natural resources. Furthermore, *Rhizobiums* close relationship to *Agrobacterium* (they are the only two genera in the bacterial family Rhizobiaceae) is exciting molecular biologists. Along with many others, pioneers of plant-microorganism research hope that the plant transformation systems now being developed with *Agrobacterium* will also be applicable to *Rhizobium*. Thus, this volume should be a timely and extremely useful addition to the literature on nitrogen fixation.

Functionally, the book is organized so that it forms both an introduction to the field and a critical review of knowledge in the main disciplines. In Chapter 1 Gloria Lim and Joe Burton answer the question 'Which legumes are nodulated?', 'Van' Bushby discusses rhizobial distribution in the soil and factors affecting it, while Mike Trinick has provided a comprehensive account of rhizobial biology. As the biggest difference between rhizobia—that between fast- and slow-growing organisms—basically concerns varying abilities to metabolize carbohydrates, Gerry Elkan and David Kuykendall have closely examined metabolism. John Beringer, Nick Brewin, and Andy Johnston reviewed the most rapidly expanding field—the genetics of the microsymbiont, and Tsien Hsien-Chyang described the cells as seen under the microscope. Three chapters deal directly or indirectly with the outer structure of the cells—Russel Carlson with their chemistry, Jim Vincent with their immunological reactions, and Frank Dazzo and David Hubbell with the implications of various rhizobial and legume components in regulation of the interaction. Finally, Eltjo Meijer correlated observations on nodule development with known biochemical events. In short, this treatise is a thorough examination of both the free-living *Rhizobium* and its relationship to legumes.