
Preface

Microbial ecology is now examining some of the most important questions in science and is helping to solve some of the most serious environmental problems facing our society today. To those wishing to learn more about the field, this textbook is for you.

The book targets students, young and old, interested in learning some basic principles of microbial ecology and the processes carried out by microbes in nature. One basis for this book is a course I teach in marine microbial ecology. The students enrolled in that course are usually a diverse lot of biologists, rarely microbiologists, often inorganic marine chemists, even the occasional geologist. The biologists may have a strong background in biochemistry, but know little about geochemistry. The chemists are comfortable talking about chemical reactions in the environment, but they know little biology. Senior colleagues working with other organisms or in geochemistry or geology ask me questions about microbes affecting the organisms and processes they are examining. These students and colleagues are the people I had in mind as I put this book together.

The book attempts to cover both land and the sea, all types of microbes, and all kinds of microbial metabolisms important in nature. It tries to do it all. While at times writing the book seemed a foolhardy endeavor reeking with hubris, most of the time it was liberating to focus on the most important processes and microbes, to attempt to identify what a student must know about a particular geochemical reaction and the microbes mediating it. Of course, there is huge diversity and complexity in the microbial world. What is surprising is to learn about the similarities among environments and microbes,

and the insights gained by comparing disparate habitats and organisms. For these reasons, I hope experienced soil microbial ecologists will learn something about microbes in lakes and the oceans, and likewise for aquatic people and terrestrial systems. These people already know in a general sense about the importance of microbes other than their favorites, and about how microbes interact with larger organisms, but this book should help them gain a better appreciation of all microbes in all environments.

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