ANALYTICAL MICROBIOLOGY METHODS

Chromatography and
Mass Spectrometry

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Mass Spectrometry

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PREFACE

The First International Symposium on the Interface between Analytical Chemistry and Microbiology: Applications of Chromatography and Mass Spectrometry was held June 1987 at the University of South Carolina, Columbia, SC, U.S.A. The purpose of the "Interface" meeting was to forge connections between analytical chemists and microbiologists that are using chromatography and mass spectrometry to solve common problems. The goals were admirably fulfilled. Nearly a hundred participants from seven European countries, Japan, and the United States participated in hearing twenty-three plenary talks and thirty-six submitted papers and posters. The papers and discussions displayed the breadth and depth of current research applications and revealed future directions.

This book "Analytical Microbiology Methods: Chromatography and Mass Spectrometry" is loosely based on some of the presentations and discussions at the meeting. Each chapter describes specific methodology and applications in the context of the relevant scientific background. The present book continues the theme of an earlier book, "Gas Chromatography/Mass Spectrometry Applications in Microbiology", edited by G. Odham, L. Larsson, and P-A. Mardh, published by Plenum Press in 1984.

Microbial chemistry has been extremely important in identifying many major structural components of microorganisms (e.g., the teichoic acids, lipopolysaccharides, and peptidoglycans). Structural information has helped provide an understanding of the functional role of many of these molecules in the physiology of the bacterial cell. The uniqueness of many of the monomers present in these macromolecules as well as their natural variability between bacterial species has also provided a framework for chemotaxonomy. The advent of modern analytical chemical methods based on chromatography and mass spectrometry has clarified and expanded on previously known chemical data. Often, this information was not obtainable by more traditional approaches.

The advances in analytical microbiology described in this book have the potential to stimulate a revolution of improved methods for automated and rapid identification of microorganisms, characterization of microbial products and constituents, and trace detection of microbial chemicals. We see the beginnings of a new discipline, "Analytical Microbiology", arising at the interface between analytical chemistry and microbiology.

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December, 1989

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