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This volume is a unique international compilation for biotechnologists of data on the source and use of bacterial cells. The volume provides details of the location and scope of major culture collections around the world holding bacteria; information is given on how to access their data, administration and safety, identification, culture, preservation, patents, specialist services and international organisations. The authors are international authorities who have combined with the resource centres to provide a source book for microbiologists in industry, research establishments and universities.

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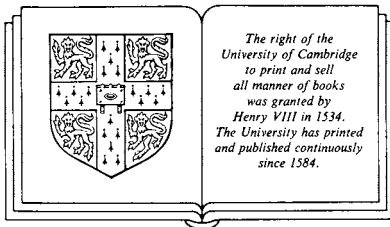
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SERIES INTRODUCTION

The rapid advances taking place in biotechnology have introduced large numbers of scientists and engineers to the need for handling microorganisms, often for the first time. Questions are frequently raised concerning sources of cultures, location of strains with particular properties, requirements for handling the cultures, preservation and identification methods, regulations for shipping, or the deposit of strains for patent purposes. For those in industry, research institutes or universities with little experience in these areas, resolving such difficulties may seem overwhelming. The purpose of the World Federation for Culture Collections' (WFCC) series, *Living Resources for Biotechnology*, is to provide answers to these questions.

Living Resources for Biotechnology is a series of practical books that provide primary data and guides to sources for further information on matters relating to the location and use of different kinds of biological material of interest to biotechnologists. A deliberate decision was taken to produce separate volumes for each group of microorganism rather than a combined compendium, since our enquiries suggested that inexpensive specialised books would be of more general value than a larger volume containing information irrelevant to workers with interests in one particular type of organism. As a result each volume contains specialised information together with material on general matters (information centres, patents, consumer services, the international coordination of culture collection activities) that is common to each.

The WFCC is an international organisation concerned with the establishment of microbial resource centres and the promotion of their activities. In addition to its primary role of coordinating the work of culture collections through the world, the committees of the WFCC are

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active in a number of areas of particular relevance to biotechnology, such as patents, microbial information centres, postal and quarantine regulations, educational and conservation matters (see Chapter 8). The Education Committee of the WFCC proposed the preparation of the current volumes.

The WFCC is concerned that this series of books is of value to biotechnologists internationally, and the authors have been drawn from specialists throughout the world. The close collaboration that exists between culture collections in every continent has made the compilation of material for the books a simple and pleasurable process, since the authors and contributors are for the most part colleagues. The Federation hopes that the result of their labours has produced valuable source books that will not only accelerate the progress of biotechnology, but will also increase communication between culture collections and their users to the benefit of both.

Barbara Kirsop
*President, World Federation
for Culture Collections*

PREFACE

Bacteria have a daily impact upon human activities. The emergence of the new biotechnology has increased the awareness by scientists of the long recognised need for reliable, permanent, culture collections which safe-keep viable exemplars of the many known bacterial species and varieties. There is now an increased awareness too that what is in fact conserved in service collections represents but a small part of the bacterial gene pool. Outside the recognised and long-established 'service-supply culture collections' there are many other centres whose holdings of cultures add to overall microbial, living resources available to scientists. There is an emphasis in this book on what defines a useful microbial resource: the cultures themselves, their documentation, and increasingly wide knowledge of their existence.

Today we are also in an age of developing information technology. Progress here enhances the existing resources, making it increasingly easy for individual scientists to access the great body of technical information associated with holdings of cultures. An additional benefit from the use of information technology to improve wider access to known information is to bring more clearly into focus gaps in our present knowledge and shortfalls in the presently conserved ranges of organisms available.

This book is an introduction to these resources, to culture collections, their holdings, and to the ways and means scientists responsible for their upkeep are exploiting information technology in the service of science. Hopefully, it will act as a stimulus to both research scientists and those engaged even in focused applied work. Reality dictates that often the distinction between research and applied science is blurred, but the extremes of each have need for authenticated, documented

