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Ian W. Sutherland

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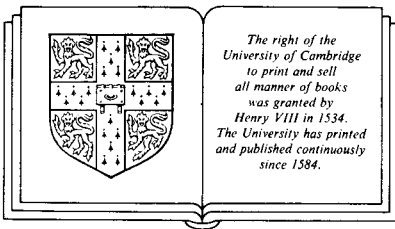
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# Biotechnology of microbial exopolysaccharides

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## Preface

Industrial interest in microbial polysaccharides has been stimulated by their unique properties and the opportunity to provide a guaranteed supply of material of constant quality and stable price. One must set against such positive aspects the relatively high costs of the product, of process development, and of downstream processing, especially if the intention is to provide material with approval for food usage.

The aim of this book is to present information relating to microbial exopolysaccharides which have actual or potential industrial or medical importance, rather than to provide comprehensive coverage of the whole field. It indicates the mechanisms by which these polymers are synthesised, as well as techniques used in their chemical and physical characterisation.

There has been a marked upsurge of interest in microbial exopolysaccharides in recent years, from biologists and non-biologists alike. In particular, recent studies on the physicochemical properties of polysaccharide solutions are providing a new insight into the physical structures of these polymers and furnishing the industrialist with a clearer indication of their useful properties. The increased interest in microbial polysaccharides mirrors a growth in the use of water-soluble polymers generally, and also an appreciation of the environmental advantages to be gained from use of water-soluble rather than solvent-based systems.

As many students now receive little instruction in the chemistry of carbohydrates and related molecules, readers may need to refer to a suitable text on that subject. It should, however, be remembered that in many respects the physical properties of polysaccharides are frequently not greatly dissimilar from those of DNA and RNA. The molecular biologist using enzymes to sequence nucleic acids and proteins may even find that a very similar approach has been used for many years in structural studies of polysaccharides. It is hoped that this volume will provide background information for the biologist, chemist, industrialist and pharmacologist, who may wish to use microbial polysaccharides and requires a suitable introduction to the subject. It is intended for those who have some training in biotechnology or one of its enabling disciplines, but who do not have a specialised knowledge of microbial polysaccharide structure and synthesis.

As the structure, production and synthesis of exopolysaccharides have been extensively reviewed in recent years, the reader will not find detailed references provided for much of this material. Instead, he or she will find a

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list of relevant review material for further reading at the end of each chapter. Most of the references that are included cover material of recent date (mainly 1986 onwards) which has not yet reached the review literature or which has come from less commonly searched areas. Such references are provided in full in the bibliography following the final chapter.

I am indebted to many friends and colleagues in the polysaccharide world for their helpful advice and comments and for the gift of polymers. Their willingness to permit reproduction of figures and to provide photographic material is gratefully acknowledged. I am also grateful to Karen for her critical reading of the manuscript and correction of grammatical and typographical errors, and to Ann and Karen for their tolerance during the gestation period of this volume.

I.W.S.