PREFACE

Progress in learning and understanding the anatomy of cell and tissues has depended very largely on the direct approach of microscopy. At first, the light microscope laid the foundations of the subject. More recently, the electron microscope applied to the study of thin sections has contributed enormously to our understanding of how cells and tissues are constructed. And now, most recently of all, the scanning electron microscope has opened for direct viewing the surfaces of cells and tissues.

This latest development coincides in time with a great increase in research and interest in cell surfaces. No longer are these surfaces shrouded in mystery; they are recognized as dynamic parts of the cell, constantly changing and constantly repairing. Once nothing more than a selective barrier to diffusion of small molecules, they are now known to engage in active transport of metabolites. Their molecular and microscopic structure varies from cell type to cell type as does their function. To be able to see these features at better and better resolutions has introduced totally new concepts about how the cell copes with and exchanges metabolites with its environment.

For these several reasons and to make the new information more generally available to the student and investigator we have put together this atlas on the structure of cells and tissue surfaces. Most of the micrographs have not heretofore been published and many of them depict features of cell and tissue surfaces that have not before been observed by this or any other approach. We have, therefore, been obliged in many instances to provide original interpretations in the descriptions that accompany the pictures. The text also includes some background information on the general properties and functions of the particular tissue under consideration. It is that through all these, the book will contribute to a better understanding of tissue surfaces and inspire a more active investigation of this important aspect of the living cell.

As is ever the case, books are not created without the involvement and generous help of many persons other than the authors. This has been no exception. Thus, we are pleased to acknowledge the loan of a scanning electron microscope (JSM-35) from JEOL, Inc., Medford, Mass., on which most of the micrographs were taken. For technical assistance, we are grateful to Robert McGrew and Virginia Fonte. Our secretary, Karen Bird, seemed never to tire of typing revised versions of the text. For many aspects of the photographic and art work we are pleased to thank Richard Carter and Cathy Verhulst. For literature searches and bibliographic work we have enjoyed the assistance of Leslie Frasier. And finally, what merits the manuscript has in terms of accuracy and English, we owe to the generous reading and editing by Dr. Mary Bonneville.

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PIETRO MOTTA
PETER M. ANDREWS
KEITH R. PORTER

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