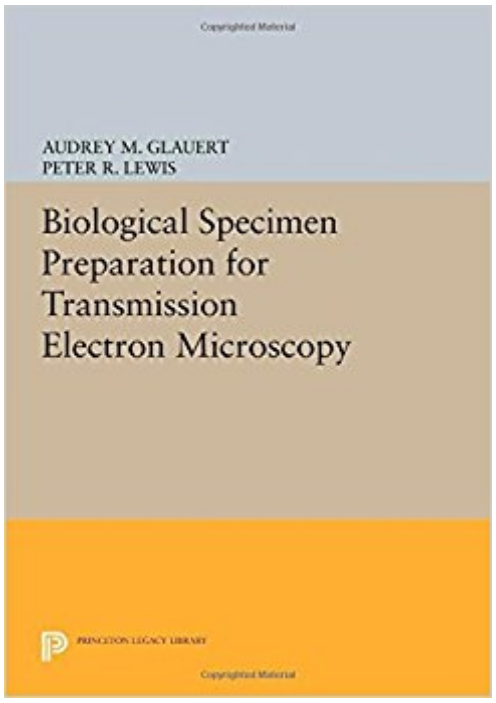
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Biological Specimen Preparation For Transmission Electron Microscopy (Princeton Legacy Library)



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Synopsis

This book contains all the necessary information and advice for anyone wishing to obtain electron micrographs showing the most accurate ultrastructural detail in thin sections of any type of biological specimen.The guidelines for the choice of preparative methods are based on an extensive survey of current laboratory practice. For the first time, in a textbook of this kind, the molecular events occurring during fixation and embedding are analysed in detail. The reasons for choosing particular specimen preparation methods are explained and guidance is given on how to modify established techniques to suit individual requirements.All the practical methods advocated are clearly described, with accompanying tables and the results obtainable are illustrated with many electron micrographs.Portland Press Series: Practical Methods in Electron Microscopy, Volume 17, Audrey M. Glauert, EditorOriginally published in 1999.The Princeton Legacy Library uses the latest print-on-demand technology to again make available previously out-of-print books from the distinguished backlist of Princeton University Press. These editions preserve the original texts of these important books while presenting them in durable paperback and hardcover editions. The goal of the Princeton Legacy Library is to vastly increase access to the rich scholarly heritage found in the thousands of books published by Princeton University Press since its founding in 1905.

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Customer Reviews

"Since 1972, when the first volume of Practical Methods in Electron Microscopy appeared under the

critical eye and constructive editorial guidance of Audrey Glauert, users of the microscope have eagerly snapped up each new title. The 17th volume in the series has now appeared, Biological Specimen Preparation for Transmission Electron Microscopy by Audrey Glauert herself together with Peter R Lewis, and the high standards of lucidity and precision that Audrey Glauert has imposed on her authors are more than maintained here. The ten chapters cover the obvious themes: fixation, embedding and safety... Beautifully printed, clearly and knowledgeably written, this is a model of what we have come to expect from the 'Practical Methods' series. I look forward to a future in which authors, editor and publisher continue to contribute to the 'Science and Art of Electron Microscopy', concludes Audrey Glauert in her editorial preface - and so do we."--Peter Hawkes, Ultramicroscopy"This is the latest edition of one of a long series of outstanding practical handbooks edited by the distinguished electron microscopist Audrey Glauert. It is an update of one of the first volumes published in the 1970s and is both a practical guide and a superb reference for all aspects of transmission electron microscopy. As in previous volumes, this book is equally valuable to novice and veteran microscopists alike. As fewer students and young scientists are trained in 'classical' electron microscopy, authoritative volumes such as this one become even more important and useful. The systematic and broad approach of the chapters, especially on fixatives, dehydration and embedding provide useful data to a wide range of electron microscopists. The sections dealing with botanical specimens are especially helpful and not normally included in similar books. The chapter on fixatives contains both theoretical and practical applications of the various different classes of fixatives. It covers a very broad range of both common and highly specific agents... The discussion of organ specific fixation is very clear and a good starting point for researchers undertaking new areas of ultrastructural research."The two chapters dealing with embedding cover a wide range of both media and techniques. The inclusion of topics such as stability of the polymerized resin in the electron microscope and of advanced techniques such as vacuum infiltration make this a thorough review of this area... New chapters which focus on cytochemistry and cryofixation are invaluable resources especially for those just starting out in these areas. The chapter that deals specifically with low temperature embedding is very timely... The culmination of this book with a chapter giving specific processing schedules is very useful... Overall this is an excellent book and keeps to the high standards Audrey Glauert has set with her past volumes."--Richard Cole, Microscopy and Analysis"This is an essential companion for the bench-worker in ultrastructure and one can easily foresee several copies being required in a busy unit. In addition, the book makes rewarding reading on its own. The language is simple and lucid throughout, the proofreading of the text has been well nigh perfect, and the pictures potently

illustrate the effects of varying crucial steps without aiming to be self-standing works of art... Like the rest of the series, this book is aimed at both the novice and the expert and both should benefit from its contents. As the authors point out, the text assumes no specialised knowledge on the part of the reader; it takes you from first principles through the intricacies of technical procedures, placing most emphasis on well established methods but also showing how these are adapted for specialised requirements... To summarise, this comprehensive and detailed book provides not only practical guidance, it also stimulates readers to think about what they are doing and to try new ideas. One can only regret that it has not been available earlier."--Visvan Navaratnam, Journal of Anatomy"This book is the latest in the highly acclaimed series Practical Methods in Electron Microscopy, edited by Audrey Glauert... It admirably fulfills the editor’s original aim of enabling the isolated worker with no specialist knowledge to pick his or her way through the bewildering array of methods available for preparing biological samples for the microscope, and to carry them out successfully... In the spirit of the series this is not a book for the library shelf but will be an invaluable companion at the laboratory bench... Overall the book is well organized, clearly written and crammed with easily accessible information. The text is both well referenced and amply illustrated with high quality micrographs, photographs of equipment, tables and some elegant line drawings... Sufficient theoretical information is included to provide a sound understanding of the principles, yet above all this is a book for the practising microscopist struggling with problems at the bench. It will become an essential acquisition for all microscopy preparation laboratories and of great value both to beginners and more experienced users wishing to keep up with contemporary specimen preparation technology."--R.D. Young, Proceedings of the Royal Microscopical Society"This book supersedes volume 3, part 1, of the series Practical Methods in Electron Microsopy, also written by Audrey Glauert and published in 1975. It is, in fact, much more than an updated edition, because it has been extensively revised and significantly extended to include many new techniques. The new book follows a logical sequence through the initial fixation of samples to the various options of embedding for TEM... It is a much needed back-to-basics text, and is an excellent introduction for new microscopists. It is also an excellent source for the expert microscopist to consult and to reassess his "routine" methodology. I certainly found myself questioning how certain dogma had crept into our own lab practices after reading this text. This book brings together many of the loose threads from other books on specimen preparation that address specific points but never quite succeed in providing a comprehensive overview of biological specimen preparation for TEM. In short, this book will provide a sound basis for the discussion and choice of methods of biological specimen preparation for TEM for the next 25years."--Jeremy N. Skepper, BioEssays"This book combines a

’cook book’ with a historical review of the techniques and a treaty on the chemistry of fixation and resin embedding... The experienced microscopist will read with interest all the detailed descriptions of embedding media chemical composition and properties, polymerization reactions and chemical hazards. Glauert was one of the developers of the basic embedding techniques and therefore has invaluable experience, together with strong opinions, on the value of the published procedures... This useful basic book can help newcomers to biological electron microscopy learn about the evolution of techniques since the early days of the field 50 years ago, and to use state-of-the-art procedures to prepare samples."--Jean Francois Dubremetz, Parasitology Today."The chapters are clearly written, well illustrated with many molecular structures, electron micrographs, drawings, photos of the essential equipment, tables of hazards and instructions for handling hazardous chemicals... Almost all you could wish to know about fixation, dehydration, and embedding is in this book, making it a useful asset."--Wally H MÃƒÂ ller, Trends in Cell Biology "Throughout, the book is well-written and well-organised. It contains enough theory for the user to understand why procedures are performed the way they are, and the procedures themselves are fully explained, with a wealth of practical tips. It really is an essential work for beginners, for instruction and reference, but experienced users may find it a helpful compendium of recent developments."--Mark Burgess, Microscopy and Imaging News"This book lives up to the title of the series Practical Methods In Electron Microscopy with emphasis on practical methods throughout all chapters of the book, and numerous hints and tips to help make the whole process of specimen preparation easier. It is, however, not simply a recipe book but gives the chemical and physical background to procedures in routine use, imparting knowledge that gives the reader confidence to choose the correct method for his/her application. I would recommend this book to beginners and experienced microscopists alike and have no doubt that it will be a book that is referred to frequently in any laboratory."--Alice Warley, The Analyst"The series Practical Methods in Electron Microscopy is well known to any self-respecting electron microscopist. The first few books in the series were already well-established when I was an undergraduate. Who can forget the seminal volume 3, Fixation, Dehydration and Embedding of Biological Specimens, or volume 10, Low Temperature Methods in Biological Electron Microscopy, a particular favourite of mine. Now, some 25 years on, we have reached volume 17. You would think that there is nothing left to say, but not a bit of it. True, this book brings together aspects of specimen preparation that are well known (in many ways it is an update of volume 3), but it also contains new material, or at least material that I have not come across before. This volume contains all sorts of cunning little techniques such as methods for encapsulation of cell pellets or ways of embedding cultured cells, as well as discussing in more

general terms the pros and cons of differing fixation and embedding protocols."Electron microscopy has been through something of a decline in recent years. The high cost of buying and maintaining electron microscopes, the lack of skilled expertise and competition from confocal microscopes have all combined to make these research tools slightly unfashionable. It is a shame and in my opinion short-sighted. It is all very well for biochemists to discover new proteins and molecular biologists to engineer new genes but what is actually happening in the cells? Where are these proteins? What effect is this new gene having? Often the best clue comes from electron microscopy, with it's superior resolving power: the books in this series are a valuable fund of information that allow us to look inside cells and help us visualize all manner of cellular processes."So, who is this book directed at? Certainly, it is probably too specialized for undergraduates and it won't give the general reader a basic grounding in electron microscopy. Rather, as is the case with the others in the series, this is an excellent reference book and probably the first place I would turn to for information on specific applications. It is all very well consulting specific references for individual protocols but in my experience they often don't run as smoothly as I would hope. By contrast, the methods outlined here have been well tried and tested and consequently have a much greater chance of success. Does this, I wonder, make Audrey Glauert the Delia Smith of electron microscopy?"--Anton Page, The Biochemist

Audrey M. Glauert and Peter R. Lewis, both of the University of Cambridge, specialize in the application of transmission electron microscopy in biology and pathology. --This text refers to an out of print or unavailable edition of this title.

Excellent reference book, a true must have if you need to embed samples for electron microscopy. The author very thoroughly explains the steps for sample preparation and the embedding media available.

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