

Practical Immunology

LESLIE HUDSON

FRANK C. HAY

THIRD EDITION

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LESLIE HUDSON

*Department of Immunology,
St George's Hospital Medical School,
London, UK;*

Present address:

*Division of Cellular and Molecular Sciences,
Glaxo Group Research Ltd,
London, UK*

FRANK C. HAY

*Departments of Immunology and Rheumatology Research,
University College and Middlesex School of Medicine,
London, UK*

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Foreword to the First Edition

Immunology might well claim to be the most popular and the most glamorous of biological sciences today. I suspect that there has been a sharper increase in the number of research workers in immunology over the last two decades than in any other scientific discipline.

Applied immunology, plus the intangibles we lump together as the rising standard of living, has virtually rid the world of smallpox, yellow fever, diphtheria and poliomyelitis and has helped in many other fields. Its prestige lingers on as the major tool of preventive medicine but, as one whose first immunological paper was published more than 50 years ago, I have seen a complete switch in the contemporary importance of immunology — but not a diminution.

Immunology today is a science in its own right. The enthusiasm of younger workers, like the authors of this book, is primarily directed toward understanding; medical applications of the new knowledge will be wholeheartedly welcomed but they are not central. For me, and to some extent all of us in immunology, the excitement is in the lead that our subject is giving toward a real understanding of the form and strategy of living process. Thanks to the *recognisability* of the significant molecules, antibody, antigen and the like, we have been able to apply the new techniques of molecular biology to the elucidation of one of the essential bodily functions. We are leading the field, for nowhere else have genetics, biochemistry and every other basic science that can help, been so effectively applied to living function. It is the first step toward a sophisticated understanding of what we are and how we became so.

This book is basically an introduction to the techniques and ideas on which immunology is based; to one who grew up with the older, predominantly medical approach, the new version can be sensed everywhere in the authors's approach.

I wish them every success.

F.M. BURNET
Basel, Switzerland
1976

Acknowledgements to the Third Edition

Immunology is a discipline in its own right. Equally, however, it provides essential tools and approaches for many other disciplines — molecular biology, biochemistry, cell biology, pharmacology, microbiology, clinical and veterinary medicine, pathology, forensic science, etc. — thus creating a challenging and rewarding environment for experimental immunologists who are able to traverse the whole of modern biology in the furtherance of research.

The blurring of intellectual demarcation has created an intellectually rich environment but provided us with a problem in the compilation of this third edition — how complete does it need to be to justify its place on the laboratory bench? Fortunately, our original principles for the selection of material for the first two editions have been useful guides: describe techniques that we know work, reflect current trends and provide a source of methods, not of references.

We have been very fortunate to receive help and advice from our friends and colleagues: Kikki Bodman, Angela Bond, Debbie Bridge, Callum Campbell, Laura Davis, Brian DeSousa, Brian Fenton, Jean-Marc Gallo, Tracy Hatton, Meinir Jones, John Kirby, Gurdip Kour, Vera Malkovska, Carlos Moreno, Sara Jane Morgan, Bill Newman, Veronica Newton, Scott Pereira, Andy Soltys, Nazira Sumar, Pochun Tai, Garry Takle and Jenny Tooze. The initial impetus that enabled us to convert from the format of Caxton to that of IBM was provided by Wendy Appelby — we will be enduringly grateful.

Anyone familiar with the layout of the first two editions of this book will readily appreciate the ideas and effort contributed to this new edition by Edward Wates and Emmie Williamson, both of Blackwell Scientific Publications.

Acknowledgements to the Second Edition

Our original notion in the compilation of this book was based on the lazy hope that such a small collection of 'core' techniques would change little, and so would entail little future revision. How wrong we were! In addition to a general revision, we have had to re-write many of the sections dealing with the isolation of immunoglobulins, affinity chromatography, ELISA and, of course, add a complete new chapter on hybridomas and monoclonal antibodies.

We are extremely grateful to our many friends and colleagues who have suggested or discussed our revisions. In particular, we wish to thank Roger Budd, Hansha Bhayani, Janette Flint, Jens Jansenius, Alan Johnstone, Meinir Jones, David Male, Alison Mawle, Lynn Nineham, Graham Rook, Colin Shapland, Yasmin Thanavala and John Whateley.

Our special thanks are due to Margaret Williams and Queenie Jaywardena for their excellent secretarial assistance.

Acknowledgements to the First Edition

This book was started while we were carrying out research for our doctorates in the department of Professor Ivan M. Roitt, FRS. He both encouraged and, indeed, stimulated us to become interested in the teaching of immunology. Our grateful thanks are also due to Dr Giorgio Torrigani for initiating us into the world of immunochemistry.

We wish to thank our colleagues Siraik Zakarian, Harald von Boehmer, Andrew Kelus, Hansruedi Kiefer, Clive Loveday, Jan Obel, Marcus Nabholz, Richard Pink and Jonathan Sprent both for their helpful discussions and in many cases for allowing us to use their unpublished material. We are particularly grateful to Sir Macfarlane Burnet for writing the foreword to this book.

Without the valuable assistance of Lynn Nineham and Anthony Finch it would have been impossible for us to gather all the information and data required for this book. In addition, we wish to acknowledge the tenacity with which Penny Hamilton-Jones converted our pages of hieroglyphs into typewritten sheets.

We have written this book for the use of those individuals, from the undergraduate to post-doctoral level, with a sound theoretical knowledge of immunology, who wish to extend their knowledge by experimentation.

We have been made painfully aware of the interdependence of the branches of immunology in writing this book. It proved extremely difficult to find a point at which to begin. The approach finally adopted was one from the view of cellular biology rather than the classical approach which starts with antibody, a mediator produced half-way through the immune response, and leads to the logical gymnastics of proceeding backwards, to the cellular basis of this response, and forwards, to the secondary mechanisms, initiated by antibody-antigen interaction. We believe that the development of the book from the basic 'lymphocyte unit' to the complete immune system avoids the fast approaching dichotomy between cellular immunology and immunochemistry.

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