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Antibodies are natural inhibitors of pathogens produced by B lymphocytes. The in vivo biological process involving antigen presenting cells, T and B lymphocytes necessary for their production are not addressed in this book, but can be found on any immunology textbook.

The breakthrough study by Kohler and Milstein was the ability to produce in vitro antibodies by cell fusion. This finding catapulted the use of antibodies as therapeutic agents. With the emergence of recombinant DNA technology and the innovative ingenuity of scientists, these magic bullets are now continuously being developed both for research and therapeutic purposes by a myriad of techniques and their use in many clinical conditions are a testimony of their importance. This book provides examples of these developments and the current areas of further research and improvements.

We have in this book the contribution of scientists that have been involved in the development of these therapeutic antibodies from their conception and preclinical testing to their use in the clinic. We believe that each chapter contributes to our understanding of this process. In no case the path from discovery to application was simple and is through perseverance and further improvements that each therapeutic moiety reached its final marketed form.

Engineering of antibodies takes place allowing their use as targeting devices of both other immunomodulators such as cytokines or cells themselves by the use of chimeric receptors. The combination with gene transfer technologies to express some of these moieties directly by the cells of the patient and thus achieve long-term delivery is also being investigated. As always there is room for improvement in this field and we expect that in the years to come more of these biologicals will become available in more diverse therapeutic fields. Better understanding of molecular mechanisms and the function of targeted molecules will lead to the production of more specific targeted agents.

The science of pharmacology has been redrawn with the entrance of these biological agents in clinical practice. We need to consider introducing the term “biopharmacology” when dealing with naturally occurring compounds that have been modified by recombinant DNA technology. It is especially relevant in cases where
two or more different targets are found in the same molecule such as in bi-specific antibodies or immunocytokines. We are actually witnessing a revolution in medicine and this book summarises it very well.

We dedicate this book to Kohler and Milstein for their seminal work on antibody production.

We thank Professor Gustav Born who gave us the opportunity to edit this book; Nathan Fox and Lin Wells for secretarial assistance, all the authors and Susanne Dathe from Springer Verlag for their commitment and help to bring this book to light.

London, United Kingdom Ahuva Nissim
London, United Kingdom Yuti Chernajovsky
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Contributors

L. Chatenoud
Université René Descartes, Paris, France, Institut National de la Santé et de la Recherche Médicale, Unité 580, Paris, France, chatenoud@necker.fr

Y. Chernajovsky
Bone and Joint Research Unit, William Harvey Research Institute, Barts and The London, Queen Mary’s School of Medicine and Dentistry, University of London, Charterhouse Square, London EC1M 6BQ, UK

A.L. Epstein
Department of Pathology, Keck School of Medicine at the University of Southern California, Los Angeles, CA, USA

Z. Eshhar
Department of Immunology, The Weizmann Institute of Science, P.O. Box 26, Rehovot 76100, Israel, zelig.eshhar@weizmann.ac.il

F. Goldblatt
Centre for Rheumatology, Department of Medicine, University College London Hospital, 3rd Floor Central, 250 Euston Road, London NW1 2PQ, UK, Fiona.goldblatt@uclh.nhs.uk

I.S. Grewal
Department of Preclinical Therapeutics, Seattle Genetics, Bothell, WA 98021, USA, igrewal@seagen.com

A. Honegger
Biochemisches Institut, Universität Zürich, Winterthurerstrasse 190, CH-8057 Zürich, Switzerland, honegger@bioc.uzh.ch

P. Hu
Department of Pathology, Keck School of Medicine at the University of Southern California, Los Angeles, CA, USA
Contributors

D.A. Isenberg
Centre for Rheumatology, Department of Medicine, University College London Hospital, 3rd Floor Central, 250 Euston Road, London NW1 2PQ, UK

A. Jakobovits
Agensys, Inc., 1545 17th Street, Santa Monica, CA 90404, USA, ajakobovits@agensys.com

P. Jin
Receptor BioLogix, Inc., 3350 W. Bayshore Rd., Suite 150, Palo Alto, CA 94303, USA

L.A. Khawli
Department of Pathology, Keck School of Medicine at the University of Southern California, Los Angeles, CA, USA
Genentech, Inc., One DNA Way, South San Francisco, CA 94080, USA, aepstein@usc.edu

T. Kishimoto
Laboratory of Immune Regulation, Graduate School of Frontier Biosciences, Osaka University, 1–3 Yamadaoka, Suita City, Osaka 565-0871, Japan

M. Kraft
Duke Asthma, Allergy and Airway Center Duke University Medical Center, Durham, NC 27710, USA

S. Lien
Antibody Engineering, Protein Engineering, and Immunology Departments, Genentech, Inc., 1 DNA Way, South San Francisco, CA 94080, USA

A.S.-Y. Lo
Dana-Farber Cancer Institute, Harvard Medical School, 44 Binney Street, Boston MA 02115, USA

N. Lonberg
Medarex, 521 Cottonwood Drive, Milpitas, CA 95035, USA, nlonberg@medarex.com

H.B. Lowman
Antibody Engineering, Protein Engineering, and Immunology Departments, Genentech, Inc., 1 DNA Way, South San Francisco, CA 94080, USA, hbl@gene.com

C.M. Lynch
Department of Preclinical Therapeutics, Seattle Genetics, Bothell, WA 98021, USA

D.C. Maneval
Receptor BioLogix, Inc., 3350 W. Bayshore Rd., Suite 150, Palo Alto, CA 94303, USA
Contributors

W.A. Marasco
Dana-Farber Cancer Institute, Harvard Medical School, 44 Binney Street, Boston MA 02115, USA, Wayne_Marasco@dfci.harvard.edu

N. Nishimoto
Laboratory of Immune Regulation, Graduate School of Frontier Biosciences, Osaka University, 1–3 Yamadaoka, Suita City, Osaka 565-0871, Japan, norihiro@fbs.osaka-u.ac.jp

A. Nissim
Bone and Joint Research Unit, William Harvey Research Institute, Barts and The London, Queen Mary’s School of Medicine and Dentistry, University of London, Charterhouse Square, London EC1M 6BQ, UK, a.nissim@qmul.ac.uk

Z. Pirot
Receptor BioLogix, Inc., 3350 W. Bayshore Rd., Suite 150, Palo Alto, CA 94303, USA

D.J. Shealy
Centocor Research and Development Inc., 145 King of Prussia Road, Radnor, PA 19087, USA, dshealy@cntus.jnj.com

H.M. Shepard
Receptor BioLogix, Inc., 3350 W. Bayshore Rd., Suite 150, Palo Alto, CA 94303, USA, hms@rblx.com

J. Singh
Duke Asthma, Allergy and Airway Center Duke University Medical Center, Durham, NC 27710, USA, Jaspal.Singh@duke.edu

D.J. Slamon
Division of Hematology and Oncology, University of California Los Angeles School of Medicine, 10945 Le Conte Avenue, Suite 3360, Los Angeles, CA 90095, USA

S. Visvanathan
Centocor Research and Development, Inc., 145 King of Prussia Road, Radnor, PA 19087, USA, svvisvana@cntus.jnj.com

Q. Zhu
Dana-Farber Cancer Institute, Harvard Medical School, 44 Binney Street, Boston MA 02115, USA