THE IMPORTANCE OF ANIMAL EXPERIMENTATION FOR SAFETY AND BIOMEDICAL RESEARCH

The Importance of Animal Experimentation for Safety and Biomedical Research

edited by

S. Garattini
Pharmacological Research Institute 'Mario Negri'
Milan
Italy

and

D.W. van Bekkum
Radiobiological Institute 'TNO'
Rijswijk
The Netherlands

Kluwer Academic Publishers

Dordrecht / Boston / London

Library of Congress Cataloging-in-Publication Data

The Importance of animal experimentation for safety and biomedical research / edited by S. Garattini and D.W. van Bekkum.

p. cm.

Presents the proceedings of an international symposium organized in Stasbourg, Oct. 24-25, 1988.

ISBN-13:978-94-010-7349-3 e-ISBN-13:978-94-009-1904-4

DOI: 10.1007/978-94-009-1904-4

1. Animal experimentation--Congresses. 2. Medicine--Research--Methodology--Congresses. I. Garattini, Silvio. II. Bekkum, D. W. van (Dirk Willem), 1925- .

[DNLM: 1. Animal Welfare--congresses. 2. Animals, Laboratory--congresses. 3. Research--congresses. QY 50 I34 1988]

R853.A53I46 1990

619--dc20

DNLM/DLC

for Library of Congress

89-24434

CIP

Published by Kluwer Academic Publishers,
P.O. Box 17, 3300 AA Dordrecht, The Netherlands.

Kluwer Academic Publishers incorporates the publishing programmes of
D. Reidel, Martinus Nijhoff, Dr W. Junk and MTP Press.

Sold and distributed in the U.S.A. and Canada
by Kluwer Academic Publishers,
101 Philip Drive, Norwell, MA 02061, U.S.A.

In all other countries, sold and distributed
by Kluwer Academic Publishers Group,
P.O. Box 322, 3300 AH Dordrecht, The Netherlands.

printed on acid free paper

All Rights Reserved

© 1990 by Kluwer Academic Publishers

No part of the material protected by this copyright notice may be reproduced or utilized in any form or by any means, electronic or mechanical including photocopying, recording or by any information storage and retrieval system, without written permission from the copyright owner.

Table of Contents

Foreword	vii
The necessity of animal experimentation S. Garattini	1
ETHICAL AND LEGAL ASPECTS	5
Animal experimentation defended C. Cohen	7
The ethics of animal use in biomedicine T.L.S. Sprigge	17
Legal and political problems of animal experimentation, the 'Swiss battle' F. Bridel	29
Experimentation and the law J.M. Varaut	35
Experimentation on animals: animals as machines and animals as fetishes J. Chanteur	39
RECENT PROGRESS OF MEDICINE REQUIRING THE USE OF ANIMALS	47
The role of animal experiments in pharmacological brain research A. Carlsson	49
Regeneration of the nervous system A. Gorio & F. Cattabeni	57
Endocrine glands, neuroendocrinology and animal experimentation P. Preziosi	71
Laboratory animals and cardiovascular pathology: means for better use J. Sassard	81
The importance of animal models for hypertension research D. Ganten, K. Lindpaintner, Th. Unger & J. Mullins	89

Animal experiments and recent progress in thrombosis research G. de Gaetano, C. Cerletti, A. Poggi & M.B. Donati	97
Models of human renal disease C. Zoja, N. Perico & G. Remuzzi	111
The necessity of animal experimentation in tumor immunology G. Forni, P. Caretto, P. Ferraiorni, M.C. Bosco & M. Giovarelli	125
The use of animals in cancer chemotherapy T.A. Connors	133
The use of experimental animals in transplantation research D.W. van Bekkum	141
Animal models for AIDS research P. Bentvelzen	153
The need for animal experimentation in drug and vaccine development against tropical diseases A. Moncayo	163
USE OF ANIMALS FOR SAFETY REASONS	173
Toxicology: role of <i>in vivo</i> studies in establishing mechanisms of toxicity J.W. Bridges	175
Necessity of animal experiments for the safety evaluation and necessary consequences for public health J.R. Claude & H. Dutertre-Catella	185
The necessity of animal testing for safety evaluation and medical progress in reproductive biology and toxicology D. Neubert	191
The need for animal experimentation in studying the carcinogenic risk of substances I. Chouroulinkov	199
THE FUTURE OF ANIMAL RESEARCH	211
Transgenic animals for human diseases and gene therapy M. Rossini, E. Di Martino & G. Bensi	213
Recent progress toward reducing the use of animal experimentation in biomedical research M. Balls	223
Animal use in drug research M. Kramer	237

Foreword

Scientists are coming under increasing pressure from activist groups to stop animal experimentation, branded as cruel and unnecessary for improving human health. This attitude, however, stems from an unrealistic evaluation of the situation and distorted information about present scientific knowledge.

There is no question that most medical progress – perhaps all, in fact – has been attained through knowledge derived initially from experiments in various animal species. There is practically no way of replacing animals in these investigations and so-called ‘alternative methods’ are in reality merely complementary. Tissue cultures, cell, microorganisms, enzymes, membranes, mathematical models – all are useful for preliminary screening tests and for testing hypotheses, but the complexity of a living organism is such that *in vivo* studies are essential before any test can responsibly be made in man.

This book presents the proceedings of an international symposium organized in Strasbourg (October 24-25, 1988), with the aim of assessing present-day requirements as regards animal experimentation in research related to major medical and toxicological problems still awaiting solutions.

Analysis of these chapters will convince any unbiased reader that animals are still needed in the laboratory. However on the positive side scientists are finding ways of using ever-fewer animals as advances are made in technology and non-invasive investigational methods become accessible on a wide scale.