

Cambridge University Press
0521024722 - Animals with Novel Genes
Edited by Norman Maclean
Frontmatter
[More information](#)

This book is about transgenic animals – animals into which new genes have been artificially introduced. It contains chapters by leading authorities on the present state of the art regarding the application of transgenic technology to the great variety of animal types – ranging from protozoan cells, through nematode worms and fruit flies, to many higher vertebrates – that have been used in this experimental way.

The impact of transgenic animals on the development of agriculture and medicine is likely to be very great; at the same time they provide an unrivalled experimental system for the study of gene regulation, genetic aspects of disease and gene therapy. One of the objectives of the book, therefore, is to place transgenic animals in the context of their present and future contributions to science, medicine and agriculture. There is also some discussion of the ethical implications of this work.

This up-to-date, comprehensive and authoritative book is ideal for advanced undergraduates and graduate students wishing to familiarize themselves with the field of transgenic animals.

Cambridge University Press
0521024722 - Animals with Novel Genes
Edited by Norman Maclean
Frontmatter
[More information](#)

ANIMALS WITH NOVEL GENES

Cambridge University Press
0521024722 - Animals with Novel Genes
Edited by Norman Maclean
Frontmatter
[More information](#)

ANIMALS WITH NOVEL GENES

Edited by
NORMAN MACLEAN
University of Southampton



Cambridge University Press
 0521024722 - Animals with Novel Genes
 Edited by Norman Maclean
 Frontmatter
[More information](#)

CAMBRIDGE UNIVERSITY PRESS
 Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore, São Paulo

Cambridge University Press
 The Edinburgh Building, Cambridge CB2 2RU, UK

Published in the United States of America by Cambridge University Press, New York

www.cambridge.org
 Information on this title: www.cambridge.org/9780521432566

© Cambridge University Press 1994

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press.

First published 1994
 This digitally printed first paperback version 2006

A catalogue record for this publication is available from the British Library

Library of Congress Cataloguing in Publication data
 Animals with novel genes / edited by Norman Maclean.
 p. cm.

Includes index.

ISBN 0-521-43256-1

1. Transgenic animals. I. Maclean, Norman, 1932-.

QH442.6.A54 1994

591.1'5'0724-dc20

94-11728

CIP

ISBN-13 978-0-521-43256-6 hardback

ISBN-10 0-521-43256-1 hardback

ISBN-13 978-0-521-02472-3 paperback

ISBN-10 0-521-02472-2 paperback

Contents

<i>List of contributors</i>	page vii
<i>Preface</i>	ix
1 Transgenic animals in perspective <i>Norman Maclean</i>	1
2 Transgenic insects <i>Julian M. Crampton and Paul Eggleston</i>	21
3 Transgenic fish <i>Norman Maclean and Azizur Rahman</i>	63
4 Transgenic birds <i>K. Simkiss</i>	106
5 Transgenic rodents <i>Martin J. Evans, Darren T. Gilmour and William H. Colledge</i>	138
6 Large transgenic mammals <i>G. Brem and M. Müller</i>	179
7 Minor transgenic systems <i>Norman Maclean</i>	245
<i>Index</i>	255

Contributors

G. Brem

*Department of Molecular Animal Breeding, LMU Munich, Veterinarstr. 13,
80539 Munich, Germany*

William H. Colledge

*Wellcome / CRC Institute, Tennis Court Road, Cambridge CB2 1QR, En-
gland*

Julian M. Crampton

*Wolfson Unit of Molecular Genetics, Liverpool School of Tropical Medicine,
Pembroke Place, Liverpool L3 5QA, England*

Paul Eggleston

*Wolfson Unit of Molecular Genetics, Liverpool School of Tropical Medicine,
Pembroke Place, Liverpool L3 5QA, England*

Martin J. Evans

*Wellcome / CRC Institute, Tennis Court Road, Cambridge CB2 1QR, En-
gland*

Darren T. Gilmour

*Wellcome / CRC Institute, Tennis Court Road, Cambridge CB2 1QR, En-
gland*

Norman Maclean

*Department of Biology, University of Southampton, Hampshire SO5 3TU,
England*

M. Müller

*Department of Molecular Animal Breeding, LMU Munich, Veterinarstr. 13,
80539 Munich, Germany*

Azizur Rahman

*Department of Biology, University of Southampton, Hampshire, SO9 3TU,
England*

K. Simkiss

*Department of Pure and Applied Zoology, University of Reading, Reading
RG6 2AJ, England*

Preface

The explosion of knowledge in the biological sciences is now widely recognized. This intellectual revolution has involved some remarkable examples of lateral thinking, and the production of transgenic animals is one such application. The development of these new animal types has depended on the exploitation of cloned genes and techniques capable of achieving the integration of transgenes into the chromosomal DNA of the relevant animals. Although the dream of directly modifying an animal's genetic endowment was long cherished, no one, at least until ten years ago, could have guessed how rich the benefits of the transgenic technology would be. We now stand at a scientific watershed, and interesting and productive applications have already appeared in genetics, medicine and agriculture. Obviously they are only the beginning: The technology is now proven and the future looks promising in innumerable ways.

This book attempts to provide the reader with a picture of what has been achieved and where the methodology is most likely to go from here. We have chosen to divide the topic by animal groups, partly because the technology varies from group to group, but even more because present and future applications differ strikingly among organisms. Thus, whereas the greatest appeal of transgenic insects is their power to throw light on problems like mutagenesis and gene regulation, the greatest appeal of transgenic mammals is their contribution to agricultural productivity and pharmaceutical research.

I am most grateful to the contributors to this volume for their expenditure of time and energy. All are active molecular biologists who have a worldwide reputation in their area of expertise and could be diverted from their experiments only with difficulty. Some of the

Cambridge University Press
0521024722 - Animals with Novel Genes
Edited by Norman Maclean
Frontmatter
[More information](#)

x

Preface

chapters have been carefully checked by other knowledgeable colleagues in the field – Chapter 2 by Dr. Michael Ashburner, Cambridge, England; Chapter 3 by Professor Lazlo Orban, Godollo, Hungary, Mr. Ferenc Müller, Godollo, Hungary, and Dr. Arati Iyengar, Southampton, England; and Chapter 4 by Dr. K. Powlett, Oxford, England. To these people we are particularly grateful.

Cambridge University Press
0521024722 - Animals with Novel Genes
Edited by Norman Maclean
Frontmatter
[More information](#)

ANIMALS WITH NOVEL GENES