

# Contents

Notes on the Authors	<i>page</i> ix
Preface	xi
Acknowledgements	xv
<b>1 Research Ethics</b>	<b>1</b>
1.1 Challenges in the Research Process: The Need for Research Integrity	1
1.2 Ethical Awareness in Design of Animal Research	2
1.3 Relation between Research Ethics, Animal Ethics and Animal Welfare	5
1.4 Ethical Reasoning in Animal Ethics Committees	9
<b>2 The Ethical Perspective</b>	<b>15</b>
2.1 What Is Morality and Ethics?	15
2.2 Animal Research Ethics	18
2.3 Who and What Is Ethically Relevant?	19
2.4 Ethical Theories and Animal Research	20
2.4.1 Contractarianism	22
2.4.2 Utilitarianism	24
2.4.3 Theories on Animal Rights	27
2.4.4 Virtue Ethics	31
2.4.5 Feminist Theories on Animal Ethics	35
2.4.6 Core Differences between the Theories When Applied to Animal Research	37
<b>3 The 3Rs and Good Scientific Practice</b>	<b>41</b>
3.1 How Are Animals Used in Research?	41
3.2 Animal Harm and Animal Welfare: What Is It and How Can It Be Assessed?	43

## vi CONTENTS

3.3	Minimizing Animal Harm: The 3Rs	53
3.3.1	Replacing the Use of Animals	53
3.3.2	Reducing Animal Numbers	55
3.3.3	Refining Animal Research	56
3.4	Biological Differences between Species	61
3.5	Improving Translation	63
4	Applying Ethical Thinking and Social Relevance	68
4.1	Research on Animals: Examples of Different Purposes and Impacts	68
4.2	Research on Animals in the Light of Different Ethical Theories	76
4.3	Searching for Social Relevance: Complex Evaluation of Animal Research	82
4.3.1	When Does an Aim Have Social Relevance?	82
4.3.2	Problems of Probability and Uncertainty	83
4.3.3	Assessing Social Relevance: Where to Start?	85
4.3.4	How to Value the Societal Relevance?	87
5	Regulation and Legislation: Overview and Background	91
5.1	Historical Overview: Development of Animal Research Legislation	92
5.2	Regulation and Review of Animal Experiments in the EU	95
5.2.1	Revision of European Legislation Protecting Animals Used in Experiments	95
5.2.2	Directive 2010/63/EU in Summary	97
5.2.2.1	Breeding Specifically for the Use in Procedures	99
5.2.2.2	License to Perform Research, Requirements for Personnel and Educational Demands	99
5.2.2.3	Project Evaluation and Authorization	100
5.2.2.4	Animal Welfare Bodies	101
5.2.2.5	Reuse and Setting Free	101

5.2.3	Review of Animal Experiments in Europe	102
5.2.3.1	Structure Within Which the Ethics Review Takes Place	103
5.2.3.2	Content of Ethics Review	104
5.2.3.3	Expertise and Representation	106
5.2.3.4	Wider Implications of the Ethics Review	107
5.3	Regulation and Ethics Review in North America	109
5.3.1	Governance in Canada	109
5.3.2	Governance in the United States	111
5.3.3	Animals Ethics Committees: Tasks and Structure in North America	112
5.3.4	Key Challenges to the Effectiveness of North American Animal Ethics Committees	113
5.3.4.1	Committee Composition	113
5.3.4.2	Animal Ethics Committee Procedures	114
5.4	Regulation and Review of Animal Experiments in Asia, Latin America and Oceania	119
5.4.1	Asia	120
5.4.2	Latin America	122
5.4.3	Oceania	123
5.5	Guidelines for Researchers by Researchers	124
5.5.1	General Ethical Guidelines for Research with Animals	127
5.5.2	Specific Guidelines on Good Practice in Research with Animals	129
6	Public Involvement: How and Why?	139
6.1	Why Involve People in Decisions over the Use of Animals in Research?	140
6.1.1	Ways of Involving the Public	141
6.1.2	Involvement in Animal Research Is Low in the General Public	142
6.1.3	Political Activity in Engaged Public Subgroups	146

## viii CONTENTS

6.2	Studies of Attitudes to Animal Research	147
6.2.1	Changes in Policy: Is the Public Pushing?	149
6.2.2	Dialogue with the Public	150
6.3	Public Funding of Animal Research: The Role of Funding Actors	151
6.3.1	Promoting the 3Rs	152
6.4	The Public Opinion and the Role of Animal Ethics Committees	154
6.4.1	What Role Should an Animal Ethics Committee Play in Relation to Society?	154
6.4.2	Can AECs Meet the Expectations?	155
6.4.3	How to Address Problems?	158
7	The Future of Animal Research: Guesstimates on Technical and Ethical Developments	163
7.1	New Refinements	163
7.2	New Replacements	164
7.3	In Silico (Computer) Models Replacing Animal Studies	166
7.4	Use of Mannequins for Educational Studies	167
7.5	Will the Total Number of Animals in Research Decrease or Increase in the Future?	168
7.6	Ethical Discussions Regarding Use of Laboratory Animals in the Future	169
	Index	175