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An Annotated Bibliography of Research Relevant to Attitudes toward Animal Research

1998-2013

The Humane Society Institute for Science and Policy

Compiled by Erich Yahner

(All Abstracts and Summaries from Authors or Publishers)

JOURNAL ARTICLES

Bishop, L. J., & Nolen, A. L. (2001). Animals in research and education: ethical issues. *Kennedy Institute of Ethics Journal*, 11(1), 91-112.

Scientific enquiry is inexorably tied to animal experimentation in the popular imagination and human history. Many, if not most, of the spectacular innovations in the medical understanding and treatment of today's human maladies have been based on research using animals. However, the use of animals in research and experimentation has been debated, defended, and protested by both individuals and organizations at various levels. Responses range from personal lifestyle decisions and fervent philosophical treatises to strident arguments, violent demonstrations, and direct action. The continuum of attitudes about animals and the human relationship with animals spans the range between those who support no regulation of the human use of animals and those who advocate absolute animal liberation from all human use.

Bowd, Alan D. (1998). Animal care courses: Helping fulfill the mandate of animal care committees in Canada. *Journal of Applied Animal Welfare Science*, 1(4), 353-360.

Animal Care Committees (ACCs) at Canadian universities and research centers operate under the aegis of the Canadian Council on Animal Care (CCAC) and its guidelines for the humane care and treatment of animals in teaching, research, and testing. All Canadian universities have at least one active committee. The committees are expected to assume an educative role beyond the provision of information concerning housing, maintenance, and appropriate conditions for the treatment of animals in research. This includes critical examination of the serious ethical issues involved in animal research within the context of the principles and practices endorsed by the CCAC. One-day animal care courses provided by ACCs at three Canadian universities are described. Comparisons are made between the content and structure of curricula and the ways these relate to the teaching and research mandate in each institution, focusing particularly on the teaching of ethics in each course. The implications for heightening awareness of ethical issues in animal research and improving the effectiveness of these courses are discussed.

De Villiers, R., & Monk, M. (2005). The first cut is the deepest: Reflections on the state of animal dissection in biology education. *Journal of Curriculum Studies*, 37(5), 583-600.

In biology education, the study of structure has traditionally involved the use of dissection. Animal-rights campaigners have caused biology educators and learners to question the necessity of dissections. This study reviews the research evidence for the efficacy of alternatives to dissection and then turns to research evidence on attitudes to dissection. It suggests that the place, practice, and purpose of dissection in biology education can act as an indicator of the state of society in which those practices are embedded. The current situation in South Africa is reviewed to illustrate how social factors outside the laboratory influence pedagogic practice.

Donaldson, L., & Downie, R. (2007). Attitudes to the uses of animals in higher education: Has anything changed. *Bioscience Education*.

Bioscience staff and students at Glasgow University in session 2005–06 were questioned on their attitudes to animal uses in higher education, as follow-up to a similar survey 20 years before. Disapproval by students of animal use was generally reduced compared to 20 years ago, but students remained in a 'moral bind', recognising the interest and educational value of animal uses such as dissection, while disapproving of killing animals for this purpose. Staff strongly rejected the proposition that animal use such as dissection desensitises students: students also rejected this, but less strongly. Both staff and students recognised that students did become more willing to use animals as they progressed, but attributed this not to desensitisation but to a better understanding of the values of animal experimentation. Final year students were more aware than first years concerning the ethical standards required of experiments on humans, and generally, final year students showed development/progression in ethical sensitivity, compared to first years. Staff and students agreed on the value of ethics coverage in bioscience degree programmes, similar to findings 20 years before.

Goldsmith, R. E., Clark, R. A., & Lafferty, B. (2006). Intention to oppose animal research : The role of individual differences in nonconformity. *Social Behavior & Personality: An International Journal*, 34(8), 955-964.

Using animals to test cosmetic products is controversial, but little research has explored its social and psychological influences. Relationships between two personality constructs related to nonconformity (independence and anticonformity) and attitudes toward animal testing were studied using data from a survey of 418 students. The Independence Orientation and Nonconformity Orientation Scales (Ringness, 1970) were used to measure independence and anticonformity. Results showed that behavioral intentions were unrelated to age, women were more likely to get involved in antitestng behavior than were men, holding antitestng attitudes predicted intended action, and higher levels of anticonformity were associated with opposition as well, even when the effects of the other variables were held constant.

Henry, B., & Pulcino, R. (2009). Individual difference and study-specific characteristics influencing attitudes about the use of animals in medical research. *Society & Animals*, 17(4), 305-324.

Research has shown that both individual difference characteristics (e.g., sex, attachment to pets) and study-specific characteristics (e.g., type of animal used) influence the extent to which people support or oppose the use of animals in research. The current study examined how three study-specific characteristics (type of animal used, level of harm to the animal, and severity of the disease being investigated) influenced attitudes toward the use of animals in biomedical research. Participants read one of 27 scenarios describing the use of an animal in research. Scenarios systematically varied each of the study-specific characteristics described above. Participants then completed a survey to assess their support for, or opposition to, the research described. Data on attachment to pets and attitudes toward the treatment of animals were also collected. Analysis of variance revealed significant main effects for each of the study-specific characteristics. Multiple regression analyses revealed that the individual difference and study-specific characteristics accounted for 49% of the variability in opposition to the use of animals in biomedical research among men, and 37% among women. Limitations and directions for future research are discussed.

Kemdal, A., & Montgomery, H. (2001). Explaining own and others' behavior in a controversial issue: Animal experimentation. *Journal of Social Psychology*, 141(6), 693-713.

The authors investigated how 2 groups with different attitudes toward animal experimentation—researchers who conducted animal experiments and members of animal welfare organizations who protested against animal experiments—made attributions for the behavior of the opposing group. The 2 groups showed an actor-observer effect, mentioning more internal causes for the opponents' behavior and more external causes for their own behavior. Both groups were able to take the other's perspective, resulting in a reversed

actor-observer effect. The less involved participants followed the pattern of ratings of the group whose attitudes corresponded to their own. In particular, the participants with a negative attitude toward animal experimentation rated researchers' behavior as more internally caused than did those with a positive attitude. The results illustrated how the participants formed and defended attitudes in a social context.

Knight, A. (2014). Conscientious objection to harmful animal use within veterinary and other biomedical education. *Animals, 4*(1), 16-34.

Laboratory classes in which animals are seriously harmed or killed, or which use cadavers or body parts from ethically debatable sources, are controversial within veterinary and other biomedical curricula. Along with the development of more humane teaching methods, this has increasingly led to objections to participation in harmful animal use. Such cases raise a host of issues of importance to universities, including those pertaining to curricular design and course accreditation, and compliance with applicable animal welfare and antidiscrimination legislation. Accordingly, after detailed investigation, some universities have implemented formal policies to guide faculty responses to such cases, and to ensure that decisions are consistent and defensible from legal and other policy perspectives. However, many other institutions have not yet done so, instead dealing with such cases on an ad hoc basis as they arise. Among other undesirable outcomes this can lead to insufficient student and faculty preparation, suboptimal and inconsistent responses, and greater likelihood of legal challenge. Accordingly, this paper provides pertinent information about the evolution of conscientious objection policies within Australian veterinary schools, and about the jurisprudential bases for conscientious objection within Australia and the USA. It concludes with recommendations for the development and implementation of policy within this arena.

Knight, S., Vrij, A., Bard, K., & Brandon, D. (2009). Science versus human welfare? Understanding attitudes toward animal use. *Journal of Social Issues, 65*(3), 463-483.

Scientists have been portrayed as having an uncaring attitude toward the use of animals and being inclined to reject the possibility of animal mind (Baldwin, 1993 ; Blumberg & Wasserman, 1995), yet there is little empirical research to support these claims. We examined why disparate attitudes toward animal use are held. Scientists, animal welfarists, and laypersons (N = 372) were compared on questionnaire responses that measured attitudes toward four types of animal use, and factors that might underlie these views (including belief in animal mind). As expected, scientists and animal welfarists held polarized views on all measures, whereas laypersons fell between the two. Animal welfarists were consistently opposed to all types of animal use, whereas scientists expressed support for the use of animals for medical research, but not for dissection, personal decoration, and entertainment. Animal welfarists showed high levels of belief in animal mind for 13 animal types, and scientists believed some of the 13 animals to have at least a moderate capacity for cognition and most to have at least a moderate capacity for sentience. Hence, the negative image of the science community that is often portrayed was not supported by our data. Findings were discussed in relation to external (group membership) and internal (belief systems) factors, and it is concluded that some people hold fixed attitudes toward animal use, whereas others are more influenced by context.

Kramer, M. G. (2006). Humane education, dissection, and the law. *Animal Law, 13*, 281.

Students regularly encounter animal dissection in education, yet humane education receives little attention in animal law. This article analyzes the status of humane education laws in the United States. It discusses the range of statutory protections, from student choice laws to bans on vivisection. The article then analyzes the litigation options for students who do not wish to dissect, including constitutional claims and claims arising under student choice laws. The article concludes by calling for additional legislation to protect students who have ethical objections to dissection.

Kruse, C. R. (1998). Who said that? Status presentation in media accounts of the animal experimentation debate. *Society and Animals*, 6(3), 235-243.

In recent years, the issue of experimentation upon nonhuman animals has become the subject of media attention. One aspect of the media presentation is the status attributed to claims-makers on either side of the issue. Research suggests that perceived expertise of the source of arguments can play a role in attitudes formed by audiences. This study examines mainstream print and broadcast media presentation of the status of individuals quoted regarding the issue of animal experimentation. Those supporting continued experimentation are significantly more likely to be presented as professionals or experts. Attitude formation is discussed in light of these findings.

Martinsen, S., & Jukes, N. (2007). Ethically sourced animal cadavers and tissue: Considerations for education and training. In *Proc. 6th World Congress on Alternatives and Animal Use in the Life Sciences, Tokyo, Japan*, 21-25.

This paper describes 'ethically sourced' animal cadavers and tissue, as defined by the InterNICHE Policy, and addresses the importance of using cadavers and tissue only from these sources when material is needed for the purpose of education and training. The attitudes developed by students and trainees using ethically sourced material and conventional sources are compared and discussed. Examples are given where the use of ethically sourced cadavers and tissue has been successfully implemented in practical classes for anatomy and surgery. Potential use for research and testing purposes is also briefly discussed. The paper outlines the potential practical problems of such cadaver use and offers examples of how they may be overcome. The impact on veterinary colleges and society of 'client donation programs' for sourcing animal cadavers is also addressed.

Martinsen, S., & Jukes, N. (2008). From policy to practice: Illustrating the viability of full replacement. *AATEX 14, Spec. Issue*, 249-252.

The InterNICHE Policy on the Use of Animals and Alternatives in Education is a comprehensive document in 10 sections that addresses all aspects of work with animals and alternatives in life science education and training. The Policy presents guidelines to ensure effective and fully ethical acquisition of knowledge and skills. It includes a definition of alternatives in education and of harm, and presents individual policies on dissection, the sourcing of animal cadavers and tissue, work with live animals for clinical skills and surgery training, and field studies. As well as addressing non-animal alternatives, therefore, it has a significant focus on the ethical use of, and work with, animals and animal tissue. It also addresses the use of animals for the production of alternatives themselves. The Policy demonstrates the possibilities for full replacement of harmful animal use in education and training. Examples from across the world of practical classes that accord with the Policy will be given. Recommendations will also be made for ethics committees, for university policy towards student choice, and for legislation.

Oakley, J., Watson, G. P., Russell, C. L., et al. (2010). Animal encounters in environmental education research: Responding to the "Question of the Animal". *Canadian Journal of Environmental Education*, 15, 86-102.

The "question of the animal" represents an area of emergent interest in the environmental education field, as researchers critically consider human-animal relations and animal advocacy in their work. Following a group discussion at the 10th Seminar in Health and Environmental Education Research, the authors of this paper share experiences, challenges, and insights related to disrupting the human/ animal divide, conducting respectful research involving nonhuman animals, and producing research that moves beyond Western humanism and aims to make a difference to the more-than-human world.

Saucier, D. A., & Cain, M. E. (2006). The foundations of attitudes about animal research. *Ethics & Behavior*, 16(2), 117-133.

Much controversy has surrounded the use of animals in research. Empirically, much of the research has focused on how ethical individuals believe animal research to be, but it has not systematically examined the specific beliefs or reasons why individuals do or do not believe animal research to be ethical. Study 1 investigated the thematic foundations for the decision that animal research is or is not ethical by examining the content of essays written by participants explaining why they do or do not support the use of animals in research. Results indicated that individuals who believed animal research was ethical most often referenced beliefs that animal research furthered human well-being, provided mechanisms to cure disease, and was well-regulated. Individuals who believed animal research was not ethical most often referenced beliefs that animal research was inhumane, unnecessary, and nonconsensual. Study 2 used the themes to create a scale to assess animal research attitudes.

Swami, V., Furnham, A., & Christopher, A. N. (2008). Free the animals? Investigating attitudes toward animal testing in Britain and the United States. *Scandinavian Journal of Psychology*, 49(3), 269-276.

In this study, 185 British and 143 American undergraduates completed a battery of tests that measured attitudes toward animal testing and various individual difference variables. Attitudes toward animal testing factored into two interpretable factors: general attitudes toward animal testing, and animal welfare and conditions of testing. Overall, there was support for animal testing under the right conditions, although there was also concern for the welfare of animals and the conditions under which testing takes place. There were small but significant national difference on both factors (with Americans more positive about testing and less positive about animal welfare), and a significant sex difference on the first factor (women were more negative about testing). Correlation and regression analyses showed that there were few significant individual difference predictors of both factors. These results are discussed in relation to past and future work on attitudes toward animal testing.

Von Roten, F. (2008). Mapping perceptions of animal experimentation: Trend and explanatory factors. *Social Science Quarterly*, 89(2), 537-549.

The goal of this article is to map out attitudes toward animal experimentation in Switzerland, more specifically, to document the current attitudes, analyze the change of attitudes over the last 10 years, and explain these attitudes. This study analyzes a series of Swiss surveys that measure public attitudes toward the environment and science (ISSP, 1994, 2000; EB, 2001, 2005). It is shown that the relative majority of Swiss are against animal research in 2005 and that refusals are increasing since 1994. Attitudes toward animal testing are explained by attitudes toward science, attitudes toward nature, and values. The study of attitudes toward animal experimentation makes important contributions to sociology and, in particular, to the public understanding of science (PUS) research.

BOOKS

Akins, C. K., Panicker, S., & Cunningham, C. L. (2005). *Laboratory animals in research and teaching: Ethics, care, and methods*. Washington, DC: American Psychological Association. ISBN: 9781591471455.

Laboratory Animals in Research and Teaching contains valuable information that college and high school instructors will need to establish and maintain laboratories at their institutions. The volume offers practical advice about administrative matters, ethical issues, and the guidelines and regulations for the care and feeding of animals. The authors, who include high school instructors, researchers, college instructors, and veterinarians, share lessons they have learned from their own experiences. Their suggestions address large institutions, as well as smaller ones (where resources may be scarce). The volume also includes useful appendixes that include classroom exercises, case studies, federal guidelines, and a detailed listing of

resources. This will be an invaluable text for psychologists and teachers who seek innovative perspectives and methods for teaching and conducting research with animals.

Carbone, L. (2004). *What animals want: Expertise and advocacy in laboratory animal welfare policy*. Oxford: Oxford University Press. ISBN: 9780195161960.

Larry Carbone, a veterinarian who is in charge of the lab animal welfare assurance program at a major research university, presents this scholarly history of animal rights. Biomedical researchers and the less fanatical among the animal rights activists will find this book reasonable, humane, and novel in its perspective. It brings a novel, sociological perspective to an area that has been addressed largely from a philosophical perspective, or from the entrenched positions of highly committed advocates of a particular position in the debate.

Festing, M. F. W. (2002). *The design of animal experiments: Reducing the use of animals in research through better experimental design*. London: Royal Society of Medicine. ISBN: 9781853155130.

Recent surveys have shown that over 60% of papers published in the biomedical literature are statistically weak or inappropriate. For scientific and welfare reasons it is clearly important to understand how to increase power and reduce (or cope with) variation whilst conducting experiments. This handbook is aimed at all research scientists who use laboratory animals, with the aim of helping them to design their own experiments more effectively and/or to improve their ability to communicate with professional statisticians when designing more complex experiments. It covers many aspects of experimental design, such as choice of experimental animal, which are not considered by most statistics textbooks. It does not cover the more advanced designs or statistical methods, so it should be used in conjunction with more conventional statistics textbooks. This handbook also contains links to a number of web sites of interest to those seeking further information related to statistical and experimental design.

Garrett, J. R. (2012). *The ethics of animal research: Exploring the controversy*. Cambridge, Mass: MIT Press. ISBN: 9780262017060.

An estimated 100 million nonhuman vertebrates worldwide--including primates, dogs, cats, rabbits, hamsters, birds, rats, and mice--are bred, captured, or otherwise acquired every year for research purposes. Much of this research is seriously detrimental to the welfare of these animals, causing pain, distress, injury, or death. This book explores the ethical controversies that have arisen over animal research, examining closely the complex scientific, philosophical, moral, and legal issues involved. Defenders of animal research face a twofold challenge: they must make a compelling case for the unique benefits offered by animal research; and they must provide a rationale for why these benefits justify treating animal subjects in ways that would be unacceptable for human subjects. This challenge is at the heart of the book. Some contributors argue that it can be met fairly easily; others argue that it can never be met; still others argue that it can sometimes be met, although not necessarily easily. Their essays consider how moral theory can be brought to bear on the practical ethical questions raised by animal research, examine the new challenges raised by the emerging possibilities of biotechnology, and consider how to achieve a more productive dialogue on this polarizing subject. The book's careful blending of theoretical and practical considerations and its balanced arguments make it valuable for instructors as well as for scholars and practitioners.

Guerrini, A. (2003). *Experimenting with humans and animals: From Galen to animal rights*. Baltimore, Md: Johns Hopkins University Press. ISBN: 9780801871962.

Experimentation on animals and particularly humans is often assumed to be a uniquely modern phenomenon. But the ideas and attitudes that encourage the biological and medical sciences to experiment on living creatures date from the earliest expression of Western thought. In *Animal and Human Experimentation*, Anita Guerrini looks at the history of these practices from vivisection in ancient Alexandria to present-day battles over animal rights and medical research employing human subjects. Guerrini

discusses in-depth key historical episodes in the use of living beings in science and medicine, including the discovery of blood circulation, the development of smallpox and polio vaccines, and recent AIDS research. She also explores the rise of the antivivisection movement in Victorian England, the modern animal rights movement, and current debates over gene therapy. In this highly accessible text, we learn how our understanding of an animal's capacity to feel pain has evolved. Guerrini reminds us that the ethical values of science seldom stray far from those of the society in which scientists live and work. Ethical questions about the use of animals and humans in research remain among the most vexing within both the scientific community and society at large. These often rancorous arguments have gone on, however, with little awareness of their historical antecedents. *Animal and Human Experimentation* offers students and concerned general readers on every side of this debate a context within which to understand more fully the responsibility we all bear for the suffering inflicted on other living beings in the name of scientific knowledge.

Harré, R. (2009). *Pavlov's dogs and Schrödinger's cat: Scenes from the living laboratory*. Oxford: Oxford University Press. ISBN: 9780199238569.

From the sheep, dog, and cockerel that were sent aloft in Montgolfier's balloon to test the air over Paris, to the famous clone Dolly the Sheep and the Darwinian finches of the Galapagos, *Pavlov's Dogs and Schrödinger's Cat* offers a fascinating and enlightening look at the use of plants and animals--including humans--in scientific experiments. Rom Harré provides a fresh and fascinating perspective on research, setting aside moral reflection to simply examine the history of how and why living creatures have been used for the purposes of discovery. Ranging over five centuries, the book uncovers many extraordinary stories, including tales of the people involved, to many curious incidents and episodes, and the occasional scientific fraud. From Gregor Mendel's use of pea plants to explore heredity, to Barry Marshall's use of himself as the experimental animal in his helicobacter experiments (he survived) and even the use of an imaginary cat in Schrödinger's famous thought experiment, the reader discovers a perspective on scientific work he or she has never encountered before.

Hart, L. A., Wood, M. W., & Hart, B. L. (2008). *Why dissection?: Animal use in education*. Westport, Conn: Greenwood Press. ISBN: 9780313323904.

Why do students continue to dissect animals in biology classes? Why, despite the excellence of teaching resources for veterinary and human medical education that substitute for dissection, do those provided for pre-college students fall short in convenience, flexibility, and coordination with the curriculum? *Why Dissection? Animal Use in Education* looks beyond the typical yes-or-no debate about dissection to understand how we came to our current practice of dissection in intermediate and high school biology, even as preparation of health professionals has moved away from dissection. Despite the many forces that support the continued use of dissection in pedagogy, teachers retain much autonomy in how they teach in the classroom, and legislation in many states provide specific requirements for what should and should not be taught in separated science and health curricula, offering students the option to not engage in dissection. *Why Dissection?* walks students, teachers, and parents through these options to help them make more informed choices regarding their science education options.

Haugen, D. M. (2007). *Animal experimentation*. Detroit: Greenhaven Press. ISBN: 9780737733464.

Despite a recent decline in the number of animals being used in research, the debate continues over whether it is ethical and necessary to use animals for science and product testing. Supporters argue that continuing animal research is necessary to protect humans from disease and dangerous products, while opponents believe that animal research is ethically wrong and the scientific results are often not applicable to humans.

Hester, R. E., Harrison, R. M., & Royal Society of Chemistry (Great Britain). (2006). *Alternatives to animal testing*. Cambridge: Royal Society of Chemistry. ISBN: 9780854042111.

Animal experimentation has long been a controversial issue with impassioned arguments on both sides of the debate. Increasingly it has become more expedient and feasible to develop new methods that avoid the use of animals. There is agreement on both sides that reduction and refinement of experiments on animals should be an important goal for the industries involved. *Alternatives to Animal Testing*, written by leading experts in the field, discusses the issues involved and approaches that can be taken. Topics include; the safety evaluation of chemicals, international validation and barriers to the validation of alternative tests, in vitro testing for endocrine disruptors, intelligent approaches to safety evaluation of chemicals, alternative tests and the regulatory framework. The book provides an up-to-date discussion of the current state of development of alternatives to animal testing and is ideal for professionals and academics in the field. It would also be of use for graduate students wishing to pursue a career in the pharmaceutical and cosmetic industries.

Institute for Laboratory Animal Research (U.S.). (2009). *Scientific and humane issues in the use of random source dogs and cats in research*. Washington, D.C: National Academies Press. ISBN: 9780309138079.

Scientific and Humane Issues in the Use of Random-Source Dogs and Cats in Research examines the value of random-source animals in biomedical research and the role of Class B dealers who acquire and resell live dogs and cats to research institutions. Findings include that, while some random-source dogs and cats may be necessary and desirable for National Institutes of Health (NIH)-funded research, there is no clear need to obtain those animals from Class B dealers. Several options for random-source animal acquisition already exist and additional options are recommended, which would further ensure the welfare of these animals and foster a positive public image for NIH. While the scientific community has recognized and responded to concerns for humane treatment of animals in research, government oversight has thus far been unable to fully enforce the Animal Welfare Act in regard to Class B dealers of live animals. Although the animals acquired by Class B dealers are destined for research--and NIH research in particular--the standard of care while in the possession of some Class B dealers requires an inordinate amount of government enforcement and is not commensurate with the policies of most NIH-funded research laboratories. This dichotomy of standards reflects poorly on public perceptions of NIH and jeopardizes animal welfare. This book will be crucial for NIH and other groups using random-source animals in research, including veterinary schools and research facilities. Animal welfare advocates, policy makers, and concerned pet owners will also find this a vital and informative work for reconciling the needs of research with the welfare of animals.

Lankford, R. D. (2009). *Animal experimentation*. Detroit: Greenhaven Press. ISBN: 9780737742800.

Students learn about the controversies surrounding animal experimentation and examine opposing viewpoints regarding this issue. Alternative methods are also explored in this book. Includes organizations to contact, bibliography, and index.

Lyons, D. (2013). *The politics of animal experimentation*. Basingstoke : Palgrave Macmillan. ISBN: 9780230355118.

The reality of animal experimentation and its regulation in Britain have been hidden behind a curtain of secrecy since its emergence as a political controversy in the 1870s. Public debate and political science alike have been severely hampered by a profound lack of reliable information about the practice. In this remarkable study, Dan Lyons advances and applies policy network analysis to investigate the evolution of British animal research policy-making.

Monamy, V. (2000). *Animal experimentation: A guide to the issues*. Cambridge, United Kingdom: Cambridge University Press. ISBN: 9780521660938.

What are the moral and ethical dimensions of animal research? What obligations do we have toward our animal subjects? In this important new book, students, researchers, and interested general readers will find a non-intimidating, readily comprehensible introduction to all the principal ethical issues and arguments in the animal experimentation debate. Vaughan Monamy covers the history and ethics of experimentation; discusses the moral status of animals and the obligations of researchers; and introduces alternatives to animal research. Although the work is aimed at those involved in the conduct, support, and teaching of animal-based research, its clarity of style will reach lay people and experts with equal ease. Monamy does justice to both the arguments that support and oppose animal experimentation, making this a balanced and objective study of a critical issue in contemporary biomedical science.

Newton, D. E. (2013). *The animal experimentation debate: A reference handbook*. Santa Barbara, California : ABC-CLIO, LLC. ISBN: 9781610693172.

The debate over the use of nonhuman animals in experimental research has gone on for centuries, and it continues as vigorously today as it ever has. In fact, in the last decade, the controversy has intensified, making animal testing a topic at the highest level of debate of any socioscientific issue in the United States. This book presents all sides of the issue so that readers can come to their own conclusions as to the morality and validity of animal experimentation, and provides biographies of individuals and descriptions of organizations that have been involved in the debate over the centuries. Additionally, it documents the historical shift in thinking that made animal experimentation commonplace between the time of the ancient Greeks and the 19th century, to the mindset of some who argue for an end to the practice and alternative ways of conducting medical experimentation to benefit human health.

Nordgren, A. (2010). *For our children: The ethics of animal experimentation in the age of genetic engineering*. Amsterdam: Rodopi. ISBN: 9789042028043.

This book provides an overview of different ethical views on animal experimentation. Special attention is given to the production and experimental use of genetically modified animals. It proposes a middle course between those positions that are very critical and those very positive. This middle course implies that animal experiments originating in vital human research interests are commonly justified, provided that animal welfare is taken seriously. Some animal experiments are not acceptable, since the expected human benefit is too low and the animal suffering too severe. This position is supported by an argument from species care according to which we have special obligations to our children and other humans due to special relations. The book tries to bridge the gap between animal ethics and animal welfare science by discussing various conceptions of animal welfare: function-centered, feeling-based, and those focusing on natural living. The theoretical starting-point is "imaginative casuistry." This approach stresses the role of moral imagination and metaphor in ethical deliberation, accepts a plurality of values, and recognizes the importance of case-by-case balancing. In the discussion of genetically modified animals, both intrinsic ethical concerns and animal welfare concerns are addressed.

Paul, E. F., & Paul, J. (2001). *Why animal experimentation matters: The use of animals in medical research*. New Brunswick [N.J.: Social Philosophy and Policy Foundation. ISBN: 9780765800251.

Animal experimentation has made a crucial contribution to many of the most important advances in modern medicine. The development of vaccines for deadly viruses like rabies and yellow fever depended upon animal research, and much of our basic knowledge about human health and physiology was discovered through the use of animals as well. In spite of these gains, animal rights activists have been zealous in communicating to the public and policymakers their view that the use of animals in medical research is morally wrong and should be severely curtailed or eliminated. The activists' arguments draw upon a range of disciplines and focus on both practical and ethical aspects of animal experimentation. Advocates of animal

experimentation have been slow to respond to these arguments. Given that the worldwide toll of communicable diseases is still immense--and that deadly new pathogens may emerge at any time in the future to menace human health--failing to defend animal experimentation from the arguments of its opponents has disastrous implications. A quick response to an unanticipated threat on the order of the AIDS epidemic is unimaginable absent a vigorous research establishment, which in turn is dependent on animal proxies. *Why Animal Experimentation Matters* is a first attempt by research scientists and moral philosophers to mount a convincing defense against animal rights enthusiasts. Because opponents of animal experimentation come from a variety of intellectual backgrounds, this defense is necessarily interdisciplinary as well. In this collection of eight essays, the authors scrutinize how animal experimentation actually functions in the laboratory, the vital role that it plays in palliating and eradicating human and animal diseases, and the moral justification for sacrificing animals for the betterment of human life. The subjects covered in the essays include the moral status of animals and persons, the importance of animals for advancing scientific knowledge, the history of animal experimentation (and of its detractors), differing theoretical approaches of American and European animal-experimentation regulations, the heavily restrictive legislation promoted by animal rights activists, and the threats posed to research and researchers by violent animal rights zealots.

Rudacille, D. (2000). *The scalpel and the butterfly: The war between animal research and animal protection*. New York: Farrar, Straus, and Giroux. ISBN: 9780374254209.

The heart of a pig may soon beat in a human chest. Sheep, cattle, and mice have been cloned. Slowly but inexorably scientists are learning how to transfer tissues, organs, and DNA between species. Some think this research is moving too far, too fast, without adequate discussion of possible consequences: Is it ethical to breed animals for spare parts? When does the cost in animal life and suffering outweigh the potential benefit to humans? In precise and elegant prose, *The Scalpel and the Butterfly* explores the ongoing struggle between the promise offered by new research and the anxiety about safety and ethical implications in the context of the conflict between experimental medicine and animal protection that dates back to the mid-nineteenth century. Deborah Rudacille offers a compelling and cogent look at the history of this divisive topic, from the days of Louis Pasteur and the founding of organized antivivisection in England to the Nazi embrace of eugenics, from animal rights to the continuing war between PETA and biomedical researchers, and the latest developments in replacing, reducing, and refining animal use for research and testing.