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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.

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

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.

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.

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. [PDF](#)

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*. [PDF](#)

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 desensitizes 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.

Einsiedel, E. F. (2005). Public perceptions of transgenic animals. *Revue Scientifique et Technique-Office International Des Epizooties*, 24(1), 149. [PDF](#)

The field of animal biotechnology has been rapidly expanding and the development of transgenic animals has been part of this research expansion. How the public perceives such developments is an important component of policy considerations. In general, biotechnology applications have been judged with evident hierarchies of acceptability. There appear to be hierarchies in terms of the type of organism being modified, the purpose of the application, the means to attain particular ends, and the nature of the benefits obtained. While general awareness of biotechnology and its specific applications remains low to moderate, this article presents data regarding public acceptance of a variety of applications. These range from the use of animals as disease models and as sources for tissues and organs, to the use of transgenic animals for disease control, for food, and for the production of pharmaceutical and industrial products. Case-by-case judgments are evident, but at the same time, the application of criteria such as the nature of the organism being modified, the animal welfare aspects and the ethical-moral concerns are additional criteria for public judgments. These findings are discussed in the context of their implications for public policy.

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.

Furnham, A., McManus, C., & Scott, D. (2003). Personality, empathy and attitudes to animal welfare. *Anthrozoös*, 16(2), 135-146. <https://doi.org/10.2752/089279303786992260>

A total of 833 students completed a four-part questionnaire which measured demographic factors (sex, education, vegetarianism, religiousness), attitudes to animal experimentation, personality (Big Five) and empathy. Attitudes to animal experimentation factored into five interpretable factors, and multiple regression analyses were used to examine the extent to which demographic factors, personality and empathy predicted these. Sex, vegetarianism, Agreeableness, Openness, Extraversion and empathy were significant predictors of all these factors. Results showed an interpretable set of correlates that were similar to previous studies in the area. As with previous research findings, the measures used predicted only a small amount of variance with respect to attitudes to animals.

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. <https://doi.org/10.2224/sbp.2006.34.8.955>

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 antitesting behavior than were men, holding antitesting 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.

Goodman, S., & Check, E. (2002). Animal experiments: The great primate debate. <https://doi.org/10.1038/417684a>

When can invasive experiments on monkeys or apes be justified? And what would be the consequences for biomedical research if they were to cease? Sally Goodman and Erika Check pose some difficult questions.

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.

Hagelin, J., Carlsson, HE, & Hau, J. (2003). An overview of surveys on how to view animal experimentation: some factors that may influence the outcome. *Public Understanding of Science*, 12 (1), 67-81. [PDF](#)

Many factors may influence the outcome of surveys on how people view the use of animals in research. Some aspects are related to the instrument used, whereas others are related to the characteristics of the respondents. Conducted in Western countries, the study is primarily a review of 56 surveys targeting scientists, students, and the public. Surveys were obtained from searching online databases and reference lists, or directly from authors whose surveys were not otherwise available. Factors related to the instrument listed include the questionnaire used and wording of questions. Factors related to the respondent include age, gender, upbringing, religion, knowledge, education, and practical experience. Results demonstrate that there was great discrepancy in acceptance/opposition estimations reported in different surveys. It is concluded that interpretation and comparison of results from different surveys should be made with caution.

Hagelin, J., Johansson, B., Hau, J., & Carlsson, H. E. (2002). Influence of pet ownership on opinions towards the use of animals in biomedical research. *Anthrozoös*, 15(3), 251-257. <https://doi.org/10.2752/089279302786992540>

The present study investigated the relationship between pet ownership and opinions on the use of animals in medical research. A questionnaire was answered by 484 schoolteacher students and 156 pre-school teacher students from Uppsala University, Sweden. Animal use was found to be of significant importance for developing treatments for human disease by 59 percent of respondents, but 15 percent did not agree. Forty-four percent thought that it was morally acceptable to use animals in biomedical research, while 25 percent did not. A significantly higher proportion of those who reported experience in the use of animals in research from university teaching morally accepted and understood the importance of using animals in biomedical research, compared with students without this background. Fifty-eight percent of the students were pet owners and the most common species owned were the cat and the dog. A lower proportion of pet owners (39%) found it acceptable to use pet species in biomedical research than did non-pet owners (52%).

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.

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. [PDF](#)

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.

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.

Hobson-West, P. (2010). The role of 'public opinion' in the UK animal research debate. *Journal of Medical Ethics, 36(1)*, 46-49. [HTML \(AUTHOR MANUSCRIPT\)](#)

Animal research remains a deeply controversial topic in biomedical science. While a vast amount has been written about the ethical status of laboratory animals, far less academic attention has been devoted to the public and, more specifically, to public opinion. Rather than *what* the public think, this article considers *the role* of 'public opinion'. It draws on a recent empirical study which involved interviews with laboratory scientists who use animals in their research, and with other UK stakeholders. The first section of the paper demonstrates that public opinion has become a kind of resource in the animal research debate. Public opinion polls, in particular, are frequently cited. The second section explores this further and argues that, for all sides, appealing to public opinion is a key way to show legitimacy. Finally, the paper shifts gear to consider whether public opinion should matter, both for ethical reasoning and for science policy.

Hobson-West, P. (2009). What kind of animal is the "Three Rs"? *Alternatives to laboratory animals: ATLA, 37(Suppl 2)*, 95. [PDF](#)

Fifty years after the publication of *The Principles of Humane Experimental Technique* by Russell and Burch, this paper explores the contemporary role of the Three Rs. This is illustrated by reference to a recent social scientific study, which involved a total of 50 in-depth interviews with scientists who use animals and with other stakeholders in the debate. The data analysis shows how the Three Rs are conceptualised in at least three ways: firstly, as an ethical animal, either as a shorthand for a moral imperative, or as a route to managing an ethical dilemma; secondly, as a scientific animal, internal to the scientific method; and finally, as a political animal, with some stakeholders referring to the Three Rs as a way to promote consensus in a controversial domain. Pushing the metaphor a little further, the paper concludes that the Three Rs concept has become a kind of hybrid animal.

Ideland, M. (2009). Different views on ethics: how animal ethics is situated in a committee culture. *Journal of medical ethics, 35(4)*, 258-261. [PDF](#)

Research that includes non-human animal experimentation is fundamentally a dilemmatic enterprise. Humans use other animals in research to improve life for their own species. Ethical principles are established to deal with this dilemma. But despite this ethical apparatus, people who in one way or another work with animal experimentation have to interpret and understand the principles from their individual points of view. In interviews with members of Swedish animal ethics committees, different views on what the term *ethics* really means were articulated. For one member, the difficult ethical dilemma of animal experimentation is the lack of enriched cages for mice. For another, the ethical problem lies in regulations restraining research. A third member talks about animals' right not to be used for human interests. These different views on "ethics" intersect once a month in the animal ethics committee

meetings. There is no consensus on what constitutes the ethical problem that the members should be discussing. Therefore, personal views on what *ethics* means, and hierarchies among committee members, characterise the meetings. But committee traditions and priorities of interpretation as well are important to the decisions. The author discusses how “ethics” becomes situated and what implications this may have for committees’ decisions.

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.

Ipsos, M. O. R. I. (2010). Views on animal experimentation. [PDF](#)

Ipsos MORI has asked the general public about their views on animal experimentation since 1999. The latest survey was conducted on behalf of the Department for Business, Innovation and Skills (BIS) in December 2009. This report presents the findings of a survey on public attitudes towards animal experimentation and awareness of the work of the National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs).

Kemdal, A., & Montgomery, H. (2001). Explaining own and others' behavior in a controversial issue: Animal experimentation. *Journal of Social Psychology*, 141(6), 693-713. <https://doi.org/10.1080/00224540109600582>

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, 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. <https://doi.org/10.1111/j.1540-4560.2009.01609.x>

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.

Knight, S., & Barnett, L. (2008). Justifying attitudes toward animal use: A qualitative study of people's views and beliefs. *Anthrozoös*, 21(1), 31-42. [PDF](#)

“Animal use” is a contentious topic that refers to practices involving the utilization of non-human animals by human beings. These practices often evoke strong and emotional reactions from opposing parties, and individuals can hold incongruent views concerning

different ways in which animals are used. Yet previous research in this area has tended to portray attitudes toward animal use as uni-dimensional (rather than distinguishing between different types of use), and the field has been dominated by quantitative approaches that focus on participant characteristics such as gender, age, and so on, in order to explain variance in people's views on this topic. The present study assumed that attitudes are not uni-dimensional and applied Grounded Theory Methodology in order to determine psychological factors that underlie people's views concerning animal use issues. Eight participant-led interviews explored the factors that people consider when rationalizing their attitudes toward the use of animals, and interview transcripts were analyzed with an aim to understanding why attitudes vary depending upon the type of animal use in question. Three key themes were identified, labelled as "type of animal used," "purpose of animal use," and "knowledge of animal use." These represent beliefs concerning animals and animal use, and help explain why people can support some animal use practices whilst opposing others. We conclude that taking a psychological approach in order to further examine the beliefs that underlie attitudes provides a way forward for future research.

Knight, S., Vrij, A., Cherryman, J., & Nunukoosing, K. (2004). Attitudes towards animal use and belief in animal mind. *Anthrozoös*, 17(1), 43-62. [PDF](#)

Animals are used by humans in many ways, yet science has paid little attention to the study of human–animal relationships (Melson 2002). In the present study, participants ($n=96$) completed a questionnaire on attitudes towards animal use, and individual differences were examined to determine which characteristics might underlie these attitudes ("belief in animal mind," age, gender, experience of animals, vegetarianism, political stance, and living area). It emerged that participants held different views for different types of animal use, and that belief in animal mind (BAM) was a powerful and consistent predictor of these attitudes, with BAM together with gender and vegetarianism predicting up to 37% of the variance in attitudes towards animal use. Thus, future research should acknowledge the importance of BAM as a major underlying factor of attitudes towards animal use, and should also distinguish between different types of animal use when measuring attitudes. We propose that the large effect of BAM might be due to increasing interest in animal mind over the past decade.

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

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.

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.

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*. [PDF](#)

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. [PDF](#)

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.

Navarro, J. F., Maldonado, E., Pedraza, C., & Cavas, M. (2001). Attitudes toward animal research among psychology students in Spain. *Psychological reports*, 89(2), 227-236. <https://doi.org/10.2466/pr0.2001.89.2.227>

Animal research plays a central role in psychology, and its use, prevalence and quality depends on the attitudes of students who enter psychology in Spain. Attitudes among psychology students about the use of laboratory animals are not known, so the aim of this work was to analyze the attitudes of Spanish psychology students toward animal research. An attitude questionnaire of 15 items was given to 661 undergraduate students of the School of Psychology at the University of Málaga, Spain. Several results were found: (a) 65.7% of the respondents strongly agreed or agreed with animal research. General support for animal research was significantly higher by men than by women. (b) Support for animal research was higher for senior students, suggesting that the psychology curriculum or self-selection to remain in the program might influence students' attitudes. (c) Attitudes toward animal research were similar among students independent of the type of animal being used for research in biological or psychological studies. (d) 58% considered that laboratory animals never or almost never are inappropriately handled. (e) 55.6% indicated that research in psychology on animals could be generalized to humans. Overall, these results suggest that among Spanish psychology students animals research is considered important for the advancement of the science. Likewise, a majority of students displayed positive attitudes toward animal research.

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.

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. [PDF](#)

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.

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.

Peggs, K. (2010). Nonhuman animal experiments in the European Community: Human values and rational choice. *Society & Animals, 18*(1), 1-20. [PDF](#)

In 2008, the European Community (EC) adopted a Proposal to revise the EC Directive on nonhuman animal experiments, with the aim of improving the welfare of the nonhuman animals used in experiments. An Impact Assessment, which gauges the likely economic and scientific effects of future changes, as well as the effects on nonhuman animal welfare, informs the Proposal. By using a discourse analytical approach, this paper examines the Directive, the Impact Assessment and the Proposal to reflect critically upon assumptions about the morality of nonhuman animal experiments. Because nonhuman animal welfare is so prominent in the Proposal, it appears that the EC position advances beyond human self-interest (orthodox rational choice) as the sole motivator for such experiments, to ethical questions about the welfare of nonhuman animals (which can be better explained by a multidimensional approach to rational choice). In examining this contention, this paper concludes that, even given concerns about nonhuman animal welfare, nonhuman animal experimentation in the EC is firmly grounded in a morality that focuses on human benefit goals rather than on the wider moral issues associated with the means of achieving such goals.

Phillips, C. J. C., & McCulloch, S. (2005). Student attitudes on animal sentience and use of animals in society. *Journal of Biological Education, 40*(1), 17-24. <https://doi.org/10.1080/00219266.2005.9656004>

Cultural differences in students' attitudes towards animals need to be better understood and respected in order to promote tolerance in multicultural biological education. A cross-cultural study was conducted to investigate the beliefs of 425 students of different nationalities on animal sentience and attitudes towards the uses of animals. European students and, to some extent, those from the USA were less likely to condone cruelty to animals on farms than students from Asian countries. Students from Europe had more concern for suffering during life than students from Asia, but there was no difference in the extent of reverence for animal life. Female students had both more concern for animal suffering during life, and a greater concern for the reverence of animal life than males, but there were no gender differences in sentience attributed to the different animal species. Teacher awareness of these cultural and gender differences should engender tolerance towards different students' attitudes to the use of animals in education. The order of sentience across nationalities that was attributed to different species was monkey > dog > newborn baby > fox > pig > chicken > rat > fish. Correlations between animal sentience and attitudes towards the uses of animals showed that the students opposing, or advocating constraints on, the use of animals in society attributed more sentience to those animals. This reinforces concern by some students, e.g. of veterinary medicine, about the use of dogs for terminal surgery practicals. It is concluded that teacher recognition of students' perceptions of animal suffering, their reverence for animal life and attribution of sentience to different species is important in ensuring that the use of animals in education is in harmony with the students' beliefs and concerns.

Preece, R. (2003). Darwinism, Christianity, and the great vivisection debate. *Journal of the History of Ideas, 64*(3), 399-419. <http://muse.jhu.edu/article/47662>

The reputation of the Christian tradition has fared poorly in the literature on the history of attitudes to nonhuman animals. This is more a consequence of secularist prejudice than objective scholarship. The idea of "dominion" and the understanding of animal souls are almost universally misrepresented. There has been no firmer conclusion than that Charles Darwin's theory of evolution had a profoundly beneficial impact on the recognition of our similarities to, kinship with, and consequent moral obligations to, other species. In reality, Darwinism had no such effect. That there was an essential kinship with, and homologies between, humans and other species had been attested to for centuries. In the first major ethical issue that arose after the publication of Darwin's *The Descent of Man* – legislation to restrict vivisection -- Darwin and Huxley stood on the side of more or less unrestricted vivisection while many major explicitly Christian voices -- from Cardinal Manning to Lord Chief Justice Coleridge to the Earl of Shaftesbury -- demanded the most severe restrictions, in many cases abolition. The customary tale of how Christianity hindered the development of sensibilities to animals and how Darwinism occasioned a revolution in animal ethics needs to be rethought and retold.

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

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.

Robertson, J. C., Gallivan, J., & MacIntyre, P. D. (2004). Sex differences in the antecedents of animal use attitudes. *Anthrozoös*, 17(4), 306-319. <https://doi.org/10.2752/089279304785643186>

Sex differences in attitudes toward the use of animals have been reported in previous research. This study examines sex differences in the levels of, and the interrelations among, three potential antecedents of attitudes toward animal use: caring value orientation, pet care experience and attachment to pets. Path analysis showed that pet care experience, through attachment to pets, accounted for a significant portion of variance in animal use attitudes in both males and females. Caring value orientation was directly linked to animal use attitudes in females, but in males, caring value orientation affected attachment to pets, which in turn impacted on animal use attitudes. Results are discussed in terms of Gilligan's theory of socialization.

Rose, M. A., & Grant, E. (2008, August). Australia's ethical framework for animals used in research and teaching. In *Proceedings of AAWS International Animal Welfare Conference*. [PDF](#)

There is a long history of public debate as to the acceptability of the use of animals for scientific purposes be that for research, for teaching or for product testing. The basic tenet of the Australian Code of Practice for the Care and Use of Animals for Scientific Purposes (the Code) is that there is an ethical imperative in our decisions as to if and how animals are used in these circumstances. The Code provides a framework for ethical review which incorporates a set of guiding principles and establishes institutional Animal Ethics Committees with responsibilities for oversight of these activities; the nexus between animal welfare and scientific outcomes and the recognition that such ethical decisions are not matters for the scientific community alone but must involve the wider community are notions central to the effective implementation of the Code. The Code also identifies the responsibilities of the various parties involved such that the arrangements within which individuals exercise their responsibilities are clarified and processes for accountability are transparent. The framework for ethical review and the governance arrangements which underpin responsibilities and accountabilities are intricately linked and must be so if the aims of the Code are to be achieved.

Rothwell, N. (2006). Public Engagement on the Use of Animals in Biomedical Research. *Engaging Science: Thoughts, Deeds, Analysis and Action*. London: Wellcome Trust Publication, 38-43. [PDF](#)

Scientists, on the whole, are keen to engage with the public and can see the value of doing so. They do see a number of obstacles, such as lack of training and the difficulties combining research with serious commitment to public engagement. Here, Nancy Rothwell looks at the lessons to be learned from public engagement on animal use in research. Although one of the most highly charged areas of public engagement, open public dialogue has been possible and has influenced public opinion.

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

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.

Schuppli, C. A., & Weary, D. M. (2010). Attitudes towards the use of genetically modified animals in research. *Public understanding of science*, 19(6), 686-697. [PDF](#)

Here we provide the first experimental evidence that public concerns about the use of animals in research are accentuated when genetically modified (GM) animals are used. Using an online survey, we probed participant views on two uses of pigs as research animals (to reduce agricultural pollution or to improve organ transplant success in humans) with and without GM. We surveyed 327 animal technicians, researchers, advocates, university students and others. In both scenarios and across demographics, support dropped off when the research required the use of GM pigs or GM corn. For example, 66% of participants supported using pigs to reduce phosphorus pollution, but this declined to 49% when the pigs were fed GM corn and to 20% when the research required the creation of a new GM line of pigs. Those involved in animal research were more consistently supportive compared to those who were not or those who were vegetarians.

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. [HTML](#)

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. C. (2009). European attitudes towards animal research: Overview and consequences for science. *Science, Technology and Society*, 14(2), 349-364. <https://doi.org/10.1177/097172180901400207>

The goal of this article is to map out attitudes towards animal experimentation in Europe (EU15 plus Switzerland), more specifically, to document the current attitudes, perform cross-national comparison of the trends of attitudes towards animal experimentation and of the explanatory factors of these attitudes. We assume that the conception of nature and science influences the perception of animal research. This study analyses a series of surveys that measure European public attitudes towards science and technology, the Eurobarometer (EB) 2001 and 2005. The majority of European countries refused animal experimentation in 2005 and we observe downward trend in every country, except Belgium and Spain. If the trend is similar among the countries the patterns of explanation of these attitudes are quite heterogeneous. Attitudes towards animal testing are explained in every country by attitudes towards science and nature, and by sociodemographic variables (except in Spain and Austria), and in very few countries by scientific knowledge (Belgium) or by values (Sweden and Switzerland). These results may have consequences for science and contribute therefore to the public understanding of science (PUS) research.

Von Roten, F. (2008). Mapping perceptions of animal experimentation: Trend and explanatory factors. *Social Science Quarterly*, 89(2), 537-549. <https://doi.org/10.1111/j.1540-6237.2008.00546.x>

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.

Vrij, A., Nunkoosing, K., Knight, S., & Cherryman, J. (2003). Using grounded theory to examine people's attitudes toward how animals are used. *Society & Animals*, 11(4), 307-327. [PDF](#)

This study uses qualitative methodology to examine why people have different attitudes toward different types of nonhuman animal use. Seventeen participants took part in a semi-structured interview. The study used Grounded Theory to analyze the interviews and developed a model that consists of 4 major themes: (a) "attitudes toward animals," (b) "knowledge of animal use procedures," (c) "perceptions of choice," and (d) "cost-benefit analysis." The findings illustrate that cognitive processing, characteristics of the species of animal being used, and the type of animal use can all influence attitudes toward animal use. Because previous research has focused on participant variables such as age and gender to explain variance in attitudes toward animal use (Furnham & Pinder, 1990; Kellert & Berry, 1981) and measured attitudes toward animal use in general (rather than distinguishing between different types of use) (Armstrong & Hutchins, 1996), these findings can add to knowledge of people's views on animal use. This paper discusses how such views may be justified and maintained.

Williams, V. M., Dacre, I. T., & Elliott, M. (2007). Public attitudes in New Zealand towards the use of animals for research, testing and teaching purposes. *New Zealand Veterinary Journal*, 55(2), 61-68. <https://doi.org/10.1080/00480169.2007.36743>

AIM: To investigate the awareness of and interest in the use of animals for research, testing and teaching (RTT) purposes, the levels of support and attitudes towards this use of animals, and the awareness of and opinions on regulations governing it within the public in New Zealand. **METHODS:** An independent telephone survey was used to collect information including demographics, awareness and interest in the use of animals for RTT, attitudes towards the use of animals for RTT, and awareness of the regulation of the use of animals in RTT and the degree of confidence held in such regulation. **RESULTS:** Data were obtained from 750 respondents throughout New Zealand. The rim-weighting efficiency figure was 90%, indicating that the sample collected closely matched the population demographics for New Zealand. Overall, 33% of respondents expressed an interest in the issue generally, 39% were interested in the area of animals used for research and testing purposes, and 21% for teaching purposes. A majority of respondents agreed that the use of animals for teaching (72%) and research and testing (68%) purposes was acceptable as long as there was no unnecessary suffering by the animals. Respondents felt animal research was most justified for research into life-threatening and debilitating diseases, and least justified for safety-testing of cosmetics and household chemicals. Only 8% of respondents knew a "fair amount" (or more) about the legislation pertaining to the use of animals in RTT. **CONCLUSIONS:** The majority of New Zealanders were neither interested nor concerned about the use of animals in RTT. The largest proportion of respondents fell into a category of accepting this use of animals with conditions such as where there is no unnecessary suffering by the animals or where the research is for a serious disease. However, the responses also indicated that attitudes towards the use of animals in RTT as a general issue may change when that use is given a specific context.