

Should animals be used in research?

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ABSTRACT

The use of animals in scientific and medical research has been a subject to heated debate for many years. The ethical assessments related to the use of animals in research are wide-ranging. Some people believe that animal experimentation is cruel, unethical and unnecessary, regardless of its purpose or benefit. On the other hand, some people believe that removing animals completely from the lab would impede our understanding of health and disease and consequently affect the development of new and vital treatments. Some diseases, such as asthma and cystic fibrosis, involve very complex physiological processes that can only be studied in a whole, living animal. Although some times these studies do reduce the quality of life of these animals, thorough regulations are in place to ensure that they are carried out in a humane way. To help minimise the harm animals, researchers are required to follow a set of principles, 'The Three Rs' – Replace, Reduce and Refine. The use of these 'Three Rs' is crucial to continuously reduce the number and suffering animals in research. Furthermore, a good regulatory regime can help to reduce further the number of animals used. Therefore, we support a healthy and continued debate on the use of animals in research.

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A note on terminology : Emphasize to readers that human beings are animals, but for purposes of this writing the term "animals" will be used to refer specifically to non-human animals.

To use of animals in research has had a vital role in many scientific and medical advances of the past century and continues to help our understanding of various diseases. Throughout the world, people enjoy a better quality of life because of these advances, and the subsequent development of new medicines and treatments. For this reason animals, from the fruit fly to the mouse, are widely used in scientific research. They are crucial for allowing scientists to learn more about human biology and health, and for developing new medicines.

However, the use of animals in scientific and medical research has been a subject to heated debate for many years. Opponents to any kind of animal research including both animal rights extremists and anti-vivisectionist groups believe that animal experimentation is cruel and unnecessary, regardless of its purpose or benefit. There is no middle ground for these groups, they want the immediate and total abolition of all animal research. Their opinion is that, animals have a moral status, and that our treatment of them should be subject to ethical consideration. Such views are reflected in the following positions :

- (i) Animals have an intrinsic value which must be respected. Over 4 million animals procedures are currently carried out each year for biomedical research.
- (ii) Animals are sentient creatures with the capacity to feel pain, and the interests of animals must therefore be taken into consideration.
- (iii) Certain harm versus potential harm. The harm done to human beings by not experimenting on animals is unknown, whereas the harm done to animals if they are tested on is certain.
- (iv) If we accept that the animals have rights then if an experiment violates the rights of an animal, it is morally wrong and any possible benefits to humanity are completely irrelevant.
- (v) There is no need to cause pain and suffering to animals when sophisticated computer systems, mathematical models, human tissue and cell cultures and more focused clinical studies can also show us what happens to our bodies during disease.

But on the other hand, removing animals completely from the lab would impede our understanding of health and disease and consequently affect the development of new and vital treatments. Some diseases, such as asthma and cystic fibrosis, involve very complex physiological processes that can only be studied in a whole, living animal. Until there is a cell that can be studied individually and can exhibit human-like responses, animals are necessary.

Contextual note that the alternative to using animals in the lab would be to test new drugs in humans. It would be very difficult for researchers to find willing volunteers who would be able to provide informed consent to be involved in testing a new drug that hadn't first been tested on animals. This is why some people say that, to stop the use of animals in research would also be unethical as it would essentially affect the development of new knowledge and flow of treatments to those with health conditions who desperately need them. Although sometimes these studies do reduce the quality of life of these animals, thorough regulations are in place to ensure that they are carried out in a humane way.

To help minimise the harm animals may experience while being studied in the laboratory, researchers are required to follow a set of principles 'The three Rs'. These are:

- Replace: Replacing where possible, experiments using animals with alternative techniques such as cell culture, computer modeling or human volunteers instead of animals.
- Reduce: Reducing the number of animals used, by improving experimental techniques and sharing information with other researchers so that the same experiments are not being done by many people.
- Refine: Refining the way the animals are cared for to help minimise any stress or pain, by using less invasive techniques where possible and improving medical care and living conditions.

Apart from that, The National Committee for Research Ethics in Science and Technology provide some ethical guidelines for researchers and other people who are considering experiments on animals. The guidelines will be useful when planning projects, assessing them, and when reporting and publishing findings and results. They are also intended to contribute to reflection on research ethics and the use of animals in research in both research communities and in the public debate. The guidelines are:

- (1) Respect for animals dignity: Researchers must have respect for animals' worth, regardless of their utility value, and for animals' interests as living, sentient creatures. Researchers must be respectful when choosing their topic and methods, and when disseminating their research. Researchers must provide care that is adapted to the needs of each laboratory animal.
- (2) Responsibility for considering options: Researchers are responsible for studying whether there are alternatives to experiments on animals. Alternative options must be prioritised if the same knowledge can be acquired without using laboratory animals. If no good options are available, researchers should consider whether the research can be postponed until alternative methods have been developed. When justifying experiments on animals, researchers therefore must be able to account for the absence of options and the need to acquire knowledge immediately.
- (3) Responsibility for considering and balancing suffering and benefit: Researchers must consider the risk that laboratory animals experience pain and other suffering and assess them in relation to the value of the research for animals, people or the environment. Researchers are responsible for considering whether the experiment may result in improvements for animals, people or the environment. The possible benefits of the study must be considered, substantiated and specified in both the short and the long term. The responsibility also entails an obligation to consider the scientific quality of the experiments and whether the experiments will have relevant scientific benefits. Suffering can only be caused to animals if this is counterbalanced by a substantial and probable benefit for animals, people or the environment.
There are many different methods for analysing harm and benefit. Research institutions should provide training on suitable models, and researchers are responsible for using such methods of analysis when planning experiments on animals.
- (4) Responsibility for considering reducing the number of animals : Researchers are responsible for considering whether it is possible to reduce the number of animals the experiment plans to use and must only include the number necessary to maintain the scientific quality of the experiments and the relevance of the results. This means, among other things, that researchers must conduct literature studies, consider alternative experiment design and perform design calculations before beginning experiments.
- (5) Responsibility for minimising the risk of suffering and improving animal welfare : Researchers are responsible for assessing the expected effects on laboratory animals. Researchers must minimise the risk of suffering and providing good animal welfare. Suffering includes pain, hunger, thirst, malnutrition, abnormal cold or heat, fear, stress, injury, illness and restrictions on the ability to behave naturally.

A researcher's assessment of what is considered acceptable suffering should be based on the animals that suffer the most. If there are any doubts regarding perceived suffering, consideration of the animals must be the deciding factor.

Researchers must not only consider the direct suffering they may be endured during the experiment itself, but also the risk of suffering before and after the experiment, including trapping, labelling, anaesthetising, breeding, transportation, stabling and euthanising. This means that researchers must also take account of the need for periods of adaptation before and after the experiment.

- (6) Responsibility for maintaining biological diversity : Researchers are responsible for ensuring that the use of laboratory animals does not endanger biological diversity. This means that researchers must consider the consequences to the stock and to the ecosystem as a whole. The use of endangered and vulnerable species must be reduced to an absolute minimum. When there is credible, but uncertain, knowledge that the inclusion of animals in research or the use of certain methods may have ethically unacceptable consequences for the stock ecosystem as a whole, researchers must observe the precautionary principle.
- (7) Responsibility when intervening in a habitat: Researchers are responsible for reducing disruption and any impact on the natural behavior of individual animals, including those that are not direct subjects of research, as well as of populations and their surroundings. Certain research and technology related projects, like those regarding environmental technology and environmental surveillance, may impact on animals and their living conditions, for example as a result of installing radar masts, antennas or other measurement instruments. In such cases, researchers must seek to observe the principle of proportionality and minimise the possible negative impact.
- (8) Responsibility for openness and sharing of data and material: Researchers are responsible for ensuring that there is transparency about research finding and facilitating the sharing of data and material from experiments on animals. Such transparency and sharing are important in order to avoid unnecessary repetition of experiments. Transparency is also important in order to ensure that the public are informed and is part of researches' responsibility for dissemination. In general, the negative results of experiments on animals should be public knowledge. Disclosing negative results may give other researchers information about which experiments are not worth pursuing, shine a light on unfortunate research design, and help reduce the use of animals in research.
- (9) Requirements of expertise on animals: Researchers and other parties who handle live animals must have adequately updated and documented expertise on animals. This includes specific knowledge about the biology of the animal species in question, and a willingness and ability to take care of animals properly.
- (10) Requirement of due care : There are national laws and rules and international conventions and agreements regarding the use of laboratory animals, and both researchers and research managers must comply with these. Any person who plans to use animals in experiments must familiarise themselves with the current rules.

In conclusion, the use of animals in research can be considered ethically and morally justified. Because, animal experiments are unavoidable if we want to make the necessary progress in medical – scientific research. The medical scientific research aims to contribute to the improvement of health care. It aims to contribute to the development of new methods to prevent, diagnose and treat disease. In order to achieve this, it is important first to gain a better understanding of the human body in sickness and in health. The various molecular mechanisms that cause disease need to be unraveled. This is currently not possible without some use of animals. After all, many diseases are a complex interaction between various components, cell and tissues, in a three – dimensional structure. This interaction and communication can not always be copied in cell cultures and that makes animals at least in part essential to understanding these complex interactions. In many cases so – called animal models are used: animals in which certain disease symptoms are elicited genetically, chemically or in some other way. The human disease is copied. Such experiments provide a lot of relevant information and many of the new drugs being marketed today were impart created thanks to this process. Nevertheless, the use of 'The three Rs' is crucial to continuously reduce the number and suffering of animals in research. Furthermore, a good regulatory regime can help to reduce further the number of animals used. Therefore, we support a healthy and continued debate on the use of animals in research. We recognize that those who oppose animal experimentation should be free to voice their opinions democratically, and we look forward to constructive discussion in the future with organizations that share the middle ground with us.

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