

Animal Experimentation Fact Sheet

In this factsheet...

1. Introduction
2. Types of Research
3. Alternatives
4. Animals in Education
5. Animal protection laws?
6. Reform is needed
7. Further information

Introduction



Rabbits are commonly used overseas in painful eye irritancy tests for products available in Australia.

The use of living animals in research and teaching became significant in the second half of the nineteenth century as part of the development of the emerging sciences of physiology and anatomy. The post-war expansion of the pharmaceutical and chemical industries saw an enormous increase in the use of animals in research. Today it is a multi-billion dollar industry, encompassing the pharmaceutical and chemical industries and university and government bodies. There is also a significant industry providing support services in relation to animal research, including animal breeding, food supply, cage manufacture, etc.

The vast majority of animals used in research are subjected to some degree of pain or stress during experimental procedures to which they may be subjected, or as a result of the environment in which they are kept prior to or after those procedures.

Many people think that all animal research is part of medical research - this is not true.

Types of Research

The following are the most common (but not only) categories of animal-based research:

Basic 'Biomedical Research'

The majority of animals used in research and teaching in universities and research establishments are used in experiments or procedures which are aimed at finding out more about the processes governing the function of living organisms. Some of this work may be relevant to the understanding of human disease, but most of it will not be. For example, nerve cells may be taken from a rat's brain (or another part of a rat's nervous system) to be used in the study of how nerve cells work. This information may indicate how human nerve cells work in general.

Although most basic scientific research using animals is probably not directly aimed at understanding or treating human disease, nevertheless, most researchers will justify the funding of this research on the grounds that it does have that human relevance. Some forms of basic research are:

- **Genetic Engineering** - Transgenic Animals -It is now possible to modify or delete a gene responsible for the expression of a particular protein. The modification or deletion can be made in an animal, usually a mouse. An animal whose genome is modified in this way is a

"transgenic" animal. The mouse genome can be modified to express a human gene. It is debatable whether results obtained in this way can provide useful information about human genes, given that the gene is being expressed in a non-human animal. The use of transgenic animals, particularly mice, has meant the number of animals used in research around the world is increasing.

Genetic modifications have also been used in attempts to produce human proteins which may be useful in disease treatment. For example, "Dolly" the sheep had her genome modified to express a human blood clotting factor, which, if it could be purified, may be useful in treating a human blood clotting disorder.

- **Physiological Research** - This involves the study of how organ systems work, for example the circulatory system, the excretory system or the breathing system. Physiological experiments may involve the use of anaesthetised animals, but many will occur using conscious animals.
- **Psychological Research** - Psychological research often involves controlling the eating, movement or choices of experimental animals and as such may cause distress and frustration.

Medical Research

Proponents seek to justify medical research using animals on the basis that such research relates to human disease and treatments for those diseases. The bulk of human disease-oriented research is done in universities and specialist institutes, and attracts massive government and private charity funding. Such research continues - with little broad and independent evaluation - because funding bodies and research institutions are reluctant to embrace the possibility that existing animal models and methods have largely failed. To do so would ruin careers, break the ever-present promises to health charities and the community, and knock out existing 'high tech' animal breeding (and facilities) supply businesses.

The main problem with animal research which claims to relate to the causes of human disease or development of human disease therapies, is that animals are not humans. Results with 'animal models' of human diseases can therefore be very misleading. Similarly, results from animals predicting toxic side effects of drugs can be wrong. This is what happened in the early 1960s with thalidomide, which was tested in the usual range of laboratory animals, such as rats and mice. The results of these tests did not reveal any problems and thalidomide was granted a licence for use as a sedative in pregnant women. As most people know, the result was the birth of thousands of babies with horrendous birth defects, such as missing limbs.[1]

But things have moved on dramatically since the 1960s. The human genome has now been cloned, which means that researchers can work with human proteins expressed in immortal cell lines, which can be grown in large quantities in the laboratory. This means that researchers no longer have the excuse that animal experiments are the only available option to research human disease and cellular function. By working on human proteins, researchers can acquire knowledge which is directly relevant to human function. Equally importantly, where the disease concerned has a genetic basis, researchers can work on the 'faulty' protein which is produced as a result of the 'fault' in the gene concerned and which causes the disease. An example is the gene 'fault' occurring on chromosome 7 in cystic fibrosis, which results in the production of a malfunction in the protein known as the cystic fibrosis transmembrane conductance regulator.[2] Because the structure of the gene is known, the 'faulty' human proteins can be studied without the need to use animals.

It is very likely that advancing knowledge of human genes, proteins and cells will make animal research on human diseases increasingly irrelevant.

For more information, visit [Medical Advances Without Animals](http://www.mawa.asn.au/). (<http://www.mawa.asn.au/>)

Agricultural Research

Agricultural research is almost entirely directed towards increasing the productivity of animals kept for food or food products. A lot of this research involves the study of animals kept in intensive housing systems, such as sow stalls or battery hen cages. One of the main reasons for the adoption of such housing systems is that they minimise the amount of skill required to look after the animals without compromising productivity. It is well established that better training would allow the adoption of more humane methods of keeping animals, while maintaining productivity. For this reason alone, the value of this sort of research is questionable.

Some genetic engineering of species used in agriculture, e.g. sheep and cattle, is occurring in an attempt to increase production, such as milk or wool production, or to alter the characteristics to the product being produced, such as the meat or finer wool. Cloning techniques are also being developed, adversely affecting many experimental animals, with the goal of increasing the ability to breed more individuals of a certain genetic makeup.

Safety Testing

The human safety of medicines, agricultural chemicals and various other chemical products, such as shampoos, cleaners and so on, is assessed by testing the products on animals.[3] Regulatory authorities responsible for the approval of the use of these substances in most countries require animal testing on the substances and it is likely that the requirements in Australia will be met by testing elsewhere for substances intended to be marketed internationally. The tests involved are particularly repugnant, as they usually involve poisoning the animals concerned - death is often the endpoint measured. A particularly extreme example is the Draize rabbit eye test, where the subject substance is put into the eyes of rabbits, often producing horrendous damage and pain.

Alternatives

Many alternatives to the use of animals have been developed, particularly in toxicity testing and teaching. Studies of systems in cell culture provide many opportunities of substitution for animal experiments.

The failure to use alternatives is too often caused by inertia, lack of funding, and reluctance to deviate from established methods. The use of alternatives must be rewarded and encouraged to ensure that the transition to alternatives is not impeded.

Animals in Education

The use of animals in teaching at all levels of secondary and tertiary education is still widespread. The majority of such teaching is not directed towards veterinary practice nor training in clinical procedures in humans. In fact, many students are required to use animals in practical classes, then choose careers in which they will never need to use animals.

Animals Australia considers that often, schools have inappropriate facilities and staffing for animals to be housed on site. Any benefits gained by the use of animals in teaching are outweighed by its tendency to convey the message that animals are merely tools available to satisfy human research and curiosity. There are sufficient alternative teaching aids available to meet the same or more useful educational objectives as those currently being met with the use of animals.

At the tertiary level, Animals Australia considers that the need for animals in teaching cannot be established except in relation to the teaching of veterinary and animal science courses. Where no non-animal alternatives exist, knowledge and skills should be obtained by study of, and practical work on abattoir materials, models, or through assistance with actual clinical cases

Animal protection laws?

In Australia, animal welfare is the subject of State and Territory laws. Each State and Territory has adopted requirements that animal research and teaching be conducted in accordance with the

'Code of Practice for the Care and Use of Animals for Scientific Purposes'. The Code is sponsored by the [National Health and Medical Research Council](http://www.nhmrc.gov.au/publications/synopses/ea16syn.htm) (<http://www.nhmrc.gov.au/publications/synopses/ea16syn.htm>) , and endorsed by other scientific and academic bodies, and reviewed by representatives of government, scientists and animal welfare organisations.

The Australian system relies heavily on the consideration of animal research and teaching proposals by institutional 'Animals Ethics Committee' (AECs). The makeup and conduct of AECs is governed by the Code of Practice, and State/Territory legislation requires all proposals be approved by the AECs and overseen by agents for the AEC. The AECs are appointed by the institutions, and are variable in their effectiveness – particularly in their assessment of the justification of the research/teaching, and the procedures permitted on animals. Animals Australia has successfully lobbied for 'independent 3rd-party' reviews of the performance of AECs, and most State/Territory Governments are moving to implement an 'outside' assessment at least once each 3 years.

A key component of the Code is that proposals for the animal use should indicate full consideration of that are called the 'R's'. These are the principles of Reduction, Replacement and Refinement which have been adopted in many countries as the benchmark procedures aimed at minimising the use of animals in research.

- **Reduction:** to reduce the number of animals used to as few as possible.
- **Replacement:** to use alternative non-animal methods whenever they are available.
- **Refinement:** to refine all procedures to ensure that as little pain and stress as possible is experienced by the animals.

A good document to show how to search for 3Rs issues is available [here](http://www.dpi.vic.gov.au/dpi/nrenfa.nsf/93a98744f6ec41bd4a256c8e00013aa9/cc20c056040dc4adca25731a001845c3/$FILE/Weblinks.pdf). ([http://www.dpi.vic.gov.au/dpi/nrenfa.nsf/93a98744f6ec41bd4a256c8e00013aa9/cc20c056040dc4adca25731a001845c3/\\$FILE/Weblinks.pdf](http://www.dpi.vic.gov.au/dpi/nrenfa.nsf/93a98744f6ec41bd4a256c8e00013aa9/cc20c056040dc4adca25731a001845c3/$FILE/Weblinks.pdf))

For information on the system of regulation of animal use in research and teaching for each State/Territory [click here](http://www.daff.gov.au/animal-plant-health/welfare). (<http://www.daff.gov.au/animal-plant-health/welfare>)

Reform is needed

Change is overdue. Animals should not be viewed as mere tools for research and education. A commitment by governments, research and educational institutions and the community is required to bring about a radical change in methodology in research and teaching to reduce and subsequently eliminate the use of animals in these areas.

Whilst any research on animals continues, further steps are needed to:

1. place the onus on the researcher to prove that no non-animal alternatives exist and that the experiment has not already been conducted (either in Australia or in any overseas country)
2. eliminate pain and suffering caused by the research process
3. effect a significant annual reduction in the number of animals used in research and teaching, and
4. develop, validate and adopt non-animal techniques in research and teaching

Further information

- [The Australian Association for Humane Research](http://www.aahr.asn.au/index.html) (<http://www.aahr.asn.au/index.html>)
- [Medical Advances Without Animals Trust](http://www.mawa.asn.au/) (<http://www.mawa.asn.au/>)

- Published studies, reviews and reports on animal experimentation compiled by [Australian veterinarian Dr Andrew Knight](http://www.animalexperimentfacts.info/studies/studies.htm) (<http://www.animalexperimentfacts.info/studies/studies.htm>)
- [Physicians Committee for Responsible Medicine](http://www.pcrm.org/resch/) (<http://www.pcrm.org/resch/>)
- [Fund for Replacement of Animals in Medical Experiments \(FRAME\)](http://www.frame.org.uk/) (<http://www.frame.org.uk/>)
- [InterNICHE is the International Network for Humane Education.](http://www.interniche.org/index1.html) (<http://www.interniche.org/index1.html>)
- For the alternatives to animals in teaching, and a good place for conscientious objectors to seek assistance, visit [Learning Without Killing.](http://www.learningwithoutkilling.info/) (<http://www.learningwithoutkilling.info/>)
- For details of which products are not tested on animals visit [Choose Cruelty Free.](http://www.choosecrueltyfree.org.au/) (<http://www.choosecrueltyfree.org.au/>)
- Australian Government sites - Commonwealth Government – access to all the animal welfare sites of each State and Territory, and relevant legislation; [click here.](http://www.daff.gov.au/animal-plant-health/welfare) (<http://www.daff.gov.au/animal-plant-health/welfare>)
- Some good State specific sites include:
 - [New South Wales](http://www.animaethics.org.au/reader/6) (<http://www.animaethics.org.au/reader/6>)
 - [Victoria](http://www.dpi.vic.gov.au/dpi/nrenfa.nsf/LinkView/7EB3AD34077BF913CA256D780013EFFC6166E48F26CF64DACA256EDD0082EDF1) (<http://www.dpi.vic.gov.au/dpi/nrenfa.nsf/LinkView/7EB3AD34077BF913CA256D780013EFFC6166E48F26CF64DACA256EDD0082EDF1>)
 - [Queensland](http://www2.dpi.qld.gov.au/animalwelfare/10608.html) (<http://www2.dpi.qld.gov.au/animalwelfare/10608.html>)

References

1. See the excellent brief review on the Physicians for Responsible Medicine website http://www.pcrm.org/resch/anexp/dangerous_med.html
 2. For more information, see the website page from the Human Genome Project at http://www.ornl.gov/sci/techresources/Human_Genome/posters/chromosome/cfr.shtml
 3. See the page at the website of the Therapeutic Goods Administration website <http://www.tga.gov.au/docs/html/chemtox.htm>
-

**Animals
Australia**
the voice for animals

Animals Australia
The Voice for Animals
www.AnimalsAustralia.org

37 O'Connell St,
North Melbourne
Victoria 3051, Australia

Ph: (613) 9329 6333
Fax: (613) 9329 6441
Freecall: 1800 888 584