

3. Animal Experimentation

Introduction

Uses of Experimental Animals

Animals Used

Welfare Concerns

Arguments Against Animal Experiments

Examples of Lack of Reliability

Alternatives to Animal Experiments

The 3Rs

Control of Animal Experiments

Use of Stray Animal in Research

Conscientious Objection

Cosmetics and Household Product Testing

Genetic Engineering

Primate Experiments

Further Resources

Introduction

It is estimated that over 100 million animals are used every year in laboratory experiments worldwide, with over 12 million animals used in the EU. The types of experiments carried out on animals include: fundamental research (search for knowledge e.g. physiology); biomedical research (medical aim e.g. using animal 'models' for human diseases); product testing (e.g. household products); education and training (e.g. school dissection) and warfare research. A wide variety of animal species are used in these experiments including cats, dogs, rats, mice, guinea pigs, rabbits, fish, birds, primates (monkeys) and other animals. Rats, mice and rabbits are used in a large proportion of laboratory experiments, mainly because they are easy to handle and cheap to keep.

Animal protection societies have different views and approaches to animal experimentation issues ranging from abolitionist (believing that animal experiments are ethically wrong, as well as misleading) to welfarist (trying to improve the conditions and treatment of experimental animals). However, although their views appear to differ greatly, they are closer aligned when examined in more detail. For example, most welfarists would oppose any experiments that cause suffering (whether in capture/breeding/rearing, confinement, handling or the procedure itself). Both groups would support the '3Rs' approach (Replacement; Reduction; Refinement), but the abolitionists would of course favour complete replacement whereas welfarists would view reduction and refinement as steps along the way to complete replacement.

Uses of Experimental Animals

Animals are used for a wide range of experimental purposes including: -

- Fundamental research (search for knowledge e.g. physiology)
- Biomedical research (medical aim e.g. using animal 'models' for human diseases)
- Product testing (e.g. household products)
- Education and training (e.g. school dissection)
- Warfare research

Animals Used

A wide variety of animal species are used in these experiments including cats, dogs, rats, mice, guinea pigs, rabbits, fish, birds, primates (monkeys) and other animals. Rats, mice and rabbits are used in a large majority of all experiments, mainly because they are easy to handle and cheap to keep.

Animals are used from a variety of sources, including: -

- Purpose bred (in breeding establishments)
- Wild caught (caught from the wild and transported to laboratories)
- Stray (strays (especially dogs and cats) are used for research in some countries)

Welfare Concerns

There are many welfare concerns connected to animal experimentation. These include: -

➤ **Housing**

Small cages

Often single housing

Often barren

(Needing environmental enrichment i.e. to alter their environment so as to allow more normal behaviour and provide for 'psychological' needs).

➤ **Procedures**

Pain (sometimes with no anesthetic) and fear

Handling

Euthanasia (humane 'endpoint')

Also the destruction of animals bred and not used, and killed

➤ **Sourcing**

Either capture from the wild or breeding

Transport (sometimes long journeys e.g. by air)

Arguments Against Animal Experiments

Arguments used by those opposed to the use of animals in experiments include the following: -

- Exaggerated role of animal experiments in medical progress
- Animal experiments are misleading/bad science
- The role of clinical research (need to test on people at certain stage)
- Money better spent elsewhere – e.g. public health improvements would be a better investment
- Immoral – it is speciesism to accept the use of animals in this way, but consider human use immoral
- Animal rights arguments (animals have an intrinsic value – they are not ours to use in this way)

Examples of Lack of Reliability

Drugs such as aspirin and paracetamol, commonly used to treat people, are highly poisonous to cats.

Alexander Fleming, who discovered penicillin, originally discounted its therapeutic qualities because the rabbit he tested it on died. It was only many years later when, in desperation, he gave it to a human patient, that he discovered it killed infection in people.

The introduction of blood transfusions and of corneal transplants is cited as being delayed for over 80 years by misleading animal tests. The breast cancer drug tamoxifen was designed as an oral contraceptive. It is a contraceptive in rats, but in women it has the opposite effect. It is now used in the treatment of breast cancer, despite causing cancer in rats in some studies.

On the other hand, each year drugs that were passed safe in animal tests are withdrawn after causing serious side effects, and even deaths, when given to people. Adverse drug reactions are the fourth leading cause of death in the Western world, killing over 100,000 people every year in the US alone. Thalidomide, Opren, FIAU and Eraldin were all drugs that caused serious (often fatal) side effects in humans, which were not foreseen by animal experiments. In December 1997 the diabetic drug, troglitazone, was withdrawn from sale after only three months. It had caused 130 cases of liver failure and 6 deaths yet had passed all animal tests.

After a project using 18,000 mice, terofterin was used to treat acute childhood leukaemia, but the children died more quickly than if they had not been treated at all.

According to *Hospital Doctor* journal, only 1 per cent of adverse drug reactions are detected in trials. This is partly because common symptoms such as nausea, dizziness, headaches and visual disturbance, are essentially impossible to detect in animals. Furthermore, the lives of commonly used laboratory animals are up to 66 times shorter than a human being - making it difficult to predict potential long-term side effects.

Alternatives to Animal Experiments

There are many alternatives to animal experiments including: -

- Cell, tissue and organ cultures
- Epidemiological studies
- Human volunteer studies
- Clinical research
- Computer and mathematical modeling

Such techniques can relate directly to humans rather than attempting to extrapolate results across species. Supporters of these techniques would say that they take into account the crucial differences between species that occur at the cellular level. It is these differences that cause variations in the reaction of species to drugs and vaccines.

The 3Rs

The 3Rs is a concept introduced by Russell and Burch in 1959. It stands for: 'Reduction, Refinement, Replacement': -

- Reduction – of the number of tests
- Refinement – of the severity of tests and the species used
- Replacement – of animal tests (being the ultimate aim)

This three-pronged approach seeks to scrutinise animal experiments with a view to minimizing their impact and ultimately replacing them (with non-animal methods). The

BUAV wants abolition i.e. replacement, with reduction being the path to this. Animals are often used in tests to find refinement methods...

Control of Animal Experiments

Most 'developed' countries control animal experiments through legislation. However, enforcement varies greatly from country-to-country. Some countries allow 'self regulation' e.g. using 'ethics committees' consisting of members employed by the institutions using animals ('self-policing'). Others have governmental control, including regulatory approval for painful experiments and government inspection visits. However, undercover investigations have shown that even such systems are no guarantee against breaches in the law and cruelty.

Use of Stray Animal in Research

The Council of Europe Convention for the Protection of Vertebrate Animals Used for Experimental and Other Scientific Purposes (Article 21) states that: -
'Straying animals of a domesticated species shall not be used in (experimental) procedures.' This is also forbidden in the EU.

Arguments against such a use of strays in research include: -

- The laboratory is an alien environment for animals raised as pets so 'refinement' demands use of purpose bred animals less likely to suffer in laboratory environment
- To create such a 'market' would encourage pet theft
- Unknown health and history of stray may compromise experimental validity
- Strays often transported through several dealers between pound and laboratory, resulting in extra stress
- Pets enjoy special moral status due to their ties with human companions: are the lives of laboratory dogs and pet dogs not necessarily equal?

The use of purpose bred animals also adds accost element to experimentation that may deter some experimenters.

Conscientious Objection

It is important that students are able to 'opt out' of sections of their course using experimental animals if they are ethically opposed to such use. Also, students should not be disadvantaged in exams or in passing their course if they opt out of the animal use.

The organisation Interniche was established particularly to help students (and organisations helping students) with this dilemma. It has a whole range of alternative resources that can be used in place of experiments, as well as many experiences that can help on this issue.

Cosmetics and Household Product Testing

Despite huge public opposition, thousands of animals are still used every year in European laboratories to test cosmetic and household products and their ingredients. This includes tests for skin or eye irritation, skin allergy, poisoning studies, genetic damage, and birth defects. These procedures lead to completely unnecessary pain and suffering to animals, producing results that can not even be interpreted with confidence because of fundamental differences in the way that species react to chemicals.

Thousands of ingredients have already been shown to be safe and harming animals to develop more is simply unjustifiable. Where new ingredients are to be used, investment and support for cutting-edge non-animal testing methods is crucial.

Animal protection societies unite to agree that there can be no justification for inflicting suffering on animals solely to satisfy human vanity. The EU has introduced a phased ban on 'animal testing and sales' of cosmetic and toiletry products, but such testing still takes place in many countries throughout the world.

Genetic Engineering

Genetic engineering is the greatest growth area in animal experimentation. It involves the manipulation of genes – either within or between species (to produce transgenic animals).

Genetic engineering has a unique capacity to cause immense suffering and harm to animals. Many of the techniques used are poorly understood and produce unpredictable results. Hundreds of animals may be 'created' in an attempt to obtain a transgenic individual with a particular desired set of traits. Some of these animals may suffer severe, even lethal unexpected effects, such as the development of tumours, brain defects, limb and skull deformities, infertility, arthritis, diabetes and other metabolic disorders.

As well as such 'accidental' (although foreseeable) types of suffering caused by genetic engineering, suffering may also arise as a deliberate consequence of the research. For example, animals have been genetically engineered to act as models of painful or distressing human diseases such as cancer, Alzheimer's and Parkinson's disease.

Scientists have also attempted to genetically engineer farm animals in order to make them grow faster, bigger or leaner. However, selective breeding, let alone genetic modification, of farm animals has caused a wealth of animal welfare problems, and many believe that farm animals have already been pushed beyond their capacity for production.

Other issues connected with genetic engineering include: -

- Cloning
- Patenting
- Xenotransplantation (transplanting animal organs or tissues to humans)
- Gene pharming

Primate Experiments

Primate experiments are particularly controversial. This is for a number of reasons including the remarkable mental abilities of primates and their similarity to humans. Many organizations campaign for an end to primate experiments (the 'zero option'). There is a pan-European zero option campaign carried out by the European Coalition to End Animal Experiments (and even Michael Balls, the first head of the EU's European Centre for the Validation of Alternative Methods (ECVAM) supported the zero option).

Thousands of chimpanzees have been used in experiments to find a cure for AIDS, but it is now known that, whilst it kills humans, AIDS does not kill chimpanzees (they do not develop full-blown AIDS).

Further Resources

🌐 Web Sites

British Union for the Abolition of Vivisection

<http://www.buav.org/>

National Anti-Vivisection Society

<http://www.navs.org.uk/>

Fund for the Replacement of Animals in Medical Experiments

<http://www.frame.org.uk/>

Altweb

<http://altweb.jhsph.edu/>

Australian and New Zealand Council for the Care of Animals in Research and Teaching

<http://www.adelaide.edu.au/ANZCCART/>

International Network for Humane Education

<http://www.interniche.org/>

Dr Hadwen Trust

<http://www.drhadwentrust.org.uk/>

American Anti-Vivisection Society

<http://www.aavs.org/>

Lord Dowding Fund

<http://www.ldf.org.uk/>

European Coalition to End Animal Experiments

<http://www.eceae.org/index.php>

American Anti-Vivisection Society

<http://www.aavs.org/intro.html>

Uncaged Campaigns

<http://www.uncaged.co.uk/>

Books

Animal Experimentation: The Consensus Changes

By: Gill Langley

Publisher: Chapman & Hall

ISBN: 041202411X

Why Animal Experiments Must Stop: And How You Can Help Stop Them

By: Vernon Coleman

Publisher: Green Print

ISBN: 1854250604

Vivisection or Science? An Investigation into Testing Drugs and Safeguarding Health

By: Pietro Croce
Publisher: Zed Books
ISBN: 1856497321

Victims of Science: The Use of Animals in Research

By: Richard D. Ryder
Publisher: Open Gate Press
ISBN: 0905225058

The Cruel Deception: Use of Animals in Medical Research

By: Robert Sharpe
Publisher: HarperCollins
ISBN: 0722515936

Vivisection Unveiled: An Expose of the Medical Futility of Animal Experimentation

By: Tony Page
Publisher: Jon Carpenter Publishing
ISBN: 1897766319

Sacred Cows and Golden Geese: How Animals Are Harmed by Animal Experimentation

By: Jane Goodall (Foreword), C. Ray Greek, Jean Swingle Greek
Publisher: Continuum International Publishing Group - Academi
ISBN: 0826412262

Campaigning Against Cruelty: Hundred Year History of the British Union for the Abolition of Vivisection

By: Emma Hopley
Publisher: BUAV
ISBN: 1870356160