

CHAPTER 6

ANIMAL EXPERIMENTATION

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1 BACKGROUND

Widespread animal experimentation and public resistance against vivisection started in the nineteenth century. Vivisection is another term for animal experimentation; it literally means the cutting up of living animals. During the mid-twentieth century the number of animals used in research and testing increased drastically, but by the early 1980s, numbers started to decline due to public pressure and financial restraints.

Today, it is estimated that over 100 million animals are used every year in laboratory experiments worldwide, with about 11 million animals used in the European Union (EU). Many species are used in experimentation, including mice, rats, guinea pigs, rabbits, fish, birds, cats, dogs and primates. Rodents and cold-blooded animals accounted for over 75% of the animals used in experiments in the EU in 2002. Research animals can be bred in purpose-built breeding establishments, caught from the wild and transported to laboratories or obtained from stray populations.

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

2 TYPES OF ANIMAL EXPERIMENTS

The main types of experiments carried out on animals include: fundamental research (the search for knowledge such as physiology); biomedical research (using animal models for human diseases); genetic engineering (to produce transgenic animals for example); product testing (household products for example); and education and training (such as school dissection).

Fundamental research accounts for the greatest number of animals used. Examples of this type of research include how memory works in the brain, or how the liver deals with toxic substances. Proponents of animal use claim that fundamental research often contributes indirectly to the development of new active ingredients and therapies. However, anti-vivisectionists believe that the contribution of fundamental research to new drugs and treatments is grossly overestimated.

Biomedical research is the second largest area of animal experimentation; it is devoted to the study of the prevention and treatment of disease, and the genetic and environmental factors related to disease and health.

The development of human and veterinary medicine has traditionally relied on animal experimentation to some degree, and tests able to diagnose and control disease also involve animal experimentation. However, alternative in-vitro methods (using cells, tissues and organs) over the past two decades have resulted in fewer animals being required for this purpose.



Anti-vivisectionists believe that rather than relying on biomedical research, more focus should be placed on preventative medicine and the promotion of healthier lifestyles. Less than 10% of diseases are congenital (inherited), and anti-vivisectionists believe that the emphasis of research should be on epidemiology, human clinical trials and other non-animal alternatives.

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. Approximately 150-200 animals are required in an attempt to obtain a transgenic individual with a particular set of desired traits. These animals are then used to establish a particular genetic line with these traits.

Genetic engineering can have severe and unexpected side effects, such as the development of tumours, brain defects, limb and skull deformities, infertility, arthritis, diabetes and other metabolic disorders. Suffering can 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. Other issues connected with genetic engineering include cloning, patenting and xenotransplantation (transplanting animal organs or tissues to humans).

Product testing: Testing chemicals for toxic risks is often required, despite the likelihood of exposure being so low that the minimal toxic dose will not be reached in real life. A more realistic approach, which would require less testing and thus reduce the number of animals, is to first assess exposure levels (de Boo and Hendriksen, 2005). This is referred to as the reversed toxicology approach.

In 2003 the European Commission adopted a proposal for a new EU regulatory framework for chemicals, called REACH (Registration, Evaluation and Authorisation of Chemicals). This proposal aims to test 30,000 chemicals that are already in use, and would require 4 to 20 million test animals (the number depends on different scenarios). Many animal protection organisations have been working to lobby national and EU authorities to implement non-animal methods. The REACH testing programme has been criticised by experts as being cumbersome, expensive, and unlikely to achieve its aims. It took 11 years to produce risk assessments for 140 chemicals, yet REACH proposes that industry produce similar data for 30,000 chemicals, in the same timescale.

Every year approximately 35,000 animals in Europe and millions across the world, are subjected to intense pain and suffering in experiments to test cosmetics products and their ingredients. Perfumes, shampoos, toothpastes, hair dyes, skin creams, makeup, deodorants and cleaning products are tested on animals. 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 of cosmetic and toiletry products, and testing for this purpose will be prohibited from 2012. However such testing still takes place in many countries throughout the world.

Education and training: Hundreds of thousands of animals are experimented on, killed and dissected each year in schools and universities worldwide. Defenders of animal use in education claim that 'hands-on' experience is the best way to learn and that providing practical classes with animals is interesting for students. Opponents – or '**conscientious objectors**' – question the (lack of) ethical justification and the educational usefulness of using animals.

It is important that students are able to 'opt out' of sections of courses that use experimental animals, if they are ethically opposed to such use. Also, students should not be disadvantaged in exams or in passing their courses if they decide to opt out. Organisations and websites such as





InterNICHE, European Resource Centre for Alternatives in Higher Education (EURCA) and www.learningwithoutkilling.info were established particularly to help conscientiously objecting students. They have a wide range of alternative resources that can be used in place of animal experiments.

Studies have shown that students trained using humane alternatives perform at least as well as students trained using animals. 36.7% (11/30) of studies across all educational levels demonstrated that students taught using humane alternatives achieved superior learning outcomes or achieved equivalent results more quickly. 56.7% demonstrated equivalent educational efficacy, and only 6.7% demonstrated inferior educational efficacy.

Using humane alternatives in education will likely influence students who continue in research, as they will think in terms of alternatives from the outset, incorporating the '3Rs' when they plan experiments. The concept of the '3Rs' will be discussed further in a subsequent section.

3

LEGISLATION AND TESTING GUIDELINES

Animal experimentation is regulated by national and international legislation. The level of legal protection accorded to animals, as well as the regulations concerning institutional licenses, inspectors and enforcement, varies greatly between countries.

Animal use within the European Member States is regulated by the Council Directive (86/609/EEC) on the Approximation of Laws, Regulations and Administrative Provisions of the Member States Regarding the Protection of Animals Used for Experimental and Other Scientific Purposes, which was adopted in 1986. This Council Directive is currently being revised, and the new Directive will hopefully include specific reference to alternative methods to animal use.

The European Convention for the Protection of Vertebrate Animals used for Experimental and Other Scientific Purposes (1986), which has been ratified by Member States to the Council of Europe, also regulates animal experimentation in the EU.

Within the EU, national legislation governing animal experimentation generally reflects the regulations in the European Council Directive and the Council of Europe Convention, although there are slight variations. The Dutch Act on Animal Experimentation and the British Animals (Scientific Procedures) Act 1986, for example, are stricter than the Council Directive.

Testing guidelines: Most animal experiments that are carried out are not legally required. However, regulations regarding the testing of substances (chemicals) and biological products (such as vaccines) do stipulate a requirement for animal experiments. There are several European and international guidelines, such as the Organisation for Economic Cooperation and Development (OECD), which establishes Test Guidelines on product testing on animals. Proposals to update Test Guidelines need to demonstrate better science or animal welfare advantages.



The European Pharmacopoeia lists the various types of substances that require animal testing and also mentions some alternatives to the use of animals in potency tests for biological preparations. The USA and Japan have other Pharmacopoeia guidelines resulting in discrepancies in requirements and therefore duplication of tests in different parts of the world. The International Conference on Harmonisation between the EU, USA and Japan is held regularly to reach mutual agreement on testing regulations.

With regard to other products, such as household products, the law usually requires that a company submit a certain amount of test data, of both ingredients and the end product, before a product can be marketed. The method by which that test data must be acquired is not specifically prescribed. However, data obtained from animal experimentation is regarded as the 'gold standard' by the regulatory authorities and is thus used as the standard reference.

Although many animal models have never been properly validated, many alternative techniques have not been validated either or they are not available on a commercial basis, and this argument is used to defend the whole system of product development, regulation and marketing of products using animal experiments.

The law, test guidelines and the attitude of regulatory authorities all need to change in order to move away from animal experiments and to embrace more modern, non-animal test methods.



ANIMAL WELFARE AND ETHICAL REVIEW COMMITTEES

4

More and more countries are establishing Ethical Review Committees (ERS) or Institutional Animal Care and Use Committees (IACUCs). These committees review research proposals and assess them in light of the benefits to science and society and the costs to the animals. In addition, the efforts of the researchers to search for alternative methods that do not use animals, use fewer animals, or use methods that cause less suffering to animals, are also assessed.

ERCs are composed of different experts: researchers, ethicists, 'alternatives' experts, animal welfare advisors, laboratory animal specialists and sometimes laypersons. Their role is to objectively assess and discuss research proposals and suggest ways in which the proposal can be improved to minimise animal suffering. Most committees do not have the authority to grant licenses or to stop experiments from happening, but their advisory role is taken seriously in most countries. It is believed that because of the existence of ERCs, the number of animals used has decreased over the past decades; proposals are critically screened, and some researchers may decide not to submit proposals that have little merit.



CONCERNS ASSOCIATED WITH ANIMAL EXPERIMENTATION

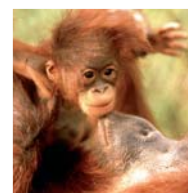
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Laboratory animal welfare can be compromised as a consequence of both living conditions and procedures, which may cause slight, moderate or severe suffering.

Some defenders of animal research claim that life in the laboratory is not so bad, as the physical environment is properly controlled: temperature, humidity, lighting, food, water, absence of predators and disease. However, it is impossible to provide laboratory environments that stimulate an animal to perform its full behavioural repertoire.

Most housing is small and barren, and animals need some level of environmental challenge to avoid boredom and apathy. Welfare concerns exist with both individual and group housing, through either isolation or overcrowding. This may result in self-inflicted damage, or when housed with incompatible cage mates – aggression leading to injuries.

There are methods to improve the welfare of laboratory animals, including environmental enrichment. Enrichment should not be regarded as a 'luxury', but as a basic need.



Most procedures cause fear or stress to some extent. Anaesthesia and analgesia (pain relief) must generally be administered to animals used in painful procedures; however, these are not always provided as it is either considered unnecessary or researchers decide that it may conflict with the results.

Even common laboratory routines, such as handling, injection, blood collection and gavaging (inserting a tube into an animal's mouth and stomach) cause the animals stress. The responses of animals to an experienced handler and an inexperienced handler often differ, suggesting that training of laboratory staff in humane treatment of animals is important. Furthermore, stressed animals show abnormal physiological parameters, and may show behavioural changes that influence the scientific results, often in a negative way.

Laboratory animals are usually killed after the experiment is over. As long as it is carried out humanely and effectively, killing is not an animal welfare issue; it is an ethical issue. Related to the killing of experimental animals is the destruction of animals that are bred, but not used. The number may be up to 50% of the animals reported in the official statistics.

Sourcing: The majority of laboratory animals are bred specifically for experimentation. However some animals are captured from the wild or obtained from stray animal populations. The use of strays is prohibited in the Council of Europe Convention for the Protection of Vertebrate Animals Used for Experimental and Other Scientific Purposes (Article 21), which states that: 'Straying animals of a domesticated species shall not be used in (experimental) procedures.'

Stakeholders: The public is often unaware that animal research is funded by different stakeholders. Commercial companies, such as Procter & Gamble, Unilever and Colgate-Palmolive, currently carry out more than half of animal experiments. Many medical research charities, such as cancer and heart research organisations, also fund research that uses animals. And, without even knowing it, taxpayers are paying for them, too. Many governments use tax money to fund animal experiments in national laboratories or in university science departments, as does the European Union.

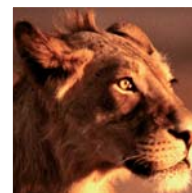
Transparency: Most research is hidden from view and the public domain. Proposals screened by ERCs occur behind closed doors, and although numbers of animals used are broken down to figures showing the purpose of the experiment and species used, they are not broken down for individual experiments. Inspection reports are not open to the public and often the amounts of and sources of funding are unknown. In other words, there is no real transparency around animal experimentation.

Contribution of animal research to human health: Most animal researchers truly believe that their research contributes to the advancement of human health. Anti-vivisectionists claim that they too want to advance human health, but not at the expense of non-human animals. They say the role of animal research in the progress in human health is exaggerated. They don't deny the fact that animal research has contributed to breakthroughs in human health in the past, but they say that the developments did not necessarily depend on the use of animals. Most of these discoveries were based on human clinical observation, and then were later tested in the laboratory on animals to 'validate' the results from human observations. The role of clinical research, where drugs are tested on humans before they are released on the market, is still crucial today.

Validity of animal data: The validity of animal experiments is beginning to be questioned. Some toxicologists, for example, admit that the way some chemicals affect animals differs from the way they affect humans. Although animals show many similarities to humans with regard to, for example physiology, hormones and capacity to feel pain, at the level of cellular metabolism there are important differences.



For example, aspirin is so toxic for animals that it causes birth defects in mice and rats, and cats can only take about twenty percent of the human dosage every third day, otherwise they will die. Ibuprofen, another painkiller for humans, causes kidney failure in dogs at low doses. Similarly, penicillin was originally discounted because although it killed bacteria in a petri dish, it didn't work in rabbits. It was only many years later when, in desperation, Alexander Fleming gave it to a human patient, that he discovered it killed bacterial infection in people.



Currently some studies are systematically and critically looking at the contribution of primates in general and chimpanzees in particular to advancements in biomedical research. The ethical argument against the use of our closest relative in biomedical research should be sufficient; however, scientific data discrediting the primate model for human disease may strengthen the case. For instance, it is now known that chimpanzees infected with the AIDS virus do not develop AIDS symptoms like humans.

A resolution to end the use of primates in biomedical research was signed by WSPA and 25 other animal protection organisations at the 5th World Congress on Alternatives and Animal Use in the Life Sciences in Berlin in August 2005.

There are not only differences between animals and humans, but also between different species, between different genders and between age groups of the same species. The predictability of animal data for humans is questionable.

IN THE WORDS OF DR RALPH HEYWOOD, PAST SCIENTIFIC DIRECTOR OF HUNTINGDON RESEARCH CENTRE IN THE UK (A MAJOR USER OF ANIMALS FOR RESEARCH): "THE BEST GUESS FOR THE CORRELATION OF ADVERSE REACTIONS IN MAN AND ANIMAL TOXICITY DATA IS SOMEWHERE BETWEEN 5% AND 25%."

IN OTHER WORDS, ANIMAL TESTS, AT BEST, WILL REVEAL ONE IN FOUR HUMAN DRUG SIDE-EFFECTS. HOWEVER, WE WILL NOT KNOW WHICH OF THE FOUR OCCURS IN PEOPLE UNTIL WE HAVE TESTED THE DRUG ON SEVERAL PEOPLE.

Detection of adverse side-effects: Each year drugs that were certified safe in animal tests are withdrawn from the market 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 identified in 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 six deaths, although it had passed all animal tests. Furthermore, the arthritis drug Vioxx, caused such serious side effects that the pharmaceutical company (Merck) had to settle lawsuits of over \$250 million. However, research defenders claim that the figures quoted for drugs taken off the market and the number of people suffering side-effects are exaggerated.



Some sources estimate that only one percent of adverse drug reactions are detected in animal 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 life, making it difficult to predict potential long-term side-effects.

6

ALTERNATIVES TO ANIMAL USE – 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 of minimising their impact and ultimately replacing them with non-animal methods.

The concept of the 3Rs is not explicitly mentioned in European legislation, but its principles are integrated into Article 7, paragraphs 2–4, of the Council Directive 86/609/EEC (1986):

Article 7

Paragraph 2: An experiment shall not be performed if another scientifically satisfactory method of obtaining the result sought, not entailing the use of an animal, is reasonably and practicably available.

Paragraph 3: When an experiment has to be performed, the choice of species shall be carefully considered and, where necessary, explained to the authority. In a choice between experiments, those which use the minimum number of animals, involve animals with the lowest degree of neurophysiological sensitivity, cause the least pain, suffering, distress or lasting harm and which are most likely to provide satisfactory results shall be selected. Experiments on animals taken from the wild may not be carried out unless experiments on other animals would not suffice for the aims of the experiment.

Paragraph 4: All experiments shall be designed to avoid distress and unnecessary pain and suffering to the experimental animals.

Developing and implementing replacement alternatives should be the ultimate aim. Reduction strategies can be applied in situations where animals are still used; aiming at the smallest number of animals that still leads to a scientific result. Finally, refinement alternatives may not directly lead to a reduction; however, the consequences of refined procedures may have a positive impact on animals.

a) Replacement

Some examples of replacement alternatives include:

Preventative medicine: The best alternative method is preventative medicine, which prevents disease and promotes health. In a strict sense, this includes vaccinations against disease, and, as we have seen before, in the production of vaccines animals are required for safety and potency testing. However, the wider definition of preventative medicine includes a healthy lifestyle.

Computer databases and simulations: Databases store information about existing chemicals, including the effects of certain drugs, human clinical research and epidemiological data. If databases are shared, a lot of duplicate tests could be avoided.

Computers have also contributed to breakthroughs in simulation and virtual reality research. This is called *in silico* research (in computers), as opposed to *in vivo* (in the living organism), and *in vitro* (in cell and tissue culture). Cells, tissues and whole organs are simulated either directly in computer programmes (such as virtual dissection programmes) or in mannequins (physical models). For example, a gastro-intestinal model has been developed that simulates the stomach, small intestine and colon, which can be used for drug testing, drug-food interactions and microbiological studies.





Synthetic model mannequins do not necessarily need computer input. An example is a synthetic skin model, called 'Corrositex', which can be used in place of animals to test whether a substance corrodes or burns the skin. This alternative has been accepted in place of the real skin tests performed on animals.

In vitro research involves the study of cells, tissues and organs, which are isolated outside the living animal or human body, and which are studied in an artificial environment (such as in a test tube). Established cell lines are derived from animals in the past and no more animals are required in later stages, while primary tissue or organs are derived from animals that are purposely killed for their tissue or organs. Human tissue banks are now being developed in some countries, but there are many legal and ethical obstacles, which prevent easy implementation. Human donors are still a minority and more donors are badly needed. More and more scientists believe that the future of testing substances is *in vitro*.

Chemicals (such as ingredients of cosmetics or household products) are tested for eye irritation. Alternative methods to the traditional eye irritation test (Draize test) are being developed, using isolated rabbit or chicken eyes. This means that animals are killed for a primary organ (eye) and don't have to suffer in the test itself.

Cells, tissues and organs are tested in test tubes, or Petri dishes, which contain a 'medium'; a mixture of substances in which cells are able to grow. Often these media contain Foetal Bovine Serum (FBS), derived from calves when still in the uterus of the cow. This blood serum promotes cell growth. Some experts say that withdrawing blood causes some suffering to the unborn calf, although Professor David Mellor claims that fetuses (animal and human) do not feel pain before they are born and that their level of awareness is very low. The most ethical solution for *in vitro* research would be to use serum-free media and to test on human cells, tissues and organs.

If replacement is defined as a 'technique for any scientific method employing non-sentient material', then primary animal cells and cell lines for *in vitro* research both replace and reduce the number of animals.

Autopsies and pathology: While the role of animal experimentation in human medical advancement is overestimated, the role of autopsies (research on dead human bodies) has contributed tremendously to important medical discoveries. For example, human blood circulation differs from that in animals. In 1628 physician William Harvey's autopsies proved that blood circulated from the right heart through the lungs back to the left heart and into the arteries and veins, which differed from the explanation based on animal dissection.

Epidemiology is the study of increased incidence of disease or disorders within a population. All factors are considered, such as lifestyle, environment, occupation, gender, age, family related diseases etc. Data from thousands of patients over a widespread area can be compared with each other and increased incidences of disease can be detected. For example, people who smoke are five times as likely to develop cancer. People who live near a chemical waste factory have a five times higher chance of developing cancer, and, if these people also smoke, the interaction between environment and smoking makes them 30 times as likely to develop cancer.

There are also epidemiological models, based on mathematics that can explain why certain diseases develop in one place and not in another. This tool can be used as part of preventative medicine, but is unfortunately under-utilised by researchers.

Human clinical trials: When test data have provided a reasonable presumption of the safety of substances or devices, clinical trials are scheduled in which human (paid) volunteers undergo a treatment protocol for several days, weeks or sometimes even months. According to the Nuremberg

Code, drawn up after World War II as a result of Nazi atrocities, any experiments on humans “should be designed and based on the results of animal experimentation.” The Declaration of Helsinki, adopted in 1964 by the 18th World Medical Assembly and revised in 1975, also states that medical research on human subjects “should be based on adequately performed laboratory and animal experimentation.” Human trials must be completed for legal approval of new devices, drugs or procedures.

Anti-vivisectionists would like to see more human clinical trials after substances have been thoroughly tested *in vitro* or by using computer simulations. Human clinical trials should never be indiscriminate, using people against their will or without a proper ethical justification – as some extremists have proposed that it is justified to use prisoners for this purpose.

Clinical research: Linked to both epidemiology and human clinical trials is clinical research. Sick patients are observed closely and all relevant data are collected to get a better idea of the development of a disease. When large groups of patients with the same disease are studied, results can be significant. Although there are differences between human individuals, the differences between animals and humans are even greater and therefore, it makes more sense to study existing patients than to induce sickness in animals to create an animal model for human disease.

Post-marketing drug surveillance: After a drug has been released on the market, physicians are asked to participate in a survey, which aims to study possible side-effects of the drug. Feedback is very important, because certain side-effects may be rare, but severe, and the more information the pharmaceutical company receives, the better the drug can be labelled. Sometimes the results of the surveillance lead to withdrawal of the drug as it may cause more harm than good.

Other technological and biomedical advancements: A recent development in biomedical research includes the use of stem cells, which are precursor cells or mother cells that have the capacity for both replication and differentiation, and for giving rise to various morphologically recognisable precursors of different blood cell lines. Human stem cell research is very promising, as no animals are required anymore and the cells have the potential to be used in different types of applications.

The problem with the development of alternative methods is that it takes a long time, especially the phase of ‘validation’. This requires new methods to be tried and tested in different laboratories and under different circumstances. Also, data from alternative methods are measured against known human data or data from animal research. The development and acceptance of alternative methods can take years, and meanwhile, this type of research is poorly funded, while animal experimentation is very well funded. Many animal protection groups argue that the money spent on animal research could be much better spent on preventative health care. Promoting a healthy lifestyle would save billions of dollars spent on research and patient treatment and care.

b) Reduction

Some examples of ‘Reduction’ alternatives include:

- Reducing the breeding surplus to decrease the total number of experimental animals
- Applying proper experimental design to ensure the minimum number of animals is used
- Applying appropriate statistics, so that fewer animals can be used, or the same number of animals can be used while more data are collected
- Sharing data and harmonisation between different countries with regard to testing regulations, so that tests are not duplicated
- Involving Ethical Review Committees for their expertise on how to advise on using fewer animals than proposed
- Conducting a literature search to review existing alternative methods to prevent duplicating protocols
- Reviewing testing guidelines and regulations on a regular basis to implement new methods that use fewer animals or that make the use of animals obsolete.



c) Refinement

Some examples of 'Refinement' alternatives include:

- Applying anaesthesia, analgesia or humane endpoints (ending suffering at an earlier stage)
- Promoting welfare by:
 - Enriching the environment: socially, by housing animals in groups; physically, by providing nesting material or hiding places; or food enrichment, for example, by scattering food in the cage or putting it on top of the cage, which makes it harder to obtain, stimulating more natural behaviour
 - Providing a reward after an animal has performed a task or cooperated with scientific procedures (for example presenting an arm for blood withdrawal)
- Education and training, which is very important, not only in raising awareness about the '3Rs' in general, but also in training people specifically in humane principles and techniques, including animal handling and basic procedures. Indeed, in some countries a basic level of training is required before scientists are allowed to perform procedures.

ANIMAL PROTECTION STRATEGIES

7

The animal protection movement has already used various strategies to fight against animal experimentation. The following are just some examples of what has been, and could be, done:

a) Campaigning and Lobbying

- Conducting high profile campaigns, such as media events, demonstrations etc., especially for bans on the worst excesses such as primate testing, cosmetics testing, cruel procedures etc.
- Investigations – mostly done undercover, and media exposés – working with television documentaries for maximum campaign impact
- Using the introduction and enforcement of animal protection legislation to ban worst excesses and to tighten controls and conditions for situations that cannot (yet) be banned
- Lobbying governmental authorities/politicians
- Bringing cases to court to test existing law
- Instigating joint campaigns between farm animal welfare and anti-vivisection groups on genetic engineering issues
- Running campaigns, which target the worst offenders and stakeholders of the worst offenders, such as shareholders, financiers, suppliers
- Campaigning for the release and re-homing of experimental animals
- Conducting literature reviews to systematically analyse existing information and the usefulness of the animal model for human health. The results can be published in peer reviewed scientific journals and used in campaigns.

b) Consumer Education

- Introducing/supporting labelling schemes for 'cruelty free' products, such as cosmetics, household products, pet foods
- Comparing and publicising the welfare credentials of different 'cruelty free' labels and exposing any misleading 'cruelty free' labels
- Comparing and publicising the 'cruelty free' credentials of different sales outlets, such as supermarkets, pharmaceutical chains etc.
- Working with media, especially documentaries to expose the issues and the practices of different companies
- Making information available in targeted publications, e.g. articles in lifestyle and consumer magazines, pet magazines etc.



'PARADISE LOST' — A BUAV CAMPAIGN

Each year throughout the world tens of thousands of monkeys are either caught in the wild or bred in captivity and then flown to laboratories around the world, predominantly as cargo on passenger airlines, to be used in experiments. Cramped conditions, inadequate ventilation, noise and extreme fluctuations in temperature can all contribute to suffering and death. Journeys can last up to three days and may involve at least two international flights and additional stopovers.

In 1991, the BRITISH UNION FOR THE ABOLITION OF VIVISECTION (BUAV) decided to embark on a daring and often dangerous investigation to follow the chain of supply from the tropical rain forests of Indonesia and the Philippines and the lush undergrowth of Mauritius, to the bare metal cages of the research laboratory. A BUAV undercover worker was placed in Shamrock (GB) Ltd, Europe's largest primate supply company (before its closure in June 2000) and Hazleton, a leading UK contract testing laboratory, while other investigators travelled to the main exporting countries to infiltrate the trapping network. In 1993 the BUAV also carried out investigations into the trade in primates in the Caribbean including St Kitts and Barbados. They documented the whole tragic picture, including:

- Cruel trapping
- Barren holding compounds
- Cramped cages and boxes
- 'Nightmare' journeys
- Laboratory conditions at the end

In 1992, the BUAV launched its powerful 'Paradise Lost' campaign to end the international trade in primates for research. The campaign covered three main areas:

- Wild capture
- Airlines campaign
- Undercover investigations

Their combination of shocking exposés, high-profile media work and concerted campaigning throughout Europe had far-reaching effects.

Since the launch of the BUAV's airline campaign in 1993, more than 100 airlines have refused to transport research primates, including many major carriers who were previously responsible for shipping thousands of monkeys to research laboratories every year. Some major suppliers have stopped importing and selling wild-caught monkeys. And countries are banning the export of wild-caught monkeys.

In March 1995, the British Government announced a ban on the use of wild-caught monkeys in research unless there was 'exceptional and specific justification' and introduced further administrative controls on the use of primates.

c) Formal Education

- Covering animal experimentation issues (including ethics and alternative methods) in school educational materials and programmes
- Covering animal experimentation issues in Veterinary University and other scientific curricula, and providing resources like WSPA's 'Concepts in Animal Welfare' syllabus

- Including animal welfare education in all vocational programmes covering animal experimentation and associated trades, such as animal breeding facilities.



FURTHER RESOURCES

Websites

Anti-vivisection Organisations

American Anti-Vivisection Society (AAVS)

www.aavs.org/

Animal Aid

www.animalaid.org.uk/viv/index.htm

British Union for the Abolition of Vivisection (BUAV)

www.buav.org/

European Coalition to End Animal Experiments

www.eceae.org/english/

Japan Anti-Vivisection Association (JAVA)

<https://www.java-animal.org/eng/index.htm>

National Anti-Vivisection Society (NAVS)

www.navs.org.uk/

New England Anti-Vivisection Society (NEAVS)

www.neavs.org/

Uncaged Campaigns

www.uncaged.co.uk/

Alternatives in Education

Association of Veterinarians for Animal Rights (AVAR)

www.avar.org/

European Resource Centre for Alternatives in Higher Education (EURCA)

www.eurca.org/

International Network for Humane Education (InterNICHE)

www.interniche.org/

Learning Without Killing – comprehensive information for students

www.learningwithoutkilling.info/

Norwegian Reference Centre for Laboratory Animal Science & Alternatives

http://oslovet.veths.no/dokument.aspx?dokument=80&mnu=about_us

Organisations Supporting the '3Rs'

Alternatives to Animal Testing (ALTEX)

www.altex.ch/hauptseite_e.htm



The Alternatives to Animal Testing Web Site (Altweb)

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

Animal Protection Institute

www.api4animals.org/

Animal Welfare Institute

www.awionline.org/

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

www.adelaide.edu.au/ANZCCART/

Dr Hadwen Trust

www.drhadwentrust.f2s.com/

Eurogroup for Animal Welfare

www.eurogroupanimalwelfare.org/

Europeans for Medical Progress (EfMP)

www.curedisease.net/

Fund for the Replacement of Animals in Medical Experiments

www.frame.org.uk/

Humane Society of the United States (HSUS)

www.hsus.org/animals_in_research/

Japanese Society for Alternatives to Animal Experiments

wwwsoc.nii.ac.jp/jsaae/index-e.html

Lord Dowding Fund

www.ldf.org.uk/

National Centre for the Replacement, Refinement and Reduction of Animals in Research

www.nc3rs.org.uk/

Netherlands Centre for Alternatives to Animal Use (NCA)

www.nca-nl.org/

Physicians Committee for Responsible Medicine (PCRM)

www.pcrm.org/

5th World Congress on Alternatives & Animal Use in the Life Sciences, Berlin, 21-25 August 2005

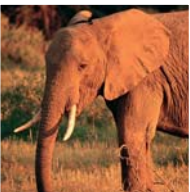
www.ctw-congress.de/act2005/

Organisations Advocating Animal Experimentation**Research Defence Society (RDS)**

www.rds-online.org.uk/

Seriously Ill for Medical Research (SIMR)

www.simr.org.uk/pages/avmyths/consensus.html



Journals

Alternatives to Laboratory Animals (ATLA)

www.frame.org.uk/atlafrn/atlaintr.htm

ALTEX – Alternatives to Animal Experiments

www.altex.ch/hauptseite_e.htm

Animal Welfare – the Journal

www.ufaw.org.uk/journal/Animal%20welfare.htm

Good Medicine (by PCRM)

www.pcrm.org/magazine

Laboratory Animals: The International Journal of Laboratory Animal Science and Welfare

www.lal.org.uk

Netherlands Centre for Alternatives to Animal Use (NCA) Newsletter

www.nca-nl.org/English/Newsletters/newsletters.html

Books

Animal Experiments: the Moral Issues

R. M. Baird, S. E. Rosenbaum

Publisher: Prometheus Books

ISBN: 0879756675

Animal Experimentation: The Consensus Changes

Gill Langley

Publisher: Chapman & Hall

ISBN: 041202411X

Animal Experimentation: A Guide to the Issues

V. Monamy

Publisher: Cambridge University Press

ISBN: 0521667860

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

Emma Hopley

Publisher: BUAV

ISBN: 1870356160

The Cruel Deception: Use of Animals in Medical Research

Robert Sharpe

Publisher: HarperCollins

ISBN: 0722515936

Handbook of Laboratory Animal Management and Welfare

S. Wolfensohn, M. Lloyd

Publisher: Blackwell Science

ISBN: 0632050527



**In the Name of Science: Issues in Responsible Animal Experimentation**

F. B. Orlans
Publisher: Oxford University Press
ISBN: 019510871X

Lethal Laws: Animal Testing, Environmental Policy and Human Health

Alix Fano
Publisher: Zed Books
ISBN: 1856494977

The Principles of Humane Experimental Technique

W.M. Russell, R.L. Burch, C.W. Humo
Publisher: Universities Federation for Animal Welfare
ISBN: 0900767782

Sacred Cows and Golden Geese

C. Ray Greek, Jean Swingle Greek
Publisher: Continuum International Publishing Group
ISBN: 0826412262

UFAW Handbook on the Care and Management of Laboratory Animals

T. Poole
Publisher: Blackwell Science
ISBN: 0632051337

The Use of Animals in Higher Education: Problems, Alternatives, and Recommendations

Jonathan Balcombe
Publisher: Humane Society Press
ISBN: 0965894215

Victims of Science: The Use of Animals in Research

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

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

Pietro Croce
Publisher: Zed Books
ISBN: 1856497321

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

Tony Page
Publisher: Jon Carpenter Publishing
ISBN: 1897766319

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

Vernon Coleman
Publisher: Green Print
ISBN: 1854250604