ANIMAL EXPERIMENTS

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CONTENTS

INTRODUCTION – HURTING ANIMALS AND HUMANS

Researchers have devised endless ways of injuring animals in experiments. They use them to test substances, including weedkillers and pesticides, and new ingredients for cleaning fluids, paints, food and drinks. Animals are also used in medical research, in an attempt to find the causes of, and treatments for, human disease.

Animal Aid believes that it is morally indefensible to incarcerate, experiment upon, deliberately injure and kill any animal for the intended benefit of humans (or other animals).

As well as being unethical, animal experiments are unreliable and can be dangerously misleading. This is because animals' bodies are different from ours, and they do not suffer from the same diseases.

Drugs also affect animals differently from us. Products such as aspirin and paracetamol, commonly used to treat people, are highly poisonous to cats. On the other hand, drugs that were passed safe in animal tests have to be withdrawn after causing serious side-effects, even deaths, when given to people.

The many differences – both obvious and very subtle – between humans and other species make animal experiments a waste of time, effort and money – and a proven hazard to human health.

Differences between rats and humans

- Rats have four legs, a tail and whiskers.
- They can eat scraps off the street that would make us violently ill.
- They have no gall bladder.
- They cannot vomit.
- Their bodies manufacture vitamin C (ours cannot).
- Forty per cent of marketed drugs and food additives cause cancer in rodents.

Differences between non-human primates and humans

- Chimpanzees are essentially immune to human killer diseases such as AIDS, hepatitis B and common malaria.
- Our brain is 16 times larger than that of the macaque monkey, yet these animals are used to study human neurological diseases.
- Parkinson's disease becomes progressively worse in people, while marmoset monkeys subjected to the chemically-induced version gradually recover.
- Numerous treatments for stroke have been developed in non-human primates, yet all of them have failed or even harmed patients in clinical trials.
- Plaques and tangles in the brain are the hallmark of Alzheimer's disease in humans but not in monkeys, in whom it is artificially induced.
- There are no comparable regions in the monkey brain that correspond to the language areas in the human brain.

ANIMAL EXPERIMENTS - BAD ETHICS • BAD SCIENCE


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THE SCOPE AND NATURE OF ANIMAL EXPERIMENTS IN THE UK TODAY

The total number of animal experiments in 2008 (the latest figures available) was a shocking 3.7 million. This represents a 14 per cent increase on 2007.

The types of animals used include mice, rats, guinea pigs, hamsters, rabbits, cats, dogs, pigs, sheep, goats, primates and birds. Many people do not know that reptiles, amphibians, octopuses and large numbers of fish are also experimented upon. In fact, experiments on fish in 2008 accounted for 16.6 per cent of the total.

In addition, an estimated five to six million animals are bred but then killed, simply because they are surplus to requirements. Yet these victims are not recorded in official Home Office statistics. Similarly, hundreds of thousands of animals, bred for their body parts and tissues, are also conveniently omitted.

Disturbingly, despite a Europe-wide movement to phase out the use of monkeys, the number of procedures involving primates actually increased. The UK conducts more experiments on monkeys than any other European Union member (more than 4,500 in 2008). Experiments involving genetically modified and 'mutant' animals have also increased, and they now account for around half the total. Many of these animals suffer from painful complications in addition to the suffering that the planned manipulation causes.

Details of animal research are broadly set out in the Home Office annual publication, *Statistics of Scientific Procedures on Living Animals*. Category headings include: fundamental and applied research, education, training, and toxicity testing. These titles fail to reveal the true nature of what the animals actually endure. Many experiments cause extreme suffering, often to the point of the animal's death. Some routinely include food deprivation, electric shocks, surgical mutilation, pain tests and extreme stress. Additionally, animals are infected with lethal viruses and other damaging disease organisms. They undergo severe and deliberate brain damage and are forced to inhale toxic gases. Animal experiments are carried out by drug and chemical companies, university and hospital departments, and other non-commercial bodies. Animal testing is also conducted by the military. Some of these weapons tests are as secretive as they are horrific, and include studies into the effects of chemical and biological warfare.

THE SIGNIFICANCE OF ANIMAL PAIN AND SUFFERING

Pain is one of the most important and fundamental survival mechanisms provided by nature. Any animal possessing a nervous system and pain receptors is capable of suffering the effects of pain. That includes fish (The government's own Farm Animal Welfare Council (1) has found that fish experience fear, stress and pain when removed from water, and that the physiological mechanisms in fish for experiencing pain are very similar to those in mammals).

Pain in humans is a subjective experience whose assessment and treatment can be complex. But, in general, most people can tell a doctor what hurts and how much. Clearly, this is not possible for animals, in whom the measurement of pain must rely on other indicators, such as attempted movement away from a painful stimulus. Researchers reflexively declare that the potential gain to humanity outweighs the animal suffering and specify whether that suffering will be mild, moderate or substantial. In 2002, Cambridge University judged that bleeding head wounds, fits, vomiting, severe bruising and whole-body tremors suffered by marmosets amounted to 'moderate' suffering. Such documented cases strongly suggest that researchers have become desensitised to the animal suffering that they cause.

Recent examples of published scientific papers reveal a culture of brutality – rats' screams of pain recorded by researchers at Nottingham University; (2) deliberate nerve damage to the tongues of cats at Sheffield School of Dentistry; (3) experimental liver damage to dogs at Liverpool University; (4) and 16 years of curiosity-driven heart experiments on dogs at Leeds Medical School. (5)


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Equally extreme in terms of animal suffering is the testing of toxic chemicals and drugs. These experiments are often designed to produce death


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as an end point. In 2008, 484,050 animals were used in such tests, including more than 189,000 mice, 5,000 dogs, 3,500 primates and 8,000 birds.

In addition to the physical stress of being restrained and exposed to painful experimental procedures (e.g. the surgical mutilation or removal of vital organs, or the insertion of electrodes into their brains), animals in laboratories also experience psychological stress. Institutionalising any species, from rats to primates, fundamentally compromises their wellbeing.

The laboratory environment is one of constant stress. The animals are unable to move freely, cannot get away from their own wastes, and, at intervals, are taken from their cages for blood tests, surgery, weighing and other interventions. These procedures are routine for the laboratory staff, but can be terrifying for the animals. When animals are stressed, their immune function, hormone levels and susceptibility to cancer and to viral and bacterial infections all increase. Stressed animals frequently suffer from illnesses, leaving experimenters to try to sort out which symptoms are caused by the substances being tested and which are caused by lab conditions or other unknown factors. (6)

LEGISLATION GOVERNING UK ANIMAL EXPERIMENTS

Animal experiments are 'regulated' by the Home Office, under the 1986 Animals (Scientific Procedures) Act. In order to perform an animal experiment (referred to as a 'procedure'), a researcher must first obtain a personal licence. A project licence is also required. Finally, the place or premises where the research is being done must be officially approved. The number of Home Office inspectors, responsible for monitoring the experiments carried out at the UK's roughly 200 research establishments, currently stands at around 25. Few welfare infringements are reported by them, and no researcher has been convicted under the 1986 Act.

The 1986 legislation came into force as a result of an EU Directive known as 86/609. Now there is a new animal research Directive, which will require fresh domestic legislation to replace the current statute. Broadly speaking, the new Directive will neither improve nor worsen the condition of animals in UK laboratories. Although one provision will make it legal to subject animals to 'prolonged, severe suffering' – currently forbidden in the UK.

Proponents of vivisection promote the message that all animal research is conducted and monitored to very high welfare standards. Alas, this is not the case. Leaked documents and undercover video footage have revealed horrific suffering and researcher incompetence, which Home Office inspectors failed to detect. This is despite the fact that around 70% of inspections are reportedly unannounced.

Examples of animal cruelty exposés

- In 2009, an eight-month British Union for the Abolition of Vivisection (BUAV) undercover investigation inside Wickham Laboratories in Hampshire revealed appalling suffering. Some animals were being used in tests no longer required by regulators, and staff were filmed crudely killing mice by breaking their necks on a corridor floor with a ball point pen.

- The BUAV infiltrated Cambridge University twice and exposed the findings in 2002. Secret video footage showed the suffering of genetically modified mice. In addition, a ten-month undercover investigation into monkey brain research at the University documented the miserable fate of hundreds of marmoset monkeys imprisoned inside small, barren cages for their entire lives and deliberately brain-damaged.


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- On September 21, 2000, Uncaged Campaigns uncovered the shocking secret history of pig-to-primate organ transplants. Between 1994 and 2000, hearts and kidneys from genetically engineered piglets were transplanted into the necks, abdomens and chests of hundreds of monkeys and baboons captured from the wild. The research was conducted by the biotech company Imutran, in collaboration with the University of Cambridge and Huntingdon Life Sciences (HLS).

- Channel 4's shocking undercover documentary, 'It's a Dog's Life' (March 1997), showed beagle dogs being punched, violently shaken and yelping as technicians from HLS made repeated, failed attempts to take blood samples from the terrified animals.

- In March 1998, Animal Aid obtained and published details of an internal document from Oxford University, marked 'strictly confidential', which revealed that some researchers lacked the basic surgical competence to stitch up wounds they had deliberately inflicted during experiments.

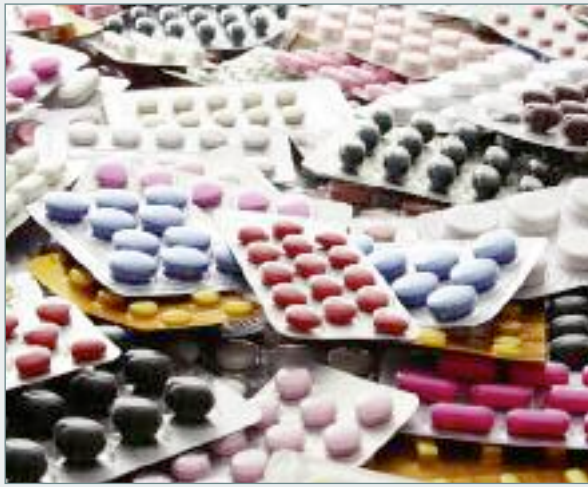
- Undercover footage filmed by the National Anti-Vivisection Society at St Mary's Hospital Medical School in London revealed Tamarin monkeys being injected with excrement.

GOVERNMENT'S SHOCK ADMISSION ON ANIMAL TESTS

In March 2004, Mike Hancock MP asked the then Home Secretary whether the efficacy (value to human medicine) of animal experiments had ever been studied. Home Office Minister, Caroline Flint, stated: 'The Home Office has not commissioned or evaluated any formal research on the efficacy of animal experiments'. In a subsequent question, Mr Hancock asked whether 'an evaluation of the efficacy of animal experimentation' would be commissioned. The reply was: 'The government has no plans to do so'. And yet, the minister went on to declare that 'animal experiments must be judged to be potentially efficacious in order to be licensed under the Animals (Scientific Procedures) Act 1986'. The startling inconsistency in this answer is hardly difficult to detect – the Home Office will not grant permission for animals to be experimented upon, it was saying, unless it is sure that such experiments will produce benefits to humans that outweigh the harm done to the animals. Yet it has never bothered to conduct its own research – or look at anyone else's – into whether or not animal experiments are reliable. Six years later, the British government has still not conducted any such research.

Significantly, a 2004 poll of 500 GPs (7) revealed a high level of distrust of results obtained from animal experiments. More than 80 per cent were concerned that animal data can be misleading when applied to humans. Eighty three per cent said they would support an independent scientific evaluation of the clinical relevance of animal testing. The results of this survey led to the tabling of a parliamentary motion calling for a transparent scientific inquiry into the efficacy of animal experiments. It received massive parliamentary support, with the signatures of 250 MPs.

THE 'ANIMAL MODEL' IN MEDICAL RESEARCH



According to one expert in the field: 'While animal experimentation is commonly credited by its own industry as responsible for nearly every discovery, time and again animal studies have merely mimicked what was originally observed in humans.' (8) Using animals as 'models' for the study of human disease is bad science. Any veterinary surgeon knows that there is a wide variation between drug responses in dogs and parrots, because of species differences. It is, therefore, not difficult to understand why the results of animal tests cannot be extrapolated to human beings with any degree of confidence. Medical scientists now admit that it is no longer safe to prescribe 'adult label' drugs to children. Equally, one twin may react to a drug in a different way from the other. (9) If it is dangerous to give adult-only medicines to children, and twins exhibit different reactions, how can we justify extrapolating the results from animals to human beings?

Drug Failures

According to figures from the thinktank Compass, (10) a staggering 6.5 per cent of all hospital admissions are due to adverse drug reactions (ADRs), totalling more than 1 million people in 2006. These figures do not include adverse reactions that occur while patients are already in hospital or those that do not result in hospitalisation. So the true number of people hurt by drugs intended to help them could actually be much higher. One study found that 14.7 per cent of hospital patients suffered an adverse reaction during their six month study. (11) In financial terms, the cost of ADRs to the NHS is estimated at nearly £2bn annually. (12) Since animal experiments constitute such an integral part of the pre-marketing 'safety screening' of all medical drugs, it is clear that they are not providing the right answers.

- 'Most adverse reactions which occur in man cannot be demonstrated, anticipated or avoided by the routine sub-acute and chronic toxicity experiment [in animals].' (13)
- 'The best guess for the correlation of adverse reactions in man and animal toxicity data is somewhere between five and 25 per cent.' (14)

The case against animal experiments has been made all the stronger by evidence from studies into their predictive value. Such evidence is especially valuable when it comes from 'systematic reviews' – where all published papers on a given subject are reviewed and analysed to draw an overarching conclusion. For example, a 2008 study analysing the results from 27 systematic reviews comparing the results from animal tests and human clinical trials found that animal experiments had been useful in predicting human outcomes in only two cases, one of which was contentious. (15)A 2007 study published in the British Medical Journal reviewed more than 200 studies and found that animal tests accurately predicted the human outcome only half of the time. (16) Among the difficulties often cited with animal experiments is that the lifespan of humans is from 4.4 to 66 times that of common test species. Thus, there is generally a much longer time available for toxic effects to be expressed or developed in people than in test animals. (17) In addition, adverse drug reactions often cannot be predicted by way of animal experiments because common side effects such as headaches, visual disturbance, dizziness and nausea are all difficult to detect in animals.

Even the 'best' animal model, the monkey, repeatedly fails to predict how humans will respond. A famous example of this is the TGN1412 disaster, where six healthy volunteers rapidly developed multiple organ failure after being injected with an experimental antibody drug. (18) Rhesus and cynomolgus monkeys both tolerated doses 500 times larger than the dose given to the volunteers, without any serious side effects. (19) According to the Chief Scientific Officer of TeGenero AG, the manufacturer: 'The drug was developed in accordance with all regulatory and clinical guidelines and standards. In pre-clinical [animal] studies, TGN1412 has been shown to be safe and the reactions which occurred in these volunteers were completely unexpected'. (20)

Another instructive case is that the anti-inflammatory drug, Vioxx. This was reported to be responsible for between 88,000 and 160,000 heart attacks and strokes in the US alone before it was withdrawn. (21) Not only had animal tests failed to predict these safety risks, but studies in four different species had shown that Vioxx was actually protective against heart attacks and vascular disease. (22) It should be noted that the chimpanzee, our closest living relative, is essentially immune to AIDS, hepatitis B and common malaria – diseases which kill millions of people throughout the world every year. Unsurprisingly, therefore, the most promising prototype AIDS vaccine – which had been tested 'successfully' on chimpanzees – not only failed to prevent HIV infection, but actually raised the risk of infection. (23)

'Monkey model' fails to convince

At a 2002 public inquiry, Cambridge University failed to convince the government-appointed planning inspector of the scientific validity of using primates in research. The inquiry – in which Animal Aid played a leading role – was triggered by the University's determination to build a controversial new primate research centre. Following the inquiry, those plans were scrapped.

Diabetes

Type I diabetes mellitus is a condition typically appearing in childhood. Rodent models of the disease are produced by injecting the animals with a chemical called streptozotocin, which damages the insulin-producing cells in their pancreas. But 'diabetic' rats and mice bear little relation to humans with diabetes, in that they do not always require insulin to survive.

Some of the animal models will not even have raised levels of glucose in their blood – a hallmark of the human disease. Also, hereditary factors are responsible for a significant number of insulin-dependent diabetics, and these cannot be reproduced in an animal in a laboratory. The best available rodent models for type 1 diabetes do not develop the long-term complications that constitute the major clinical problem in patients. Regardless, many researchers are studying numerous animal models, even while acknowledging that 'they differ markedly from the human disease.' (24)

Unsurprisingly, drug catastrophes result from such animal-based studies. Rezulin, which was launched on to the market in 1997 after its success in treating 'diabetic' animals, was withdrawn three years later when it was found to cause liver failure and had killed several hundred people. (25)

Cancer

There are more than 200 different types of cancer in humans, many of which have been 'replicated' in animals by exposing them to carcinogenic chemicals, radiation, cancer-causing viruses, by injecting them directly with tumour cells, or by inserting genetic

material associated with the growth of cancers. Mice are commonly used in cancer research, but one expert observed that transplanting human cancer tissue into a mouse 'rarely predict[s] how a human will respond to the same treatment'. (26) In fact, the use of animals in the search for cancer drugs has been a costly failure. According to a 2010 article in The Scientist: 'It's been estimated that cancer drugs that enter clinical testing have a 95 per cent rate of failing to make it to the market, in comparison to the 89 per cent failure for all therapies.' (27) In 1998, Dr Richard Klausner, Director of the National Cancer Institute, admitted: 'The NCI believes we have lost cures for cancer because they were ineffective in mice.' (28)

Heart disease and stroke

The most common cause of heart disease in people is atherosclerosis (fat deposition on artery walls), which may lead to clogging of the blood vessels and heart attacks. Dogs are often the model of choice for research into heart disease although 'it is virtually impossible to produce atherosclerosis in a dog'. (29) Naturally-occurring strokes are extremely rare in animals. In humans, most strokes occur as a result of atherosclerosis in the blood vessels supplying the brain. Since there is no good animal model in which to reproduce this condition, researchers induce artificial strokes in rats, cats and monkeys by tying off or blocking arteries in their brains. (30)
More than 4,000 studies have been reported demonstrating the efficacy of more than 700 drugs in primate and other animal models of stroke. (31)
About 150 of these drugs have been tested in human trials, and all have failed to show any benefit. (32)
'Over-reliance upon such animal models [for stroke] may impede rather than advance scientific progress in the treatment of this disease.' (33)

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Disorders of the brain and the nervous system

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Brain and nervous system conditions are varied and often extremely complex. They include such problems as migraine, dementia and epilepsy. Most of these disorders are unique to human beings. The most dramatic difference between humans and other species, including the great apes, is found in the central nervous system. Our brain is four times larger than that of a chimpanzee, which is four times larger than that of a macaque monkey. The human brain is enriched with specific cell types implicated in communication, language, comprehension and automatically regulated functions. Using monkey brains to study human neurological disease makes no sense. 'For cortical regions [in the brain], such as the language areas, we cannot use the macaque brain even as a rough guide as it probably lacks comparable regions.' (34)

Neurological disease

Inevitably, the attempt to model human neurological conditions in primates is a sorry saga of bitter failure. Parkinson's disease becomes progressively worse in patients, while the chemically-induced marmoset version demonstrates gradual recovery. (35) Brain-lesioned marmosets used in the study of Huntington's disease do not replicate the pathology or symptoms of the disease. (36)

Mental illness

If researchers believe that animals are capable of experiencing the same kind of complex emotional stresses that give rise in people to conditions such as anxiety disorders, depression and schizophrenia, then they should not be experimenting on them in the first place. Yet animals continue to be brain-damaged and subjected to trauma, despite the fact that there are already many people suffering from these disorders who could reveal an abundance of relevant information if their cooperation was sought for non-invasive research.

Safety testing and public health

Regulatory authorities insist that new substances – ranging from pesticides and food additives to medical drugs – undergo 'safety testing' on species such as rats, mice and dogs before being allowed onto the market. This is done by applying chemicals to animals' skin, by force-feeding directly into the stomach, or by making them inhale toxic fumes. Alternatively, the chemicals may be mixed with the feed, or injected by syringe into the body. If the test chemical happens to be highly toxic to the particular species of animal used, they may die slow, painful deaths. Often, the end-point of such testing is to see how many animals actually succumb to a given dose.

In June 2007, the new European chemical testing regime, REACH (Registration, Evaluation and Authorisation of Chemicals), came into force. REACH is intended to establish whether an estimated 300,000 chemicals on the market are safe for humans and the environment, and to control the use of those judged to be a risk. The legislation states that the chemicals should be tested on animals only as a last resort, but estimates suggest that at least 8 million animals could be used in lethal toxicity tests

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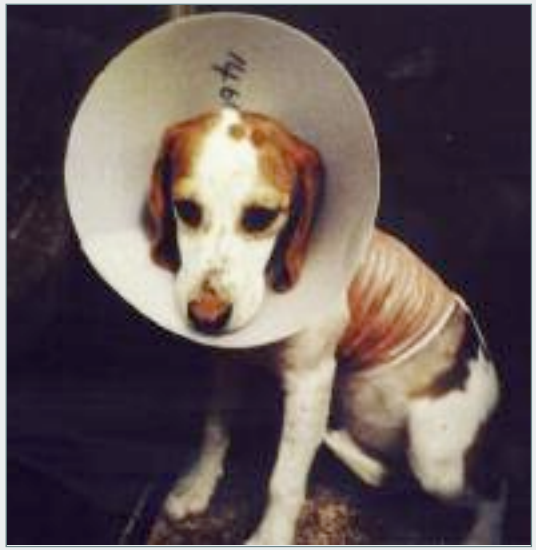
as a result of REACH. Not only would these tests cause enormous suffering, but using non-animal methods would be more accurate and more efficient, given the vast number of chemicals to be tested.

Modern biology has provided the tools necessary for species-specific toxicity testing at the cellular and sub-molecular level. This is now being recognised, and, indeed, pushed by some government authorities.

In February 2008, the US National Institutes of Health and the Environmental Protection Agency announced that government laboratories would start moving towards non-animal methods to test chemicals, drugs and toxins for safety because such methods are faster, and likely to be more accurate and far less expensive. (37)



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ANIMAL EXPERIMENTATION AND VETERINARY RESEARCH

Those still in favour of animal research often claim that, if it were to end, animals themselves would suffer, as no cures or treatments would be found for their diseases. Using dogs to study dog diseases makes scientific sense. Using dogs (or other animals) to study human diseases does not. However, even with the intention of finding treatments for dogs, we should not experiment on healthy animals and deliberately make them sick. We should, instead, study dogs who are already sick, and try to help them with therapies that have shown promise in the laboratory.

The fundamental principle should be to make as much use as possible of all the relevant research methods, to the point where, having exhausted every avenue, there is no other option but to try the experimental drug or therapy on a living animal who is already sick. This ethical groundrule should apply no less to humans as it does to animals.

GM ANIMALS AND MEDICAL RESEARCH

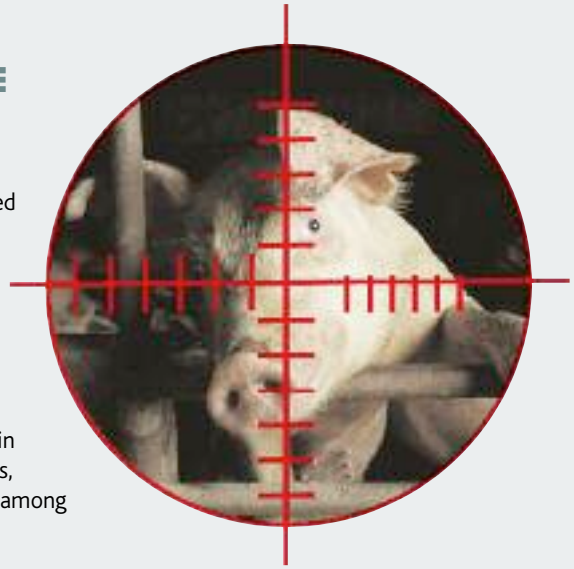
There is a rapidly growing use of GM (genetically modified) animals in research. Between 1990 and 2008, the number of experimental procedures involving such animals increased from 50,000 to more than 1,000,000.

Animals have been genetically manipulated in an attempt to mimic many different human diseases, including diabetes, asthma, obesity, cardiovascular disease, neurological disorders

and various forms of cancer. There are major animal welfare problems associated with the production of GM animals. In order to create a new strain of mice, (the most frequently used species), young females are injected with powerful hormones to make them ovulate in excess. After mating, they are killed to extract the embryos, which are microinjected with the foreign DNA. These altered embryos are then surgically implanted into many surrogate mothers who have also been hormone-injected to assist implantation and who will later be killed just before or after giving birth. For every 'successfully' produced GM animal, hundreds either die in the womb or soon after birth, or are killed as unwanted surplus. Even when the desired result is obtained, the GM animal will suffer from a host of unintended ailments, ranging from arthritis and heart defects, to premature ageing.

The most common types of genetic manipulations are transgenic (animals with added genes) and knockout (animals with genes deleted). Inbred strains ('mutant') are also specially developed to exhibit particular genetic effects. From a scientific perspective, using GM animals produces results that are no more reliable than those obtained from ordinary animal experiments. Although the research is focused on the activity of one or more genes, these do not exist in a vacuum. Inside the cell, the gene will interact with other genes, proteins and various cell factors. Because these interactions are unique for every species of animal – humans included – it is not possible to extrapolate results from one species to any other. (38) Another complicating factor is the fact that even though two species may share many of the same genes, those genes are regulated in different ways in each species – sometimes completely differently. This would explain why, for example, none of the current 'cystic fibrosis' mouse strains accurately replicate the human condition, in which the major symptoms are excess mucus in the lungs, leading to lung infections. The GM mice, in contrast, suffer principally from bowel disorders and are clearly not a very helpful model of the disease. (39) Mice lack mucus secreting cells. Therefore, lung disease is mild and infrequent – but is up to 90 per cent fatal in humans.

WEAPONS TESTING ON ANIMALS – THE BATTLE GOES ON



The number of animals used in weapons research in British laboratories quadrupled between 1997 and 2007, from 4,500 to more than 18,000. They were poisoned by chemical warfare agents, subjected to blast injuries, dosed with sensory irritants, killed by bacterial toxins and deliberately wounded. Most of this research takes place at the Ministry of Defence establishment at Porton Down in Wiltshire. Guinea pigs, rabbits, mice, dogs, rats, sheep, pigs, goats and monkeys are among the species used.

Pig experiments

Pigs are a particularly popular choice for weapons research. In one experiment at Porton Down, ten female Large White pigs were used to test the effects of Phosgene, a highly toxic gas. The animals were anaesthetised and exposed to the gas for varying lengths of time. Most died from severe lung damage. Those who survived were euthanased at the end of the experiment. (40)

Pigs have also been used to study physiological shock and peritonitis (severe and life-threatening inflammation of the abdominal cavity, often associated with gunshot wounds). In one experiment, 17 animals were anaesthetised and then subjected to massive blood loss by the withdrawal of 40% of their blood volume. Peritonitis was induced by the deliberate placement of sepsis-causing bacteria within the abdomen. The animals were subsequently resuscitated with intravenous fluids and various drugs. The anaesthetised pigs were monitored for 24 hours. Those still alive after this period were subsequently killed. (41)

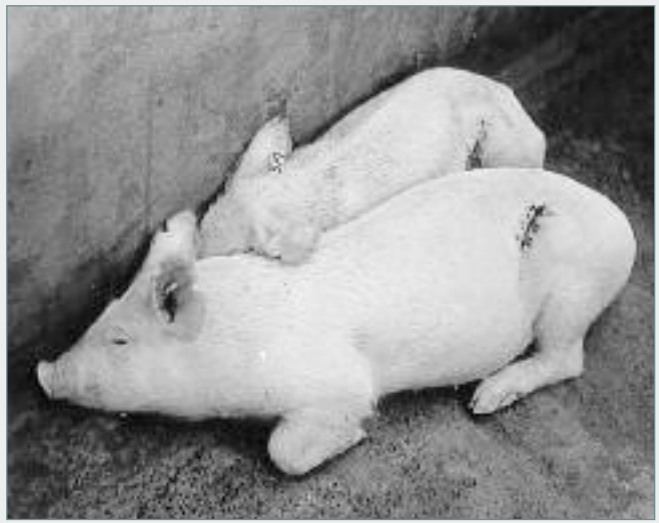
Private sector killing

In addition to the labs at Porton Down, a facility at Alverstoke, Hampshire has used goats to conduct research into decompression sickness, subjecting them to extreme pressures in sealed chambers. The tests were defended on the grounds that they provide advice for submariners on escape procedures from crippled underwater vessels. Between 2000 and 2007, 406 procedures were carried out. A sustained campaign against the experiments put pressure on the MoD to hold an internal review, and the tests – which had gone on for 50 years – were at last halted. (42)

Gulf war syndrome

Many experiments have taken place at Porton Down, following a range of debilitating and life-threatening diseases reported by veterans of the first and second Gulf Wars. These have included tumours, brain and respiratory disorders, and birth defects in their children. Marmoset and rhesus macaque monkeys are among the species widely used in an attempt to test whether the combination of vaccine jabs and anti-nerve damage tablets given to troops resulted in Gulf War illness.

A senior UK government scientist indicated that the monkey tests did not suggest any problem for the troops. (43) In sharp contrast, US scientists found a clear link between exposure to toxic chemicals and Gulf War syndrome. (44) This difference highlights the 'alibi' role of animal tests. They can prove or disprove virtually anything to suit the aim of the experimenters.

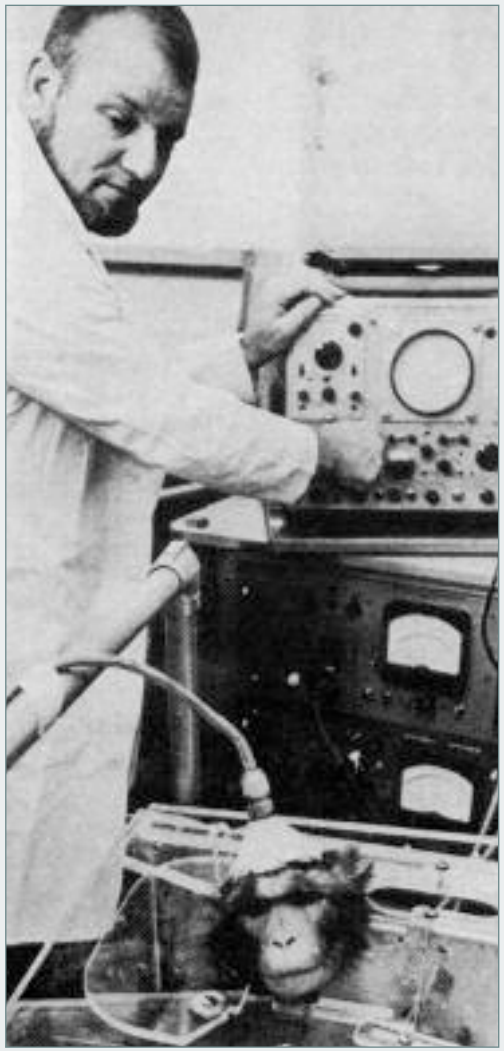


Despite repeated official statements that weapons research on animals is essential to protect frontline troops, the government has effectively disowned their men and women in uniform – refusing to accept that their ill-health could be linked to a recognizable syndrome.

WHY DOES ANIMAL EXPERIMENTATION PERSIST TODAY?

There are many reasons for the continuation of animal experiments:

1) It is tradition. Individual scientists do not question the practice because it is how they were taught; it is what their professors have always done; and a large volume of scientific literature describes it.
2) Vivisection is big business. The pharmaceutical industry is one of the most profitable in the world and its interests are strongly protected by governments. Animal experiments appeal to drug and biotechnology companies because the data produced can be manipulated to suit their commercial interests.
3) Animal experiments provide a legal defence for pharmaceutical companies when people are injured or killed by adverse drug reactions.
4) The animal research industry keeps people employed, so many have a direct or indirect vested interest in the process.



Crucially, the law encourages the use of animals in drug development – as a result of pressure from the pro-vivisection lobby. If these same vested interests were to abandon their destructive attachment to animal use and instead promote non-animal methods of disease study and drug development, then legislators would soon embrace new systems.

NON-ANIMAL RESEARCH METHODS

Animal experimentation is bad science. We need to get rid of it, and replace it with good science: species-specific research, which relies on human cells instead of animal cells, human tissues instead of animal tissues, and human data instead of animal data. Scientists and legislators are starting formally to acknowledge this imperative. In 2008, Dr Christopher Austin, a Director at the world's most influential biomedical research body, the US National Institutes of Health (NIH), said 'Traditional animal testing is expensive, time-consuming, uses a lot of animals and from a scientific perspective the results do not necessarily translate to humans.' The NIH's goal is to eliminate animal use in toxicology in ten years. (45)

Non-animal research methods can offer a reliable and efficient way of obtaining data that is relevant to humans, without causing any suffering. For example, the NIH have carried out tests using high-speed robots that can screen 200,000 compounds in two days. It would take a researcher using traditional whole-animal tests 12 years working eight hours a day and seven days a week to do the same amount of work. (46)

Consequently, initiatives designed to aid the transition to non-animal methods are receiving considerable funding. The EU has recently awarded a 500,000 Euro grant to AXLR8, a collaboration between the Humane Society International and scientists in Germany and Belgium that will support and monitor research to modernise toxicity testing. (47) In 2009, the European Commission and the European Cosmetics Association launched a call for proposals looking at safety testing methods that will be more accurate, faster and cheaper than animal tests. Up to 50 million Euros will be allocated to research projects to predict the toxicity of the repeated use of substances over a long period of time. The Director-General of the European Cosmetics Association said the initiative 'has a key role to play in the process towards full replacement of animal safety tests in the scientifically complex area of systemic toxicity'. (48)

Humane research in action

There are many well-established non-animal research methods that could play an important role in reducing, and eventually eliminating, the use of animals in experiments:

- MRI, CAT and PET scans, along with other new imaging technologies, allow non-invasive, yet detailed analysis of human organ structure and function. Neurological conditions such as Alzheimer's and Parkinson's disease are particularly amenable to the use of such technologies.

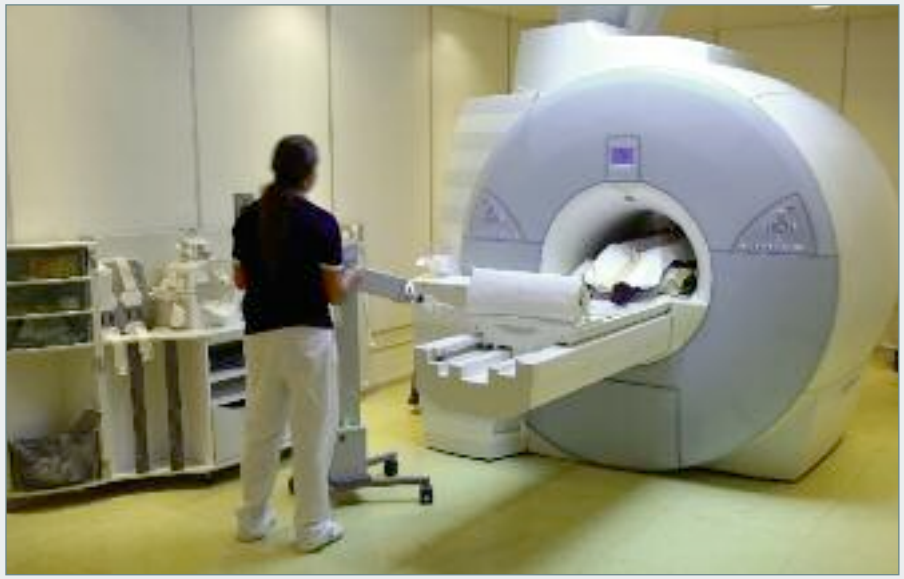
- Microdosing allows tiny amounts of experimental drugs to be tracked safely in the human body. It gives data on human metabolism, and could allow ineffective drugs to be screened out earlier, faster and at less expense.

- Stem cell research offers the potential for treatments for a lot of diseases. Induced pluripotent stem (IPS) cells can be grown into any type of tissue, meaning they can be used in a wide variety of specialist research. As they are made by manipulating adult skin tissue, their use is ethically acceptable.

- DNA chips allow thousands of genes to be monitored simultaneously for their response to a substance such as a new drug.

- Microfluidics chips contain tissue samples from various different parts of the body in tiny chambers linked by microchannels, through which a blood substitute flows. A test drug can be added to the blood substitute, and circulated around the chip, mimicking, on a tiny scale, what goes on in the human body. Sensors in the chip feed back information for computer analysis.

- Human DNA, cells and donated tissues and organs can be used to analyse disease processes and test new therapies. Human material can be ethically obtained from patients who go into hospital for operations or biopsies. Tissues donated upon death can also be used.



- Computer modelling is a sophisticated way to analyse and design the molecular structure of drugs that target specific parts of cells. Virtual human organs and virtual metabolism programmes can predict drug effects in humans more accurately than animals can. It is also an extremely efficient system, as scientists can simulate experiments on a computer in minutes that could take months or years to perform in the lab.

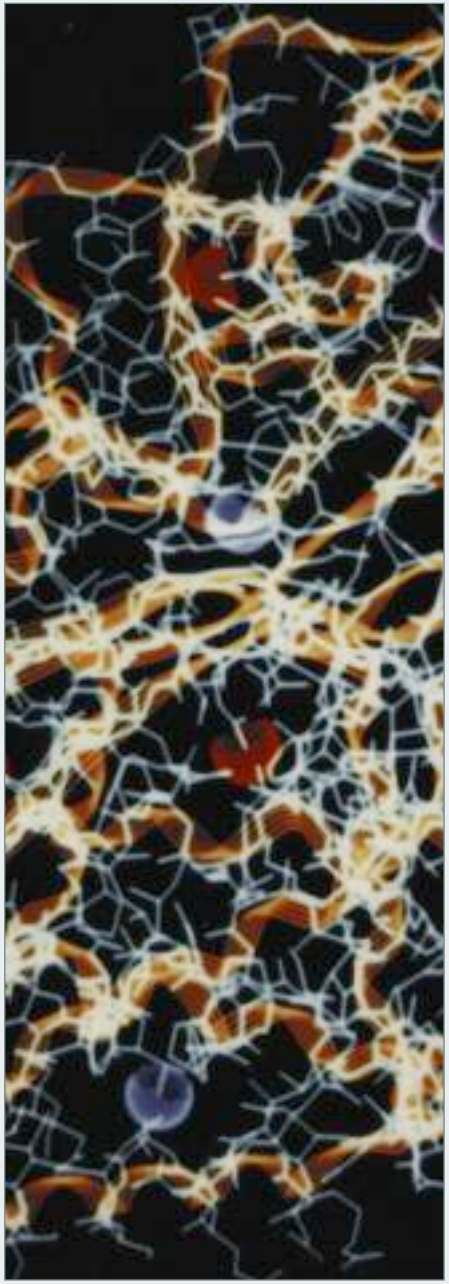
- Autopsy studies allow doctors to understand why people died, and to observe the efects of a disease on the whole body. They also allow the outcome of different treatements to be studied.

- Clinical observation is another important method of obtaining information about patients, based on minimally invasive procedures such as blood and urine analysis.

- Epidemiology (the study of human populations) examines possible correlations between lifestyle factors and disease. This method linked smoking to cancer, and high cholesterol to heart disease.

- Disease prevention is still the best solution for most of our modern ills. It requires political as well as personal action and relates to such key matters as diet, exercise, the use of tobacco and alcohol, and pollution in the general environment. A study by the World Cancer Research Fund indicated that four out of ten cases of breast cancer could be prevented if women exercised, limited their alcohol intake and maintained a healthy weight. (49)

With thanks to Safer Medicines Campaign for help in compiling this section.
http://www.safermedicines.org/superior_methods.shtml



CONCLUSION

With the continuing emergence and validation of superior non-animal research technologies, along with more progressive thinking about the ethical status of animals, criticism of animal research on both scientific and moral grounds is increasing. Under public pressure, legislators are starting to recognise this, and inject more funding and committment into reducing experiments on animals. But they must be far more ambitious and imaginative. The pace must quicken. Animal research is both immoral and irrational. For the sake of humans as well as animals, we must consign this shameful practice to history.

WHAT YOU CAN DO

- Many medical research and health charities – including the British Heart Foundation and Cancer Research UK – still conduct or commission experiments on animals. Donate just to those charities that fund only non-animal research. Contact Animal Aid on info@animalaid.org.uk or 01732 364546 for a list of humane charities, or visit our website at http://www.animalaid.org.uk

- Help save the lives of half a million animals each year who are bred for their tissues. By consenting for samples of your tissues to be taken after surgery or biopsies, or upon your death, you could contribute to medical research that will provide results relevant to people. Contact Animal Aid for more information.

- Write to your MP and ask that the government invests more money in developing and implementing non-animal research methods.

- Write a letter to your local newspaper stating the case against animal experiments, and in support of ethical, rational and relevant human-based research.

- Order more copies of this booklet, or other Animal Aid vivisection-related leaflets, stickers, posters and petitions, to inform friends, family and colleagues, or for use on street stalls. A list of resources is available on our website.

- Join Animal Aid and support our campaign against animal experiments.

References

1. Farm Animal Welfare Council report on fish farming, 1996.
2. Finn DP et al. *Neuroscience* 2006; 138:1309-1317.
3. Yates Y et al. *Pain* 2004; 111:261-268.
4. Kenny J et al. *Drug Metabolism and Disposition* 2005; 33:271-281.
5. Moore JP et al. *J. Physiol* 2004; 555(3):805-14
6. Barnard ND, Hou S. *Lab Animal* 1988;17: 21-27
7. Europeans for Medical Advancement, GP survey 2004.
8. Greek and Greek, *What will we do if we don't experiment on animals?* 2004 Trafford publishers.
9. Evans W, McLeod H. *New England Journal of Medicine* 2003;348:538-549.
10. Boseley S. 'Adverse drug reactions cost NHS £2bn.' *The Guardian,* April 3 2008
11. 'Adverse Drug Reactions in Hospital In-Patients: A Prospective Analysis of 3695 Patient-Episodes.' Davies et al 2009
12. Boseley S. 'Adverse drug reactions cost NHS £2bn.' *The Guardian,* April 3 2008
13. Zbinden G, *Applied Therapeutics* 8 1966.
14. Heywood R. 'Animal Toxicity Studies: their relevance for man.' 1989. Eds. C E Lumley and S R Walker.
15. Knight A. 2008. 'Systematic reviews of animal experiments demonstrate poor contributions towards human healthcare.' *Reviews on Recent Clinical Trials* 3:89-96
16. Perel P, Roberts I, Sena E et al. 2006. 'Comparison of treatment effects between animal experiments and clinical trials: systematic review.' *British Medical Journal* 334:197-202.
17. Gad SC. *Journal of the Am Coll of Toxicol.* 1990; 3:291-302.
18. Bhogal N and Combes R. 2006. 'TGN1412: Time to change the paradigm for the testing of new pharmaceuticals.' *ALTA* 34:225-39
19. Kenter MJ and Cohen AF. 2006. 'Establishing risk of human experimentation with drugs: lessons from TGN1412.' *Lancet* 368:1387-91
20. Dr. Thomas Hanke, Chief Scientific Officer of TeGenero AG. TG press release March 15, 2006
21. Graham DJ. 2004. Testimony to the Senate Finance Committee, November 18. www.senate.gov/~finance/sitepages/hearing111804.htm Accessed April 3, 2008.
22. Physicians Committee for Responsible Medicine. 2005. 'Animal research on trial: PCRM sues Merck over Vioxx animal tests.' *Good Medicine,* Autumn 2005.
23. 'South Africa launches Aids vaccine trial.' *The Independent,* July 20 2009
24. McNeill JH, (Ed) 'Experimental Models of Diabetes', CRC Press, 1999, p.95.
25. *Los Angeles Times,* 20th December 2000.
26. Edyta Zielinska 'Building a Better Mouse' *The Scientist,* volume 24, issue 4
27. Edyta Zielinska 'Building a Better Mouse' *The Scientist,* volume 24, issue 4
28. As quoted in *L A Times* May 6, 1998.
29. Roberts WC. *American Journal of Cardiology* 1990; 66:896.
30. Strong AJ, et al. *Cerebral Blood Flow and Metabolism* 1996; 16:36.
31. Macleod MR, O'Collins T, Howells DW, Donnan GA. 2004. 'Pooling of animal experimental data reveals influence of study design and publication bias.' *Stroke*
32. Macleod M. 2005. 'What can systematic review and meta-analysis tell us about the experimental data supporting stroke drug development?' *International Journal of Neuroprotection and Neuroregeneration* 1:201
33. *Stroke* 1990; 21:1-3.
34. Crick F, Jones E. *Nature* 1993; 361:109-110.
35. www.mrmcmed.org
36. Kendall AL, et al. *Brain* 2000; 123(7): 1442-58.
37. Fox M. 'Government labs try non-animal testing.' *Reuters,* February 14 2008
38. Reiss C. *Biogenic Amines* 2003; 18(1):41-54.
39. Snouwaert JN, Brigham KK, et al. *Science* 1992; 257:1083-1088.
40. *J Appl Toxicol.* 2002 Jul-Aug; 22(4):263-9.
41. Parker SJ et al. *Shock* 2000; 13(4):291-6.
42. http://www.savethegoats.com/
43. *The Guardian.* 19th October 2004.
44. *New Scientist.* 3rd November 2004.
45. Fleming N. 'Testing chemicals on animals may be banned in decade.' *The Daily Telegraph,* February 14 2008
46. Fleming N. 'Testing chemicals on animals may be banned in decade.' *The Daily Telegraph,* February 14 2008
47. Press release from The Humane Society of the United States, April 15 2010. 'EU Initiative to 'AXLR8' Move to High-Tech, Animal-Free Methods for Chemical and Drug Testing'
48. EU press release, August 31 2009. 'The European Commission and the cosmetic industry match research funds to develop alternative solutions to animal testing.'
49. 'Women could avoid breast cancer through lifestyle changes.' *The Times,* Sept 1 2009

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