

WHY ARE ANIMALS USED IN SCIENTIFIC RESEARCH?

ANIMAL RESEARCH FACTS

It is illegal in the UK and Europe to use animals to test cosmetics or their ingredients

It is illegal in the UK and Europe to use an animal in research if there is a viable non-animal method

All animal research in the UK is regulated and inspected by the Home Office

It is a legal requirement that all potential new medicines intended for human use are tested in two species of mammal before they are given to human volunteers in clinical trials

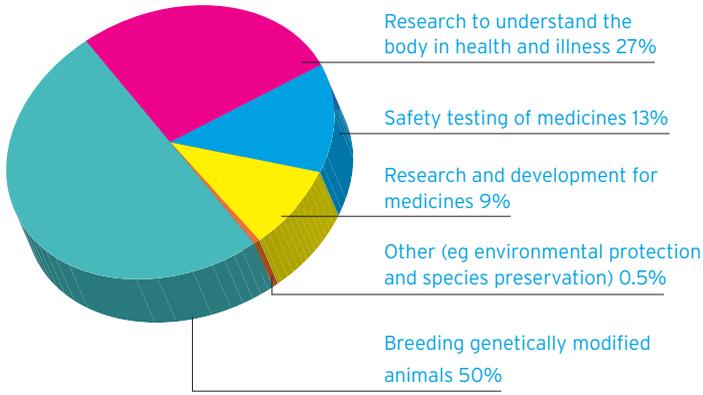
The law stipulates that all potential veterinary medicines must be safety tested in animals



Why are animals used in scientific research?

Animals are used in scientific research to help us understand our own bodies and how they work. This is necessary to develop new medicines. Animals are also used to safety test potential medicines before they are tested in people and to check the safety of other chemicals.

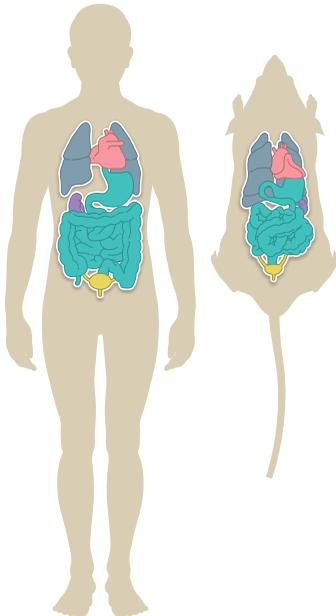
HOW ANIMALS ARE USED IN RESEARCH



RESEARCH USING MICE IS RELEVANT TO PEOPLE

Humans share at least 90% of their genes with every other mammal, and we have the same vital organs, including the heart, lungs, liver, kidneys and brain.

Although animals can seem different to us, their biology is often very similar. This means animals can be used to understand our bodies in health and disease and help predict whether medicines are likely to work and be safe. Genetically modifying animals like mice can make them even more like humans and even more useful in understanding disease.



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Animals are also used to see whether new chemicals have harmful effects, such as finding out whether a chemical causes cancer or harms the unborn foetus. The short life span and rapid breeding of mice are particularly useful as they allow us to understand effects on future generations.

TYPES OF ANIMALS USED IN SCIENTIFIC RESEARCH

Vertebrates, such as fish, birds, reptiles, amphibians and mammals, are protected under UK law and licences are needed to carry out research on these animals.

Genetically modified animals (mostly mice)

now make up over half of the animals used in research. Larger animals, such as pigs, dogs and monkeys, account for less than 2% of the animals used in research. Research is also done using insects and tiny worms such as nematodes, but this work is not regulated and is not included in statistics of animal use.



Chimpanzees, gorillas and orang-utans have not been used in UK medical research for over 25 years. Other primates are

used for research into very serious conditions, such as Ebola and Alzheimer's disease, and in important basic research.



SCIENTISTS MUST USE ALTERNATIVES TO ANIMALS WHEN THEY CAN

Nobody likes using animals in research, and scientists use non-animal research methods whenever possible. It is illegal to use animals if there is any other way of doing the research.

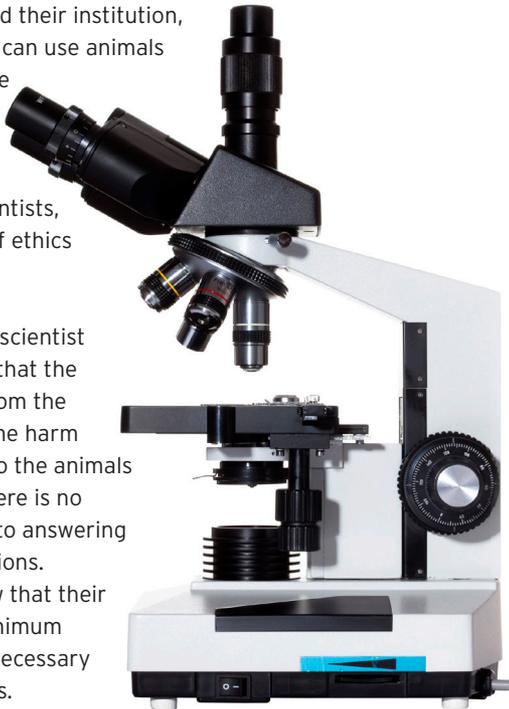
Research into alternative methods is funded and co-ordinated by the National Centre for the 3Rs, which is dedicated to Replacing, Refining and Reducing the use of animals in research and testing. Most medical research is carried out using *in vitro* studies, tissue culture, computer simulations and human studies. Sometimes the answers sought mean that it is necessary to study whole living animals.

CONTROL OF ANIMAL RESEARCH

Before a scientist and their institution, such as a university, can use animals in research they have to get a licence from the Home Office. Their application is judged by other scientists, vets and members of ethics committees.

To get a licence, the scientist has to demonstrate that the expected benefits from the research outweigh the harm that will be caused to the animals involved and that there is no non-animal method to answering their research questions. They must also show that their method uses the minimum number of animals necessary to get reliable results.

The scientist has to estimate the 'severity' of their work. They are expected to show in their application how they would minimise any possible pain or suffering to the animal. Some experiments do cause pain or distress, but licences for such work are hard to obtain and must show why the research cannot be done without causing suffering.



There are tough rules that govern the use of animals in research. Three separate licences are needed: a personal licence for the researcher; a project licence for the study; and an establishment licence for the place where the research is done. Government vets and doctors make regular, and often unannounced, visits to make sure that the animals are properly looked after. On their recommendation, licences can be removed and facilities closed down if rules are broken.

ANIMAL RESEARCH AND MEDICAL ADVANCEMENT

Each year there are breakthroughs and new treatments thanks to animal research. Here are a few examples.

HERCEPTIN

Forty years ago in the UK the five-year survival rate following diagnosis of breast cancer was 50%. Today that figure is 80% thanks to advances in treatment and screening. Herceptin is just one of these treatments. It reduces, by a third, the chance of some types of breast cancer coming back and was developed using rats, mice, hamsters and monkeys. It is based on a mouse antibody.



LEUKAEMIA

Leukaemia treatments including chemotherapy mean that eight out of 10 children diagnosed with acute lymphocytic leukaemia survive for at least five years and many make a full recovery. Twenty years ago only three in 10 children survived five years. The improvement is partly due to animal research.

EBOLA

In 2015 the Ebola vaccine VSV-EBOV was found to be 100% safe in 7,500 people. The vaccine, which was initially tested safe and effective in primates, subsequently showed extremely promising results in humans.

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THE LIFE OF A RESEARCH ANIMAL

Research animals are specially bred. This makes sure that the animals are free of disease, are of known genetic stock and are raised in good conditions. In occasional circumstances wild animals are caught for conservation work and these are usually released back into the wild.

In a typical experiment, trained researchers give an animal doses of a potential medicine and then take blood samples or scan the animal to check inside its body. Preventing boredom is important for all captive animals, and the animals are provided with items to play with. Animal care staff and vets are on hand to look for signs of pain or distress and can stop experiments to prevent suffering.

At the end of most scientific studies, the animals are humanely killed so that a full examination of their tissues can show the effect of the treatment. If this is not necessary, the animal might be used in another experiment, and very occasionally animals are rehomed.



Why are animals used in scientific research?



WILL FUTURE MEDICAL ADVANCES REQUIRE ANIMAL RESEARCH?

Many of them will. To understand the whole body and the way different parts such as the heart and lungs and nervous system interconnect, it is vital to study the 'whole body'. It is not yet possible to create artificial animals.

All potential medicines and new chemicals must, by law, be safety-tested on animals, ensuring that they do not have unexpected effects on the heart, liver or other vital organs.

Other tests estimate effective doses and find the best way to administer the medicine, be it by mouth, injection or another method.

Clinical trials of a new medicine, which assess its efficacy and identify side effects, can only be conducted in humans after the new medicine has passed animal safety tests.

