

A close-up photograph of two white mice in a cardboard tube. One mouse is inside the tube, looking out, while the other is outside, sniffing the end of the tube. The background is filled with brown wood shavings.

Alzheimer's
Research UK
Defeating Dementia

Why research
using animals
can help defeat
dementia

What we do

Alzheimer's Research UK is the UK's leading dementia research charity, funding pioneering research into the causes, diagnosis, prevention and treatment of dementia.

Dementia currently affects over 820,000 people in the UK, and with an ageing population, thousands more individuals and families will face the devastation of dementia in future. We believe that research is the only long-term solution to dementia and our scientists are working tirelessly to make discoveries that will help people with the condition now and in the future. This leaflet aims to tell you more about the progress we are making and why research using animals continues to be central to that progress.

Left: Fruit flies used in medical research.

The challenge

Research has shown us that Alzheimer's and other dementias are not an inevitable part of ageing but the result of complex brain diseases. Unravelling the cause of these diseases and moving towards new treatments is no mean feat for researchers. The human brain is the most complex living structure on earth. It contains around 86 billion nerve cells and recreating this in the laboratory is impossible.

The relative inaccessibility of the brain, as well as the slow progression of these diseases, pose even more challenges for scientists trying to study what is happening as they develop. For this reason, research using animals such as worms, fruit flies and mice has underpinned many of the advances made to date.



Our research

Alzheimer's Research UK endeavours to find answers to the big questions in dementia using non-animal methods whenever possible, but sometimes working within a living system is our only option and offers the best chance of breakthroughs.

We fully support the three Rs (Replacement, Refinement and Reduction) when it comes to research using animals and expect all of our scientists to follow these principles.

The three Rs:

Replacing the use of animals with alternative methods wherever possible

Refining experimental techniques to maximise animal welfare

Reducing the number of animals needed for research.

The majority of our research uses cells, computer analysis, human tissue and volunteers. Just under a third of our research projects involve animals – worms, fruit flies and mice – in situations where other methods would not suffice.

Why animals are important in dementia research



Understanding the basics

- While laboratory animals will never display all the same features of complex diseases like Alzheimer's that we see in people, they can help scientists understand some of the key changes. Flies and mice bred to develop amyloid and tau in their brains have been vital for helping scientists understand these hallmark Alzheimer's proteins, tracking how they build up and finding clues to why this could be so damaging in people.



- Flies and mice can also help scientists unravel the genetics of diseases that cause dementia. Fruit flies can be bred to develop features of these diseases within weeks and many important human genes have a similar equivalent in flies. This makes them invaluable for scientists to gain important insight into the disease in a short period of time. We support scientists that are using fruit flies to identify the basic biological processes that go wrong in Alzheimer's and other dementias, aiding the discovery of new treatment targets.



- Huge advances have been made using human adult stem cells to model Alzheimer's disease. Initial research using mouse stem cells has helped researchers develop ways of turning human skin cells into nerve cells in a Petri dish. We support scientists who are using these stem cells to recreate what happens to nerve cells in the brain in different types of dementia, to help screen potential new drugs for these diseases.

Testing new treatments

Any new treatment designed for humans must, by law, be tested in animals first. This helps to highlight potential side effects and make sure researchers are investing time and money to develop drugs that are most likely to be a success in people. While drugs may not always behave the same in mice as they would in humans, this stage of testing helps scientists to decide whether to take a drug into clinical trials in people.

Every year in the UK, millions of drug prescriptions are given to help people with dementia live with their symptoms. These drugs were developed and tested using animals, and while they are not a cure, they are the only treatment option currently available for people with dementia.



Research using animals continues to be vital in the ongoing search for a treatment that can slow or stop the disease process. This would be a huge step forward for people with dementia, providing them with more time to enjoy life with their loved ones.

Medical research using animals in the UK

Scientific procedures carried out using animals in the UK are tightly regulated by the Home Office and can only legally be carried out by someone licensed to perform that procedure as part of an authorised programme of research. This research can only take place if there are no non-animal methods which could be used instead. Standards of animal welfare are extremely high, with vets on hand to advise on health and welfare, and animals looked after on a day-to-day basis by trained staff.

To learn more about animal research in the UK, contact **Understanding Animal Research** on **0203 675 1230** or visit **www.understandinganimalresearch.org.uk**



How you can help

If you would like to donate to Alzheimer's Research UK to support groundbreaking research into dementia but do not feel comfortable supporting research using animals, you can restrict your donation to non-animal research projects. Simply let us know at the time you make your donation.

To donate to defeat dementia today, call 0300 111 5555 or visit www.alzheimersresearchuk.org



Alzheimer's Research UK: the UK's leading charity specialising in finding preventions, treatments and a cure for dementia.

Visit www.alzheimersresearchuk.org to find out more.

**Alzheimer's
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Defeating Dementia

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