

Alzheimer's Research UK: We power world class studies that give us the best chance of beating dementia sooner.

Visit [www.alzheimersresearchuk.org](http://www.alzheimersresearchuk.org) to find out more.



**Alzheimer's  
Research  
UK**

**The Power to Defeat Dementia**

3 Riverside  
Granta Park  
Cambridge  
CB21 6AD  
UK  
Telephone: +44 300 111 5555  
[research@alzheimersresearchuk.org](mailto:research@alzheimersresearchuk.org)

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# Why research using animals can help defeat dementia



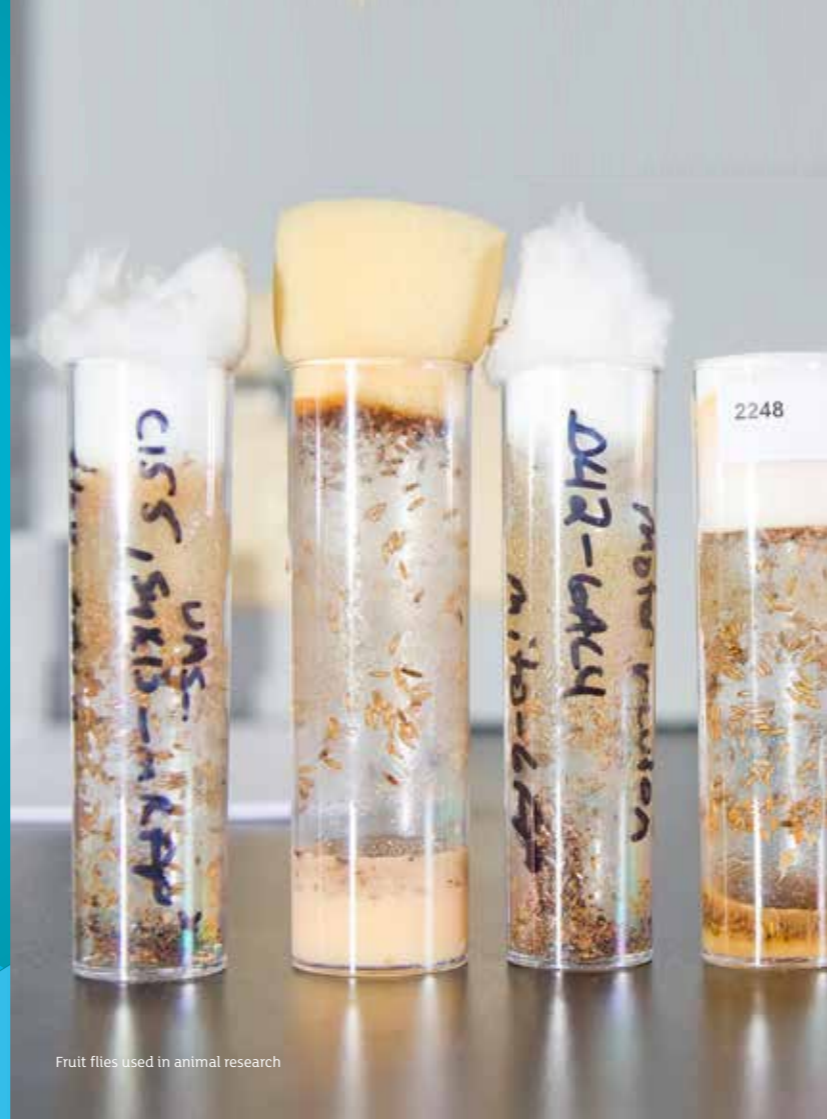
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# Research has the power to defeat dementia

Alzheimer's Research UK is the world's largest dedicated dementia research charity. We work with the best researchers, and fund pioneering studies to prevent, diagnose, treat and cure dementia.

Dementia currently affects over 850,000 people in the UK, and with an ageing population, thousands more individuals and families will face the devastation of dementia in future. We believe in the power of research to defeat dementia and our scientists are working tirelessly to make discoveries that will transform people's lives. We aim to empower people across all generations through a greater understanding of dementia. 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.



Fruit flies used in animal research

## The challenge

Alzheimer's and other causes of dementia are not an inevitable part of ageing but the result of complex brain diseases. Unravelling the causes 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 mice, rats, worms and fruit flies 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 over a third of our research projects involve animals – worms, fruit flies, mice and rats – in situations where other methods would not be possible.

# Why animals are important in dementia research

Here are a few examples of how animals are helping research to defeat dementia.

## 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 brain 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. They can be bred to develop features of these diseases within weeks and many important human genes have a similar equivalent in animals. 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 animals 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 the disease.





## 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 and maintain their quality of life. 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 treatments that can slow or stop diseases like Alzheimer's. 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 in the UK using vertebrates like mice and rats 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 that 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](http://www.understandinganimalresearch.org.uk)**



## How you can help

We're getting closer to defeating dementia but we need your 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](http://www.alzheimersresearchuk.org)**