



Annual Research Review

2017/2018



Foreword

Last year we launched our new strategy – the New Deal on Dementia – with a mission to transform the landscape of dementia forever by boosting research, changing society and offering support to everyone affected by dementia.

It's been brilliant to see our strategy take shape over the last 12 months. The UK Dementia Research Institute, our biggest ever single investment in research, is attracting over 400 world-leading scientists to focus their skills and energy on dementia. A partnership between Alzheimer's Society, the Medical Research Council and Alzheimer's Research UK, the institute is bringing new laboratories, equipment and researchers into the fight against dementia at an unprecedented scale. Meanwhile, our Centres of Excellence are transforming research into the best dementia care and support. We've also led in the development of a roadmap to make sure that care research is prioritised nationally, alongside finding a cure.

We know that investments in research pay off. To give just one example, our research fellows made genetic discoveries this year that fundamentally advance our understanding of dementia, bringing personalised medicine ever closer. There are many individual successes to celebrate, but what excites me most is the unique ability of Alzheimer's Society to unite people who care about dementia, working across all areas to improve people's lives. In my new role as Chief Policy and Research Officer, I'm bringing people closer together to campaign for research funding, prepare the health and social care system for advances in treatment and diagnosis, and use research insights to improve dementia services.

The diseases that cause dementia are complex. The effects it can have on individuals, families and communities are profound. But united, with your support, we will make a real difference for every person whose life is touched by dementia.



Dr Doug Brown
Chief Policy and Research Officer



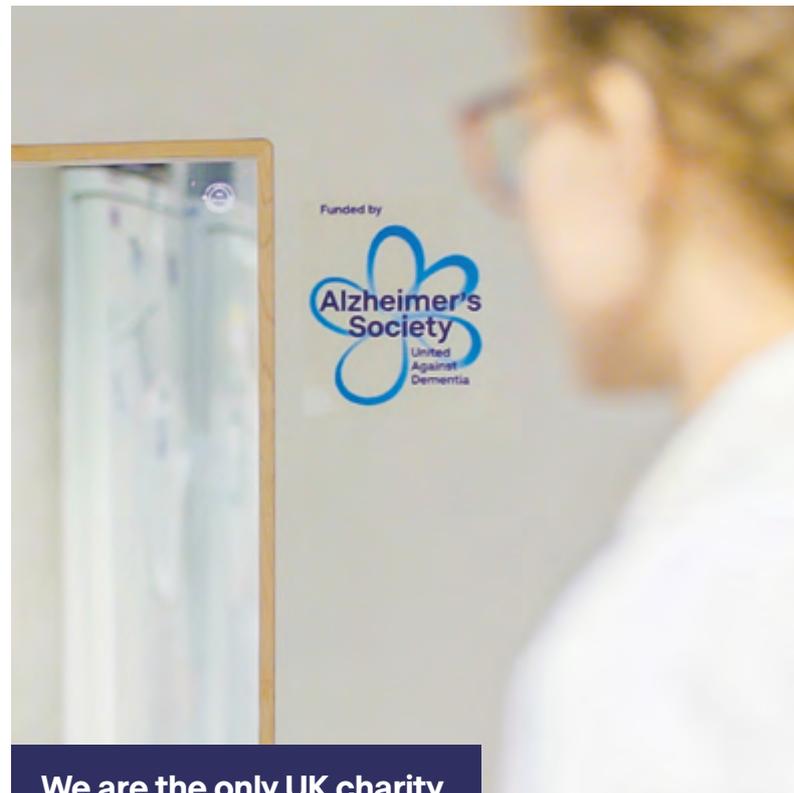
Care for today, cure for tomorrow

Alzheimer's Society is the UK's leading dementia support and research charity – since 1990 we have invested over £60 million into dementia research.

Our research programme is driving progress towards a cure, but the focus we also give to innovative care research makes us unique. By funding research at every stage – from undergraduate projects through to complex programmes led by world experts – we are building the research workforce's capacity to make discoveries that will improve treatment, care and support for everyone.

We're now funding more research than ever before with 182 active grants worth over £35 million. Although this research is increasing our understanding of the many diseases that cause dementia, we haven't had a new treatment for 15 years and there's still no well evidenced, standard pathway of care. Set against the rising personal and social costs of dementia, our research programme brings hope to change the outlook for people affected by dementia for good.

In 2017/2018 we invested £10 million in research, including £7.5 million on new grants, £1 million on our first contribution to the UK DRI and £1.5 million to maximise our impact through research and development activity. This includes work to translate knowledge into practice, develop innovative ideas that improve people's lives, and involve people affected by dementia along with international experts to select the most impactful research projects.



We are the only UK charity committed to funding research into the cause, cure, care and prevention of all forms of dementia.

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Our 2017/2018 research programme in numbers

£10 million

spend on research activity

Our Dementia Research Leaders programme supported

37

early career researchers

£7.5 million

invested in

60

new grants

216

new peer-reviewed papers

182

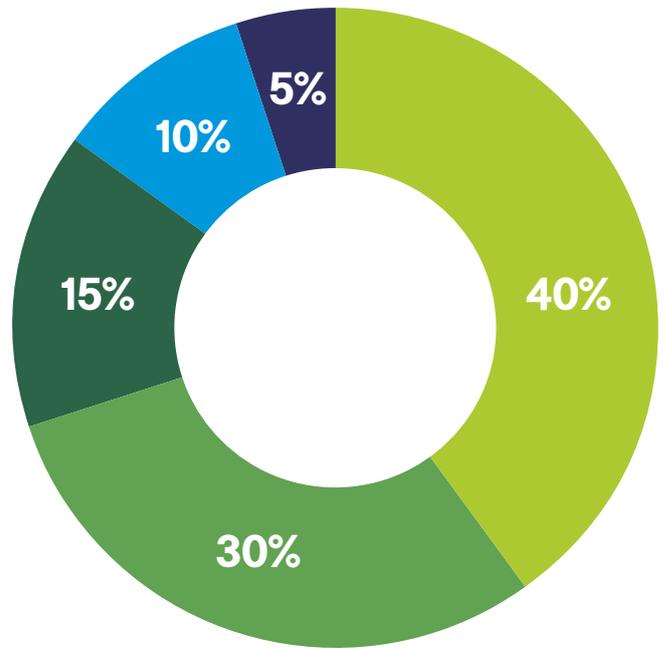
active projects worth over

£35 million

£1 million

our first contribution to the UK DRI

The types of research we fund



- Understanding the underlying causes of dementia
- Towards better care for people with dementia
- Searching for a cure
- Improving diagnosis of dementia
- Preventing dementia



249 Research Network volunteers, who have personal experience of dementia, contributed **5,367** reviews to ensure we fund the best quality and most relevant research

Building the UK Dementia Research Institute

Our work with government helped secure funding for the UK's first dedicated institute for dementia research. As a founding partner, we pledged £50 million to the UK Dementia Research Institute – our biggest ever single commitment to research. Along with £50 million from Alzheimer's Research UK and £150 million from the Medical Research Council, this landmark £250 million investment will accelerate the global search for preventions, treatments and technologies that change lives.

We're delighted with the progress we've seen at the UK Dementia Research Institute so far. The headquarters at UCL are now open, and in the past year we announced the establishment of five additional centres at Cambridge, Edinburgh and Cardiff universities, Imperial College London and King's College London. The institute's researchers will be closely connected so they can share ideas, technologies and data wherever they are based.

Creating a world-leading research institute takes time, and it's been exciting to hear about new laboratories, equipment and researchers across the six sites. In Edinburgh, scientists moved into



dedicated labs to investigate how brain cells, the immune system and the brain's blood supply interact. The new facilities will benefit many researchers, including those funded by others – the more collaboration and knowledge sharing, the sooner we can identify new treatments and the best care.

The UK Dementia Research Institute is attracting the best talent, creating a community of forward-thinkers who will get to the core of what causes dementia and use that insight to make the advances that we need.

There are 28 research programmes underway and this will grow to 50 when the institute is fully established. This is already transforming the landscape of dementia research and we expect big discoveries in the coming years. With a further £40 million recently committed by the government to build a new hub at UCL, as well as the appointment of an Associate Director for Care Research and Technology due in summer 2018, it's clear that momentum is growing.

'In Cambridge, we've seen one of our key ambitions becoming a reality – scientists who have made significant discoveries in other fields have been attracted to focus their efforts on dementia.'

**Dr James Pickett,
Head of Research at Alzheimer's Society**



Image credit: Betina Skovbro

In February 2018, new lab space for the UK Dementia Research Institute was created inside the Hadyn Ellis building at Cardiff University.



‘In a single interaction the wealth of knowledge, information and feedback that you can gather is incredible.’

Mario
(biomedical researcher)

Our report on the Alzheimer’s Society Research Network, published this year, shows how involving people affected by dementia maximises the impact of our research.

alzheimers.org.uk/researchnetwork

New knowledge

Our research programme is constantly building knowledge to improve care and find new treatments for people with dementia. Researchers share their findings widely by publishing them in peer-reviewed journals. Each paper marks another step forward, providing a basis for future advances and bringing us closer to a world without dementia.

Here are some highlights from the 216 peer-reviewed publications our research programme generated this year.

Prescription advice

Society-funded research at the University of East Anglia showed that some, but not all, anticholinergic drugs – used to treat a range of conditions from depression to gastrointestinal disorders – carry a potential dementia risk. By showing which specific drugs could increase the risk of developing dementia, this study has implications for how doctors prescribe these drugs for long-term use and could even reduce the number of future cases of dementia.

Richardson, K et al (2018). Anticholinergic medication and risk of dementia: case control study. <http://doi.org/10.1136/bmj.k1315>

Accelerating drug discovery

Removing toxic amyloid protein from the brain is a promising target for new drugs to combat Alzheimer's disease, but so far drugs taking this approach haven't been successful. Dr Francesco Aprile used large computer databases to design precise new antibodies that can disrupt amyloid without triggering a damaging immune response. The techniques he's developed mean the time and cost of finding new drugs can be greatly reduced.

Aprile, FA et al (2017). Selective targeting of primary and secondary nucleation pathways in A β 42 aggregation using a rational antibody scanning method. <http://doi.org/10.1126/sciadv.1700488>



New genes

A study led by Alzheimer's Society Research Fellow Dr Rebecca Sims identified two new genes that influence the risk of getting Alzheimer's disease. Both of these genes are part of the brain's immune system and are found in specialised immune cells called microglia. Investigating the role of these cells in the development of Alzheimer's is now a focus of research to slow or stop the disease.

'Insights like this show researchers where to focus their efforts in the search for new treatments.'

Dr Doug Brown

Sims, R et al (2017). Rare coding variants in PLCG2, ABI3 and TREM2 implicate microglial-mediated innate immunity in Alzheimer's disease. <http://doi.org/10.1038/ng.3916>

Dementia prevention

We supported researchers from around the world to work together on a comprehensive review of dementia risk factors. Their publication in *The Lancet* describes factors in early, mid and late life that, if combined, could reduce the number of people developing dementia by as much as 35%. We're now working to include dementia risk reduction in NHS mid-life health checks.

Livingston, G et al (2017). Dementia prevention, intervention and care. [http://doi.org/10.1016/S0140-6736\(17\)31363-6](http://doi.org/10.1016/S0140-6736(17)31363-6)

The care we need

With no new drugs approved for people with dementia since 2003, there's no question that we need research to find new treatments. While we search for these treatments, there are 850,000 people in the UK right now who need the best care that we can offer. Research is essential to improve the support that we're able to provide. There is a shocking lack of evidence about the best approaches, whether that's providing advice after diagnosis, training care workers who support people in their own homes or designing services to help people live as well as possible with their condition.

Alzheimer's Society leads the way in research to improve the lives of people currently living with dementia. In the past year, we invested £6.4 million in three centres of excellence and two implementation grants – five ambitious programmes of work to improve care and put innovations into practice. As well as funding research, we're challenging researchers, funders and policymakers to do more. We led a taskforce of 50 top researchers and experts by experience to lay down five research goals to inspire the dementia care community.

A roadmap for success

The existing global commitment to find a treatment that can slow or stop the progression of dementia by 2025 isn't enough – we also need to research the best support for people living with the condition now. Our 'Dementia research roadmap for prevention, diagnosis, intervention and care' sets out five additional research goals to inspire the co-ordination and funding required to match the success we've seen across the biomedical landscape.

In producing this report, our taskforce brought together clinicians, researchers, funders, people with dementia and carers. We asked, 'What research, in addition to searching for new treatments, is required to improve the lives of people affected by dementia today, and reduce the risk of dementia for future populations?'

The resulting five goals and detailed recommendations have the potential to change millions of lives worldwide, as well as protect future generations. They are not just for the research community to use; they are for anyone with a stake in dementia, to inform future research investment and proposals and to help us better align our research efforts with national dementia policy.



Goal 1

Prevent future cases of dementia through increasing knowledge of risk and protective factors.

Goal 2

Maximise the benefits to people living with dementia and their families when seeking and receiving a diagnosis of dementia.

Goal 3

Improve quality of life for people affected by dementia, by promoting functional capabilities and independence, while preventing and treating negative consequences of dementia.

Goal 4

Enable the dementia workforce to improve practice and skills by increasing evidence to inform changes in practice and culture.

Goal 5

Optimise the quality and inclusivity of health and social care systems that support people affected by dementia.

This work was published in the International Journal of Geriatric Psychiatry and became the journal's sixth most shared article in history, demonstrating just how important the topic is. In only a few months we've already seen a positive impact.

Over £50 million of new funding opportunities were made available for dementia care research in the UK and Europe during Spring 2018 – the first steps towards a better balance between cure and care research. Specific projects have also been commissioned to address roadmap recommendations about prevalence and the challenges of conducting research in care home settings. Alzheimer's Society is using the roadmap to inform the mid-term review of the Prime Minister's Challenge on Dementia 2020.

Regardless of when we find a breakthrough treatment for dementia, this roadmap and the work that has followed shows the great progress we can make to improve the lives of people with dementia by 2025.

Download the report:

alzheimers.org.uk/researchroadmap

'With budgets cut to the bone and demand always increasing, care providers need to be as efficient and effective as possible. Focused research will help health and social care professionals to improve knowledge and practice.'

Dr James Pickett, Head of Research at Alzheimer's Society

Striving for excellence

This year we announced a £5.6 million investment to establish three Centres of Excellence in dementia care research.



University of Exeter

Professor Linda Clare will lead efforts to measure and improve the quality of life of people living with dementia, including understanding the impact of changes in the social care system.

'It's vitally important that people with dementia are able to live as well as possible.'



Newcastle University

Professor Louise Robinson will tackle the 'postcode lottery' that exists for post-diagnostic support, developing and testing new guidelines to provide high-quality support after a dementia diagnosis.

'We want to address what resources are needed to provide a better quality of care, and how these can be successfully delivered.'



UCL

Dr Claudia Cooper will address the absence of dementia training among care workers, improving people's independence by designing training for family carers and professional care workers.

'We're excited by the opportunities this investment will bring to improve lives for people living with dementia and their carers.'

Progress towards new treatments

A number of promising drugs for dementia failed in the final stages of testing in the past year. Pfizer, one of the world's largest pharmaceutical companies, also announced that it would pull out of neuroscience research. However, we know that finding treatments to stop the diseases that cause dementia is too important to leave to the pharma industry alone.

We're working hard to drive progress through our Drug Discovery programme, funding the science that will uncover new ways to approach the treatment of dementia. We're also providing a unique focus on repurposing drugs currently used for other conditions, which can halve the time for a new treatment to reach the people who desperately need it.

Finding new angles

Researchers funded by us at Cambridge University made headlines when they published their discovery of a new way to stop brain cells dying. They found existing drugs that target a key biological process in the brain called the unfolded protein response. This process should fix tangled proteins, but it can become overactive and cause damage in dementia. Their promising findings are based on tests with mice, so now the lead researcher Professor Giovanna Mallucci plans to set up a trial of the repurposed drugs in people.

Tackling inflammation

For too long, drug discovery for Alzheimer's has focused on just one process in the brain – build-up of a protein called amyloid. Scientists now recognise that we must explore all potential avenues to find the one that eventually leads to a cure. Our funding contributed to a breakthrough from Dr David Brough at the University of Manchester, who identified a new class of molecules that can reduce inflammation. This discovery opens up a new area for drug development.

Diabetes drugs

People with type 2 diabetes are more likely to develop Alzheimer's disease, and a series of findings from Society-funded researchers led to the establishment of a clinical trial to test diabetes drugs as a treatment for Alzheimer's. This year we funded a 12-month extension of the trial, as people receiving the drug, liraglutide, reported a perceived change in their symptoms after they stopped taking it. This extension means the researchers will be able to test the drug for a longer period of time. While we wait for these results, we're also funding lab-based research into an improved diabetes drug that may have an even greater effect.

As we learn more about the links between dementia and other health conditions, it is vital that we continue to test whether existing drugs can be repurposed to improve the lives of people with dementia. Our programme will keep funding this essential research, leaving no stone unturned in the search for a cure.



Our Dementia Leaders programme

Historically, dementia research has been seriously underfunded. We don't have nearly enough specialist researchers to make the breakthroughs that people with dementia need.

Our Dementia Research Leaders programme is designed to close that gap. Since it launched in 2014, we've funded almost 200 early career researchers to pursue vital projects investigating the care, cure, cause and prevention of dementia. Our funding, training and mentoring is helping these researchers to become established leaders with the skills they need to deliver tomorrow's breakthroughs.

A story of success

Dr Rita Guerreiro and Dr Jose Bras work together on the genetics of dementia at University College London. We awarded them both fellowships as part of the Dementia Research Leaders programme and they have led the discovery of a number of genes that play an important role in dementia.

In the past year they published the first study identifying genetic factors that increase the risk of developing dementia with Lewy bodies. This type of dementia shares symptoms of Alzheimer's and Parkinson's diseases, but Drs Guerreiro and Bras found that it has its own unique genetic signature. The researchers tested 8.3 million genetic factors in 5,778 people – 1,324 people who had dementia with Lewy bodies and 4,454 who didn't – and identified four genetic factors that are linked to its development. These genes don't directly cause dementia with Lewy bodies, but they do increase an individual's risk. Genetic findings like this help us get to the bottom of what's causing these diseases, and can inform new ways to diagnose and treat them.

'These results offer us, for the first time, a way to start to differentiate dementia with Lewy bodies from Alzheimer's and Parkinson's from the most relevant perspective – their molecular basis.'

Dr Rita Guerreiro

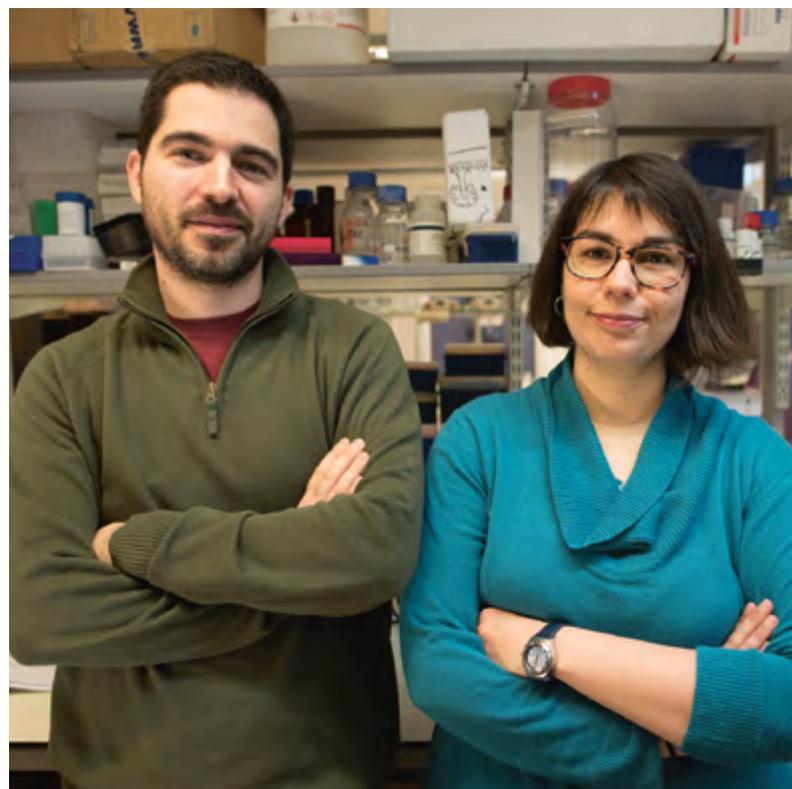
Alzheimer's Society funding helped Drs Guerreiro and Bras establish themselves as successful researchers. Now they've secured funding from the UK Dementia Research Institute, moving to new labs with new equipment to accelerate their quest to get to the core of what causes dementia.

Clinical expertise

When healthcare professionals, such as nurses, physiotherapists and occupational therapists, bring their unique experience to research, they can transform treatment and care for people with dementia.

Our Dementia Research Leaders programme is boosting the number of healthcare professionals doing research. However, they often have difficulty taking time out of their day-to-day work to apply for research funding. To remove this barrier, we launched clinical research partnerships, which allow more established senior researchers to get funding for multiple projects and then appoint fellows to conduct them.

During 2017/2018, we invested £375,000 in our first clinical training partnerships with matched funding from two universities. This first round will see five clinicians researching how to improve support for people in care homes and how to help people with dementia recover from periods of delirium.





‘Dementia is a global health and social care issue that can no longer be ignored. Alzheimer’s Society is rising to the challenge and leading international efforts to combat dementia.’

Jeremy Hughes, CEO of Alzheimer’s Society and Vice-Chair of the World Dementia Council

A world united against dementia

Alzheimer's Society is the UK's leading dementia support and research charity. Our funding develops research in the UK and findings are shared internationally, influencing people around the world. International collaboration makes our investments go further, ensures that UK researchers benefit from international initiatives and helps in the valuable exchange of knowledge.

Funding in partnership

Dementia scientists in the UK punch above their weight in terms of what they produce for every pound invested in their work, and we've had great success in making sure they can access international funding.

This has included over £450,000 so far from the US-based Alzheimer's Drug Discovery Foundation towards four UK projects to repurpose drugs that could be used to treat dementia. Our ongoing partnership with this foundation means we're always on the lookout for new projects, and researchers know they can come to us to fund their ambitious ideas.

In the coming year we are co-ordinating the UK element of the EU Joint Programme – Neurodegenerative Disease Research. By working closely with them, we've ensured that UK researchers can apply for grants from the over £18 million available, in collaboration with researchers in over 20 countries.

Researchers without borders

We fund research at UK institutions, but the reach of our scientists' work is far wider. Researchers disseminate their findings internationally and set up close collaborations around the world to make progress more quickly. For example, Dr Raffaele Ferrari, Alzheimer's Society Research Fellow at University College London, co-ordinates the International Frontotemporal Dementia Genomics Consortium, which includes research groups from more than 20 countries. They provide DNA samples that Dr Ferrari uses to better understand what causes frontotemporal dementia. Our funding supported this year's international consortium meeting, with academic and industry speakers attending from the UK, Germany, Australia, the US and Italy.

Another example is the Society-funded researcher Dr Mario Parra, who is developing new tests of thinking skills that can detect subtle changes before clinical symptoms emerge. By working with collaborators in the UK, Columbia and Brazil, he has shown these tests are effective regardless of someone's age, education or culture. That means they have potential for use around the world. Most recently, Dr Parra led a review of the state of dementia in Latin American countries, highlighting issues specific to the region that require greater focus.

Leading the way in patient and public involvement

Through our Research Network, we involve people with dementia, carers and former carers to influence every stage of our research. Their advice and feedback from their personal experience helps us to fund high quality research that will make the impact people affected by dementia need. As a leader in patient and public involvement, we're asked to share our expertise widely so that other researchers and funders can bring similar benefits to their programmes. This year we hosted an international one-day conference where organisations from different countries shared their ideas and learnt about the difference made by our Research Network volunteers.

#UnitedAgainstDementia



Thanks to you

Our volunteers

We're enormously grateful to all of the people who volunteer their time and experience to help us deliver a successful programme of research each year. This includes the 249 carers, former carers and people with dementia in our Research Network and the 54 academics and clinicians who make up our Research Strategy Council and Grants Advisory Boards.

We give particular thanks to:

- Professors Nick Fox, Carol Brayne, John O'Brien and all members of our Research Strategy Council
- Professor Roy Weller and all the members of our Biomedical Grants Advisory Board
- Professor Steve Iliffe and all the members of our Care, Services and Public Health Grants Advisory Board.
- Professor Ruth Boaden and all the members of our Implementation Grants Advisory Board
- 395 peer reviewers who submitted 508 reviews providing expert commentary on grant applications
- 27 trained mentors who are offering career development support to our research fellows
- 18 Area Co-ordinators and Deputy Area Co-ordinators who help develop the Research Network
- 43 lay members of the Grant Advisory Panels
- 134 Research Network monitors who help our funded researchers deliver their research
- 69 Research Network members who support our Research Partnerships programme
- 83 Research Network members who helped researchers improve the quality and relevance their project plans before applying for funding.

Our donors and funders

Our research programme would not be possible without the generous support of all of our donors and funders. We would like to thank all those individuals who have donated to our research programme, our corporate partners, supporting trusts and those who remember us in their Will. We would specifically like to thank the following individuals and organisations for their support:

- The Anthony and Pat Charitable Foundation
- The BACIT Foundation
- Barbour Foundation
- Celesio UK
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- Ecclesiastical Insurance
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- Swarovski Foundation

- Swiss Re
- Treemont Care Ltd
- The Utley Foundation
- Mr Chris Wallace
- Mr John Young

Our kind and generous legators who generously left a gift in their Will.

All of our supporters who wish to remain anonymous.

Our partners

Our research programme is delivered in partnership with several other organisations. We give thanks to the following for working with us to fund and deliver high-quality dementia research:

- Asthma UK
- Alzheimer Nederland
- Alzheimer's Drug Discovery Foundation

- Alzheimer's Research UK
- BRACE
- British Council
- British Heart Foundation
- Cancer Research UK
- Economic and Social Research Council
- Marie Curie
- Medical Research Council
- LifeArc
- National Institute for Health Research
- National Prevention Research Initiative
- Stroke Association

We would also like to thank everyone who contributed to our report on the impact of the Research Network and to our Dementia research roadmap for prevention, diagnosis, intervention and care by 2025.



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Alzheimer's Society is the UK's leading dementia charity. We provide information and support, improve care, fund research, and create lasting change for people affected by dementia.

To keep up to date on the latest news from our research programme, sign up to receive our research magazine at

alzheimers.org.uk/careandcure

All of the dementia research we support is fully funded by voluntary income. You can donate to our research programme online at alzheimers.org.uk/donate

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