BRACE
Dementia Research

Impact Report

2024

Chris Williams

BRACE, CEO

2024 has been an incredible year for dementia research and BRACE in many ways and we are thrilled to be able to share the charity's success with our supporters.

Thanks to your support we have fought back post-pandemic and are funding more research than ever before. In 2024, the charity has awarded £919,192 to new research grants, increasing our ongoing projects to 22. This research looks into the causes of dementia, diagnosis and developing treatments. We are passionate about training new researchers and BRACE is currently supporting 9 PhD students who will, in the near future, be Drs in their respective fields.

The charity has also received a landmark donation of £1 million to support early dementia diagnosis which, we hope, will have a huge impact on the 1 in 3 people who do not currently have a dementia diagnosis in England. Earlier diagnosis may also offer people living with the condition access to life changing drugs in the near future.

The breakthrough Alzheimer's drugs lecanemab and donanemab were licensed in 2024 for use in the UK. These drugs have shown positive signs of slowing down early Alzheimer's for the first time. We remain hopeful that, although these drugs are not yet available on the NHS, they will pave the way for treatments that could one day stop dementia entirely.

Whilst we celebrate the incredible achievements, now is not the time to become complacent. In 2024, we received 36 requests for funding, of which we could only fund 11. Until we have found a cure for dementia, we must invest as many resources as possible into the fight against dementia.

Thank you once more for your continued support.

Hollye Kirkcaldy

BRACE, Chair

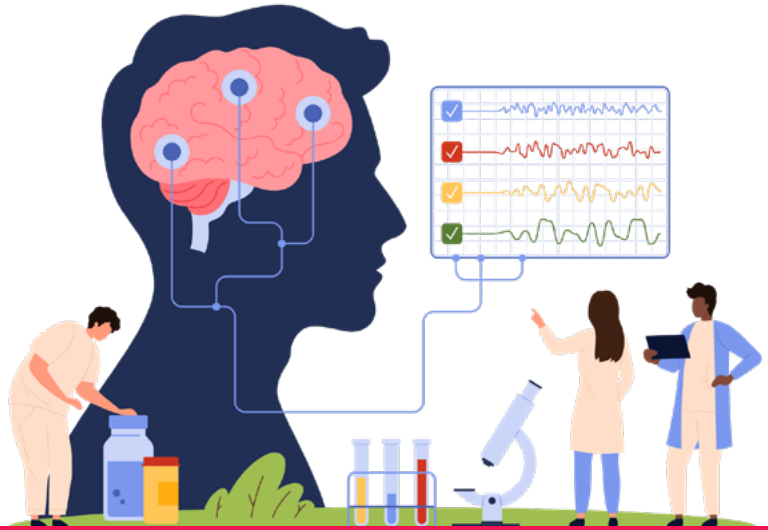
As I step into my role as Chair, I would like to say a big thank you to each and every person who has contributed to the success of the charity.

BRACE is in an incredible period of growth with ambitious plans to double the amount of research the charity currently funds by 2030. I am thrilled to be joining the charity at such a pivotal moment in its development.

BRACE's success has only been possible thanks to our committed supporters, the hard working staff team, Board of Directors, and the dedicated researchers who work tirelessly to improve the understanding of dementia, develop new methods for earlier diagnosis and advance treatments.

Thank you for your ongoing support.

Together we are making a difference. Together we will defeat dementia.



Vision

BRACE has ambitious plans to continue its growth from a small to a medium-sized charity that can provide more support for dementia research.

Currently, BRACE supports up to 4 PhD projects, up to 2 pilot studies, the South West Dementia Brain Bank (SWDBB), and a Dementia Research Nurse at the Bristol Brain Centre each year.

Vision for 2030

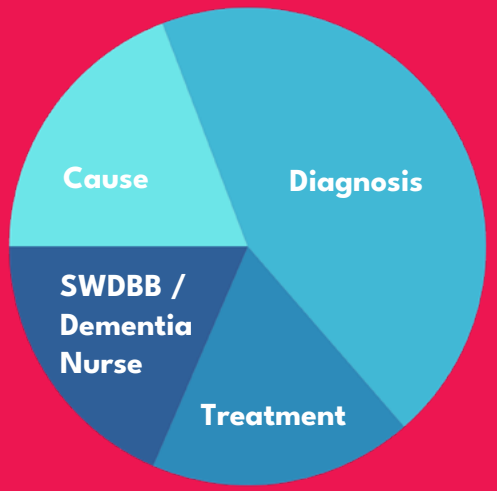
During the next 5 years, BRACE is working towards becoming a £2 million a year charity with ambitious plans for increasing the amount of research the charity will fund.

With this increased income, BRACE aims to fund double the number of PhD projects and pilot studies, continue supporting the annual SWDBB core costs, and maintain funding for the Dementia Research Nurse at the Bristol Brain Centre each year; while also enhancing and extending the reach of our impact on public understanding of dementia.

You will see the areas of research BRACE funded in 2024 on page 5.

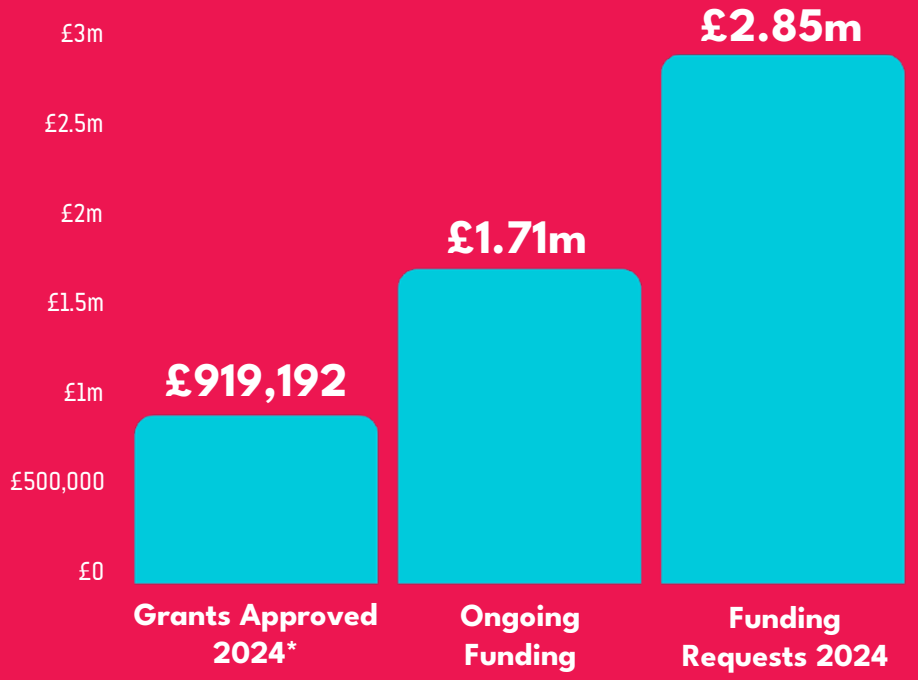
Funding requests far outweighed the charity's income. Our vision for 2030 is to close the gap between funding requests and grants awarded.

Research Approved in 2024



£919,192
grants awarded in 2024:

- **Diagnosis** £408,355
- **SWDBB / Dementia Research Nurse** £170,080
- **Cause** £176,355
- **Treatment** £164,402



*The figure is a projection based on recommendations from the Scientific Advisory Committee (SAC) and the status of BRACE's free reserves as of November 2024, ahead of the Q4 Board meeting.

BRACE Funding Strategy

BRACE is committed to funding world class research to achieve our charitable aims of understanding the causes of dementia, achieving earlier diagnosis, thereby giving new treatments and knowledge of prevention more time to make a difference, finding new and more effective treatments, and sharing dementia research and knowledge with the public.

Our focus is on supporting:

PHD Projects

By funding PhD projects, BRACE not only advances specific research goals but also nurtures the next generation of researchers who will carry this critical work forward. The more researchers we have working on dementia, the greater the chance of breakthroughs. Investing in a pipeline of talent ensures that dementia research remains a priority for the scientific community and helps maintain momentum in dementia research.

Pilot Projects

Pilot projects are vital for testing innovative ideas and generating the evidence needed to secure larger grants from major funding bodies like the National Institute for Health and Care Research (NIHR). Despite their importance, researchers often struggle to secure funding for pilot projects and BRACE is one of the few charities that offers funding to these projects.

In recent years, 2 BRACE-funded pilot projects have gone on to attract significant NIHR funding for larger projects focused on early dementia diagnosis and an Alzheimer's treatment which, if successful, could be used by the NHS.

The South West Dementia Brain Bank

BRACE supports the UK's largest dementia brain bank, an essential resource for many studies, and has done since 1987. Tissue samples are essential for improving the understanding of dementia and developing new treatments. *See pages 18-21 for further information.*

A Dementia Research Nurse at the Bristol Brain Centre

This role is crucial for patient recruitment, support, and data collection for dementia studies. With limited NHS funding for such a role, BRACE covers half the annual salary to ensure this important post continues to drive research forward. *See page 14 for further information.*

Let's Talk Dementia 2024

BRACE worked alongside two Bristol dementia charities - Alive Activities and Bristol Dementia Action Alliance to host Let's Talk Dementia: a free public information event, on Saturday 18th May in central Bristol.

Experts in 'all things dementia' attended as exhibitors and speakers, with researchers, health, care, and legal organisations sharing their knowledge with attendees.

Inclusivity was at the heart of the event to ensure we could support people living with dementia, and their loved ones, to attend.

BRACE-funded PhD student, Oliver Hermann, spoke about his fascinating work on an early Alzheimer's diagnosis test called Fastball, which was developed with BRACE funding.

Let's Talk Dementia is returning to the Watershed in Bristol, on Saturday 17th May 2025!

Book your free ticket: www.alzheimers-brace.org/events/ltd-25

I felt all the speakers were deeply knowledgeable about their subjects, there was a genuine sense of openness and curiosity too, which created a relaxed atmosphere, in which people felt comfortable asking questions and contributing to discussion.

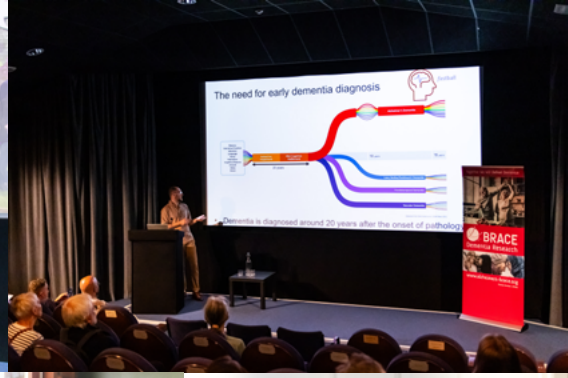
I love that people living with dementia were invited to speak, not as token representatives of a group, but as experts in their field - their contribution was insightful, authentic and really valuable."

- LTD 2024 Attendee

BRACE Dementia Research

alive Lighting up later life

Bristol Dementia Action Alliance



LTD Let's Talk Dementia

A Landmark Donation

BRACE received a £1 million donation to support dementia research across Bristol and the South West, building on a centre of excellence within the region. A life changing sum for people living with dementia, for researchers and for a small charity.

This donation will be used in research activities aimed at improving early dementia diagnosis.

Dementia is currently diagnosed too late, with Alzheimer's disease - the most common type of dementia, being diagnosed up to 20 years after the condition has begun. Quicker, more accurate ways to diagnose dementia are greatly needed so patients can access treatments earlier and plan for their future.

The charity has, in recent years, had a breakthrough in early dementia diagnosis through the development of an early Alzheimer's test called Fastball, which is currently being investigated by the NHS for possible future use. This donation will be put towards projects such as this one, to make a real impact in the fight against dementia.

"Diagnosing dementia and Alzheimer's earlier can offer many benefits to both the patient and their loved ones. Delays in diagnosis can be stressful for families who are left in limbo, knowing something 'isn't quite right,' while being unable to access support and treatment.

With the development of new dementia drugs, which in the future may be available on the NHS, earlier diagnosis offers dementia patients hope for a better quality of life for longer."

"A £1 million donation to BRACE Dementia Research will undoubtedly have a profound impact on advancing dementia research, not only in Bristol and the South West but also globally.

The focus on improving early diagnosis is particularly crucial, as it can significantly enhance patients' access to new treatments that are being developed, such as the revolutionary new dementia drugs in the near future."

Diagnosis

BRACE in Numbers 2024

11
new research grants awarded

14
current BRACE researchers

£919,192
granted to research projects

55
expert reviewers of BRACE research

36
research grant applications

9
BRACE-funded PhD students

5
BRACE-funded pilot projects

4,000+
brain samples sent out from the SWDBB

97
BRACE volunteers

1,837
hours volunteered for BRACE

£21,015
was saved thanks to volunteers*

176
individual BRACE fundraisers

3,817km
walked, ran and cycled for BRACE by fundraisers

28
public information talks

8,318
followers across social media

68,786
visits to the BRACE website

3,647
people on our newsletter mailing list

*based on National Living Wage 2024

BRACE Researchers

Anya Soonderpershad

BRACE-funded Dementia Research Nurse

"I am so proud to be a BRACE-funded Dementia Research Nurse. Since joining the team in August 2022, I've had the privilege to contribute to studies that bring us closer to a cure for dementia. Each project, however small it may seem, represents progress in a field that urgently needs it. Seeing tangible results of dementia research, like the recent approval of Lecanemab, an early Alzheimer's drug, for use in the UK, motivates me to keep pushing forward.

Our study participants are remarkable, and their excitement about being part of these advancements shows me the impact we can achieve together. We are hopeful that treatments like Lecanemab will soon be available on the NHS, making a difference for even more patients. I am incredibly grateful to BRACE for enabling me to be part of this journey. Together with my team, I'm not just hoping to make a difference - I'm part of the solution. With ongoing support, I am confident that together we can defeat dementia. Thank you for making this work possible!"

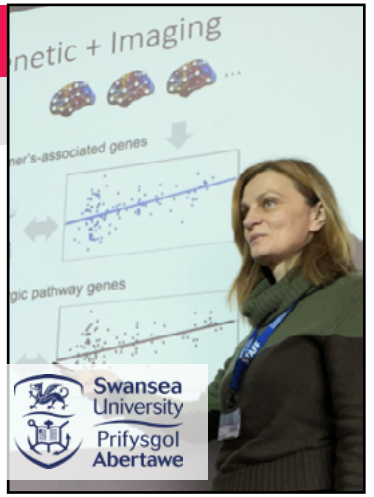
Cillian Power

BRACE-funded PhD Student

"I am incredibly grateful for the support of BRACE and its donors, whose generosity is not just a financial aid but a catalyst for my growth and success. Your contributions are advancing our understanding of these complex diseases and bringing us closer to developing much-needed therapies for those affected by dementia."

Dr Vesna Vuksanovic

Senior Lecturer, Health Data Science



"Securing BRACE funding for my pilot project is important for me and my research. It provides a great opportunity to explore some innovative ideas and their potential in dementia research. It allowed me to use some advanced computational approaches to analyse brain scans, to investigate their potential in identifying individuals at risk of developing dementia. It also supports in the mentoring of young researchers."

Genes and their role in Alzheimer's

Understanding the interplay between APOE and BIN1 in molecular mechanisms of late onset Alzheimer's disease

BRACE-funded PhD student, Johanna Maninger, is working with Professor Julie Williams and her team at Cardiff University to research the role genes play in Alzheimer's disease.

The most common form of Alzheimer's is late-onset Alzheimer's disease (LOAD), which usually develops after the age of 65. Scientists have identified certain genes that increase the risk of developing this form of Alzheimer's, and two of the most important are APOE and BIN1.

About one-third of people with Alzheimer's carry a variation of the APOE gene called APOE4. However, the combined effects of APOE4 and changes in the BIN1 gene on brain cells remain poorly understood. This research is looking at how these genes work together to lead to the progression of Alzheimer's disease to hopefully find potential targets for new treatments.

In this project, we are using induced pluripotent stem cells (iPSCs), which are cells that have been reprogrammed to behave like stem cells. Stem cells can be turned into almost any type of cell in the body, including the brain cells that we are focusing on—microglia and astrocytes. Microglia are the brain's immune cells, responsible for clearing away waste and harmful substances, while astrocytes help maintain a healthy environment for neurons in the brain.

What has been achieved so far?

To study the effects of APOE and BIN1, researchers used advanced gene-editing technology called CRISPR to modify these genes in the iPSCs. Once they had these modified cells, they used methods in the lab to turn them into microglia and astrocytes.

They have begun running a series of functional tests to understand how microglia behave in the presence of APOE and BIN1 variations:

1. Calcium signalling tests.
2. Phagocytosis tests.
3. Endocytosis tests

By examining these processes, they aim to uncover how the combination of APOE and BIN1 variations affects microglia's ability to perform these vital functions. Understanding these changes could shed light on how these genetic factors contribute to the development of Alzheimer's disease.

Cause

Future Impact

The results from this project will provide new insights into how two of the most significant Alzheimer's risk genes affect brain cells. Ultimately, this knowledge may help identify potential targets for future drug therapies, giving hope to those at risk of developing Alzheimer's and their families.

Professor Julie Williams

Director, UK Dementia Research Institue

"BRACE funding has underpinned important areas of research over the last decade. The support for new ideas and emerging scientific leaders has been particularly fruitful. I believe we are at a turning point in dementia research where discoveries are now being translated into future therapies. We must continue to increase investment in dementia research to support new ideas, new scientists and new therapies."

South West Dementia Brain Bank

40 years of excellence!

The South West Dementia Brain Bank (SWDBB), celebrated its 40th anniversary at the end of 2024. The SWDBB is one of largest Brain Banks in the UK and one of only six Brain Banks supporting dementia research.

Established in 1984, by Professor Gordon Wilcock from the University of Bristol, the South West Dementia Brain Bank's role was to supply human tissue samples for dementia research.

The SWDBB reaching its 40 year is a remarkable milestone, not least because in recent years, several Brain Banks have downgraded or closed their operations due to a lack of funding.

A significant part of the ongoing success of the SWDBB is due to BRACE.

Continuous funding from BRACE, since 1987, has provided essential support to the South West Dementia Brain Bank, with the charity giving grants totalling more than £2 million in the past 20 years.

SWDBB has approximately 730 registered potential donors and has successfully retrieved 1300+ brain donations since 1984.

Impact of SWDBB

Published Research

The SWDBB has underpinned a number of high-impact publications, including one showing that infections such as UTIs and bronchopneumonia worsen cerebral blood flow and the function of the blood-brain barrier in people with Alzheimer's disease.

Dr Sinclair has published work looking at later vs early life depression. This showed that individuals older than 50 years old with depression did not have any evidence of increased Alzheimer's dementia pathology, nor chronic ischaemia, blood brain barrier breakdown nor increased alpha synuclein (LB dementia-related) pathology. This is in direct contrast to the "vascular depression hypothesis" that has been prevalent in psychiatry for decades. It also demonstrates that depression is a risk factor for dementia, rather than an early symptom of dementia, at least in individuals with severe depression.

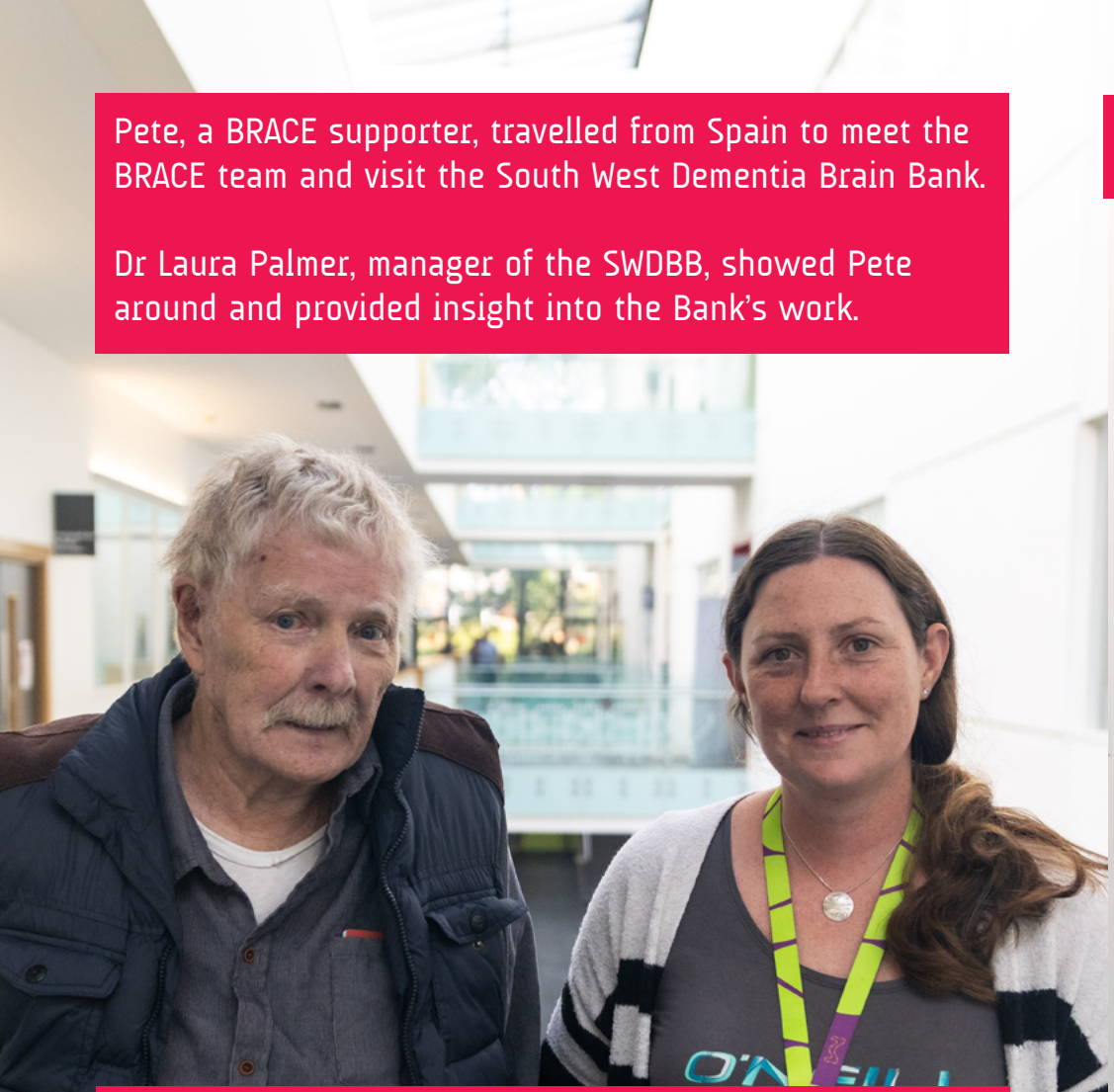
Genetic Research

Collaboratively, researchers have shown that most people with dementia have multiple concomitant pathologies within their brains, and that the genetic factors that increase the risk of dementia within individuals usually act through multiple pathological pathways and processes.

DNA from SWDBB cases will form part of the largest genetic study of Vascular Cognitive Impairment ever conducted to date. This work will be led by SWDBB Co-Director, Professor Pat Kehoe, in collaboration with European Alzheimer's DNA BioBank.

Pete, a BRACE supporter, travelled from Spain to meet the BRACE team and visit the South West Dementia Brain Bank.

Dr Laura Palmer, manager of the SWDBB, showed Pete around and provided insight into the Bank's work.

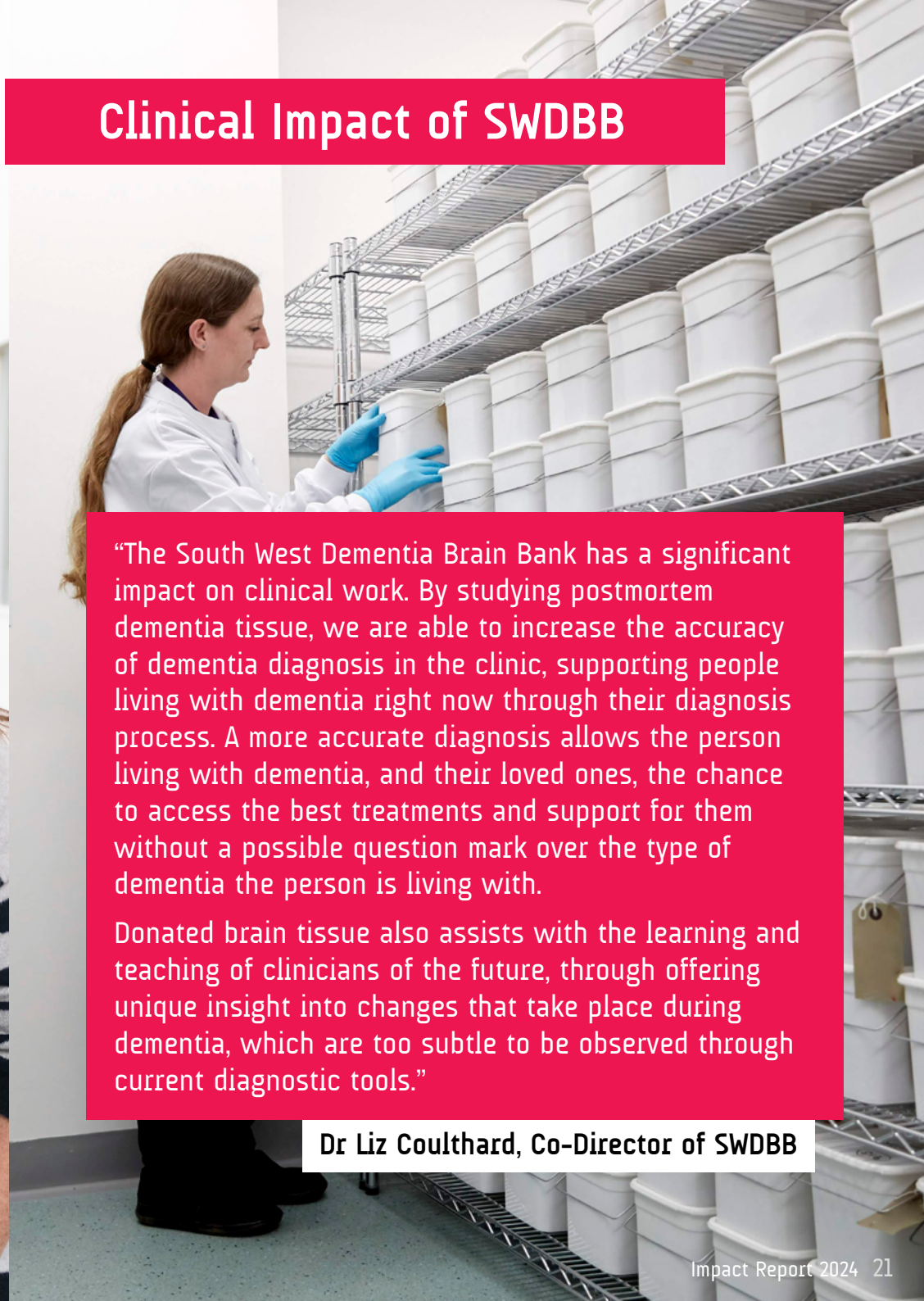


"What Laura does is incredibly complex, yet she made it easy for me to grasp.

I left with the knowledge that there will be an end to the horror that took my wife. It was in the air. It was in Laura's determined passion to defeat dementia."

Pete Elverhøi, BRACE Supporter

Clinical Impact of SWDBB



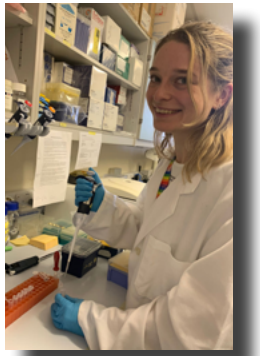
"The South West Dementia Brain Bank has a significant impact on clinical work. By studying postmortem dementia tissue, we are able to increase the accuracy of dementia diagnosis in the clinic, supporting people living with dementia right now through their diagnosis process. A more accurate diagnosis allows the person living with dementia, and their loved ones, the chance to access the best treatments and support for them without a possible question mark over the type of dementia the person is living with.

Donated brain tissue also assists with the learning and teaching of clinicians of the future, through offering unique insight into changes that take place during dementia, which are too subtle to be observed through current diagnostic tools."

Dr Liz Coulthard, Co-Director of SWDBB

Humans and flies may not be so different

Functional characterisation of deafness, Alzheimer's and Parkinson's disease associated Ctl2 – choline transporter-like protein 2 (SLC44A2) as a potential new drug target.



BRACE-funded PhD student, Amy Preston is working with Professor James Hodge and his research team at the University of Bristol, to look at the link between deafness and Alzheimer's disease using fruit flies. Fruit flies are often used in research because they have short lifespans and can be studied with a wide range of genetic tools. Researchers can also simulate Alzheimer's disease in flies by increasing the levels of proteins like beta-amyloid and tau, which are also found in the brains of Alzheimer's patients.

This project focuses on a gene called SLC44A2 (also known as Ctl2), which may be linked to Alzheimer's disease. The Ctl2 gene in humans and fruit flies is very similar, making these flies a great model for this research.

What has been achieved so far?

In the first year of Amy's PhD, she worked with the research team to set up tools to study the symptoms of Alzheimer's disease in the flies. They started using a gene-editing method called CRISPR to delete parts the Ctl2 gene in the flies. They did this to find out which parts of the gene contribute to the symptoms of Alzheimer's disease. They also experimented by reducing the activity of the Ctl2 gene, which resulted in effects like those seen in patients with Alzheimer's, such as reduced memory and trouble with sleep.

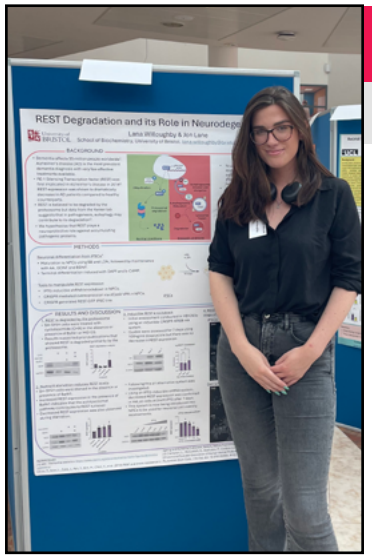
Future Impact

Cause

These experiments will help us understand how changes in the Ctl2 gene affect Alzheimer's symptoms. This could point to new ways to treat Alzheimer's in the future.

The BRACE team with University of Bristol dementia researchers

From left to right, Professor James Hodge, Professor Jonathan Hanley, Nikola Scanlon, Hamim Islam, Chris Williams, Amy Preston (BRACE-funded PhD student), Lana Willoughby (BRACE-funded PhD student), Jasmine White and Professor Jon Lane.



Lana Willoughby

BRACE-funded PhD Student

Lana Willoughby is working with Professor Jon Lane and his team for her PhD research, which is looking at how a protein called REST impacts cell death in dementia. Lana is pictured presenting a poster of her work at a conference in 2024.

Thank you

Our mission to find a cure is made possible by our supporters, volunteers and partners. BRACE is extremely grateful to our valued Corporate and Trust and Foundation partners. Many thanks to each, and every, supporter for their inspiring commitment.

If you would like to learn more about our finances, please visit the Charity Commission website:
www.gov.uk/government/organisations/charity-commission

BRACE
Dementia Research

FUNDRAISING REGULATOR