



**Christ Church Cathedral from the Meadow.**

Photo credit: Jasmine Blane

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## News New Oxford Brain Health Centre

The NIHR Oxford Health Biomedical Research Centre is launching a pilot of a new joint clinical-research service in Oxford, called the Brain Health Centre (BHC). The aim of the BHC is to address gaps between what is available to patients in NHS memory clinics and the major research advances into dementia. The centre is a partnership between the Oxford Health NHS Foundation Trust and the University of Oxford, and will be the first psychiatry-led service of its kind, developing the model for a specialist service that can be adopted throughout the NHS.

Patients with memory problems who are referred by their GP will attend the centre based at the Warneford Hospital to complete some memory and thinking tests and have an MRI, a type of scan that uses magnetic fields and radio waves to produce detailed images of the brain. Oxford Health NHS psychiatrists will use the information gathered to provide more confident and accurate diagnoses and treatments plans for patients. The centre also hopes to improve access for patients and their relatives to take part in research studies and clinical trials. The Brain Health Centre will begin its pilot in January 2020 with patients from the South Oxfordshire Memory Clinic.



Brain Health Centre MRI scanner

The Brain Health Centre is unable to receive direct referrals, if you have any concerns about your memory we advise you to visit your local GP.

Article Credit: Jasmine Blane



Photos taken from the Brain Health Centre dry run in September 2019



## News Brain Health Centre Cognitive Tasks

In the Brain and Cognition lab we have been working towards developing novel and sensitive tasks that have the potential to provide a more comprehensive fingerprint of human cognition. Importantly, our aim is to develop tasks that can have the potential to assist diagnosis of individuals with suspected memory impairments, typically seen at early stages of various neurodegenerative disorders such as dementia. These tasks will compliment traditional ‘gold standard’ behavioural and neuroimaging techniques (such as MRI and CT scans). This project will allow us to build a richer understanding of the cognitive deficits in these disorders.

We are hoping to collect data on these tasks from participants attending the Brain Health Centre study in order to examine the validity and sensitivity of these measures with the aim of developing a comprehensive sensitive cognitive battery.



*Example of the new cognitive task*

Article Credit: Alex Board

## News A New Blood Test for Alzheimer's Disease?

The hunt for a routine blood test that could detect Alzheimer's disease has so far been unsuccessful. However, researchers from Washington University School of Medicine in St. Louis announced in the August edition of the journal *Neurology* that they have discovered a blood test that is “94 per cent accurate at identifying Alzheimer's disease before symptoms of memory loss and confusion arise”.

*But what does that actually mean?*

Essentially, the researchers have developed a blood test to detect levels of damaging clumps of amyloid proteins. We can already detect these levels using lumbar punctures or PET scans, so a blood test is a cheaper, simple alternative. But just detecting amyloid levels isn't enough; indeed, you can have amyloid clumps without having Alzheimer's. So, in order to predict who will actually develop Alzheimer's disease 20 years later, people will need to be tracked for 20 years, and combine this amyloid information with age, genetic data, and level of cognitive impairment. There's still a way to go!

Article Credit: Sophie Walker

## Researcher Profiles

In this section of the newsletter, we get to know the OxDARE scientists behind the research.



### **Giedrė Čepukaitytė**

DPhil Student

Brain and Cognition Lab

OHBA, University of Oxford

#### **Q. What are your main research interests?**

**Giedrė:** My research is focused on memory functions. I am particularly interested in how different types of memory, namely, short- and long-term, compare within individuals and across different populations. My current projects are aimed at characterising how short- and long-term memory compare within healthy individuals and how the relationship between the two types of memory changes in people who are at increased risk of developing Alzheimer's disease.

In the future I would like to focus on understanding the neural substrates of short- and long-term memory, by testing patients with hippocampal damage and utilising neuroimaging methods. I hope that this research will aid in developing new ways of detecting subtle memory impairments, such as in Alzheimer's disease, before the onset of clinical symptoms.

**Jemma:** My research focuses on dementia, specifically Alzheimer's disease (AD). I am particularly interested in how brain imaging techniques can be useful for both research and clinical purposes. My main study, New Therapeutics in Alzheimer's Disease (NTAD), focusses on how Magnetoencephalography (MEG) scans can be used to identify biomarkers that track disease change, with the hope to provide effective treatments for AD in future clinical trials.

In the future I hope to build on current MEG and MRI research in AD, by testing patients and healthy controls using MRI and MEG scans. I would like to define an imaging pipeline to describe how these different scans can be effectively linked together and translated into clinical practice to help understand the progression of the disease better.

## Researcher Profiles

### Q. Why did you decide to get involved in ageing and dementia research?

**Giedrė:** I became fascinated with ageing during my undergraduate degree because of the complexity of its effects on the brain and its different functions, and the different life outcomes it could lead to. This, and the possibility of contributing something to society, has led me to join ageing and dementia research in Oxford.

**Jemma:** I started working on the dementia ward in my local hospital when I was in school, and loved interacting with patients and their families. I quickly realised I wanted to be involved in research to help understand the disease better and so went to University to study neuroimaging. This, alongside the fantastic imaging facilities at Oxford, led to me being part of the OxDARE team.

### Jemma Pitt

Research Assistant

Translational Neurosciences Group

Department of Psychiatry, University of Oxford



### Q. What is your favourite activity to do in Oxford, during your free time?

**Giedrė:** I enjoy indoor climbing, yoga and running, and mostly try to combine these with socialising. When the weather is good, I love exploring nature in and around Oxford.

**Jemma:** I really enjoy keeping fit and enjoy going for long runs in Oxford, especially South Park when the sun is out! I also enjoy exploring the town centre as it is very different to my home town, Cardiff—the signs are all in English!

### Q. Do you have any recommendations for a book/ movie/ holiday?

**Giedrė:** Still Alice by Lisa Genova once recommended to me by one of my participants about a successful academic who is developing Alzheimer's disease.

**Jemma:** I recommend 'Do No Harm' by Henry Marsh, it is a fascinating book about the daily life of a brain surgeon!

## Research The Heart-Brain Study

A new study called 'The Heart-Brain Study' is using a technique known as Doppler ultrasound imaging to investigate how different aspects of heart and brain health are relevant to age-related disorders, such as dementia. For example, the study wants to understand how the brain regulates its blood supply under different conditions, because these processes may be affected in ageing and dementia. The health of our hearts is vital for supplying brain cells with energy and oxygen. Poor heart health, or carrying the Alzheimer's risk gene APOE4, can increase the risk of dementia.

Dr. Sana Suri, the Principle Investigator of the study, said: "We know what is good for the heart and is good for the head. Research suggests that improving your heart health through diet and exercise can help to reduce the risk of dementia. The aim of my study is to find out how cardiovascular conditions affect cerebrovascular reactivity—the ability that our body has to increase blood supply to the brain when it needs more energy and oxygen—and how this impacts on memory"

The project involves 140 people from the UK Whitehall II Imaging cohort - a group of people who have already had annual heart health test since they were 40 years old. At 70 they also had brain scans and memory and thinking assessments. With this unique group of people it is hoped that the study will be able to assess how brain health in older age is linked to heart health in middle age.

Article credit: Jemma Pitt & Sana Suri



*Dr Sana Suri performing a carotid ultrasound*



## Research A Healthy Lifestyle May Reduce the Risk of Dementia

A recent study raises hopes that leading a healthy lifestyle may reduce the risk of dementia, even for people with a higher genetic risk. The authors grouped people according to their genetic risk and lifestyle profile and examined who developed dementia over approximately 8 years.



Results showed that people with a high genetic risk of dementia were 32% less likely to develop the condition if they followed a healthy lifestyle, compared to an unhealthy lifestyle. In fact, following a healthy lifestyle was seen to reduce dementia regardless of genetic risk.

A healthy lifestyle was defined in terms of not smoking, doing regular physical activity, eating a healthy diet and drinking moderate levels of alcohol. The definitions were broadly in line with UK government guidance.

This study supports a growing body of evidence that we may be able to reduce our risk of dementia by the lifestyle choices we make.

Article Credit: Shona Forster

## Current Opportunities/ Studies

### **A study of cognitive bias in older adults with depression (Ethics code: 16/LO/1184)**

We are researching the causes of depression in older people by comparing people experiencing depression with those who have never had depression.

The study will involve carrying out simple tasks using a computer which measures negative thoughts, and to complete some questionnaires. This will take about two hours in total. We are looking for people:

- \* Aged 60 and over
- \* With no mental health difficulties.

You will be reimbursed £15/hour for your time, and £20 for travel expenses.

If you are interested and would like further information about the study please contact Dr Philip Wilkinson ([philip.wilkinson@psych.ox.ac.uk](mailto:philip.wilkinson@psych.ox.ac.uk) or 01865 902400).

## Current Opportunities/ Studies

### Memory and Navigation across Ageing (Ethics code: R62148/RE001)

We are researching the effect of ageing on memory and navigational abilities using computerised tasks and questionnaires, place over two consecutive days, for one hour each day. Volunteers should be between the ages of 60-80, fluent in written and spoken English, with sufficient ability to use a computer.

If you are interested and would like further information about the study please contact Oana Gurau at [oana.gurau@ndcn.ox.ac.uk](mailto:oana.gurau@ndcn.ox.ac.uk).

## Upcoming Events *The National Trust Is Going Dementia-Friendly!*

The National Trust is joining forces with Alzheimer's Society to make all of its 500 historic and countryside sites dementia-friendly, in the first project of its kind for the Trust.

About 150,000 National Trust supporters are over the age of 65, and for those volunteers, staff and members who are living with dementia, historic spaces, collections and stories can prompt and stimulate discussion and connection, encourage outdoor exploration, and offer a vital connection to the world around them. Day trips are recognised as one of the most favoured activities for people living with memory problems and their carers.

The new partnership will focus on:

- Upskilling the 74,000 people who work and volunteer for the National Trust
- Improving the accessibility of National Trust sites for all visitors
- Improving internal policies and processes to staff and volunteers affected by the condition.



*Image credit: Reflection by Highlights6 on Flickr CC*

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