

Changing Dementia Horizons: DPUK Progress Outlined

Major investment in research gives hope to millions living with or at risk from dementia – taking us closer to a dementia-free world

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Every three seconds, someone in the world develops dementia. Right now there are 850,000 cases in the UK alone, and more than 50 million worldwide. One in eight people died from dementia and Alzheimer's disease in England and Wales in 2018, according to the latest statistics.

But despite the scale and severity of the problem, there has been disappointingly slow progress over the past century in developing treatments that could delay or prevent the onset of dementia.

For the past five years, Dementias Platform UK – a major public-private partnership funded by the Medical Research Council – has been working to transform the dementia research landscape and accelerate the development of diagnosis and treatments.

To mark five years of investment in dementia research, Dementias Platform UK (DPUK) has announced the progress it has been making on improving diagnosis and treatments for people at risk of dementia. It has also launched the world's most in-depth study into Alzheimer's disease.

DPUK has changed the dementia research landscape by bringing technology, expertise and volunteers together to accelerate the development of new treatments. The success of the programme lies in the access it gives to securely managed big data, which is revealing new findings: for example, that anti-rheumatoid drugs halve the risk of dementia and, once trialled, may provide new treatments.

DPUK curates (cleans and standardises) cohort data from 3.2 million people, making it easier for researchers to compare different cohorts, uncover changes associated with dementia, and test new theories. Cohorts are longitudinal health studies that track information over time.

Big data, coupled with cutting-edge imaging and stem cell technology, is helping researchers identify the molecular and cellular mechanisms associated with dementia, promising earlier diagnosis and treatment, before dementia irreversibly damages the brain. Researchers are now working to diagnose dementia early enough to disentangle how different forms of dementia start and progress.

Professor John Gallacher of Oxford University, who leads the DPUK programme, said: 'Dementia affects over 50 million people worldwide and is the biggest public health crisis facing us in the 21st century. We have stepped up the fight against it with this multi-million-pound investment. While the money is crucial, what is also important with a programme of this kind is that what it can achieve is greater than the sum of its parts.'

'It's like the way we made great strides in tackling cancer: by working together we are increasing our knowledge of how dementia starts, and as a result can develop more effective treatments and ways to tackle it. Big data can sometimes have a bad reputation, but DPUK is leading the way in this area. All our cohorts sign off their involvement in our research, and we have curated the data so that the widest range of scientists can use it.'

'However, what is also significant is the critical role of the public in discovering the causes of dementia. Having a critical mass of reliable data wouldn't be possible without volunteers, as they are how researchers translate our understanding of the mechanisms of disease into treatments. Ensuring that relationship continues to work well is the key to unlocking a dementia-free future.'

Adding to the already immense and important data it provides access to, DPUK has also launched the world's most in-depth study into Alzheimer's disease. Following a pilot study, the screening phase of what is called the Deep and Frequent Phenotyping study (DFP) is now about to get under way. The study will be examining 250 volunteers over 60 years of age with the absence of dementia but pathological signs of it.

The objective of the study is to collect biological samples and brain imaging, and identify a variety of complex biomarkers – some old, some new – so that we can predict the risk of dementia earlier. Once we can identify people at risk of dementia (but not yet showing symptoms) we can improve the success of clinical and drug trials, as we are testing the right volunteers with the right intervention, early in the disease when the brain is still relatively healthy.

Dr Vanessa Raymont of Oxford University, who will be leading this work for DPUK, said: 'We completed analysis of the pilot study early this year, and that has demonstrated that not only do the public want to contribute to Alzheimer's research, they are also willing to undertake relatively invasive assessments in the effort to identify new biomarkers and test new treatments.'

'Without people being willing to do this we would not have been able to move on

to launching the full study, which we hope will reveal phenotypic – or observable – characteristics that may contribute to people developing Alzheimer's disease. Once the study is complete, this data will be part of the DPUK data portal and be accessible to researchers worldwide. This will allow new analysis and opportunities for drug trials to help find a cure and potentially prevent dementia altogether.'

Felicity Steadman, a member of the UK Biobank cohort, is just one example of the millions of people in the UK who are taking part in various research trials. She said: 'I have participated in the UK Biobank over the past 15 years. My father died with dementia and my mother died of metastasised breast cancer, so I would like to do whatever I can to assist research into why these conditions develop and what can be done to prevent and treat them. As Mahatma Gandhi said: "Be the change that you wish to see in the world." I participate for my own benefit and for the benefit of all now and in the future.'

Professor John Gallacher concluded: 'I would really like to thank the public for their support so far and would encourage anyone who wants to help support dementia research in either the DFP programme or wider to join a dementia research registry that suits them.'

'It is people like Felicity and millions like her that are helping us fill the knowledge gap of the causes of dementia. This means we are moving in the right direction, with some breakthroughs in experimental medicine coming to fruition. We are also working with the pharmaceutical industry so that we maximise the success of clinical and drug trials. As we move into the next phase of this ground-breaking project, I am incredibly optimistic that we have all the right ingredients in place to make even greater strides in tackling this terrible disease that affects so many people worldwide.'



Professor Rick Livesey



Dr Vanessa Raymont



Professor Paul Matthews



Professor Franklin Aigbirio



Professor John Gallacher

Pictured are of some of the presenters at the Dementias Platform Five Year Event hosted by The Royal Society, London. Pic Credits: Alex Tyler/Film this Tyler



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