

Link between immune system and brain disorders focus of new project

December 22 2014, by Clare Ryan

A group of UK scientists are teaming up with researchers from two pharmaceutical companies to investigate whether mood disorders, such as depression, and neurodegenerative diseases, such as Alzheimer's, could be treated by targeting the immune system.

The project, which has received a Strategic Award of £5 million (to be awarded in milestones) from the Wellcome Trust, is a new public-private partnership between seven universities (Cambridge, Cardiff, Glasgow, King's College London, Oxford, Southampton and Sussex) and the companies Janssen Research & Development LLC and H. Lundbeck A/S (Lundbeck). The project has been facilitated by Johnson & Johnson Innovation in London.

The initial link between the [immune system](#) and psychiatric and neurodegenerative disorders has been established by a number of studies which indicate that increased levels of biological markers for inflammatory processes are found in patients with [depression](#) and Alzheimer's disease. It has also been shown that inflammatory processes can trigger phenomena that resemble [mood disorders](#) or neurodegeneration in some cases. However, whether or not anti-inflammatory medicines could benefit patients remains unclear.

In a two-stage project, the team will begin by investigating the immune system of patients with depression that has not responded to conventional treatment and patients with Alzheimer's disease. They also plan to use animal models to establish more precisely what the

relationship is between immune-related markers found in blood and brain function and behaviour.

The second part of the research, which is reliant on the success of the first, will be to carry out "proof-of-concept" experimental medicine trials, using re-purposed anti-inflammatory drugs in patients who have been identified according to their specific immunological profile.

Professor Ed Bullmore, from the University of Cambridge, who is leading the consortium, said: "This is an area of enormous public health importance – depression is the single biggest cause of disability in working age adults and Alzheimer's disease is the main cause of the growing numbers of patients with dementia in our ageing population. However, finding new medicines for these disorders has proven to be very difficult in the last few decades. Our consortium will be taking a radically innovative approach, focusing on drug targets in the immune system rather than the nervous system. We have an excellent team of academic and industry experts assembled to address the challenges and we look forward to getting started in the new year."

Dr John Isaac, Head of Neuroscience and Mental Health at the Wellcome Trust, said: "It is incredibly hard to develop drugs to treat depression and Alzheimer's, and existing drugs are often not very effective. The cost of mental illness in the UK is huge, economically, socially and personally. This project is taking a new approach by looking at the immune system, which we already have an advanced understanding of and we know affects the brain, and seeing whether we can use that knowledge to treat mental illness."

Jeffrey Nye, Vice President of Scientific Partnership Strategy and Neuroscience Innovation at Johnson & Johnson Innovation, who worked with the Trust to assemble the consortium, said: "The approach we are taking brings together leading experts from the complementary fields of

neuroscience and immunology and is likely to accelerate our understanding of the role of inflammation in these disorders. By combining the expertise and resources of pharma companies and academics we hope to speed the translation of these approaches into new therapies."

Dr Stevin Zorn, Executive Vice President at Lundbeck Research USA, said: "Neuroinflammation has been increasingly implicated as a key player in a wide range of brain disorders including depression and Alzheimer's disease. This partnership is an exciting opportunity for us to increase our understanding of the important role of emerging immune and neuronal interactions in these disorders, and to point us toward new avenues to develop breakthrough treatments for them."

This will be a joint programme of work building on the complementary resources and expertise of all parties. The commercial partners in the project will contribute financial support, drug discovery know-how, preclinical models, imaging expertise, and access to anti-inflammatory drugs. The academic partners will contribute expertise in neuroimaging, clinical phenotyping and trials, animal models, and informatics.

Provided by Wellcome Trust

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