



ASX Announcement

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Australian study holds key to early detection of Alzheimer's disease

Highlights

- CogState (ASX.CGS) test in combination with amyloid biomarkers enables detection of Alzheimer's Disease before clinical signs emerge
 - Research undertaken as part of the major study Australian Imaging, Biomarker & Lifestyle Flagship Study of Ageing (AIBL) ; CogState founder Paul Maruff a co-author
 - Research findings published in leading journal *Neurology*
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Australian researchers have found a way to detect the very beginning of Alzheimer's disease in apparently healthy people. The study, co-authored by Professor Paul Maruff who is Chief Scientific Officer of CogState (ASX.CGS), is published today in the leading international journal *Neurology*.

The research, led by University of Melbourne PhD student Yen Ying Lim, confirms that elevated brain levels of a certain protein (beta amyloid) can be used as a marker for very early-stage Alzheimer's disease.

"Up to now, we've known there are some healthy older people who have elevated amyloid in their brain but the meaning of this was unknown," says Professor Maruff who is also Head of Neuropsychology Laboratory at the Mental Health Research Institute of Victoria (MHRI).

"We found that despite people with high amyloid having no symptoms or problems with thinking, careful measurement over time revealed clear evidence of a subtle but progressive decline in their memory".

"The data suggest that high amyloid does indicate early disease and the combination of this biomarker, and the cognitive test, is really useful," Professor Maruff said.

The study involved 141 "healthy and cognitively normal" older people (mean age 76 years) enrolled in the control arm of the major Australian Imaging, Biomarker & Lifestyle Flagship Study of Ageing (AIBL) - a large collaborative study between universities, the CSIRO and the biotechnology and pharmaceutical industry.

Participants in the study underwent PET brain scans and were tested for the APOE gene. They also had their memory function tested using computer-based tests developed by CogState at the start of the study and then a year and a half later.



None in the group showed clinical signs of Alzheimer's disease either before, or at the end of, the 18 month study.

However, those known to have higher brain levels of beta amyloid showed up to a 20% greater decline in memory performance over the period when compared to people with normal levels of amyloid.

"The research validates the use of tests within the CogState battery, showing that they are highly sensitive and able to detect even subtle changes in memory performance in otherwise healthy elderly people," Professor Maruff also said.

"These tests could play an important role in the early detection of Alzheimer's disease in patients who would not be diagnosed using conventional clinical assessment."

Prof Maruff said the discovery could bolster efforts to develop an effective treatment that could intervene in the earliest phase of Alzheimer's disease and curb, or stop, its progression.

"For me this study brings great opportunity and hope. We are on the cusp of having new drugs designed specifically to stop the accumulation of amyloid," he said.

"This biomarker, and CogState data from the AIBL study, suggests that we may be able to assess the effects of these drugs in people who remain healthy, active and independent.

"There is a possibility for stopping this disease before its effects manifest".

Beta amyloid is a component of the "plaques" seen to form in the brains of people with Alzheimer's disease, and around 95% of people diagnosed with the neurodegenerative condition will have elevated levels if checked with a PET scan.

Elevated beta amyloid levels will also be seen in around 20 – 30% of elderly people who appear to be healthy and so the link to Alzheimer's disease had remained unclear.

Study co-author Professor Colin Masters, Executive Director of the MHRI and Laureate Professor at the University of Melbourne, said the research suggested "Alzheimer's disease processes have begun" in these people.

"The combination of a decline in memory, along with amyloid imaging, may be useful for the identifying Alzheimer's disease in people who don't meet any clinical criteria for cognitive impairment. Furthermore, it is possible to detect this decline in memory using a brief but repeatable assessment," Professor Masters said.

The study also found beta amyloid levels had a stronger effect on memory performance than those carrying the APOE gene, which is associated with a more rapid decline in memory in healthy older people.

The research is published in the October 16, 2012 edition of *Neurology*, the medical journal of the American Academy of Neurology.



About AIBL

The Australian Imaging, Biomarker & Lifestyle Flagship Study of Ageing (AIBL) is seeking to identify the biomarkers, cognitive characteristics, and health and lifestyle factors which impact on Alzheimer's Disease risk. It is the largest study of its kind in Australia, was launched in late 2006, and now involves more than one thousand people aged over 60 years who have Alzheimer's Disease, Mild Cognitive Impairment as well as healthy volunteers.

About CogState

CogState Ltd (ASX: CGS) specialises in the development and commercialisation of rapid, computerised tests of cognition (brain function).

In the clinical drug trial market, CogState technology and associated services are used by pharmaceutical and biotechnology companies to quantify the effect of drugs or other interventions on human subjects participating in clinical trials. Since sales into the clinical trials market began in 2004, CogState has secured agreements with top pharmaceutical companies including Pfizer, AstraZeneca, Bristol-Myers Squibb, GlaxoSmithKline, Merck, Johnson & Johnson, Novartis, Lundbeck, Daiichi Sankyo, Targacept, Otsuka, and Servier.

Axon Sports is dedicated to protecting and training the Athletic Brain. Our goal is simple - to transform how athletes protect and train their brains for sport. Axon Sports launched in August of 2010 with the Axon CCAT, a baseline concussion management system that is currently used by major professional teams and leading medical providers to safeguard the cognitive health of athletes of all ages.

While athlete safety is of critical concern, Axon Sports was founded with a much broader goal: transforming the way athletes train for sport. We are currently developing products to train the athletic brain and accelerate the curve of skill acquisition. Today, athletes develop key cognitive skills through practice time and game experience. However, we believe there are ways to isolate and train high-speed decision skills off the field or court, through 'athletic brain training'. Axon is developing new training tools that will speed up this learning process and accelerate the acquisition of athletic expertise. Using Axon programs, athletes can get added 'mental reps' without taxing the body or risking injury.

In June 2012, CogState entered into an agreement with Merck Canada Inc. providing it with the exclusive right to market and promote the CogState Test to primary care physicians in Canada. The first commercial sale is expected to occur before the end of 2012. In the primary care or general practice setting, the CogState Test assesses cognition in patients and the reports generated on the basis of this assessment can allow physicians to identify subtle changes that could be indicative of the early stage of a neurodegenerative disease, such as Alzheimer's disease. The CogState Test can also be used to monitor changes in cognitive function following concussion or after treatment with drugs or other types of interventions.

For further information:

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