

Alzheimer's to be diagnosed online

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(Medical Xpress)—The early onset of Alzheimer's disease could be detected using a simple online test, according to scientists from the [Queensland Brain Institute](#) (QBI) at The University of Queensland (UQ).

Study coordinator Professor Lizzie Coulson said her research team at QBI had identified how Alzheimer's disease impairs the cholinergic basal forebrain in undertaking navigational tasks.

"One of the areas known to degenerate in Alzheimer's disease is a region called as the cholinergic basal forebrain, implicated in memory and attention," Professor Coulson said.

"It has been unclear whether loss of function in this brain area causes the cognitive changes seen early in Alzheimer's disease."

The researchers examined the [cognitive changes](#) in rodent models with basal forebrain degeneration mimicking Alzheimer's disease.

"Surprisingly, the mice behaved normally on most of the [cognitive tests](#)," Professor Coulson said.

"However on a recall navigation task akin to 'dead reckoning', the mice become disorientated."

Professor Coulson said this demonstrated that recall navigation tasks relied heavily on cholinergic [neurons](#), which were known to deteriorate early in Alzheimer's patients.

"By asking patients to perform these navigation tasks, doctors may be able to detect symptoms of Alzheimer's disease much sooner and more cheaply than the MRI tests," she said.

"We envision this test could also help to identify patients who would benefit from early administration of current Alzheimer's disease treatments."

She says early diagnosis is critical as current Alzheimer's disease treatments enhance the function of cholinergic neurons only when the cells were still healthy.

Professor Coulson, in collaboration with a team from the Czech Republic who developed the human recall [navigation tasks](#), are currently validating the findings in humans.

Volunteers are asked navigate a simple arena on a [computer monitor](#) touchscreen.

Some subjects also have a brain MRI.

Professor Coulson says the diagnosis tool could be widely used as early as 2015.

Patients would perform the online test at a memory clinic, but the examination could one day be undertaken on their home computer says Coulson.

Alzheimer's disease patients, known to show specific memory impairment, are currently diagnosed using a range of cognitive tests as well as magnetic resonance imaging (MRI) scans, which can pinpoint the regions of brain degeneration, a symptom of the disease.

The paper, "Lesions of the basal forebrain cholinergic system in mice disrupt idiothetic navigation," is published in the journal *Plos One*.

Provided by University of Queensland

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