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Research reveals more about spatial memory problems associated with Alzheimer's

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Researchers at Western University have created a mouse model that reproduces some of the chemical changes in the brain that occur with Alzheimer's, shedding new light on this devastating disease. Marco Prado, Vania Prado and their colleagues at the Schulich School of Medicine & Dentistry's Robarts Research Institute, looked at changes related to a neurotransmitter or chemical messenger, named acetylcholine (ACh), and the kinds of memory problems associated with it.

The research is now published online by *PNAS*.

The researchers, including first author Amanda Martyn, created a mouse line that doesn't have enough ACh being secreted by neurons in the same brain regions affected by Alzheimer's disease. They found this neurochemical failure caused problems with spatial memory, the stored information that is needed for navigating one's environment. For instance, the memory needed to drive across town. They also found the reduction of ACh led to hyperactivity, which many patients with Alzheimer's experience.

"Once we reproduced that neurochemical failure, we asked, 'how does that affect spatial memory, how does it affect learning?' We found mice that don't have that particular chemical messenger in specific areas of the brain, have problems with spatial memory, for example," says Marco Prado. "This reveals specific types of cognitive deficits that we can hope to improve with drugs that boost this chemical messenger."

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Provided by University of Western Ontario

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