

Key Brain Receptors Linked To Learning and Memory Decrease with Age

September 11 2009



(PhysOrg.com) -- Scientists studying cognitive decline that accompanies aging have been interested in nicotinic receptors, part of a key neural pathway that not only enhances learning and memory skills but reinforces addictions as well. The loss of these receptors has been difficult to study in living subjects, but Yale University researchers using advanced imaging technology have successfully tracked the loss of receptors with age, according to a report in the September issue of the journal *Neurobiology of Aging*.

“Measurable decline in cognitive abilities is evident by [age 50](#), but our knowledge of the changes in the brain associated with these deficits has been largely confined to post-mortem studies,” said Christopher H. van Dyck, senior author of the study and Professor of Psychiatry and

Neurobiology and Director of the Alzheimer's Disease Research Unit.

The Yale University researchers used SPECT imaging to track concentrations of nicotinic receptors in eight brain regions of 47 subjects aged 18 to 85. They observed an age-related loss of receptors in seven of eight brain regions, at a rate of about 5 percent per decade of life.

Nicotinic receptors reinforce addictions such as smoking, but also facilitate learning and memory. Autopsies of [dementia](#) patients have revealed a significant decline of these receptors.

“Nicotinic receptors are such promising targets that pharmaceutical companies are currently exploring nicotine analogues as potential treatments for Alzheimer's disease and Mild Cognitive Impairment,” van Dyck said.

The findings are additional evidence that nicotinic receptors may play a role in the cognitive decline associated with normal aging. “These results may encourage the broadening of therapeutic trials to target the [cognitive decline](#) associated with healthy aging,” van Dyck said.

Other Yale authors of the paper are Effie M. Mitsis, Kelly P. Cosgrove, Julie K. Staley, Frederic Bois, Erin B. Frohlich, Gilles D. Tamagnan, Kristina M. Estok and John P. Seibyl.

Provided by Yale University ([news](#) : [web](#))

Citation: Key Brain Receptors Linked To Learning and Memory Decrease with Age (2009, September 11) retrieved 19 April 2024 from <https://medicalxpress.com/news/2009-09-key-brain-receptors-linked-memory.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.