

Tau, not amyloid-beta, triggers neuronal death process in Alzheimer's

[Post new comment](#)

posted by news on november 17, 2014 - 2:30pm

[+](#) [Share / Save](#) [f](#) [g+](#) [su](#) ...



WASHINGTON (Nov. 16, 2014) -- New research points to malfunctioning tau, not amyloid-beta (Abeta) plaque, as the seminal event that spurs neuron death in disorders such as Alzheimer's disease. The lead Georgetown neuroscientist investigating the work explains the finding and the potential of an already approved drug in mediating the problem at the annual meeting of the Society for Neuroscience, Tuesday, Nov. 18, 8:15 a.m. in room WCC152A.

The study, which dramatically alters the prevailing theory of Alzheimer's development, also explains why some people with plaque build-up in their brains don't have dementia. The work was describe earlier this month in the journal *Molecular Neurodegeneration*.

Neuronal death happens when tau, found inside neurons, fails to function. Tau's role is to provide a structure -- like a train track --inside brain neurons that allows the cells to clear accumulation of unwanted and toxic proteins.

"When tau is abnormal, these proteins, which include Abeta, accumulate inside the neurons," explains the study's senior investigator, Charbel E-H Moussa, MB, PhD, assistant professor of neuroscience at Georgetown University Medical Center. "The cells start to spit the proteins out, as best they can, into the extracellular space so that they cannot exert their toxic effects inside the cell. Because Abeta is 'sticky,' it clumps together into plaque," Moussa says.

He says his study suggests the remaining Abeta inside the neuron (that isn't pushed out) destroys the cells, not the plaques that build up outside. "When tau does not function, the cell cannot remove the garbage, which at that point includes Abeta as well as tangles of nonfunctioning tau, and the cell dies. The Abeta released from the dead neuron then sticks to the plaque that had been forming."

Moussa's experiments in animal models also show less plaques accumulate outside the cell when tau is functioning; when tau was reintroduced into neurons that did not have it, plaques did not grow.

Malfunctioning tau can occur due to errant genes or through aging. As individuals grow older, some tau can malfunction while enough normal tau remains to help clear the garbage. In these cases, the neurons don't die, he says. "That explains the confusing clinical observations of older people who have plaque build-up, but no dementia," Moussa says.

Moussa has long sought a way to force neurons to clean up their garbage. In this study, he shows that nilotinib, a drug approved to treat cancer, can aid in that process. Nilotinib helps the neuron clear garbage, but requires some functional tau, he says.

"This drug can work if there is a higher percentage of good to bad tau in the cell," Moussa says. "There are many diseases of dementia that have malfunctioning tau and no plaque accumulation, such as frontal temporal dementia linked to Parkinsonism," Moussa says. "The common culprit is tau, so a drug that helps tau do its job may help protect against progression of these diseases."

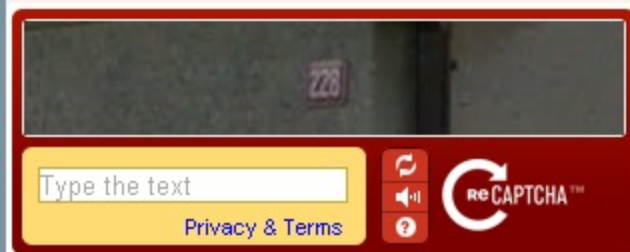
Source: Georgetown University Medical Center

- Allowed HTML tags: <a> <object> <cite><p>
<i><div><html5:figure><html5:figcaption>
- Lines and paragraphs break automatically.

More information about formatting options

CAPTCHA

Sorry, we know you're not a spambot, but they're out there



Related Articles To This One:

- [Tau, not amyloid-beta, triggers neuronal death process in Alzheimer's](#)
- [A single-domain antibody that specifically recognizes amyloid-beta 42 oligomers](#)
- [Novel role of protein in generating amyloid-beta peptide](#)
- [New mechanism for amyloid beta protein's toxic impact on the Alzheimer's brain](#)
- [Phase 3 Alzheimer's drug provides some benefit if you don't mind increases in toxic beta amyloid in the brain](#)

Recent Articles:

- [Vanderbilt team uses e-health records to search for hidden drug benefits](#)
- [Trojan horse tactic gives parasites edge over immune systems](#)
- [Researchers shed new light on the genetics of memory performance](#)
- [A hybrid vehicle that delivers DNA](#)
- [Pathology specialist contributes to debate on breast cancer gene screening](#)

[more](#)



- [El Niño Blamed For Stunted Growth Of Peruvian Children](#)
- [Which Government Created Regín, One Of The Most Sophisticated Espionage Bugs Ever Discovered?](#)
- [Violence, Sex And Taboo: The Original Brothers Grimm Fairy Tales Back In Print](#)
- [Australian Farmers Face Increasing Threat Of New Diseases](#)
- [How To Make A Profit In The World's Driest Wheat Region](#)

Create Your Own Releases: