



Prions Could Play Role in Preventing Alzheimer's Disease

Scientists say protein particles block plaque formation

Protein particles, or prions, produced by the body appear to prevent the buildup of plaque in the human brain, a key indicator of Alzheimer's disease, according to important new research from the University of Leeds.

Prions have already been linked to such infectious diseases as mad cow disease and Creutzfeldt-Jakob disease. Now, the British team, led by Professor Nigel Hooper of the University of Leeds, found that prions can also have a role in preventing Alzheimer's disease, which closely parallels Creutzfeldt-Jakob in some respects.

"Our experiments have shown that the normal prion proteins found in brain cells reduce the formation of beta-amyloid, a protein that binds with others to build plaques in the brain that are found in Alzheimer's disease," explains Professor Hooper.

Using cells grown in the lab, the team found that, at high levels

of normal prion protein, beta amyloid did not form. At lower levels or in the absence of the protein, beta amyloid formation increased.

Why? One theory is that the normal prion protein blocks an enzyme called beta-secretase from cutting up amyloid protein into the smaller beta-amyloid fragments that are required to build plaque.

"Until now, the normal function of prion proteins has remained unclear," says Professor Hooper, "but our findings clearly identify a role for normal prion proteins in regulating the production of beta-amyloid. Whether this function is lost as a result of the normal aging process, or if some people are more susceptible to it than others, we don't know yet.

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For more information on projects being funded by Alzheimer's Disease Research, visit us on the web at: www.ahaf.org



President's Corner

Making Alzheimer's disease a national priority

We are standing on the brink of a major health crisis.

According to a recently released progress report by the National Institute on Aging, the number of Americans afflicted with Alzheimer's disease, currently estimated at 4.5 million, could reach 13.2 million by 2050 if a cure isn't found.

When you add in the costs of caring for Alzheimer's disease patients, which now run as high as \$100 billion a year — not to mention the escalating number of Americans who will be forced into the role of caregivers — our mission is clear. We must continue to dedicate ourselves to preventing and treating Alzheimer's disease now — before it turns into a national calamity.

This is the mission that has animated Alzheimer's Disease Research from the start. And it will continue to guide us as we educate the public and sponsor cutting-edge scientific research, moving steadily toward the day when "Alzheimer's disease" is no longer a death sentence.

This November, as we celebrate Alzheimer's Awareness month, I hope you will do what you can to educate and protect yourself and your loved ones about Alzheimer's disease.



Brian K. Regan, Ph.D.
President

www.ahaf.org

Simply click on the Alzheimer's Disease Research link to learn more about what's new in the world of research, as well as important information about risk factors for Alzheimer's disease.

Please share this newsletter with someone you know who might be interested in learning about some of the latest advancements in research to prevent, treat and cure Alzheimer's disease.

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continued from *Prions Could Play Role ...*

“The next step for our research will be to look in more detail at how the prion protein controls beta amyloid, knowledge that could be used to design anti-Alzheimer’s drugs. Theoretically, if we can find a way of mimicking the prion’s function we should be able to halt the progress of

Alzheimer’s. However, there’s still a lot of work to be done in looking at levels of prions in the human system and how these may alter as we age.”

The research team's findings were edited by Dr. Stanley Prusiner, who won a Nobel Prize in Medicine in 1997

for his landmark research on prions. Dr. Prusiner has acknowledged the donors of Alzheimer's Disease Research who supported the \$1.2 million in grants he received to develop the ideas that led to his Nobel Prize, the highest honor in science.

Difficulty Identifying Odors May Predict Cognitive Decline

Researchers uncover potential early marker for Alzheimer's

Older adults who have trouble identifying common odors may experience a greater decline in thinking, learning and memory, according to a study reported in the July issue of *Archives of General Psychiatry*, one of the *JAMA/Archives* journals.

The study, led by Robert S. Wilson, Ph.D., of Rush University Medical Center, Chicago, tracked 589 older adults (average age 79.9) over five years. Researchers found that the risk of developing mild cognitive impairment increased as the ability to identify odors decreased, so that those who scored below average on the odor identification test were 50 percent more likely to develop the condition than those who scored above average. This association did not change when stroke, smoking habits or other potential influences were factored in.



Impaired odor identification was also linked with a more rapid decline in episodic memory (memory of past experiences), semantic memory (memory of words and symbols) and perceptual speed.

Although an impaired ability to recognize odors has previously been associated with more rapid cognitive decline, **this is the first major study to suggest it predicts the development of mild cognitive impairment.**

“The findings suggest that olfactory dysfunction can be an

early manifestation of Alzheimer’s disease,” the study’s authors write, “and that olfactory assessment may be useful for early disease identification.”



Healthy Living

Exercise is key to brain function

The last issue of **Alzheimer's Research Review** discussed the importance of keeping the mind active. Increasingly, physical exercise is also being touted as a possible help in preventing or delaying Alzheimer's disease.

It has long been known that lifelong exercise reduces a person's risk of developing high blood pressure, stroke and cardiovascular diseases. This in turn decreases the risk of Alzheimer's disease. New research, however, suggests that exercise might actually help break down the amyloid protein that produces plaque.

The brain also benefits greatly from the increased blood circulation brought about and sustained by regular physical

activity. In addition, exercise is an excellent way to release stress and improve overall physical and emotional health.

When is it time to see your doctor?

You should visit your physician if you notice that memory loss increases in frequency or severity, makes an impression on friends and family or begins to interfere with daily activities associated with employment responsibilities, social interactions and family chores.

Other potential signs of Alzheimer's disease include changes in personality, language difficulties, problems with simple mathematical tasks, impairments in gait or movement or problems with



attention and orientation. A physician with extensive knowledge, experience and interest in dementia and memory problems should be involved in evaluating your condition. Other subspecialties may then be called in to add their opinions. Proper medication may be able to slow the progression of the disease or control symptoms.

'Tis the Season

Memorial gifts are an ideal way to honor loved ones over holidays

With the holidays approaching, this is a wonderful time to honor loved ones with a special gift!

Memorial and Honor Gifts to Alzheimer's Disease Research can be given at any time of year, for any special occasion — birthdays, anniversaries, graduations, weddings and especially, Christmas and Hanukkah — to show appreciation for someone's kindness or to recognize a friend's impact on your life. When you make a gift in memory or honor of someone special, we will send a card notifying the honoree or their family of

your generous gift in their name.

To make a Memorial or Honor Gift donation or for more information, please call Sierra Saligumba, Memorial Coordinator, at 800-437-2423, or visit our website www.ahaf.org.

