



## Protein Shown to Reduce Buildup of Alzheimer's Plaque

### Research highlights new possibility for Alzheimer's treatment

A protein that helps the brain process cholesterol may also be a key to slowing the progression of Alzheimer's disease, according to an important new study.

Using a mouse model, scientists with the Washington University School of Medicine in St. Louis found that higher levels of the protein ABCA1 sharply curtailed the buildup of beta-amyloid plaque found in the brains of people with Alzheimer's disease.

"It's becoming clear that ABCA1 may be a good drug target for Alzheimer's therapies," says senior author David M. Holtzman, M.D., chairman of the school's Neurology Department. "There are known drugs that can increase ABCA1 levels, and with some further development of this or similar classes of drugs and additional insights into how ABCA1 slows down plaque deposition, there may be a way to create a new approach to Alzheimer's treatment." Because cholesterol and other lipids aren't soluble, they need

associated molecules called apolipoproteins to help them pass through the bloodstream and into cells and organs. This process is facilitated by ABCA1, a naturally occurring enzyme discovered in 2001 that is also being studied as a potential treatment for heart disease.

In previous research, Holtzman and his colleagues found that ABCA1 helps boost levels of

HDL or "good" cholesterol in the brain. Taking that insight a step further, Holtzman's team discovered that mice with elevated levels of ABCA1 developed beta-amyloid plaque more slowly and to a much smaller extent than mice with normal levels of the protein. Holtzman will conduct additional studies to clarify this linkage.

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# Depression Puts People at Higher Alzheimer's Risk

## Study finds new links between mental and brain health

People who have suffered from depression are more than twice as likely as others to develop Alzheimer's disease, according to a study conducted at the Erasmus University Medical Center in Rotterdam, the Netherlands.

Published in *Neurology*, the medical journal of the American Academy of Neurology, the study tracked 486 older people over six years and found that those who had experienced depression were

two and a half times likelier to develop Alzheimer's than those who had never had depression. For those who experienced depression before 60, the risk was nearly four times as great.

"We don't know yet whether depression contributes to the development of Alzheimer's disease or whether another unknown factor causes both depression and dementia," says study author Monique M.B. Breteler, M.D., Ph.D. "We'll need to do more studies to

understand the relationship between depression and dementia."

Scientists have previously theorized that depression contributes to Alzheimer's disease by killing off cells in the hippocampus and amygdala, two key areas of the brain. The Erasmus University study, however, found these brain areas were no different in size in people with a history of depression.

## President's Corner

### Knowing the enemy

More than a century has passed since Alois Alzheimer discovered the disease that bears his name, and still the best way to conclusively diagnose it is through autopsy – studying the brain tissue of a patient already dead.

In living patients, doctors can only make the diagnosis after looking at medical histories, physical exams, neuropsychological tests – and then eliminating all other possible causes for the patient's symptoms. At least 10 percent of the time, this diagnosis by exclusion can be incorrect.

All that is now changing. As you'll learn in this issue of *Alzheimer's Research Review*, scientists are finding highly accurate new ways of detecting the disease in living patients, even before symptoms appear. In addition to greatly improving patients' long-term health prospects, these techniques will allow future researchers to study the impacts of treatments at every stage of the disease.

No one wants to get diagnosed with Alzheimer's disease. But with stakes as high as these, no one wants to get it wrong, either.

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. The *Alzheimer's Research Review* is published by Alzheimer's Disease Research, a program of the American Health Assistance Foundation, a nonprofit organization located at 22512 Gateway Center Drive, Clarksburg, Maryland 20871, 301-948-3244, 800-437-2423, [www.ahaf.org](http://www.ahaf.org).

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## Special Compound Helps Scientists “See” Alzheimer’s Plaques

Findings could enable earlier diagnosis of disease

A special radioactive compound that binds to beta-amyloid brain deposits could allow clinicians to make definitive Alzheimer’s diagnoses in living patients, according to researchers at the University of Pittsburgh.

In the past, scientists could conclusively diagnose Alzheimer’s only by autopsying the brains of dead patients. The new study, which correlates findings from living patients with post-mortem autopsy findings, offers hope that clinicians can diagnose the disease earlier and track its progression more closely, possibly enhancing the development of future treatments.

“This is final confirmation of what we have believed all along – that Pittsburgh Compound-B allows us to accurately assess

the amount of beta-amyloid plaques in brains of people afflicted with Alzheimer’s,” says senior study author Steven DeKosky, M.D.

Created by Pitt researchers, Pittsburgh Compound-B (PiB) can be injected into the bloodstream and, in conjunction with positron emission tomography imaging, can enable researchers to locate the full distribution of plaque deposits.

“In every subject, and with each test that we performed, our results supported the idea that PiB binds almost exclusively to beta-amyloid, which means that we can, with confidence, look to PiB to indicate the troublesome beta-amyloid deposits in brains of living patients,” says lead author Milos Ikonovic, M.D.

## Grief Takes Largest Toll on Alzheimer’s Caregivers, Study Says

Survey points out new directions for supporting family members

The emotional turmoil of losing loved ones’ support and companionship is the greatest burden Alzheimer’s caregivers face, suggests a new study by the University of Indianapolis.

The study gathered responses from more than 400 dementia caregivers, mostly spouses and adult children of Alzheimer’s patients. More than 80 percent of the responses clustered around a similar theme: “letting go of the person you used to know ... watching your loved one slip away and forget who

people are.”

“You are losing and grieving while you’re providing the care, because Charlie isn’t Charlie anymore,” says study leader Jacquelyn Frank of UIndy’s Center for Aging & Community.

Frank hopes the findings will instigate new support and intervention programs for dementia caregivers. “These people need to know that feelings of grief and loss are normal,” she says, “and that

other caregivers face the same emotional difficulties.”

Learn More  
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Simply click on the Alzheimer’s Disease Research link to learn more about what’s new in the world of research. You’ll also find practical tips on diet and lifestyle and how caregivers can minimize damage to their own health.

## Research Roundup

### INFRARED LIGHT CAN FIND EVIDENCE OF ALZHEIMER'S IN BRAIN TISSUE

Scientists have successfully used infrared light to detect signs of Alzheimer's disease in the human brain. In a study published in *Optics Letters*, researchers reported that optical technology can detect alterations in brain tissue caused by Alzheimer's disease—sometimes well before clinical symptoms appear.

Infrared light is favored by scientists because it can pass through the skull and brain without harm to the patient. Beta-amyloid plaques, one of the hallmarks of Alzheimer's disease, will make this light scatter in a different way than normal brain tissue.

"We're primarily interested in finding a way of diagnosing and monitoring Alzheimer's disease during life," says Eugene Hanlon, a research scientist with the U.S. Department of Veterans Affairs. "We think this technique has a lot of potential for detecting the disease early on."

### FISH OIL COULD BE DIETARY WEAPON AGAINST ALZHEIMER'S DISEASE

Scientists at UCLA have found conclusive proof that fish oil slows the progress of Alzheimer's disease. In findings published in the *Journal of Neuroscience*, researchers reported that DHA, the omega-3 fatty acid found in fish oil, boosts production of a

protein that in turn reduces the brain plaque associated with Alzheimer's.

Omega-3 fatty acids are found in fatty fish like salmon, and their health benefits have long been endorsed by many clinicians and practitioners. The National Institutes of Health is currently undertaking a large-scale clinical trial testing the impacts of DHA on people with established Alzheimer's disease.

### HIGH CHOLESTEROL COULD RAISE ALZHEIMER'S RISK

People who register high cholesterol counts in their 40s are more likely to develop Alzheimer's disease later in life, says a study presented at the American Academy of Neurology.

The study of 9,752 men and women in northern California found that people with total cholesterol levels between 221 and 248 milligrams were 25 percent more likely to develop Alzheimer's than those with cholesterol levels less than 198 milligrams. Those with total cholesterol levels between 249 and 500 milligrams were 50 percent more likely to develop the disease.

"Our findings show it would be best for both physicians and patients to attack high cholesterol levels in their 40s to reduce the risk of dementia," says study author Alina Solomon, M.D., of the University of Kuopio in Finland.

## Feel Good and Give Back

Gift planning can help fight Alzheimer's ... and secure your own future

Through thoughtful gift planning, you can donate now to help the world's leading scientists search for a cure for Alzheimer's disease. With a bequest, you will still be helping the scientists as well as making a significant tribute to your legacy. A bequest may also aid in reducing your estate taxes, which would leave a larger inheritance for your loved ones.

Whether you send a check, donate stock or include Alzheimer's Disease Research in your will, your gifts will put you front and center in the fight to discover treatments that will benefit millions.

For additional information, or if you want to discuss the many giving options available, please contact Barbara Spitzer, Development Coordinator, at 1-800-437-2423 or e-mail her at [bspitzer@ahaf.org](mailto:bspitzer@ahaf.org).

