

New Research Links Your Brain and Your Gut

Researchers break down how, exactly, a healthy diet might lower dementia risk - by Hallie Levine

Last year's Alzheimer's Association conference made headlines with the release of studies showing that a healthy diet, along with other lifestyle factors, can slash your risk of dementia ([https:// www.aarp.org/health/dementia/](https://www.aarp.org/health/dementia/)) by a third. To find out why exactly that might be the case, researchers have hunted for answers, among other places, in the gut microbiome, the trillions of microorganisms that live in our digestive tracts. Certain changes in these bacteria have been linked to various inflammatory and autoimmune conditions, such as obesity, diabetes and inflammatory bowel disease. But scientists also discovered that some types of microbiome bacteria can promote buildup in the brain of specific proteins known as amyloid and tau proteins, which are linked to Alzheimer's disease. In mouse studies, dietary changes that alter the microbiome in turn reduce amyloid plaques, lower inflammation and — bingo — improve memory.

Research released at today's conference suggests another link along the digestive tract: that a person's ability to metabolize certain lipids — fatlike substances found in blood and body tissue that actually make up most of your brain — also can affect the risk of developing Alzheimer's and other dementias. "If your body has trouble producing or moving lipids around, it may impact your brain structure and its function," explains Heather Snyder, senior director of Medical and Scientific Operations at the Alzheimer's Association.

While this research is still in its infancy, it has the potential to be game-changing. "It may help us develop better diagnostic tests for the disease in the future, as well as to better understand why some people progress rapidly over a year, and some more slowly over 15 years," says Jagan Pillai, a neurologist at Cleveland Clinic.

What the Studies Show

Two of the studies looked at the impact of lipids on Alzheimer's risk. One study, by researchers at the University of Pennsylvania and Duke University, found that low levels of a certain type of lipids, plasmalogens, are linked to higher Alzheimer's risk. (Some of these plasmalogens also contain two omega-3 fatty acids that are vital for brain health.) The second study, done at the University of California, Davis, looked at 800 older adults, some healthy, some with mild cognitive impairment and some with full-blown Alzheimer's. They also found that people with Alzheimer's had many problems with lipid metabolism, such as difficulty absorbing lipids that contain EPA and DHA. In addition, giving these patients fish oil supplements failed to bring these lipids back to normal.

"These studies seem to show that if, for whatever reason, your body has trouble producing certain lipids, it impacts what's going on in your brain," explains Snyder. This may also explain why fish oil supplements have had mixed results in clinical trials when it comes to warding off dementia. "Some people just aren't able to absorb them, for unknown reasons," Snyder says.

A third study, at Indiana University, examined the bile acids — substances made by your liver that help break down fat — in older adults who either had early-stage Alzheimer’s or were at increased risk of the disease. They found that high levels of certain bile acids were increased in people with Alzheimer’s and were linked to cognitive decline, reduced brain glucose metabolism and greater brain atrophy, as well as higher levels of amyloid and tau proteins. “We still have a lot to tease out: Are these changes in bile acids causing changes in the brain, or is it the other way around — that something happening in the brain leads to alterations in digestion?” says Snyder. “But information like this could ultimately be used to develop better diagnostic testing for Alzheimer’s.”

There are more than 40 different risk genes associated with Alzheimer’s. The last study, out of Erasmus Medical Center in Rotterdam, looked at some of these genetic variations and found that two — including the strongly associated APOE-e4 — were significantly associated with lower levels of cholesterol components that help keep brain cell membranes healthy and strong. Other genes were associated with higher or lower levels of certain bile acids. “Alzheimer’s researchers haven’t paid much attention to these sorts of markers in the past, but this research suggests that perhaps we should,” says Gary Small, professor of psychiatry and biobehavioral sciences at the David Geffen School of Medicine at UCLA. “This may help us understand how these underlying mechanisms contribute to Alzheimer’s disease, and thus unlock strategies for more effective treatments.”

The Takeaway

While much of this research is intriguing, it’s still in its infancy, cautions Small. In the meantime, “the microbiome is certainly a very interesting area of study right now, not just for Alzheimer’s but for brain health and mood,” he notes. In the meantime, you can help keep all your organs, including your liver, GI tract — and yes, brain — in tiptop shape by eating a diet high in fruits, veggies, whole grains and healthy fats such as fatty fish and olive oil, while limiting saturated fats and sugars.



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The Young at Heart Show Fewer Signs of Aging

They have more gray matter in their brains, a recent study finds - by Patrick J. Kiger

Researchers have found that people who feel younger than their chronological age show fewer age-related changes in their brains, compared with those who say they feel their age or older.

In a study published in the journal *Frontiers in Aging Neuroscience*, scientists from two South Korean universities performed MRI scans on the brains of 68 healthy people between the ages of 59 and 84. The subjects also took a memory test (</health/brain-health/info-2017/stimulating-brain-games-fd.html>) and filled out a survey, which asked whether they felt younger or older than their age. Their overall health and cognitive abilities were also assessed.

The scientists found that participants who felt younger had a greater amount of gray matter (which is involved in information processing) in key regions of the brain than did those who felt their age or older. They were also likely to score higher on the memory test and considered themselves to be in better health. And they were less likely to report signs of depression.

"We found that people who feel younger have the structural characteristics of a younger brain," Jeanyung Chey, a psychology professor at Seoul National University, said in a statement. "Importantly, this difference remains robust even when other possible factors, including personality, subjective health, depressive symptoms or cognitive functions, are accounted for."

The researchers said they suspect that those who feel older may actually be sensing their own gradual loss of gray matter, which can make cognitive tasks more difficult. "If somebody feels older than their age, it could be a sign for them to evaluate their lifestyle, habits and activities that could contribute to brain aging and take measures to better care for their brain health (</health/brain-health/info-2018/steady-exercise-increase-older-rainpower.html>)," Chey said.



How Much Life Insurance Can I Buy in My Retirement Plan?

Life insurance needs can be met within most qualified retirement plans if the Plan Document and Trust allow for it. The amount that you can purchase depends on the type of plan you sponsor, as indicated below:

- 1. SEP-IRA and SIMPLE-IRA.** Life insurance is not a permitted investment of an IRA.
- 2. Defined Contribution Plans (e.g., Money Purchase).** Any participant can use up to 50% of his or her cumulative contributions (not account balance) to purchase whole life insurance or less than 25% of contributions to buy universal life or policies with term insurance riders.
- 3. 401(k) and Profit Sharing Plans.** For premiums paid with ongoing contributions, see defined contribution plans. However, some 401(k) and profit sharing plans, including SAI prototype plans, include “aged money” features that waive the limit for certain monies in the plan. There are three exceptions:
 - **Five Year Rule.** If a participant has been in the plan for more than five years, there is no limit on the life insurance purchase within his or her account if only profit sharing monies are used.
 - **Two Year Rule.** Any employer-paid profit sharing monies that have resided in the plan for at least two full years may be used without limit.
 - **Rollovers.** Amounts that you rolled into the 401(k) or profit sharing plan (e.g., from IRAs) can be used without limit.

This latter provision has become broadly available as the 2001 tax act greatly expanded the portability of pension proceeds. For example, you can now roll over 403(b) funds into your profit sharing plan and tap any of these monies to secure life insurance if you have a need.

- 4. Defined Benefit (including Fully Insured or Cash Balance Plans).** There are two rules that the plan sponsor selects from to determine the maximum survivor benefits allowed under the plan:
 - **100 Times Rule.** Life insurance of up to 100 times the expected monthly retirement benefit at Normal Retirement Age may be purchased.
 - **Revenue Rul. 74-307 Method.** This somewhat complex method determines a “Theoretical Level Premium” (TLP) that is actuarially calculated. Up to 66 2/3% of the TLP may then be used to buy whole life insurance, and up to 33 1/3% may be used for universal life or for policies with term riders. Although this method often provides for more life insurance than the 100 Times Rule, the comparison will vary widely based on age and expected plan contributions. SAI can do the calculations for you.