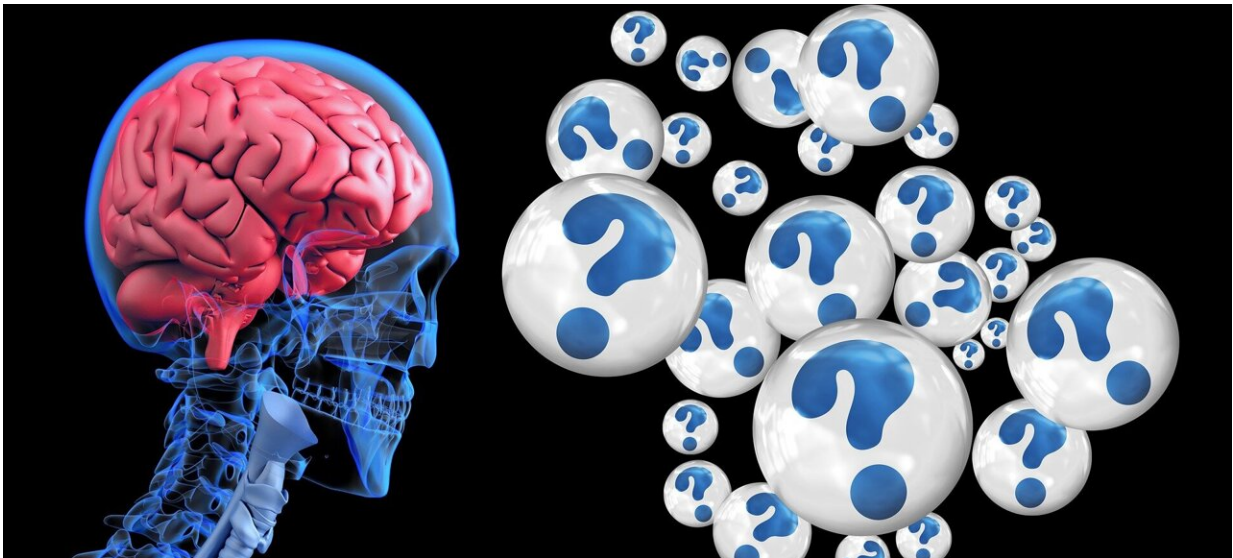


Different biological variants discovered in Alzheimer's disease

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Dutch scientists have discovered five biological variants of Alzheimer's disease, which may require different treatments. As a result, previously tested drugs may incorrectly appear to be ineffective or only minimally effective. This is the conclusion of researcher Betty Tijms and colleagues from Alzheimer Center Amsterdam, Amsterdam UMC and Maastricht University. Their study is published in *Nature Aging*.

In those with Alzheimer's disease, the [amyloid](#) and tau proteins clump in

the brain. In addition to these clumps, other [biological processes](#) such as inflammation and nerve cell growth are also involved. Using new techniques, the researchers have been able to measure these other processes in the [cerebrospinal fluid](#) of patients with amyloid and tau clumps.

Betty Tijms and Pieter Jelle Visser examined 1,058 proteins in the cerebrospinal fluid of 419 people with Alzheimer's disease. They found that there are five biological variants within this group. The first [variant](#) is characterized by increased amyloid production. In a second type, the [blood-brain barrier](#) is disrupted, and there is reduced amyloid production and less nerve cell growth.

Furthermore, the variants differ in the degree of protein synthesis, the functioning of the immune system, and the functioning of the organ that produces cerebrospinal fluid. Patients with different Alzheimer's variants also showed differences in other aspects of the disease. For example, the researchers found a faster course of the disease in certain subgroups.

The findings are of great importance for [drug research](#). They could mean that a certain drug might only work in one variant of Alzheimer's disease. For example, medication that inhibits amyloid production may work in the variant with increased amyloid production, but may be harmful in the variant with decreased amyloid production. It is also possible that patients with one variant would have a higher risk of side effects, while that risk would be much lower with other variants.

The next step for the research team is to show that the Alzheimer's variants do indeed react differently to medicines, in order to treat all patients with appropriate medicines in the future.

More information: Cerebrospinal fluid proteomics in Alzheimer's

disease patients reveals five molecular subtypes with distinct genetic risk profiles, *Nature Aging* (2024). DOI: 10.1038/s43587-023-00550-7 , www.nature.com/articles/s43587-023-00550-7

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