

MEDICAL BREAKTHROUGHS **RESEARCH SUMMARY**

TOPIC: ALZHEIMER'S RESTORING MISSING PROTEIN THE KEY?
REPORT: **MB #4979**

AMYLOID BETA BACKGROUND: Amyloid plaques are aggregates of proteins that have been misfolded and formed in the spaces between nerve cells. These cells are thought to affect Alzheimer's disease because they are abnormally formed and develop in areas of the brain where memory and other cognitive functions are stored. They form when pieces of a protein called beta-amyloid form into a cluster. The beta-amyloid composed of 42 amino acids is chemically "stickier" than the other lengths and therefore is more likely to form plaques. Currently, it's unclear how the beta-amyloid causes toxic damage to nerve cells, but there are many theories surrounding how it impact Alzheimer's.

(Source: <https://www.news-medical.net/health/What-are-Amyloid-Plaques.aspx>)

AMYLOID BETA AND ALZHEIMER'S: The hypothesis that amyloid plaques have something to do with Alzheimer's is because they develop in areas of our memory and cognitive functions and in Alzheimer's disease, the brain cells that process and receive information degenerate and die. There are a few theories on why this happens to some people and not everyone. The "amyloid hypothesis" suggests that a microscopic brain protein fragment called beta-amyloid, a sticky compound that accumulates in the brain, is disrupting communication between brain cells and eventually killing them. Some researchers believe this while others believe Alzheimer's could be caused by something else entirely. The amyloid plaques have gotten their status as a prime suspect to the cause of developing Alzheimer's because they are stickier than other fragments that could be found in the same areas of plaque build up in the brain. Since they are sticky, they form small clusters called oligomers, then form chains of clusters called fibrils, then "mats" of fibrils called beta-sheets. The final stage is plaques, which contain clumps of beta-sheets and other substances.

(Source: https://www.alz.org/national/documents/topicsheet_betaamyloid.pdf)

NEW TECHNOLOGY: The cure for Alzheimer's is still being researched, currently researchers are looking at several approaches for a cure, one being using the immune system. Several drugs are being tested as a way to prevent beta-amyloid from clumping into plaques or remove beta-amyloid plaques that have formed and help the body clear the beta-amyloid from the brain. The monoclonal antibodies are thought to be able to mimic the antibodies your body naturally makes as a part of your existing immune system. The antibodies are the response to foreign invaders and could potentially get rid of plaque build up in the brain. The FDA recently approved aducanumab for the treatment of some cases of Alzheimer's disease.

(Source: <https://www.mayoclinic.org/diseases-conditions/alzheimers-disease/in-depth/alzheimers-treatments/art-20047780>)

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If this story or any other Ivanhoe story has impacted your life or prompted you or someone you know to seek or change treatments, please let us know by contacting Marjorie Bekaert Thomas at mthomas@ivanhoe.com