


Alzheimer's Disease Biomarker Testing

 A biomarker is a substance in your body that may signal health or disease. For example, high blood glucose is a biomarker for diabetes. A doctor orders a test for glucose when they are looking for signs of diabetes.

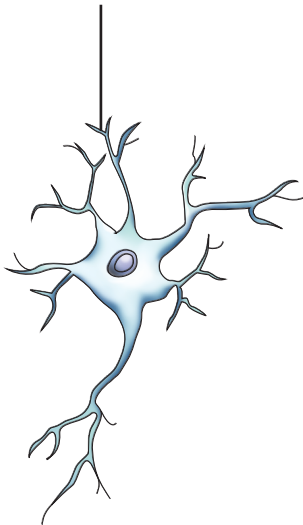
What biomarkers are used to test for Alzheimer's disease?

Amyloid-beta and **tau** are biomarkers that help determine if a person's declining brain health is likely due to Alzheimer's disease. Amyloid-beta and tau are proteins that are normally present in all of our brain cells.

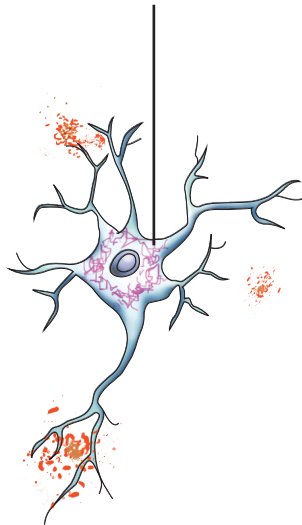
Why are amyloid-beta and tau important?

In Alzheimer's disease, amyloid-beta proteins clump together in the brain forming **amyloid plaques**. Similarly, tau proteins also clump together in the brain forming **tau tangles**.

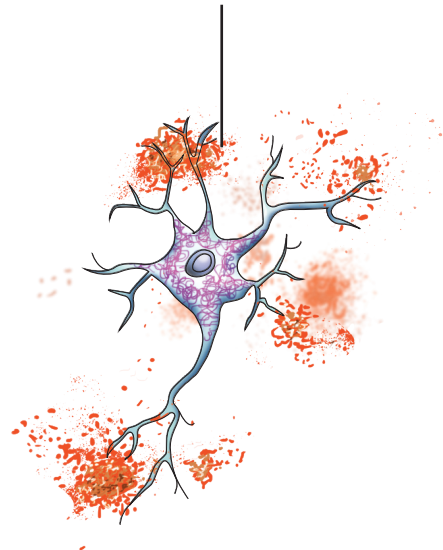
Healthy brain cell



Tau tangles



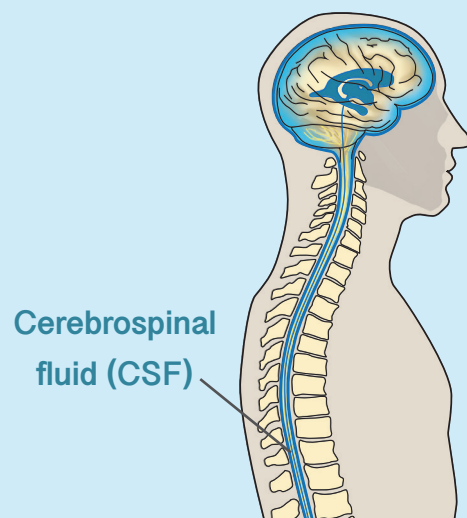
Amyloid plaques



Why are amyloid-beta and tau measured in CSF?

As it is not possible to see clumps of amyloid-beta and tau in the brain using regular imaging techniques (like a CT or MRI), we instead look at the fluid that surrounds the brain, that is, cerebrospinal fluid (CSF).

Low amyloid-beta 42 in CSF can be a signal of the presence of amyloid plaques in the brain. **High phospho tau** in CSF can be a signal of the presence of tau tangles in the brain. **High total tau** in CSF can be a signal of the presence of inflammation or damage to cells in the brain.



Why measure different forms of amyloid-beta and tau?

There are several forms of amyloid-beta and tau normally found in CSF. The form of amyloid-beta that has **42 amino acids** (amyloid-beta 42) is the most helpful in detecting Alzheimer's disease as it contributes to the **formation of amyloid plaques**. Measuring all forms of tau (total tau) can help identify inflammation or damage to brain cells as **tau is released when cells are injured**. More specific to Alzheimer's disease, we look at phospho tau, as the tau tangles are **formed from tau proteins that are highly phosphorylated**.



Does an abnormal test result mean I have Alzheimer's disease?

No, there may be reasons other than Alzheimer's disease for an abnormal test result. Your doctor will discuss any relevant issues with you.



How is this CSF test used by my doctor?

Your doctor will consider the CSF test **together with other important medical information** to determine the mostly likely cause of declining brain health. The test is not used by itself to decide if an individual does or does not have Alzheimer's disease or a related form of dementia.