APP can be processed by α-secretase (ADAM10/17), precluding the formation of amyloid beta (Aβ), or by β-secretase (BACE1/2). Cleavage by BACE1 and then γ-secretase (containing presenilin-1/2 (PS), Nicastrin, Aph-1 and Pen-2) generates Aβ, the major component of brain plaques characterising Alzheimer’s Disease. Aβ has many fates: oligomerization and association with proteins such as CLAC-P or ApolipoproteinE (ApoE) in amyloid plaques, clearance by α2-macroglobulin (α2M), ApoE, or low density lipoprotein receptor-related protein (LRP), or degradation by proteases such as insulin degrading enzyme (IDE), neprilysin (NEP) or plasminogen (PLG). Alterations in any pathway can lead to increased levels of Aβ. APP is also involved in an intracellular signaling cascade upon phosphorylation of tyrosine 688, the C-terminus can be stabilized and linked to other proteins by interacting adaptor proteins such as the Mints or Fe65 and cleavage by γ-secretase releases an amyloid intracellular domain (AICD) that may affect nuclear transcription. Interactions of proteins such as presenilin (PS), with molecules such as ubiquilin, may contribute to AD. There are many other type-I integral membrane proteins that are cleaved by γ-secretase and the biological significance of these cleavages remain to be determined.
Here are Abcam’s best selling antibodies for Alzheimer’s research. We have over 275 products in this range to choose from.

**Beta amyloid monoclonal antibodies (ab10146) and (ab1910)**

Beta amyloid peptides vary in length from 39 to 43 amino acids. They are the major constituents of the plaques and tangles that occur in Alzheimer’s disease. Antibodies to beta amyloid are gold standard tools for elucidating the biology of Alzheimer’s disease.

**Beta amyloid antibodies** [6E10] (ab10146) and [4G8] (ab1910) work well in immunohistochemistry using paraffin-embedded cerebellum (as seen here for ab10146) as well as western blot, immunoprecipitation, ELISA & immunohistochemistry.

Recent customer publication using ab10146:

Telese et al. (2005) EMBO Reports 6, 1, 77-82

**Amyloid Precursor Protein antibody [MABDE2B4] (ab12266)**

Amyloid Precursor Protein is cleaved by BACE and gamma secretase to form beta amyloid peptides. Cleavage takes place during the last Amyloid Precursor Protein processing step.

Amyloid Precursor Protein antibody [MABDE2B4] (ab12266) recognises an epitope near the N-terminus of beta-amyloid peptides. Immunohistochemistry of Alzheimer’s temporal lobe tissue shows staining of plaques in the neuropil (circled in black). Amyloid deposits stained by ab12266 can be seen around some blood vessels.

Applications tested for ab12266:
- western blot
- immunoprecipitation
- immunocytochemistry
- immunohistochemistry (formalin-fixed paraffin-embedded sections)

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