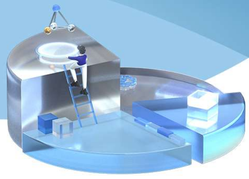
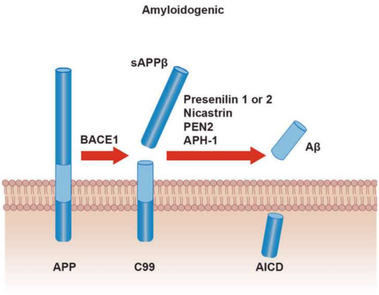
Elabscience®



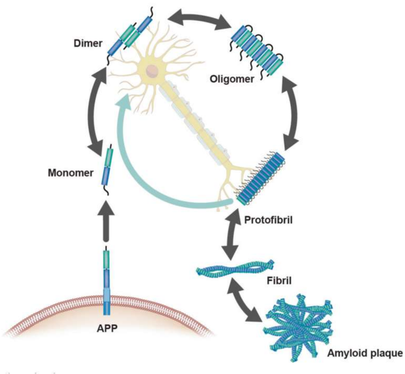
Amyloid - β peptide: The Key molecule of Alzheimer's disease

Alzheimer's disease (AD) is the most common neurodegenerative disorder that eventually results in dementia, about 45.0 million individuals in the world suffer from this disease. Research evidence in molecular medicine has positioned the amyloid-β (Aβ) pathway at the center of Alzheimer's disease (AD) pathophysiology. The established biochemical alterations of the Aβ cycle is the core biological hallmark of AD and are promising targets for the development of disease-modifying therapies.

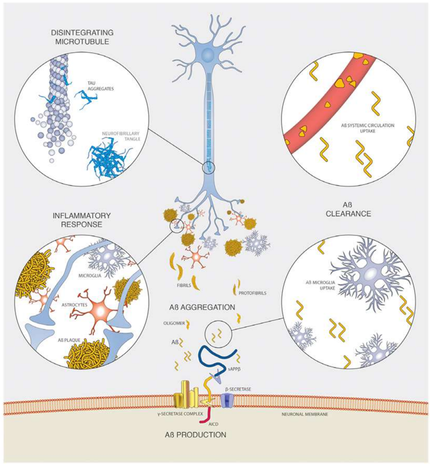
● **Formation mechanism of amyloid-β:** Amyloid Precursor Protein (APP) is a single transmembrane protein, it is first cleaved by β-secretase(BACE1). CTFβ(C99) fragment is subsequently cleaved by Presenilin 1 or 2, Nicastrin, PEN2 and APH-1. This proteolytic processing releases amyloid-β into the extracellular space. APP intracellular domain (AICD) from the initial β-secretase cleavage is released into intracellular space.



● **Molecule type:** Aβ Aggregation can exist as monomers, dimers, oligomers, protofibril, fibril and amyloid plaques.



● **Scheme of the amyloid-β cascade hypothesis in Alzheimer disease.** In normal brains physiological concentration of the amyloid-β has been indicated to be involved in modulating neurogenesis and synaptic plasticity. However, excess amyloid-β production, its aggregation and deposition deleteriously affect a large number of biologically important pathways leading to neuronal cell death.



Application of amyloid-β peptide

1)As target to develop therapeutic method of AD: recently, several anti-Aβ therapeutic pipelines have been expanded to preclinical stages of AD [1].

2)As fluid biomarkers to diagnosis of Alzheimer's disease [3].

3)As Antimicrobial agent: In vitro studies suggest that aβ peptide can inhibit growth of a number of bacteria and viruses. Animal studies also have further evidenced the important potential role that amyloid-β peptides have in protecting against infections [5].

Advantages of Elabscience amyloid-β peptide products

1)High purity: over 95% 2)In stock 3)Provide monomer and polymer type 4)All peptides are analyzed by MS and HPLC

Popular Amyloid-β peptide list

Cat. No.	Product Name	Sequence
E-PP-0426	Amyloid-β (1-40), rat/mouse	DAEFGHDSGFEVRHQKLVFFAEDVGSNKGAIIGLMVGGVV
E-PP-0427	Amyloid-β (1-40), human	DAEFRHDSGYEVHHQKLVFFAEDVGSNKGAIIGLMVGGVV
E-PP-0428	Amyloid-β (1-42), human	DAEFRHDSGYEVHHQKLVFFAEDVGSNKGAIIGLMVGGVVIA
E-PP-0448	Amyloid-β (25-35)	GSNKGAIIGLM
E-PP-0455	Amyloid-β (40-1), human	VVGGVMLGIIAGKNSGVDEAFFVLKQHHVEYGSDHRFEAD
E-PP-0459	Amyloid-β (1-42), rat/mouse	DAEFGHDSGFEVRHQKLVFFAEDVGSNKGAIIGLMVGGVVIA
E-PP-0666	Amyloid-β (42-1), human	AIVVGGVMLGIIAGKNSGVDEAFFVLKQHHVEYGSDHRFEAD

Reference

[1] Hampel H, Hardy J, Blennow K, Chen C, Perry G, Kim SH, et al. The Amyloid-β Pathway in Alzheimer's disease. Mol Psychiatry. 2021.

[2] Francesco Panza, Madia Lozupone, Davide Seripa, and Bruno P. Imbimbo. Amyloid-β Immunotherapy for Alzheimer Disease: Is it now a long shot? ANNALS of Neurology.2019.

[3] Oskar Hansson. Biomarkers for neurodegenerative diseases. Nature Medicine. Vol27 954 – 963(2021).

[4] Chen Guo-fang, Xu Ting-hai, Yan Yan, et al. Amyloid beta: structure, biology and structure-based therapeutic development. Acta Pharmacologica Sinica advance online publication, 17 July 2017.

[5] Umar H. Iqbal, Emma Zeng and Giulio M. Pasinetti. The Use of Antimicrobial and Antiviral Drugs in Alzheimer's disease. Int. J. Mol. Sci. 2020, 21, 4920.

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