ARG10183
anti-Amyloid Precursor Protein antibody [NT 4A2]

Package: 100 µg
Store at: -20°C

Summary

Product Description	Mouse Monoclonal antibody [NT 4A2] recognizes Amyloid beta peptide
Tested Reactivity	Hu
Tested Application	ELISA, IHC-P
Specificity	This antibody recognizes the N-terminal peptide (DAEFRHDS) of human beta amyloid peptides and also reacts with full length Aβ40, Aβ42 and Aβ43.
Host	Mouse
Clonality	Monoclonal
Clone	NT 4A2
Isotype	IgG1, kappa
Target Name	Amyloid Precursor Protein
Species	Human
Immunogen	Full length human beta amyloid peptide 42
Epitope	DAEFRHDS
Conjugation	Un-conjugated
Alternate Names	CVAP; AAA; AICD-50; PN2; 50; Beta-APP42; AID; Gamma-CTF; S-APP-alpha; 57; AD1; PN-II; Beta-APP40; 42; 40; APPI; Alzheimer disease amyloid protein; Amyloid beta A4 protein; PreA4; ABETA; Amyloid intracellular domain 50; CTFgamma; Amyloid intracellular domain 57; 59; AICD-59; S-APP-beta; APP; AICD-57; Amyloid intracellular domain 59; ABPP; Protease nexin-II; Cerebral vascular amyloid peptide

Application Instructions

Application table

Application	Dilution
ELISA	Assay-dependent
IHC-P	10 µg/ml

Application Note

IHC-P: Need heat induced antigen retrieval.

ELISA: The antibody can be used as capture antibody in Sandwich ELISA for Aβ42 detection.

* The dilutions indicate recommended starting dilutions and the optimal dilutions or concentrations should be determined by the scientist.

Properties

Form	Liquid
Purification	Protein G affinity purified
Buffer	0.01M PBS (pH 7.2)

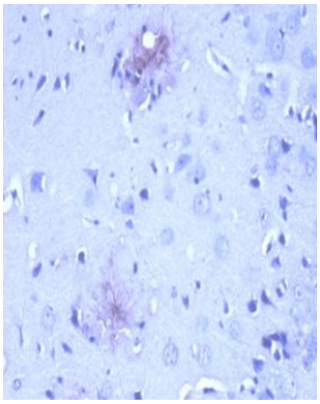
Storage instruction	For continuous use, store undiluted antibody at 2-8°C for up to a week. For long-term storage, aliquot and store at -20°C or below. Storage in frost free freezers is not recommended. Avoid repeated freeze/thaw cycles. Suggest spin the vial prior to opening. The antibody solution should be gently mixed before use.
Note	For laboratory research only, not for drug, diagnostic or other use.

Bioinformation

Database links	GeneID: 351 Human Swiss-port # P05067 Human
Gene Symbol	APP
Gene Full Name	amyloid beta (A4) precursor protein
Background	Aβ40, Aβ42 and Aβ43 are different only at the few C-end amino acids. While the C-end amino acids showed no species-specificity in mammalians, the N-terminal amino acid sequences have minor discrepancies between difference species. Amyloid beta peptides Aβ42 and Aβ40 have been investigated extensively for predicating Alzheimer's disease. A recent study on A Aβ43 in brain showed that Aβ43 is more fibrillogenic than the other amyloid beta peptides and may be useful as a biomarker or therapeutic target for Alzheimer's disease. Antibody to N-terminal sequence can bind to all the three amyloid beta peptides.
Function	Functions as a cell surface receptor and performs physiological functions on the surface of neurons relevant to neurite growth, neuronal adhesion and axonogenesis. Involved in cell mobility and transcription regulation through protein-protein interactions. Can promote transcription activation through binding to APBB1-KAT5 and inhibits Notch signaling through interaction with Numb. Couples to apoptosis-inducing pathways such as those mediated by G(O) and JIP. Inhibits G(o) alpha ATPase activity (By similarity). Acts as a kinesin I membrane receptor, mediating the axonal transport of beta-secretase and presenilin 1. Involved in copper homeostasis/oxidative stress through copper ion reduction. In vitro, copper-metallated APP induces neuronal death directly or is potentiated through Cu(2+)-mediated low-density lipoprotein oxidation. Can regulate neurite outgrowth through binding to components of the extracellular matrix such as heparin and collagen I and IV. The splice isoforms that contain the BPTI domain possess protease inhibitor activity. Induces a AGER-dependent pathway that involves activation of p38 MAPK, resulting in internalization of amyloid-beta peptide and leading to mitochondrial dysfunction in cultured cortical neurons. Provides Cu(2+) ions for GPC1 which are required for release of nitric oxide (NO) and subsequent degradation of the heparan sulfate chains on GPC1. Beta-amyloid peptides are lipophilic metal chelators with metal-reducing activity. Bind transient metals such as copper, zinc and iron. In vitro, can reduce Cu(2+) and Fe(3+) to Cu(+) and Fe(2+), respectively. Beta-amyloid 42 is a more effective reductant than beta-amyloid 40. Beta-amyloid peptides bind to lipoproteins and apolipoproteins E and J in the CSF and to HDL particles in plasma, inhibiting metal-catalyzed oxidation of lipoproteins. Beta-APP42 may activate mononuclear phagocytes in the brain and elicit inflammatory responses. Promotes both tau aggregation and TPK II-mediated phosphorylation. Interaction with Also bind GPC1 in lipid rafts. Appicans elicit adhesion of neural cells to the extracellular matrix and may regulate neurite outgrowth in the brain. The gamma-CTF peptides as well as the caspase-cleaved peptides, including C31, are potent enhancers of neuronal apoptosis. N-APP binds TNFRSF21 triggering caspase activation and degeneration of both neuronal cell bodies (via caspase-3) and axons (via caspase-6). [UniProt]
Highlight	Related Antibody Duos and Panels: ARG30063 Beta amyloid peptide 42 ELISA Antibody Duo ARG30064 Beta amyloid peptide 40 ELISA Antibody Duo Related products: Amyloid Precursor Protein antibodies; Amyloid Precursor Protein Duos / Panels; Anti-Mouse IgG secondary antibodies;
Research Area	Neuroscience antibody
Calculated Mw	87 kDa. (79 - 120 kDa depending on glycosylation level)
PTM	Proteolytically processed under normal cellular conditions. Cleavage either by alpha-secretase, beta-secretase or theta-secretase leads to generation and extracellular release of soluble APP peptides, S-

APP-alpha and S-APP-beta, and the retention of corresponding membrane-anchored C-terminal fragments, C80, C83 and C99. Subsequent processing of C80 and C83 by gamma-secretase yields P3 peptides. This is the major secretory pathway and is non-amyloidogenic. Alternatively, presenilin/nicastrin-mediated gamma-secretase processing of C99 releases the amyloid beta proteins, amyloid-beta 40 (Abeta40) and amyloid-beta 42 (Abeta42), major components of amyloid plaques, and the cytotoxic C-terminal fragments, gamma-CTF(50), gamma-CTF(57) and gamma-CTF(59). Many other minor beta-amyloid peptides, beta-amyloid 1-X peptides, are found in cerebral spinal fluid (CSF) including the beta-amyloid X-15 peptides, produced from the cleavage by alpha-secretase and all terminating at Gln-686.
Proteolytically cleaved by caspases during neuronal apoptosis. Cleavage at Asp-739 by either caspase-6, -8 or -9 results in the production of the neurotoxic C31 peptide and the increased production of beta-amyloid peptides.
N- and O-glycosylated. O-glycosylation on Ser and Thr residues with core 1 or possibly core 8 glycans. Partial tyrosine glycosylation (Tyr-681) is found on some minor, short beta-amyloid peptides (beta-amyloid 1-15, 1-16, 1-17, 1-18, 1-19 and 1-20) but not found on beta-amyloid 38, beta-amyloid 40 nor on beta-amyloid 42. Modification on a tyrosine is unusual and is more prevelant in AD patients. Glycans had Neu5AcHex(Neu5Ac)HexNAc-O-Tyr, Neu5AcNeu5AcHex(Neu5Ac)HexNAc-O-Tyr and O-AcNeu5AcNeu5AcHex(Neu5Ac)HexNAc-O-Tyr structures, where O-Ac is O-acetylation of Neu5Ac. Neu5AcNeu5Ac is most likely Neu5Ac 2,8Neu5Ac linked. O-glycosylations in the vicinity of the cleavage sites may influence the proteolytic processing. Appicans are L-APP isoforms with O-linked chondroitin sulfate.
Phosphorylation in the C-terminal on tyrosine, threonine and serine residues is neuron-specific. Phosphorylation can affect APP processing, neuronal differentiation and interaction with other proteins. Phosphorylated on Thr-743 in neuronal cells by Cdc5 kinase and Mapk10, in dividing cells by Cdc2 kinase in a cell-cycle dependent manner with maximal levels at the G2/M phase and, in vitro, by GSK-3-beta. The Thr-743 phosphorylated form causes a conformational change which reduces binding of Fe65 family members. Phosphorylation on Tyr-757 is required for SHC binding. Phosphorylated in the extracellular domain by casein kinases on both soluble and membrane-bound APP. This phosphorylation is inhibited by heparin.
Extracellular binding and reduction of copper, results in a corresponding oxidation of Cys-144 and Cys-158, and the formation of a disulfide bond. In vitro, the APP-Cu(+) complex in the presence of hydrogen peroxide results in an increased production of beta-amyloid-containing peptides.
Trophic-factor deprivation triggers the cleavage of surface APP by beta-secretase to release sAPP-beta which is further cleaved to release an N-terminal fragment of APP (N-APP).
Beta-amyloid peptides are degraded by IDE.

Images



ARG10183 anti-Amyloid Precursor Protein antibody [NT 4A2] IHC-P image

Immunohistochemistry: After heat-induced antigen retrieval, Formalin-fixed and paraffin-embedded brain tissue section from 12 month old APPswe/PSEN1dE9 transgenic Alzheimer's disease mouse model stained with ARG10183 anti-Amyloid Precursor Protein antibody [NT 4A2] at 10 µg/ml, 4°C and overnight.