ARG66780
anti-Amyloid Precursor Protein phospho (Thr743) antibody

Package: 100 µg
Store at: -20°C

Summary

Product Description	Rabbit Polyclonal antibody recognizes Amyloid Precursor Protein phospho (Thr743)
Tested Reactivity	Hu
Predict Reactivity	Ms, Rat
Tested Application	ICC/IF, IHC-P, WB
Specificity	The antibody detects Amyloid Precursor Protein only when phosphorylated at Thr743.
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Target Name	Amyloid Precursor Protein
Species	Human
Immunogen	Phosphospecific peptide around Thr743 (aa. 711-760) of Human Amyloid Precursor Protein.
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
ICC/IF	1:200 - 1:1000
IHC-P	1:100 - 1:300
WB	1:500 - 1:2000

Application Note	IHC-P: Antigen Retrieval: High-pressure and temperature Tris/EDTA buffer (pH 8.0). * The dilutions indicate recommended starting dilutions and the optimal dilutions or concentrations should be determined by the scientist.
Positive Control	HeLa
Observed Size	~ 140 kDa

Properties

Form	Liquid
Purification	Affinity purification with immunogen.
Buffer	PBS, 0.02% Sodium azide, 50% Glycerol and 0.5% BSA.

Preservative	0.02% Sodium azide
Stabilizer	50% Glycerol and 0.5% BSA
Concentration	1 mg/ml
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. 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

Gene Symbol	APP
Gene Full Name	amyloid beta (A4) precursor protein
Function	Functions as a cell surface receptor and performs physiological functions on the surface of neurons relevant to neurite growth, neuronal adhesion and axonogenesis. Interaction between APP molecules on neighboring cells promotes synaptogenesis (PubMed:25122912). 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 (By similarity). By acting as a kinesin I membrane receptor, plays a role in axonal anterograde transport of cargo towards synapes in axons (PubMed:17062754, PubMed:23011729). 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. Amyloid-beta 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. Amyloid-beta protein 42 is a more effective reductant than amyloid-beta protein 40. Amyloid-beta peptides bind to lipoproteins and apolipoproteins E and J in the CSF and to HDL particles in plasma, inhibiting metal-catalyzed oxidation of lipoproteins. APP42-beta may activate mononuclear phagocytes in the brain and elicit inflammatory responses. Promotes both tau aggregation and TPK II-mediated phosphorylation. Interaction with overexpressed HADH2 leads to oxidative stress and neurotoxicity. Also binds 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]
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.

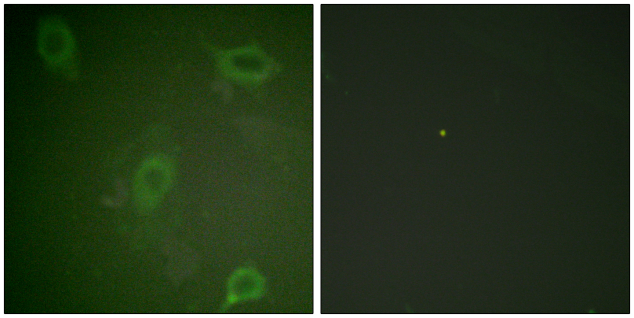
Extracellular binding and reduction of copper, results in a corresponding oxidation of Cys-144 and Cys-158, and the formation of a disulfide bond. In vitro, the APP-Cu(+) complex in the presence of hydrogen peroxide results in an increased production of beta-amyloid-containing peptides.

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. [UniProt]

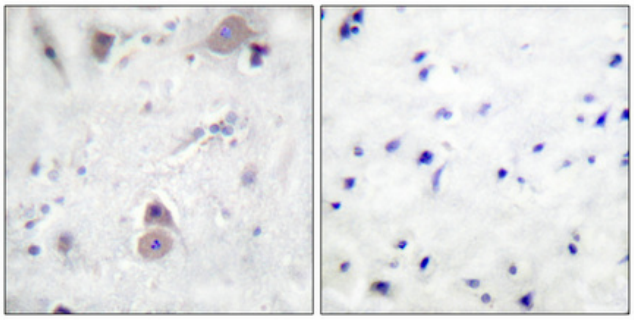
Cellular Localization	Membrane; Single-pass type I membrane protein. Membrane, clathrin-coated pit. [UniProt]

Images



ARG66780 anti-Amyloid Precursor Protein phospho (Thr743) antibody ICC/IF image

Immunofluorescence: HeLa cells stained with ARG66780 anti-Amyloid Precursor Protein phospho (Thr743) antibody. The picture on the right is blocked with the phospho peptide.

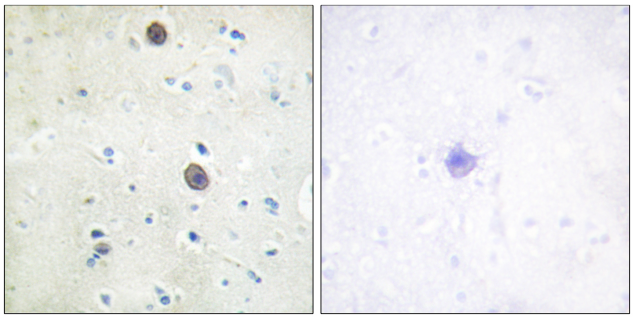


ARG66780 anti-Amyloid Precursor Protein phospho (Thr743) antibody IHC-P image

Immunohistochemistry: Paraffin-embedded Human breast cancer tissue. Antigen Retrieval: High-pressure and temperature Tris/EDTA buffer (pH 8.0). The tissue section was stained with ARG66780 anti-Amyloid Precursor Protein phospho (Thr743) antibody at 1:100 dilution, overnight at 4°C. The picture on the right is blocked with the phospho peptide.

ARG66780 anti-Amyloid Precursor Protein phospho (Thr743) antibody WB image

Western blot: HeLa cell lysate stained with ARG66780 anti-Amyloid Precursor Protein phospho (Thr743) antibody.



ARG66780 anti-Amyloid Precursor Protein phospho (Thr743) antibody IHC-P image

Immunohistochemistry: Paraffin-embedded Human brain tissue stained with ARG66780 anti-Amyloid Precursor Protein phospho (Thr743) antibody. The picture on the right is blocked with the phospho peptide.