abcam

ab15456

Anti-Presenilin 1/PS-1 antibody [APS 11]

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	Preservative: 0.05% Sodium azide Constituents: PBS, 0.1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	Synthetic Peptide within Human PSEN1 aa 1-50. The exact immunogen used to generate this antibody is proprietary information. Database link P49768
Clone number	APS 11
Purification technique	Affinity purification Protein G
Specificity	No cross-reactivity is seen with presenilin 2. In formalin-fixed, paraffin embedded sections of human brain, this antibody showed strong staining of both the plaque core and dystrophic neurites. By Western blot, this antibody detects an ~28 kDa protein representing PS1 N-terminus cleavage product in ST15 cell lysate transfected with human PS1.
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

Flow Cyt

Tested

Species	Human
Dilution info	1 µg for 10^6 Cells

Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Expected

Species	Mouse
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Cow, Dog, Primates, Cynomolgus monkey
Dilution info	-
Notes	-

IHC-P

Tested

Species	Human
Dilution info	0.75 µg/mL
Notes	-

Expected

Species	Mouse
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Cow, Dog, Primates, Cynomolgus monkey
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Mouse
Dilution info	0.75 µg/mL
Notes	-

Expected

Species	Human
Dilution info	0.75 µg/mL
Notes	-

Predicted

Species	Cow, Dog, Primates, Cynomolgus monkey
Dilution info	-
Notes	-

Target data

See full target information PSEN1

Function

Catalytic subunit of the gamma-secretase complex, an endoprotease complex that catalyzes the intramembrane cleavage of integral membrane proteins such as Notch receptors and APP (amyloid-beta precursor protein) (PubMed:10206644, PubMed:10545183, PubMed:10593990, PubMed:10811883, PubMed:10899933, PubMed:12679784, PubMed:12740439, PubMed:15274632, PubMed:20460383, PubMed:25043039, PubMed:26280335, PubMed:28269784, PubMed:30598546, PubMed:30630874). Requires the presence of the other members of the gamma-secretase complex for protease activity (PubMed:15274632, PubMed:25043039, PubMed:26280335, PubMed:30598546, PubMed:30630874). Plays a role in Notch and Wnt signaling cascades and regulation of downstream processes via its role in processing key regulatory proteins, and by regulating cytosolic CTNNB1 levels (PubMed:10593990, PubMed:10811883, PubMed:10899933, PubMed:9738936). Stimulates cell-cell adhesion via its interaction with CDH1; this stabilizes the complexes between CDH1 (E-cadherin) and its interaction partners CTNNB1 (beta-catenin), CTNND1 and JUP (gamma-catenin) (PubMed:11953314). Under conditions of apoptosis or calcium influx, cleaves CDH1 (PubMed:11953314). This promotes the disassembly of the complexes between CDH1 and CTNND1, JUP and CTNNB1, increases the pool of cytoplasmic CTNNB1, and thereby negatively regulates Wnt signaling (PubMed:11953314, PubMed:9738936). Required for normal embryonic brain and skeleton development, and for normal angiogenesis (By similarity). Mediates the proteolytic cleavage of EphB2/CTF1 into EphB2/CTF2

(PubMed:17428795, PubMed:28269784). The holoprotein functions as a calcium-leak channel that allows the passive movement of calcium from endoplasmic reticulum to cytosol and is therefore involved in calcium homeostasis (PubMed:16959576, PubMed:25394380). Involved in the regulation of neurite outgrowth (PubMed:15004326, PubMed:20460383). Is a regulator of presynaptic facilitation, spike transmission and synaptic vesicles replenishment in a process that depends on gamma-secretase activity. It acts through the control of SYT7 presynaptic expression (By similarity).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	Presenilin 1 often referred to as PS-1 is a protein with an important role in the function of gamma-secretase a multi-subunit protease complex. It weighs approximately 50 kDa and is widely expressed in different tissues especially in the brain. Presenilin 1 functions as part of the gamma-secretase complex which is responsible for processing several type I transmembrane proteins. This protein undergoes endoproteolytic processing to form an N-terminal and C-terminal fragment which are pivotal for its gamma-secretase activity.
Biological function summary	Presenilin 1 plays a fundamental role in the cleavage of amyloid precursor protein (APP) within the transmembrane domain. This cleavage results in the formation of amyloid-beta peptides which are of significant interest in neurobiology. Presenilin 1 is an integral component of the gamma-secretase complex that includes nicastrin APH-1 and PEN-2. This complex involvement underlines the enzyme's importance in cell signaling pathways and modulation of synaptic functions. The functionality at the synaptic level is particularly important given its expression pattern and involvement in neural processes.
Pathways	The action of presenilin 1 is closely linked to the Notch signaling pathway and the amyloidogenic pathway. Presenilin 1 facilitates the intramembrane cleavage of the

	Notch receptor releasing the Notch intracellular domain that translocates to the nucleus and affects gene transcription. The protein's role in processing APP into amyloid-beta peptides links it directly to Alzheimer's disease pathology. The protein Tax also a component of the gamma-secretase complex shows interdependencies in these pathways.
Associated diseases and disorders	Presenilin 1 holds significant relevance in Alzheimer's disease where mutations in its gene are associated with early-onset familial Alzheimer's. The production of amyloid-beta peptides through presenilin 1's interaction with APP is central to the disease's pathogenesis. Another disorder linked to presenilin 1 is Dilated Cardiomyopathy where presenilin mutations may affect calcium signaling in cardiac cells. In Alzheimer's the interaction between presenilin 1 and the amyloid-beta peptide protein is critical while in cardiac issues it's more about protein misfolding and signaling mishaps.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

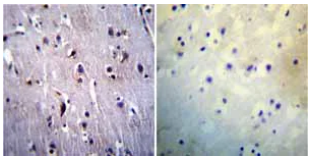
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

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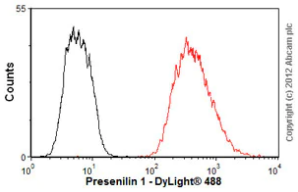
4 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Presenilin 1/PS-1 antibody [APS 11] (ab15456)

Presenilin 1/PS-1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-Presenilin 1/PS-1 antibody

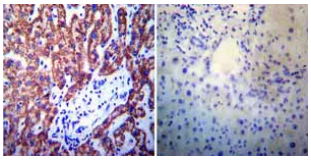
Immunohistochemistry was performed on normal biopsies of deparaffinized Human brain tissue. To expose target proteins heat induced antigen retrieval was performed using 10mM sodium citrate (pH6.0) buffer microwaved for 8-15 minutes. Following antigen retrieval tissues were blocked in 3% BSA-PBS for 30 minutes at room temperature. Tissues were then probed at a dilution of 1:20 with a mouse monoclonal antibody recognizing Presenilin 1 ab15456 or without primary antibody (negative control) overnight at 4°C in a humidified chamber. Tissues were washed extensively with PBST and endogenous peroxidase activity was quenched with a peroxidase suppressor. Detection was performed using a biotin-conjugated secondary antibody and SA-HRP followed by colorimetric detection using DAB. Tissues were counterstained with hematoxylin and prepped for mounting.



Flow Cytometry - Anti-Presenilin 1/PS-1 antibody [APS 11] (ab15456)

Presenilin 1/PS-1 Flow Cytometry staining using mouse Anti-Presenilin 1/PS-1 antibody

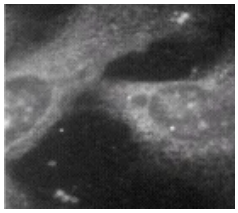
Overlay histogram showing HepG2 cells stained with ab15456 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab15456, 1ug/1x10^6 cells) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG1 (H+L) (ab96879) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was Mouse IgG1 [ICIGG1] (ab91353, 2µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed. This antibody gave a positive signal in HepG2 cells fixed with 4% paraformaldehyde (10 min) permeabilized with 0.1% PBS-Tween for 20 min used under the same conditions.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Presenilin 1/PS-1 antibody [APS 11] (ab15456)

Presenilin 1/PS-1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-Presenilin 1/PS-1 antibody

Immunohistochemistry was performed on normal biopsies of deparaffinized Human liver tissue. To expose target proteins heat induced antigen retrieval was performed using 10mM sodium citrate (pH6.0) buffer microwaved for 8-15 minutes. Following antigen retrieval tissues were blocked in 3% BSA-PBS for 30 minutes at room temperature. Tissues were then probed at a dilution of 1:200 with a mouse monoclonal antibody recognizing Presenilin 1 ab15456 or without primary antibody (negative control) overnight at 4°C in a humidified chamber. Tissues were washed extensively with PBST and endogenous peroxidase activity was quenched with a peroxidase suppressor. Detection was performed using a biotin-conjugated secondary antibody and SA-HRP followed by colorimetric detection using DAB. Tissues were counterstained with hematoxylin and prepped for mounting.



Immunocytochemistry/ Immunofluorescence - Anti-Presenilin 1/PS-1 antibody [APS 11] (ab15456)

Presenilin 1/PS-1 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-Presenilin 1/PS-1 antibody

Immunofluorescent staining of Presenilin-1/PS1 in mouse fibroblast fixed with methanol, incubated with ab15456 at 0.3 ug/ul of an antibody concentration of 11.2 mg/mL (dilution 1/37). The experiment was performed with transient transfected mouse fibroblast cells.

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