Amyloid-β Mouse Monoclonal Antibody

MCA-AB9

Ordering Information
Web *www.encorbio.com*
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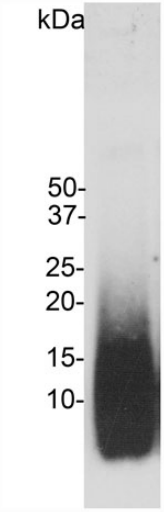
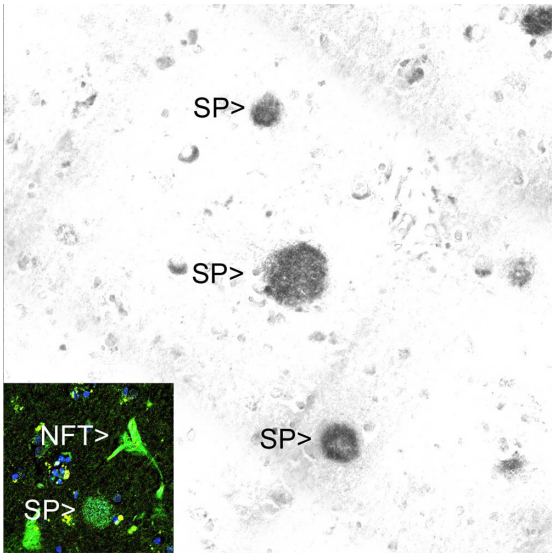
HGNC Name: *APP*
UniProt: *P05067*
RRID: *AB_2572226*
Immunogen: *1-42 human amyloid Aβ epitope is sequence 1-16*
Format: *Purified antibody at 1mg/mL in 50% PBS, 50% glycerol plus 5mM NaN_3*
Storage: *Stable at 4°C for one year, for longer term store at -20°C*
Recommended dilutions:
WB: 1:1,000-1:2,000. IF/ICC: 1:1,000. IHC: 1:2,000.

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
WB, IF/ICC, IHC	Mouse	IgG2a heavy, κ light	~5kDa	Hu



Blot of amyloid-β peptide preparation probed with MCA-AB9. The MCA-AB9 antibody recognizes monomeric amyloid-β peptide running at ~5kDa and also higher molecular weight amyloid-β aggregates.



Immunohistochemical analysis of a region of cerebral cortex from an Alzheimer's disease (AD) patient stained with MCA-AB9, the signal detected with a secondary anti-mouse antibody coupled to HRP, signal revealed with DAB. Senile plaques are labeled "SP". The region of the lowest of the three plaques is shown in the inset stained with the fluorescent dye thioflavin-S. This dye binds to not only the senile plaque but also a neurofibrillary tangle (NFT), the other pathological hallmark of AD, which do not contain Aβ.

Background:

Alzheimer's disease (AD) is a serious and increasingly common age related dementia which is characterized by the formation of senile plaques which are extracellular accumulations of insoluble proteins. Another characteristic of AD is the formation of neurofibrillary tangles inside neurons. A major component of the senile plaques is β-amyloid, a.k.a. Aβ, a peptide the predominant forms of which are 42 or 40 amino acids in length. The Aβ peptide is derived by proteolytic cleavage from a much larger protein membrane lozalized called the amyloid precursor protein (APP). Deposition of Aβ is increased as a result of certain point mutations in the APP gene and by mutations in presenilins and other genes. The presence of certain alleles of the ApoE gene also increase the likelihood of progressing to AD.

The MCA-AB9 is a mouse monoclonal antibody which made against the Aβ peptide and has been described in a peer reviewed publication (1). It was found to bind to the N-terminal peptide of Aβ, and has become very widely used (e.g. 2-6). It works well on western blots and reveals senile plaques in AD brains by ICC and IHC, for further IHC see data under "Additional Info" tab. Much interest has focused on the use of humanized monoclonal antibodies to target and potentially clear Aβ from the brains of Alzheimer patients. This antibody has been used in this manner as a proof of concept in mouse models of AD (e.g. 2,3). This antibody was originally made in the Mayo Clinic in Jacksonville, Florida, in the then laboratory of Dr. Todd Golde.

References:

1. Levites Y, et al. Anti-Abeta42- and anti-Abeta40-specific mAbs attenuate amyloid deposition in an Alzheimer disease mouse model, J. Clin. Invest 116:193-201 (2006).
2. Wang A, et al. Robust Amyloid Clearance in a Mouse Model of Alzheimer's Disease Provides Novel Insights into the Mechanism of Amyloid-β Immunotherapy. J. Neuroscience, March 16, 2011 • 31:4124–36 (2011).
3. Kim J, et al. Aβ40 Inhibits Amyloid Deposition In Vivo. J. Neurosci. 27:627-33 (2007).
4. Das P, et al. Amyloid-β Immunization Effectively Reduces Amyloid Deposition in FcRγ-/- Knock-Out Mice. J Neurosci. 23:8532-8 (2003).
5. Sagi SA, et al. Substrate Sequence Influences γ-Secretase Modulator Activity: Role of the Transmembrane Domain of The Amyloid Precursor Protein. J. Biol. Chem. 286:39794-803 (2011).
6. Fernandez-Funez P, et al. Holdase activity of secreted Hsp70 masks amyloid-β42 neurotoxicity in Drosophila. 2016.
7. Moore BD, et al. Overlapping profiles of Aβ peptides in the Alzheimer's disease and pathological aging brains. Alz. Res. Therap. 4:18 (2012).

This antibody has been utilized in numerous other peer-reviewed publications many of which can be found by searching Google Scholar for "AB9 AND Amyloid" or by selecting here.

Abbreviation Key:

mAb—Monoclonal Antibody pAb—Polyclonal Antibody WB—Western Blot IF—Immunofluorescence ICC—Immunocytochemistry IHC—Immunohistochemistry E—ELISA Hu—Human Mo—Monkey Do—Dog Rt—Rat Ms—Mouse Co—Cow Pi—Pig Ho—Horse Ch—Chicken Dr—D. rerio Dm—D. melanogaster Sm—S. mutans Ce—C. elegans Sc—S. cerevisiae Sa—S. aureus Ec—E. coli.