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Dynamin-1 Antibody

Purified Mouse Monoclonal Antibody
Catalog # AO1055a

Product Information

Application	WB, IHC, E
Primary Accession	Q05193
Reactivity	Human
Host	Mouse
Clonality	Monoclonal
Clone Names	3G4B6
Isotype	IgG2a
Calculated MW	97408
Description	Dynamin-1 (Dyn1), with 864-amino acid protein (about 95kDa), belongs to the dynamin family. Dynamin-1 (neuron-specific), dynamin-2 (ubiquitously expressed), and dynamin-3 (expressed only in the testis, brain, and lung), constitute the dynamin family. Members of the dynamin family are GPTase, microtubule-associated proteins which are involved in endocytosis, synaptic transmission and neurogenesis. Dynamin-1 is phosphorylated in nerve terminals exclusively in the cytosolic compartment and in vitro by protein kinase C. Dynamin-1 is a large GTPase enzyme required in membrane constriction and fission during multiple forms of endocytosis. Dynamin-1 is also a key molecule required for the recycling of synaptic vesicles in neurons, and it has been known that dynamin-1 gene expression is induced during neuronal differentiation.
Immunogen	Purified recombinant fragment of human Dynamin-1 expressed in E. Coli.
Formulation	Ascitic fluid containing 0.03% sodium azide.

Additional Information

Gene ID	1759
Other Names	Dynamin-1, 3.6.5.5, DNM1, DNM
Dilution	WB~~1/500 - 1/2000 IHC~~1/200 - 1/1000 E~~N/A
Storage	Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	Dynamin-1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

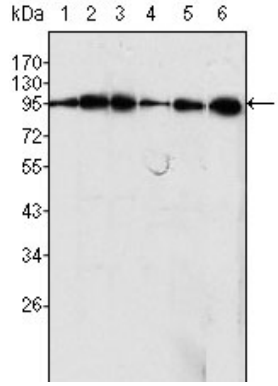
Name	DNM1 (HGNC:2972)
Synonyms	DNM
Function	Catalyzes the hydrolysis of GTP and utilizes this energy to mediate vesicle scission and participates in many forms of endocytosis, such as clathrin-mediated endocytosis or synaptic vesicle endocytosis as well as rapid endocytosis (RE) (PubMed:15703209, PubMed:20428113, PubMed:29668686, PubMed:8101525, PubMed:8910402, PubMed:9362482). Associates to the membrane, through lipid binding, and self-assembles into rings and stacks of interconnected rings through oligomerization to form a helical polymer around the vesicle membrane leading to constriction of invaginated coated pits around their necks (PubMed:30069048, PubMed:7877694, PubMed:9922133). Self-assembly of the helical polymer induces membrane tubules narrowing until the polymer reaches a length sufficient to trigger GTP hydrolysis (PubMed:19084269). Depending on the curvature imposed on the tubules, membrane detachment from the helical polymer upon GTP hydrolysis can cause spontaneous hemifission followed by complete fission (PubMed:19084269). May play a role in regulating early stages of clathrin-mediated endocytosis in non-neuronal cells through its activation by dephosphorylation via the signaling downstream of EGFR (PubMed:29668686). Controls vesicle size at a step before fission, during formation of membrane pits, at hippocampal synapses (By similarity). Controls plastic adaptation of the synaptic vesicle recycling machinery to high levels of activity (By similarity). Mediates rapid endocytosis (RE), a Ca(2+)-dependent and clathrin- and K(+)-independent process in chromaffin cells (By similarity). Microtubule-associated force-producing protein involved in producing microtubule bundles and able to bind and hydrolyze GTP (By similarity). Through its interaction with DNAJC6, acts during the early steps of clathrin-coated vesicle (CCV) formation (PubMed:12791276).
Cellular Location	Cell membrane. Membrane, clathrin-coated pit. Cytoplasmic vesicle {ECO:0000250|UniProtKB:P21575, ECO:0000250|UniProtKB:P39053} Presynapse {ECO:0000250|UniProtKB:P21575}. Cytoplasmic vesicle, secretory vesicle, chromaffin granule {ECO:0000250|UniProtKB:Q08DF4} Note=Associated to the membrane in a helical polymer shape in a GTP bound state (PubMed:30069048). Transiently recruited to endocytic clathrin-coated pits (CCPs) at a late stage of clathrin-coated vesicle (CCV) formation (PubMed:15703209).

References

1. Annie Quan and Phillip J. Robinson. Methods Enzymol. 2005; 404:556-69. 2. Jiyun Yoo, Moon-Jin Jeong, Byoung-Mog Kwon. J. Biol. Chem., Mar 2002; 277: 11904 – 11909

Images

Figure 1: Western blot analysis using Dynamin1 mouse mAb against C6 (1), NIH/3T3 (2), SKN-SH (3), LN18 (4), SHSY5Y (5) cell lysate and rat brain tiisues lysate (6).



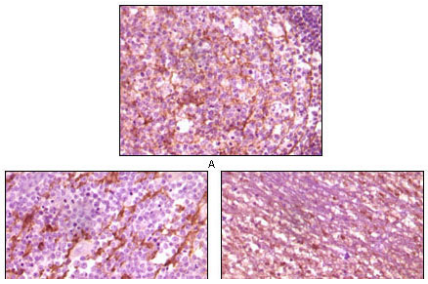


Figure 2: Immunohistochemical analysis of paraffin-embedded human lymph tissue (A), glioma tissue (B) and cerebellum tissue (C), showing membrane localization using Dynamin1 mouse mAb with DAB staining