SANTA CRUZ BIOTECHNOLOGY, INC.

SYP (D-4): sc-17750

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Synaptic vesicles participate in a cycle of fusion with the plasma membrane and reformation by endocytosis. Synaptic vesicle protein synaptophysin (SYP) is targeted to early endosomes in transfected fibroblasts and in neuroendocrine cells. SYP is an N-glycosylated intergral membrane protein found in neurons and endocrine cells that associates into hexamers to form a large conductance channel. SYP contains four transmembrane domains and may function as a gap juction-like channel. Membrane cholesterol specifically interacts with SYP to play a role in vesicle formation. Synaptobrevin (VAMP) also binds to SYP and the resultant complex is upregulated during neuronal development, but is absent in exocytosis fusion complex. Thus, the synaptophysin-synaptobrevin complex is not essential for exocytosis, but rather provides a pool of synaptobrevin for exocytosis. In addition, the tail domain of brain Myosin V also forms a stable complex with synaptobrevin II and SYP, and this complex is disassembled upon the depolarization-induced entry of Ca^{2+} into intact nerve endings.

CHROMOSOMAL LOCATION

Genetic locus: SYP (human) mapping to Xp11.23; Syp (mouse) mapping to X A1.1.

SOURCE

SYP (D-4) is a mouse monoclonal antibody raised against amino acids 221-313 of SYP of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

SYP (D-4) is available conjugated to agarose (sc-17750 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-17750 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-17750 PE), fluorescein (sc-17750 FITC), Alexa Fluor® 488 (sc-17750 AF488), Alexa Fluor® 546 (sc-17750 AF546), Alexa Fluor® 594 (sc-17750 AF594) or Alexa Fluor® 647 (sc-17750 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-17750 AF680) or Alexa Fluor® 790 (sc-17750 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

SYP (D-4) is recommended for detection of SYP of mouse, rat and human origin by Western Blotting (starting dilution 1:1,000, dilution range 1:100-1:10,000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

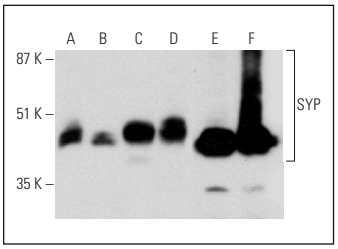
Suitable for use as control antibody for SYP siRNA (h): sc-36597, SYP siRNA (m): sc-36596, SYP shRNA Plasmid (h): sc-36597-SH, SYP shRNA Plasmid (m): sc-36596-SH, SYP shRNA (h) Lentiviral Particles: sc-36597-V and SYP shRNA (m) Lentiviral Particles: sc-36596-V.

Molecular Weight of SYP: 38-48 kDa.

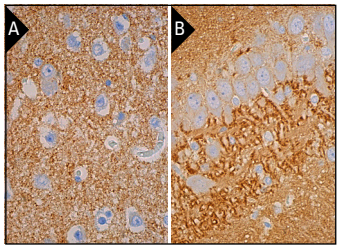
STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

DATA



SYP (D-4) HRP: sc-17750 HRP. Direct western blot analysis of SYP expression in IMR-32 (**A**), Neuro-2A (**B**), BE (2)-M17 (**C**) and SH-SY5Y (**D**) whole cell lysates and rat brain (**E**) and mouse brain (**F**) tissue extracts.



SYP (D-4) HRP: sc-17750 HRP. Direct immunoperoxidase staining of formalin fixed, paraffin-embedded human cerebral cortex tissue (**A**) and rat brain tissue (**B**) showing neuropil staining. Blocked with 0.25X UltraCruz® Blocking Reagent: sc-516214.

SELECT PRODUCT CITATIONS

1. Gum, J.R., Jr., et al. 2004. Mice expressing SV40 T antigen directed by the intestinal trefoil factor promoter develop tumors resembling human small cell carcinoma of the colon. Mol. Cancer Res. 2: 504-513.
2. Hao, Z., et al. 2015. Impaired maturation of large dense-core vesicles in muted-deficient adrenal chromaffin cells. J. Cell Sci. 128: 1365-1374.
3. Sen, A., et al. 2016. Protein kinase Cε (PKCε) promotes synaptogenesis through membrane accumulation of the postsynaptic density protein PSD-95. J. Biol. Chem. 291: 16462-16476.
4. Jiang, W., et al. 2017. Identification of protein tyrosine phosphatase receptor type O (PTPRO) as a synaptic adhesion molecule that promotes synapse formation. J. Neurosci. 37: 9828-9843.
5. Sorokina, A.M., et al. 2018. Striatal transcriptome of a mouse model of ADHD reveals a pattern of synaptic remodeling. PLoS ONE 13: e0201553.
6. Domise, M., et al. 2019. Neuronal AMP-activated protein kinase hyper-activation induces synaptic loss by an autophagy-mediated process. Cell Death Dis. 10: 221.
7. Lewis, K.E., et al. 2020. The influence of metallothionein treatment and treadmill running exercise on disease onset and survival in SOD1G93A amyotrophic lateral sclerosis mice. Eur. J. Neurosci. 52: 3223-3241.
8. Torres, A.K., et al. 2021. Pathologically phosphorylated tau at S396/404 (PHF-1) is accumulated inside of hippocampal synaptic mitochondria of aged Wild-type mice. Sci. Rep. 11: 4448.
9. Yu, H., et al. 2022. Maternal diabetes-mediated RORA suppression in mice contributes to autism-like offspring through inhibition of aromatase. Commun. Biol. 5: 51.

RESEARCH USE

For research use only, not for use in diagnostic procedures.