

# rapsyn (1234): sc-58585

## BACKGROUND

The RAPSIN gene locus is located on chromosome 11p11.2 and encodes a peripheral membrane protein. Rapsyn (receptor-associated protein of the synapse) is expressed in the postsynaptic membrane of skeletal muscle. rapsyn is required for the clustering of nicotinic acetylcholine receptors (nAChR). Rapsyn self-associates through at least two of its seven tetra-tripeptide repeats (TPRs). Rapsyn interacts with the large intracellular domain of the nAChR  $\alpha$  subunit through the hydrophobic surface of the coiled-coil domain. Rapsyn modifies trafficking of AChR within the cell. Expression is essential for agrin-induced AChR clustering. Overexpression inhibits agrin-induced AChR clustering pathway. Absence of rapsyn causes deficit in the formation of postsynaptic specializations at neuromuscular synapse, which increases axonal branching and motoneuron survival. Rapsyn plays a role in selective targeting of newly synthesized intracellular AChR to postsynaptic membrane.

## REFERENCES

- Buckel, A., Beeson, D., James, M. and Vincent, A. 1996. Cloning of cDNA encoding human rapsyn and mapping of the RAPSIN gene locus to chromosome 11p11.2-11.1. *Genomics* 35: 613-616.
- Maimone, M.M. and Enigk, R.E. 1999. The intracellular domain of the nicotinic acetylcholine receptor  $\alpha$  subunit mediates its coclustering with rapsyn. *Mol. Cell. Neurosci.* 14: 340-354.
- Han, H., Noakes, P.G. and Phillips, W.D. 1999. Overexpression of rapsyn inhibits agrin induced acetylcholine receptor clustering in muscle cells. *J. Neurocytol.* 28: 763-775.
- Han, H., Yang, S.H. and Phillips, W.D. 2000. Overexpression of rapsyn modifies the intracellular trafficking of acetylcholine receptors. *J. Neurosci. Res.* 60: 155-163.
- Ramarao, M.K., Bianchetta, M.J., Lanken, J. and Cohen, J.B. 2001. Role of rapsyn tetratricopeptide repeat and coiled-coil domains in self-association and nicotinic acetylcholine receptor clustering. *J. Biol. Chem.* 276: 7475-7483.
- Banks, G.B., Chau, T.N., Bartlett, S.E. and Noakes, P.G. 2001. Promotion of motoneuron survival and branching in rapsyn-deficient mice. *J. Comp. Neurol.* 429: 156-165.

## CHROMOSOMAL LOCATION

Genetic locus: RAPSIN (human) mapping to 11p11.2; Rapsn (mouse) mapping to 2 E1.

## SOURCE

rapsyn (1234) is a mouse monoclonal antibody raised against purified rapsyn from the electric organ postsynaptic membrane of *Torpedo californica*.

## PRODUCT

Each vial contains 100  $\mu$ g IgG<sub>1</sub> in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

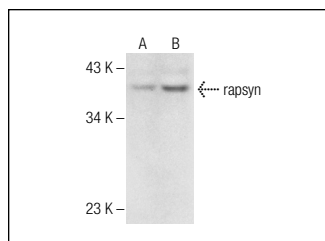
rapsyn (1234) is recommended for detection of rapsyn of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for rapsyn siRNA (h): sc-42206, rapsyn siRNA (m): sc-42207, rapsyn shRNA Plasmid (h): sc-42206-SH, rapsyn shRNA Plasmid (m): sc-42207-SH, rapsyn shRNA (h) Lentiviral Particles: sc-42206-V and rapsyn shRNA (m) Lentiviral Particles: sc-42207-V.

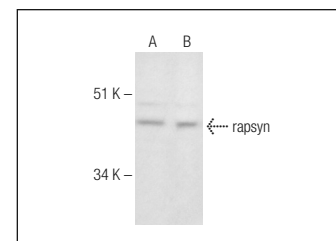
Molecular Weight of rapsyn: 43 kDa.

Positive Controls: A-673 cell lysate: sc-2414, mouse skeletal muscle extract: sc-364250 or Hs 732.Sk/Mu whole cell lysate: sc-364362.

## DATA



rapsyn (1234): sc-58585. Western blot analysis of rapsyn expression in Hs 732.Sk/Mu whole cell lysate (A) and mouse skeletal muscle tissue extract (B).



rapsyn (1234): sc-58585. Western blot analysis of rapsyn expression in A-673 (A) and HeLa (B) whole cell lysates.

## SELECT PRODUCT CITATIONS

- Lv, B., Min, S., Xie, F., Yang, J. and Chen, J. 2019. Alleviating sepsis-induced neuromuscular dysfunction linked with acetylcholine receptors by Agrin. *J. Surg. Res.* 241: 308-316.
- Lee, C.Y., Petkova, M., Morales-Gonzalez, S., Gimber, N., Schmoranzler, J., Meisel, A., Böhmerle, W., Stenzel, W., Schuelke, M. and Schwarz, J.M. 2020. A spontaneous missense mutation in the chromodomain helicase DNA binding protein 8 (CHD8) gene: a novel association with congenital myasthenic syndrome. *Neuropathol. Appl. Neurobiol.* 46: 588-601.
- Leite, A.P.S., Pinto, C.G., Tibúrcio, F.C., Muller, K.S., Padovani, C.R., Barraviera, B., Junior, R.S.F., Leal, C.V., Matsumura, C.Y. and Matheus, S.M.M. 2023. Acetylcholine receptors of the neuromuscular junctions present normal distribution after peripheral nerve injury and repair through nerve guidance associated with fibrin biopolymer. *Injury* 54: 345-361.

## STORAGE

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

## RESEARCH USE

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