

#3730 Store at -20°C

SAP102 Antibody



✓ 100 µl
(10 Western mini-blot)

Orders ■ 877-616-CELL (2355)
orders@cellsignal.com
Support ■ 877-678-TECH (8324)
info@cellsignal.com
Web ■ www.cellsignal.com

New 12/07

This product is for *in vitro* research use only and is not intended for use in humans or animals.

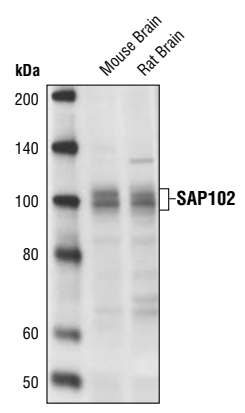
Applications W	Species Cross-Reactivity* M, R, (H)	Molecular Wt. 102 kDa	Source Rabbit
-------------------	--	--------------------------	------------------

Background: Synapse-associated protein 102 (SAP102, DLG3) belongs to the membrane-associated guanylate kinase (MAGUK) protein family and is a homolog of the *Drosophila* disc large (dlg) tumor suppressor protein. SAP102 consists of three PDZ domains, a Src homology 3 (SH3) domain and a guanylate kinase (GK) domain (1). The SAP102 protein is more highly expressed in non-proliferating cells than in proliferating cells, indicating a role in the negative regulation of cell growth. SAP102 interacts with the carboxy terminus of the adenomatous polyposis coli (APC) tumor suppressor protein. Furthermore, SAP102 associates with PSD95 in the presence of calcium while the SH3 domain of SAP102 binds calmodulin (2,3). All three PDZ domains of SAP102 participate in binding to the NMDA receptor, interacting specifically with the carboxy-terminal domain of the N-methyl-D-aspartate receptor 2B (NR2B). This SAP102-NR2B interaction may facilitate AMPA receptor withdrawal from the postsynaptic membrane by inhibiting the ERK/MAPK pathway (1,4).

Neuronal SAP102 is concentrated at dendritic shafts and spines, axons, and synaptic junctions. At excitatory synapses, SAP102 is involved in NMDA receptor clustering and immobilization and links NMDA receptors to the submembrane cytomatrix (4). SAP102 and the NMDA receptor function together to mediate plasticity, behavior, and signal transduction (1). A nonsyndromic form of X-linked mental retardation is caused by loss-of-function mutations to the SAP102 gene. The SAP102 protein may be involved in autism since MAGUK proteins in the NMDA receptor complex bind directly to the autism susceptibility gene neuroligin (1,5).

Specificity/Sensitivity: SAP102 Antibody detects endogenous levels of total SAP102 protein.

Source/Purification: Polyclonal antibodies are produced by immunizing rabbits with a fusion protein surrounding residue Gly100 of human SAP102. Antibodies are purified by protein A chromatography.



Western blot analysis of extracts from mouse and rat brain using SAP102 Antibody.

Background References:

- (1) Cuthbert, P.C. et al. (2007) *J Neurosci* 27, 2673–82.
- (2) Makino, K. et al. (1997) *Oncogene* 14, 2425–33.
- (3) Masuko, N. et al. (1999) *J Biol Chem* 274, 5782–90.
- (4) Lau, L.F. et al. (1996) *J Biol Chem* 271, 21622–8.
- (5) Yan, J. et al. (2005) *Mol Psychiatry* 10, 329–32.

Entrez-Gene ID # 1741
Swiss-Prot Acc. # Q92796

Storage: Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA and 50% glycerol. Store at -20°C. *Do not aliquot the antibody.*

*Species cross-reactivity is determined by Western blot.

Recommended Antibody Dilutions:
Western Blotting 1:1000

- Companion Products:**
- Phospho-NMDAR1 (Ser890) Antibody #3381
 - NMDAR1 Antibody #4204
 - NMDAR2A Antibody #4205
 - AMPA Receptor (GluR 2/3/4) Antibody #2460
 - PSD95 Antibody #2507
 - Phospho-Erk1/2 Pathway Sampler Kit #9911
 - Phototope®-HRP Western Blot Detection System, Anti-rabbit IgG, HRP-linked Antibody #7071
 - Anti-rabbit IgG, HRP-linked Antibody #7074
 - Prestained Protein Marker, Broad Range (Premixed Format) #7720
 - Biotinylated Protein Ladder #7727
 - 20X LumiGLO® Reagent and 20X Peroxide #7003

IMPORTANT: For Western blots, incubate membrane with diluted antibody in 5% w/v BSA, 1X TBS, 0.1% Tween-20 at 4°C with gentle shaking, overnight.

Applications Key: W—Western IP—Immunoprecipitation IHC—Immunohistochemistry IC—Immunocytochemistry IF—Immunofluorescence
Species Cross-Reactivity Key: H—human M—mouse R—rat Hm—hamster Mk—monkey Mi—mink C—chicken X—Xenopus
 F—Flow cytometry E—ELISA D—DELFIATM
 Z—zebra fish B—bovine All—all species expected
 Species enclosed in parentheses are predicted to react based on 100% sequence homology.

Western Immunoblotting Protocol (Primary Antibody Incubation in BSA)

For Western blots, incubate membrane with diluted antibody in 5% w/v BSA, 1X TBS, 0.1% Tween-20 at 4°C with gentle shaking, overnight.

A Solutions and Reagents

NOTE: Prepare solutions with Milli-Q or equivalently purified water.

- 1X Phosphate Buffered Saline (PBS)
- 1X SDS Sample Buffer:** 62.5 mM Tris-HCl (pH 6.8 at 25°C), 2% w/v SDS, 10% glycerol, 50 mM DTT, 0.01% w/v bromophenol blue or phenol red
- Transfer Buffer:** 25 mM Tris base, 0.2 M glycine, 20% methanol (pH 8.5)
- 10X Tris Buffered Saline (TBS):** To prepare 1 liter of 10X TBS: 24.2 g Tris base, 80 g NaCl; adjust pH to 7.6 with HCl (use at 1X).
- Nonfat Dry Milk (weight to volume [w/v])
- Blocking Buffer:** 1X TBS, 0.1% Tween-20 with 5% w/v nonfat dry milk; for 150 ml, add 15 ml 10X TBS to 135 ml water, mix. Add 7.5 g nonfat dry milk and mix well. While stirring, add 0.15 ml Tween-20 (100%).
- Wash Buffer:** 1X TBS, 0.1% Tween-20 (TBS/T)
- Bovine Serum Albumin (BSA)
- Primary Antibody Dilution Buffer:** 1X TBS, 0.1% Tween-20 with 5% BSA; for 20 ml, add 2 ml 10X TBS to 18 ml water, mix. Add 1.0 g BSA and mix well. While stirring, add 20 µl Tween-20 (100%).
- Phototope®-HRP Western Blot Detection System #7071:** Includes biotinylated protein ladder, secondary anti-rabbit (#7074) antibody conjugated to horseradish peroxidase (HRP), anti-biotin antibody conjugated to HRP, LumiGLO® chemiluminescent reagent and peroxide.
- Prestained Protein Marker, Broad Range (Premixed Format) #7720
- Biotinylated Protein Ladder Detection Pack #7727
- Blotting Membrane:** This protocol has been optimized for nitrocellulose membranes, which CST recommends. PVDF membranes may also be used.

B Protein Blotting

A general protocol for sample preparation is described below.

- Treat cells by adding fresh media containing regulator for desired time.
- Aspirate media from cultures; wash cells with 1X PBS; aspirate.
- Lyse cells by adding 1X SDS sample buffer (100 µl per well of 6-well plate or 500 µl per plate of 10 cm diameter plate). Immediately scrape the cells off the plate and transfer the extract to a microcentrifuge tube. Keep on ice.
- Sonicate for 10–15 seconds to shear DNA and reduce sample viscosity.
- Heat a 20 µl sample to 95–100°C for 5 minutes; cool on ice.
- Microcentrifuge for 5 minutes.
- Load 20 µl onto SDS-PAGE gel (10 cm x 10 cm).

NOTE: CST recommends loading prestained molecular weight markers (#7720, 10 µl/lane) to verify electrotransfer and biotinylated protein ladder (#7727, 10 µl/lane) to determine molecular weights.

- Electrotransfer to nitrocellulose or PVDF membrane.

C Membrane Blocking and Antibody Incubations

NOTE: Volumes are for 10 cm x 10 cm (100 cm²) of membrane; for different sized membranes, adjust volumes accordingly.

- (Optional) After transfer, wash nitrocellulose membrane with 25 ml TBS for 5 minutes at room temperature.
- Incubate membrane in 25 ml of blocking buffer for 1 hour at room temperature.
- Wash three times for 5 minutes each with 15 ml of TBS/T.
- Incubate membrane and primary antibody (at the appropriate dilution) in 10 ml primary antibody dilution buffer with gentle agitation overnight at 4°C.
- Wash three times for 5 minutes each with 15 ml of TBS/T.
- Incubate membrane with HRP-conjugated secondary antibody (1:2000) and HRP-conjugated anti-biotin antibody (1:1000) to detect biotinylated protein markers in 10 ml of blocking buffer with gentle agitation for 1 hour at room temperature.
- Wash three times for 5 minutes each with 15 ml of TBS/T.

D Detection of Proteins

- Incubate membrane with 10 ml LumiGLO® (0.5 ml 20X LumiGLO®, 0.5 ml 20X Peroxide and 9.0 ml Milli-Q water) with gentle agitation for 1 minute at room temperature.

NOTE: LumiGLO® substrate can be further diluted if signal response is too fast.

- Drain membrane of excess developing solution (do not let dry), wrap in plastic wrap and expose to x-ray film. An initial 10-second exposure should indicate the proper exposure time.

NOTE: Due to the kinetics of the detection reaction, signal is most intense immediately following LumiGLO® incubation and declines over the following 2 hours.