SYSY
Synaptic Systems

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Synaptotagmin 1 cytoplasmic tail

Cat.No. 105 011; Monoclonal mouse antibody, 100 µg purified IgG (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µg purified IgG, lyophilized. For reconstitution add 100 µl H_2O to get a 1mg/ml solution in PBS. Then aliquot and store at -20°C until use.
Applications	**WB**: 1 : 1000 (AP staining) (see remarks) **IP**: yes **ICC**: 1 : 100 up to 1 : 500 **IHC**: 1 : 500 **IHC-P/FFPE**: 1 : 500 **EM**: yes **ELISA**: yes (see remarks)
Clone	41.1
Subtype	IgG2a (κ light chain)
Immunogen	Recombinant protein corresponding to AA 80 to 421 from rat Synaptotagmin1 (UniProt Id: P21707)
Epitop	Epitop: AA 150 to 240 from rat Synaptotagmin1 (UniProt Id: P21707)
Reactivity	Reacts with: human (P21579), rat (P21707), mouse (P46096), mammals, zebrafish. Other species not tested yet.
Specificity	Specific for mammalian synaptotagmin 1, no cross-reactivity to other synaptotagmins. (K.O. verified)
Remarks	**WB**: Use only non-boiled samples when running SDS-PAGE. **ELISA**: Suitable as capture antibody for sandwich-ELISA with cat. no. 105 002 as detector antibody (protocol for sandwich-ELISA). Since synaptotagmin 1 is unevenly expressed in neuronal subpopulations and may, in fact, be missing from some, it is less well suited as a general marker for synapses.

TO BE USED IN VITRO / FOR RESEARCH ONLY
NOT TOXIC, NOT HAZARDOUS, NOT INFECTIOUS, NOT CONTAGIOUS

Synaptotagmin 1 also known as **p65**, is an integral membrane glycoprotein of neuronal synaptic vesicles and secretory granules of neuroendocrine cells that is widely (but not ubiquitously) expressed in the central and peripheral nervous system. It has a variable N-terminal domain that is exposed to the lumen of the vesicle and a conserved cytoplasmic tail that contains two Ca^{2+}-binding C2-domains. Ca^{2+}-binding to synaptotagmin triggers exocytosis of synaptic vesicles, thus linking Ca^{2+}-influx during depolarization to neurotransmitter release.
Lumenal antibodies were used in living neurons to label synaptic vesicles from the outside via endocytotic uptake.

Selected References SYSY Antibodies

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The Journal of biological chemistry (2004) 279(50): 52124-31. **IHC, IP, WB; tested species: mouse**

Synaptotagmin I, synaptobrevin II, and syntaxin I are coexpressed in rat and gerbil pinealocytes.
Redecker P
Cell and tissue research (1996) 283(3): 443-54. **WB, EM, IHC; tested species: rat**

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Xue M, Craig TK, Shin OH, Li L, Brautigam CA, Tomchick DR, Südhof TC, Rosenmund C, Rizo J
PloS one (2010) 5(9): . **WB, ICC; tested species: mouse**

Expression and secretion of synaptic proteins during stem cell differentiation to cortical neurons.
Nazir FH, Becker B, Brinkmalm A, Höglund K, Sandelius Å, Bergström P, Satir TM, Öhrfelt A, Blennow K, Agholme L, Zetterberg H, et al.
Neurochemistry international (2018) : . **WB, ICC; tested species: human**

JIP3 localises to exocytic vesicles and focal adhesions in the growth cones of differentiated PC12 cells.
Caswell PT, Dickens M
Molecular and cellular biochemistry (2017) : . **WB, ICC; tested species: rat**

A novel method for culturing stellate astrocytes reveals spatially distinct Ca2+ signaling and vesicle recycling in astrocytic processes.
Wolfes AC, Ahmed S, Awasthi A, Stahlberg MA, Rajput A, Magruder DS, Bonn S, Dean C
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Wnt signalling tunes neurotransmitter release by directly targeting Synaptotagmin-1.
Ciani L, Marzo A, Boyle K, Stamatakou E, Lopes DM, Anane D, McLeod F, Rosso SB, Gibb A, Salinas PC
Nature communications (2015) 6: 8302. **WB, ICC**

Phosphorylation of cysteine string protein in the brain: developmental, regional and synaptic specificity.
Evans GJ, Morgan A
The European journal of neuroscience (2005) 21(10): 2671-80. **WB, ICC**

SNAP-23 functions in docking/fusion of granules at low Ca2+.
Chieregatti E, Chicka MC, Chapman ER, Baldini G
Molecular biology of the cell (2004) 15(4): 1918-30. **WB, IP**

Distribution of synaptic vesicle proteins in the mammalian retina identifies obligatory and facultative components of ribbon synapses.
Von Kriegstein K, Schmitz F, Link E, Südhof TC
The European journal of neuroscience (1999) 11(4): 1335-48. **WB, IHC**

Synaptotagmin: a membrane constituent of neuropeptide-containing large dense-core vesicles.
Walch-Solimena C, Takei K, Marek KL, Midyett K, Südhof TC, De Camilli P, Jahn R
The Journal of neuroscience : the official journal of the Society for Neuroscience (1993) 13(9): 3895-903. **WB, IP**

Synapsin-dependent reserve pool of synaptic vesicles supports replenishment of the readily releasable pool under intense synaptic transmission.
Vasileva M, Horstmann H, Geumann C, Gitler D, Kuner T
The European journal of neuroscience (2012) 36(8): 3005-20. **ELISA**

Disabling the Gβγ-SNARE interaction disrupts GPCR-mediated presynaptic inhibition, leading to physiological and behavioral phenotypes.
Zurawski Z, Thompson Gray AD, Brady LJ, Page B, Church E, Harris NA, Dohn MR, Yim YY, Hyde K, Mortlock DP, Jones CK, et al.
Science signaling (2019) 12(569): . **WB; tested species: mouse**

Light-activated ROS production induces synaptic autophagy.
Hoffmann S, Orlando M, Andrzejak E, Bruns C, Trimbuch T, Rosenmund C, Garner CC, Ackermann F
The Journal of neuroscience : the official journal of the Society for Neuroscience (2019) : . **ICC; tested species: mouse**

Neuronal Regulation of Fast Synaptotagmin Isoforms Controls the Relative Contributions of Synchronous and Asynchronous Release.
Turecek J, Regehr WG
Neuron (2019) : . **IHC; tested species: mouse**

Synaptotagmin-3 drives AMPA receptor endocytosis, depression of synapse strength, and forgetting.
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Science (New York, N.Y.) (2018) : . **WB; tested species: rat**

Two Behavioral Tests Allow a Better Correlation Between Cognitive Function and Expression of Synaptic Proteins.
Balietti M, Fattorini G, Pugliese A, Marcotulli D, Bragina L, Conti F
Frontiers in aging neuroscience (2018) 10: 91. **WB; tested species: rat**