

Munc 13-1

Cat.No. 126 102; Polyclonal rabbit antibody, 200 µl antiserum (lyophilized)

Data Sheet

Reconstitution/ Storage	200 µl antiserum, lyophilized. For reconstitution add 200 µl H ₂ O, then aliquot and store at -20°C until use.
Applications	WB: 1 : 1000 (AP staining) IP: yes (see remarks) ICC: 1 : 500 (see remarks) IHC: 1 : 200 IHC-P/FFPE: not tested yet ELISA: (see remarks)
Immunogen	Recombinant protein corresponding to AA 3 to 317 from rat Munc13-1 (UniProt Id: Q62768)
Reactivity	Reacts with: human (Q9UPW8), rat (Q62768), mouse (Q4KUS2), zebrafish. Other species not tested yet.
Specificity	Specific for munc 13-1. (K.O. verified)
Remarks	IP: For most effective IP use the solubilization protocol described in the ELISA protocol. Consider that protein-protein interaction may be affected. ICC: This antibody gives much better results in ICC than the monoclonal antibody. ELISA: Suitable as detector antibody for sandwich-ELISA with cat. no. 126 111 as capture antibody (protocol for sandwich-ELISA).

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

Munc 13s are homologues of the *C. elegans* unc-13 gene product. Three brain specific isoforms, Munc 13-1, -13-2, and -13-3 are expressed in rat where they localize to presynaptic terminals. All three isoforms share multiple regulatory domains that may mediate phorbol ester and diacylglycerol binding.

Munc13-1 shows the broadest expression pattern and is found in cortex, cerebellum, olfactory bulb and hippocampus. Munc 13-2 is mainly expressed in cortex and hippocampus whereas **Munc 13-3** exhibits highest expression levels in cerebellum and pons. Munc13-1 interacts directly with a putative coiled coil domain in the N-terminal part of syntaxin and is involved in synaptic vesicle priming. For Munc13-2 an additional ubiquitously expressed N-terminal splice variant (ubMunc 13-2) has been described.

Munc 13-3 has been shown to be involved in the regulation of cerebellar synaptic transmission and motor learning.

Selected References SYSY Antibodies

Active zone protein expression changes at the key stages of cerebellar cortex neurogenesis in the rat. Juranek JK, Mukherjee K, Siddiqui TJ, Kaplan BJ, Li JY, Ahnert-Hilger G, Jahn R, Calka J
Acta histochemica (2013) 115(6): 616-25. **WB, ICC, IHC**

Spinal TNF-α impedes Fbxo45-dependent Munc13-1 ubiquitination to mediate neuropathic allodynia in rats. Hsieh MC, Ho YC, Lai CY, Chou D, Chen GD, Lin TB, Peng HY
Cell death & disease (2018) 9(8): 811. **WB, IHC; KD verified; tested species: rat**

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**

SNARE Complex-associated Proteins in the Lateral Amygdala of Macaca mullatta Following Long-term Ethanol Drinking.

Alexander NJ, Rau AR, Jimenez VA, Daunais JB, Grant KA, McCool BA
Alcoholism, clinical and experimental research (2018) : . **WB; tested species: monkey**

Ethanol Mediated Inhibition of Synaptic Vesicle Recycling at Amygdala Glutamate Synapses Is Dependent upon Munc13-2. Gioia DA, Alexander N, McCool BA

Frontiers in neuroscience (2017) 11: 424. **WB; tested species: mouse**

Differential Expression of Munc13-2 Produces Unique Synaptic Phenotypes in the Basolateral Amygdala of C57BL/6J and DBA/2J Mice.

Gioia DA, Alexander NJ, McCool BA
The Journal of neuroscience : the official journal of the Society for Neuroscience (2016) 36(43): 10964-10977. **WB**

Epac2 Mediates cAMP-Dependent Potentiation of Neurotransmission in the Hippocampus.

Fernandes HB, Riordan S, Nomura T, Remmers CL, Kraniotis S, Marshall JJ, Kukreja L, Vassar R, Contractor A
The Journal of neuroscience : the official journal of the Society for Neuroscience (2015) 35(16): 6544-53. **WB**

Ubiquitination acutely regulates presynaptic neurotransmitter release in mammalian neurons.

Rinetti GV, Schweizer FE
The Journal of neuroscience : the official journal of the Society for Neuroscience (2010) 30(9): 3157-66. **IHC**

Selected General References

Regulation of insulin exocytosis by Munc13-1.

Sheu L, Pasyk EA, Ji J, Huang X, Gao X, Varoquaux F, Brose N, Gaisano HY
The Journal of biological chemistry (2003) 278(30): 27556-63.

Rab34 and its effector munc13-2 constitute a new pathway modulating protein secretion in the cellular response to hyperglycemia.

Goldenberg NM, Silverman M
American journal of physiology. Cell physiology (2009) 297(4): C1053-8.

Munc13-2/- baseline secretion defect reveals source of oligomeric mucins in mouse airways.

Zhu Y, Ehre C, Abdullah LH, Sheehan JK, Roy M, Evans CM, Dickey BF, Davis CW
The Journal of physiology (2008) 586(7): 1977-92.

Bidirectional regulation of Munc13-3 protein expression by age and dark rearing during the critical period in mouse visual cortex.

Yang CB, Kiser PJ, Zheng YT, Varoquaux F, Mower GD
Neuroscience (2007) 150(3): 603-8.

Cast: a novel protein of the cytomatrix at the active zone of synapses that forms a ternary complex with RIM1 and munc13-1.

Ohtsuka T, Takao-Rikitsu E, Inoue E, Inoue M, Takeuchi M, Matsubara K, Deguchi-Tawarada M, Satoh K, Morimoto K, Nakanishi H, Takai Y, et al.
The Journal of cell biology (2002) 158(3): 577-90.

Identification of Munc13-3 as a candidate gene for critical-period neuroplasticity in visual cortex.

Yang CB, Zheng YT, Li GY, Mower GD
The Journal of neuroscience : the official journal of the Society for Neuroscience (2002) 22(19): 8614-8.

The cerebellum-specific Munc13 isoform Munc13-3 regulates cerebellar synaptic transmission and motor learning in mice.

Augustin I, Korte S, Rickmann M, Kretschmar HA, Südhof TC, Herms JW, Brose N
The Journal of neuroscience : the official journal of the Society for Neuroscience (2001) 21(1): 10-7.

Munc13-1 acts as a priming factor for large dense-core vesicles in bovine chromaffin cells.

Ashery U, Varoquaux F, Voets T, Betz A, Thakur P, Koch H, Neher E, Brose N, Rettig J
The EMBO journal (2000) 19(14): 3586-96.