Synaptic Systems

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Munc 13-1

Cat.No. 126 103; Polyclonal rabbit antibody, 50 µg specific antibody (lyophilized)

Data Sheet

Reconstitution/ Storage	50 µg specific antibody, lyophilized. Affinity purified with the immunogen. Rabbit serum albumin was added for stabilization. For reconstitution add 50 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) **IP**: yes (see remarks) **ICC**: 1 : 500 up to 1 : 1000 (see remarks) **IHC**: 1 : 200 **IHC-P/FFPE**: not tested yet **EM**: yes **ELISA**: yes (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

Non-additive potentiation of glutamate release by phorbol esters and metabotropic mGlu7 receptor in cerebrocortical nerve terminals.
Martín R, Bartolomé-Martín D, Torres M, Sánchez-Prieto J
Journal of neurochemistry (2011) 116(4): 476-85. **ICC, WB; tested species: mouse**

RIM, Munc13, and Rab3A interplay in acrosomal exocytosis.
Bello OD, Zanetti MN, Mayorga LS, Michaut MA
Experimental cell research (2012) 318(5): 478-88. **WB, ICC**

Composition of isolated synaptic boutons reveals the amounts of vesicle trafficking proteins.
Wilhelm BG, Mandad S, Truckenbrodt S, Kröhnert K, Schäfer C, Rammner B, Koo SJ, Claßen GA, Krauss M, Haucke V, Urlaub H, et al.
Science (New York, N.Y.) (2014) 344(6187): 1023-8. **IHC; tested species: mouse**

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**

Visualization of Synchronous or Asynchronous Release of Single Synaptic Vesicle in Active-Zone-Like Membrane Formed on Neuroligin-Coated Glass Surface.
Funahashi J, Tanaka H, Hirano T
Frontiers in cellular neuroscience (2018) 12: 140. **ICC; tested species: rat**

Riluzole attenuates the efficacy of glutamatergic transmission by interfering with the size of the readily releasable neurotransmitter pool.
Lazarevic V, Yang Y, Ivanova D, Fejtova A, Svenningsson P
Neuropharmacology (2018) : . **ICC; tested species: rat**

Postsynaptic RIM1 modulates synaptic function by facilitating membrane delivery of recycling NMDARs in hippocampal neurons.
Wang J, Lv X, Wu Y, Xu T, Jiao M, Yang R, Li X, Chen M, Yan Y, Chen C, Dong W, et al.
Nature communications (2018) 9(1): 2267. **WB; tested species: mouse**

Dopamine Secretion Is Mediated by Sparse Active Zone-like Release Sites.
Liu C, Kershberg L, Wang J, Schneeberger S, Kaeser PS
Cell (2018) 172(4): 706-718.e15. **ICC; tested species: mouse**

Inhibitory role of Munc13-1 in antigen-induced mast cell degranulation.
Higashio H, Satoh YI, Saino T
Biomedical research (Tokyo, Japan) (2017) 38(6): 321-329. **WB; tested species: rat**

Molecular Mechanisms of Synaptic Vesicle Priming by Munc13 and Munc18.
Lai Y, Choi UB, Leitz J, Rhee HJ, Lee C, Altas B, Zhao M, Pfuetzner RA, Wang AL, Brose N, Rhee J, et al.
Neuron (2017) 95(3): 591-607.e10. **WB; KO verified; tested species: mouse**

How to Make an Active Zone: Unexpected Universal Functional Redundancy between RIMs and RIM-BPs.
Acuna C, Liu X, Südhof TC
Neuron (2016) 91(4): 792-807. **WB**

CAPS-1 promotes fusion competence of stationary dense-core vesicles in presynaptic terminals of mammalian neurons.
Farina M, van de Bospoort R, He E, Persoon CM, van Weering JR, Broeke JH, Verhage M, Toonen RF
eLife (2015) 4: . **ICC**

Bassoon-disruption slows vesicle replenishment and induces homeostatic plasticity at a CNS synapse.
Mendoza Schulz A, Jing Z, Sánchez Caro JM, Wetzel F, Dresbach T, Strenzke N, Wichmann C, Moser T
The EMBO journal (2014) 33(5): 512-27. **IHC**

β-Adrenergic receptors activate exchange protein directly activated by cAMP (Epac), translocate Munc13-1, and enhance the Rab3A-RIM1α interaction to potentiate glutamate release at cerebrocortical nerve terminals.
Ferrero JJ, Alvarez AM, Ramírez-Franco J, Godino MC, Bartolomé-Martín D, Aguado C, Torres M, Luján R, Ciruela F, Sánchez-Prieto J
The Journal of biological chemistry (2013) 288(43): 31370-85. **WB; tested species: mouse**

Different Munc13 isoforms function as priming factors in lytic granule release from murine cytotoxic T lymphocytes.
Dudenhöffer-Pfeifer M, Schirra C, Pattu V, Halimani M, Maier-Peuschel M, Marshall MR, Matti U, Becherer U, Dirks J, Jung M, Lipp P, et al.
Traffic (Copenhagen, Denmark) (2013) 14(7): 798-809. **WB**

The Munc13 proteins differentially regulate readily releasable pool dynamics and calcium-dependent recovery at a central synapse.
Chen Z, Cooper B, Kalla S, Varoqueaux F, Young SM
The Journal of neuroscience : the official journal of the Society for Neuroscience (2013) 33(19): 8336-51. **WB**