Synaptic Systems

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Piccolo

Cat.No. 142 002; Polyclonal rabbit antibody, 200 µl antiserum (lyophilized)

Data Sheet

Reconstitution/ Storage	200 µl antiserum, lyophilized. For reconstitution add 200 µl H_2O, then aliquot and store at -20°C until use.
Applications	**WB**: 1 : 1000 up to 1 : 5000 (ECL detection) (see remarks) **IP**: not tested yet **ICC**: 1 : 200 up to 1 : 500 **IHC**: yes **IHC-P/FFPE**: not tested yet
Immunogen	Recombinant protein corresponding to AA 4439 to 4776 from rat Piccolo (UniProt Id: Q9JKS6)
Reactivity	Reacts with: rat (Q9JKS6), mouse (Q9QYX7). Other species not tested yet.
Specificity	Specific for piccolo. (K.O. verified)
matching control	142-0P
Remarks	**WB**: This antibody detects an additional band of ~65 kDa.

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

Piccolo, also referred to as **Aczonin**, is a large protein which constists of an N-terminal Zn^{2+} finger, several piccolo-bassoon homology domains (PBH-domains) and C-terminal PDZ and C2 domains. In general it is found together with bassoon, a related huge multi-domain protein of the CAZ (cytoskeletal matric assembled at active zones).
Piccolo is supposed to be a scaffolding protein for proteins involved in endo- and exocytosis of synaptic vesicles. Recently piccolo has been shown to interfere with clathrin mediated endocytosis by binding to the F-actin and dynamin binding protein Abp1.

Selected References SYSY Antibodies

Molecular dynamics of photoreceptor synapse formation in the developing chick retina.
Wahlin KJ, Moreira EF, Huang H, Yu N, Adler R
The Journal of comparative neurology (2008) 506(5): 822-37. **WB, IHC**

Localization of the active zone proteins CAST, ELKS, and Piccolo at neuromuscular junctions.
Tokoro T, Higa S, Deguchi-Tawarada M, Inoue E, Kitajima I, Ohtsuka T
Neuroreport (2007) 18(4): 313-6. **ICC**

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**

Nanoscale Structural Plasticity of the Active Zone Matrix Modulates Presynaptic Function.
Glebov OO, Jackson RE, Winterflood CM, Owen DM, Barker EA, Doherty P, Ewers H, Burrone J
Cell reports (2017) 18(11): 2715-2728. **ICC**

Fusion Competent Synaptic Vesicles Persist upon Active Zone Disruption and Loss of Vesicle Docking.
Wang SSH, Held RG, Wong MY, Liu C, Karakhanyan A, Kaeser PS
Neuron (2016) 91(4): 777-791. **ICC; KO verified**

Dual-color STED microscopy reveals a sandwich structure of Bassoon and Piccolo in active zones of adult and aged mice.
Nishimune H, Badawi Y, Mori S, Shigemoto K
Scientific reports (2016) 6: 27935. **IHC; tested species: mouse**

Calcium channels link the muscle-derived synapse organizer laminin β2 to Bassoon and CAST/Erc2 to organize presynaptic active zones.
Chen J, Billings SE, Nishimune H
The Journal of neuroscience : the official journal of the Society for Neuroscience (2011) 31(2): 512-25. **IHC; tested species: mouse**

Neuronal MHC class I molecules are involved in excitatory synaptic transmission at the hippocampal mossy fiber synapses of marmoset monkeys.
Ribic A, Zhang M, Schlumbohm C, Mätz-Rensing K, Uchanska-Ziegler B, Flügge G, Zhang W, Walter L, Fuchs E
Cellular and molecular neurobiology (2010) 30(6): 827-39. **IHC**

Rapid structural alterations of the active zone lead to sustained changes in neurotransmitter release.
Matz J, Gilyan A, Kolar A, McCarvill T, Krueger SR
Proceedings of the National Academy of Sciences of the United States of America (2010) 107(19): 8836-41. **ICC; tested species: rat**

Presynaptic calcium channels and α3-integrins are complexed with synaptic cleft laminins, cytoskeletal elements and active zone components.
Carlson SS, Valdez G, Sanes JR
Journal of neurochemistry (2010) 115(3): 654-66. **WB; tested species: mouse**

APP anterograde transport requires Rab3A GTPase activity for assembly of the transport vesicle.
Szodorai A, Kuan YH, Hunzelmann S, Engel U, Sakane A, Sasaki T, Takai Y, Kirsch J, Müller U, Beyreuther K, Brady S, et al.
The Journal of neuroscience : the official journal of the Society for Neuroscience (2009) 29(46): 14534-44. **WB**

Assembly of active zone precursor vesicles: obligatory trafficking of presynaptic cytomatrix proteins Bassoon and Piccolo via a trans-Golgi compartment.
Dresbach T, Torres V, Wittenmayer N, Altrock WD, Zamorano P, Zuschratter W, Nawrotzki R, Ziv NE, Garner CC, Gundelfinger ED
The Journal of biological chemistry (2006) 281(9): 6038-47. **ICC**

Differential expression of active zone proteins in neuromuscular junctions suggests functional diversification.
Juranek J, Mukherjee K, Rickmann M, Martens H, Calka J, Südhof TC, Jahn R
The European journal of neuroscience (2006) 24(11): 3043-52. **ICC**

Molecular profiling reveals synaptic release machinery in Merkel cells.
Haeberle H, Fujiwara M, Chuang J, Medina MM, Panditrao MV, Bechstedt S, Howard J, Lumpkin EA
Proceedings of the National Academy of Sciences of the United States of America (2004) 101(40): 14503-8. **ICC**

Selected General References

Unitary assembly of presynaptic active zones from Piccolo-Bassoon transport vesicles.
Shapira M, Zhai RG, Dresbach T, Bresler T, Torres VI, Gundelfinger ED, Ziv NE, Garner CC
Neuron (2003) 38(2): 237-52.

Interactions between Piccolo and the actin/dynamin-binding protein Abp1 link vesicle endocytosis to presynaptic active zones.
Fenster SD, Kessels MM, Qualmann B, Chung WJ, Nash J, Gundelfinger ED, Garner CC
The Journal of biological chemistry (2003) 278(22): 20268-77.