Synaptic Systems

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ERC 1b/2

Cat.No. 143 003; 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 TBS. Then aliquot and store at -20°C until use.
Applications	**WB**: 1 : 100 up to 1 : 5000 (AP staining) **IP**: yes **ICC**: 1 : 1000 **IHC**: 1 : 100 **IHC-P/FFPE**: not tested yet
Immunogen	Synthetic peptide corresponding to AA 939 to 948 from rat Erc1b (UniProt Id: Q811U3-1)
Reactivity	Reacts with: human (Q8IUD2, O15083), rat (Q811U3, Q8K3M6), mouse (Q99MI1, Q6PH08), hamster. No signal: zebrafish. Other species not tested yet.
Specificity	Specific for the brain specific isoforms ERC 1b and ERC 2.
matching control	143-0P

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

ELKS, also referred to as **ERC**s (ERC 1 and ERC 2) and **CAST**, are related proteins which share an identical C-terminal sequence. They interact with the conserved RIM PDZ domain via an unusual PDZ binding motif. Two splice variants of ERC 1 (1a and 1b) have been described. ERC 1b (CAST 2a) binds to RIM and is expressed exclusively in the brain. ERC 1a is a ubiquitously expressed cytosolic protein. ERC 2 (CAST 1) is only expressed as a single RIM binding variant.
All ERCs have been shown to interact with Rab 6, a protein involved in membrane trafficking at the Golgi complex. The function of these proteins has not been determined yet. They may link Rab 6 mediated non-neuronal membrane traffic at the Golgi complex to neuronal membrane traffic at the active zone executed via RIMs.

Selected References SYSY Antibodies

Extensive remodeling of the presynaptic cytomatrix upon homeostatic adaptation to network activity silencing.
Lazarevic V, Schöne C, Heine M, Gundelfinger ED, Fejtova A
The Journal of neuroscience : the official journal of the Society for Neuroscience (2011) 31(28): 10189-200. **WB, ICC**

Molecular dissection of the photoreceptor ribbon synapse: physical interaction of Bassoon and RIBEYE is essential for the assembly of the ribbon complex.
tom Dieck S, Altrock WD, Kessels MM, Qualmann B, Regus H, Brauner D, Fejtová A, Bracko O, Gundelfinger ED, Brandstätter JH
The Journal of cell biology (2005) 168(5): 825-36. **WB, IHC**

Liprin-α2 promotes the presynaptic recruitment and turnover of RIM1/CASK to facilitate synaptic transmission.
Spangler SA, Schmitz SK, Kevenaar JT, de Graaff E, de Wit H, Demmers J, Toonen RF, Hoogenraad CC
The Journal of cell biology (2013) 201(6): 915-28. **ICC, WB; tested species: rat**

α2δ-4 is required for the molecular and structural organization of rod and cone photoreceptor synapses.
Kerov V, Laird JG, Joiner ML, Knecht S, Soh D, Hagen J, Gardner SH, Gutierrez W, Yoshimatsu T, Bhattarai S, Puthussery T, et al.
The Journal of neuroscience : the official journal of the Society for Neuroscience (2018) : . **WB; tested species: mouse**

The active zone protein CAST regulates synaptic vesicle recycling and quantal size in the mouse hippocampus.
Kobayashi S, Hida Y, Ishizaki H, Inoue E, Tanaka-Okamoto M, Yamasaki M, Miyazaki T, Fukaya M, Kitajima I, Takai Y, Watanabe M, et al.
The European journal of neuroscience (2016) 44(5): 2272-84. **WB**

RIM1α SUMOylation is required for fast synaptic vesicle exocytosis.
Girach F, Craig TJ, Rocca DL, Henley JM
Cell reports (2013) 5(5): 1294-301. **WB; tested species: rat**

Mover is a homomeric phospho-protein present on synaptic vesicles.
Ahmed S, Wittenmayer N, Kremer T, Hoeber J, Kiran Akula A, Urlaub H, Islinger M, Kirsch J, Dean C, Dresbach T
PloS one (2013) 8(5): e63474. **WB**

Lateral mobility of presynaptic α7-containing nicotinic receptors and its relevance for glutamate release.
Gomez-Varela D, Berg DK
The Journal of neuroscience : the official journal of the Society for Neuroscience (2013) 33(43): 17062-71. **ICC; tested species: rat**

Small-scale isolation of synaptic vesicles from mammalian brain.
Ahmed S, Holt M, Riedel D, Jahn R
Nature protocols (2013) 8(5): 998-1009. **WB; tested species: mouse**

ELKS1 and Ca(2+) channel subunit β4 interact and colocalize at cerebellar synapses.
Billings SE, Clarke GL, Nishimune H
Neuroreport (2012) 23(1): 49-54. **IHC**

Formation of Golgi-derived active zone precursor vesicles.
Maas C, Torres VI, Altrock WD, Leal-Ortiz S, Wagh D, Terry-Lorenzo RT, Fejtova A, Gundelfinger ED, Ziv NE, Garner CC
The Journal of neuroscience : the official journal of the Society for Neuroscience (2012) 32(32): 11095-108. **WB**

Active zone proteins are dynamically associated with synaptic ribbons in rat pinealocytes.
Spiwoks-Becker I, Maus C, tom Dieck S, Fejtová A, Engel L, Wolloscheck T, Wolfrum U, Vollrath L, Spessert R
Cell and tissue research (2008) 333(2): 185-95. **IHC; tested species: rat**

Molecular anatomy of a trafficking organelle.
Takamori S, Holt M, Stenius K, Lemke EA, Grønborg M, Riedel D, Urlaub H, Schenck S, Brügger B, Ringler P, Müller SA, et al.
Cell (2006) 127(4): 831-46. **WB**

Selected General References

Physical and functional interaction of the active zone proteins, CAST, RIM1, and Bassoon, in neurotransmitter release.
Takao-Rikitsu E, Mochida S, Inoue E, Deguchi-Tawarada M, Inoue M, Ohtsuka T, Takai Y
The Journal of cell biology (2004) 164(2): 301-11.

CAST2: identification and characterization of a protein structurally related to the presynaptic cytomatrix protein CAST.
Deguchi-Tawarada M, Inoue E, Takao-Rikitsu E, Inoue M, Ohtsuka T, Takai Y
Genes to cells : devoted to molecular & cellular mechanisms (2004) 9(1): 15-23.

Interaction of the ERC family of RIM-binding proteins with the liprin-alpha family of multidomain proteins.
Ko J, Na M, Kim S, Lee JR, Kim E
The Journal of biological chemistry (2003) 278(43): 42377-85.

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.