Synaptotagmin 1 (Syt 1) Antibody

Cat. No. CP10345

Applications:	**WB**
Detected MW:	**65 kDa**
Species & Reactivity:	**Human, Mouse, Rat**
Isotype:	**Mouse IgG1**

BACKGROUND

Synaptotagmins constitute a family of membrane-trafficking proteins that are characterized by an N-terminal TMR, a variable linker, and two C-terminal C_2-domains. Synaptotagmin 1 (Syt 1) was identified as p65 in a monoclonal antibody screen for synaptic proteins and proposed as a potential Ca^{2+} sensor for regulated exocytosis. Synaptotagmin 1 is thought to convey the calcium signal onto the core secretory machinery. Its cytosolic portion mainly consists of two C2 domains, which upon calcium binding are enabled to bind to acidic lipid bilayers. It was suggested that synaptotagmin 1 functions by binding in a *trans* configuration whereby the C2A domain binds to the synaptic vesicle and the C2B binds to the $PI(4,5)P_2$-enriched plasma membrane.[1] Twelve additional synaptotagmins were subsequently discovered. Extensive work showed that Syts 1 and 2 likely function as Ca^{2+} sensors in synaptic vesicle exocytosis. The most abundant of these "other" synaptotagmins, Syts 3 and 7, are localized on the plasma membrane opposite to synaptic vesicles and exhibit distinct Ca^{2+} affinities, suggesting that plasma membrane and vesicular synaptotagmins may function as complementary Ca^{2+} sensors in exocytosis with a hierarchy of Ca^{2+} affinities. Thus, members from the synaptotagmin family are believed to underlie at least in part the distinct Ca^{2+} dependencies of different forms of regulated secretion. In neurons, synaptotagmin 1 (Syt1) is a Ca^{2+} sensor that interacts with SNAREs and membranes to mediate synaptic vesicle fusion, triggering synchronous neurotransmission. Synaptotagmin-1 mediates fast neurotransmitter release at the hippocampus, while fast release is triggered in other brain regions by this same isoform or by the closely related synaptotagmins-2 or -9. In contrast, insulin secretion in pancreatic β cells depends on synaptotagmin-7, and acrosomal exocytosis in sperm appears to involve synaptotagmin-6. In PC12 cells, Ca^{2+}-dependent secretion is mediated by synaptotagmins-1 and -9, whereas chromaffin cells use synaptotagmins-1 and –7 as Ca^{2+} sensors. Functional differentiation among synaptotagmins is expected to arise primarily from differences in the properties of the two C_2 domains that form most of their cytoplasmic regions (referred to as C_2A and C_2B domains).[3] In addition, synaptotagmins also function in endocytosis. Syt 1 regulates endocytosis of the acetylcholine receptor, a process that involves the AP2 complex before membrane internalization. Syt 7 appears to have a role in membrane sealing and lysosomal trafficking.[4]

References:
1. Radhakrishnan, A. et al: J. Biol. Chem. 285:25749-60, 2009
2. Martens, S. et al: Science 316:1205-8, 2007
3. Xue, M. et al: PLoS ONE 5:e12544, 2010
4. Musch, M.W. et al: Am. J. Physiol. Gastrointest. Liver Physiol. 298:G203-11, 2010

TECHNICAL INFORMATION

Source:
Synaptotagmin 1 (Syt 1) Antibody is a mouse monoclonal antibody raised against recombinant human Syt1 fragments expressed in *E. coli*.

Specificity and Sensitivity:
This antibody detects Syt1 proteins without cross-reactivity with other family members.

Storage Buffer: PBS and 30% glycerol

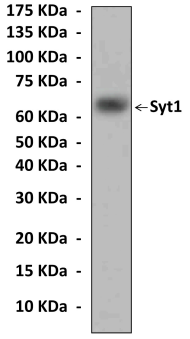
Storage:
Store at -20°C for at least one year. Store at 4°C for frequent use. Avoid repeated freeze-thaw cycles.

APPLICATIONS

Application:	*Dilution:
WB	1:1000
IP	n/d
IHC	n/d
ICC	n/d
FACS	n/d

**Optimal dilutions must be determined by end user.*

QUALITY CONTROL DATA



Western Blot detection of Syt1 proteins in mouse brain tissue lysate using Syt1 Antibody.