Recombinant Human Neuroligin 1/ NLGN1 Variant 2

Catalog Number: 7066-NL

DESCRIPTION

Source	Mouse myeloma cell line, NS0-derived Met1-Ser677, with a C-terminal 6-His tag Accession # NP_055747
N-terminal Sequence Analysis	No results obtained: Gln46 predicted, sequencing might be blocked
Predicted Molecular Mass	71.3 kDa

SPECIFICATIONS

SDS-PAGE	90-110 kDa, reducing conditions
Activity	Measured by its binding ability in a functional ELISA. When Recombinant Human Neuroligin 1/NLGN1 Variant 2 is immobilized at 5.0 µg/mL, Recombinant Human Neurexin 1β Fc Chimera (Catalog # 5268-NX) binds with an apparent K_D < 30 nM.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 300 µg/mL in PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** ● 12 months from date of receipt, -20 to -70 °C as supplied. ● 1 month, 2 to 8 °C under sterile conditions after reconstitution. ● 3 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

Neuroligin 1 (NLGN1 or NL1) is one of several type I transmembrane Neuroligin proteins that play an important role in synaptic development (1). Mature human Neuroligin 1 is an N- and O-glycosylated 120 kDa molecule that consists of a 649 amino acid (aa) extracellular domain (ECD) with a catalytically inactive cholinesterase-like domain, a 21 aa transmembrane segment, and a 125 aa cytoplasmic tail (2). In rat, insertion of 20 aa at splice site A and/or 9 aa at splice site B within the ECD results in NLGN1A, NLGN1B, or NLGN1AB isoforms while the NLGN1(-) isoform has neither insertion (3). This recombinant protein lacks the splice site A insert but contains the splice site B insert and corresponds to the human equivalent of rat NLGN1B. Within the ECD, human NLGN1A shares 99% aa sequence identity with comparable regions of mouse and rat Neuroligin 1, respectively. Neuroligin 1 expression is restricted to postsynaptic nerve terminal membranes where it associates into dimers and tetramers (5 - 7). NLGN1B and NLGN1AB are enriched at excitatory (glutamatergic) contacts, whereas NLGN1A is enriched at inhibitory (GABAergic) contacts and NLGN1(-) is expressed at both (3). The interaction of Neuroligin 1 with presynaptic membrane Neurexins promotes the maturation of presynaptic as well as postsynaptic structures (3, 4, 8 - 11). Neuroligin 1 isoforms are selective in which Neurexin isoforms they bind: NLGN1B and NLGN1AB preferentially interact with Neurexin 1β lacking the splice site 4 insert, while NLGN1A and NLGN1(-) bind Neurexin 1 alpha and Neurexin 1 beta irrespective of the SS4 insert (12). Neurexin 1 beta (-SS4) additionally binds to LRRTM2 to trigger a second mechanism that promotes excitatory synapse development (13, 14). Neuroligin 1 mediated synaptogenesis is also enhanced by its direct binding to Thrombospondin 1 (15).

References:

1. Sudhof, T.C. (2008) Nature **455**:903.
2. Ichtchenko, K. *et al.* (1995) Cell **81**:435.
3. Chih, B. *et al.* (2006) Neuron **51**:171.
4. Dean, C. *et al.* (2003) Nat. Neurosci. **7**:708.
5. Comoletti, D. *et al.* (2006) Biochemistry **45**:12816.
6. Berninghausen, O. *et al.* (2007) J. Neurochem. **103**:1855.
7. Song, J.-Y. *et al.* (1999) Proc. Natl. Acad. Sci. **96**:1100.
8. Wittenmayer, N. *et al.* (2009) Proc. Natl. Acad. Sci. **106**:13564.
9. Jung, S.-Y. *et al.* (2010) Proc. Natl. Acad. Sci. **107**:4710.
10. Chubykin, A.A. *et al.* (2007) Neuron **54**:919.
11. Chih, B. *et al.* (2005) Science **307**:1324.
12. Boucard, A.A. *et al.* (2005) Neuron **48**:229.
13. Siddiqui, T.J. *et al.* (2010) J. Neurosci. **30**:7495.
14. Ko, J. *et al.* (2009) Neuron **64**:791.
15. Xu, J. *et al.* (2010) Nat. Neurosci. **13**:22.

bio-techne®
Global bio-techne.com info@bio-techne.com techsupport@bio-techne.com TEL +1 612 379 2956
USA TEL 800 343 7475 Canada TEL 855 668 8722 China TEL +86 (21) 52380373
Europe | Middle East | Africa TEL +44 (0)1235 529449