

## DESCRIPTION

<b>Species Reactivity</b>	Human
<b>Specificity</b>	Detects human Neuroligin 4/NLGN4 in direct ELISAs and Western blots. In direct ELISAs, less than 5% cross-reactivity with recombinant human (rh) NLGN3 is observed.
<b>Source</b>	Polyclonal Sheep IgG
<b>Purification</b>	Antigen Affinity-purified
<b>Immunogen</b>	<i>E. coli</i> -derived recombinant human Neuroligin 4/NLGN4 Met618-Thr673 Accession # Q8N0W4
<b>Endotoxin Level</b>	<0.10 EU per 1 µg of the antibody by the LAL method.
<b>Formulation</b>	Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details. *Small pack size (-SP) is supplied as a 0.2 µm filtered solution in PBS.

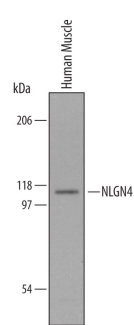
## APPLICATIONS

**Please Note:** Optimal dilutions should be determined by each laboratory for each application. *General Protocols* are available in the *Technical Information* section on our website.

	Recommended Concentration	Sample
<b>Western Blot</b>	1 µg/mL	See Below
<b>Immunohistochemistry</b>	5-15 µg/mL	See Below

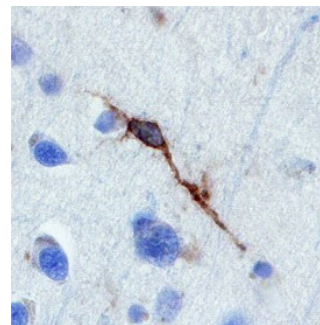
## DATA

### Western Blot



**Detection of Human Neuroligin 4/NLGN4 by Western Blot.** Western blot shows lysates of human muscle tissue. PVDF membrane was probed with 1 µg/mL of Human Neuroligin 4/NLGN4 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF5158) followed by HRP-conjugated Anti-Sheep IgG Secondary Antibody (Catalog # HAF016). A specific band was detected for Neuroligin 4/NLGN4 at approximately 110 kDa (as indicated). This experiment was conducted under reducing conditions and using Immunoblot Buffer Group 8.

### Immunohistochemistry



**Neuroligin 4/NLGN4 in Human Brain.** Neuroligin 4/NLGN4 was detected in immersion fixed paraffin-embedded sections of human brain (cortex) using Human Neuroligin 4/NLGN4 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF5158) at 5 µg/mL overnight at 4 °C. Tissue was stained using the Anti-Sheep HRP-DAB Cell & Tissue Staining Kit (brown; Catalog # CTS019) and counterstained with hematoxylin (blue). Specific staining was localized to neuronal cell bodies and their processes. View our protocol for [Chromogenic IHC Staining of Paraffin-embedded Tissue Sections](#).

## PREPARATION AND STORAGE

<b>Reconstitution</b>	Reconstitute at 0.2 mg/mL in sterile PBS.
<b>Shipping</b>	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. *Small pack size (-SP) is shipped with polar packs. Upon receipt, store it immediately at -20 to -70 °C
<b>Stability &amp; Storage</b>	<b>Use a manual defrost freezer and avoid repeated freeze-thaw cycles.</b> <ul style="list-style-type: none"> <li>● 12 months from date of receipt, -20 to -70 °C as supplied.</li> <li>● 1 month, 2 to 8 °C under sterile conditions after reconstitution.</li> <li>● 6 months, -20 to -70 °C under sterile conditions after reconstitution.</li> </ul>

**BACKGROUND**

Neuroligin 4 (NLGN4, NL4 or NL4X) is a 110 kDa type I transmembrane glycoprotein that is a member of the type B carboxyesterase/lipase family of proteins (1). Neuroligins are postsynaptically expressed on neurons and initiate excitatory presynapse maturation through binding to select isoforms of  $\beta$ -neurexin (1-3). The 816 amino acid (aa) human NLGN4 contains a 41 aa signal sequence, a 635 aa extracellular domain (ECD), a 21 aa transmembrane domain and a 119 aa cytoplasmic tail. The ECD possesses a nonfunctional esterase homology domain through which neuroligins, except for NLGN2, interact with neurexins (4). Human NLGN4 is found on the X-chromosome. It shares 69%-73% aa identity with NLGNs 1, 2 and 3, and 98% aa identity with NLGN4Y, a Y-chromosome-encoded neuroligin (1). Human NLGN4 ECD shares 62%, 99% and 99% aa identity with mouse, equine and canine NLGN4, respectively (5). Unlike other neuroligins, human NLGN4 does not appear to express alternate splice forms (1, 6). Crystalization of the NLGN4 ECD with and without  $\beta$ -neurexin shows that NLGN4 forms a homodimer via a hydrophobic interface, but interactions with  $\beta$ -neurexin are hydrophilic and calcium-dependent (4, 6). NLGNs 3 and 4 bind syntrophin- $\gamma$ 2 intracellularly (7). Mutations of NLGN4 can be associated with rare cases of autism, Asperger or Tourette syndromes (8-10). Mice with a loss-of-function mutation in NLGN4 show deficits in reciprocal social interactions and communication that are reminiscent of autism spectrum conditions in humans (11).

**References:**

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11. Jamain, S. *et al.* (2008) *Proc. Natl. Acad. Sci. USA* **105**:1710.