

## DESCRIPTION

<b>Species Reactivity</b>	Human/Primate
<b>Specificity</b>	Detects human NCAM-1/CD56 in ELISAs and Western blots. In direct ELISAs and Western blots, no cross-reactivity with recombinant human (rh) ALCAM, rhBCAM, rhEPCAM, rhMCAM, rhNCAM-1-L1, recombinant mouse (rm) MADCAM-1, rmNCAM-1-L1, or rmOCAM is observed.
<b>Source</b>	Monoclonal Mouse IgG <sub>2B</sub> Clone # 301040
<b>Purification</b>	Protein A or G purified from hybridoma culture supernatant
<b>Immunogen</b>	Mouse myeloma cell line NS0-derived recombinant human NCAM-1/CD56
<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 either lyophilized or as a 0.2 µm filtered solution in PBS.

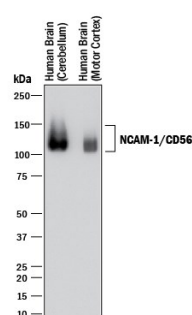
## APPLICATIONS

**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>Flow Cytometry</b>	0.25 µg/10 <sup>6</sup> cells	Human peripheral blood mononuclear cells and human NK cells expanded from PBMCs using Cloudz Human NK Cell Expansion Kit (Catalog # CLD004)
<b>Human/Primate NCAM-1/CD56 Sandwich Immunoassay</b>		<b>Reagent</b>
<b>ELISA Capture</b>	2-8 µg/mL	Human/Primate NCAM-1/CD56 Antibody (Catalog # MAB2408)
<b>ELISA Detection</b>	0.1-0.4 µg/mL	Human/Primate NCAM-1/CD56 Biotinylated Antibody (Catalog # BAF2408)
<b>Standard</b>		Recombinant Human NCAM-1/CD56 120 isoform (Catalog # 2408-NC)
<b>CytoF-ready</b>	Ready to be labeled using established conjugation methods. No BSA or other carrier proteins that could interfere with conjugation.	

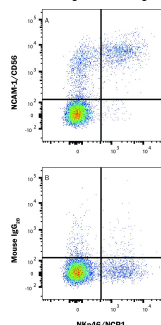
## DATA

### Western Blot



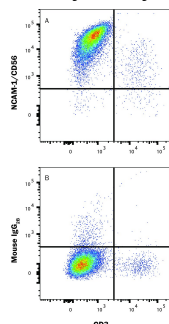
**Detection of Human NCAM-1/CD56 by Western Blot.** Western blot shows lysates of human brain (cerebellum) tissue and human brain (motor cortex) tissue. PVDF membrane was probed with 1 µg/mL of Mouse Anti-Human/Primate NCAM-1/CD56 Monoclonal Antibody (Catalog # MAB2408) followed by HRP-conjugated Anti-Mouse IgG Secondary Antibody (Catalog # HAF018). A specific band was detected for NCAM-1/CD56 at approximately 100-150 kDa (as indicated). This experiment was conducted under reducing conditions and using Immunoblot Buffer Group 1.

### Flow Cytometry



**Detection of NCAM-1/CD56 in Human PBMC by Flow Cytometry.** Human PBMCs were stained with either (A) Mouse Anti-Human NCAM-1/CD56 Monoclonal Antibody (Catalog # MAB2408) or (B) Mouse IgG2B Isotype Control (Catalog # MAB0041) followed by Anti-Mouse IgG APC-conjugated secondary antibody (Catalog # F0101B) and Mouse Anti-Human NKp46 PE-conjugated Monoclonal Antibody (Catalog # FAB1850P). Staining was performed using our Staining Membrane-associated Proteins protocol.

### Flow Cytometry



**Detection of NCAM-1/CD56 in Human NK cells by Flow Cytometry.** Human NK cells were expanded from PBMCs using Cloudz Human NK Cell Expansion Kit (Catalog # CLD004) and were stained with either (A) Mouse Anti-Human NCAM-1/CD56 Monoclonal Antibody (Catalog # MAB2408) or (B) Mouse IgG2B Isotype Control (Catalog # MAB0041) followed by Anti-Mouse IgG APC-conjugated secondary antibody (Catalog # F0101B) and Mouse Anti-HumanCD3 PE-conjugated Monoclonal Antibody (Catalog # FAB100P). Staining was performed using our Staining Membrane-associated Proteins protocol.

## PREPARATION AND STORAGE

<b>Reconstitution</b>	Reconstitute at 0.5 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>	<p><b>Use a manual defrost freezer and avoid repeated freeze-thaw cycles.</b></p> <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

Neural cell adhesion molecule 1 (NCAM-1) is a multifunctional member of the Ig superfamily. It belongs to a family of membrane-bound glycoproteins that are involved in Ca<sup>++</sup> independent cell matrix and homophilic or heterophilic cell-cell interactions. NCAM-1 specifically binds to heparan sulfate proteoglycans (1), the extracellular matrix protein agrin (2), and several chondroitin sulfate proteoglycans that include neurocan and phosphacan (3). There are three main forms of human NCAM-1 that arise by alternate splicing. These are designated NCAM-120/NCAM-1 (761 amino acids [aa]), NCAM-140 (848 aa), and NCAM-180 (1120 aa). NCAM-120 is GPI-linked, while NCAM-140 and NCAM-180 are type I transmembrane glycoproteins (4-6). Additional alternate splicing adds considerable diversity to all three forms, and extracellular proteolytic processing is possible for NCAM-180 (7-8). NCAM-1 is synthesized as a 761 aa preproprecursor that contains a 19 aa signal sequence, a 722 aa GPI-linked mature region, and a 20 aa C-terminal prosegment (4). The molecule contains five C-2 type Ig-like domains and two fibronectin type-III domains. Human to mouse, NCAM-1 is 93% aa identical. NCAM-1 appears to be highly sialylated. The polysialylation of NCAM-1 reduces its adhesive property and increases its neurite outgrowth promoting features (9). NCAM-1 in the adult brain shows a decline of sialylation relative to earlier developmental periods. In regions that retain a high degree of neuronal plasticity, however, the adult brain continues to express polysialylation-NCAM-1, suggesting sialylation of NCAM-1 is involved in regenerative processes and synaptic plasticity (10-13).

## References:

1. Burg, M.A. *et al.* (1995) J. Neurosci. Res. **41**:49.
2. Storms, S.D. and U. Rutishauser (1998) J Biol. Chem. **273**:27124.
3. Margolis, R.K. *et al.* (1996) Perspect. Dev. Neurobiol. **3**:273.
4. Dickson, G. *et al.* (1987) Cell **50**:1119.
5. Lanier, L.L. *et al.* (1991) J. Immunol. **146**:4421.
6. Hemperly, J.J. *et al.* (1990) J. Mol. Neurosci. **2**:71.
7. Rutishauser, U. and C. Goridis (1986) Trends Genet. **2**:72.
8. Vawter, M.P. *et al.* (2001) Exp. Neurol. **172**:29.
9. Rutishauser, U. (1990) Adv. Exp. Med. Biol. **265**:179.
10. Becker, C.G. *et al.* (1996) J. Neurosci. Res. **45**:143.
11. Doherty, P. *et al.* (1995) J. Neurobiol. **26**:437.
12. Eckardt, M. *et al.* (2000) J. Neurosci. **20**:5234.
13. Muller, D. *et al.* (1996) Neuron **17**:413.