Human Semaphorin 4A Antibody

Monoclonal Mouse IgG_1 Clone # 741531

Catalog Number: MAB4694

DESCRIPTION

Species Reactivity	Human
Specificity	Detects human Semaphorin 4A in direct ELISAs. In direct ELISAs, 50%-100% cross-reactivity with recombinant human (rh) Semaphorin 4C and rhSemaphorin 4G is observed, and less than 5% cross-reactivity with rhSemaphorin 4B, 4D, and recombinant mouse Semaphorin 4A is observed.
Source	Monoclonal Mouse IgG_1 Clone # 741531
Purification	Protein A or G purified from hybridoma culture supernatant
Immunogen	Mouse myeloma cell line NS0-derived recombinant human Semaphorin 4A Gly32-His683 Accession # Q9H3S1
Formulation	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.

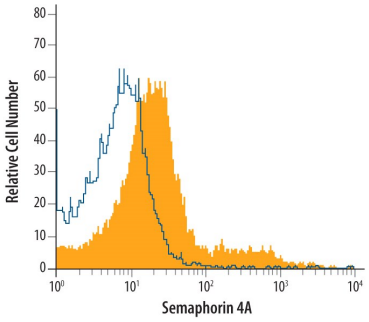
APPLICATIONS

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
Flow Cytometry	2.5 µg/10^6 cells	See Below
CyTOF-ready	Ready to be labeled using established conjugation methods. No BSA or other carrier proteins that could interfere with conjugation.	

DATA

Flow Cytometry



Detection of Sema 4A in Human Blood Monocytes by Flow Cytometry. Human peripheral blood monocytes treated for 24 hours with 50 ng/mL PMA and 500 ng/mL of calcium ionomycin were stained with Mouse Anti-Human Semaphorin 4A Monoclonal Antibody (Catalog # MAB4694, filled histogram) or isotype control antibody (Catalog # MAB002, open histogram), followed by Allophycocyanin-conjugated Anti-Mouse IgG Secondary Antibody (Catalog # F0101B).

PREPARATION AND STORAGE

Reconstitution	Sterile PBS to a final concentration of 0.5 mg/mL.
Shipping	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
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. ● 6 months, -20 to -70 °C under sterile conditions after reconstitution.

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BACKGROUND

Semaphorin 4A (Sema4A, previously semB) is a Class 4 transmembrane Semaphorin with activity in the immune and nervous systems (1). The 761 amino acid (aa) human Sema4A precursor contains a 32 aa signal sequence, a 651 aa extracellular domain (ECD) containing sema, PSI and C2-type immunoglobulin domains, a 21 aa transmembrane domain, and a 57 aa cytoplasmic domain with two Ser/Thr phosphorylation sites (2). Human Sema4A ECD shares 87%, 87%, 86% and 85% aa identity with mouse, rat, bovine and canine Sema4A, respectively, and shares 32-37% aa identity with other human Sema4 family members. Of six reported splice variants with 723, 629, 370, 321, 236 and 220 aa, five lack the N-terminus and/or portions of the sema domain, and three lack the transmembrane and cytoplasmic domains in the C-terminus (3). Sema4A was first described as a molecule that enhances T cell activation and interacts with TIM-2 (T cell immunoglobulin and mucin domain-2 (4). Mice with targeted disruption of Sema4A show defects in dendritic cell-mediated T cell priming and Th1 responses (5). Roles for Sema4A have also been identified in the brain, the endothelium and the eye. It mediates hippocampal neuron growth cone collapse *in vitro* through interaction of the sema domain with Plexin-B1 (6). Interaction of Sema4A with endothelial cell Plexin-D1 causes opposition to the angiogenic, proliferative, chemotactic and integrin-mediated adhesive actions of VEGF (7). The retina of $Sema4A^{-/-}$ mice shows severe degeneration, and mutations of Sema4A are associated with retinitis pigmentosa and cone rod dystrophy in humans (8, 9).

References:

1. Kumanogoh, A. *et al.* (2003) J. Cell Sci. **116**:3463.
2. Swissprot Accession # Q9H3S1.
3. Entrez Accession # CAI15528, CAI15529, CAI15531, CAI15532, CAI15533 and EAW52993.
4. Kumanogoh, A. *et al.* (2002) Nature **419**:629.
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6. Yukawa, K. *et al.* (2005) Int. J. Mol. Med. **16**:115.
7. Toyofuku, T. *et al.* (2007) EMBO J. **26**:1373.
8. Rice, D.S. *et al.* (2004) Invest. Ophthalmol. Vis. Sci. **45**:2767.
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