Human Semaphorin 4A
Alexa Fluor® 405-conjugated Antibody

Monoclonal Mouse IgG_1 Clone # 741531

Catalog Number: FAB4694V

100 µg

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
Conjugate	Alexa Fluor 405 Excitation Wavelength: 405 nm Emission Wavelength: 421 nm
Formulation	Supplied 0.2 mg/mL in a saline solution containing BSA and Sodium Azide. See Certificate of Analysis for details. *Contains <0.1% Sodium Azide, which is not hazardous at this concentration according to GHS classifications. Refer to the Safety Data Sheet (SDS) for additional information and handling instructions.

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	0.25-1 µg/10^6 cells	Human peripheral blood monocytes

PREPARATION AND STORAGE

Shipping	The product is shipped with polar packs. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Protect from light. Do not freeze.** ● 12 months from date of receipt, 2 to 8 °C as supplied.

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.
5. Kumanogoh, A. *et al.* (2005) Immunity **22**:305.
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.
9. Abid, A. *et al.* (2007) J. Med. Genet. **43**:378.

PRODUCT SPECIFIC NOTICES

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