

DESCRIPTION

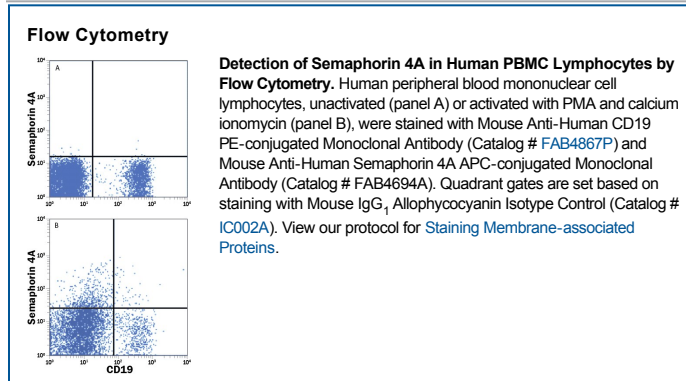
Species Reactivity	Human
Specificity	Detects human Semaphorin 4A in direct ELISAs. In direct ELISAs, 50%-100% cross-reactivity with recombinant human (rh) Semaphorin 4C and rhSemaphorin 4G is observed, and less than 5% cross-reactivity with rhSemaphorin 4B, 4D, and recombinant mouse Semaphorin 4A is 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	Allophycocyanin Excitation Wavelength: 620-650 nm Emission Wavelength: 660-670 nm
Formulation	Supplied 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	10 μ L/10 ⁶ cells	See Below

DATA



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. <ul style="list-style-type: none"> 12 months from date of receipt, 2 to 8 °C as supplied.

BACKGROUND

Semaphorin 4A (Sema4A), previously SemaB, is a 145-150 kDa Class IV 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, 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) on Th2 cells (4). Mice with targeted disruption of Sema4A show defects in dendritic cell-mediated T cell priming and Th1 responses (6). Roles for Sema4A have also been identified in the brain, the vasculature, and the eye. It mediates hippocampal neuron growth cone collapse *in vitro* through interaction of the sema domain with Plexin-B1 (7). Interaction of Sema4A with macrophage Plexin D1 promotes VEGF production and an angiogenic phenotype (8). Finally, 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). This may be due to a malfunction of endosomal sorting mediated by Sema4A (9,10).

References:

1. Nkyinbeng-Takwi, E. and S.P. Chapoval (2011) *Immunol. Res* **50**:10.
2. Swissprot Accession # Q9H3S1.
3. Entrez Accession # CAI15528, CAI15529, CAI15531, CAI15532, CAI15533 and EAW52993.
4. Kumanogoh, A. *et al.* (2002) *Nature* **419**:629.
5. Yukawa, K. *et al.* (2010) *Int. J. Mol. Med.* **25**:225.
6. Kumanogoh, A. *et al.* (2005) *Immunity* **22**:305.
7. Yukawa, K. *et al.* (2005) *Int. J. Mol. Med.* **16**:115.
8. Meda, C. *et al.* (2012) *J. Immunol.* **188**:4081.
9. Rice, D.S. *et al.* (2004) *Invest. Ophthalmol. Vis. Sci.* **45**:2767.
10. Toyofuku, T. *et al.* (2012) *Genes Dev.* **26**:816.