

DESCRIPTION

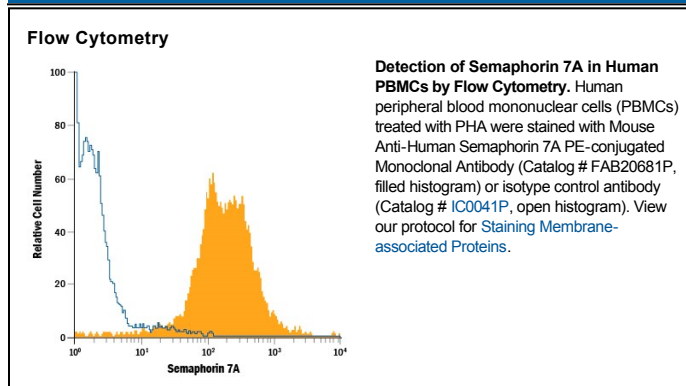
Species Reactivity	Human
Specificity	Detects human Semaphorin 7A in direct ELISAs.
Source	Monoclonal Mouse IgG _{2B} Clone # 310829
Purification	Protein A or G purified from hybridoma culture supernatant
Immunogen	Mouse myeloma cell line NS0-derived recombinant human Semaphorin 7A His47-Ala648 Accession # O75326
Conjugate	Phycoerythrin Excitation Wavelength: 488 nm Emission Wavelength: 565-605 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 7A (Sema7A, designated CD108, previously Sema K1 or Sema L), is an ~80 kDa membrane-anchored glycoprotein that is a member of the Semaphorin family of axon guidance molecules (1-4). On human erythrocytes, it is the John Milton Hagen (JMH) blood group antigen (4). Sema7A is the only known Class 7 or glycosphosphatidylinositol (GPI)-linked semaphorin; its expression is concentrated in the brain, spleen and thymus (1-5). Human Sema7A cDNA encodes a 44 amino acid (aa) signal sequence, a 604 aa extracellular domain (ECD) including Sema and C2-type Ig-like domains, and an 18 aa propeptide/GPI membrane anchor signal sequence. Mature human Sema7A shares 89%, 89%, 88%, 86% and 90% aa identity with mouse, rat, canine, bovine and equine Sema7A, respectively. The Sema7A sema domain contains an RGD integrin interaction motif (4). Although it binds plexin-C1 in vitro and may be coexpressed with it, many of its activities depend on interaction with β 1 integrins such as α 1 β 1 (6-10). Sema7A signaling through the two receptors may cause opposing effects (8). Sema7A is an immune semaphorin, with expression and activity on CD4⁺CD8⁺ thymocytes, activated T cells, macrophages and microglia (2, 9-12). T cell Sema7A interacts with monocytic cells, stimulating their chemotaxis, production of pro-inflammatory cytokines, and dendritic differentiation (5, 6). However, on the T cells themselves, Sema7A downregulates T cell Receptor (TCR) signaling by promoting TCR internalization, modulating T cell responses (9). In lung macrophages, Sema7A is induced by TGF- β and participates in TGF- β -induced lung fibrosis (12). Sema7A is also expressed on pre-osteoblasts and osteoclasts, where it promotes migration and fusion, respectively; on keratinocytes, where it promotes melanocyte spreading and dendricity; and on some neurons, for example, promoting axon outgrowth in the developing olfactory tract (8, 10, 13).

References:

1. Yazdani, U. and J.R. Terman (2006) *Genome Biol.* **7**:211.
2. Kikutani, H. *et al.* (2007) *Adv. Immunol.* **93**:121.
3. Sato, Y. and Takahashi H. (1998) *Biochim. Biophys. Acta.* **1443**:419.
4. Yamada, A. *et al.* (1999) *J. Immunol.* **162**:4094.
5. Holmes, S. *et al.* (2002) *Scand. J. Immunol.* **56**:270.
6. Suzuki, K. *et al.* (2007) *Nature* **446**:680.
7. Pasterkamp, R.J. *et al.* (2007) *BMC Dev. Biol.* **7**:98.
8. Scott, G.A. *et al.* (2007) *J. Invest. Dermatol.* **128**:151.
9. Czopik, A.K. *et al.* (2006) *Immunity* **24**:591.
10. Pasterkamp, R.J. *et al.* (2003) *Nature* **424**:398.
11. Mine, T. *et al.* (2000) *Tissue Antigens* **55**:429.
12. Kang, H.-R. *et al.* (2007) *J. Exp. Med.* **204**:1083.
13. Delorme, G. *et al.* (2005) *Biol. Cell* **97**:589.