

## DESCRIPTION

<b>Species Reactivity</b>	Human
<b>Specificity</b>	Detects human Semaphorin 3A in direct ELISAs and Western blots. In direct ELISAs and Western blots, approximately 5% cross-reactivity with recombinant human Semaphorin 6A, recombinant mouse (rm) Semaphorin 3C, rmSemaphorin 3E, and rmSemaphorin 3F is observed.
<b>Source</b>	Polyclonal Goat IgG
<b>Purification</b>	Antigen Affinity-purified
<b>Immunogen</b>	Mouse myeloma cell line NS0-derived recombinant human Semaphorin 3A Lys26-Val771 (Arg552Ala, Arg555Ala) Accession # Q14563
<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 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>	0.1 µg/mL	Recombinant Human Semaphorin 3A Fc Chimera (Catalog # 1250-S3)
<b>Intracellular Staining by Flow Cytometry</b>	2.5 µg/10 <sup>6</sup> cells	Human T cells treated with PHA

## PREPARATION AND STORAGE

<b>Reconstitution</b>	Reconstitute at 0.2 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>	<b>Use a manual defrost freezer and avoid repeated freeze-thaw cycles.</b> <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

The Semaphorins constitute a large family of secreted, GPI-anchored and transmembrane cell signaling molecules. Depending on their domain organization and species origin, these proteins can be classified into eight groups. To date, at least 19 vertebrate Semaphorins belonging to five groups (class 3 through 7) have been identified. All Semaphorins contain a conserved, 500 amino acid (aa) Sema domain at the amino terminus. Semaphorins are best known for their roles in axon guidance during neuronal development. Semaphorins are also expressed in non-neuronal tissues and are involved in angiogenesis, hematopoiesis, organogenesis, and the regulation of immune functions (1, 2).

Class 3 Semaphorins (Sema3) are secreted proteins containing a Sema domain, an immunoglobulin c2-like domain and a basic domain near the carboxyl tail. Sema3A (also referred to as SemaIII, SemD and Collapsin) cDNA predicts a 771 aa precursor protein with a putative 25 aa signal peptide (1-3). Bioactive Sema3A is a disulfide-linked dimer (4). The bioactivity is increased after proteolytic processing by a furin-like endoprotease near the carboxy-terminus (1). The functional receptor complex for Sema3 is composed of two distinct transmembrane proteins: Neuropilin-1 (Npn-1) and Plexin-A. Npn-1 binds directly to Sema3A with high-affinity and confers specificity. Plexin-A interacts with Npn-1 to increase the affinity of the complex for Sema3A and serves as the signaling subunit in the receptor complex (1, 2, 5).

### References:

1. Nakamura, F. *et al.* (2000) *J Neurobiol.* **44**:219.
2. Goshima, Y. *et al.* (2002) *J. Clin. Invest.* **109**:993.
3. Kolodkin, A.L. *et al.* (1993) *Cell* **75**:1389.
4. Koppel, A.M. *et al.* (1998) *J. Biol. Chem.* **273**:15708.
5. Yu, T.W. *et al.* (2001) *Nature Neurosci. Supplement* **4**:1169.
6. Luo Y. *et al.* (1993) *Cell* **75**:217.