

Product Information

Anti-Semaphorin 3A (Human)

(Sema 3A)

Developed in Goat, Affinity Isolated Antibody

Product Number **S 6820**

Product Description

Anti-Semaphorin 3A (Human) was developed in goat using purified NS0-derived, recombinant human Semaphorin 3A (rhSema 3A; amino acids 26 - 771) as the immunogen. The antibody was affinity isolated.

Anti-Semaphorin 3A (Human) recognizes human Sema 3A in direct ELISAs and western blots. In these formats, this antibody shows approximately 5% cross-reactivity with rhSema 6A, rmSema 3C, rmSema 3E and rmSema 3F.

Semaphorins, neuropilins and netrins are among a number of molecules and their receptors that regulate the developing nervous system to guide the development of neural circuits.¹ Although first identified as axon guidance cues,^{2,3} it is now apparent that many of these same factors are not limited to the guidance of growing axons, but have roles in a range of processes from the guidance of cell migration to the regulation of the immune response, angiogenesis, lung branching morphogenesis, nervous system regeneration, and cancer.⁴⁻⁹

The semaphorins make up the largest family of axon guidance cues. They are characterized by the presence of an approximately 500 amino acid N-terminal semaphorin (Sema) domain. Semaphorins function mainly as chemorepellents that direct axons away from tissues.³ Semaphorin 3A (Sema3A) has been shown to be repellent to cortical axons and to inhibit axon branching.¹⁰ The transmembrane protein semaphorin 6A has been shown to repel embryonic sympathetic axons.¹¹ The actions of the various semaphorins are not always similar. Semaphorin 3A has been found to inhibit tumor development whereas semaphorin 6A may contribute to tumor progression.⁹

Neuropilins are the ligand binding moieties in the class 3 Semaphorin receptor complexes that subsequently activate signaling through associated plexins. Two types have been identified so far: Neuropilin-1 (Npn-1) and Neuropilin-2 (Npn-2) receptors. At the amino acid sequence level, Npn-1 and Npn-2 share 44% identity.

Npn-1 and Npn-2 show different expression patterns in developing neurons of the central and peripheral nervous systems, and show different binding specificities for different members of the semaphorin family. Both also function as receptors for some forms of vascular endothelial growth factor (VEGF).¹²

Netrins are a family of laminin-related small proteins that are involved in axon guidance and neurite outgrowth. Netrin-1 has been shown to attract cortical growth cones and promote axon branching.¹⁰ Netrin-4 (first named β -netrin) was found to promote neurite elongation from olfactory bulb explants.¹³ Netrin-G1 consists of at least six isoforms of which five are predominantly anchored to the plasma membrane via glycosyl phosphatidyl-inositol linkages, and lack appreciable affinity to receptors for classical netrins.^{14,15}

Reagent

The antibody is supplied lyophilized from a 0.2 μ m filtered solution in phosphate-buffered saline (PBS) with 5% trehalose.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

Reconstitute with sterile PBS. If 1 mL of PBS is used, the antibody concentration will be 100 μ g/mL.

Storage/Stability

Lyophilized powder can be stored intact at room temperature for several weeks. For extended storage, it should be stored at -20°C or below. The reconstituted solution can be stored at $2-8^{\circ}\text{C}$ for up to 2 weeks. For longer storage, freeze in working aliquots. Repeated freezing and thawing is not recommended. Storage in "frost-free" freezers is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile

The recommended working dilutions are 0.1-0.2 µg/ml for immunoblotting and 0.5-1 µg/ml for Direct ELISA.

Note: In order to obtain best results and assay sensitivities of different techniques and preparations, determination of optimal working dilutions by titration test is recommended.

References

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