

## Product Information

### Netrin-1, mouse recombinant, expressed in mouse NSO cells

Catalog Number **N4162**  
Storage Temperature  $-20\text{ }^{\circ}\text{C}$

#### Product Description

A DNA sequence encoding mature mouse Netrin-1 (Val<sup>22</sup>-Ala<sup>603</sup>) was fused to the signal peptide from human CD33 at the amino terminus and to a polyhistidine tag at the carboxy-terminus. The chimeric protein was expressed in a mouse myeloma cell line, NSO.

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.<sup>1</sup> Although first identified as axon guidance cues,<sup>2,3</sup> 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.<sup>4,9</sup>

The semaphorins make up the largest family of axon guidance cues. They are characterized by the presence of an ~500 amino acid N-terminal semaphorin (Sema) domain. Semaphorins function mainly as chemorepellents that direct axons away from tissues.<sup>3</sup> Semaphorin 3A (Sema3A) has been shown to be repellent to cortical axons and to inhibit axon branching.<sup>10</sup> The transmembrane protein semaphorin 6A has been shown to repel embryonic sympathetic axons.<sup>11</sup> 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.<sup>9</sup>

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).<sup>12</sup>

Netrins are a family of laminin-related small proteins, involved in axon guidance and neurite outgrowth. Netrin-1 has been shown to attract cortical growth cones and promote axon branching.<sup>10</sup> Netrin-4 (first named beta-netrin) was found to promote neurite elongation from olfactory bulb explants.<sup>13</sup>

#### Reagent

Recombinant, mouse Netrin-1 is supplied lyophilized from a 0.2  $\mu\text{m}$  filtered solution of phosphate-buffered saline (PBS) containing 50  $\mu\text{g}$  of bovine serum albumin per 1  $\mu\text{g}$  of cytokine.

#### 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 containing at least 0.1% human serum albumin or bovine serum albumin to prepare a stock solution of no less than 10  $\mu\text{g}/\text{mL}$ .

#### Storage/Stability

Lyophilized powder can be stored intact at room temperature for several weeks. For extended storage, it should be stored  $-20\text{ }^{\circ}\text{C}$  or below.

The reconstituted solution can be stored at  $2-8\text{ }^{\circ}\text{C}$  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.

## References

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MCT,PHC,MAM 08/10-1

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