PRODUCT INFORMATION

Sema3A Sema Domain (human, recombinant; aa 26-546)

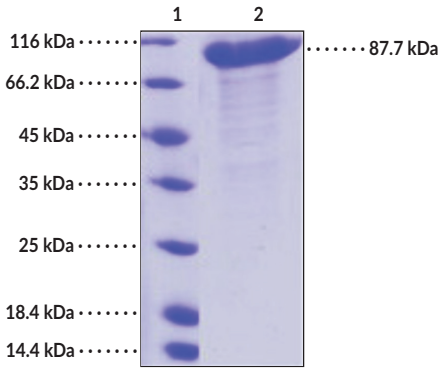
Item No. 38070

Overview and Properties

Synonyms:	Sema III, Semaphorin-3A, Semaphorin III
Source:	Recombinant N-terminal human IgG1 Fc-tagged Sema3A expressed in HEK293 cells
Amino Acids:	26-546
Uniprot No.:	Q14563
Molecular Weight:	87.7 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥90% estimated by SDS-PAGE
Supplied in:	Lyophilized from from sterile PBS, pH 7.4
Endotoxin Testing:	<1.0 EU/µg, determined by the LAL endotoxin assay

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Image



Lane 1: MW Markers
Lane 2: Sema3A Sema Domain

SDS-PAGE Analysis of Sema3A Sema Domain. This protein has a calculated molecular weight of 87.7 kDa.

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM

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Description

Semaphorin-3A (Sema3A) is a secreted glycoprotein and ligand of neuropilin-1 (NRP-1) and plexin A receptors.[1,2] It is composed of a Sema domain, which mediates signaling and receptor specificity, a plexin-semaphorin-integrin (PSI) domain, an immunoglobulin (Ig) domain, and a C-terminal domain, which contains several basic residues that are important for NRP-1 binding. Sema3A is expressed in many tissues, including nervous, bone, and connective tissues and vascular endothelium, as well as some immune cells such as T cells and macrophages.[1] It is involved in axonal guidance, bone remodeling, immunoregulation, and angiogenesis.[1-3] Sema3A decreases the length and number of neurites in sensory and motor neurons *in vitro* and increases vascular permeability in mice.[4,5] Heterozygous deletion of *SEMA3A* is associated with Kallmann syndrome, a disorder characterized by hypogonadotropic hypogonadism and an absent or decreased sense of smell.[6] Cayman's Sema3A Sema Domain (human, recombinant; aa 26-546) protein is a disulfide-linked homodimer. The reduced monomer, composed of Sema3A (amino acids 26-546) fused to human IgG1 Fc at its N-terminus, consists of 781 amino acids and has a calculated molecular weight of 87.7 kDa.

References

1. Kiseleva, E.P. and Rutto, K.V. Semaphorin 3A in the immune system: Twenty years of study. *Biochemistry (Mosc.)* **87(7)**, 640-657 (2022).
2. Li, Z., Hao, J., Duan, X., *et al.* The role of Semaphorin 3A in bone remodeling. *Front. Cell. Neurosci.* **11:40**, (2017).
3. He, Z. and Tessier-Lavigne, M. Neuropilin is a receptor for the axonal chemorepellent Semaphorin III. *Cell* **90(4)**, 739-751 (1997).
4. Shen, M., Zhou, C., Tian, Y., *et al.* Effects of Semaphorin3A on the growth of sensory and motor neurons. *Exp. Cell Res.* **424(2)**, 113506 (2023).
5. Acevedo, L.M., Barillas, S., Weis, S.M., *et al.* Semaphorin 3A suppresses VEGF-mediated angiogenesis yet acts as a vascular permeability factor. *Blood* **111(5)**, 2674-2680 (2008).
6. Young, J., Metay, C., Bouligand, J., *et al. SEMA3A* deletion in a family with Kallmann syndrome validates the role of semaphorin 3A in human puberty and olfactory system development. *Hum. Reprod.* **27(5)**, 1460-1465 (2012).

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