

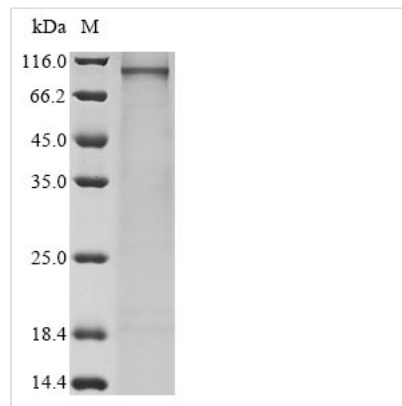


Recombinant Human Semaphorin-3G (SEMA3G)

Product Code	CSB-MP885719HU
Abbreviation	Recombinant Human SEMA3G protein
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	Q9NS98
Form	Liquid or Lyophilized powder
Storage Buffer	If the delivery form is liquid, the default storage buffer is Tris/PBS-based buffer, 5%-50% glycerol. If the delivery form is lyophilized powder, the buffer before lyophilization is Tris/PBS-based buffer, 6% Trehalose.
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	GPSPGPSVPRRLRLSYRDLLSANRSAIFLGPQGSLNLQAMYLDEYRDRLFLGGL DALYSLRLDQAWPDPREVLWPPQPGQREECVRKGRDPLTECANFVRVLQPH NRTHLLACGTGAFQPTCALITVGHGEHVLHLEPGSVESGRGRCPHEPSRPF ASTFIDGELYTGLTADFLGREAMIFRSGGPRPALRSDSDQSLLDHPRFVMAARI PENSDQDNDKVYFFFSETVPSPDGGSNHVTVS RVGRVCVNDAGGQRVLVNK WSTFLKARLVCSVPGP GGAETHFDQLEDVFLWPKAGKSLEVYALFSTVSAVF QGFAVCVYHMADIWEVFNGPFAHRDGPQHGWGPYGGKVPFPRPGVCPSKM TAQPGRPFGSTKDYPDEV LQFARAHPLMFWPVRPRHGRPVLVKTHLAQQLH QIVVDRVEAEDGTYDVIFLGTDSGSVLKVIALQAGGSAEPEEVVLEELQVFKVP TPITEMEISVKRQMLYVGSRLGVAQLRLHQCETYGTACAECCLARDPYCAWD GASCTHYRPSL GKRRFRRQDIRHGNPALQCLGQSQEEEAVGLVAATMVYGT E HNSTFLECLPKSPQA A VRWLLQRP GDEGPDQVKTDERVLHTERGLLFRRLSR FDAGTYTCTTLEHGFSQTVVRLALVVIVASQLDNLFPPPEPKPEEPPARGGLAST PPKAWYKDILQLIGFANLPRVDEY CERVWCRGTTECSGCFR SRSRGKQARGK SWAGLELGKKMKSRVHAEHNRTPREVEAT
Research Area	Immunology
Source	Mammalian cell
Target Names	SEMA3G
Expression Region	23-782aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 10xHis-tagged and C-terminal Myc-tagged
Mol. Weight	89.5 kDa
Protein Length	Full Length of Mature Protein



Image



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

Description

To produce recombinant human Semaphorin-3G (SEMA3G) in *E. coli*, the gene of interest (23-782aa of human SEMA3G) is co-inserted into an expression vector with an N-terminal 10xHis-tag and C-terminal Myc-tag gene, which is transformed into *E. coli* cells. These cells are cultured to induce protein expression. After reaching sufficient growth, the cells are lysed to extract the recombinant SEMA3G protein. These proteins are purified through affinity chromatography. The purity of the protein is confirmed using SDS-PAGE, over 90%.

SEMA3G is a secretory protein that belongs to the class 3 semaphorins, which are involved in various physiological processes. In human white adipose tissue, SEMA3G expression is associated with obesity and metabolic syndrome, indicating its involvement in adipose tissue pathophysiology [1]. SEMA3G has been identified as a tissue-specific secretory factor in the lung and has implications for inflammation and cancer [2]. Studies have shown that SEMA3G may regulate adipocyte differentiation and be linked to high-fat diet-induced obesity [3]. Furthermore, SEMA3G is downregulated in brain microvascular endothelial cells, suggesting a role in axonal guidance through interactions with neuropilin-2 [4]. In diabetes, SEMA3G has been implicated in modulating angiogenic responses, with its transcription being regulated by the methyltransferase SETD7 through chromatin modifications [5][6][7]. The absence of SEMA3G has been associated with enhanced expression of inflammatory markers in diabetic nephropathy, affecting podocyte structure [8].

References:

- [1] A. Saeidi, M. Saei, B. Mohammadi, H. Zarei, M. Vafaei, A. Mohammadi et al., Supplementation with spinach-derived thylakoid augments the benefits of high intensity training on adipokines, insulin resistance and lipid profiles in males with obesity, *Frontiers in Endocrinology*, vol. 14, 2023.
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- [2] J. Zhang, J. Ahn, Y. Suh, S. Hwang, M. Davis, & K. Lee, Identification of *ctla2a*, *defb29*, *wfdc15b*, *serpina1f* and *mup19* as novel tissue-specific secretory factors in mouse, *Plos One*, vol. 10, no. 5, p. e0124962, 2015.
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- [3] M. Liu, S. Xie, W. Liu, J. Li, C. Li, W. Huanget al., Mechanism of *sema3g* knockdown-mediated attenuation of high-fat diet-induced obesity, *Journal of*



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[4] A. Calabria and E. Shusta, A genomic comparison of in vivo and in vitro brain microvascular endothelial cells, *Journal of Cerebral Blood Flow & Metabolism*, vol. 28, no. 1, p. 135-148, 2007. <https://doi.org/10.1038/sj.jcbfm.9600518>

[5] S. Mohammed, S. Costantino, A. Akhmedov, S. Ambrosini, G. Karsay, P. Browne et al., P736 histone marks induced by the methyltransferase setd7 modulate angiogenic response in diabetes, *European Heart Journal*, vol. 40, no. Supplement_1, 2019. <https://doi.org/10.1093/eurheartj/ehz747.0340>

[6] S. Mohammed, S. Costantino, A. Akhmedov, G. Karsai, S. Ambrosini, G. Spinetti et al., A chromatin signature by the methyltransferase setd7 regulates semaphorin-3g transcription and angiogenic response in diabetes: insights for personalized epigenetic therapies, *European Heart Journal*, vol. 41, no. Supplement_2, 2020. <https://doi.org/10.1093/ehjci/ehaa946.3757>

[7] S. Mohammed, Targeting the histone methyltransferase setd7 rescues diabetes-induced impairment of angiogenic response by transcriptional repression of semaphorin 3g, *Cardiovascular Research*, vol. 120, no. Supplement_1, 2024. <https://doi.org/10.1093/cvr/cvae088.158>

[8] T. Chang and J. Chen, The role of chemokines and chemokine receptors in diabetic nephropathy, *International Journal of Molecular Sciences*, vol. 21, no. 9, p. 3172, 2020. <https://doi.org/10.3390/ijms21093172>

Reconstitution

We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL. We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.

Shelf Life

The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.