SANTA CRUZ BIOTECHNOLOGY, INC.

SEMA3D siRNA (h): sc-62992

BACKGROUND

Semaphorins are a family of cell surface and secreted proteins that are conserved from insects to humans. Members of this family of proteins are approximately 750 amino acids in length (including signal sequences) and are defined by a conserved extracellular "semaphorin" domain of approximately 500 amino acids containing 14-16 cysteines, blocks of conserved sequences and no obvious repeats. Secreted and cell-bound semaphorins chemically attract and repel the growth of neural axons, guiding the development of intricate networks of neural tissue. SEMA3D (semaphorin-3D), also known as coll-2 or Sema-Z2, is a 777 amino acid secreted protein that belongs to the semaphorin family and participates in axon-axon interactions and neural crest activity. SEMA3D binds neuropilin and is able to induce the collapse and paralysis of neuronal growth cones, as well as act to repel specific neuronal populations. SEMA3D contains one immunoglobulin-like (Ig-like) domain, one PSI domain and one semaphorin domain.

REFERENCES

1. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 609907. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
2. Liu, Y., Berndt, J., Su, F., Tawarayama, H., Shoji, W., Kuwada, J.Y. and Halloran, M.C. 2004. Semaphorin3D guides retinal axons along the dorsoventral axis of the tectum. J. Neurosci. 24: 310-318.
3. Wolman, M.A., Liu, Y., Tawarayama, H., Shoji, W. and Halloran, M.C. 2004. Repulsion and attraction of axons by semaphorin3D are mediated by different neuropilins *in vivo*. J. Neurosci. 24: 8428-8435.
4. Jin, Z., Chau, M.D. and Bao, Z.Z. 2006. Sema3D, Sema3F, and Sema5A are expressed in overlapping and distinct patterns in chick embryonic heart. Dev. Dyn. 235: 163-169.
5. Bao, Z.Z. and Jin, Z. 2006. Sema3D and Sema7A have distinct expression patterns in chick embryonic development. Dev. Dyn. 235: 2282-2289.
6. Sakai, J.A. and Halloran, M.C. 2006. Semaphorin 3d guides laterality of retinal ganglion cell projections in zebrafish. Development 133: 1035-1044.
7. Berndt, J.D. and Halloran, M.C. 2006. Semaphorin 3d promotes cell proliferation and neural crest cell development downstream of TCF in the zebrafish hindbrain. Development 133: 3983-3992.
8. Sato, M., Tsai, H.J. and Yost, H.J. 2006. Semaphorin3D regulates invasion of cardiac neural crest cells into the primary heart field. Dev. Biol. 298: 12-21.
9. Wolman, M.A., Regnery, A.M., Becker, T., Becker, C.G. and Halloran, M.C. 2007. Semaphorin3D regulates axon axon interactions by modulating levels of L1 cell adhesion molecule. J. Neurosci. 27: 9653-9663.

CHROMOSOMAL LOCATION

Genetic locus: SEMA3D (human) mapping to 7q21.11.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

PRODUCT

SEMA3D siRNA (h) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see SEMA3D shRNA Plasmid (h): sc-62992-SH and SEMA3D shRNA (h) Lentiviral Particles: sc-62992-V as alternate gene silencing products.

For independent verification of SEMA3D (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-62992A, sc-62992B and sc-62992C.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

SEMA3D siRNA (h) is recommended for the inhibition of SEMA3D expression in human cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor SEMA3D gene expression knockdown using RT-PCR Primer: SEMA3D (h)-PR: sc-62992-PR (20 µl, 452 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

For research use only, not for use in diagnostic procedures.