

SEMA3A (H-130): sc-28867

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. SEMA3A (semaphorin-3A), also known as SEMA1, SEMAD, SEMAL, coll-1, Hsema-I, SEMAIII or Hsema-III, is a 771 amino acid secreted protein that belongs to the semaphorin family and can function as both a chemoattractive agent or a chemorepulsive agent. SEMA3A binds neuropilin and is able to induce the collapse and paralysis of neuronal growth cones. SEMA3A contains one immunoglobulin-like (Ig-like) domain, one PSI domain and one semaphorin domain.

REFERENCES

1. Kolodkin, A.L., et al. 1993. The semaphorin genes encode a family of transmembrane and secreted growth cone guidance molecules. *Cell* 75: 1389-1399.
2. Matthes, D.J., et al. 1995. Semaphorin II can function as a selective inhibitor of specific synaptic arborizations. *Cell* 81: 631-639.
3. Wright, D.E., et al. 1995. The guidance molecule Semaphorin III is expressed in regions of spinal cord and periphery avoided by growing sensory axons. *J. Comp. Neurol.* 361: 321-333.
4. Puschel, A.W., et al. 1995. Murine Semaphorin D/collapsin is a member of a diverse gene family and creates domains inhibitory for axonal extension. *Neuron* 14: 941-948.
5. Messersmith, E.K., et al. 1995. Semaphorin III can function as a selective chemorepellent to pattern sensory projections in the spinal cord. *Neuron* 14: 949-959.

CHROMOSOMAL LOCATION

Genetic locus: SEMA3A (human) mapping to 7q21.11, SEMA3B (human) mapping to 3p21.31; Sema3a (mouse) mapping to 5 A1, Sema3b (mouse) mapping to 9 F1.

SOURCE

SEMA3A (H-130) is a rabbit polyclonal antibody raised against amino acids 642-771 mapping at the C-terminus of Semaphorin 3A of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

APPLICATIONS

SEMA3A (H-130) is recommended for detection of precursor and mature forms of SEMA3A, and to a lesser extent, SEMA3B of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

SEMA3A (H-130) is also recommended for detection of precursor and mature forms of SEMA3A, and to a lesser extent, SEMA3B in additional species, including equine, canine, bovine, porcine and avian.

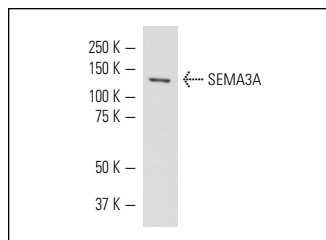
Molecular Weight of proSEMA3A: 125 kDa.

Molecular Weight of activated SEMA3A: 95 kDa.

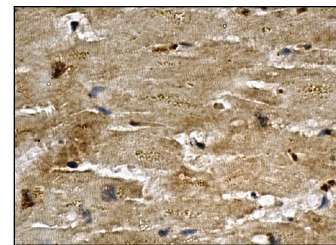
Molecular Weight of SEMA3A proteolytic fragments: 65/45 kDa.

Positive Controls: Rat brain extract: sc-2392.

DATA



SEMA3A (H-130): sc-28867. Western blot analysis of SEMA3A expression in rat brain tissue extract.



SEMA3A (H-130): sc-28867. Immunoperoxidase staining of formalin fixed, paraffin-embedded human heart tissue showing cytoplasmic staining of myocytes.

SELECT PRODUCT CITATIONS

1. Nakamura, F., et al. 2009. Increased proximal bifurcation of CA1 pyramidal apical dendrites in SEMA3A mutant mice. *J. Comp. Neurol.* 516: 360-375.
2. Veron, D., et al. 2011. Podocyte vascular endothelial growth factor (Vegf (64)) overexpression causes severe nodular glomerulosclerosis in a mouse model of type 1 diabetes. *Diabetologia* 54: 1227-1241.
3. Fukamachi, S., et al. 2011. Modulation of semaphorin 3A expression by calcium concentration and histamine in human keratinocytes and fibroblasts. *J. Dermatol. Sci.* 61: 118-123.

RESEARCH USE

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



Try **SEMA (A-12): sc-74554**, our highly recommended monoclonal alternative to SEMA3A (H-130). Also, for AC, HRP, FITC, PE, Alexa Fluor[®] 488 and Alexa Fluor[®] 647 conjugates, see **SEMA (A-12): sc-74554**.