

SEMA3A (C-1): sc-74555



The Power to Question

BACKGROUND

Semaphorins (SEMA3s) comprise 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, many blocks of conserved sequences and no obvious repeats. Secreted and cell-bound semaphorins are known to chemically attract and repel the growth of neural axons, guiding the development of intricate networks of neural tissue. In addition to their role in axonal guidance, semaphorins have also been associated with the progression of cancer. Many semaphorins bind to the receptors neuropilin and neuropilin-2, thus competing with VEGF for this interaction, which ultimately results in the suppression of angiogenesis. The loss of functional semaphorins to compete with VEGF may play an important role in tumor progression.

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. Dodd, J., et al. 1995. Axon guidance: a compelling case for repelling growth cones. *Cell* 81: 471-474.

CHROMOSOMAL LOCATION

Genetic locus: SEMA3A (human) mapping to 7q21.11; Sema3a (mouse) mapping to 5 A1.

SOURCE

SEMA3A (C-1) is a mouse monoclonal antibody raised against amino acids 103-402 of SEMA3A of human origin.

PRODUCT

Each vial contains 200 µg IgG₁ kappa light chain 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 (C-1) is recommended for detection of SEMA3A of mouse, rat and human origin by Western Blotting (starting dilution 1:100, 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).

Molecular Weight of SEMA family members: 80-140 kDa.

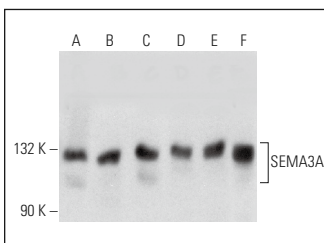
Positive Controls: C2C12 whole cell lysate: sc-364188, F9 cell lysate: sc-2245 or RAT2 whole cell lysate: sc-364198.

RECOMMENDED SUPPORT REAGENTS

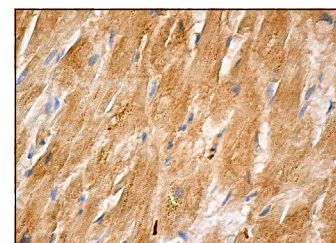
To ensure optimal results, the following support reagents are recommended:

- 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048.
- 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).
- 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.
- 4) Immunohistochemistry: use m-IgGκ BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

DATA



SEMA3A (C-1): sc-74555. Western blot analysis of SEMA3A expression in C2C12 (A), F9 (B), Neuro-2A (C), NRK (D) and RAT2 (E) whole cell lysates and rat testis tissue extract (F).



SEMA3A (C-1): sc-74555. Immunoperoxidase staining of formalin fixed, paraffin-embedded human heart muscle tissue showing cytoplasmic staining of myocytes.

SELECT PRODUCT CITATIONS

1. Li, K., et al. 2013. The predictive value of semaphorins 3 expression in biopsies for biochemical recurrence of patients with low- and intermediate-risk prostate cancer. *Neoplasma* 60: 683-689.
2. Hao, S., et al. 2018. Long non-coding RNA GAS5 reduces cardiomyocyte apoptosis induced by MI through SEMA3A. *Int. J. Biol. Macromol.* 120: 371-377.
3. Ma, Y.X., et al. 2021. Silicified collagen scaffold induces semaphorin 3A secretion by sensory nerves to improve *in-situ* bone regeneration. *Bioact. Mater.* 9: 475-490.
4. Han, X., et al. 2023. Bioactive semaphorin 3A promotes sequential formation of sensory nerve and type H vessels during *in situ* osteogenesis. *Front. Bioeng. Biotechnol.* 11: 1138601.

RESEARCH USE

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



See **SEMA3A (A-12): sc-74554** for SEM3A antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.