APL917Ra61 100μg
Active Semaphorin 3A (SEMA3A)
Organism Species: *Rattus norvegicus (Rat)*
Instruction manual

FOR RESEARCH USE ONLY
NOT FOR USE IN CLINICAL DIAGNOSTIC PROCEDURES

13th Edition (Revised in Aug, 2023)

[PROPERTIES]

Source: Eukaryotic expression.
Host: CHO
Residues: Asn21~Val772
Tags: N-terminal His-tag
Purity: >90%
Endotoxin Level: <1.0EU per 1μg (determined by the LAL method).
Buffer Formulation: PBS, pH7.4, containing 5% Trehalose .
Original Concentration: 200μg/mL
Applications: Cell culture; Activity Assays.
(May be suitable for use in other assays to be determined by the end user.)
Predicted isoelectric point: 7.5
Predicted Molecular Mass: 88.2kDa
Accurate Molecular Mass: 88&70kDa as determined by SDS-PAGE reducing conditions.
Phenomenon explanation:
The possible reasons that the actual band size differs from the predicted are as follows:
1. Splice variants: Alternative splicing may create different sized proteins from the same gene.
2. Relative charge: The composition of amino acids may affects the charge of the protein.
3. Post-translational modification: Phosphorylation, glycosylation, methylation etc.
4. Post-translation cleavage: Many proteins are synthesized as pro-proteins, and then cleaved to give the active form.
5. Polymerization of the target protein: Dimerization, multimerization etc.

[USAGE]

Reconstitute in 10mM PBS (pH7.4) to a concentration of 0.1-1.0 mg/mL. Do not vortex.

[STORAGE AND STABILITY]

Storage: Avoid repeated freeze/thaw cycles.
Store at 2-8°C for one month.
Aliquot and store at -80°C for 12 months.

Stability Test: The thermal stability is described by the loss rate. The loss rate was determined by accelerated thermal degradation test, that is, incubate the protein at 37°C for 48h, and no obvious degradation and precipitation were observed. The loss rate is less than 5% within the expiration date under appropriate storage condition.

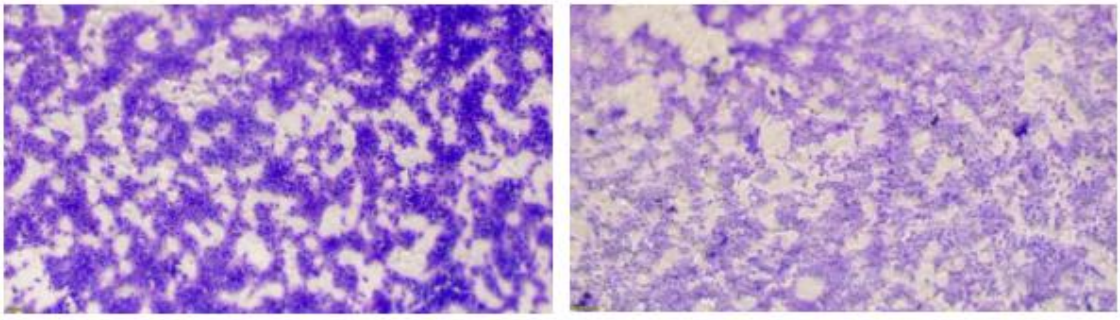
[SEQUENCE]

NYANGKNNVPRLKLSYKEMLESNNVITFNGLANSSSYHTFLLDEERSRLYVGAKDHIFSFNLV
NIKDFQKIVWPVSYTRRDECKWAGKDILKECANFIKVLKAYNQTHLYACGTGAFHPICTYIEV
GHHPEDNIFKLQDSHFENGRGKSPYDPKLLTASLLIDGELYSGTAADFMGRDFAIFRTLGHHH
PIRTEQHDSRWLNDPRFISAHLIPESDNPEDDKVYFFFRENAIDGEHSGKATHARIGQICKND
FGGHRSLVNKWTTFLKARLICSVPGPNGIDTHFDELQDVFLMNSKDPKNPIVYGVFTTSSNIF
KGSAVCMYSMSDVRRVFLGPYAHRDGPNYQWVPYQGRVPYPRPGTCPSKTFGGFDSTKDL
PDDVITFARSHPAMYNPVFPINNRPIMIKTDVNYQFTQIVVDRVDAEDGQYDVMFIGTDVG
TVLKVVSVPKETWHDLEEVLLEEMTVFREPTTISAMELSTKQQQLYIGSTAGVAQLPLHRCDI
YGKACAECCLARDPYCAWDGSSCSRYFPTAKRRTRRQDIRNGDPLTHCSDLQHHDNHHGH
SLEERIIYGVENSSTFLECSPKSQRALVYWQFQRRNEDRKEEIRVGDHIIRTEQGLLLRSLQKK
DSGNYLCHAVEHGFMQTLLKVTLEVIDTEHLEELLHKDDDGDGSKTKEMSSSMTPSQKVW
YRDFMQLINHPNLNTMDEFCEQVWKRDRKQRRQRPGHSQGSSNKWKHMQESKKGRNR
RTHEFERAPRSV

[ACTIVITY]

Semaphorin 3A (SEMA3A) is a canonical secreted member of the class 3 semaphorin family, the largest subfamily of the semaphorin superfamily with conserved sema domains. It exerts biological functions primarily by binding to neuropilin-1/plexin-A receptor complexes, acting as a key axon guidance cue in neural development. SEMA3A potently inhibits cell proliferation and migration in

multiple cell types including neurons, endothelial and cancer cells; it also induces caspase-dependent apoptosis in tumor cells and suppresses angiogenesis. Additionally, it modulates immune cell trafficking, playing critical roles in neural patterning, tissue morphogenesis and cancer progression.Thus, chemotaxis assay used 24-well microchemotaxis system was undertaken to detect the chemotactic effect of SEMA3A on MDA-MB-231. Briefly, MDA-MB-231 cells were seeded into the upper chambers and SEMA3A at different concentrations was added in lower chamber with a polycarbonate filter(8um pore size) used to separate the two compartments. After incubation at 37℃ with 5% CO2 for 1h, the filter was removed,then cells in low chamber were observed by inverted microscope at low magnification . Result shows that SEMA3A is able to induce migration of MDA-MB-231 cells. The migrated MDA-MB-231 cells in low chamber at low magnification were shown in Figure 1.



A B

Figure 1.The chemotactic effect of SEMA3A on MDA-MB-231 cells

(A) MDA-MB-231 cells were seeded into the upper chambers and SEMA3A at 19.53 ng/mL was added in lower chamber, then cells in lower chamber were observed after incubation for 1h;

(B) MDA-MB-231 cells were seeded into the upper chambers and SEMA3A was NOT added in lower chamber, then cells in lower chamber were observed after incubation for 1h.

[IDENTIFICATION]

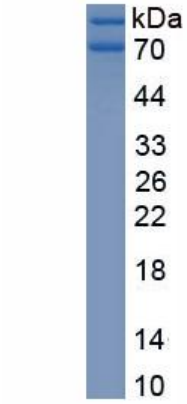


Figure 3. SDS-PAGE

Sample: Active recombinant SEMA3A, Rat

[IMPORTANT NOTE]

The kit is designed for research use only, we will not be responsible for any issue if the kit was used in clinical diagnostic or any other procedures.