Recombinant Human Repulsive guidance molecule A (RGMA)
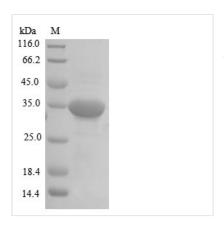
Product Code	CSB-EP836186HU
Relevance	Member of the repulsive guidance molecule (RGM) family that performs several functions in the developing and adult nervous system. Regulates cephalic neural tube closure, inhibits neurite outgrowth and cortical neuron branching, and the formation of mature synapses. Binding to its receptor NEO1/neogenin induces activation of RHOA-ROCK1/Rho-kinase signaling pathway through UNC5B-ARHGEF12/LARG-PTK2/FAK1 cascade, leading to collapse of the neuronal growth cone and neurite outgrowth inhibition. Furthermore, RGMA binding to NEO1/neogenin leads to HRAS inactivation by influencing HRAS-PTK2/FAK1-AKT1 pathway. It also functions as a bone morphogenetic protein (BMP) coreceptor that may signal through SMAD1, SMAD5, and SMAD8.
Abbreviation	Recombinant Human RGMA 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.	Q96B86
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 85% as determined by SDS-PAGE.
Sequence	PHLRTFTDRFQTCKVQGAWPLIDNNYLNVQVTNTPVLPGSAATATSKLTIIFKN FQECVDQKVYQAEMDELPAAFVDGSKNGGDKHGANSLKITEKVSGQHVEIQA KYIGTTIVVRQVGRYLTFAVRMPEEVVNAVEDWDSQGLYLCLRGCPLNQQIDF QAFHTNAEGTGARRLAAASPAPTAPETFPYETAVAKCKEKLPVEDLYYQACVF DLLTTGDVNFTLAAYYALEDVKMLHSNKDKLHLYDRTRDLPGRA
Research Area	Neuroscience
Source	E.coli
Target Names	RGMA
Protein Names	RGM domain family member A RGM
Expression Region	169-424aa
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	35.5 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

Recombinant Human Repulsive guidance molecule A (RGMA) is produced in E. coli and includes the full-length mature protein spanning amino acids 169 to 424. The protein features an N-terminal 10xHis-tag and a C-terminal Myc-tag, which help with purification and detection processes. SDS-PAGE analysis confirms a purity level exceeding 85%, making it appropriate for various research applications.

RGMA belongs to the repulsive guidance molecule family. It appears to play a critical role in axon guidance and neural development. The protein is involved in signaling pathways that may influence neural patterning and regeneration, which has made it a subject of considerable interest in neurobiology research. Understanding RGMA's interactions and functions could provide insights into nervous system development and potential therapeutic approaches for neural repair.

Potential Applications

Note: The applications listed below are based on what we know about this protein's biological functions, published research, and experience from experts in the field. However, we haven't fully tested all of these applications ourselves yet. We'd recommend running some preliminary tests first to make sure they work for your specific research goals.

1. Antibody Development and Validation Studies

This recombinant RGMA protein can work as an immunogen or antigen for developing monoclonal or polyclonal antibodies against human RGMA. The dual tagging system - with its N-terminal His-tag and C-terminal Myc-tag - offers multiple epitopes for antibody validation through Western blot, ELISA, and immunoprecipitation assays. The 85% purity level appears sufficient for immunization protocols and subsequent antibody characterization studies. Researchers can likely use this protein to generate research-grade antibodies for studying RGMA expression and localization across different cell types and tissues.

2. Protein-Protein Interaction Studies

The His-tagged RGMA protein can be immobilized on nickel-affinity matrices for pull-down assays to identify potential binding partners from cell lysates or purified protein libraries. Meanwhile, the Myc-tag allows detection and confirmation of successful protein capture in these interaction studies. This approach may help researchers investigate RGMA's molecular interactions and identify novel binding partners that could be involved in guidance signaling pathways. The expressed region (169-424aa) represents the mature protein form, which suggests it's suitable for physiologically relevant interaction studies.

3. ELISA-Based Binding Assays

Both tags work together to support the development of sandwich or direct ELISA formats for quantitative binding studies. The protein can be coated onto ELISA plates via the His-tag while the Myc-tag serves as a detection epitope using anti-Myc antibodies. This dual-tag system provides flexibility in assay design. It enables researchers to study RGMA binding to various ligands, receptors, or other molecules of interest. The 85% purity is likely adequate for establishing reliable and reproducible ELISA-based assays.

4. Biochemical Characterization and Stability Studies

This recombinant RGMA protein can be used for comprehensive biochemical analysis. This includes molecular weight confirmation, thermal stability assessment, and buffer optimization studies. The defined expression region and dual tagging allow for precise protein identification and tracking during various experimental conditions. Researchers can investigate protein stability under different pH, salt, and temperature conditions to establish optimal storage and handling protocols. These studies may provide fundamental biochemical data necessary for downstream applications and assay development.

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.