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Human Recombinant Gremlin-1, ACF

Gremlin-1

Catalog #100-2073 100 µg

Product Description

Gremlin-1 is a secreted protein belonging to the differential screening-selected gene aberrative in neuroblastoma (DAN) family of bone morphogenic proteins (BMP) antagonists. Gremlin-1 specifically binds to BMP family proteins including BMP-2 and BMP-4, preventing them from interacting with their receptors (Hsu et al.). Gremlin-1 is expressed in colon basal crypts where it is thought to contribute to the maintenance of the stem cell niche (Kosinski et al.). Gremlin-1 expression is elevated in disease, including some colon tumors (Kosinski et al.), liver disease, and diabetes (Baboota et al.). Additionally, overexpression of Gremlin-1 has been shown to promote cancer cell migration, proliferation, and invasiveness in a VEGFR2- and BMP-independent manner (Kim et al.). Gremlin-1 has been used for the culture of human colon epithelia and carcinoma organoids (Urbischek et al.). This cytokine can be used in human, bovine, and porcine workflows. This product is animal component-free (ACF).

Product Information

Alternative Names: BMP antagonist 1, Cell proliferation-inducing gene 2 protein, Cysteine knot superfamily 1, DAN domain family member 2, Down-regulated in Mos-transformed cells protein, DRM

Accession Number: O60565

Predicted Molecular Mass: 18 kDa (monomer)

Species: Human, Other

Product Formulation: Lyophilized from a solution containing acetonitrile and trifluoroacetic acid.

Source: E. coli

Purity: ≥ 98% by SDS-PAGE

Specifications

Activity: The EC50 is approximately 34 ng/mL (~1.88 nM), as determined by the BMP-2 responsive luciferase reporter assay in HEK293T cells.

Endotoxin Level: Measured by kinetic Limulus amebocyte lysate (LAL) analysis and is ≤ 0.1 EU/µg protein.

Preparation and Storage

Stability and Storage: Store at -20 to -80°C. Stable as supplied for 12 months from date of receipt.

Preparation: Centrifuge vial before opening. Reconstitute the product in 10 mM hydrochloric acid to at least 0.1 mg/mL by pipetting the solution down the sides of the vial. Do not vortex.

OPTIONAL: After reconstitution, if product will not be used immediately, dilute with concentrated bovine serum albumin (BSA) to a final BSA concentration of 0.1 - 1%. The effect of storage of stock solution on product performance should be tested for each application. As a general guide, do not store at -20 to -80°C for more than 12 months. Avoid repeated freeze-thaw cycles.

Data

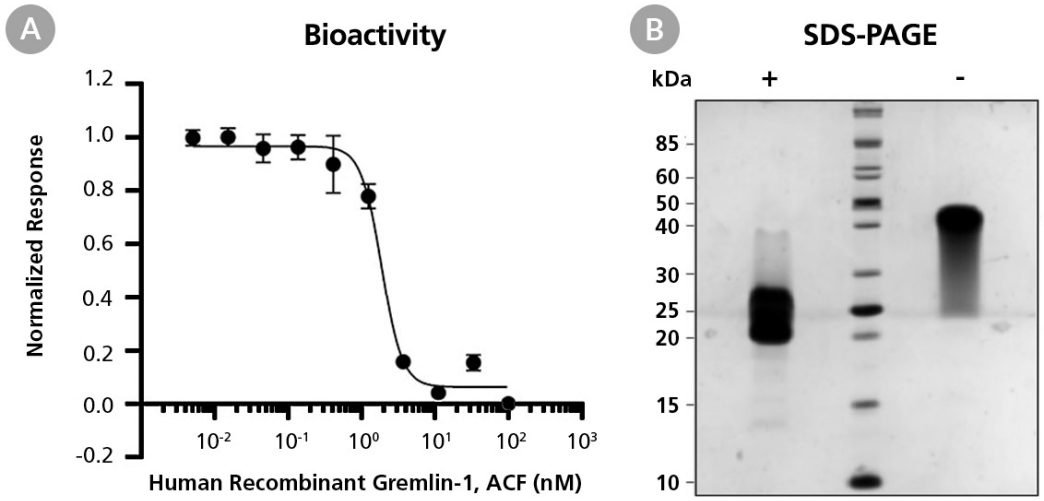

Figure 1. Biological Activity and Molecular Mass of Human Recombinant Gremlin-1, ACF

(A) The biological activity of Human Recombinant Gremlin-1, ACF was tested by its ability to inhibit BMP-2 activity in stably transfected HEK293T cells using a luciferase reporter assay. Firefly luciferase activity was normalized to the control Renilla luciferase activity. The EC50 is defined as the effective concentration of the growth factor at which inhibition of BMP-2 activity is at 50% of maximum. The EC50 in the above example is 1.88 nM (34 ng/mL). (B) 7 µg of Human Recombinant Gremlin-1, ACF was resolved with SDS-PAGE under reducing (+) and non-reducing (-) conditions and visualized by Coomassie Blue staining. Human Recombinant Gremlin-1, ACF has a predicted molecular mass of 18 kDa (monomer). The characteristic diffused bands are due to the dissociation of the non-covalent dimer during electrophoresis.

Related Products

For a complete list of cytokines or peptide pools, as well as related products available from STEMCELL Technologies, visit www.stemcell.com/cytokines or contact us at techsupport@stemcell.com.

References

Baboota RK et al. (2022) BMP4 and Gremlin 1 regulate hepatic cell senescence during clinical progression of NAFLD/NASH. Nat Metab 4(8): 1007–21.

Hsu, DR et al. (1998) The Xenopus dorsalizing factor Gremlin identifies a novel family of secreted proteins that antagonize BMP activities. Molecular cell 1.5 : 673-83.

Kim M et al. (2012) Gremlin-1 induces BMP-independent tumor cell proliferation, migration, and invasion. PLoS One 7(4).

Kosinski C et al. (2007) Gene expression patterns of human colon tops and basal crypts and BMP antagonists as intestinal stem cell niche factors. PNAS 104(39): 15420–3.

Urbischek, M et al. (2019) Organoid culture media formulated with growth factors of defined cellular activity. Scientific reports 9.1: 6193.