Recombinant Human Gremlin-1

FOR RESEARCH ONLY! NOT FOR HUMAN USE!

Cat.-no:	**200-070**
Size:	50 µg
Lot. No.:	According to product label
Country of origin:	Germany

Scientific Background

Gene:	*Grem1*
Synonyms:	Cell proliferation-inducing gene 2 protein, BMP antagonist 1

Gremlin, also known as "Increased in High Glucose protein 2" and "Down regulated in Mos-transformed cells protein" (Drm), is a 28 kDa member of the Dan family of secreted glycoproteins. Native human Gremlin consist of 160 amino acids. The mature region contains one potential site for N-linked glycosylation (Asn42), a cysteine-rich region, and a cysteine-knot motif (aa94-184) whose structure is shared by members of the TGFβ superfamily. Posttranslational modifications include glycosylation and phosphorylation. Human Gremlin exists in both secreted and membrane-associated forms and there exist 2 isoforms. The aa sequence identity of human Gremlin with mouse and chicken Gremlin is 99% and 86%, respectively. Northern blot analysis shows that Gremlin mRNA is highly expressed in the small intestine, fetal brain and colon, and weakly expressed in adult brain, ovary, prostate, pancreas and skeletal muscle. Gremlin functions as a bone morphogenetic protein (BMP) antagonist. It acts by binding to, and forming heterodimers with, BMP2/-4 -7, thus preventing them from interacting with their cell surface receptors. This mechanism is thought to be responsible for the pattern-inducing activity of Gremlin during embryonic development and to play a role in human diseases, such as diabetic nephropathy. However, intracellular BMP-independent mechanisms of action may mediate the ability of Gremlin to suppress transformation and tumor genesis under certain experimental conditions. Gremlin also interacts with Slit proteins and acts as an inhibitor of monocyte chemotaxis. In addition, Gremlin has been found to be a proangiogenic factor expressed by endothelium. Furthermore Gremlin is a novel agonist of the major proangiogenic receptor VEGFR2.

References

1. Hsu DR et al, Mol Cell 1 (1998)
2. McMahon R et al, JBC 275 (2000)
3. Wordinger RJ et al, Exp Eye Res (2008)
4. Topol LZ et al, Cytogenet Cell Genet (2000)
5. Khokha MK et al, Nat. Genet (2003)
6. Lappin DW et al, Nephrol Dial Transplant (2002)
7. Chen B et al, BBRC (2002)
8. Topol LZ et al, Mol Cell Biol (1997)
9. Stabile H et al, Blood (2007)
10. Chen B et al, J Immunol (2004)
11. Mitola S et al, Blood (2010).

Sequence

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MKKKGSQGAIPPPDKAQHNDSEQTQSPQQPGSRNRGRGQGRGTAMPGEEVLE
SSQEALHVTERKYLKRDWCKTQPLKQTIHEEGCNSRTIINRFCYGQCNSFYI
PRHIRKEEGSFQSCSFCKPKKFTTMMVTLNCPELQPPTKKKRVTRVKQCRCI
SIDLD
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Database References

Protein RefSeq:	NP_037504.1
Uniprot ID:	O60565
mRNA RefSeq:	NM_013372.6

Product Specifications

Expressed in	E.coli
Purity	> 95% by SDS-PAGE & silver stain
Buffer	50 mM acetic acid
Stabilizer	None
Formulation	lyophilized
Length (aa):	161
MW:	18.4 kDa
Result by N-terminal sequencing	MKKKGSQGAI

Stability: The lyophilized human Grem-1, though stable at room temperature, is best stored desiccated below 0°C. **Avoid repeated freeze-thaw cycles.**

Reconstitution: Human Grem-1 should be reconstituted in 50 mM acetic acid or water to a concentration of 0.1 mg/ml. This solution can be diluted in water or other buffer solutions or stored at -20°C.

AVOID REPEATED FREEZE AND THAW CYCLES!

Biological Activity: No biological data available at the moment.

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Handling/Application

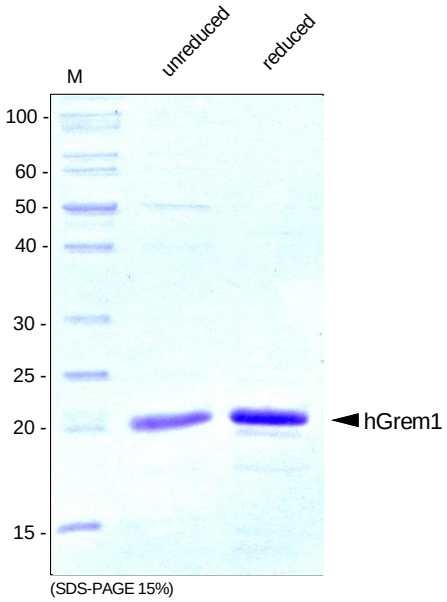

Figure 1. SDS-PAGE analysis of recombinant human Gremlin-1. Samples were loaded in 15% SDS-polyacrylamide gel under reducing conditions and stained with Coomassie blue.

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