

## Active Recombinant Human SHH Protein (Cys24-Gly197, Cys24Ile-Ile), GMP Grade, Animal-Free

Cat. No. SHH-14HG Lot. No. (See product label)

### SPECIFICATION

**Product Overview** GMP recombinant human Sonic Hedgehog/Shh (Cys24-Gly197, Cys24Ile-Ile), with an N-terminal Met was expressed in E. coli, produced using non-animal reagents in an Animal-Free laboratory and manufactured and tested under current Good Manufacturing Practice (GMP) guidelines.

**Species** Human

**Source** E.coli

**ProteinLength** Cys24-Gly197, Cys24Ile-Ile

**Description** This gene encodes a protein that is instrumental in patterning the early embryo. It has been implicated as the key inductive signal in patterning of the ventral neural tube, the anterior-posterior limb axis, and the ventral somites. Of three human proteins showing sequence and functional similarity to the sonic hedgehog protein of Drosophila, this protein is the most similar. The protein is made as a precursor that is autocatalytically cleaved; the N-terminal portion is soluble and contains the signalling activity while the C-terminal portion is involved in precursor processing. More importantly, the C-terminal product covalently attaches a cholesterol moiety to the N-terminal product, restricting the N-terminal product to the cell surface and preventing it from freely diffusing throughout the developing embryo. Defects in this protein or in its signalling pathway are a cause of holoprosencephaly (HPE), a disorder in which the developing forebrain fails to correctly separate into right and left hemispheres.

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HPE is manifested by facial deformities. It is also thought that mutations in this gene or in its signalling pathway may be responsible for VACTERL syndrome, which is characterized by vertebral defects, anal atresia, tracheoesophageal fistula with esophageal atresia, radial and renal dysplasia, cardiac anomalies, and limb abnormalities. Additionally, mutations in a long range enhancer located approximately 1 megabase upstream of this gene disrupt limb patterning and can result in preaxial polydactyly.

**Bio-activity**

Measured by its ability to induce alkaline phosphatase production by C3H10T1/2 mouse embryonic fibroblast cells. The ED50 for this effect is 0.1-0.4 µg/mL.

**Molecular Mass**

Predicted Molecular Mass: 20 kDa  
SDS-PAGE: 22 kDa, reducing conditions

**N-terminal Sequence Analysis**

Met-Ile-Ile-Gly<sup>25</sup>-Pro-Gly-Arg-Gly-Phe-Gly

**Endotoxin**

<0.01 EU/ µg of the protein by the LAL method.

**Purity**

>95%, by SDS-PAGE with silver staining, under reducing conditions.

**Storage**

Use a manual defrost freezer and avoid repeated freeze-thaw cycles.  
A minimum of 12 months when stored at ≤ -20 centigrade as supplied. Refer to lot specific COA for the Use by Date.  
1 month, 2 to 8 centigrade under sterile conditions after reconstitution.  
3 months, ≤ -20 centigrade under sterile conditions after reconstitution.

**Storage Buffer**


Lyophilized from a 0.2 µm filtered solution in PBS and NaCl.

**Reconstitution**

Reconstitute at 100-200 µg/mL in PBS, and allow up to 24 hours at 2 to 8 centigrade for complete reconstitution.

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**Shipping** The product is shipped with polar packs.

## GENE INFORMATION

**Gene Name** SHH sonic hedgehog [ Homo sapiens ]

**Official Symbol** SHH

**Synonyms** SHH; sonic hedgehog; HLP3, HPE3, sonic hedgehog (Drosophila) homolog , sonic hedgehog homolog (Drosophila); sonic hedgehog protein; HHG1; MCOPCB5; SMMCI; TPT; TPTPS; sonic hedgehog homolog; HLP3; HPE3;

**Gene ID** 6469

**mRNA Refseq** NM\_000193

**Protein Refseq** NP\_000184

**MIM** 600725

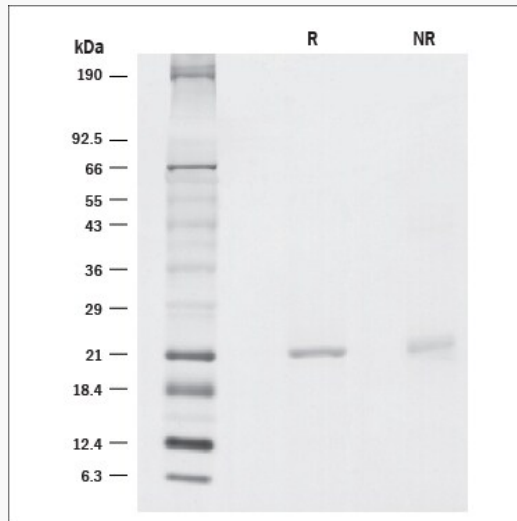
**UniProt ID** Q15465

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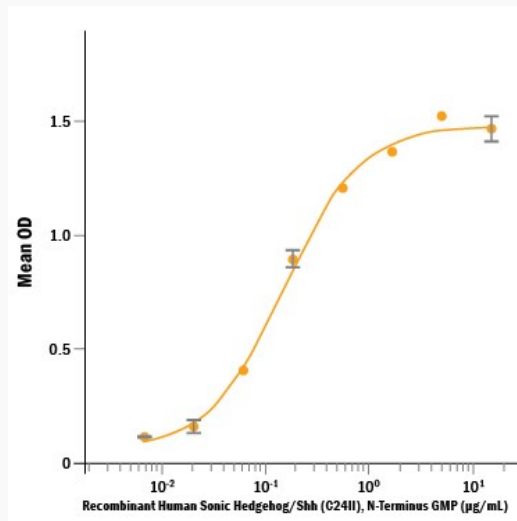
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**SDS-PAGE**



**Bioactivity**



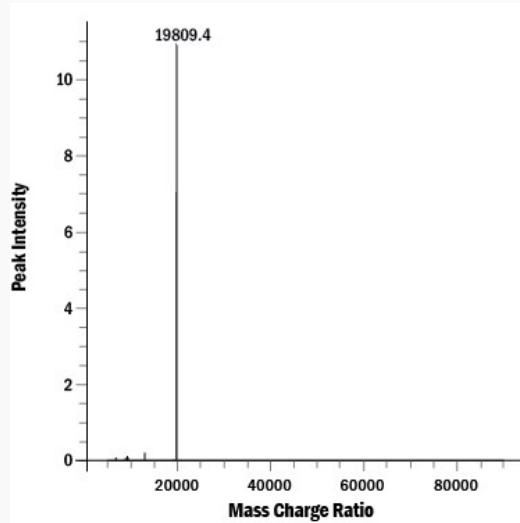
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Mass Spectrometry



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