Recombinant Human SHH Protein

Cat. No. SHH-36H **Lot. No.** (See product label)

SPECIFICATION

Product Overview	Recombinant human Shh protein without tag was expressed in E. coli. Animal-free (AOF) and carrier protein-free. Mass spectrometry: single species with expected mass. Recovery from stock vial: >95%
Species	Human
Source	E.coli
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. 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

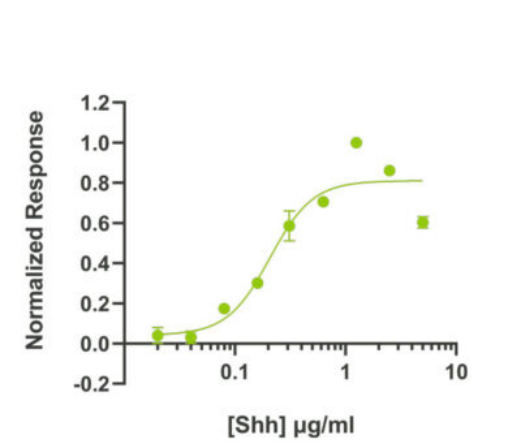
Tel: 1-631-559-9269 1-516-512-3133
Email: info@creative-biomart.com Fax: 1-631-938-8127
45-1 Ramsey Road, Shirley, NY 11967, USA

	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.
Molecular Mass	19.8 kDa (monomer)
Endotoxin	<0.005 EU/μg protein (below level of detection)
Applications	Pancreatic tumor organoid culture; maintenance of urine-derived Stem cells
Storage	Resuspend in water at >100 μg/mL, prepare single use aliquots, add carrier protein if desired and store frozen at -20 centigrade (short-term) or -80 centigrade (long-term).
Storage Buffer	Lyophilized from PBS

GENE INFORMATION

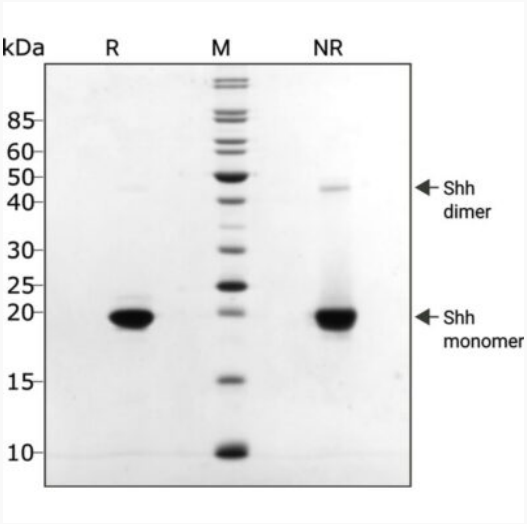
Gene Name	SHH sonic hedgehog signaling molecule [Homo sapiens (human)]
Official Symbol	SHH
Synonyms	SHH; sonic hedgehog signaling molecule; TPT; HHG1; HLP3; HPE3; SMMCI; ShhNC; TPTPS; MCOPCB5; sonic hedgehog protein; shh unprocessed N-terminal signaling and C-terminal autoprocessing domains; sonic hedgehog homolog
Gene ID	6469
mRNA Refseq	NM_000193
Protein Refseq	NP_000184

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MIM	600725
UniProt ID	Q15465
Bioactivity	 The bioactivity of Shhis determined by its ability to induce alkaline phosphatase production by C3H/10T1/2cells. The EC50 for this effect is 0.21 µg/mL (10.6 nM). Cells were incubated with different concentrations of Shh for 5 days before alkaline phosphatase measurement.

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Purity



Human Shhmigrates as a major band at 19.8 kDa in non-reducingconditions. We load 3 ug of protein to ensure good visibility of protein in the gel. This allows you to see the faint Shh dimer band at 40 kDa in the non-reduced sample. Shh spontaneously forms non-covalent dimers, this is thought to increase its potency (10). Upon reduction (R), only the 19.8 kDa band is visible. No contaminating protein bands are visible. Purified recombinant protein was resolved using 15% w/v SDS-PAGE in reducedand non-reducedconditions and stained with Coomassie Brilliant Blue R-250.

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