

# Recombinant Human SHH protein

**Cat. No.** SHH-30498TH    **Lot. No.** (See product label)

## SPECIFICATION

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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| <b>Product Overview</b> | Recombinant Human SHH protein was expressed in Escherichia coli.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Species</b>          | Human                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Source</b>           | E.coli                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>ProteinLength</b>    | 176                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Description</b>      | <p>Sonic Hedgehog (SHH) is one of three proteins of the Hedgehog (Hh) family, which also contains Desert Hedgehog (DHH) and Indian Hedgehog (IHH). The three members share a high degree of amino-acid sequence identity (e.g., SHH and IHH are 93 % identical). SHH is expressed in fetal intestine, liver, lung, and kidney, but not in adult tissues. The protein consists of 462 a.a. with a 23a.a. signal peptide at N-terminus, and is further cleaved into SHH N-Terminus and C-Terminus. SHH has the most critical roles in development, acting as a morphogen involved in patterning many systems, including the limb and midline structures in the brain, spinal cord, the thalamus by the zona limitans intrathalamica and the teeth. In the absence of Sonic HedgeHog, patched receptor represses the constitutive signaling activity of smoothened. SHH-N retains all known signaling capabilities, and can be lipid-modified without receptor affinity reducing, but has more potent than the unmodified form. The rHuSHH has an N-terminal Ile-Val-Ile sequence substituted for the natural occurring chemically modified Cys residue.</p> |
| <b>Form</b>             | Lyophilized from a 0.2µm filtered concentrated solution in 20 mM PB, pH 7.4, 150 mM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

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|                       |                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | NaCl.                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Bio-activity</b>   | Fully biologically active when compared to standard. The ED50 as determined by inducing alkaline phosphatase production of murine C3H/10T1/2 cells is less than 1 µg/ml, corresponding to a specific activity of $> 1.0 \times 10^3$ IU/mg.                                                                                                                                                      |
| <b>Molecular Mass</b> | Approximately 19.8 kDa, a single non-glycosylated polypeptide chain containing 176 amino acids.                                                                                                                                                                                                                                                                                                  |
| <b>AA Sequence</b>    | IVIGPGRGFGKRRHPKKLTPLAYKQFIPNVAEKTGASGRYEGKISRNSERFKELTPN<br>YNPDIIKFDEENTGADRLMTQRCKDKLNALAISVMNQWPGVKLRVTEGWDEEDGHHS<br>EESLHYEGRAVDITTSRDRSKYGMLARLAVEAGFDWVYYESKAHIHCSVKAENSV<br>AAKSGG                                                                                                                                                                                                      |
| <b>Endotoxin</b>      | Less than 1 EU/g of rHuSHH as determined by LAL method.                                                                                                                                                                                                                                                                                                                                          |
| <b>Purity</b>         | >98% by SDS-PAGE and HPLC analysis.                                                                                                                                                                                                                                                                                                                                                              |
| <b>Storage</b>        | Use a manual defrost freezer and avoid repeated freeze-thaw cycles. 12 months from date of receipt, -20 to -70 centigrade as supplied. 1 month, 2 to 8 centigrade under sterile conditions after reconstitution. 3 months, -20 to -70 centigrade under sterile conditions after reconstitution.                                                                                                  |
| <b>Reconstitution</b> | We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Reconstitute in sterile distilled water or aqueous buffer containing 0.1% BSA to a concentration of 0.1-1.0 mg/mL. Stock solutions should be apportioned into working aliquots and stored at $\leq -20$ centigrade. Further dilutions should be made in appropriate buffered solutions. |

## GENE INFORMATION

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|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Gene Name</b>       | SHH                                                                                                                                                                                                       |
| <b>Official Symbol</b> | SHH                                                                                                                                                                                                       |
| <b>Synonyms</b>        | 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; |
| <b>Gene ID</b>         | 6469                                                                                                                                                                                                      |
| <b>mRNA Refseq</b>     | NM_000193                                                                                                                                                                                                 |
| <b>Protein Refseq</b>  | NP_000184                                                                                                                                                                                                 |
| <b>MIM</b>             | 600725                                                                                                                                                                                                    |
| <b>UniProt ID</b>      | Q15465                                                                                                                                                                                                    |

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