# Recombinant Mouse Sonic Hedgehog/Shh (C25II), N-Terminus

Catalog Number: 464-SH

## DESCRIPTION

| | |
|---|---|
| **Source** | *E. coli*-derived<br>Cys25-Gly198 (Cys25IIe-IIe), with an N-terminal Met<br>Accession # Q62226 |
| **N-terminal Sequence Analysis** | Met |
| **Predicted Molecular Mass** | 19.8 kDa |

## SPECIFICATIONS

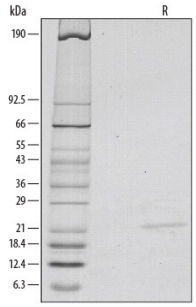
| | |
|---|---|
| **Activity** | Measured by its ability to induce alkaline phosphatase production by C3H10T1/2 mouse embryonic fibroblast cells. Nakamura, T. *et al.* (1997) Biochem. Biophys. Res. Commun. **237**:465.<br>The $ED_{50}$ for this effect is typically 0.05-0.25 µg/mL. |
| **Endotoxin Level** | <0.10 EU per 1 µg of the protein by the LAL method. |
| **Purity** | >97%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining. |
| **Formulation** | Lyophilized from a 0.2 µm filtered solution in $NaH_2PO_4$, NaCl and DTT with BSA as a carrier protein. See Certificate of Analysis for details. |

## PREPARATION AND STORAGE

| | |
|---|---|
| **Reconstitution** | Reconstitute at 100-200 µg/mL in sterile PBS containing at least 0.1% human or bovine serum albumin. |
| **Shipping** | The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. |
| **Stability & Storage** | **Use a manual defrost freezer and avoid repeated freeze-thaw cycles.**<br>● 12 months from date of receipt, -20 to -70 °C as supplied.<br>● 1 month, 2 to 8 °C under sterile conditions after reconstitution.<br>● 3 months, -20 to -70 °C under sterile conditions after reconstitution. |

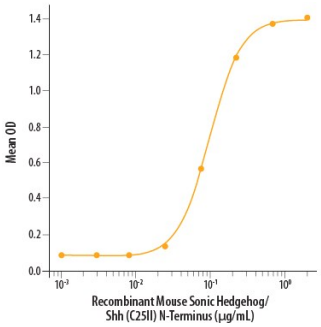
## DATA

### SDS-PAGE




1 µg/lane of Recombinant Mouse Sonic Hedgehog/Shh (C25II), N-Terminus was resolved with SDS-PAGE under reducing (R) conditions and visualized by silver staining, showing a single band at 22 kDa.

### Bioactivity




Recombinant Mouse Sonic Hedgehog/Shh (C25II), N-Terminus (Catalog # 464-SH) induces alkaline phosphatase production by the C3H10T1/2 mouse embryonic fibroblast cell line. The $ED_{50}$ for this effect is typically 0.05-0.25 µg/mL.



bio-techne
bio-techne.com
Global info@bio-techne.com techsupport@bio-techne.com
North America TEL 800 343 7475 Europe | Middle East | Africa TEL +44 (0)1235 529449
China info.cn@bio-techne.com TEL +86 (21) 52380373
Rest of World bio-techne.com/find-us/distributors TEL +1 612 379 2956

# Recombinant Mouse Sonic Hedgehog/Shh (C25II), N-Terminus

Catalog Number: 464-SH

## BACKGROUND

Sonic Hedgehog (Shh) is expressed in embryonic tissues that are critical for the patterning of the developing central nervous system, somite, and limb. It is also involved in whisker, hair, foregut, tooth, and bone development. Shh regulates neural and hematopoietic stem cell fate and is important for thymocyte differentiation and proliferation as well as T cell determination. In adult tissue Shh is associated with cancer development and tissue remodeling following injury (1-3). Mouse Shh encodes a 437 amino acid (aa) precursor protein that is autocatalytically processed to yield a non-glycosylated 19 kDa N-terminal fragment (Shh-N) and a glycosylated 25 kDa C-terminal protein (Shh-C) (4). Shh-C, which is responsible for the intramolecular processing of Shh, is rapidly degraded following Shh proteolysis (5). Shh-N is highly conserved, sharing >98% aa identity between mouse, human, rat, canine, porcine, and chicken Shh-N. Shh-N can be palmitoylated at its N-terminal cysteine and modified by cholesterol addition at its C-terminus (6). These modifications contribute to the membrane tethering of Shh as well as its assembly into various sized multimers (6-9). Lipid modification and multimerization greatly increase Shh-N receptor binding affinity and signaling potency (5, 6, 8, 9). Monomeric and multimeric Shh can be released from the plasma membrane by the cooperative action of DISP1, SCUBE2, and TACE/ADAM17 (10-12). Modifications also extend the effective range of Shh functionality and are required for the development of protein gradients important in tissue morphogenesis (9, 13). Canonical signaling of Shh is mediated by a multicomponent receptor complex that includes Patched (PTCH1, PTCH2) and Smoothened (SMO) (14). The binding of Shh to PTCH releases the basal repression of SMO by PTCH. Shh activity can also be regulated through interactions with heparin, glypicans, and membrane-associated Hip (hedgehog interacting protein) (13, 15, 16).

**References:**

1. Briscoe, J. and P.P. Therond (2013) Mol. Cell. Biol. **14**:416.
2. Aviles, E.C. *et al.* (2013) Front. Cell. Neurosci. **7**:86.
3. Xie, J. *et al.* (2013) OncoTargets Ther. **6**:1425.
4. Echelard, Y. *et al.* (1993) Cell **75**:1417.
5. Zeng, X. *et al.* (2001) Nature **411**:716.
6. Feng, J. *et al.* (2004) Development **131**:4357.
7. Goetz, J.A. *et al.* (2006) J. Biol. Chem. **281**:4087.
8. Pepinsky, R.B. *et al.* (1998) J. Biol. Chem. **273**:14037.
9. Chen, M.-H. *et al.* (2004) Genes Dev. **18**:641.
10. Etheridge, L.A. *et al.* (2010) Development **137**:133.
11. Jakobs, P. *et al.* (2014) J. Cell Sci. **127**:1726.
12. Dierker, T. *et al.* (2009) J. Biol. Chem. **284**:8013.
13. Lewis, P.M. *et al.* (2001) Cell **105**:599.
14. Carpenter, D. *et al.* (1998) Proc. Natl. Acad. Sci. USA **95**:13630.
15. Filmus, J. and M. Capurro (2014) Matrix Biol. **35**:248.
16. Chuang, P.-T. and A.P. McMahon (1999) Nature **397**:617.



bio-techne
bio-techne.com
Global info@bio-techne.com techsupport@bio-techne.com
North America TEL 800 343 7475 Europe | Middle East | Africa TEL +44 (0)1235 529449
China info.cn@bio-techne.com TEL +86 (21) 52380373
Rest of World bio-techne.com/find-us/distributors TEL +1 612 379 2956