Recombinant Human Nodal

Cat. No. NODAL-30H **Lot. No.** (See product label)

SPECIFICATION

Product Overview	Active Recombinant Human Nodal Protein,Tag Free,was expressed in E. coli.
Species	Human
Source	E.coli
ProteinLength	His238-Leu347aa
Description	Nodal is a 13 kDa member of the TGF-beta superfamily of molecules (1-3). Its name derives from the fact that it is expressed in the primitive node of the developing embryo. In human, it is synthesized as a 347 amino acid (aa) preproprecursor that contains a 26 aa signal sequence, a 211 aa prodomain, and a 110 aa mature region (4, 5). Consistent with its TGF-beta superfamily membership, it exists as a disulfide-linked homodimer and would be expected to demonstrate a cysteine-knot motif (1, 5, 6). Mature human Nodal is 99%, 98%, 96% and 98% aa identical to mature canine, rat, bovine and mouse Nodal, respectively. Nodal signals through two receptor complexes, both of which contain members of the TGF-beta family of Ser/Thr kinase receptors. The first receptor complex is composed of ActRIB/ALK4 and ActRIIB. Nodal interaction with the ligand-binding subunit ALK4 requires the participation of fucosylated Cripto, a member of the EGF-CFC gene family. The second complex is composed of ALK7 and ActRIIB, and does not require Cripto interaction (7-9). Nodal signaling is regulated by a number of inhibitors. Nodal is reported to form nonsignaling disulfide-linked heterodimers with BMP-3, -4 and -7 (2, 6). There are also at least three secreted factors that block Nodal activation of its receptor. The first

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	is Cerberus, a member of the DAN family of proteins. The last two are TGF-beta family members named Lefty-A and B (2, 11). The exact mechanisms employed are unclear, but Leftys are apparently induced by nodal and can work at a considerable distance from their origin (2). Nodal is known to induce both mesoderm and endoderm, participate in anterior-posterior positioning, and through ALK7, induce apoptosis in susceptible cell populations (2, 8, 12).
Tag	Non
Bio-activity	Measured by its ability to induce Smad2 phosphorylation in P19 mouse embryonal carcinoma cells. Yeo, C. et al. (2001) Mol. Cell. 7:949. Approximately 100 ng/mL of Recombinant Human Nodal can effectively induce Smad2 phosphorylation.
Molecular Mass	12.9 kDa
Purity	>97%, by SDS-PAGE under reducing conditions and visualized by silver stain.
N-terminal Sequence Analysis	Met
Stability	Use a manual defrost freezer and avoid repeated freeze-thaw cycles. 12 months from date of receipt, -20 to -70 °C as supplied. 1 month, 2 to 8 °C under sterile conditions after reconstitution. 3 months, -20 to -70 °C under sterile conditions after reconstitution.
Storage	Use a manual defrost freezer and avoid repeated freeze-thaw cycles. 12 months from date of receipt, -20 to -70 °C as supplied. 1 month, 2 to 8 °C under sterile conditions after reconstitution. 3 months, -20 to -70 °C under sterile conditions after reconstitution.
Storage Buffer	Lyophilized from a 0.2 μm filtered solution in Acetonitrile and TFA with BSA as a

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	carrier protein.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Reconstitution	Reconstitute at 100 µg/mL in sterile 4 mM HCl containing at least 0.1% human or bovine serum albumin.

GENE INFORMATION

Gene Name	NODAL nodal growth differentiation factor [Homo sapiens (human)]
Official Symbol	NODAL
Synonyms	NODAL
Gene ID	4838
UniProt ID	Q96S42

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