

DESCRIPTION

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| Species Reactivity | Human/Mouse |
| Specificity | Detects human and mouse Nodal in direct ELISAs and Western blots. |
| Source | Polyclonal Goat IgG |
| Purification | Antigen Affinity-purified |
| Immunogen | <i>E. coli</i> -derived recombinant mouse Nodal His245-Leu354 Accession # P43021 |
| Formulation | Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details. |

APPLICATIONS

Please Note: Optimal dilutions should be determined by each laboratory for each application. *General Protocols* are available in the *Technical Information* section on our website.

| | Recommended Concentration | Sample |
|---------------------|----------------------------------|--|
| Western Blot | 0.1 µg/mL | Recombinant Human Nodal (Catalog # 3218-ND) Recombinant Mouse Nodal (Catalog # 1315-ND) |

PREPARATION AND STORAGE

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| Reconstitution | Reconstitute at 0.2 mg/mL in sterile PBS. |
| 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. <ul style="list-style-type: none"> ● 12 months from date of receipt, -20 to -70 °C as supplied. ● 1 month, 2 to 8 °C under sterile conditions after reconstitution. ● 6 months, -20 to -70 °C under sterile conditions after reconstitution. |

BACKGROUND

Nodal is a secreted protein that is a member of the Transforming Growth Factor-β (TGF-β) superfamily. Nodal was named for its localized expression in the mouse node during gastrulation, and is first detected in the early primitive streak during mesoderm formation. Expression of the Nodal gene occurs asymmetrically in the left, but not right, lateral plate during somitogenesis. Nodal proteins play crucial roles in mesoderm formation and both anterior-posterior and left-right axis formation during vertebrate development. Members of the Nodal gene family include mouse Nodal, chick cNR-1, frog Xnr1-4, and zebrafish cyclops. Biologically active Nodal is a disulfide-linked homodimer and contains all seven of the cysteine residues necessary for formation of the "cysteine knot" characteristic of TGF-β-related molecules. Mouse Nodal is 34 - 39% homologous in the conserved region to other TGF-β superfamily members. Nodal has been shown to signal through a mechanism related to the Activin pathway, and signaling is mediated through both Smad2 and 3. Nodal signaling utilizes type II Activin receptors, together with ALK4/ActRIB, or the orphan type I receptor ALK7. Nodal interacts extracellularly with members of other protein families, including Cerberus, Lefty, and EGF-CFC ligands, such as Cripto. While the Cerberus and Lefty families act as Nodal antagonists, the EGF-CFC molecules act as co-receptors to facilitate Nodal signaling. The resulting concert of regulated Nodal activity allows for the precise control of mesoderm formation, neural patterning, and axis positioning and patterning during early vertebrate development.

References:

1. Kumar, A. *et al.* (2001) *J. Biol. Chem.* **276**:656.
2. Reissmann, E. *et al.* (2001) *Genes & Dev.* **15**: 2010.
3. Schier, A. and M. Shen (1999) *Nature* **403**:385.
4. Zhou, X. *et al.* (1993) *Nature* **361**:543.