Technical Data Sheet

Recombinant human/mouse nodal protein

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Lot Specific Information

Lot Number: **Lot Specific***

Total Protein: **Lot Specific***

*This information will be noted on the certificate of analysis that ships with this product.

Shelf Life

This product has a guaranteed shelf-life of one year from the date of customer receipt when stored as recommended.

Product Information

Catalog Number:	**RP051**
Protein Identity:	Confirmed identity with expected mass, determined by mass spectrometry
Reported Applications:	iPSC-derived mesoderm differentiation Differentiation of iPSC into endoderm Cancer research Maintenance of pluripotency in iPSC Maintenance of undifferentiated embryonic stem cells
Formulation:	Lyophilized, white powder
Endotoxin:	≤0.5 EU/mg, LAL assay
Purity:	≥95%; SDS-PAGE
Reconstitution:	Resuspend in 10 mM HCl (Reconstitution Buffer A) at >50 µg/ml. Once reconstituted, store in single-use aliquots to avoid freeze-thaw cycles. Store reconstituted protein at -20 °C to -80 °C for a maximum of 12 months or until the expiry date if sooner.
Sterility:	Sterile
Production:	Microbial. Expressed in E. coli
Molecular Weight:	25.9 kDa (homodimer)
Bioactivity Assay:	No significant difference between EC50 of reference and test lots
Mycoplasma:	Negative

Description

Recombinant human/mouse nodal protein is a member of the transforming growth factor β (TGF-β) family, which comprises the activin/inhibin, BMP and nodal subgroups, and is synthesized as a large precursor that is cleaved to a mature disulfide-linked homodimer. Nodal signals through type I and type II transmembrane serine-threonine kinase receptors to activate Smad2 and Smad3, in contrast to BMP signaling through Smad1, Smad5 and Smad8. Nodal is essential at the early epiblast stage, where it maintains expression of key pluripotency factors and, together with BMPs, controls endoderm and mesoderm specification while blocking neuroectoderm formation, and studies of gastruloids (embryonic organoids) show a role for nodal in axial patterning alongside FGF-2, DKK-1, BMP-4 and Wnt signaling. In cancer models such as glioma, recombinant nodal increases MMP-2 secretion and cell invasion. In human embryonic stem cell (hESC) culture, recombinant nodal maintains pluripotency and prevents default neuroectodermal differentiation, and together with TGF-β1 and activin A supports pluripotency under mechanical strain, making it a key reagent for stem cell, gastruloid and developmental biology research. This protein is optimized for in vivo and functional applications: low-endotoxin, tag-free, and carrier-free, supporting reproducible performance in demanding preclinical and bioactivity studies. A GMP-grade version of this protein is available for cell and gene therapy manufacturing. Contact us at customerservice@bioxcell.com for details. Species reactivity: human. Species similarity: mouse - 98%, rat - 98%, bovine - 96%*, porcine - 97%*. *Sequences unconfirmed.

Storage

Store at the stock concentration at 4°C . **Do not freeze.**

It is not uncommon for a floccule or precipitate to appear during storage. The floccule is typically buffer salts precipitating out of solution or a small bit of protein aggregation. For information on how to remove floccules or precipitates see our FAQ's at https://bioxcell.com/faqs.

Store lyophilized protein between -20 °C and -80 °C until the date of expiry. Avoid freeze-thaw cycles

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