

#### DESCRIPTION

**Source** Chinese Hamster Ovary cell line, CHO-derived  
Gly307-Arg441  
Accession # AAA53035

**N-terminal Sequence Analysis** Gly307

**Predicted Molecular Mass** 15.6 kDa

#### SPECIFICATIONS

**SDS-PAGE** 20 kDa, reducing conditions

**Activity** Measured by its ability to induce Smad2 phosphorylation in P19 mouse embryonal carcinoma cells. Mazerbourg, S. *et al.* (2004) Mol. Endocrinol. **18**:653.  
100 ng/mL rmGDF-9 can effectively induce Smad2 phosphorylation.

**Endotoxin Level** <1.0 EU per 1 µg of the protein by the LAL method.

**Purity** >95%, by SDS-PAGE under reducing conditions and visualized by silver stain.

**Formulation** Lyophilized from a 0.2 µm filtered solution in HCl with BSA as a carrier protein. See Certificate of Analysis for details.

#### PREPARATION AND STORAGE

**Reconstitution** Reconstitute at 100 µg/mL in 4 mM HCl containing 0.1% 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.**

- 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.

#### BACKGROUND

Growth differentiation factor-9 (GDF-9) is a member of the transforming growth factor-β (TGF-β) superfamily, and is an oocyte secreted paracrine factor essential for mammalian ovarian folliculogenesis (1 - 2). Mouse GDF-9 is synthesized as a 441 amino acid (aa) prepropeptide that contains a 29 aa signal sequence, a 277 aa propeptide, and a 135 aa mature chain (SwissProt # Q07105). Residues 340 - 441 constitute a TGF-β like domain. In addition, there is one potential site of N-linked glycosylation in the mature chain. Unlike other members of the TGF-β superfamily, GDF-9 lacks the conserved cysteine residue that is believed to form the sole disulfide linkage between subunits in other family members (3). Mature mouse GDF-9 shares 90% aa sequence identity with mature human GDF 9. The protein is expressed throughout the development of the maturing follicle (2). GDF-9 functions as a paracrine factor in the regulation of granulosa cell proliferation and differentiation, and is essential for fertility (2, 4). Studies on GDF-9 null mice have demonstrated arrested follicular development at the primary follicle stage (5). Mouse GDF-9 induces Smad2 phosphorylation and inhibin production in rat diethylstilbestrol treated granulosa cells (6) and in human granulosa-luteal cells (7). The downstream signaling actions of GDF 9 are mediated by the type I receptor, activin receptor-like kinase 5 (ALK5), initiating the subsequent activation of Smad2 and Smad3 (2, 8). GDF 9 uses the BMP type II receptor (BMPRII) as its other signaling receptor (2, 9).

#### References:

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5. Dong, J. *et al.* (1996) Nature **383**:531.
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7. Kaivo-Oja, N. *et al.* (2003) J. Clin. Endocrinol. Metab. **88**:755.
8. Mazerbourg, S. *et al.* (2004) Mol. Endocrinol. **18**:653.
9. Vitt, U.A. *et al.* (2002) Biol. Reprod. **67**:473.