

# Cytokines

## Human Recombinant GDF-11



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### Growth differentiation factor 11

Catalog # 78110  
78110.1

20 µg  
100 µg

## Product Description

Growth differentiation factor 11 (GDF-11) is a member of transforming growth factor beta (TGF-β) family. It binds to the TGF-β receptors ALK4, ALK5, and ALK7 and activates the SMAD signaling pathway (Ho et al.). GDF-11 regulates the development of the olfactory system, retina, and pancreas, as well as anterior/posterior patterning of the axial skeleton (Lee & Lee). GDF-11 is an endocrine factor expressed in skeletal muscle, brain, and dental pulp (Kondás et al.). Studies in mice showed that GDF-11 regulates muscle and cardiac aging, and stimulates neurogenesis by remodeling blood vessels (Katsimpardi et al.; Loffredo et al.; Sinha et al.).

## Product Information

**Alternative Names:** BMP-11, Bone morphogenetic protein 11, Growth differentiation factor 11  
**Accession Number:** O95390  
**Amino Acid Sequence:** NLGLDCDEHS SESRCCRYPL TVDFEAFGWD WIIAPKRYKA NYCSGQCEYM FMQKYPHTHL VQQANPRGSA GPCCTPTKMS PINMLYFNDK QQIYGKIPG MVVDRCGCS  
**Predicted Molecular Mass:** 12.5 kDa monomer; 24.9 kDa dimer  
**Species:** Human  
**Cross Reactivity:** Mouse, Rat  
**Formulation:** Lyophilized from a sterile-filtered aqueous solution containing 0.1% trifluoroacetic acid.  
**Source:** E. coli

## Specifications

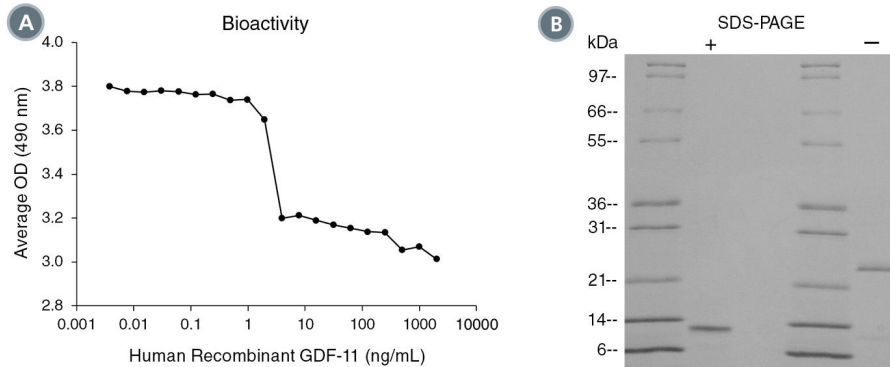
**Activity:** The specific activity is  $\geq 1.0 \times 10^4$  units/mg ( $EC_{50} \leq 100$  ng/mL) as determined by alkaline phosphatase activity induced in ATDC-5 cells.  
**Purity:**  $\geq 95\%$   
**Endotoxin Level:** Measured by kinetic Limulus amoebocyte lysate (LAL) analysis and is  $\leq 1$  EU/µg protein.

## Preparation and Storage

**Storage:** Store at -20°C to -80°C.  
**Stability:** Stable as supplied for 12 months from date of receipt.  
**Preparation:** Centrifuge vial before opening. Reconstitute the product in 10 mM hydrochloric acid to at least 0.1 mg/mL by pipetting the solution down the sides of the vial. Do not vortex.

OPTIONAL: After reconstitution, if product will not be used immediately, dilute with concentrated bovine serum albumin (BSA) to a final BSA concentration of 0.1%. The effect of storage of stock solution on product performance should be tested for each application. As a general guide we recommend to not store at 2 - 8°C for more than 1 month or at -20°C to -80°C for more than 3 months. Avoid repeated freeze-thaw cycles.

## Data



(A) The biological activity of Human Recombinant GDF-11 was tested by its ability to inhibit alkaline phosphatase production in ATDC-5 cells. Inhibition of alkaline phosphatase production was measured using a fluorometric assay method. The EC<sub>50</sub> is defined as the effective concentration of the growth factor at which alkaline phosphatase activity is at 50% of maximum. The EC<sub>50</sub> in the above example is 2.63 ng/mL.

(B) 1 µg of Human Recombinant GDF-11 was resolved with SDS-PAGE under reducing (+) and non-reducing (-) conditions and visualized by Coomassie Blue staining.

## Related Products

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## References

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- Loffredo FS et al. (2013) Growth differentiation factor 11 is a circulating factor that reverses age-related cardiac hypertrophy. *Cell* 153(4): 828–39.
- Sinha M et al. (2014) Restoring systemic GDF11 levels reverses age-related dysfunction in mouse skeletal muscle. *Science* 344(6184): 649–52.

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