# Cytokines

## Human/Mouse Recombinant GDF-11

Growth differentiation factor 11

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|---|---|---|
| Catalog # | 78110 | 20 µg |
| | 78110.1 | 100 µg |

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## 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

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| 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 QQIIYGKIPG MVVDRCGCS |
| Predicted Molecular Mass: | 12.5 kDa monomer; 24.9 kDa dimer |
| Species: | Human, Mouse |
| Formulation: | Lyophilized from a sterile-filtered aqueous solution containing 0.1% trifluoroacetic acid. |
| Source: | *E. coli* |

## Specifications

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| Activity: | The specific activity is ≥ 1.0 x 10^4 units/mg (EC50 ≤ 100 ng/mL) as determined by alkaline phosphatase activity induced in ATDC-5 cells. |
| Purity: | ≥ 95% |
| Endotoxin Level: | Measured by kinetic Limulus amebocyte lysate (LAL) analysis and is ≤ 1 EU/µg protein. |

## Preparation and Storage

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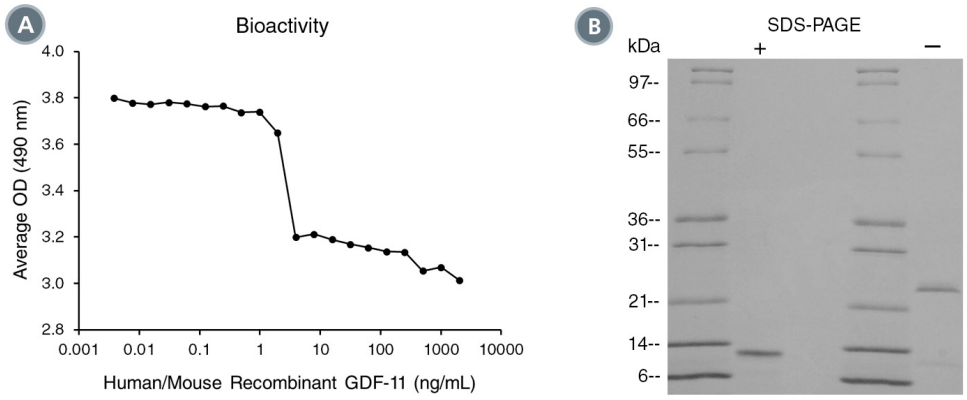
| Storage: | Store at -20°C to -80°C. |
| Stability: | Stable as supplied for 12 months from date of receipt. |
| Preparation: | Centrifuge vial before opening. Reconstitute the product in 10 mM hydrochloric acid to at least 0.1 mg/mL by pipetting the solution down the sides of the vial. Do not vortex.<br><br>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/Mouse Recombinant GDF-11 was tested by its ability to inhibit alkaline phosphatase production in ATDC-5 cells. The EC50 is defined as the effective concentration of the growth factor at which alkaline phosphatase activity is at 50% of maximum. The EC50 in the above example is 2.63 ng/mL.
(B) 1 µg of Human/Mouse Recombinant GDF-11 was resolved with SDS-PAGE under reducing (+) and non-reducing (-) conditions and visualized by Coomassie Blue staining. Human/Mouse Recombinant GDF-11 has a predicted molecular mass of 12.5 kDa (monomer) or 24.9 kDa (dimer).

## Related Products

For a complete list of cytokines, as well as related products available from STEMCELL Technologies, visit www.stemcell.com/cytokines or contact us at techsupport@stemcell.com.

## References

Ho DM et al. (2010) The role and regulation of GDF11 in Smad2 activation during tailbud formation in the Xenopus embryo. Mech Dev 127(9–12): 485–95.
Katsimpardi L et al. (2014) Vascular and neurogenic rejuvenation of the aging mouse brain by young systemic factors. Science 344(6184): 630–4.
Kondás K et al. (2008) Both WFIKKN1 and WFIKKN2 have high affinity for growth and differentiation factors 8 and 11. J Biol Chem 283(35): 23677–84.
Lee Y-S & Lee S-J. (2013) Regulation of GDF-11 and myostatin activity by GASP-1 and GASP-2. Proc Natl Acad Sci USA 110(39): E3713–22.
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 Met al. (2014) Restoring systemic GDF11 levels reverses age-related dysfunction in mouse skeletal muscle. Science 344(6184): 649–52.