

## DESCRIPTION

<b>Species Reactivity</b>	Human/Mouse
<b>Specificity</b>	Detects human and mouse GDF-3 in direct ELISAs and Western blots. In Western blots, less than 5% cross-reactivity with recombinant mouse (rm) GDF-5, rmGDF-6, rmGDF-7, rmGDF-8, and rmGDF-9 is observed.
<b>Source</b>	Polyclonal Goat IgG
<b>Purification</b>	Antigen Affinity-purified
<b>Immunogen</b>	<i>E. coli</i> -derived recombinant mouse GDF-3 Ala253-Gly366 Accession # Q07104
<b>Formulation</b>	Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details. *Small pack size (-SP) is supplied as a 0.2 µm filtered solution in PBS.

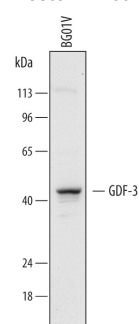
## APPLICATIONS

**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
<b>Western Blot</b>	1.5 µg/mL	See Below
<b>Immunocytochemistry</b>	5-15 µg/mL	See Below
<b>Immunohistochemistry</b>	5-15 µg/mL	See Below

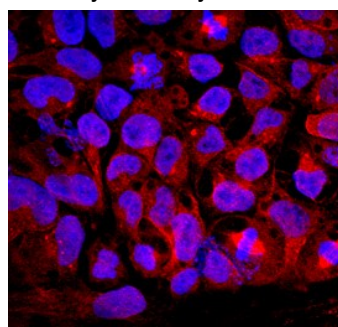
## DATA

### Western Blot



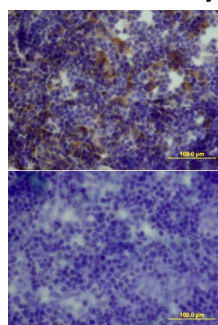
**Detection of Human GDF-3 by Western Blot.** Western blot shows lysates of BG01V human embryonic stem cells. PVDF membrane was probed with 1.5 µg/mL of Goat Anti-Human/Mouse GDF-3 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF958) followed by HRP-conjugated Anti-Goat IgG Secondary Antibody (Catalog # HAF017). A specific band was detected for GDF-3 at approximately 42 kDa (as indicated). This experiment was conducted under reducing conditions and using Immunoblot Buffer Group 1.

### Immunocytochemistry



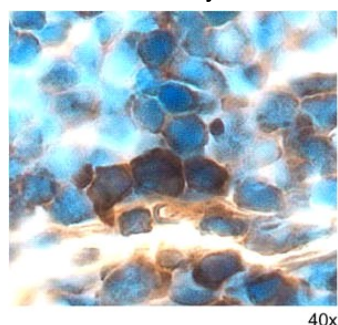
**GDF-3 in BG01V Human Stem Cells.** GDF-3 was detected in immersion fixed BG01V human embryonic stem cells using Goat Anti-Human/Mouse GDF-3 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF958) at 10 µg/mL for 3 hours at room temperature. Cells were stained using the NorthernLights™ 557-conjugated Anti-Goat IgG Secondary Antibody (red; Catalog # NLO01) and counterstained with DAPI (blue). Specific staining was localized to cytoplasm. View our protocol for [Fluorescent ICC Staining of Cells on Coverslips](#).

### Immunohistochemistry



**GDF-3 in Mouse Thymus.** GDF-3 was detected in perfusion fixed frozen sections of mouse thymus using Mouse GDF-3 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF958) at 15 µg/mL overnight at 4 °C. Tissue was stained using the Anti-Goat HRP-DAB Cell & Tissue Staining Kit (brown; Catalog # CTS008) and counterstained with hematoxylin (blue). Lower panel shows a lack of labeling if primary antibodies are omitted and tissue is stained only with secondary antibody followed by incubation with detection reagents. View our protocol for [Chromogenic IHC Staining of Frozen Tissue Sections](#).

### Immunohistochemistry



**GDF-3 in Mouse Thymus.** GDF-3 was detected in perfusion fixed frozen sections of mouse thymus using 5 µg/mL Mouse GDF-3 Antigen Affinity-purified Polyclonal Antibody (Catalog # AF958) overnight at 4 °C. Tissue was stained with the Anti-Goat HRP-DAB Cell & Tissue Staining Kit (brown; Catalog # CTS008) and counterstained with hematoxylin (blue). View our protocol for [Chromogenic IHC Staining of Frozen Tissue Sections](#).

## PREPARATION AND STORAGE

<b>Reconstitution</b>	Reconstitute at 0.2 mg/mL in sterile PBS.
<b>Shipping</b>	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. *Small pack size (-SP) is shipped with polar packs. Upon receipt, store it immediately at -20 to -70 °C
<b>Stability &amp; Storage</b>	<b>Use a manual defrost freezer and avoid repeated freeze-thaw cycles.</b> <ul style="list-style-type: none"> <li>• 12 months from date of receipt, -20 to -70 °C as supplied.</li> <li>• 1 month, 2 to 8 °C under sterile conditions after reconstitution.</li> <li>• 6 months, -20 to -70 °C under sterile conditions after reconstitution.</li> </ul>

**BACKGROUND**

GDF-3 (previously called Vgr-2) is a TGF- $\beta$  superfamily member belonging to the growth/differentiation factor family (1, 2). GDF-3 is expressed in undifferentiated embryonic stem (ES) cells, adipose tissue and the brain (2-4). In ES cells, it maintains pluripotency and influences early cell fate decisions (5, 6). For example, frog embryos injected with GDF-3 develop a secondary dorsal axis and deletion of mouse GDF-3 can produce defects in the anterior visceral endoderm of the pre-gastrulation embryo (5, 6). In adipocytes, GDF-3 is induced by a high fat diet and promotes adipogenesis (3). GDF-3 has been reported to oppose BMP's functions and to have a nodal-like activity in early development (1). The 366 amino acid (aa) mouse GDF-3 contains a 22 aa signal sequence, a 230 aa propeptide and a 114 aa mature protein that contains one potential N-glycosylation site. Most of GDF-3 is present as the prepro form, while the mature GDF-3 is presumably the secreted, active form (1). The mature protein contains the cysteine-knot structure that is conserved throughout family members. Since it lacks the fourth cysteine, which is responsible for the formation of inter-molecular disulfide bond, GDF-3 may exist as a non-covalent homodimer. Mature mouse GDF-3 shares 90%, 83%, and 83% aa identity with rat, human and canine GDF-3, respectively. Among family members, mature GDF-3 is most similar to mouse BMP-6 (45% aa identity) and *Xenopus* VG-1 (52% aa identity).

**References:**

1. Levine, A.J. and A.H. Brivanlou (2006) *Cell Cycle* **5**:1069.
2. McPherron, A.C. and S-J. Lee (1993) *J. Biol. Chem.* **268**:3444.
3. Wang, W. *et al.* (2004) *Biochem. Biophys. Res. Comm.* **321**:1024.
4. Hexige, S. *et al.* (2005) *Neurosci. Lett.* **389**:83.
5. Levine, A.J. and A.H. Brivanlou (2005) *Development* **133**:209.
6. Chen, C. *et al.* (2006) *Development* **133**:319.