



## Genorise® Recombinant Bovine BMP7 Protein

Catalog Number: GR104073

### Background

Bone morphogenetic protein 7 (BMP7, also known as osteogenic protein-1 or OP-1) is a protein that in humans is encoded by the *BMP7* gene<sup>[1]</sup> and belong to BMP family and the TGF- $\beta$  superfamily. Like other members of the BMP family of proteins, it plays a key role in the transformation of mesenchymal cells into bone and cartilage. It is inhibited by noggin and a similar protein, chordin, which are expressed in the Spemann-Mangold Organizer. BMP7 may be involved in bone homeostasis. It is expressed in the brain, kidneys and bladder.<sup>[2]</sup> BMP7 induces the phosphorylation of SMAD1 and SMAD5, which in turn induce transcription of numerous osteogenic genes.<sup>[3]</sup> It has been demonstrated that BMP7 treatment is sufficient to induce all of the genetic markers of osteoblast differentiation in many cell types.<sup>[2]</sup> Human recombinant BMP7 has surgical uses and is marketed under the brand name OP1. It can be used to aid in the fusion of vertebral bodies to prevent neurologic trauma.<sup>[4]</sup> Also in the treatment of tibial non-union, frequently in cases where a bone graft has failed.<sup>[5]</sup> BMP7 also has the potential for treatment of chronic kidney disease.<sup>[6][7]</sup> BMP7 administration has been proposed as a possible treatment for human infertility.<sup>[8]</sup> It was discovered that mice injected with BMP7 increased their production of "good" brown fat cells.<sup>[9]</sup>

### References

1. Hahn GV, et al. (November 1992). *Genomics* **14** (3): 759–62.
2. Chen D, et al. (December 2004). *Growth Factors* **22** (4): 233–41.
3. Freedman BI, et al. (2009). *J. Bone Miner. Res.* **24** (10): 1719–27.
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5. Gautschi OP, et al. (2009). *J Musculoskelet Neuronal Interact* **9** (1): 53–60.
6. Elshaier AM, et al. (2009). *Arthritis Rheum.* **60** (1): 143–54.
7. Yerges LM, et al. (2009). *J. Bone Miner. Res.* **24** (12): 2039–49.
8. Dudas PL, et al. (2009). *Nephrol. Dial. Transplant.* **24** (5): 1406–16.
9. Sengle G, et al. (2008). *J. Mol. Biol.* **381** (4): 1025–39.

### DECLARATION

THIS REAGENT IS FOR IN VITRO LABORATORY TESTING AND RESEARCH USE ONLY. DO NOT USE IT FOR CLINICAL DIAGNOSTICS. DO NOT USE OR INJECT IT IN HUMANS AND ANIMALS.

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### Description

**Source:** Chinese Hamster Ovary cell derived  
**Compositions:** Ser293-His431  
**Accession #** NP\_001192944.1  
**N-terminal Sequence Analysis:** Ser293  
**Predicted Molecular Mass:** 15.7 kDa (monomer)

### Specifications

**SDS-PAGE:** 18-20 kDa, reducing conditions  
**Activity** Measured by its ability to induce alkaline phosphatase production by ATDC5 mouse chondrogenic cells. Nakamura, K. et al. (1999) Exp. Cell Res. 250:351.  
**Endotoxin Level:** <0.01 EU per 1 µg of the protein by the LAL method.  
**Purity:** >95%, by SDS-PAGE visualized by silver staining and quantitative densitometry by Coomassie Blue staining.  
**Formulation:** Lyophilized from a 0.2 µm filtered solution in 35% (V/V) Acetonitrile and 0.1% (v/v) TFA.

### Preparation and Storage

**Reconstitution:** Reconstitute at 50 µg/mL in sterile 4 mM HCl.  
**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.

- 6 months, -20 °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.

### Related products

1. GR239031 96-well microplate sealer plastic, pack of 100
2. GR238016 50 ml Reagent Reservoir, 100/case, 5 packs/case (pack of 20)
3. GR238004 Tissue Culture 96-well Microplate, individually packed, Case of 50
4. GR238002 Microplate 12x8-Well Strip High Binding, Case of 50
5. GR238003 Microplate 12x8-Well Strip Medium Binding, Case of 50
6. GR238032 42592 Costar Stripwell Microplate 1 x 8 Flat Bottom, High Binding, Case of 100
7. GR238001 468667 Thermo Microplate 12x8-Well Strip Nunc Maxisorp F8, Case of 60
8. GR238019 1.5 ml Microcentrifuge tube with screw cap and free-standing, pack of 500