### Recombinant Human BMP-4/BMP-7 Heterodimer

**Catalog Number:** 3727-BP

#### DESCRIPTION

<table>
<thead>
<tr>
<th>Source</th>
<th>E. coli-derived</th>
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<tr>
<th>Met</th>
<th>Human BMP-4</th>
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<tbody>
<tr>
<td>(Ser23-Arg406)</td>
<td>Accession # P12644</td>
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<tr>
<th>Human BMP-7</th>
<th>Accession # P18075</th>
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<tbody>
<tr>
<td>(Ser293-His431)</td>
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**N-terminal Sequence Analysis**

- Met (BMP-4) & Ser293 (BMP-7)

**Structure / Form**

- Disulfide-linked heterodimer

**Predicted Molecular Mass**

- 13.3 kDa (BMP-4), 15.8 kDa (BMP-7)

### SPECIFICATIONS

**Activity**


The ED$_{50}$ for this effect is typically 15-75 ng/mL.

**Endotoxin Level**

<0.01 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 Acetonitrile and TFA with BSA as a carrier protein. See Certificate of Analysis for details.

### PREPARATION AND STORAGE

**Reconstitution**

Reconstitute at 100 μg/mL in sterile 4 mM HCl containing at least 0.1% human or 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

Human Bone Morphogenetic Protein 4 and 7 (BMP-4 and BMP-7), also known as osteogenic protein 1 (OP-1), belong to distinct BMP subgroups of the TGF-β superfamily and signal through heterodimeric complexes composed of type I and type II BMP receptors. BMP-4 and BMP-7 are widely expressed from early embryogenesis to adult and influence a variety of morphogenetic processes (1-3). The human BMP-4 cDNA encodes a 406 amino acid (aa) precursor that includes a 19 aa signal sequence, a 273 aa propeptide, and a 116 aa mature protein (4). The human BMP-7 cDNA encodes a 431 aa precursor that includes a 29 aa signal sequence, a 263 aa propeptide, and a 139 aa mature protein (5). BMP propeptides are removed intracellularly by proteolysis, enabling mature BMPs to form active disulfide-linked homodimers or heterodimers (1). Cell types that express both BMP components can produce the heterodimers. BMP-4 and BMP-7 are each 98% conserved between human and mouse. Human BMP-4 shares 85% aa sequence identity with human BMP-2 and less than 50% aa sequence identity with other BMPs. Human BMP-7 shares approximately 60 - 70% aa sequence identity with BMP-5, -6, and -8 and less than 50% aa sequence identity with other BMPs. BMP-4 and BMP-7, when associated into 36 kDa heterodimers (6, 7), acquire increased potency in in vitro osteogenic differentiation assays and in vivo bone formation models compared to either homodimer (6-10). Furthermore, BMP-4/BMP-7 heterodimers induce ventral mesoderm and blood formation in mid-blastula Xenopus animal cap assays, whereas the homodimers do not (11, 12). BMP-4/BMP-7 as well as either homodimer can modulate mesoderm induction by activin and prevent subsequent dorsalization of the mesoderm (12).

### References:


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