

## DESCRIPTION

<b>Species Reactivity</b>	Human
<b>Specificity</b>	Detects human BMP-10 propeptide in direct ELISAs and Western blots. In direct ELISAs, less than 1% cross-reactivity with mature recombinant human BMP-10 is observed.
<b>Source</b>	Polyclonal Goat IgG
<b>Purification</b>	Antigen Affinity-purified
<b>Immunogen</b>	Mouse myeloma cell line NS0-derived recombinant human BMP-10 propeptide (R&D Systems, Catalog # 3956-BP) Ser20-Arg313 Accession # O95393
<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.

	<b>Recommended Concentration</b>	<b>Sample</b>
<b>Western Blot</b>	0.1 µg/mL	Recombinant Human BMP-10 Propeptide (Catalog # 3956-BP)

## 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

BMP-10, along with BMP-9, GDF-5, -6, and -7, belongs to a subgroup of sequence related TGF-β superfamily proteins that signal through heterodimeric complexes composed of type I and type II BMP receptors (1 - 3). Proteolytic removal of the propeptide from the 60 kDa proprotein yields a 12 kDa mature BMP-10 which forms disulfide-linked non-glycosylated homodimers (4, 5). In transfectants, BMP-10 is secreted as a cleaved mature dimer, an uncleaved proform dimer, and an uncleaved proform monomer (4). The propeptide of human BMP-10 shares 82% amino acid sequence identity with mouse and rat proBMP-10 and 19% - 34% with the propeptides of human BMP-9, GDF-5, -6, and -7. BMP-10 is critical for the proper development of the heart and first appears at the onset of trabeculation and chamber formation (6 - 8). Homozygous BMP-10 knockout mice die *in utero* due to arrested cardiac development (7). BMP-10 is required for maintaining expression of the cardiogenic transcription factors NKX2.5 and MEF2C in developing myocardium and promoting the growth of embryonic cardiomyocytes (7, 9, 10). The BMP-10 mediated proliferation of these cells requires Notch signaling (11). NKX2.5 itself negatively regulates BMP-10 expression in cardiac myocytes (10). Multiple human congenital heart defects result from mutations in NKX2.5 and require BMP-10 expression (10). In mice, genetic knockout of ErbB leads to a similar phenotype but appears not to involve BMP-10, and knockout of the calcium channel subunit FKBP12 induces BMP-10 overexpression (7). BMP-10 in the postnatal heart promotes increased cardiomyocyte and heart size (8). BMP-10 has been shown to induce signaling through ALK-1, BMPR-IA, BMPR-IB, and BMPR-II in transfectants and non-cardiac cell lines (4, 5). A functional BMP-10 receptor in the heart has not yet been identified, although deletion of BMPR-IA or BMP-10 causes similar cardiac morphogenetic abnormalities (12).

## References:

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