


CA1045	HumanKine™ BMP-4			
	Prod. No. S2303-10UG	lot #: PR1XXXXXX XXXX	Orders & Support	866 372-7442 support@primorigen.com
	<i>For Research Use Only Not intended for use in humans or animals</i>		Web	www.primorigen.com

Pack Size	10 µg
Species	Human
Expression System	HEK 293*
	Animal-derived product free
Molecular Mass	34 kDa homodimer, glycosylated
Activity	Typically 2 to 10 ng/mL ED50
Purity	≥ 95%
Endotoxin	≤ 1 EU/µg

Background: Recombinant human BMP-4 expressed in engineered human cells. BMP-4 belongs to the bone morphogenic protein family that is a subgroup of the TGF-beta superfamily. BMP-4 is a 34 kDa glycosylated homodimer with a disulfide linkage. BMP-4 provides ventralizing signals for existing mesoderm and has a crucial role in mammalian hematopoietic stem cells. This cytokine is important to the onset of endochondral bone formation in humans and is expressed from early embryogenesis through adulthood. BMP-4 is essential in epidermal determination, the development of multiple organs, tissue repair, mesenchyme formation, and suppression of neural induction.

Note: Representative data are shown below (not Lot-specific).

Formulation:

Lyophilized from a 0.2 micron filtered solution in PBS

Reconstitution:

Briefly centrifuge the vial before opening. It is recommended to reconstitute the protein in sterile 4mM HCl containing 0.1% endotoxin-free recombinant human serum albumin.

Storage and Stability:

Lyophilized products are stable for one year at -20°C to -80°C from date of receipt. Store only at -20°C to -80°C in working aliquots. Avoid repeated freeze-thaw cycles.

Quality Control Testing

Assay:

The specific activity assay was determined by the dose dependent induction of alkaline phosphatase production in the ATDC-5 cell line (Mouse chondrogenic cell line)

Purity Confirmation:

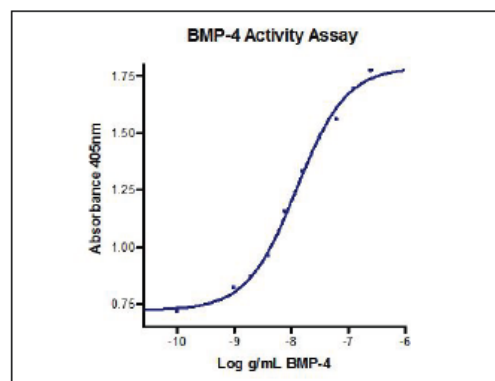
The protein was resolved by SDS-polyacrylamide gel electrophoresis and the gel was stained with Coomassie blue.

References:

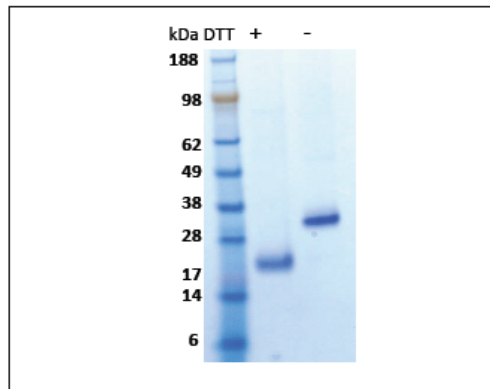
Chen, D., *et al*, (2004) *Growth Factors* 22, 233-241
Nakamura, K., *et al*, (1999) *Exp Cell Research* 250, 351-363

**All HumanKine™ cytokines are expressed in HEK 293 cells.
HumanKine™ is a trademark of HumanZyme Inc.*

A. Activity Assay



B. SDS-PAGE



Limited Use License “For Research Use Only”

This product is to be used for Research Purposes only and for no other purpose. The term “Research Purposes” means scientific research programs directly under the user’s control, which are specifically directed to the purposes of internal research and not for any Commercial Purpose. The purchase and/or use of this product conveys to the user the non-transferable right to use the product and the components of the product in research conducted by the user. The user will not reformulate the Product and shall not sell or otherwise transfer this product, its components, or materials made therefrom to any third party. User shall not use this product or its components for Commercial Purposes until it has obtained a license for this purpose. The term “Commercial Purposes” shall mean any activity by a party for consideration and may include, but is not limited to, use of the product or its components (i) in manufacturing, (ii) to provide a service, information or data to a third party (e.g. fee for sample testing), (iii) for therapeutic, diagnostic or prophylactic purposes, (iv) for resale, whether or not such product or its components are resold for use in research, or (v) in a quality control or quality assurance process for the manufacture of a product for sale. The use of this product by the user constitutes agreement with the terms of this limited use label license for Primorigen Biosciences Inc.”

Primorigen Biosciences Inc. warrants that its products will conform to the standards stated in its product specification sheets in effect at the time of shipment when used as directed. Primorigen Biosciences Inc. will replace, free of charge, any product that does not conform to the specifications, but only when used as directed. This warranty limits the liability of Primorigen Biosciences Inc. to only the replacement of the product. THIS WARRANTY IS EXCLUSIVE, and Primorigen Biosciences INC. MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. The stated express warranties, and the remedy provided for breach thereof, are in lieu of all other liability or obligations of Primorigen Biosciences INC. for any damages whatsoever arising out of or in connection with the delivery, use, performance, or the inability to use any of its products. IN NO EVENT SHALL Primorigen Biosciences INC. BE LIABLE UNDER ANY LEGAL THEORY (INCLUDING BUT NOT LIMITED TO CONTRACT, NEGLIGENCE, STRICT LIABILITY IN TORT, OR WARRANTY OF ANY KIND) FOR ANY INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES (INCLUDING BUT NOT LIMITED TO LOST PROFITS). Without limiting the effect of the preceding sentence, the maximum liability, if any, of Primorigen Biosciences Inc., shall not exceed the purchase price paid by PURCHASER for the product. The use of the product by the user constitutes user's understanding of and agreement with the terms of this limited warranty and limited liability policy.