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# BMPR1B Human

*Bone Morphogenetic protein Receptor-1B Human Recombinant*
*CYK0096*

## Product Overview

| | |
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| Name | BMPR1B Human |

**Description**

Bone Morphogenetic protein Receptor-1B Human Recombinant

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| Accession (Primary) | O00238 |

**Synonyms**

Bone Morphogenetic Protein Receptor, Type IB, BMP Type-1B Receptor, EC 2.7.11.30, BMPR-1B, ALK6, Bone Morphogenetic Protein Receptor Type-1B, Serine/Threonine Receptor Kinase, CDw293 Antigen, EC 2.7.11, CDw293, ALK-6, Bone morphogenetic protein receptor type-1B.

**Introduction**

Bone Morphogenetic protein Receptor-1B, also known as BMPR1B belongs to the TKL Ser/Thr protein kinase family. BMPR1B is on ligand binding, forms a receptor complex consisting of two type II and two type I transmembrane serine/threonine kinases. Type II receptors phosphorylate as well as activate type I receptors which autophosphorylate, afterward bind and activate SMAD transcriptional regulators. BMPR1B is receptor for BMP7/OP-1 as well as GDF5.

**Source**

Escherichia Coli.

**Physical Appearance**

Sterile Filtered colorless solution.

**Formulation**

BMPR1B protein solution (0.5mg/ml) containing Phosphate buffered saline (pH7.4), 20% glycerol, 1mM DTT and 0.1mM PMSF.

**Stability**

Store at 4°C if entire vial will be used within 2-4 weeks. Store, frozen at -20°C for longer periods of time. For long term storage it is recommended to add a carrier protein (0.1% HSA or BSA). Avoid multiple freeze-thaw cycles.

**Purity**

Greater than 80.0% as determined by SDS-PAGE.

**Amino acid sequence**

MGSSHHHHHH SSGLVPRGSH MGS KKEDGES TAPTPRPKVL RCKCHHHCPE DSVNNICSTD GYCFTMIEED

DSGLPVVTSG CLGLEGSDFQ CRDTPIPHQR RSIECCTERN ECNKDLHPTL PPLKNRDFVD GPIHHR.

## Background

Bone Morphogenetic Protein Receptor-1B Human Recombinant: A Key Regulator of Cellular Signaling in Development and Disease Abstract: Bone Morphogenetic Protein Receptor-1B (BMPR1B) human recombinant is a critical component of the bone morphogenetic protein (BMP) signaling pathway, governing cellular processes such as embryogenesis, tissue homeostasis, and disease progression. This research paper provides a comprehensive analysis of BMPR1B, including its characteristics, signaling mechanisms, and potential therapeutic applications. Additionally, innovative methodologies for the production and optimization of BMPR1B human recombinant are proposed, shedding light on its future implications in the field of regenerative medicine. Introduction: The precise regulation of cellular signaling pathways is essential for proper development and tissue maintenance. BMPR1B, a key receptor in the BMP pathway, plays a crucial role in various biological processes. This paper explores the unique features of BMPR1B and presents novel approaches for its production and optimization, aiming to unravel its therapeutic potential in a wide range of developmental and disease contexts. Characteristics and Signaling Mechanisms: BMPR1B belongs to the serine/threonine kinase receptor family and is predominantly expressed in embryonic tissues, skeletal structures, and reproductive organs. Upon binding to BMP ligands, BMPR1B initiates downstream signaling cascades, including Smad-dependent and Smad-independent pathways. These pathways regulate gene expression, cellular proliferation, differentiation, and apoptosis, ultimately influencing tissue development and homeostasis. Production of BMPR1B Human Recombinant: Efficient production methodologies are pivotal for harnessing the therapeutic potential of BMPR1B human recombinant. Mammalian expression systems, such as Chinese hamster ovary (CHO) cells, have been widely employed to ensure proper folding and post-translational modifications of the receptor. Optimization strategies, including codon optimization and vector engineering, have been utilized to enhance production efficiency. Purification techniques, such as affinity chromatography and size exclusion chromatography, have been optimized to obtain high-quality BMPR1B recombinant protein. Potential Therapeutic Applications: BMPR1B human recombinant holds tremendous promise in the field of regenerative medicine and disease therapy. Dysregulation of the BMP signaling pathway has been implicated in various developmental disorders, including skeletal abnormalities and congenital malformations. Modulating BMPR1B activity using BMPR1B human recombinant may offer a targeted approach for promoting tissue regeneration and repair in these conditions. Furthermore, BMPR1B signaling is involved in several diseases, such as cancer and cardiovascular disorders, highlighting its potential as a therapeutic target for intervention. Conclusion: BMPR1B human recombinant represents a vital regulator in cellular signaling, with significant implications in development and disease. Optimizing production methodologies and expanding our understanding of its signaling mechanisms will further enhance its therapeutic potential. With its involvement in various biological processes and disease contexts, BMPR1B human recombinant emerges as a promising tool for regenerative medicine and targeted therapeutics.

## References

Bibliography: ten Dijke P, Yamashita H, Sampath TK, et al. Identification of type I receptors for osteogenic protein-1 and bone morphogenetic protein-4. J Biol Chem. 1994;269(25):16985-16988. Rosenzweig BL, Imamura T, Okadome

T, et al. Cloning and characterization of a human type II receptor for bone morphogenetic proteins. Proc Natl Acad Sci USA. 1995;92(17):7632-7636. Miyazono K, Kamiya Y, Morikawa M. Bone morphogenetic protein receptors and signal transduction. J Biochem. 2010;147(1):35-51. Miyazono K, ten Dijke P, Heldin CH. TGF-β signaling by Smad proteins. Adv Immunol. 2000;75:115-157. Chang C, Hemmati-Brivanlou A. Cell signaling. Receptors, Smads, and transcription factors in the transforming growth factor-β superfamily signaling. Sci STKE. 1999;1999(15):re8.

**Precautions**

BMPR1B Human is for research use only and not for use in diagnostic or therapeutic procedures.

# Target Information: ( O00238 )

# Background

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## References for protein:

Bibliography: ten Dijke P, Yamashita H, Sampath TK, et al. Identification of type I receptors for osteogenic protein-1 and bone morphogenetic protein-4. J Biol Chem. 1994;269(25):16985-16988. Rosenzweig BL, Imamura T, Okadome T, et al. Cloning and characterization of a human type II receptor for bone morphogenetic proteins. Proc Natl Acad Sci USA. 1995;92(17):7632-7636. Miyazono K, Kamiya Y, Morikawa M. Bone morphogenetic protein receptors and signal transduction. J Biochem. 2010;147(1):35-51. Miyazono K, ten Dijke P, Heldin CH. TGF-β signaling by Smad proteins. Adv Immunol. 2000;75:115-157. Chang C, Hemmati-Brivanlou A. Cell signaling. Receptors, Smads, and transcription factors in the transforming growth factor-β superfamily signaling. Sci STKE. 1999;1999(15):re8.