

Recombinant Human XBP1 Protein

For Research Use Only

1. Basic Product Information

Catalog No.: REP51074

Size: 10ug, 100ug

Protein Name: X-box-binding protein 1 (XBP-1) (Tax-responsive element-binding protein 5) (TREB-5) [Cleaved into: X-box-binding protein 1, cytoplasmic form; X-box-binding protein 1, luminal form]

Synonym: XBP1, TREB5, XBP2

UniProt ID: P17861

UniProt Link: www.uniprot.org/uniprotkb/P17861/entry

Species Source: Human

Expression System: HEK293T eukaryotic cell expression system Sequence

Length: 261 AA

Molecular Weight: 29 KD

Protein Tag: C-terminal His6

2. Amino Acid Sequence

MVVVAAAPNPADGTPKVL LLSGQPASAAGAPAGQALPLM VPAQRGASPEAASGGLPQARKRQRLT
HLSPEEKALRRKLKNRVAAQTARDRKKARMSELEQQVVDLEENQKLLLENQLLREKTHGLVVENQ
ELRQRLGMDALVAEEEEAEAKGNEVRPVAGSAESAALRLRAPLQQVQAQLSPLQNISPWILAVLTLQI
QSLISCWAFWTTWTQSCSSNALPQSLPAWRSSQRSTQKDPVPYQPPFLCQWGRHQPSWKPLMN

3. Buffer Composition

Liquid format: PBS-based buffer containing 50% glycerol. Glycerol concentration can be customized upon customer request; please state special requirements when placing your order.

Lyophilized format: Buffer before lyophilization is PBS supplemented with 6% trehalose.

4. Storage Conditions



Upon receipt, store the product at -20 °C or -80 °C. Aliquot the product for on-demand use to preserve protein activity and prevent denaturation and inactivation caused by repeated freeze-thaw cycles.

5. Product Description

This product is recombinant X-box-binding protein 1 (XBP-1) (Tax-responsive element-binding protein 5) (TREB-5) [Cleaved into: X-box-binding protein 1, cytoplasmic form; X-box-binding protein 1, luminal form] produced using the HEK293T eukaryotic cell expression system. It is suitable for in-vitro functional assays, protein-protein interaction studies, antibody preparation and other biomedical research applications.

Protein Function: Functions as a transcription factor during endoplasmic reticulum (ER) stress by regulating the unfolded protein response (UPR). Required for cardiac myogenesis and hepatogenesis during embryonic development, and the development of secretory tissues such as exocrine pancreas and salivary gland (By similarity). Involved in terminal differentiation of B lymphocytes to plasma cells and production of immunoglobulins (PubMed:11460154). Modulates the cellular response to ER stress in a PIK3R-dependent manner (PubMed:20348923). Binds to the cis-acting X box present in the promoter regions of major histocompatibility complex class II genes (PubMed:8349596). Involved in VEGF-induced endothelial cell (EC) proliferation and retinal blood vessel formation during embryonic development but also for angiogenesis in adult tissues under ischemic conditions. Also functions as a major regulator of the UPR in obesity-induced insulin resistance and type 2 diabetes for the management of obesity and diabetes prevention (By similarity).; [Isoform 1]: Plays a role in the unconventional cytoplasmic splicing processing of its own mRNA triggered by the endoplasmic reticulum (ER) transmembrane endoribonuclease ERN1: upon ER stress, the emerging XBP1 polypeptide chain, as part of a mRNA-ribosome-nascent chain (R-RNC) complex, cotranslationally recruits its own unprocessed mRNA through transient docking to the ER membrane and translational pausing, therefore facilitating efficient IRE1-mediated XBP1 mRNA isoform 2 production (PubMed:19394296, PubMed:21233347). In endothelial cells (EC), associated with KDR, promotes IRE1-mediated XBP1 mRNA isoform 2 productions in a vascular endothelial growth factor (VEGF)-dependent manner, leading to EC proliferation and angiogenesis (PubMed:23529610). Functions as a negative feed-back regulator of the potent transcription factor XBP1 isoform 2 protein levels through proteasome-mediated degradation, thus preventing the constitutive activation of the ER stress response signaling pathway (PubMed:16461360, PubMed:25239945). Inhibits the transactivation activity of XBP1 isoform 2 in myeloma cells (By similarity). Acts as a weak transcriptional factor (PubMed:8657566). Together with HDAC3, contributes to the activation of NFE2L2-mediated HMOX1 transcription factor gene expression in a PI(3)K/mTORC2/Akt-dependent signaling pathway leading to EC survival under disturbed flow/oxidative stress (PubMed:25190803). Binds to the ER stress response element (ERSE) upon ER stress (PubMed:11779464). Binds to the consensus 5'-GATGACGTG[TG]N(3)[AT]T-3' sequence related to cAMP responsive element (CRE)-like sequences (PubMed:8657566). Binds the Tax-responsive element (TRE) present in the long terminal repeat (LTR) of T-cell leukemia virus type 1 (HTLV-I) and to the TPA response elements (TRE) (PubMed:1903538, PubMed:2196176, PubMed:2321018, PubMed:8657566). Associates preferentially to the HDAC3 gene promoter region in a static flow-dependent manner (PubMed:25190803). Binds to the CDH5/VE-cadherin gene promoter region (PubMed:19416856).; [Isoform 2]: Functions as a stress-inducible potent transcriptional activator during endoplasmic reticulum (ER) stress by inducing unfolded protein response (UPR) target genes via binding to the UPR element (UPRE). Up-regulates target genes encoding ER chaperones and ER-associated degradation (ERAD) components to enhance the capacity of productive folding and degradation mechanism, respectively, in order to maintain the homeostasis of the ER under ER stress (PubMed:11779464, PubMed:25239945). Plays a role in the production of immunoglobulins and interleukin-6 in the presence of stimuli required for plasma cell differentiation (By similarity). Induces phospholipid biosynthesis and ER expansion (PubMed:15466483). Contributes to the VEGF-induced endothelial cell (EC) growth and proliferation in a Akt/GSK-dependent and/or -independent signaling pathway, respectively, leading to beta-catenin nuclear translocation and E2F2 gene expression (PubMed:23529610). Promotes umbilical vein EC apoptosis and atherosclerosis development in a caspase-dependent signaling pathway, and

contributes to VEGF-induced EC proliferation and angiogenesis in adult tissues under ischemic conditions (PubMed:19416856, PubMed:23529610). Involved in the regulation of endostatin-induced autophagy in EC through BECN1 transcriptional activation (PubMed:23184933). Plays a role as an oncogene by promoting tumor progression: stimulates zinc finger protein SNAI1 transcription to induce epithelial-to-mesenchymal (EMT) transition, cell migration and invasion of breast cancer cells (PubMed:25280941). Involved in adipocyte differentiation by regulating lipogenic gene expression during lactation. Plays a role in the survival of both dopaminergic neurons of the substantia nigra pars compacta (SNpc), by maintaining protein homeostasis and of myeloma cells. Increases insulin sensitivity in the liver as a response to a high carbohydrate diet, resulting in improved glucose tolerance. Also improves glucose homeostasis in an ER stress- and/or insulin-independent manner through both binding and proteasome-induced degradation of the transcription factor FOXO1, hence resulting in suppression of gluconeogenic genes expression and in a reduction of blood glucose levels. Controls the induction of de novo fatty acid synthesis in hepatocytes by regulating the expression of a subset of lipogenic genes in an ER stress- and UPR-independent manner (By similarity). Associates preferentially to the HDAC3 gene promoter region in a disturbed flow-dependent manner (PubMed:25190803). Binds to the BECN1 gene promoter region (PubMed:23184933). Binds to the CDH5/VE-cadherin gene promoter region (PubMed:19416856). Binds to the ER stress response element (ERSE) upon ER stress (PubMed:11779464). Binds to the 5'-CCACG-3' motif in the PPARG promoter (By similarity). Binds to the HEPN1 gene promoter region and activates transcription (PubMed:25448679).

Subcellular Localization: Endoplasmic reticulum . Note=Colocalizes with ERN1 and KDR in the endoplasmic reticulum in endothelial cells in a vascular endothelial growth factor (VEGF)-dependent manner (PubMed:23529610).; [Isoform 1]: Nucleus . Cytoplasm . Endoplasmic reticulum membrane ; Single-pass type II membrane protein . Endoplasmic reticulum membrane ; Peripheral membrane protein . Membrane ; Peripheral membrane protein . Note=Shows no preferential localization to either the nucleus or the cytoplasm (By similarity). Shuttles between the nucleus and the cytoplasm in a CRM1-dependent manner (PubMed:16461360). Localizes predominantly at the endoplasmic reticulum membrane as a membrane-spanning protein; whereas may be only marginally localized on the cytosolic side of the ER membrane as a peripheral membrane (PubMed:19394296, PubMed:25190803).; [Isoform 2]: Nucleus . Cytoplasm . Note=Localizes predominantly in the nucleus. Colocalizes in the nucleus with SIRT1. Translocates into the nucleus in a PIK3R-, ER stress-induced- and/or insulin-dependent manner (By similarity).; [X-box-binding protein 1, cytoplasmic form]: Cytoplasm . Nucleus . Note=Localizes in the cytoplasm and nucleus after HM13/SPP-mediated intramembrane proteolytic cleavage of isoform 1 (PubMed:25239945).

6. Notes

- Avoid repeated freeze-thaw cycles to maintain protein stability and biological activity.
- Please specify special buffer- composition requirements at the time of order placement.
- For research use only. Not intended for clinical diagnosis, therapeutic use or commercial manufacturing.