abcam

ab238456

Anti-XBP1 antibody [EPR22004] - BSA and Azide free

Recombinant | RabMAb

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	EPR22004
Purification technique	Affinity purification Protein A
Concentration	1.059 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Human
Dilution info	-

Notes	-

Expected

Species	Mouse
Dilution info	Use at an assay dependent concentration.
Notes	-

WB

Tested

Species	Mouse, Human
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	-

Expected

Species	Mouse
Dilution info	Use at an assay dependent concentration.
Notes	-

Target data

See full target information XBP1

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 atherosclerotisis 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).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C
Storage information	Do Not Freeze

Notes

ab238456 is the carrier-free version of ab220783.

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Conjugation ready
Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes, oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

Compatibility
This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	XBP1 also known as X-box binding protein 1 is a transcription factor with a mass of approximately 33 kDa. It is mainly expressed in the endoplasmic reticulum of cells where it plays a significant role in regulating the unfolded protein response (UPR). XBP1 exists in two forms: an unspliced form (XBP1u) and a spliced form (XBP1s). The splicing of XBP1 mRNA is mediated by the endoribonuclease IRE1 and is a response to endoplasmic reticulum stress. This process results in a shift of the reading frame which leads to the production of a new functional transcription factor.
Biological function summary	The action of XBP1 participates in processes critical for cell survival under stress conditions particularly in the UPR. It activates genes involved in protein folding secretion and degradation to alleviate stress within the endoplasmic reticulum. XBP1 acts as part of the larger mechanism that ensures cellular homeostasis by maintaining protein quality control. It forms a complex network with other transcription factors ensuring an integrated response to stress stimuli in various tissues including pancreatic beta cells and immune cells.
Pathways	XBP1 functions intricately within the UPR and is linked to the insulin signaling pathway. It works alongside proteins such as ATF6 and PERK to coordinate the cellular response to endoplasmic reticulum stress and sustain essential cellular processes. The IRE1-XBP1 pathway represents one arm of the UPR and shows interaction with C/EBP homologous protein (CHOP) as part of the stress signaling pathways modulating apoptosis if adaptation fails. XBP1 also influences lipid metabolism and cellular differentiation through its pathway connections impacting wide-ranging physiological processes.
Associated diseases and disorders	Dysfunctions of XBP1 have associations with metabolic diseases and multiple myeloma. Altered XBP1 activity links to diabetes due to its role in protein homeostasis in pancreatic beta cells involving modulation of insulin secretion and sensitivity. In cancer particularly multiple myeloma XBP1 interacts with proteins such as B-cell maturation antigen (BCMA) influencing cell survival and proliferation. Targeting the XBP1 signaling axis shows potential as a therapeutic strategy for managing disorders resulting from dysregulated protein folding and stress responses.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

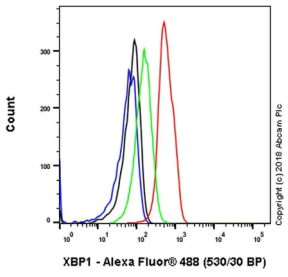
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

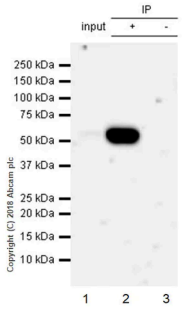
4 product images



Flow Cytometry (Intracellular) - Anti-XBP1 antibody [EPR22004] - BSA and Azide free (ab238456)

XBP1 Flow Cytometry (Intracellular) staining using rabbit Anti-XBP1 antibody

Intracellular flow cytometric analysis of 4% paraformaldehyde-fixed, 90% methanol permeabilized Huh7 (human hepatocellular carcinoma epithelial cell line) cells treated with 300 nM Thapsigargin for 18 hours (red) / Untreated control (green) labeling XBP1 with ab220783 at 1/100 dilution compared with a Rabbit IgG, monoclonal [EPR25A] - Isotype Control (ab172730) (black) and an unlabeled control (cells incubated with secondary antibody only) (blue). Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) at 1/2000 dilution was used as the secondary antibody.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol and sodium azide (ab220783).



Immunoprecipitation - Anti-XBP1 antibody [EPR22004] - BSA and Azide free (ab238456)

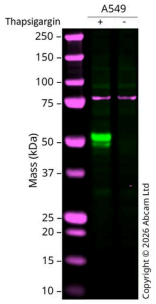
XBP1 was immunoprecipitated from 0.35 mg Huh7 (human hepatocellular carcinoma epithelial cell line) treated with 300 nM Thapsigargin for 18 hours whole cell lysate with ab220783 at 1/50 dilution. Western blot was performed from the immunoprecipitate using ab220783 at 1/1000 dilution. VeriBlot for IP Detection Reagent (HRP) (ab131366), was used for detection at 1/5000 dilution.
Lane 1: Huh7 treated with 300 nM Thapsigargin for 18 hours whole cell lysate 10 µg (Input).
Lane 2: ab220783 IP in Huh7 treated with 300 nM Thapsigargin for 18 hours whole cell lysate (+).
Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab220783 in Huh7 treated with 300 nM Thapsigargin for 18 hours whole cell lysate (-).

Blocking/Dilution buffer: 5% NFDM/TBST.
Exposure time: 3 minutes.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab220783).

All lanes:
Immunoprecipitation - Anti-XBP1 antibody [EPR22004] (ab220783)

Predicted band size: 29 kDa



Western blot - Anti-XBP1 antibody [EPR22004] - BSA and Azide free (ab238456)

XBP1 Western blot staining using rabbit Anti-XBP1 antibody

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab220783).

Western blot: Anti-XBP1 antibody [EPR22004] ab220783 staining at 1/1000 dilution, shown in green; Mouse anti-CANX ab238078 loading control staining at 1/20000 dilution, shown in magenta. A band was observed at 55 kDa. To generate this image, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in 5% Milk in TBS-0.1 % Tween® 20 (TBS-T) before incubation with primary antibodies overnight at 4 °C. Blots were washed four times in TBS-T, incubated with secondary antibodies for 1 h at room temperature, washed again four times then imaged. Secondary antibodies used were Goat anti-Rabbit 800CW and Goat anti-Mouse 680RD at 1/20,000 dilution.
All lanes:
Western blot - Anti-XBP1 antibody [EPR22004] (ab220783) at 1/1000 dilution

Lane 1:
Wild-type A549 Thapsigargin (1uM, 5hr) cell lysates at 20 µg

Lane 2:
Wild-type A549 Vehicle Control Thapsigargin (0uM, 5hr) cell lysates at 20 µg

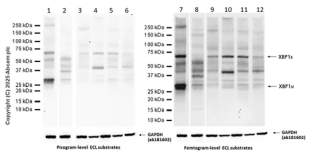
Secondary

All lanes:
Goat anti-Rabbit 800CW & Goat anti-Mouse 680RD at 1/20000 dilution

Performed under reducing conditions.

Predicted band size: 29 kDa

Observed band size: 55 kDa



Western blot - Anti-XBP1 antibody [EPR22004] - BSA and Azide free (ab238456)

XBP1 Western blot staining using rabbit Anti-XBP1 antibody

This data was developed using ab220783, the same antibody clone in a different buffer formulation.
Blocking and diluting buffer and concentration: 5% NFDM/TBST.

In Western blot, Anti-GAPDH antibody [EPR16891] - Loading Control (ab181602) staining at 1/1000000 dilution.

Lanes 1-6: Picogram-level ECL substrates.

Lanes 7-12: Femtogram-level ECL substrates.

All lanes:
Western blot - Anti-XBP1 antibody [EPR22004] (ab220783) at 1/1000 dilution

Lanes 1 and 7:
Mouse breast tissue lysate at 20 µg

Lanes 2 and 8:
Mouse liver tissue lysate at 20 µg

Lanes 3 and 9:
Mouse testis tissue lysate at 20 µg

Lanes 4 and 10:
Mouse heart tissue lysate at 20 µg

Lanes 5 and 11:
Mouse lung tissue lysate at 20 µg

Lanes 6 and 12:
Mouse spleen tissue lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Observed band size: 27 kDa, 55 kDa

Exposure time: 180s

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.