abcam

ab108615

Anti-GRP78 BiP antibody [EPR4041(2)]

Recombinant | RabMAb | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR4041(2)
Purification technique	Affinity purification Protein A
Specificity	Stimulation may be required to allow detection of the target protein due to low levels of endogenous expression in some samples. Please see images below for recommended treatment conditions and positive controls. The mouse and rat recommendation is based on the WB results. We do not guarantee IHC-P for mouse and rat.
Concentration	1.765 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human

Dilution info	1/100 - 1/500
Notes	**For unpurified, use 1/50 - 1/100.** Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Not recommended

Species	Mouse, Rat
Dilution info	-
Notes	-

WB

Tested

Species	Mouse
Dilution info	1/1000 - 1/10000
Notes	Stimulation may be required to allow detection of the target protein due to low levels of endogenous expression in some samples. Please see images for recommended treatment conditions and positive controls.

Species	Rat
Dilution info	1/1000 - 1/10000
Notes	Stimulation may be required to allow detection of the target protein due to low levels of endogenous expression in some samples. Please see images for recommended treatment conditions and positive controls.

Species	Human
Dilution info	1/1000 - 1/10000
Notes	Stimulation may be required to allow detection of the target protein due to low levels of endogenous expression in some samples. Please see images for recommended treatment conditions and positive controls.

ICC/IF

Not recommended

Species	Mouse, Rat, Human
Dilution info	-

Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/200
Notes	-

Not recommended

Species	Mouse, Rat
Dilution info	-
Notes	-

Target data

See full target information HSPA5

Function

Endoplasmic reticulum chaperone that plays a key role in protein folding and quality control in the endoplasmic reticulum lumen (PubMed:2294010, PubMed:23769672, PubMed:23990668, PubMed:28332555). Involved in the correct folding of proteins and degradation of misfolded proteins via its interaction with DNAJC10/ERdj5, probably to facilitate the release of DNAJC10/ERdj5 from its substrate (By similarity). Acts as a key repressor of the EIF2AK3/PERK and ERN1/IRE1-mediated unfolded protein response (UPR) (PubMed:11907036, PubMed:1550958, PubMed:19538957, PubMed:36739529). In the unstressed endoplasmic reticulum, recruited by DNAJB9/ERdj4 to the luminal region of ERN1/IRE1, leading to disrupt the dimerization of ERN1/IRE1, thereby inactivating ERN1/IRE1 (By similarity). Also binds and inactivates EIF2AK3/PERK in unstressed cells (PubMed:11907036). Accumulation of misfolded protein in the endoplasmic reticulum causes release of HSPA5/BiP from ERN1/IRE1 and EIF2AK3/PERK, allowing their homodimerization and subsequent activation (PubMed:11907036). Plays an auxiliary role in post-translational transport of small presecretory proteins across endoplasmic reticulum (ER). May function as an allosteric modulator for SEC61 channel-forming translocon complex, likely cooperating with SEC62 to enable the productive insertion of these precursors into SEC61 channel. Appears to specifically regulate translocation of precursors having inhibitory residues in their mature region that weaken channel gating. May also play a role in apoptosis and cell proliferation (PubMed:26045166). (Microbial infection) Plays an important role in viral binding to the host cell membrane and entry for several flaviruses such as Dengue virus, Zika virus and Japanese encephalitis virus (PubMed:15098107, PubMed:28053106, PubMed:33432092). Acts as a component of the cellular receptor for Dengue virus serotype 2/DENV-2 on human liver cells

(PubMed:15098107). (Microbial infection) Acts as a receptor for CotH proteins expressed by fungi of the order mucorales, the causative agent of mucormycosis, which plays an important role in epithelial cell invasion by the fungi (PubMed:20484814, PubMed:24355926, PubMed:32487760). Acts as a receptor for R.delemar CotH3 in nasal epithelial cells, which may be an early step in rhinoorbital/cerebral mucormycosis (RCM) disease progression (PubMed:32487760).

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Stable for 12 months at -20°C

Notes

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.

Supplementary info

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

Activity summary	GRP78 also known as BiP or HSPA5 is a protein that plays an important role in protein folding and assembly within the endoplasmic reticulum (ER). It weighs approximately 78 kDa hence the name GRP78. This chaperone protein binds to

	hydrophobic regions of nascent polypeptides to prevent aggregation and misfolding. GRP78 is expressed in high levels in the ER of cells where it monitors cellular stress and aids in maintaining ER homeostasis.
Biological function summary	GRP78/BiP is important in the unfolded protein response (UPR) a cellular stress response related to the ER. It is part of a complex that manages protein load inside the ER by regulating the fold of nascent proteins and interacting with other ER stress sensors like IRE1 PERK and ATF6. This function is essential for maintaining proper protein conformation in the ER especially during physiological stress ensuring that only correctly folded proteins proceed to the Golgi apparatus.
Pathways	GRP78/BiP significantly affects the UPR and apoptosis pathways. By controlling protein folding and quality in the ER GRP78 helps prevent cell death under stress conditions. It works closely with other proteins like ATF6 which activates stress response genes. In normal conditions GRP78 keeps stress transducers inactivated but during stress it dissociates allowing UPR signaling to occur.
Associated diseases and disorders	GRP78/BiP has been implicated in cancer and neurodegenerative diseases. Overexpression of GRP78 is associated with tumor proliferation and poor prognosis in various cancers as cancer cells heavily rely on its protein-folding capacity to survive. Additionally in neurodegenerative diseases misfolded proteins can accumulate leading GRP78 to attempt counteracting these toxic aggregations highlighting its connection with proteins like tau and amyloid-beta in diseases such as Alzheimer's.

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

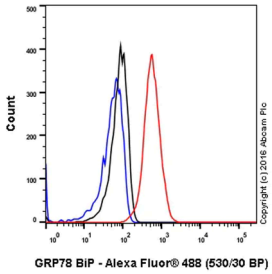
We do not recommend this combination. It is not covered by our product promise.

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:

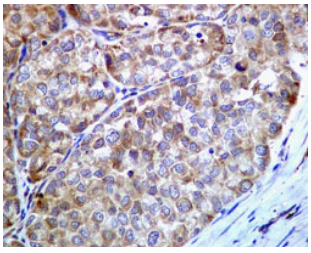
10 product images



Flow Cytometry (Intracellular) - Anti-GRP78 BiP antibody [EPR4041(2)] (ab108615)

GRP78 BiP Flow Cytometry (Intracellular) staining using rabbit Anti-GRP78 BiP antibody

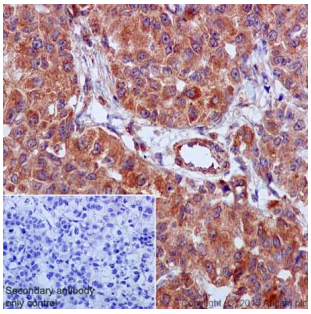
Intracellular Flow Cytometry analysis of HeLa (human cervix adenocarcinoma) cells labeling GRP78 BiP with purified ab108615 at 1/200 dilution (10ug/mL) (red). Cells were fixed with 4% paraformaldehyde and permeabilised with 90% methanol. A Goat anti rabbit IgG (Alexa Fluorr® 488) (1/2000 dilution) was used as the secondary antibody. Rabbit monoclonal IgG (Black) was used as the isotype control, cells without incubation with primary antibody and secondary antibody (Blue) were used as the unlabeled control.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-GRP78 BiP antibody [EPR4041(2)] (ab108615)

GRP78 BiP Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-GRP78 BiP antibody

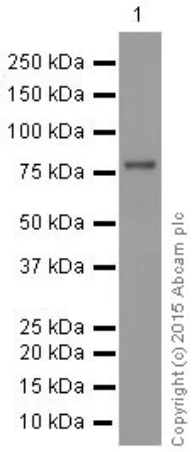
Unpurified ab108615 at 1/50 dilution staining GRP78 BiP in Human breast carcinoma tissue by Immunohistochemistry Formalin-fixed, Paraffin-embedded tissue.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-GRP78 BiP antibody [EPR4041(2)] (ab108615)

GRP78 BiP Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-GRP78 BiP antibody

Immunohistochemical staining of paraffin embedded human hepatocellular carcinoma with purified ab108615 at a working dilution of 1/500. The secondary antibody used is HRP goat anti-rabbit IgG H&L (ab97051) at 1/500. The sample is counter-stained with hematoxylin. Antigen retrieval was perfomed using Tris-EDTA buffer, pH 9.0. PBS was used instead of the primary antibody as the negative control, and is shown in the inset.



Western blot - Anti-GRP78 BiP antibody [EPR4041(2)] (ab108615)

GRP78 BiP Western blot staining of HepG2 using rabbit Anti-GRP78 BiP antibody

Blocking buffer: 5% NFDM/TBST
Dilution buffer: 5% NFDM/TBST
All lanes:
Western blot - Anti-GRP78 BiP antibody [EPR4041(2)] (ab108615) at 1/5000 dilution

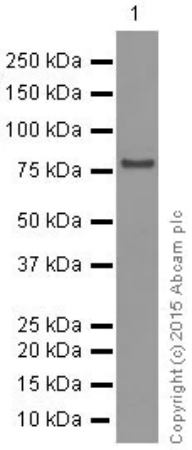
All lanes:
HepG2 at 20 µg

Secondary

All lanes:
HRP goat anti-rabbit IgG (H+L) at 1/50000 dilution

Predicted band size: 72 kDa

Observed band size: 78 kDa



Western blot - Anti-GRP78 BiP antibody [EPR4041(2)] (ab108615)

Blocking buffer: 5% NFDM/TBST
Dilution buffer: 5% NFDM/TBST
All lanes:
Western blot - Anti-GRP78 BiP antibody [EPR4041(2)] (ab108615) at 1/1000 dilution

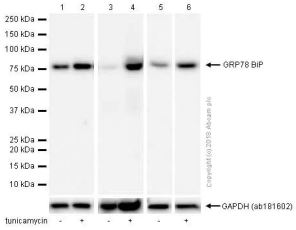
All lanes:
LnCaP at 20 µg

Secondary

All lanes:
HRP goat anti-rabbit IgG (H+L) at 1/50000 dilution

Predicted band size: 72 kDa

Observed band size: 78 kDa



Western blot - Anti-GRP78 BiP antibody [EPR4041(2)] (ab108615)

GRP78 BiP Western blot staining using rabbit Anti-GRP78 BiP antibody

Blocking and diluting buffer: 5% NFDM/TBST.
Tunicamycin induces the expression of GRP78 BiP reported by PMID 22859938
Exposure time:
Lanes 1 and 2: 20 seconds
Lanes 3 and 4: 30 seconds
Lanes 5 and 6: 5 seconds

All lanes:
Western blot - Anti-GRP78 BiP antibody [EPR4041(2)] (ab108615) at 1/1000 dilution

Lane 1:
HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysates at 15 µg

Lane 2:

HeLa (Human cervix adenocarcinoma epithelial cell) treated with 10ug/mltunicamycin for 12 hours whole cell lysates at 15 µg

Lane 3:
MCF-7 (Human breast adenocarcinoma epithelial cell) whole cell lysates at 15 µg

Lane 4:
MCF-7 (Human breast adenocarcinoma epithelial cell) treated with 10ug/mltunicamycin for 48 hours whole cell lysates at 15 µg

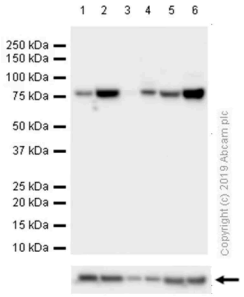
Lane 5:
MEF (Mouse embryonic fibroblast) whole cell lysates at 15 µg

Lane 6:
MEF (Mouse embryonic fibroblast) treated with 10ug/ml tunicamycin for 48 hours whole cell lysates at 15 µg

Secondary

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

Predicted band size: 72 kDa



Western blot - Anti-GRP78 BiP antibody [EPR4041(2)] (ab108615)

GRP78 BiP Western blot staining using rabbit Anti-GRP78 BiP antibody

Blocking and diluting buffer and concentration: 5% NFDM/TBST
All lanes:
Western blot - Anti-GRP78 BiP antibody [EPR4041(2)] (ab108615) at 1/1000 dilution

Lane 1:
HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysates at 20 µg

Lane 2:
HeLa treated with 2.5 µg/ml tunicamycin for 24h whole cell lysates at 20 µg

Lane 3:
HUVEC (Human umbilical vein endothelial cell) whole cell lysates at 20 µg

Lane 4:
HUVEC treated with 10 µg/ml tunicamycin for 48h whole cell lysates at 20 µg

Lane 5:
Raw 264.7 (Mouse Abelson murine leukemia virus-induced tumor macrophage) whole cell lysates at 20 µg

Lane 6:
Raw 264.7 treated with 5 µg/ml tunicamycin for 18h whole cell lysates at 20 µg

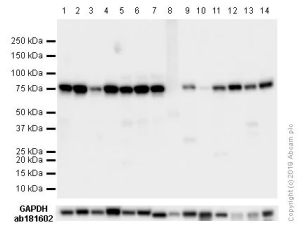
Secondary

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

Predicted band size: 72 kDa

Observed band size: 78 kDa

Exposure time: 3s



Western blot - Anti-GRP78 BiP antibody [EPR4041(2)] (ab108615)

GRP78 BiP Western blot staining using rabbit Anti-GRP78 BiP antibody

Blocking/Diluting buffer and concentration: 5% NFDM/TBST
All lanes:
Western blot - Anti-GRP78 BiP antibody [EPR4041(2)] (ab108615) at 1/1000 dilution

Lane 1:
MCF7 (Human breast adenocarcinoma epithelial cell) whole cell lysates at 20 µg

Lane 2:
HepG2 (Human hepatocellular carcinoma epithelial cell) whole cell lysates at 20 µg

Lane 3:
293T (Human embryonic kidney epithelial cell) whole cell lysates at 20 µg

Lane 4:
U-87 MG (Human glioblastoma-astrocytoma epithelial cell) whole cell lysates at 20 µg

Lane 5:
THP-1 (Human monocytic leukemia monocyte) whole cell lysates at 20 µg

Lane 6:
MDA-MB-231 (Human breast adenocarcinoma epithelial cell) whole cell lysates at 20 µg

Lane 7:
NIH/3T3 (Mouse embryonic fibroblast) whole cell lysates at 20 µg

Lane 8:
Human uterus lysates at 20 µg

Lane 9:
Human liver lysates at 20 µg

Lane 10:
Mouse heart lysates at 20 µg

Lane 11:
Mouse lung lysates at 20 µg

Lane 12:
Mouse testis lysates at 20 µg

Lane 13:
Mouse liver lysates at 20 µg

Lane 14:
Rat liver lysates at 20 µg

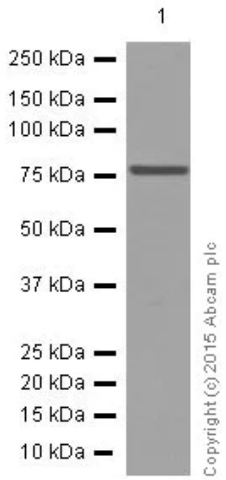
Secondary

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

Predicted band size: 72 kDa

Observed band size: 78 kDa

Exposure time: 26s



Western blot - Anti-GRP78 BiP antibody [EPR4041(2)] (ab108615)

Blocking buffer: 5% NFDM/TBST
Dilution buffer: 5% NFDM/TBST
All lanes:
Western blot - Anti-GRP78 BiP antibody [EPR4041(2)] (ab108615) at 1/1000 dilution

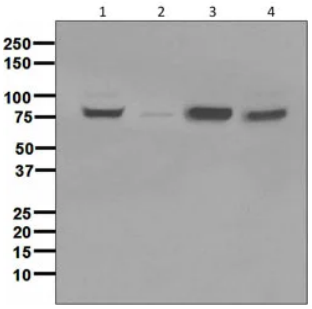
All lanes:
Raw264.7 cell lysate at 20 µg

Secondary

All lanes:
HRP goat anti-rabbit IgG (H+L) at 1/50000 dilution

Predicted band size: 132 kDa, 216 kDa, 72 kDa

Observed band size: 160 kDa, 170 kDa, 208-216 kDa, 78 kDa



Western blot - Anti-GRP78 BiP antibody [EPR4041(2)] (ab108615)

All lanes:
Western blot - Anti-GRP78 BiP antibody [EPR4041(2)] (ab108615) at 1/1000 dilution

Lane 1:
HeLa cell lysates

Lane 2:
NIH/3T3 cell lysates

Lane 3:
LnCaP cell lysates

Lane 4:
HepG2 cell lysates

Secondary

All lanes:
HRP labelled goat anti-rabbit at 1/2000 dilution

Predicted band size: 72 kDa

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