abcam

ab318970

Anti-groEL antibody [EPR28718-8]

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	EPR28718-8
Purification technique	Affinity purification Protein A
Concentration	0.502 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

WB

Tested

Species	Transfected cell lysate - Escherichia coli K-12
Dilution info	1/1000
Notes	-

Species	Escherichia coli BL21(DE3)

Dilution info	1/1000
Notes	-

Predicted

Species	Escherichia coli
Dilution info	-
Notes	-

Not recommended

Species	Transfected cell line - Escherichia coli K-12
Dilution info	-
Notes	-

IHC-P

Tested

Species	Transfected cell line - Escherichia coli K-12
Dilution info	1/10000
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Expected

Species	Escherichia coli BL21(DE3)
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Escherichia coli
Dilution info	-
Notes	-

Not recommended

Species	Transfected cell lysate - Escherichia coli K-12
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Transfected cell line - Escherichia coli K-12
Dilution info	1/2000
Notes	-

Expected

Species	Escherichia coli BL21(DE3)
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Escherichia coli
Dilution info	-
Notes	-

Not recommended

Species	Transfected cell lysate - Escherichia coli K-12
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Transfected cell line - Escherichia coli K-12
Dilution info	1/5000
Notes	-

Expected

Species	Escherichia coli BL21(DE3)
Dilution info	Use at an assay dependent concentration.
Notes	-

Predicted

Species	Escherichia coli
Dilution info	-
Notes	-

Not recommended

Species	Transfected cell lysate - Escherichia coli K-12
Dilution info	-
Notes	-

Target data

See full target information groEL

Function	Together with its co-chaperonin GroES, plays an essential role in assisting protein folding (PubMed:10532860, PubMed:16751100, PubMed:1676490, PubMed:18418386, PubMed:18987317, PubMed:20603018, PubMed:24816391, PubMed:2573517, PubMed:2897629, PubMed:8104102, PubMed:9285593). The GroEL-GroES system forms a nano-cage that allows encapsulation of the non-native substrate proteins and provides a physical environment optimized to promote and accelerate protein folding, probably by preventing aggregation and by entropically destabilizing folding intermediates (PubMed:16751100, PubMed:18418386, PubMed:18987317, PubMed:20603018, PubMed:24816391). Rapid binding of ATP, followed by slower binding of the non-native substrate protein and GroES to the cis open ring of GroEL initiates productive folding of the non-native protein inside a highly stable GroEL-ATP-GroES complex (PubMed:19915138, PubMed:22445172, PubMed:9285585, PubMed:9285593). Binding of ATP and GroES induces conformational changes that result in the

release of the substrate protein into a nano-cage compartment, within the GroEL central cavity, for folding in isolation (PubMed:16684774, PubMed:22445172, PubMed:8861908, PubMed:9285585). To discharge GroES and substrate protein, ATP hydrolysis in the cis ring is required to form a GroEL-ADP-GroES complex with decreased stability (PubMed:9285593). Finally, binding of ATP to the opposite trans ring of GroEL results in disassembly of the cis-ternary complex, which opens the cage and allows release of the folded protein (PubMed:9285585, PubMed:9285593). Proteins released in non-native form may be rapidly rebound by another GroEL complex until all of the initially bound polypeptide reaches native form (PubMed:7867798, PubMed:7915201). Can rescue kinetically trapped intermediates (PubMed:20603018). GroEL shows ATPase activity (PubMed:1676490, PubMed:379350, PubMed:9285593). ATP hydrolysis moves the reaction cycle forward but is not required for substrate folding (PubMed:9285593). Also plays a role in coupling between replication of the F plasmid and cell division of the cell. (Microbial infection) Essential for the assembly of several bacteriophages.

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	Avoid freeze / thaw cycle

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	The groEL protein often known as 60 kDa chaperonin is a highly conserved molecular chaperone with an approximate mass of 60 kilodaltons. It plays an integral role in assisting the correct folding of nascent or stress-denatured proteins in the cell. Expressed prominently in prokaryotic organisms such as E. coli groEL is an important component of the E. coli expression system due to its ability to maintain protein functionality. By forming a double-ring structure that encapsulates substrates groEL collaborates with its co-chaperonin groES to perform essential protein folding.
Biological function summary	GroEL functions in collaboration with groES as part of a chaperonin complex that stabilizes unfolded proteins and prevents aggregation. It operates by undergoing ATP-dependent conformational changes that create an environment conducive to proper protein folding. E. coli products such as enzymes and structural proteins rely on the folding mechanism orchestrated by groEL to achieve their native conformation. Consequently its role is indispensable for protein homeostasis within E. coli affecting diverse cellular processes.
Pathways	Molecular chaperones including groEL integrate into the protein quality control network which monitors and manages protein integrity and turnover. In particular groEL operates in the folding and stress response pathways. Working closely with other proteins such as DnaK and DnaJ groEL ensures efficient protein folding and repair especially during heat shock conditions. This function maintains cellular viability and is important for cellular adaptation to environmental stressors.
Associated diseases and disorders	Disruptions in groEL function can lead to protein misfolding-related diseases like Alzheimer's and Parkinson's. Although direct links to groEL are less observed in eukaryotic systems similar chaperone proteins like HSP60 show connections to neurodegenerative disorders. Dysfunctional protein homeostasis due to insufficient chaperone activity highlights the role of molecular chaperones in preventing protein aggregation which is implicated in these diseases.

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

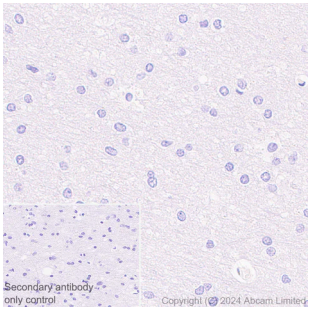
We do not recommend this combination. It is not covered by our product promise.

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.

9 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-groEL antibody [EPR28718-8] (ab318970)

GroEL Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Human cerebrum using rabbit Anti-groEL antibody

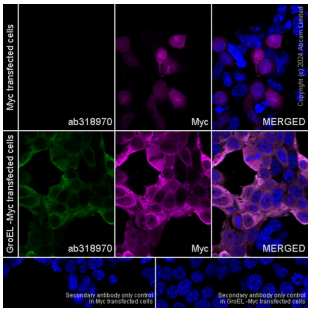
Immunohistochemical analysis of paraffin-embedded Human cerebrum tissue labeling groEL with ab318970 at 1/100 (5.02 ug/ml) dilution, followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection).

Negative control: no staining on human cerebrum. The section was incubated with ab318970 for 30 mins at room temperature.
The immunostaining was performed on a Leica Biosystems BOND® RX instrument

Counterstained with Hematoxylin.

Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection).

Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 20 mins



Immunocytochemistry/ Immunofluorescence - Anti-groEL antibody [EPR28718-8] (ab318970)

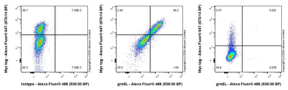
GroEL Immunocytochemistry/ Immunofluorescence staining of 293T (human embryonic kidney epithelial cell) cells transfected with an E.coli K12 Chaperonin GroEL expression vector containing a myc-His-tag® using rabbit Anti-groEL antibody

Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized 293T (human embryonic kidney epithelial cell) cells labelling groEL with ab318970 at 1/2000 (0.251 ug/ml) dilution, followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed antibody at 1/1000 2 ug/ml dilution (Green).

Confocal image showing positive staining in 293T cells transfected with an E.coli K12 Chaperonin GroEL expression vector containing a myc-His-tag®. The counterstain was observed in magenta. Nuclear DNA was labeled with DAPI (shown in blue).
Image was taken with a confocal microscope(Leica-Microsystems, TCS SP8).

ab223894 Anti-Myc tag mouse monoclonal antibody (Alexa Fluor® 594) was used to counterstain tubulin at 1/100 5ug/ml dilution (Magenta). The Nuclear counterstain was DAPI (Blue).

Secondary antibody only control: Secondary antibody is ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 2 ug/ml dilution.

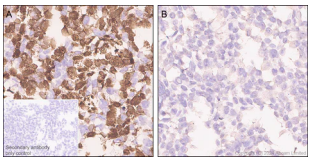


Flow Cytometry (Intracellular) - Anti-groEL antibody [EPR28718-8] (ab318970)

GroEL Flow Cytometry (Intracellular) staining using rabbit Anti-groEL antibody

Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized Isotype (Left) / 293T (human embryonic kidney epithelial cell) cells transfected with an E. coli groEL expression vector containing a myc-His-tag®(Middle) / 293T cells transfected with an empty expression vector containing a myc-His-tag® (Right) cells labelling groEL with ab318970 at 1/5000 dilution (0.01 ug)/Middle and Right compared with a Rabbit monoclonal IgG (ab172730) / Left isotype control and an unlabelled control (cells without incubation with primary antibody and secondary antibody).

Goat Anti-Rabbit IgG (Alexa Fluor® 488, ab150081) at 1/5000 dilution was used as the secondary antibody.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-groEL antibody [EPR28718-8] (ab318970)

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

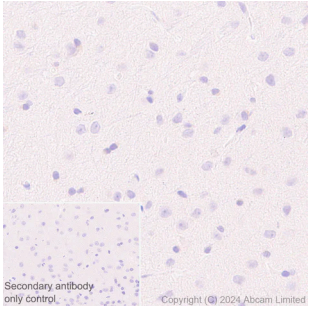
Immunohistochemical analysis of paraffin-embedded (A) HEK-293T (human epithelial cell line from embryonic kidney) transfected with an E. coli groEL expression vector containing a myc-His-tag®. (B) HEK-293T transfected with empty vector containing a myc-His-tag®. tissue labeling groEL with ab318970 at 1/10000 (0.05 ug/ml) dilution, followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection).

Positive staining on (A) HEK-293T (human epithelial cell line from embryonic kidney) transfected with an E. coli groEL expression vector containing a myc-His-tag®, negative staining on (B) HEK-293T transfected with empty vector containing a myc-His-tag®. The section was incubated with ab318970 for 30 mins at room temperature.
The immunostaining was performed on a Leica Biosystems BOND® RX instrument

Counterstained with Hematoxylin.

Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection).

Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 20 mins



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-groEL antibody [EPR28718-8] (ab318970)

GroEL Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Rat cerebrum using rabbit Anti-groEL antibody

Immunohistochemical analysis of paraffin-embedded Rat cerebrum tissue labeling groEL with ab318970 at 1/100 (5.02 ug/ml) dilution, followed by a ready to use LeicaDS9800 (Bond™ Polymer

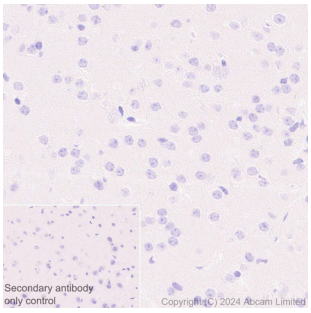
Refine Detection).

Negative control: no staining on rat cerebrum. The section was incubated with ab318970 for 30 mins at room temperature.
The immunostaining was performed on a Leica Biosystems BOND® RX instrument

Counterstained with Hematoxylin.

Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection).

Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 20 mins



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-groEL antibody [EPR28718-8] (ab318970)

GroEL Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Mouse cerebrum using rabbit Anti-groEL antibody

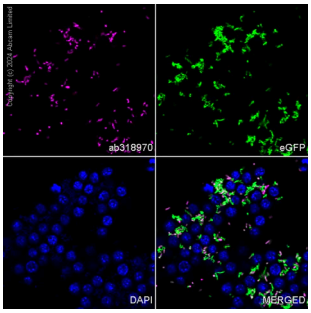
Immunohistochemical analysis of paraffin-embedded Mouse cerebrum tissue labeling groEL with ab318970 at 1/100 (5.02 ug/ml) dilution, followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection).

Negative control: no staining on mouse cerebrum. The section was incubated with ab318970 for 30 mins at room temperature.
The immunostaining was performed on a Leica Biosystems BOND® RX instrument

Counterstained with Hematoxylin.

Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection).

Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 20 mins



Immunocytochemistry/ Immunofluorescence - Anti-groEL antibody [EPR28718-8] (ab318970)

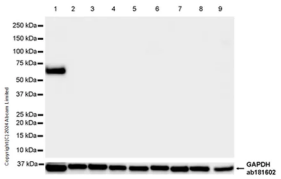
GroEL Immunocytochemistry/ Immunofluorescence staining of Raw 264.7 (mouse Abelson murine leukemia virus-induced tumor macrophage) infected by Escherichia coli BL21(DE3), which was transformed with an eGFP expression vector using rabbit Anti-groEL antibody

Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized Raw 264.7 (mouse Abelson murine leukemia virus-induced tumor macrophage) cells labelling groEL with ab318970 at 1/2000 (0.251 ug/ml) dilution, followed by ab150080 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 594) antibody at 1/500 4ug/ml dilution (Green).

Confocal image showing positive staining in Raw 264.7 cells (shown in magenta) infected by Escherichia coli BL21(DE3), which was transformed with an eGFP expression vector. Nuclear DNA was labelled with DAPI (shown in blue).
Image was taken with a confocal microscope(Leica-Microsystems, TCS SP8).

was used to counterstain tubulin at 1/200 2.5 dilution (Magenta). The Nuclear counterstain was DAPI (Blue).

Secondary antibody only control: Secondary antibody is ab150080 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 594) at 1/500 4ug/ml dilution.



Western blot - Anti-groEL antibody [EPR28718-8] (ab318970)

Blocking and diluting buffer and concentration: 5% NFDM/TBST.

This antibody does not cross-react with human, mouse and rat.

In Western blot, Anti-GAPDH antibody [EPR16891] - Loading Control (ab181602) staining at 1/200000 dilution.

All lanes:
Western blot - Anti-groEL antibody [EPR28718-8] (ab318970) at 1/1000 dilution

Lane 1:
E. coli (BL21(DE3)) whole cell lysate at 20 µg

Lane 2:
HeLa (human cervical adenocarcinoma epithelial cell) whole cell lysate at 20 µg

Lane 3:
Jurkat (human t cell leukemia t lymphocyte from peripheral blood) whole cell lysate at 20 µg

Lane 4:
NIH/3T3 (mouse embryonic fibroblast) whole cell lysate at 20 µg

Lane 5:
RAW 264.7 (mouse abelson murine leukemia virus-induced tumor macrophage) whole cell lysate at 20 µg

Lane 6:
PC-12 (rat adrenal gland pheochromocytoma cell) whole cell lysate at 20 µg

Lane 7:
Mouse brain tissue lysate at 20 µg

Lane 8:
Rat kidney tissue lysate at 20 µg

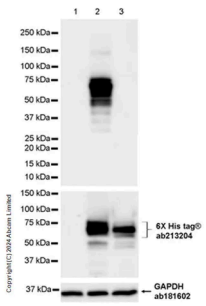
Lane 9:
Human liver tissue lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Observed band size: 57 kDa, 36 kDa

Exposure time: 1s



Western blot - Anti-groEL antibody [EPR28718-8] (ab318970)

Blocking and diluting buffer and concentration: 5% NFDM/TBST.

This antibody does not cross-react with human HSPD1 .

In Western blot, Anti-GAPDH antibody [EPR16891] - Loading Control (ab181602) staining at 1/200000 dilution.

In Western blot, Anti-6X His tag® antibody [EPR20547] - ChIP Grade (ab213204) staining at 1/5000 dilution.

All lanes:
Western blot - Anti-groEL antibody [EPR28718-8] (ab318970) at 1/1000 dilution

Lane 1:
293T (human embryonic kidney epithelial cell) cells transfected with an empty vector containinga myc-His-tag®, whole cell lysate at 5 µg

Lane 2:
293T cells transfected with an E. coli groEL expression vector containinga myc-His-tag®, whole cell lysate at 5 µg

Lane 3:
293T cells transfected with a human HSPD1 expression vector containing a myc-His-tag®, whole cell lysate at 5 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Observed band size: 57 kDa, 36 kDa

Exposure time: 10s

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