abcam

ab313374

Anti-DNA Ligase III/LIG3 antibody [EPR27265-44]

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	EPR27265-44
Purification technique	Affinity purification Protein A
Specificity	Unsuitable for human IHC-P, and rat ICC and FC-Intra.
Concentration	0.505 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/500
Notes	-

Species	Mouse
Dilution info	1/500
Notes	-

Not recommended

Species	Rat
Dilution info	-
Notes	-

IHC-P

Tested

Species	Mouse
Dilution info	1/2000
Notes	-

Species	Rat
Dilution info	1/2000
Notes	-

Not recommended

Species	Human
Dilution info	-
Notes	-

IP

Tested

Species	Human
Dilution info	1/30
Notes	-

Expected

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

ICC/IF

Tested

Species	Human
Dilution info	1/100
Notes	-

Species	Mouse
Dilution info	1/100
Notes	-

Not recommended

Species	Rat
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	1/1000
Notes	-

Species	Mouse
Dilution info	1/1000
Notes	-

Species	Rat

Dilution info	1/1000
Notes	-

Target data

See full target information LIG3

Function	Isoform 3 functions as a heterodimer with DNA-repair protein XRCC1 in the nucleus and can correct defective DNA strand-break repair and sister chromatid exchange following treatment with ionizing radiation and alkylating agents. Isoform 1 is targeted to mitochondria, where it functions as a DNA ligase in mitochondrial base-excision DNA repair (PubMed:10207110, PubMed:24674627).

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	DNA Ligase III also known as LIG3 or Lig 3 is an enzyme that plays a central role in DNA repair by catalyzing the joining of DNA strands. Mechanically it facilitates the ligation step in the DNA repair process sealing nicks in the DNA backbone. This ligase has a sizing mass of approximately 103 kDa. It is expressed widely in human cells with a high concentration in tissues with active DNA repair needs such as testes and ovaries. Ligase acts in various subcellular locations including the nucleus and mitochondria with distinct isoforms functioning in these compartments.
Biological function summary	DNA Ligase III is significant in maintaining genomic stability. It often operates as part of multi-protein complexes interacting especially with XRCC1 during base excision repair (BER). It ensures the continuity of DNA strands after damage-induced breaks are processed. LIG3 also has a pivotal function in the mitochondria where it is involved in repair and replication of mitochondrial DNA therefore preserving mitochondrial genome integrity.
Pathways	DNA Ligase III is an integral part of the DNA repair pathways particularly the base excision repair (BER) and single-strand break repair (SSBR) pathways. In the BER pathway LIG3 collaborates closely with other proteins like XRCC1 to mend damaged DNA by filling in missing nucleotides and sealing nicks. It also plays a role in non-homologous end joining (NHEJ) though this is more dominantly accomplished by DNA Ligase IV. These pathways are important for correcting oxidative damage and abasic sites that can disrupt the DNA structure.
Associated diseases and disorders	DNA Ligase III has associations with certain syndromes and cancers. Mutations or malfunctions in this enzyme can lead to ataxia-telangiectasia-like disorder owing to impaired DNA repair processes. Additionally LIG3 expression is often evaluated in the context of cancerous cells where aberrant repair processes could promote tumor progression. A connection with XRCC1 another key player in the repair machinery is critical as XRCC1 mutations may magnify the impact of LIG3 deficiencies contributing to disease pathology.

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

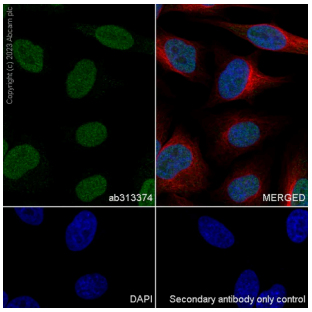
We do not recommend this combination. It is not covered by our product promise.

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.

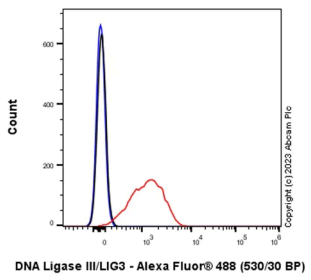
Full details and terms and conditions can be found here:
Terms & Conditions.

11 product images



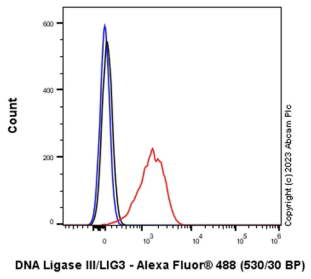
Immunocytochemistry/ Immunofluorescence - Anti-DNA Ligase III/LIG3 antibody [EPR27265-44] (ab313374)

Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized HeLa (human cervical adenocarcinoma epithelial cell) cells labelling DNA Ligase III/LIG3 with ab313374 at 1/100 (5.05 ug/ml) dilution, followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed antibody at 1/1000 2ug/ml dilution (Green). Confocal image showing nuclear and weak cytoplasmic staining in HeLa cells.Image was taken with a confocal microscope (Leica-Microsystems, TCS SP8). is observed. ab195889 Anti-alpha Tubulin mouse monoclonal antibody - Microtubule Marker (Alexa Fluor® 594) was used to counterstain tubulin at 1/200 2.5ug/ml dilution (Red). 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 2ug/ml dilution.



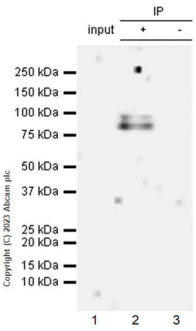
Flow Cytometry (Intracellular) - Anti-DNA Ligase III/LIG3 antibody [EPR27265-44] (ab313374)

Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized Jurkat (human T cell leukemia T lymphocyte from peripheral blood) cells labelling DNA Ligase III/LIG3 with ab313374 at 1/500 dilution (0.1 ug)/Red (Red) compared with a Rabbit monoclonal IgG (ab172730) (Black) isotype control and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (Blue). A Goat Anti-Rabbit IgG (Alexa Fluor® 488, ab150081) at 1/5000 dilution was used as the secondary antibody.



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Immunoprecipitation - Anti-DNA Ligase III/LIG3 antibody [EPR27265-44] (ab313374)

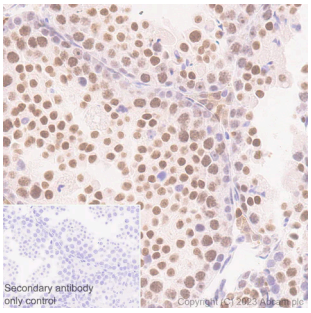
DNA Ligase III/LIG3 was immunoprecipitated from 0.35 mg HeLa (human cervical adenocarcinoma epithelial cell) whole cell lysate with ab313374 at 1/30 dilution (2ug in 0.35mg lysates). Western blot was performed on the immunoprecipitate using ab313374 at 1/1000 dilution. VeriBlot for IP secondary antibody(HRP)(ab131366) was used at 1/5000 dilution. Lane 1: HeLa (human cervical adenocarcinoma epithelial cell) whole cell lysate Lane 2: ab313374 IP in HeLa (human cervical adenocarcinoma epithelial cell) whole cell lysate Lane 3:Rabbit monoclonal IgG (ab172730) instead of ab313374 in HeLa whole cell lysate Blocking and dilution buffer and concentration: 5% NFDM/TBST. Exposure time: 180 seconds
All lanes:
Immunoprecipitation - Anti-DNA Ligase III/LIG3 antibody [EPR27265-44] (ab313374) at 1/30 dilution

All lanes:
HeLa (human cervical adenocarcinoma epithelial cell) whole cell lysate

Secondary

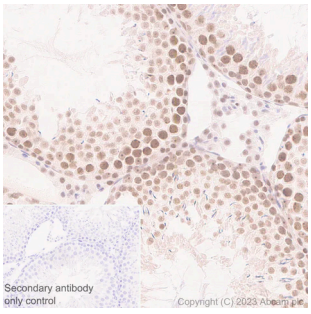
All lanes:
Immunoprecipitation - VeriBlot for IP Detection Reagent (HRP) (ab131366) at 1/5000 dilution

Exposure time: 180s



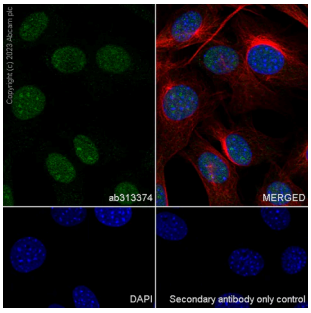
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-DNA Ligase III/LIG3 antibody [EPR27265-44] (ab313374)

Immunohistochemical analysis of paraffin-embedded Mouse testis tissue labeling DNA Ligase III/LIG3 with ab313374 at 1/2000 (0.253 ug/ml) followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Positive staining on mouse testis. The section was incubated with ab313374 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



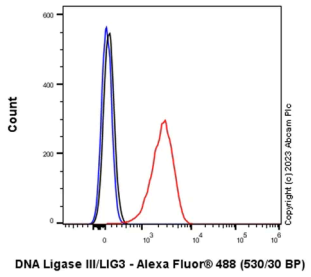
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Immunohistochemical analysis of paraffin-embedded Rat testis tissue labeling DNA Ligase III/LIG3 with ab313374 at 1/2000 (0.253 ug/ml) followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Positive staining on rat testis. The section was incubated with ab313374 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



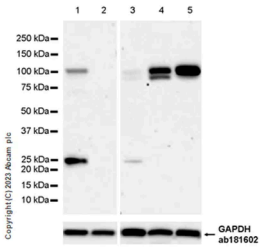
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Western blot - Anti-DNA Ligase III/LIG3 antibody [EPR27265-44] (ab313374)

DNA Ligase III/LIG3 Western blot staining using rabbit Anti-DNA Ligase III/LIG3 antibody

Blocking and diluting buffer and concentration: 5% NFDM/TBST.
Low expression: pancreas (PMID: 7760816).

In Western blot, anti-GAPDH antibody (ab181602) loading control staining at 1/200000 dilution.

All lanes:
Western blot - Anti-DNA Ligase III/LIG3 antibody [EPR27265-44] (ab313374) at 1/1000 dilution

Lane 1:
Human testis tissue lysate at 20 µg

Lane 2:
Human pancreas tissue lysate at 20 µg

Lane 3:
HepG2 non-nuclear fraction at 20 µg

Lane 4:
HepG2 nuclear fraction at 20 µg

Lane 5:
Jurkat (human t cell leukemia t lymphocyte from peripheral blood) whole cell lysate at 20 µg

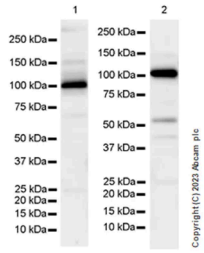
Secondary

Lanes 1 - 2:
Goat Anti-Rabbit IgG (HRP) with minimal cross-reactivity with human IgG at 1/2000 dilution

Lanes 3 - 5:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Observed band size: 102 kDa, 95 kDa

Exposure time: 180s



Western blot - Anti-DNA Ligase III/LIG3 antibody [EPR27265-44] (ab313374)

Blocking and diluting buffer and concentration: 5% NFDM/TBST Exposure time: 26 seconds
All lanes:
Western blot - Anti-DNA Ligase III/LIG3 antibody [EPR27265-44] (ab313374) at 1/1000 dilution

Lane 1:
PC-12 (rat adrenal gland pheochromocytoma cell) whole cell lysate at 20 µg

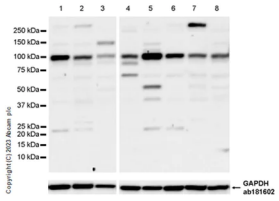
Lane 2:
Rat testis tissue lysate at 20 µg

Secondary

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

Observed band size: 102 kDa

Exposure time: 26s



Western blot - Anti-DNA Ligase III/LIG3 antibody [EPR27265-44] (ab313374)

DNA Ligase III/LIG3 Western blot staining using rabbit Anti-DNA Ligase III/LIG3 antibody

Blocking and diluting buffer and concentration: 5% NFDM/TBST.
Low expression: spleen, pancreas (PMID: 7760816).

Exposure time: Lanes 1-3: 37 seconds; Lanes 4-8: 59 seconds.

In Western blot, anti-GAPDH antibody (ab181602) loading control staining at 1/200, 000 dilution.

All lanes:
Western blot - Anti-DNA Ligase III/LIG3 antibody [EPR27265-44] (ab313374) at 1/1000 dilution

Lane 1:
Rat thymus tissue lysate at 20 µg

Lane 2:
Rat spleen tissue lysate at 20 µg

Lane 3:
Rat pancreas tissue lysate at 20 µg

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

Lane 5:
Mouse testis tissue lysate at 20 µg

Lane 6:
Mouse thymus tissue lysate at 20 µg

Lane 7:
Mouse spleen tissue lysate at 20 µg

Lane 8:
Mouse pancreas 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: 102 kDa, 95 kDa

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