abcam

ab175197

Anti-DNA Polymerase beta antibody [EPR12722(B)]

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	EPR12722(B)
Purification technique	Affinity purification Protein A
Specificity	The human recommendation is based on the WB results. We do not guarantee IHC-P for human
Concentration	0.157 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1/2000

Notes	The human recommendation is based on the WB results. We do not guarantee IHC-P for human

Expected

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

Predicted

Species	Rat
Dilution info	-
Notes	-

IP

Not recommended

Species	Human, Rat, Mouse
Dilution info	-
Notes	-

Flow Cyt

Tested

Species	Human
Dilution info	1/200
Notes	-

Expected

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

Predicted

Species	Rat
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	1/1000
Notes	-

Expected

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

Predicted

Species	Rat
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/50
Notes	-

Species	Mouse
Dilution info	1/100

Notes	-

Predicted

Species	Rat
Dilution info	-
Notes	-

Target data

See full target information POLB

Function	Repair polymerase that plays a key role in base-excision repair (PubMed:10556592, PubMed:9207062, PubMed:9572863). During this process, the damaged base is excised by specific DNA glycosylases, the DNA backbone is nicked at the abasic site by an apurinic/apyrimidic (AP) endonuclease, and POLB removes 5'-deoxyribose-phosphate from the preincised AP site acting as a 5'-deoxyribose-phosphate lyase (5'-dRP lyase); through its DNA polymerase activity, it adds one nucleotide to the 3' end of the arising single-nucleotide gap (PubMed:10556592, PubMed:17526740, PubMed:9556598, PubMed:9572863, PubMed:9614142). Conducts 'gap-filling' DNA synthesis in a stepwise distributive fashion rather than in a processive fashion as for other DNA polymerases. It is also able to cleave sugar-phosphate bonds 3' to an intact AP site, acting as an AP lyase (PubMed:9614142).

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

We are constantly working hard to ensure we provide our customers with best in class antibodies. As a result of this work we are pleased to now offer this antibody in purified format. We are in the process of updating our datasheets. The purified format is designated 'PUR' on our product labels. If you have any questions regarding this update, please contact our Scientific Support team.

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 polymerase beta often abbreviated as pol β serves as a repair enzyme that plays a role in the base excision repair (BER) pathway. This protein's mechanical function involves filling small gaps in the DNA created during repair processes by adding nucleotides. Its molecular weight is approximately 39 kDa. DNA polymerase beta is expressed extensively in the brain liver and testis indicating its importance in DNA repair in various cells. Other names for this protein include DNA pol beta and pol β. It synthesizes DNA using deoxyribonucleotide triphosphates as substrates and requires magnesium ions for activity.
Biological function summary	DNA polymerase beta helps to maintain genome integrity by repairing DNA lesions caused by oxidation alkylation or deamination. This protein often collaborates with other components of the DNA repair pathways but it does not directly form a larger protein complex focusing instead on its important function in BER. When DNA damage like single-strand breaks occur pol β carries out important gap-filling synthesis steps preparing the strand for subsequent ligation.
Pathways	DNA polymerase beta functions critically in base excision repair and acts alongside other important proteins like XRCC1. The BER pathway operates to correct DNA damage from endogenous sources preventing harmful mutations. This pathway is essential for maintaining cellular stability and protecting cells from apoptosis or malignant transformation that might occur if DNA damage propagates.
Associated diseases and disorders	Mutations or dysfunctional activity within DNA polymerase beta have links to cancer and neurodegenerative diseases. For example errors in pol β's repair functions can lead to the persistence of DNA damage which can contribute to tumorigenesis. Furthermore its relationship with beta-actin has implications in cellular structural integrity and cancer metastasis. Dysfunctions within the BER pathway indicate potential contributions to neurodegenerative disorders where an accumulation of DNA damage is a common feature.

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

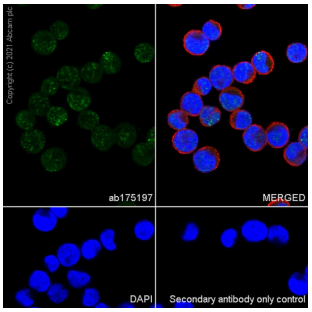
We do not recommend this combination. It is not covered by our product promise.

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.

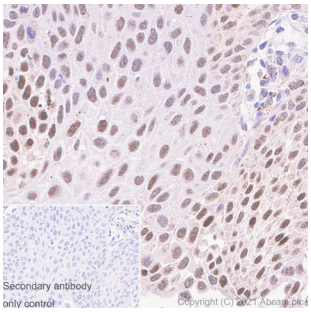
6 product images



Immunocytochemistry/ Immunofluorescence - Anti-DNA Polymerase beta antibody [EPR12722(B)] (ab175197)

DNA Polymerase beta Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-DNA Polymerase beta antibody

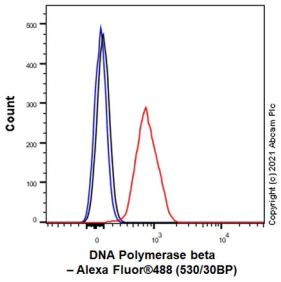
Immunocytochemistry analysis of K-562 (Human chronic myelogenous leukemia lymphoblast) cells labeling DNA Polymerase beta with Purified ab175197 at 1:50 dilution (3.1 µg/ml). Cells were fixed in 100% Methanol and permeabilized with 0.1% tritonX-100. Cells were counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) 1:200 (2.5 µg/ml). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody at 1:1000 (2 µg/ml) dilution. DAPI (blue) was used as nuclear counterstain. PBS instead of the primary antibody was used as the secondary antibody only control.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-DNA Polymerase beta antibody [EPR12722(B)] (ab175197)

DNA Polymerase beta Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-DNA Polymerase beta antibody

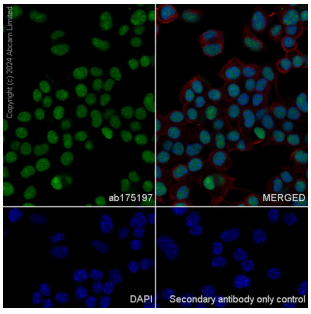
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human lung carcinoma tissue sections labeling with Purified ab175197 at 1:500 dilution (0.31 µg/ml). Heat mediated antigen retrieval was performed using Heat mediated antigen retrieval using Bond™ Epitope Retrieval Solution 2 (pH 9.0) . Tissue was counterstained with Hematoxylin. Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) secondary antibody was used. PBS instead of the primary antibody was used as the negative control. M3



Flow Cytometry - Anti-DNA Polymerase beta antibody [EPR12722(B)] (ab175197)

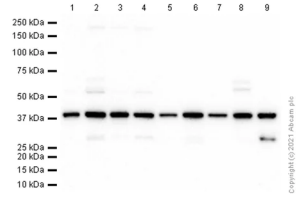
DNA Polymerase beta Flow Cytometry staining using rabbit Anti-DNA Polymerase beta antibody

Flow Cytometry analysis of A431 (Human epidermoid carcinoma epithelial cell) cells labelling DNA Polymerase beta with Purified ab175197 at 1:200 dilution (1 µg/ml) (Red). Cells were fixed with 4% Paraformaldehyde and permeabilised with 90% Methanol. A Goat anti rabbit IgG (Alexa Fluor™ 488, ab150077) secondary antibody was used at 1:2000. Isotype control - Rabbit monoclonal IgG (Black). Unlabelled control - Cell without incubation with primary antibody and secondary antibody (Blue).



Immunocytochemistry/ Immunofluorescence - Anti-DNA Polymerase beta antibody [EPR12722(B)] (ab175197)

Immunocytochemistry analysis of Neuro-2a (mouse neuroblastoma neuroblast) cells labeling DNA Polymerase beta with ab175197 at 1/50 dilution (1.57 µg/mL). Cells were fixed in 4% Paraformaldehyde and permeabilized with 0.1% tritonX-100. Cells were counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) 1/200 (2.5 µg/mL). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody at 1/1000 (2 µg/mL) dilution. PBS instead of the primary antibody was used as the secondary antibody only control. Confocal image showing nuclear staining in Neuro-2a cell line (shown in green). The counterstain was observed in red. Nuclear DNA was labelled with DAPI (shown in blue). Image was taken with a confocal microscope (Leica-Microsystems, TCS SP8).



Western blot - Anti-DNA Polymerase beta antibody [EPR12722(B)] (ab175197)

All lanes:
Western blot - Anti-DNA Polymerase beta antibody [EPR12722(B)] (ab175197) at 1/1000 dilution

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

Lane 2:
Jurkat (Human T cell leukemia T lymphocyte) whole cell lysate at 20 µg

Lane 3:
K-562 (Human chronic myelogenous leukemia lymphoblast) whole cell lysate at 20 µg

Lane 4:
A431 (Human epidermoid carcinoma epithelial cell) whole cell lysate at 20 µg

Lane 5:
Mouse brain lysate at 20 µg

Lane 6:
Mouse spleen lysate at 20 µg

Lane 7:
Rat brain lysate at 20 µg

Lane 8:
Rat spleen lysate

Lane 9:
C6 (Rat glial tumor glial cell) whole cell lysate

Secondary

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

Predicted band size: 38 kDa

Observed band size: 38 kDa

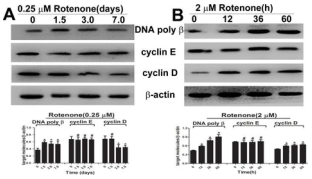


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Western blot - Anti-DNA Polymerase beta antibody [EPR12722(B)] (ab175197)

DNA Polymerase beta western blot using anti-DNA Polymerase beta antibody [EPR12722(B)] ab175197. Publication image and figure legend from Wang, H., Chen, Y., et al., 2014, PLoS One, PubMed 25303312.

ab175197 was used in this publication in western blot. This may not be the same as the application(s) guaranteed by Abcam. For a full list of applications guaranteed by Abcam for ab175197 please see the product overview.

DNA poly β, cyclin E and cyclin D expression were detected after treatment with low and high concentrations of rotenone.The expression of DNA poly β, cyclin E and cyclin D were investigated by western blot. * P<0.05 compared to the control group; # P>0.05 compared to the control group.

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