abcam

ab186407

Anti-POLD1 antibody [EPR15118]

Anti-POLD1 antibody [EPR15118] (ab186407) is a rabbit monoclonal antibody detecting POLD1 in **Western Blot, Flow Cytometry (Intra), IHC-P, ICC/IF**. Suitable for **Human, Mouse, Rat**.

- Biophysical QC for unrivalled batch-batch consistency
- Over 10 publications

Recombinant | RabMAb

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	EPR15118
Purification technique	Affinity purification Protein A
Concentration	0.977 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

WB

Tested

Species	Mouse

Dilution info	1/1000 - 1/10000
Notes	-

Species	Rat
Dilution info	1/1000 - 1/10000
Notes	-

Species	Human
Dilution info	1/1000 - 1/10000
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/250
Notes	-

Expected

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

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/250
Notes	-

Expected

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

Notes	-

IHC-P

Tested

Species	Human
Dilution info	1/50 - 1/100
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Expected

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

Target data

See full target information POLD1

Function

As the catalytic component of the trimeric (Pol-delta3 complex) and tetrameric DNA polymerase delta complexes (Pol-delta4 complex), plays a crucial role in high fidelity genome replication, including in lagging strand synthesis, and repair (PubMed:16510448, PubMed:19074196, PubMed:20334433, PubMed:24022480, PubMed:24035200, PubMed:31449058). Exhibits both DNA polymerase and 3'- to 5'-exonuclease activities (PubMed:16510448, PubMed:19074196, PubMed:20334433, PubMed:24022480, PubMed:24035200). Requires the presence of accessory proteins POLD2, POLD3 and POLD4 for full activity. Depending upon the absence (Pol-delta3) or the presence of POLD4 (Pol-delta4), displays differences in catalytic activity. Most notably, expresses higher proofreading activity in the context of Pol-delta3 compared with that of Pol-delta4 (PubMed:19074196, PubMed:20334433). Although both Pol-delta3 and Pol-delta4 process Okazaki fragments in vitro, Pol-delta3 may be better suited to fulfill this task, exhibiting near-absence of strand displacement activity compared to Pol-delta4 and stalling on encounter with the 5'-blocking oligonucleotides. Pol-delta3 idling process may avoid the formation of a gap, while maintaining a nick that can be readily ligated (PubMed:24035200). Along with DNA polymerase kappa, DNA polymerase delta carries out approximately half of nucleotide excision repair (NER) synthesis following UV irradiation (PubMed:20227374). Under conditions of DNA replication stress, in the presence of POLD3 and POLD4, may catalyze the repair of broken replication forks through break-induced replication (BIR) (PubMed:24310611). Involved in the translesion synthesis (TLS) of templates carrying O6-methylguanine, 8oxoG or abasic sites (PubMed:19074196, PubMed:24191025).

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

What is this antibody validated in?
Anti-POLD1 antibody [EPR15118] (ab186407) is a rabbit recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Immunohistochemistry (IHC-P), Immunocytochemistry/immunofluorescence (ICC/IF) in Human, Mouse, Rat samples.

What is the molecular weight of POLD1?
Anti-POLD1 [EPR15118] (ab186407) specifically detects a band for POLD1 (UniProt: P28340) at a molecular weight of 124kDa.

Trusted by the scientific community
Anti-POLD1 [EPR15118] (ab186407) was first used in a scientific publication in 2014 and has been cited over 10 times in peer-reviewed journals.

Other related products
We have a range of other formats of antibody clone [EPR15118] also available for your convenience: ab186407, Carrier free - ab240300, PE - ab306081, APC - ab306082, HRP - ab306083, Alkaline Phosphatase - ab308862, Alexa Fluor® 488 - ab309788, Alexa Fluor® 647 - ab310157, Alexa Fluor® 594 - ab310588, Alexa Fluor® 555 - ab312118, Alexa Fluor® 568 - ab312602, Alexa Fluor® 750 - ab321298

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	POLD1 also known as DNA polymerase delta is a catalytic subunit of the DNA polymerase delta complex with alternative names such as delta 647 delta 555 delta 488 delta APC delta ALP and ADN-594. Its mass is approximately 124 kDa. POLD1 is expressed in various tissues but shows high expression in proliferating cells. The primary role is to facilitate the high-fidelity DNA replication process by synthesizing the lagging strand during DNA replication and repair. Its enzymatic activity involves adding nucleotides to a primer strand of DNA and executing proofreading functions to ensure replication accuracy.
Biological function summary	POLD1 is integral to the replication machinery where it functions as part of the multi-subunit DNA polymerase delta complex. This complex plays a pivotal role in promoting genome stability by participating in DNA synthesis proofreading and repair processes. The complex provides both polymerase and exonuclease activity ensuring accuracy during DNA replication. Besides POLD1 interacts with PCNA (proliferating cell nuclear antigen) to enhance its enzymatic efficiency during DNA synthesis.
Pathways	POLD1 is involved in the DNA replication and repair pathways. Its interaction with replication protein A (RPA) and PCNA facilitates the smooth completion of Okazaki fragment processing within the DNA replication pathway. Additionally POLD1 plays a role in the base excision repair pathway working alongside other repair proteins such as FEN1 (flap endonuclease 1) and LIG1 (DNA ligase I) to correct DNA lesions. These interactions enforce fidelity and speed during genetic information transfer.
Associated diseases and disorders	Mutations or dysregulation of POLD1 have links to various cancers and genomic instability disorders. Somatic mutations in POLD1 are associated with colorectal cancer where the impaired replication and repair capabilities lead to accumulated mutations. Another disorder related to defective POLD1 function is MDPL syndrome (mandibular hypoplasia deafness progeroid features and lipodystrophy) where the genomic instability contributes to the disease phenotype. Through these conditions POLD1 interacts with tumor suppressors and regulatory proteins involved in DNA damage response highlighting its significance in maintaining genomic integrity and preventing disease.

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.

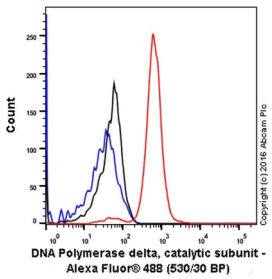
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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.

---

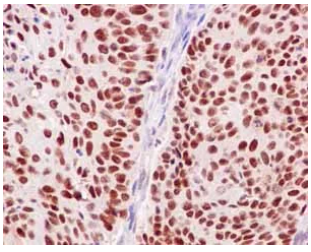
8 product images



Flow Cytometry (Intracellular) - Anti-POLD1 antibody [EPR15118] (ab186407)

POLD1 Flow Cytometry (Intracellular) staining using rabbit Anti-POLD1 antibody

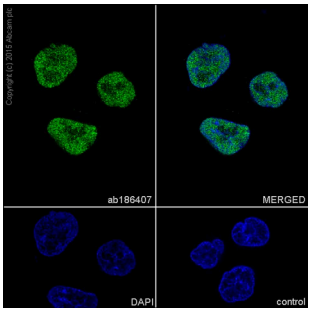
Intracellular Flow Cytometry analysis of HeLa (human cervix adenocarcinoma) cells labelling POLD1, catalytic subunit (red) with purified ab186407 at a dilution of 1/250. The secondary antibody used was Alexa Fluor® 488 goat-anti-rabbit IgG (1/2000). Cells were fixed with 4% paraformaldehyde and permeabilised with 90% methanol. Isotype control antibody was rabbit monoclonal IgG (black). The blue line shows cells without incubation with primary and secondary antibody.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-POLD1 antibody [EPR15118] (ab186407)

POLD1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-POLD1 antibody

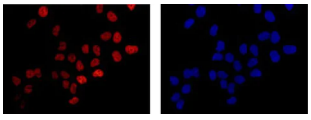
Immunohistochemical analysis of paraffin-embedded Human cervix carcinoma tissue labeling POLD1, catalytic subunit with ab186407 at 1/100 dilution followed by prediluted HRP Polymer for Rabbit IgG. Counter stained with Hematoxylin.
Perform heat mediated antigen retrieval with EDTA buffer pH 9 before commencing with IHC staining protocol.



Immunocytochemistry/ Immunofluorescence - Anti-POLD1 antibody [EPR15118] (ab186407)

POLD1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-POLD1 antibody

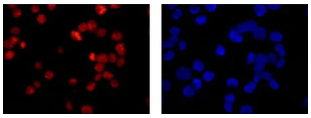
ab186407 staining POLD1, catalytic subunit in HeLa (human cervix adenocarcinoma) cells by ICC/IF (Immunocytochemistry/immunofluorescence). Cells were fixed with 4% Paraformaldehyde and permeabilized with 0.1% Triton X-100. Samples were incubated with primary antibody at a dilution of 1/500. A goat anti rabbit IgG (Alexa Fluor® 488) (ab150077) was used as the secondary antibody at a dilution of 1/1000. DAPI was used as a nuclear counterstain.
Control: PBS only



Immunocytochemistry/ Immunofluorescence - Anti-POLD1 antibody [EPR15118] (ab186407)

POLD1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-POLD1 antibody

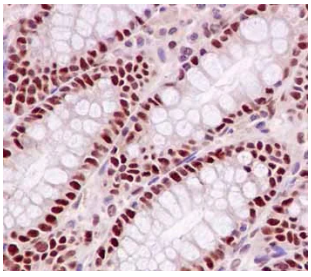
Immunofluorescent analysis of 4% paraformaldehyde-fixed HeLa cells labeling POLD1, catalytic subunit with ab186407 at 1/250 dilution followed by Goat anti rabbit IgG (Alexa Fluor® 555) secondary antibody at 1/200 dilution. Counter stained with Dapi (blue).



Immunocytochemistry/ Immunofluorescence - Anti-POLD1 antibody [EPR15118] (ab186407)

POLD1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-POLD1 antibody

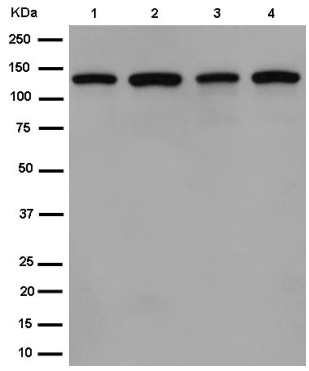
Immunofluorescent analysis of acetone-fixed K562 cells labeling POLD1, catalytic subunit with ab186407 at 1/250 dilution, followed by Goat anti rabbit IgG (Alexa Fluor® 555) secondary antibody at 1/200 dilution. Counter stained with Dapi (blue).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-POLD1 antibody [EPR15118] (ab186407)

POLD1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-POLD1 antibody

Immunohistochemical analysis of paraffin-embedded Human colon tissue labeling POLD1, catalytic subunit with ab186407 at 1/100 dilution, followed by prediluted HRP Polymer for Rabbit IgG. Counter stained with Hematoxylin.
Perform heat mediated antigen retrieval with EDTA buffer pH 9 before commencing with IHC staining protocol.



Western blot - Anti-POLD1 antibody [EPR15118] (ab186407)

All lanes:
Western blot - Anti-POLD1 antibody [EPR15118] (ab186407) at 1/10000 dilution

Lane 1:
MOLT4 cell lysate at 20 µg

Lane 2:
HeLa cell lysate at 20 µg

Lane 3:
Jurkat cell lysate at 20 µg

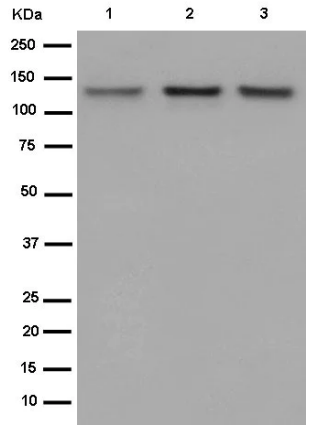
Lane 4:
K562 cell lysate at 20 µg

Secondary

All lanes:
Goat anti-rabbit IgG, (H+L), peroxidase conjugate at 1/1000 dilution

Predicted band size: 124 kDa

Observed band size: 124 kDa



Western blot - Anti-POLD1 antibody [EPR15118] (ab186407)

All lanes:
Western blot - Anti-POLD1 antibody [EPR15118] (ab186407) at 1/1000 dilution

Lane 1:
C6 cell lysate at 10 µg

Lane 2:
Raw264.7 cell lysate at 10 µg

Lane 3:
PC12 cell lysate at 10 µg

Secondary

All lanes:
Goat anti-rabbit IgG, (H+L), peroxidase conjugate at 1/1000 dilution

Predicted band size: 124 kDa

Observed band size: 124 kDa

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