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Anti-DNA Polymerase delta 1 Antibody

Catalog # AP51436

Product Information

Application	WB, IF/IC
Primary Accession	P28340
Reactivity	Human, Mouse, Rat, Pig, Bovine, Dog
Host	Rabbit
Clonality	Polyclonal
Calculated MW	123631

Additional Information

Gene ID	5424
Other Names	POLD; DNA polymerase delta catalytic subunit; DNA polymerase subunit delta p125
Target/Specificity	KLH-conjugated synthetic peptide encompassing a sequence within the C-term region of human DNA Polymerase delta 1. The exact sequence is proprietary.
Dilution	WB~~WB (1/500 - 1/1000) IF/IC~~N/A
Format	Liquid in 0.42% Potassium phosphate, 0.87% Sodium chloride, pH 7.3, 30% glycerol, and 0.01% sodium azide.
Storage	Store at -20 °C.Stable for 12 months from date of receipt

Protein Information

Name	POLD1 (HGNC:9175)
Synonyms	POLD
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).

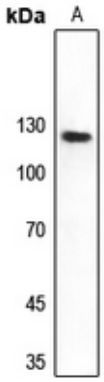
Cellular Location

Nucleus Note=Colocalizes with PCNA and POLD3 at S phase replication sites (PubMed:11595739). After UV irradiation, recruited to DNA damage sites within 2 hours, independently of the cell cycle phase, nor on PCNA ubiquitination. This recruitment requires POLD3, PCNA and RFC1- replication factor C complex (PubMed:20227374, PubMed:22801543)

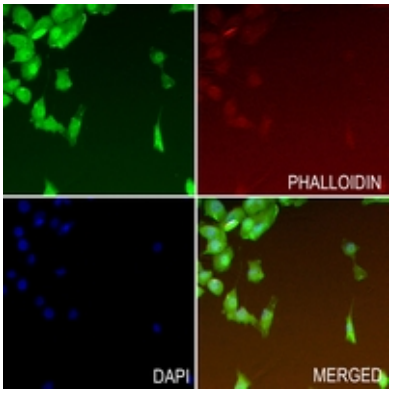
Tissue Location

Widely expressed, with high levels of expression in heart and lung.

Images



Western blot analysis of DNA Polymerase delta 1 expression in Hela (A) whole cell lysates. (Predicted band size: 123 kD; Observed band size: 125 kD)



Immunofluorescent analysis of DNA Polymerase delta 1 staining in PANC1 cells. Formalin-fixed cells were permeabilized with 0.1% Triton X-100 in TBS for 5-10 minutes and blocked with 3% BSA-PBS for 30 minutes at room temperature. Cells were probed with the primary antibody in 3% BSA-PBS and incubated overnight at 4 °C in a hidified chamber. Cells were washed with PBST and incubated with a AF488-conjugated secondary antibody (green) in PBS at room temperature in the dark. Phalloidin - AF594 was used to stain Actin filaments (red). DAPI was used to stain the cell nuclei (blue).

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