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POLA1 Antibody (C-Term)

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP22315b

Product Information

Application	WB, FC, E
Primary Accession	P09884
Reactivity	Human, Mouse
Predicted	Human
Host	Rabbit
Clonality	polyclonal
Isotype	Rabbit IgG
Clone Names	RB57637
Calculated MW	165913

Additional Information

Gene ID	5422
Other Names	DNA polymerase alpha catalytic subunit, 2.7.7.7, DNA polymerase alpha catalytic subunit p180, POLA1, POLA
Target/Specificity	This POLA1 antibody is generated from a rabbit immunized with a KLH conjugated synthetic peptide between 1406-1439 amino acids from the human region of human POLA1.
Dilution	WB~~1:2000 FC~~1:25 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.09% (W/V) sodium azide. This antibody is purified through a protein A column, followed by peptide affinity purification.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	POLA1 Antibody (C-Term) is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	POLA1
Synonyms	POLA
Function	Catalytic subunit of the DNA polymerase alpha complex (also known as the alpha DNA polymerase-primase complex) which plays an essential role in the

initiation of DNA synthesis. During the S phase of the cell cycle, the DNA polymerase alpha complex (composed of a catalytic subunit POLA1, a regulatory subunit POLA2 and two primase subunits PRIM1 and PRIM2) is recruited to DNA at the replicative forks via direct interactions with MCM10 and WDHD1. The primase subunit of the polymerase alpha complex initiates DNA synthesis by oligomerising short RNA primers on both leading and lagging strands. These primers are initially extended by the polymerase alpha catalytic subunit and subsequently transferred to polymerase delta and polymerase epsilon for processive synthesis on the lagging and leading strand, respectively. The reason this transfer occurs is because the polymerase alpha has limited processivity and lacks intrinsic 3' exonuclease activity for proofreading error, and therefore is not well suited for replicating long complexes. In the cytosol, responsible for a substantial proportion of the physiological concentration of cytosolic RNA:DNA hybrids, which are necessary to prevent spontaneous activation of type I interferon responses (PubMed:27019227).

Cellular Location Nucleus. Cytoplasm, cytosol. Note=In the cytosol, colocalizes with RNA:DNA hybrids with a speckled pattern

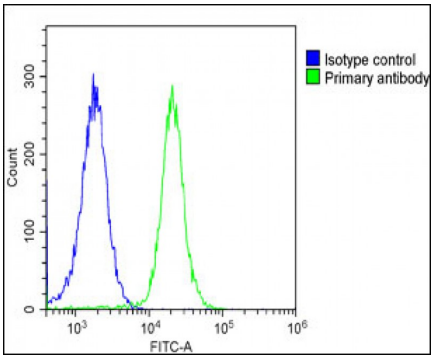
Background

Plays an essential role in the initiation of DNA replication. During the S phase of the cell cycle, the DNA polymerase alpha complex (composed of a catalytic subunit POLA1/p180, a regulatory subunit POLA2/p70 and two primase subunits PRIM1/p49 and PRIM2/p58) is recruited to DNA at the replicative forks via direct interactions with MCM10 and WDHD1. The primase subunit of the polymerase alpha complex initiates DNA synthesis by oligomerising short RNA primers on both leading and lagging strands. These primers are initially extended by the polymerase alpha catalytic subunit and subsequently transferred to polymerase delta and polymerase epsilon for processive synthesis on the lagging and leading strand, respectively. The reason this transfer occurs is because the polymerase alpha has limited processivity and lacks intrinsic 3' exonuclease activity for proofreading error, and therefore is not well suited for replicating long complexes.

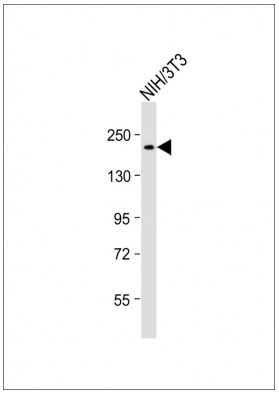
References

Wong S.W.,et al.EMBO J. 7:37-47(1988).
Pearson B.E.,et al.Mol. Cell. Biol. 11:2081-2095(1991).
Hsi K.-L.,et al.Nucleic Acids Res. 18:6231-6237(1990).
Smale S.T.,et al.Mol. Cell. Biol. 6:4077-4087(1986).
Lee S.S.,et al.Proc. Natl. Acad. Sci. U.S.A. 92:7882-7886(1995).

Images



Overlay histogram showing A431 cells stained with AP22315b(green line). The cells were fixed with 2% paraformaldehyde and then permeabilized with 90% methanol for 10 min. The cells were then icubated in 2% bovine serum albumin to block non-specific protein-protein interactions followed by the antibody (1:25 dilution) for 60 min at 37°C. The secondary antibody used was Goat-Anti-Rabbit IgG, DyLight® 488 Conjugated Highly Cross-Adsorbed at 1/200 dilution for 40 min at Room temperature. Isotype control antibody (blue line) was rabbit IgG1 (1µg/1x10^6 cells) used under the same conditions. Acquisition of >10, 000 events was performed.



Anti-POLA1 Antibody (C-Term) at 1:2000 dilution + NIH/3T3 whole cell lysate Lysates/proteins at 20 µg per lane. Secondary Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated at 1/10000 dilution. Predicted band size : 166 kDa Blocking/Dilution buffer: 5% NFDM/TBST.