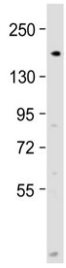
POLA1 Antibody / DNA Polymerase Alpha Rabbit Polyclonal Antibody (F54189)

Catalog No.	Formulation	Size
F54189-0.2ML	In 1X PBS, pH 7.4, with 0.09% sodium azide	0.2 ml
F54189-0.05ML	In 1X PBS, pH 7.4, with 0.09% sodium azide	0.05 ml

Bulk quote request

Species Reactivity	Human
Predicted Reactivity	Mouse, Rat
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit Ig
Purity	Antigen affinity
UniProt	P09884
Applications	WB: 1:1000-1:2000
Limitations	This POLA1 Antibody / DNA Polymerase Alpha Rabbit Polyclonal Antibody is available for research use only.



POLA1 Antibody Western Blot Analysis of Human 293T/17 Cell Lysate. Western blot analysis of human 293T/17 cell lysate using DNA Polymerase Alpha Rabbit Polyclonal Antibody at a dilution of 1:2000. An immunoreactive band is detected at approximately 180 kDa, consistent with the commonly reported apparent molecular weight of the POLA1 catalytic subunit (p180), which has a calculated molecular weight of approximately 166 kDa.

Description

POLA1 Antibody / DNA Polymerase Alpha Rabbit Polyclonal Antibody targets the catalytic subunit of DNA polymerase alpha, an essential enzyme involved in the initiation of eukaryotic DNA replication. Encoded by the POLA1 gene, this approximately 166 kDa protein is also known as DNA polymerase alpha catalytic subunit or p180. POLA1 forms part of the heterotetrameric DNA polymerase alpha-primase complex, which contains the catalytic subunit POLA1, the regulatory subunit POLA2, and the primase subunits PRIM1 and PRIM2. Together, these proteins generate the RNA-DNA primers

required to initiate DNA synthesis at replication origins and during lagging-strand replication.

DNA polymerase alpha-primase performs a specialized function that distinguishes it from the major replicative polymerases delta and epsilon. The primase component first synthesizes a short RNA primer, which is subsequently extended by POLA1 through the addition of deoxyribonucleotides. This produces a hybrid RNA-DNA primer that can be transferred to other DNA polymerases for continued synthesis. Unlike polymerases delta and epsilon, POLA1 lacks intrinsic 3'-to-5' exonuclease proofreading activity and exhibits limited processivity. Consequently, its principal role is primer initiation rather than extensive DNA chain elongation.

Recruitment and regulation of the polymerase alpha-primase complex are coordinated with the activities of the replicative helicase and other replication-associated proteins. Interactions involving MCM10, WDHD1, and components of the replisome help position the complex at replication forks. POLA1 activity is particularly important during S phase, when accurate initiation and progression of DNA synthesis are required for genome duplication. The enzyme also participates in the repeated initiation of Okazaki fragments on the lagging strand, linking primer formation to coordinated replication fork progression.

Defects in POLA1 function can disrupt DNA replication, impair genome maintenance, and activate cellular stress responses. Pathogenic POLA1 variants have been associated with X-linked reticulate pigmentary disorder, a condition involving abnormalities in immune regulation and other cellular processes. Altered POLA1 activity has also attracted attention in studies of replication stress, cell proliferation, and cancer biology. Research involving POLA1 Antibody contributes to investigations of DNA replication machinery, polymerase complex regulation, and the molecular mechanisms that maintain genome integrity during cell division.

POLA1 is an essential component of the DNA replication machinery, making it an important target in studies of cell proliferation, genome maintenance, and other fundamental processes investigated using cell biology antibodies.

Application Notes

The stated application concentrations are suggested starting points. Titration of the POLA1 Antibody / DNA Polymerase Alpha Rabbit Polyclonal Antibody may be required due to differences in protocols and secondary/substrate sensitivity.

Immunogen

A portion of amino acids 1-33 from human POLA1 was used as the immunogen for the DNA Polymerase alpha / POLA1 antibody.

Storage

Aliquot the DNA Polymerase alpha / POLA1 antibody and store frozen at -20oC or colder. Avoid repeated freeze-thaw cycles.

Alternate Names

DNA Polymerase Alpha antibody, DNA Polymerase Alpha Catalytic Subunit antibody, DNA Polymerase Alpha p180 antibody, DNA-directed DNA Polymerase Alpha antibody, DNA Polymerase Alpha Subunit A antibody, DNA Polymerase Alpha 1 antibody, POLA1 p180 antibody, DNA Replication Polymerase Alpha antibody

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