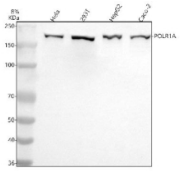
POLR1A Antibody / DNA-directed RNA polymerase I subunit RPA1 (FY12855)

Catalog No.	Formulation	Size
FY12855	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

Availability	1-2 days
Species Reactivity	Human
Format	Lyophilized
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Immunogen affinity purified
Buffer	Each vial contains 4 mg Trehalose, 0.9 mg NaCl, 0.2 mg Na2HPO4.
UniProt	O95602
Applications	Western Blot : 0.25-0.5ug/ml ELISA : 0.1-0.5ug/ml
Limitations	This POLR1A antibody is available for research use only.



Western blot analysis of POLR1A using anti-POLR1A antibody. Lane 1: human Hela whole cell lysates, Lane 2: human 293T whole cell lysates, Lane 3: human HepG2 whole cell lysates, Lane 4: human Caco-2 whole cell lysates. After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. The membrane was incubated with rabbit anti-POLR1A antibody at 0.5 ug/ml overnight at 4oC, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-rabbit IgG-HRP secondary antibody at a dilution of 1:5000 for 1.5 hour at RT. The signal was developed using enhanced chemiluminescent. A specific band was detected for POLR1A at approximately 195 kDa. The expected molecular weight of POLR1A is ~195 kDa.

Description

POLR1A antibody detects DNA-directed RNA polymerase I subunit RPA1, the largest catalytic subunit of RNA polymerase I, which is responsible for ribosomal RNA (rRNA) synthesis in the nucleolus. Encoded by the POLR1A gene

on chromosome 2p11.2, this essential enzyme subunit forms part of the multi-protein RNA polymerase I complex that catalyzes transcription of 45S pre-rRNA, a key step in ribosome biogenesis. POLR1A serves as the catalytic core that binds DNA and nucleoside triphosphates, driving polymerization during transcription initiation and elongation.

Structurally, POLR1A contains a DNA-binding cleft, catalytic residues within the active center, and multiple contact surfaces for interacting with transcription factors and other RNA polymerase I subunits. It forms the backbone of the enzyme and interacts with RPA2 and RPA3 to establish the core complex. POLR1A also associates with transcription initiation factors such as SL1 and UBF, which guide polymerase recruitment to rDNA promoters and regulate transcriptional output in response to growth signals.

The POLR1A antibody is widely used in transcription, cell growth, and cancer biology research to study ribosomal biogenesis and nucleolar function. Western blot analysis detects a 190 kilodalton band corresponding to POLR1A, while immunofluorescence reveals strong nucleolar staining consistent with its role in rRNA synthesis. This antibody supports studies of transcriptional regulation, nucleolar stress responses, and metabolic control of protein synthesis.

POLR1A activity is tightly linked to cellular growth and proliferation. Under conditions of nutrient abundance, mTOR signaling promotes RNA polymerase I activation and rRNA transcription; conversely, DNA damage or stress inhibits POLR1A function to conserve resources. Mutations in POLR1A cause ribosomopathies such as acrofacial dysostosis, characterized by craniofacial malformations due to impaired ribosome production. Overactivation of RNA polymerase I, on the other hand, contributes to oncogenic transformation by driving excessive ribosome biogenesis and protein synthesis. The POLR1A antibody allows precise monitoring of polymerase expression and localization under these physiological and pathological conditions.

NSJ Bioreagents provides a high-quality POLR1A antibody validated for its applications. Its sensitivity and specificity enable researchers to investigate transcriptional control mechanisms, nucleolar architecture, and the coupling of rRNA synthesis to cell cycle progression and oncogenesis.

Application Notes

Optimal dilution of the POLR1A antibody should be determined by the researcher.

Immunogen

E.coli-derived human POLR1A recombinant protein (Position: E607-R1720) was used as the immunogen for the POLR1A antibody.

Storage

After reconstitution, the POLR1A antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.