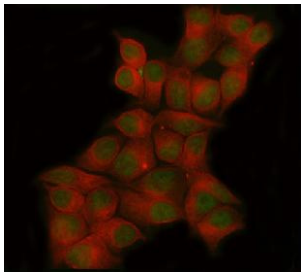
POLR3D Antibody / DNA-directed RNA polymerase III subunit RPC4 (RQ8942)

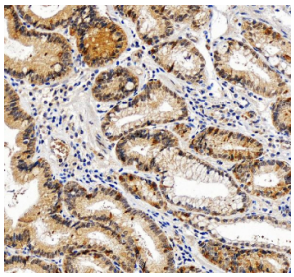
Catalog No.	Formulation	Size
RQ8942	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

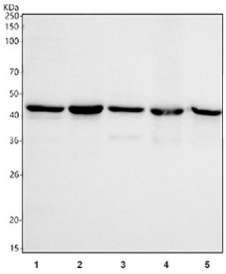
Availability	1-2 days
Species Reactivity	Human, Rat
Format	Purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Antigen Affinity purified
UniProt	P05423
Localization	Nuclear
Applications	Western blot: 1-2ug/ml Immunohistochemistry (FFPE): 2-5ug/ml ELISA: 0.1-0.5ug/ml Flow cytometry: 1-3ug/million cells Immunofluorescence: 5ug/ml
Limitations	This POLR3D antibody is available for research use only.



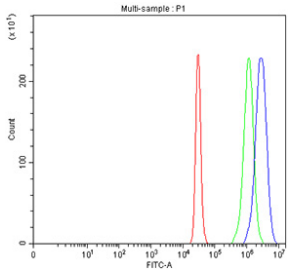
Immunofluorescent staining of FFPE human MCF7 cells with POLR3D antibody (green) and Beta Tubulin mAb (red). HIER: steam section in pH6 citrate buffer for 20 min.



IHC staining of FFPE human stomach cancer tissue with POLR3D antibody, HRP-secondary and DAB substrate. HIER: boil tissue sections in pH8 EDTA for 20 min and allow to cool before testing.



Western blot testing of 1) human HeLa, 2) human 293T, 3) human HEL, 4) human K562 and 5) rat testis tissue lysate with POLR3D antibody. Predicted molecular weight ~44 kDa.



Flow cytometry testing of fixed and permeabilized human 293T cells with POLR3D antibody at 1ug/million cells (blocked with goat sera); Red=cells alone, Green=isotype control, Blue= POLR3D antibody.

Description

POLR3D antibody is a key reagent for studying transcriptional regulation and RNA metabolism. The encoded protein, DNA-directed RNA polymerase III subunit RPC4, is an essential component of RNA polymerase III, the enzyme complex responsible for synthesizing small structural RNAs including tRNAs, 5S rRNA, and other short non-coding RNAs. These transcripts are fundamental to ribosome biogenesis, protein synthesis, and multiple regulatory pathways. By supporting the assembly and activity of RNA polymerase III, POLR3D ensures proper cellular growth, proliferation, and maintenance of homeostasis.

DNA-directed RNA polymerase III subunit RPC4 contributes to the conserved catalytic core of the enzyme, providing structural stability and facilitating transcriptional activity. Its interactions with other polymerase subunits form part of the framework that enables RNA chain initiation and elongation. Beyond its basal role, POLR3D helps modulate transcription in response to signaling pathways, linking environmental and metabolic cues to RNA production.

Mutations in DNA-directed RNA polymerase III subunit RPC4 have been associated with rare neurodevelopmental syndromes, underscoring its importance in human biology. Furthermore, RNA polymerase III and its subunits, including POLR3D, are closely tied to innate immune function. Viral infections often exploit RNA polymerase III activity, while host defenses detect RNA polymerase III products as part of antiviral recognition systems. This highlights the dual role of POLR3D in normal physiology and immune response.

Cancer research has also implicated RNA polymerase III dysregulation, where increased transcription of tRNAs and 5S rRNA drives uncontrolled protein synthesis and cellular proliferation. As part of this complex, DNA-directed RNA polymerase III subunit RPC4 may contribute to tumor development by supporting excessive biosynthetic activity. Ongoing studies are examining whether POLR3D and its associated pathways can serve as biomarkers or therapeutic targets.

The POLR3D antibody is applied in western blotting, immunohistochemistry, immunofluorescence, and flow cytometry to assess expression, localization, and changes in disease or experimental models. These tools are vital for researchers

investigating transcriptional regulation, immune surveillance, and oncogenic pathways. For advanced molecular studies requiring consistent and accurate detection, the POLR3D antibody from NSJ Bioreagents provides dependable performance.

Application Notes

Optimal dilution of the POLR3D antibody should be determined by the researcher.

Immunogen

Amino acids K231-L360 from the human protein were used as the immunogen for the POLR3D antibody.

Storage

After reconstitution, the POLR3D antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.

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