

POLR2A / RNA polymerase II Antibody (aa1585-1634)
Rabbit Polyclonal Antibody
Catalog # ALS14718**Specification**

POLR2A / RNA polymerase II Antibody (aa1585-1634) - Product Information

Application	IF, WB, IHC
Primary Accession	P24928
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Calculated MW	217kDa KDa

POLR2A / RNA polymerase II Antibody (aa1585-1634) - Additional Information**Gene ID** 5430**Other Names**

DNA-directed RNA polymerase II subunit RPB1, RNA polymerase II subunit B1, 2.7.7.6, DNA-directed RNA polymerase II subunit A, DNA-directed RNA polymerase III largest subunit, RNA-directed RNA polymerase II subunit RPB1, 2.7.7.48, POLR2A, POLR2

Target/Specificity

POLR2A antibody detects endogenous levels of total POLR2A protein.

Reconstitution & Storage

Short term 4°C, long term aliquot and store at -20°C, avoid freeze thaw cycles.

Precautions

POLR2A / RNA polymerase II Antibody (aa1585-1634) is for research use only and not for use in diagnostic or therapeutic procedures.

POLR2A / RNA polymerase II Antibody (aa1585-1634) - Protein Information**Name** POLR2A ([HGNC:9187](#))**Synonyms** POLR2**Function**

Catalytic core component of RNA polymerase II (Pol II), a DNA-dependent RNA polymerase which synthesizes mRNA precursors and many functional non-coding RNAs using the four ribonucleoside triphosphates as substrates (PubMed:<[a href="http://www.uniprot.org/citations/9852112" target="_blank">9852112](http://www.uniprot.org/citations/9852112), PubMed:<[a href="http://www.uniprot.org/citations/23748380" target="_blank">23748380](http://www.uniprot.org/citations/23748380), PubMed:<[a href="http://www.uniprot.org/citations/27193682" target="_blank">27193682](http://www.uniprot.org/citations/27193682), PubMed:<[a href="http://www.uniprot.org/citations/30190596" target="_blank">30190596](http://www.uniprot.org/citations/30190596)) (By similarity). Pol II-mediated transcription cycle proceeds through transcription initiation, transcription elongation and transcription termination stages. During transcription initiation, Pol II pre-initiation complex (PIC) is recruited to DNA promoters, with

focused-type promoters containing either the initiator (Inr) element, or the TATA-box found in cell-type specific genes and dispersed-type promoters that often contain hypomethylated CpG islands usually found in housekeeping genes. Once the polymerase has escaped from the promoter it enters the elongation phase during which RNA is actively polymerized, based on complementarity with the template DNA strand. Transcription termination involves the release of the RNA transcript and polymerase from the DNA (PubMed:9852112, PubMed:23748380, PubMed:27193682, PubMed:30190596, PubMed:28108474) (By similarity). Forms Pol II active center together with the second largest subunit POLR2B/RPB2. Appends one nucleotide at a time to the 3' end of the nascent RNA, with POLR2A/RPB1 most likely contributing a Mg(2+)- coordinating Dx/DG motif, and POLR2B/RPB2 participating in the coordination of a second Mg(2+) ion and providing lysine residues believed to facilitate Watson-Crick base pairing between the incoming nucleotide and template base. Typically, Mg(2+) ions direct a 5' nucleoside triphosphate to form a phosphodiester bond with the 3' hydroxyl of the preceding nucleotide of the nascent RNA, with the elimination of pyrophosphate. The reversible pyrophosphorolysis can occur at high pyrophosphate concentrations (PubMed:9852112, PubMed:30190596, PubMed:8381534) (By similarity). Can proofread the nascent RNA transcript by means of a 3' -> 5' exonuclease activity. If a ribonucleotide is mis-incorporated, backtracks along the template DNA and cleaves the phosphodiester bond releasing the mis-incorporated 5'- ribonucleotide (PubMed:8381534) (By similarity). Through its unique C- terminal domain (CTD, 52 heptapeptide tandem repeats) serves as a platform for assembly of factors that regulate transcription initiation, elongation and termination. CTD phosphorylation on Ser-5 mediates Pol II promoter escape, whereas phosphorylation on Ser-2 is required for Pol II pause release during transcription elongation and further pre-mRNA processing. Additionally, the regulation of gene expression levels depends on the balance between methylation and acetylation levels of the CTD-lysines. Initiation or early elongation steps of transcription of growth-factor-induced immediate early genes are regulated by the acetylation status of the CTD. Methylation and dimethylation have a repressive effect on target genes expression. Cooperates with mRNA splicing machinery in co-transcriptional 5'-end capping and co-transcriptional splicing of pre-mRNA (PubMed:24207025, PubMed:26124092) (By similarity).

Cellular Location

Nucleus. Cytoplasm. Chromosome. Note=Hypophosphorylated form is mainly found in the cytoplasm, while the hyperphosphorylated and active form is nuclear (PubMed:26566685). Co-localizes with kinase SRPK2 and helicase DDX23 at chromatin loci where unscheduled R-loops form (PubMed:28076779).

Volume

50 µl

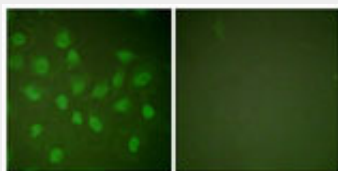
POLR2A / RNA polymerase II Antibody (aa1585-1634) - Protocols

Provided below are standard protocols that you may find useful for product applications.

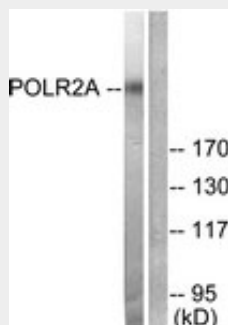
- [Western Blot](#)
- [Blocking Peptides](#)

- [Dot Blot](#)
- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

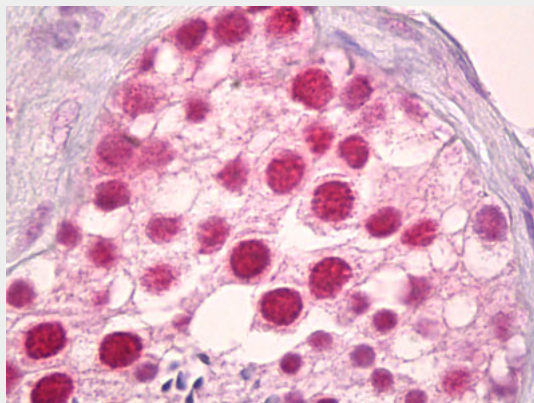
POLR2A / RNA polymerase II Antibody (aa1585-1634) - Images



Immunofluorescence of HeLa cells, using POLR2A antibody.



Western blot of extracts from COS7 cells, treated with EGF 200 ng/ml 30', using POLR2A antibody.



Anti-POLR2A / RNA polymerase II antibody IHC of human testis.

POLR2A / RNA polymerase II Antibody (aa1585-1634) - Background

DNA-dependent RNA polymerase catalyzes the transcription of DNA into RNA using the four ribonucleoside triphosphates as substrates. Largest and catalytic component of RNA polymerase II which synthesizes mRNA precursors and many functional non-coding RNAs. Forms the polymerase active center together with the second largest subunit. Pol II is the central component of the basal RNA polymerase II transcription machinery. It is composed of mobile elements that move relative to each other. RPB1 is part of the core element with the central large cleft, the clamp element that moves to open and close the cleft and the jaws that are thought to grab the incoming DNA template. At the start of transcription, a single-stranded DNA template strand of the promoter is positioned within the central active site cleft of Pol II. A bridging helix emanates from RPB1 and

crosses the cleft near the catalytic site and is thought to promote translocation of Pol II by acting as a ratchet that moves the RNA-DNA hybrid through the active site by switching from straight to bent conformations at each step of nucleotide addition. During transcription elongation, Pol II moves on the template as the transcript elongates. Elongation is influenced by the phosphorylation status of the C-terminal domain (CTD) of Pol II largest subunit (RPB1), which serves as a platform for assembly of factors that regulate transcription initiation, elongation, termination and mRNA processing. Acts as an RNA- dependent RNA polymerase when associated with small delta antigen of Hepatitis delta virus, acting both as a replicate and transcriptase for the viral RNA circular genome.

POLR2A / RNA polymerase II Antibody (aa1585-1634) - References

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Mita K.,et al.Gene 159:285-286(1995).
Zody M.C.,et al.Nature 440:1045-1049(2006).
Mural R.J.,et al.Submitted (SEP-2005) to the EMBL/GenBank/DDBJ databases.
Kershnar E.,et al.J. Biol. Chem. 273:34444-34453(1998).