

POLR2A Antibody (N-term) Blocking Peptide
Synthetic peptide
Catalog # BP6821a**Specification**

POLR2A Antibody (N-term) Blocking Peptide - Product InformationPrimary Accession [P24928](#)**POLR2A Antibody (N-term) Blocking Peptide - Additional Information**

Gene ID 5430

Other Names

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

Target/Specificity

The synthetic peptide sequence used to generate the antibody [AP6821a](/products/AP6821a) was selected from the N-term region of human POLR2A. A 10 to 100 fold molar excess to antibody is recommended. Precise conditions should be optimized for a particular assay.

Format

Peptides are lyophilized in a solid powder format. Peptides can be reconstituted in solution using the appropriate buffer as needed.

Storage

Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C.

Precautions

This product is for research use only. Not for use in diagnostic or therapeutic procedures.

POLR2A Antibody (N-term) Blocking Peptide - Protein InformationName 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: [9852112](http://www.uniprot.org/citations/9852112), PubMed: [23748380](http://www.uniprot.org/citations/23748380), PubMed: [27193682](http://www.uniprot.org/citations/27193682), PubMed: [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).

POLR2A Antibody (N-term) Blocking Peptide - Protocols

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

- [Blocking Peptides](#)

POLR2A Antibody (N-term) Blocking Peptide - Images

POLR2A Antibody (N-term) Blocking Peptide - Background

POLR2A is the largest subunit of RNA polymerase II, the polymerase responsible for synthesizing messenger RNA in eukaryotes. This protein contains a carboxy terminal domain composed of heptapeptide repeats that are essential for polymerase activity. These repeats contain serine and threonine residues that are phosphorylated in actively transcribing RNA polymerase. In addition, this subunit, in combination with several other polymerase subunits, forms the DNA binding domain of the polymerase, a groove in which the DNA template is transcribed into RNA.

POLR2A Antibody (N-term) Blocking Peptide - References

Ujvari,A., et.al., J. Biol. Chem. 283 (47), 32236-32243 (2008)