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POLR1A Antibody (C-term) Blocking Peptide

Synthetic peptide
Catalog # BP18976b

Specification

POLR1A Antibody (C-term) Blocking Peptide - Product Information

Primary Accession O95602

POLR1A Antibody (C-term) Blocking Peptide - Additional Information

Gene ID 25885

Other Names
DNA-directed RNA polymerase I subunit RPA1, RNA polymerase I subunit A1, A190, DNA-directed RNA polymerase I largest subunit, DNA-directed RNA polymerase I subunit A, RNA polymerase I 194 kDa subunit, RPA194, POLR1A

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.

POLR1A Antibody (C-term) Blocking Peptide - Protein Information

Name POLR1A {ECO:0000303|PubMed:25913037, ECO:0000312|HGNC:HGNC:17264}

Function
Catalytic core component of RNA polymerase I (Pol I), a DNA- dependent RNA polymerase which synthesizes ribosomal RNA precursors using the four ribonucleoside triphosphates as substrates. Transcribes 47S pre-rRNAs from multicopy rRNA gene clusters, giving rise to 5.8S, 18S and 28S ribosomal RNAs (PubMed:34671025, PubMed:34887565, PubMed:36271492, PubMed:11250903, PubMed:11283244, PubMed:16858408). Pol I-mediated transcription cycle proceeds through transcription initiation, transcription elongation and transcription termination stages. During transcription initiation, Pol I pre-initiation complex (PIC) is recruited by the selectivity factor 1 (SL1/TIF-IB) complex bound to the core promoter that precedes an rDNA repeat unit. The PIC assembly bends the promoter favoring the formation of the transcription bubble and promoter escape. 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. Highly processive, assembles in structures referred to as 'Miller trees' where many elongating Pol I complexes queue and transcribe the same rDNA coding regions. At terminator sequences downstream of the rDNA gene, PTRF interacts with Pol I and halts Pol I transcription leading to the release of the RNA transcript and polymerase from the DNA (PubMed:34671025, PubMed:34887565, PubMed:36271492, PubMed:11250903, PubMed:11283244, PubMed:16858408). Forms Pol I active center together with the second largest subunit POLR1B/RPA2. Appends one nucleotide at a time to the 3' end of the nascent RNA, with POLR1A/RPA1 contributing a Mg(2+)-coordinating DxDGD motif, and POLR1B/RPA2 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 the 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. Has proofreading activity: Pauses and backtracks to allow the cleavage of a missincorporated nucleotide via POLR1H/RPA12. High Pol I processivity is associated with decreased transcription fidelity (PubMed:34671025, PubMed:34887565, PubMed:36271492, PubMed:11250903, PubMed:11283244, PubMed:16858408) (By similarity).

Cellular Location
Nucleus, nucleolus. Chromosome {ECO:0000250|UniProtKB:O35134}

POLR1A Antibody (C-term) Blocking Peptide - Protocols

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

- Blocking Peptides

POLR1A Antibody (C-term) Blocking Peptide - Images

POLR1A Antibody (C-term) Blocking Peptide - Background

DNA-dependent RNA polymerase catalyzes the transcription of DNA into RNA using the four ribonucleoside triphosphates as substrates. Largest and catalytic core component of RNA polymerase I which synthesizes ribosomal RNA precursors. Forms the polymerase active center together with the second largest subunit. A single stranded DNA template strand of the promoter is positioned within the central active site cleft of Pol I. A bridging helix emanates from RPA1 and crosses the cleft near the catalytic site and is thought to promote translocation of Pol I 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 (By similarity).

POLR1A Antibody (C-term) Blocking Peptide - References

Rose, J. Phd, et al. Mol. Med. (2010) In press :Percipalle, P., et al. EMBO Rep. 7(5):525-530(2006)Bouwmeester, T., et al. Nat. Cell Biol. 6(2):97-105(2004)Hirschler-Laszkiewicz, I., et al. J. Biol. Chem. 278(21):18953-18959(2003)Dundr, M., et al. Science 298(5598):1623-1626(2002)