

Pol II (CTD4H8): sc-47701

BACKGROUND

RNA polymerase II (Pol II) is an enzyme that is composed of 12 subunits and is responsible for the transcription of protein-coding genes. Transcription initiation requires Pol II-mediated recruitment of transcription machinery to a target promoter, thereby allowing transcription to begin. The largest subunit of Pol II (referred to as RPB1 or RPB205) is a 1,840 amino acid protein that contains one C₂H₂-type zinc finger and a C-terminal domain comprised of several heptapeptide repeats. Although Pol II function requires the cooperation of all twelve subunits, the largest subunit conveys Pol II catalytic activity and, together with the second largest subunit, forms the active center of the Pol II enzyme. Additionally, the large subunit participates in forming the DNA-binding domain of Pol II, a groove that is necessary for transcription of the DNA template. Without proper function of the large subunit, mRNA synthesis and subsequent transcription elongation cannot occur.

REFERENCES

1. Bushnell, D.A., et al. 2004. Structural basis of transcription: an RNA polymerase II-TFIIB cocystal at 4.5 Angstroms. *Science* 303: 983-988.
2. Palangat, M., et al. 2004. Downstream DNA selectively affects a paused conformation of human RNA polymerase II. *J. Mol. Biol.* 341: 429-442.
3. Hirsch, H.A., et al. 2004. Distinct mechanisms for repression of RNA polymerase III transcription by the retinoblastoma tumor suppressor protein. *Mol. Cell. Biol.* 24: 5989-5999.

CHROMOSOMAL LOCATION

Genetic locus: POLR2A (human) mapping to 17p13.1; Polr2a (mouse) mapping to 11 B3.

SOURCE

Pol II (CTD4H8) is a mouse monoclonal antibody raised against 10 repeats of synthetic peptide YSPSPS using chemically synthesized phospho-Ser 5.

PRODUCT

Each vial contains 200 µg IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin. Also available as TransCruz reagent for Gel Supershift and ChIP applications, sc-47701 X, 200 µg/0.1 ml.

Pol II (CTD4H8) is available conjugated to agarose (sc-47701 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-47701 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-47701 PE), fluorescein (sc-47701 FITC), Alexa Fluor[®] 488 (sc-47701 AF488), Alexa Fluor[®] 546 (sc-47701 AF546), Alexa Fluor[®] 594 (sc-47701 AF594) or Alexa Fluor[®] 647 (sc-47701 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor[®] 680 (sc-47701 AF680) or Alexa Fluor[®] 790 (sc-47701 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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STORAGE

Store at 4° C, ****DO NOT FREEZE****. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

APPLICATIONS

Pol II (CTD4H8) is recommended for detection of hypo- and hyper-phosphorylated Pol II of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for Pol II siRNA (h): sc-36290, Pol II siRNA (m): sc-36291, Pol II shRNA Plasmid (h): sc-36290-SH, Pol II shRNA Plasmid (m): sc-36291-SH, Pol II shRNA (h) Lentiviral Particles: sc-36290-V and Pol II shRNA (m) Lentiviral Particles: sc-36291-V.

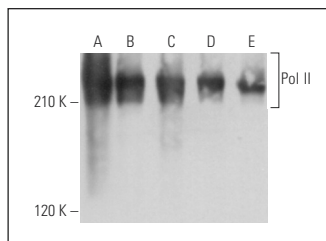
Pol II (CTD4H8) X TransCruz antibody is recommended for Gel Supershift and ChIP applications.

Molecular Weight (predicted) of Pol II: 217 kDa.

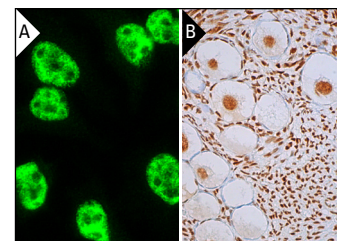
Molecular Weight (observed) of Pol II: 192-253 kDa.

Positive Controls: U-2 OS cell lysate: sc-2295, AT3B-1 whole cell lysate: sc-364372 or A-431 whole cell lysate: sc-2201.

DATA



Pol II (CTD4H8): sc-47701. Western blot analysis of Pol II expression in A-431 (A), 3T3-L1 (B), A-673 (C), U-2 OS (D) and AT3B-1 (E) whole cell lysates.



Pol II (CTD4H8): sc-47701. Immunofluorescence staining of methanol-fixed HeLa cells showing nuclear localization (A). Pol II (CTD4H8) HRP: sc-47701 HRP. Direct immunoperoxidase detection of Pol II in formalin fixed, paraffin-embedded human ovary tissue, showing nuclear staining of follicle cells, ovarian stroma cells and oocytes. Blocked with 0.25X UltraCruz[®] Blocking Reagent: sc-516214 (B).

SELECT PRODUCT CITATIONS

1. Madak-Erdogan, Z., et al. 2008. Nuclear and extranuclear pathway inputs in the regulation of global gene expression by estrogen receptors. *Mol. Endocrinol.* 22: 2116-2127.
2. Khan, P., et al. 2019. Aspirin enhances cisplatin sensitivity of resistant non-small cell lung carcinoma stem-like cells by targeting mTOR-Akt axis to repress migration. *Sci. Rep.* 9: 16913.
3. Wang, M., et al. 2020. Increased neural progenitor proliferation in a hiPSC model of autism induces replication stress-associated genome instability. *Cell Stem Cell* 26: 221-233.e6.

RESEARCH USE

For research use only, not for use in diagnostic procedures.