

# Pol II (3WG2): sc-21750



The Power to Question

## 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 C<sub>2</sub>H<sub>2</sub>-type zinc finger and a C-terminal domain comprised of several heptapeptide repeats. Although Pol II function requires the cooperation of all 12 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

- Bushnell, D.A., et al. 2004. Structural basis of transcription: an RNA polymerase II-TFIIB cocystal at 4.5 Angstroms. *Science* 303: 983-988.
- Palangat, M., et al. 2004. Downstream DNA selectively affects a paused conformation of human RNA polymerase II. *J. Mol. Biol.* 341: 429-442.
- Zhong, S., et al. 2004. Epidermal growth factor enhances cellular TATA binding protein levels and induces RNA polymerase I- and III-dependent gene activity. *Mol. Cell. Biol.* 24: 5119-5129.

## CHROMOSOMAL LOCATION

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

## SOURCE

Pol II (3WG2) is a mouse monoclonal antibody raised against conserved heptapeptide repeat on the largest subunit of RNA polymerase II.

## PRODUCT

Each vial contains 200 µg IgM kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

Pol II (3WG2) is recommended for detection of Pol II of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

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.

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

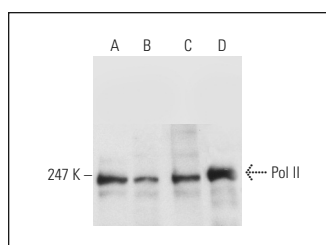
Molecular Weight (observed) of Pol II: 192-253 kDa.

Positive Controls: HeLa nuclear extract: sc-2120, Hep G2 cell lysate: sc-2227 or F9 cell lysate: sc-2245.

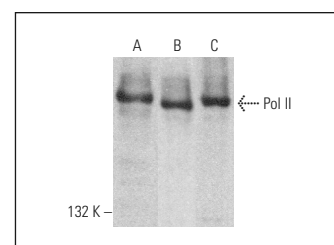
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein L-Agarose: sc-2336 (0.5 ml agarose/2.0 ml).

## DATA



Pol II (3WG2): sc-21750. Western blot analysis of Pol II expression in A-431 (A), U-2 OS (B), NIH/3T3 (C) and PC-12 (D) whole cell lysates.



Pol II (3WG2): sc-21750. Western blot analysis of Pol II expression in F9 (A) and Hep G2 (B) whole cell lysates and HeLa nuclear extract (C).

## SELECT PRODUCT CITATIONS

- Sisci, D., et al. 2010. 17β-Estradiol enhances α5 integrin subunit gene expression through ERα-Sp1 interaction and reduces cell motility and invasion of ERα-positive breast cancer cells. *Breast Cancer Res. Treat.* 124: 63-77.
- Haim, Y., et al. 2015. Elevated autophagy gene expression in adipose tissue of obese humans: a potential non-cell-cycle-dependent function of E2F1. *Autophagy* 11: 2074-2088.
- Jain, P., et al. 2019. Modulation of azole sensitivity and filamentation by GPI15, encoding a subunit of the first GPI biosynthetic enzyme, in *Candida albicans*. *Sci. Rep.* 9: 8508.
- Peng, F., et al. 2020. The transcription factor Sp1 modulates RNA polymerase III gene transcription by controlling BRF1 and GTF3C2 expression in human cells. *J. Biol. Chem.* E-published.

## STORAGE

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

## RESEARCH USE

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



See **Pol II (CTD4H8): sc-47701** for Pol II antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.