Phospho-Rpb1 CTD (Ser7) Antibody [C17G21]

Catalog No.C05730 Batch:C0573003

Product Datasheet

Biological Description

Specificity	Phospho-Rpb1 CTD (Ser7) Antibody [C17G21] recognizes endogenous levels of Rpb1 protein only when the carboxy-terminal domain (CTD) heptapeptide repeat [Tyr1, Ser2, Pro3, Thr4, Ser5, Pro6, Ser7] is phosphorylated at Ser7.
Background	RNA polymerase II (RNAPII) is a large, multi-subunit enzyme that functions as a DNA-dependent RNA polymerase, facilitating the transcription of DNA into RNA by utilizing four ribonucleoside triphosphates as substrates. The largest subunit, known as Rpb1 or POLR2A, features a unique heptapeptide sequence (Tyr1, Ser2, Pro3, Thr4, Ser5, Pro6, Ser7) that is repeated up to 52 times in its carboxy-terminal domain (CTD). These heptapeptide repeats are subject to various post-translational modifications that play a critical role in regulating the activity of the RNAPII complex. During active transcription, the phosphorylation of the CTD is essential for linking transcription with chromatin remodeling and RNA processing. This modification controls the recruitment of chromatin-modifying enzymes and RNA-processing proteins to the gene being transcribed. Initially, RNAPII possesses a hypophosphorylated CTD at the transcription initiation stage, and it is directed to gene promoters through interactions with DNA-bound transcription factors and the Mediator complex. Phosphorylation of Ser7 is particularly important for the effective transcription of small nuclear RNA (snRNA) genes. The phosphorylation of Ser7 by CDK7 during the early stages of transcription aids in recruiting RPAP2, which subsequently dephosphorylates Ser5. This process results in a dual phosphorylation pattern of Ser2/Ser7 that enhances the binding of the Integrator complex, thereby facilitating the processing of nascent snRNA transcripts.

Usage Information

Application	WB, IP, ChIP	Dilution	WB: 1:1000; IP: 1:100; CHIP: 1:50
Reactivity	Human, Mouse, Rat, Monkey		
Source	Rabbit Monoclonal Antibody	MW	250 kDa
Storage Buffer	PBS, pH 7.2+50% Glycerol+0.05% BSA+0.01% NaN_3		
Storage (from the date of receipt)	–20°C (avoid freeze-thaw cycles), 2 years		

Experimental Methods

WB

Experimental Protocol:

Sample preparation
1. Tissue: Lyse the tissue sample by adding an appropriate volume of ice-cold **RIPA/NP-40 Lysis Buffer (containing Protease Inhibitor Cocktail, Phosphatase Inhibitor Cocktail)**，and homogenize the tissue at a low temperature or lyse it by sonication on ice, then incubate on ice for 30 minutes.
2. Adherent cell: Aspirate the culture medium and transfer the cells into an EP tube. Wash the cells with ice-cold PBS twice. Add an appropriate volume of **RIPA/NP-40 Lysis Buffer (containing Protease Inhibitor Cocktail, Phosphatase Inhibitor Cocktail)**, sonicate to lyse the cells, and incubate on ice for 30 minutes.
3. Suspension cell: Transfer the culture medium to a pre-cooled centrifuge tube. Centrifuge and aspirate the supernatant. Wash the cells with ice-cold PBS twice.Add an appropriate volume of **RIPA/NP-40 Lysis Buffer (containing Protease Inhibitor Cocktail, Phosphatase Inhibitor Cocktail)**, sonicate to lyse the cells, and incubate on ice for 30 minutes.
4. Place the lysate into a pre-cooled microcentrifuge tube. Centrifuge at 4°C for 15 min. Collect the supernatant;
5. Remove a small volume of lysate to determine the protein concentration;
6. Combine the lysate with protein loading buffer. Boil 20 µL sample under 95-100°C for 5 min. Centrifuge for 5 min after cool down on ice.

Electrophoretic separation
1. According to the concentration of extracted protein, load appropriate amount of protein sample and marker onto SDS-PAGE gels for electrophoresis. **Recommended separating gel (lower gel) concentration: 5%.** Reference Table for Selecting SDS-PAGE Separation Gel Concentrations
2. Power up 80V for 30 minutes. Then the power supply is adjusted (110 V~150 V), the Marker is observed, and the electrophoresis can be stopped when the indicator band of the predyed protein Marker where the protein is located is properly separated. (Note that the current should not be too large when electrophoresis, too large current (more than 150 mA) will cause the temperature to rise, affecting the result of running glue. If high currents cannot be avoided, an ice bath can be used to cool the bath.)

Transfer membrane
1. Take out the converter, soak the clip and consumables in the pre-cooled converter;
2. Activate PVDF membrane with methanol for 1 min and rinse with transfer buffer;
3. Install it in the order of "black edge of clip - sponge - filter paper - filter paper - glue -PVDF membrane - filter paper - filter paper - sponge - white edge of clip";
4. The protein was electrotransferred to PVDF membrane. (0.45 µm PVDF membrane is recommended) Reference Table for Selecting PVDF Membrane Pore Size Specifications
Recommended conditions for wet transfer: **250 mA, 180 min**.
(Note that the transfer conditions can be adjusted according to the protein size. For high-molecular-weight proteins, a higher current and longer transfer time are recommended. However, ensure that the transfer tank remains at a low temperature to prevent gel melting.)

Block
1. After electrotransfer, wash the film with TBST at room temperature for 5 minutes;
2. Incubate the film in the blocking solution **(recommending 5% BSA solution)** for 1 hour at room temperature;
3. Wash the film with TBST for 3 times, 5 minutes each time.

Antibody incubation
1. Use 5% skim milk powder to prepare the primary antibody working liquid (recommended dilution ratio for primary antibody 1:1000), gently shake and incubate with the film at 4°C overnight;
2. Wash the film with TBST 3 times, 5 minutes each time;
3. Add the secondary antibody to the blocking solution and incubate with the film gently at room temperature for 1 hour;
4. After incubation, wash the film with TBST 3 times for 5 minutes each time.

Antibody staining
917. Add the prepared ECL luminescent substrate (or select other color developing substrate according to the second antibody) and mix evenly;
2. Incubate with the film for 1 minute, remove excess substrate (keep the film moist), wrap with plastic film, and expose in the imaging system.

References

https://pubmed.ncbi.nlm.nih.gov/19834511/ https://pubmed.ncbi.nlm.nih.gov/20457598/

Application Data

WB

Validated by Capsid Bio



Lane 1: Hela
Lane 2: 293T
Lane 3: C2C12
Lane 4: H-4-II-E