Phospho-MARCKS (Ser167/170) Antibody [A4H10]

Catalog No.C05728 Batch:C0572803

Product Datasheet

Biological Description

Specificity	Phospho-MARCKS (Ser167/170) Antibody [A4H10] recognizes endogenous levels of MARCKS protein only when phosphorylated at Ser167 and Ser170. This antibody may also detect MARCKS mono-phosphorylated at Ser167.
Background	MARCKS, also known as Myristoylated Alanine-Rich C Kinase Substrate, plays a crucial role in various cellular processes like cytoskeletal remodeling, cell motility, and secretion. It primarily regulates actin dynamics, which are essential for cell movement and shape changes. Initially located on the plasma membrane, MARCKS acts as a bridge for actin filaments. Upon phosphorylation by protein kinase C (PKC) or binding to calcium-calmodulin, its association with actin and the membrane weakens, causing it to move into the cell's interior. PKC phosphorylates specific serine residues (Ser159, 163, 167, and 170) in response to signals like growth factors and oxidative stress, modulating MARCKS' activities related to calcium/calmodulin binding and actin cross-linking. This phosphorylation also triggers MARCKS' translocation from the plasma membrane to the cytoplasm, influencing its cellular functions.

Usage Information

Application	WB, IF, FCM	Dilution	WB: 1:1000; IF: 1:100; FCM: 1:200
Reactivity	Human, Mouse, Rat, Chicken, Bovine		
Source	Rabbit Monoclonal Antibody	MW	75 kDa (rodent), 80 kDa (human)
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

Western Blotting

Sample preparation

1. Aspirate media from cultures and Wash the cells with 1X PBS.
2. Lyse cells by adding 1X SDS sample buffer and transfer the extract to a microcentrifuge tube. Keep onice.
3. Sonicate for 10–15 sec to complete cell lysis and shear DNA.
4. Heat a 20 µl sample to 95–100°C for 5 min, then cool on ice.
5. Centrifuge for 5 min (with Microcentrifuge).
6. Load appropriate volumes of samples onto SDS-PAGE gel (loading quantity of protein sample depends on the concentration of extracted proteins).
NOTE: At the same time, please load the pre-stained molecular weight markers to determine molecular weights and verify electrotransfer.
7. Electrotransfer to nitrocellulose/PVDF membrane.

Membrane Blocking and Antibody Incubations

a. Blocking

1. (Optional) After transfer, wash the transferred membrane with TBS for 5 min at room temperature.
2. Incubate the membrane in the blocking buffer for 1 hr at room temperature.
3. Wash three times for 5 min each with TBST.

b. Antibodies Incubation

1. Incubate membrane and primary antibody (at the appropriate dilution and diluent recommended) in a primary antibody dilution buffer with gentle agitation overnight at 4°C.
2. Wash three times for 5 min each with TBST.
3. Incubate membrane with an appropriate second antibodydissolved in the blocking buffer with gentle agitation for 1 hr at room temperature.
4. Wash three times for 5 min each with TBST.
5. Proceed with detection.

Detection of Proteins

1. After antibodies incubation, Wash membrane three times for 5 minutes in TBST.
2. PrepareECL Reagent (or other chromogenic agents/substrate according to your second antibody). Mix well.
3. Incubate substrate with membrane for 1 minute, remove excess solution (membrane remains wet), wrap in plastic and expose in the imaging system.

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: 10%. 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

Experimental Methods

	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: **200 mA, 120 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 573. 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.
IF	Experimental Protocol: **Sample Preparation** 1. Adherent Cells: Place a clean, sterile coverslip in a culture dish. Once the cells grow to near confluence as a monolayer, remove the coverslip for further use. 2. Suspension Cells: Seed the cells onto a clean, sterile slide coated with poly-L-lysine. 3. Frozen Sections: Allow the slide to thaw at room temperature. Wash it with pure water or PBS for 2 times, 3 minutes each time. 4. Paraffin Sections: Deparaffinization and rehydration. Wash the slide with pure water or PBS for 3 times, 3 minutes each time. Then perform antigen retrieval. **Fixation** 1. Fix the cell coverslips/spots or tissue sections at room temperature using a fixative such as 4% paraformaldehyde (4% PFA) for 10-15 minutes. 2. Wash the sample with PBS for 3 times, 3 minutes each time. **Blocking** Add blocking solution and incubate at room temperature for at least 1 hour. (Common blocking solutions include: serum from the same source as the secondary antibody, BSA, or goat serum.) **Note: Ensure the sample remains moist during and after the blocking step to prevent drying, which can lead to high background.** **Immunofluorescence Staining (Day 1)** 1. Remove the blocking solution and add the diluted primary antibody. 2. Incubate the sample in a humidified chamber at 4°C overnight. **Immunofluorescence Staining (Day 2)** 1. Remove the primary antibody and wash with PBST for 3 times, 5 minutes each time. 2. Add the diluted fluorescent secondary antibody and incubate in the dark at 4°C for 1–2 hours. 3. Remove the secondary antibody and wash with PBST for 3 times, 5 minutes each time. 4. Add diluted DAPI and incubate at room temperature in the dark for 5–10 minutes. 5. Wash with PBST for 3 times, 5 minutes each time. **Mounting** 1. Mount the sample with an anti-fade mounting medium. 2. Allow the slide to dry at room temperature overnight in the dark. 3. Store the slide in a slide storage box at 4°C, protected from light.

References

https://pubmed.ncbi.nlm.nih.gov/2557340/ https://pubmed.ncbi.nlm.nih.gov/1560845/

Application Data

WB

Validated by Capsid Bio



Lane 1: Hela
Lane 2: Hela (TPA,200 nM,15 min)
Lane 3: SH-SY5Y
Lane 4: SH-SY5Y (TPA,200 nM,15 min)
Lane 5: SK-N-MC
Lane 6: SK-N-MC (TPA,200 nM,15 min)
Lane 7: Huh7
Lane 8: Huh7 (TPA,200 nM,15 min)

IF

Validated by Capsid Bio



Immunofluorescent analysis of Hela cells (Serum-starved) using F1259 (green, 1:100), Hoechst (blue) and tubulin (Red).

IF

Validated by Capsid Bio



Immunofluorescent analysis of Hela cells, Serum starved (upper) and TPA-treated (200 nM, 30min)(lower), using F1259 (green, 1:100), Hoechst (blue) and tubulin (Red).