Product Datasheet

Biological Description

Specificity	Phospho-Smad1 (Ser206) Antibody [D10B24] recognizes endogenous levels of SMAD1 protein only when phosphorylated at Ser206.
Background	Small Body Size (SMA) and Mothers Against Decapentaplegic family 1 (SMAD1), also referred to as JV4-1, MADH1, or MADR1, is located on human chromosome 5q4. It was initially identified in studies exploring genes involved in breast cancer pathogenesis and has since been recognized as a critical regulator of tumor progression. SMAD1 is a key mediator of TGF-β signaling and plays a pivotal role in various biological processes, including cell growth, apoptosis, development, and immune responses. It has been implicated in the progression of multiple malignancies. SMAD1 transduces signals from bone morphogenetic proteins (BMPs), which regulate diverse cellular activities such as growth, apoptosis, development, and immune responses. BMP ligands activate SMAD1 through phosphorylation by BMP receptor kinases. Once phosphorylated, SMAD1 forms a complex with SMAD4, which translocates to the nucleus to regulate gene transcription in collaboration with transcription factors. SMAD1 is known to promote cell invasion and metastasis across various cancer types. For instance, SMAD1 overexpression enhances stomach cancer cell proliferation in response to BMP-7 and supports ovarian cancer cell growth upon activation by BMP-9. Additionally, MAP kinases and CDKs 8 and 9 phosphorylate residues in the SMAD1 linker region, including Ser206. Phosphorylation at Ser206 recruits Smurf1 to the linker region, leading to SMAD1 degradation. Interestingly, this phosphorylation also enhances SMAD1 transcriptional activity by facilitating the recruitment of YAP to the linker region.

Usage Information

Application	WB, IP	Dilution	WB: 1:1000; IP: 1:50
Reactivity	Human		
Source	Rabbit Monoclonal Antibody	MW	60 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: 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
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
1287. 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/34134766/ https://pubmed.ncbi.nlm.nih.gov/17289590/

Application Data

WB

Validated by Capsid Bio



Lane 1: HeLa
Lane 2: HeLa (UV-treated)