Phospho-ULK1 (Ser757) Antibody [A12P8]

Catalog No.C05127 Batch:C0512703

Product Datasheet

Biological Description

Specificity	Phospho-ULK1 (Ser757) Antibody [A12P8] recognizes endogenous levels of ULK1 only when phosphorylated at Serine 757.
Background	ULK1 (Unc-51 Like Autophagy Activating Kinase 1) is a crucial serine/threonine kinase that initiates autophagy by forming a complex with key autophagy-related proteins such as ATG13, FIP200, and ATG101. It has distinct functional domains: an N-terminal kinase domain, a central serine-proline-rich region, and a C-terminal region for protein-protein interactions. ULK1's activity is tightly regulated by nutrient-sensing pathways involving AMPK and mTOR. Under nutrient-rich conditions, mTORC1 phosphorylates Ser757 on ULK1, which disrupts its interaction with AMPK, suppressing autophagy initiation. Conversely, during nutrient deprivation, AMPK phosphorylates ULK1 at Ser317 and Ser777, activating it and promoting the formation of the autophagy initiation complex, which includes key players like Beclin-1 and VPS34. ULK1 not only initiates autophagy by driving phagophore formation but also regulates autophagosome-lysosome fusion through its interaction with syntaxin 17 (STX17) and facilitates selective autophagy processes such as mitophagy via phosphorylation of adaptors like FUNDC1. This dual regulation by AMPK and mTOR ensures proper integration of nutrient sensing with cellular stress responses, maintaining cellular homeostasis. Dysregulation of ULK1 results in cancer, neurodegeneration, and metabolic disorders.

Usage Information

Application	WB, IP, IF, FCM	Dilution	WB: 1:1000; IP: 1:100; IF: 1:1600 - 1:3200; FCM: 1:800 - 1:1600
Reactivity	Human, Mouse, Rat, Monkey		
Source	Rabbit Monoclonal Antibody	MW	140-150 kDa
Storage Buffer	PBS, pH 7.2+50% Glycerol+0.05% BSA+0.01% NaN3		
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)**，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)**, 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)**, 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 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
1389. 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/21258367/

Application Data

IF

Validated by Capsid Bio



Immunofluorescent analysis of MCF-7 cells using F0351 (green, 1:1600), Hoechst (blue) and tubulin (Red).

WB

Validated by Capsid Bio



Lane 1: MCF7, Lane 2: A20, Lane 3: H-4-II-E, Lane 4: A172