Anti-Ubiquitin
Catalog# SMC-160A/B
Size: 50/200µg

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Product	**Mouse anti-Ubiquitin antibody; monoclonal**
Clone	**5B9-B3**
Immunogen	**Native bovine Ubiquitin, conjugated to KLH**
Host and Subclass	**Mouse, IgG_{2a} Kappa**
Applications	**WB, ELISA**
Specificity	**The antibody recognizes ~10kD kDa corresponding to free ubiquitin.**
Species cross-reactivity	**Human, Mouse, Rat, Bovine.**
Format	**Protein G Purified. In PBS pH7.4, 0.09% Sodium Azide, 50% glycerol**
Concentration and Working Dilution	**1mg/mL; 1/1000 dilution for WB**
Storage and stability	**-20˚C; 1 year+; shipped on cold packs or ambient**

Scientific Background

Ubiquitin is a small protein that occurs in all eukaryotic cells. The ubiquitin protein itself consists of 76 amino acids and has a molecular mass of about 8.5kDa. Key features include its C-terminal tail and the 7 Lys residues. It is highly conserved among eukaryotic species: Human and yeast ubiquitin share 96% sequence identity (1). The main function of Ubiquitin is to clear abnormal, foreign and improperly folded proteins by targeting them for degradation by the 26S proteosome (2). Ubiquitination represents an essential cellular process affected by a multi-enzyme cascade involving classes of enzymes known as ubiquitin-activating enzymes (E1s), ubiquitin-conjugating enzymes (E2s or Ubcs) and ubiquitin-protein ligases (E3s). Ubiquitin is activated in a two-step reaction by an E1 ubiquitin-activating enzyme in a process requiring ATP as an energy source. The initial step involves production of an ubiquitin-adenylate intermediate. The second step transfers ubiquitin to the E1 active site cysteine residue, with release of AMP. This step results in a thioester linkage between the C-terminal carboxyl group of ubiquitin and the E1 cysteine sulfhydryl group. The third step is a transfer of ubiquitin from E1 to the active site cysteine of a ubiquitin-conjugating enzyme E2 via a trans(thio)esterification reaction. And the final step of the ubiquitylation cascade creates an isopeptide bond between a lysine of the target protein and the C-terminal glycine of ubiquitin. In general, this step requires the activity of one of the hundreds of E3 ubiquitin-protein ligases (often termed simply ubiquitin ligase). E3 enzymes function as the substrate recognition modules of the system and are capable of interaction with both E2 and substrate(2, 3). Ubiquitination also participates in the internalization and degradation of plasma membrane proteins such as some of the TCR subunits while still ER-membrane associated (4).

Ubiquitin also plays a role in regulating signal transduction cascades through the elimination inhibitory proteins, such as IκBα and p27 (5).

Selected References

1. Wilkinson K.D. (1995) *Annu. Rev. Nutr.* 15:161-189.
2. Bonifacino J.S., *et al.* (1998) *Annu Rev Cell Dev Biol.* 14: 19-57.
3. Boston Biochem: "Ubiquitin Proteasome Pathway Overview" http://www.bostonbiochem.com/upp.php
4. Yang M., *et al.* (1998) *J Exp Med.* 187: 1835-1846.
5. Chen Z.J., *et al.* (1996) *Cell* 84: 853-862.

Certificate of Analysis

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1 µg/mL of SMC-160 was sufficient for detection of ubiquitin in 10µg of Heal Lysate by colorimetric immunoblot analysis using Goat anti-mouse IgG:HRP as the secondary antibody.

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Material Safety Data Sheet

Anti-Ubiquitin (Monoclonal Antibody) SMC-160

This product is for *in vitro* research use only and is not intended for use in humans or animals

The below information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. StressMarq shall not be held liable for any damage resulting from handling or from contact with the above product. See the Technical Specification, Packing Slip, Invoice, and Product Catalogue for additional terms and conditions of sale.

Hazardous Ingredients

The physical, chemical and toxicological properties of these components have not been fully investigated. It is recommended that all laboratory personnel follow standard laboratory safety procedures when handling this product. Safety procedures should include wearing OSHA approved safety glasses, gloves and protective clothing. Direct physical contact with this product should be avoided.

Known Hazardous Components	CAS Number	Percent
Sodium Azide	26628-22-8	0.09

Physical Data

This product consists of mouse immunoglobulin in PBS in 50% glycerol containing 0.09% sodium azide shipped on gel packs. The physical properties of this product have not been investigated thoroughly.

Fire and Explosion Hazard and Reactivity Data

NOT APPLICABLE

Toxicological Properties

May be harmful by inhalation, ingestion, or skin absorption. The toxicological properties of this product have not been investigated thoroughly. Exercise due caution.

Preventative Measures

Wear chemical safety goggles and compatible chemical-resistant gloves. Avoid inhalation, contact with eyes, skin or clothing.

Spill and Leak Procedures

Observe all federal, state and local environmental regulations.

- Wear protective equipment.
- Absorb on sand or vermiculite and place in closed containers for disposal.
- Dispose or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

First Aid Measures

- If swallowed, wash out mouth with water, provided person is conscious. Call a physician.
- In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. If a rash or other irritation develops, call a physician.
- If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.
- In case of eye contact, flush with copious amounts of water for at least 15 minutes while separating the eyelids with fingers. Call a physician.

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