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## Atg4A (D62C10) Rabbit mAb

For Research Use Only. Not for Use in Diagnostic Procedures.

<b>Applications:</b> W, IP	<b>Reactivity:</b> H R	<b>Sensitivity:</b> Endogenous	<b>MW (kDa):</b> 48-60	<b>Source/Isotype:</b> Rabbit IgG	<b>UniProt ID:</b> #Q8WYN0	<b>Entrez-Gene Id:</b> 115201
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### Product Usage Information

#### Application

Western Blotting  
Immunoprecipitation

#### Dilution

1:1000  
1:100

### Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at -20°C. Do not aliquot the antibody.

### Specificity/Sensitivity

Atg4A (D62C10) Rabbit mAb recognizes endogenous levels of total Atg4A protein. This antibody recognizes unidentified bands within the molecular weight range of 48-60 kDa which decrease with silencing of Atg4A expression.

### Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues near the carboxy terminus of human Atg4A protein.

### Background

Autophagy is a catabolic process for the autophagosomic-lysosomal degradation of bulk cytoplasmic contents. Control of autophagy was largely discovered in yeast and involves proteins encoded by a set of autophagy-related genes (Atg) (1). Formation of autophagic vesicles requires a pair of essential ubiquitin-like conjugation systems, Atg12-Atg5 and Atg8-phosphatidylethanolamine (Atg8-PE), which are widely conserved in eukaryotes (2). Numerous mammalian counterparts to yeast Atg proteins have been described, including three Atg8 proteins (GATE-16, GABARAP, and LC3) and four Atg4 homologs (Atg4A/autophagin-2, Atg4B/autophagin-1, Atg4C/autophagin-3, and Atg4D/autophagin-4) (3-5). The cysteine protease Atg4 is pivotal to autophagosome membrane generation and regulation. Atg4 primes the Atg8 homolog for lipidation by cleaving its carboxy terminus and exposing its glycine residue for E1-like enzyme Atg7. The Atg8 homolog is transferred to the E2-like enzyme Atg3 before forming the Atg8-PE conjugate. During later stages of autophagy, Atg4 can reverse this lipidation event by cleaving PE, thereby recycling the Atg8 homolog (6). Atg4A predominately cleaves GATE-16, although it can cleave the other mammalian Atg8 homologues with lesser efficiencies (4,7,8). Mutation in the corresponding Atg4A gene is critical for redox regulation and inhibits autophagosome formation. Expression of this Atg4A mutation demonstrates a role for reactive oxygen species in nutrient-deprived autophagy (9).

### Background References

1. Reggiori, F. and Klionsky, D.J. (2002) *Eukaryot Cell* 1, 11-21.
2. Ohsumi, Y. (2001) *Nat Rev Mol Cell Biol* 2, 211-6.
3. Kabeya, Y. et al. (2000) *EMBO J* 19, 5720-8.
4. Kabeya, Y. et al. (2004) *J Cell Sci* 117, 2805-12.
5. Mariño, G. et al. (2003) *J Biol Chem* 278, 3671-8.
6. Sou, Y.S. et al. (2008) *Mol Biol Cell* 19, 4762-75.
7. Scherz-Shouval, R. et al. (2003) *J Biol Chem* 278, 14053-8.
8. Li, M. et al. (2011) *J Biol Chem* 286, 7327-38.
9. Scherz-Shouval, R. et al. (2007) *EMBO J* 26, 1749-60.

### Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

### Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

### Applications Key

**W:** Western Blotting **IP:** Immunoprecipitation

### Cross-Reactivity Key

**H:** Human **R:** Rat

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