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ProductInformation

Anti-Atg3
produced in rabbit, affinity isolated antibody

Catalog Number **A3231**

Product Description

Anti-Atg3 is developed in rabbit using as immunogen a synthetic peptide corresponding to amino acids 17–32 of human Atg3 (Gene ID: 64422), conjugated to KLH via a C-terminal cysteine residue. The corresponding sequence is identical in rat and mouse. The antibody is affinity-purified using the immunizing peptide immobilized on agarose.

Anti-Atg3 recognizes human, rat, and mouse Atg3 by immunoblotting (~36 kDa) and immunoprecipitation. Detection of the Atg3 band by immunoblotting is specifically inhibited with the immunizing peptide.

Macroautophagy, usually referred to as autophagy, is a major pathway for bulk degradation of cytoplasmic constituents and organelles. In this process, portions of the cytoplasm are sequestered into double membrane vesicles, the autophagosomes, and subsequently delivered to the lysosome for degradation and recycling.[1,2] Although autophagy is a constitutive cellular event, it is enhanced under certain conditions such as starvation, hormonal stimulation, and drug treatments.[3] Autophagy is required for normal turnover of cellular components during starvation. It plays an essential role in cellular differentiation, cell death, and aging. Defective autophagy may contribute to certain human diseases such as cancer, neurodegenerative diseases, muscular disorders and pathogen infections.[4,5]

Autophagy is an evolutionary conserved pathway seen in all eukaryotic cells.[1] At least 16 ATG genes required for autophagosome formation were identified in yeast by genetic screens. For many of these genes, related homologs have been identified in mammals.[6] Two ubiquitin-like conjugation systems are involved in autophagosome formation: Atg12 and Atg8 conjugation systems. Atg3, the mammalian homolog of yeast Apg3p/Aut1p, is an E2-like enzyme that catalyzes the conjugation reaction between Atg8 and phosphatidyl-ethanolamine (PE). The Atg8-PE conjugate is essential for autophagosome formation.[7, 8] The ubiquitin-like proteins Atg8 and Atg12 are activated by Atg7, an E1-like enzyme essential for both conjugation systems. Atg8 is then transferred to Atg3 and conjugated to PE. Whereas, Atg12 is transferred to Atg10, another E2-like enzyme, followed by conjugation to Atg5.[9,10] Atg3 interacts with Atg7 to form an E1-E2 complex, and with Atg12, which is a substrate for Atg7 but not for Atg3. Moreover, overexpression of Atg3 facilitates the formation of the Atg12-Atg5 conjugate. Enhance levels of this conjugate promote the recruitment of the lipidated form of MAP-LC3 onto autophagosomal membranes. Although all three Atg8 mammalian homologs, GATE-16, GABARAP, and MAP-LC3 are substrates for Atg3; MAP-LC3 is the preferred substrate. Atg3 is ubiquitously expressed in human tissues.[7]

Reagent

Supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide as a preservative.

Antibody Concentration: ~1.0 mg/mL

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

For continuous use, store at 2–8 °C for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile

Immunoblotting: A working antibody concentration of 2–4 µg/mL is recommended using whole extracts of human HeLa or mouse 3T3 cells.

Immunoprecipitation: A working antibody concentration of 5–10 µg is recommended using rat NRK cell lysate.

Note: In order to obtain the best results in various techniques and preparations, we recommend determining optimal working concentration by titration.

References

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