

Store at
-20°C

#36105

PhosphoPlus® Atg13 (Ser355) Antibody Duet



Cell Signaling
TECHNOLOGY®

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Entrez-Gene ID #9776
UniProt ID #075143

New 04/21

For Research Use Only. Not For Use In Diagnostic Procedures.

Products Included	Product #	Quantity	Mol. Wt.	Isotype
Phospho-Atg13 (Ser355) (E4D3T) Rabbit mAb	46329	100 µl	72 kDa	Rabbit IgG
Atg13 (E1Y9V) Rabbit mAb	13468	100 µl	72 kDa	Rabbit IgG

See www.cellsignal.com for individual component applications, species cross-reactivity, dilutions, and additional application protocols.

Description: PhosphoPlus® Duets from Cell Signaling Technology (CST) provide a means to assess protein activation status. Each Duet contains an activation-state and total protein antibody to your target of interest. These antibodies have been selected from CST's product offering based upon superior performance in specified applications.

Background: Autophagy is a catabolic process for the autophagosomal-lysosomal degradation of bulk cytoplasmic contents (1,2). Autophagy is generally activated by conditions of nutrient deprivation but has also been associated with a number of physiological processes including development, differentiation, neurodegeneration, infection, and cancer (3). The molecular machinery of autophagy was largely discovered in yeast and referred to as autophagy-related (Atg) genes.

Atg13/Apg13 was originally identified in yeast as a constitutively expressed protein that was genetically linked to Atg1/Apg1, a protein kinase required for autophagy (4). Overexpression of Atg1 suppresses the defects in autophagy observed in Atg13 mutants (4). Autophagy requires a direct association between Atg1 and Atg13, and is inhibited by TOR-dependent phosphorylation of Atg13 under high-nutrient conditions (5). Similarly, mammalian Atg13 forms a complex with the Atg1 homologues ULK1/2, along with FIP200, which localizes to autophagic isolation membranes and regulates autophagosome biogenesis (6-8). mTOR phosphorylates both Atg13 and ULK1, suppressing ULK1 kinase activity and autophagy (7-9). ULK1 can directly phosphorylate Atg13 at a yet unidentified site, presumably to promote autophagy (7,8). Additional studies suggest that Atg13 and FIP200 can function independently of ULK1 and ULK2 to induce autophagy through an unknown mechanism (10). ULK1-dependent phosphorylation of Atg13 at Ser355, which corresponds to Ser318 of isoform 2 of Atg13, leads to the recruitment of Atg13 to damaged mitochondria, enabling efficient mitophagy (11).

Specificity/Sensitivity: Phospho-Atg13 (Ser355) (E4D3T) Rabbit mAb recognizes endogenous levels of Atg13 protein only when phosphorylated at Ser355. Atg13 (E1Y9V) Rabbit mAb recognizes endogenous levels of total Atg13 protein.

Source/Purification: Monoclonal antibody is produced by immunizing animals with a synthetic phosphopeptide corresponding to residues surrounding Ser355 of human Atg13 protein, or with a synthetic peptide corresponding to residues surrounding Asn230 of human Atg13 protein. The phosphorylation site at Ser355 corresponds to Ser318 of isoform 2 of Atg13.

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 antibodies.

For product specific protocols and a complete listing of recommended companion products please see the product web page at www.cellsignal.com.

Background References:

- (1) Reggiori, F. and Klionsky, D.J. (2002) *Eukaryot Cell* 1, 11-21.
- (2) Codogno, P. and Meijer, A.J. (2005) *Cell Death Differ* 12 Suppl 2, 1509-18.
- (3) Levine, B. and Yuan, J. (2005) *J Clin Invest* 115, 2679-88.
- (4) Funakoshi, T. et al. (1997) *Gene* 192, 207-13.
- (5) Kamada, Y. et al. (2000) *J Cell Biol* 150, 1507-13.
- (6) Ganley, I.G. et al. (2009) *J Biol Chem* 284, 12297-305.
- (7) Hosokawa, N. et al. (2009) *Mol Biol Cell* 20, 1981-91.
- (8) Jung, C.H. et al. (2009) *Mol Biol Cell* 20, 1992-2003.
- (9) Kim, J. et al. (2011) *Nat Cell Biol* 13, 132-41.
- (10) Alers, S. et al. (2011) *Autophagy* 7, 1423-33.
- (11) Joo, J.H. et al. (2011) *Mol Cell* 43, 572-85.

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Applications: W—Western IP—Immunoprecipitation IHC—Immunohistochemistry ChIP—Chromatin Immunoprecipitation IF—Immunofluorescence F—Flow cytometry E-P—ELISA-Peptide **Species Cross-Reactivity:** H—human M—mouse R—rat Hm—hamster Mk—monkey Mi—mink C—chicken Dm—D. melanogaster X—Xenopus Z—zebrafish B—bovine Dg—dog Pg—pig Sc—S. cerevisiae Ce—C. elegans Hr—Horse All—all species expected **Species** enclosed in parentheses are predicted to react based on 100% homology.