Revision 1

#14205 Store at -20C

Phospho-ULK1 (Ser638) (D8K9O) Rabbit mAb

Cell Signaling TECHNOLOGY®

Orders: 877-616-CELL (2355) orders@cellsignal.com

Support: 877-678-TECH (8324)

Web: info@cellsignal.com cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

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

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
WB	H M Mk	Endogenous	140-150	Rabbit IgG	#O75385	8408

Product Usage Information

Application	Dilution
Western Blotting	1:1000

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

Phospho-ULK1 (Ser638) (D8K9O) Rabbit mAb recognizes endogenous levels of ULK1 protein only when phosphorylated at Ser638.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic phosphopeptide corresponding to residues surrounding Ser638 of human ULK1 protein.

Background

Two related serine/threonine kinases, UNC-51-like kinase 1 and 2 (ULK1, ULK2), were discovered as mammalian homologs of the *C. elegans* gene *unc-51* in which mutants exhibited abnormal axonal extension and growth (1-4). Both proteins are widely expressed and contain an amino-terminal kinase domain followed by a central proline/serine rich domain and a highly conserved carboxy-terminal domain. The roles of ULK1 and ULK2 in axon growth have been linked to studies showing that the kinases are localized to neuronal growth cones and are involved in endocytosis of critical growth factors, such as NGF (5). Yeast two-hybrid studies found ULK1/2 associated with modulators of the endocytic pathway, SynGAP, and syntenin (6). Structural similarity of ULK1/2 has also been recognized with the yeast autophagy protein Atg1/Apg1 (7). Knockdown experiments using siRNA demonstrated that ULK1 is essential for autophagy (8), a catabolic process for the degradation of bulk cytoplasmic contents (9,10). It appears that Atg1/ULK1 can act as a convergence point for multiple signals that control autophagy (11), and can bind to several autophagy-related (Atg) proteins, regulating phosphorylation states and protein trafficking (12-16).~Phosphorylation of ULK1 at Ser638 and Ser757 is mediated by mTOR, which is a regulator of cell growth and an inhibitor of autophagy that disrupts the interaction between ULK1 and AMPK (17,18). Conversely, AMPK is activated during low nutrient conditions and directly phosphorylates ULK1 at multiple sites including Ser317, Ser555, and Ser777 (17-19).

Background References

1. Ogura, K. et al. (1994) *Genes Dev* 8, 2389-400.
2. Kuroyanagi, H. et al. (1998) *Genomics* 51, 76-85.
3. Yan, J. et al. (1998) *Biochem Biophys Res Commun* 246, 222-7.
4. Yan, J. et al. (1999) *Oncogene* 18, 5850-9.
5. Zhou, X. et al. (2007) *Proc Natl Acad Sci USA* 104, 5842-7.
6. Tomoda, T. et al. (2004) *Genes Dev* 18, 541-58.
7. Matsuura, A. et al. (1997) *Gene* 192, 245-50.
8. Chan, E.Y. et al. (2007) *J Biol Chem* 282, 25464-74.
9. Reggiori, F. and Klionsky, D.J. (2002) *Eukaryot Cell* 1, 11-21.
10. Codogno, P. and Meijer, A.J. (2005) *Cell Death Differ* 12 Suppl 2, 1509-18.
11. Stephan, J.S. and Herman, P.K. (2006) *Autophagy* 2, 146-8.
12. Okazaki, N. et al. (2000) *Brain Res Mol Brain Res* 85, 1-12.
13. Young, A.R. et al. (2006) *J Cell Sci* 119, 3888-900.
14. Kamada, Y. et al. (2000) *J Cell Biol* 150, 1507-13.
15. Lee, S.B. et al. (2007) *EMBO Rep* 8, 360-5.
16. Hara, T. et al. (2008) *J Cell Biol* 181, 497-510.
17. Kim, J. et al. (2011) *Nat Cell Biol* 13, 132-41.
18. Shang, L. et al. (2011) *Proc Natl Acad Sci U S A* 108, 4788-93.
19. Egan, D.F. et al. (2011) *Science* 331, 456-61.

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

WB: Western Blotting

Cross-Reactivity Key

H: human **M:** mouse **R:** rat **Hm:** hamster **Mk:** monkey **Vir:** virus **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 **GP:** Guinea Pig **Rab:** rabbit **All:** all species expected

Trademarks and Patents

Limited Uses