

# Phospho-ULK1 (Ser317) Antibody



**Orders** ■ 877-616-CELL (2355)  
orders@cellsignal.com  
**Support** ■ 877-678-TECH (8324)  
info@cellsignal.com  
**Web** ■ www.cellsignal.com

rev. 02/16/16

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

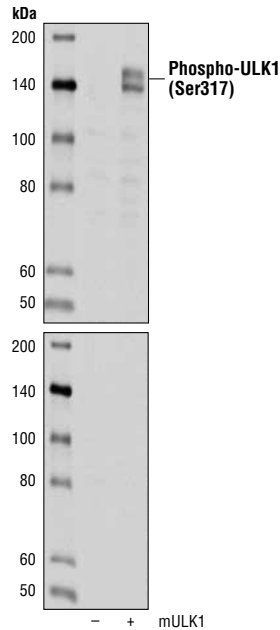
Applications W Transfected	Species Cross-Reactivity* M, (H, R, Mk, B)	Molecular Wt. 140-150 kDa	Source Rabbit**
----------------------------------	---	------------------------------	--------------------

**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 (CTD). 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).

AMPK, activated during low nutrient conditions, directly phosphorylates ULK1 at multiple sites including Ser317, Ser555, and Ser777 (17,18). Conversely, mTOR, which is a regulator of cell growth and an inhibitor of autophagy, phosphorylates ULK1 at Ser757 and disrupts the interaction between ULK1 and AMPK (17).

**Specificity/Sensitivity:** Phospho-ULK1 (Ser317) Antibody recognizes transfected levels of ULK1 protein only when phosphorylated at Ser317.

**Source/Purification:** Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Ser317 of human ULK1 protein.



Western blot analysis of extracts from 293T cells, mock transfected or transfected with a construct overexpressing mouse ULK1 using Phospho-ULK1 (Ser317) Antibody. Membranes were untreated (upper) or treated with Calf Intestinal Phosphatase (CIP) (lower) to demonstrate phospho-specificity.

Entrez-Gene ID #8408  
Swiss-Prot Acc. #075385

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

\*Species cross-reactivity is determined by western blot.

\*\*Anti-rabbit secondary antibodies must be used to detect this antibody.

**Recommended Antibody Dilutions:**

Western blotting 1:1000

For product specific protocols and a complete listing of recommended companion products please see the product web page at [www.cellsignal.com](http://www.cellsignal.com)

**Background References:**

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

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

Tween® is a registered trademark of ICI Americas, Inc.