

**ULK1 Substrate Antibody Sampler Kit**

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1 Kit (9 x 20 microliters)

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

Product Includes	Product #	Quantity	Mol. Wt	Isotype/Source
Phospho-Atg14 (Ser29) (D4B8M) Rabbit mAb	92340	20 µl	65 kDa	Rabbit IgG
Atg14 (D1A1N) Rabbit mAb	96752	20 µl	65 kDa	Rabbit IgG
Phospho-Beclin-1 (Ser15) (D4B7R) Rabbit mAb	84966	20 µl	60 kDa	Rabbit IgG
Beclin-1 (D40C5) Rabbit mAb	3495	20 µl	60 kDa	Rabbit IgG
Phospho-Atg13 (Ser355) (E4D3T) Rabbit mAb	46329	20 µl	72 kDa	Rabbit IgG
Atg13 (D4P1K) Rabbit mAb	13273	20 µl	72 kDa	Rabbit IgG
ULK1 (D8H5) Rabbit mAb	8054	20 µl	150 kDa	Rabbit IgG
Phospho-ULK1 (Ser757) (D7O6U) Rabbit mAb	14202	20 µl	140-150 kDa	Rabbit IgG
Phospho-ULK1 (Ser555) (D1H4) Rabbit mAb	5869	20 µl	140-150 kDa	Rabbit IgG
Anti-rabbit IgG, HRP-linked Antibody	7074	100 µl		Goat

Please visit [cellsignal.com](http://cellsignal.com) for individual component applications, species cross-reactivity, dilutions, protocols, and additional product information.

**Description**

The ULK1 Substrate Antibody Sampler Kit provides an economical means of detecting the activity of ULK1 using phospho-specific and control antibodies. The kit includes enough antibody to perform two western blot experiments with each primary antibody.

**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.

**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).

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 is an inhibitor of autophagy, phosphorylates ULK1 at Ser757 and disrupts the interaction between ULK1 and AMPK (17). ULK1 has been shown to phosphorylate several targets in the autophagy pathway, including Ser29 of Atg14, Ser15 of Beclin-1, and Ser355 of Atg13 (19-22).

**Background References**

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