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Mitophagy Antibody Sampler Kit

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

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

1 Kit (9 x 20 microliters)

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

Product Includes	Product #	Quantity	Mol. Wt	Isotype/Source
SQSTM1/p62 (D5E2) Rabbit mAb	8025	20 µl	62 kDa	Rabbit IgG
NDP52 (D1E4A) Rabbit mAb	60732	20 µl	52, 60 kDa	Rabbit IgG
Optineurin (D2L8S) Rabbit mAb	58981	20 µl	75 kDa	Rabbit IgG
Parkin (Prk8) Mouse mAb	4211	20 µl	50 kDa	Mouse IgG2b
PINK1 (D8G3) Rabbit mAb	6946	20 µl	60, 50 kDa	Rabbit IgG
BNIP3 (D7U1T) Rabbit mAb	44060	20 µl	22-28, 50-55 kDa	Rabbit IgG
BNIP3L/Nix (D4R4B) Rabbit mAb	12396	20 µl	38, 76 kDa	Rabbit IgG
LC3B (D11) XP® Rabbit mAb	3868	20 µl	14, 16 kDa	Rabbit IgG
Phospho-Ubiquitin (Ser65) (E2J6T) Rabbit mAb	62802	20 µl		Rabbit IgG
Anti-rabbit IgG, HRP-linked Antibody	7074	100 µl		Goat

Please visit cellsignal.com for individual component applications, species cross-reactivity, dilutions, protocols, and additional product information.

Description

The Mitophagy Antibody Sampler Kit provides an economical means of detecting proteins involved in the process of mitophagy. The kit includes enough primary 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 antibodies.

Background

Autophagy is a catabolic process for the autophagosome-lysosomal degradation of bulk cytoplasmic contents (1, 2). Selective autophagy targets the degradation of distinct sets of substrates and organelles (3-5). One of the best studied examples of selective autophagy involves the clearance of damaged mitochondria through a process called mitophagy. Several pathways have been described for various contexts of mitophagy, including the FUNDC1 pathway, the BNIP3 and BNIP3L/Nix pathway, and the PINK1/Parkin pathway. FUNDC1 is a mitochondrial protein that is phosphorylated by the autophagy kinase ULK1 and regulates hypoxia induced mitophagy (6, 7). BNIP3L/Nix and BNIP3 are members of the Bcl-2 family of apoptosis regulators that are expressed on mitochondria, induced by hypoxia, and have been shown to play a role in mitophagy (8). BNIP3L/Nix is also important in the autophagic maturation of erythroid cells (9). FUNDC1, BNIP3 and BNIP3L/Nix bind to LC3 family members, targeting the mitochondria to the autophagosome.

Non-hypoxic induction of mitophagy can be regulated by the PINK1/Parkin pathway, which plays causative roles in neurodegenerative disease, most notably Parkinson's disease (10, 11). PINK1 is a mitochondrial serine/threonine kinase that is stabilized on the outer mitochondrial membrane of damaged mitochondria. Substrates of PINK1 include the E3 ubiquitin ligase Parkin and ubiquitin itself (12-14). Phosphorylation of Parkin as well as binding to phosphorylated ubiquitin leads to accumulation of ubiquitinated chains on multiple mitochondrial proteins. Ubiquitinated proteins are recognized by selective cargo receptors including SQSTM1/p62, Optineurin, and NDP52 (15-16). Autophagy cargo receptors contain an LC3-interacting region (LIR) required for binding to Atg8/LC3 family members and targeting to the autophagosome (3).

Background References

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