UCHL1 [6His-tagged]

Deubiquitylating Enzyme

Alternate Names: Ubiquitin C-Terminal Hydrolase, Neuron-Specific PGP9.5, Parkinson Disease 5, Included; PARK5

Cat. No.	**64-0007-050**	Quantity:	50 µg
Lot. No.	**1740**	Storage:	-70˚C

FOR RESEARCH USE ONLY NOT FOR USE IN HUMANS

Background

The deubiquitylating enzymes (DUBs) regulate ubiquitin dependent signaling pathways. The activities of the DUBs include the generation of free ubiquitin from precursor molecules, the recycling of ubiquitin following substrate degradation to maintain cellular ubiquitin homeostasis and the removal of ubiquitin or ubiquitin-like protein (UBL) modifications through chain editing to rescue proteins from proteasomal degradation or to influence cell signalling events (Komander *et al*., 2009). There are two main classes of DUB enzyme the cysteine proteases and metalloproteases. UCHL1 is a cysteine protease and member of the UCH family of ubiquitin C-terminal hydrolases. Cloning of the human UCHL1 gene was first described by Day and Thompson (1987). UCHL1 contains a catalytic triad consisting of a cysteine (Cys90), a histidine (His161), and an aspartate (Asp176) residue. The overall structure of UCHL1 is very similar to that of its nearest UCH relative UCHL3, with which it shares 51% sequence identity (Das *et al*., 2006). UCHL1 is expressed predominantly in neurons, testis and ovary (Osaka *et al*., 2003). *In vivo* UCHL1 has been shown to be involved in the regulation of the ubiquitin pool, apoptosis, learning and memory, and its absence in mice because of spontaneous intragenic deletions yields phenotypes with neurological defects (Saigoh *et*

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Physical Characteristics

Species: human

Source: *E. coli* expression

Quantity: 50 µg

Concentration: 0.5 mg/ml

Formulation: 50 mM HEPES pH 7.5, 150 mM sodium chloride, 2 mM dithiothreitol, 10% glycerol

Molecular Weight: ~27 kDa

Purity: >98% by InstantBlue™ SDS-PAGE

Stability/Storage: 12 months at -70˚C; aliquot as required

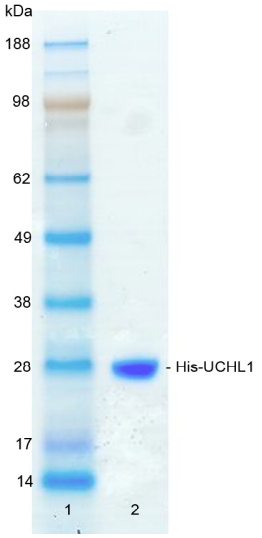
Protein Sequence:

MGSSHHHHHHSSGLEVLFQGPGS***M***QLKP
MEINPEMLNKVLSRLGVAGQWRFVDVL
GLEEESLGSVPAPACALLLLFPLTAQHEN
FRKKQIEELKGQEVSPKVYFMKQTIGN
SCGTIGLIHAVANNQDKLGFEDGSVLKQ
FLSETEKMSPEDRAKCFEKNEAIQAAH
DAVAQEGQCRVDDKVNFHFILFNNVDGHLY
ELDGRMPFPVNHGASSEDTLLKDAAKVCREFT
EREQGEVRFSAVALCKAA

Tag (**bold text**): N-terminal His
Protease cleavage site: PreScission™ (LEVLFQ▼GP)
UCHL1 (regular text): Start ***bold italics*** (amino acid residues 1-223)
Accession number: AAH00332.1

Quality Assurance

Purity:
4-12% gradient SDS-PAGE
InstantBlue™ staining
Lane 1: MW markers
Lane 2: 1 µg His-UCHL1



Protein Identification:
Confirmed by mass spectrometry.

Deubiquitylating Enzyme Assay:
The activity of His-UCHL1 was validated by determining the increase in fluorescence measured as a result of the enzyme catalysed cleavage of the fluorogenic substrate Ubiquitin-Rhodamine110-Glycine generating Ubiquitin and Rhodamine110-Glycine. Incubation of the substrate in the presence or absence of His-UCHL1 was compared confirming the deubiquitylating activity of His-UCHL1.

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Email **services@ubiquigent.com** for enquiries regarding compound profiling and/or custom assay development services.

Lot-specific COA version tracker: v1.0.0

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al., 1999). Mutations in UCHL1 have been implicated in Parkinson disease (PD); a point mutation near the active site that changes Ile93 to Met (I93M) has been linked to an increased risk of developing an autosomal-dominant form of PD (Leroy *et al.*, 1998).

References:

Das C, Hoang QQ, Kreinbring CA, Luchansky SJ, Meray RK, Ray SS, Lansbury PT, Ringe D, Petsko GA (2006) Structural basis for conformational plasticity of the Parkinson's disease-associated ubiquitin hydrolase UCH-L1. *Proc Natl Acad Sci USA* **103**, 4675-80.

Day IN, Thompson RJ (1987) Molecular cloning of cDNA coding for human PGP 9.5 protein. A novel cytoplasmic marker for neurones and neuroendocrine cells. *FEBS Lett* **210**, 157-60.

Komander D, Clague MJ, Urbe S (2009) Breaking the chains: structure and function of the deubiquitinases. *Nat Rev Mol Cell Biol* **10**, 550-63.

Leroy E, Boyer R, *et al.* (1998) The ubiquitin pathway in Parkinson's disease. *Nature* **395**, 451-2.

Osaka H, Wang YL, et al. (2003) Ubiquitin carboxy-terminal hydrolase L1 binds to and stabilizes monoubiquitin in neuron. *Hum Mol Genet* **12**, 1945-58.

Saigoh K, Wang YL, et al. (1999) Intragenic deletion in the gene encoding ubiquitin carboxy-terminal hydrolase in gad mice. *Nat Genet* **23**, 47-51.

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Lot-specific COA version tracker: v1.0.0