

Ordering Information
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HGNC Name: UCHL1
RRID: NA
Format: 1mg/mL in 6M Urea, 10mM phosphate pH=7.5
Storage: Stable at 4°C for several months. For longer term store at -20°C or lower
UniProt: P09936

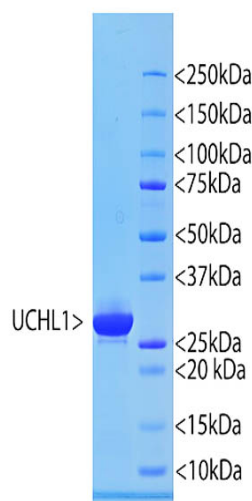
References:

1. Doran JF, Jackson P, Kynoch PA, Thompson RJ. Isolation of PGP 9.5, a new human neurone-specific protein detected by high-resolution two-dimensional electrophoresis. *J Neurochem.* 40:1542-7 (1983).
2. Wilkinson KD, et al. The neuron-specific protein PGP 9.5 is a ubiquitin carboxyl-terminal hydrolase. *Science.* 1989 246:670-3 (1989).
3. Liu Y, Fallon L, Lashuel HA, Liu Z, Lansbury PT Jr. The UCH-L1 gene encodes two opposing enzymatic activities that affect alpha-synuclein degradation and Parkinson's disease susceptibility. *Cell* 111:209-18 (2002).
4. Lewis SB, et al. Identification and preliminary characterization of Ubiquitin C terminal Hydrolase 1 (UCHL1) as a biomarker of neuronal loss in aneurysmal subarachnoid hemorrhage. *J. Neurosci. Res.* 88:1475-1484 (2010).
5. Mondello S, et al. Clinical utility of serum levels of ubiquitin C-terminal hydrolase as a biomarker for severe traumatic brain injury. *Neurosurg.* 70:666-75 (2012).

UCHL1 Full Length Recombinant Protein

PROT-UCHL1

Applications	Host	Molecular Wt.	HGNC	UniPort
Protein standard for ELISA, MSD, Luminex and Simoa assays, also immunogen for antibody production		24kDa by SDS-PAGE plus about 5kDa tag sequence	UCHL1	P09936



A codon optimized cDNA encoding full length human UCHL1 was generated and inserted into the pET30a(+) expression vector. The vector adds an N-terminal His-tag and some other vector derived sequence to the human sequence which increases the molecular weight by about 5kDa. The construct was expressed by standard methods in *E. coli* and purified using a Nickel column in 6M urea. The protein is supplied in 6M urea in phosphate buffer. The lane on the left shows the pure protein and the lane on the right shows protein standards of the indicated molecular size.

Background:

Ubiquitin C-terminal hydrolase 1 (UCHL1) has several other names, such as ubiquitin carboxyl esterase L1, ubiquitin thioesterase, neuron-specific protein PGP9.5 and Park5. It was originally identified as a major component of the neuronal cytoplasm from 2-dimensional gel analysis of brain tissues, and was given the name "protein gene product 9.5" (Pgp9.5) (1). Pgp9.5 was estimated to be present at a concentration of 200-500 µg/g wet weight, representing a major protein component of neuronal cytoplasm (1), which corresponds to ~1-2% of total brain protein (2). A ubiquitin C-terminal hydrolase enzyme activity was found to reside in the PGP9.5 protein, resulting in the name ubiquitin C-terminal hydrolase 1 (UCHL1, 2). This was the first of a family of ubiquitin C-terminal hydrolases which cleave ubiquitin from other molecules. This activity is important to generate mono-ubiquitin from several genes which encode polyubiquitin chains or ubiquitin fusions and is also important to remove ubiquitin from target proteins allowing the ubiquitin monomer to be recycled. Regulation of the ubiquitin pathway is very important and many disease states are associated with defects in this pathway. The covalent ubiquitin conjugates may then be degraded in the proteasome. Point mutations in the UCHL1 gene are associated with forms of human Parkinson's disease. Recent studies suggest that UCHL1 also has a ubiquitinyl ligase activity, being able to couple ubiquitin monomers by linking the C-terminus of one with lysine 63 of the other (3).

Since UCHL1 is heavily expressed in neurons, antibodies to UCHL1 can be used to identify neurons in histological sections and in tissue culture, and the detection of UCHL1 leaking from CNS tissues into blood and CSF give information about ongoing CNS damage and disease (4,5). Accordingly sensitive ELISA, MSD, Luminex and Simoa assays have been developed and are widely used in research and clinical contexts. This recombinant protein can be used as a convenient protein standard for such assays.

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Abbreviation Key:

mAb—Monoclonal Antibody **pAb**—Polyclonal Antibody **WB**—Western Blot **IF**—Immunofluorescence **ICC**—Immunocytochemistry
IHC—Immunohistochemistry **E**—ELISA **Hu**—Human **Mo**—Monkey **Do**—Dog **Rt**—Rat **Ms**—Mouse **Co**—Cow **Pi**—Pig **Ho**—Horse **Ch**—Chicken
Dr—*D. rerio* **Dm**—*D. melanogaster* **Sm**—*S. mutans* **Ce**—*C. elegans* **Sc**—*S. cerevisiae* **Sa**—*S. aureus* **Ec**—*E. coli*.