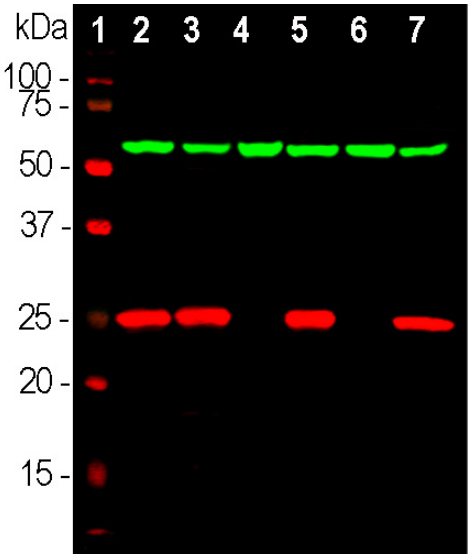
UCHL1 Rabbit Polyclonal Antibody

RPCA-UCHL1

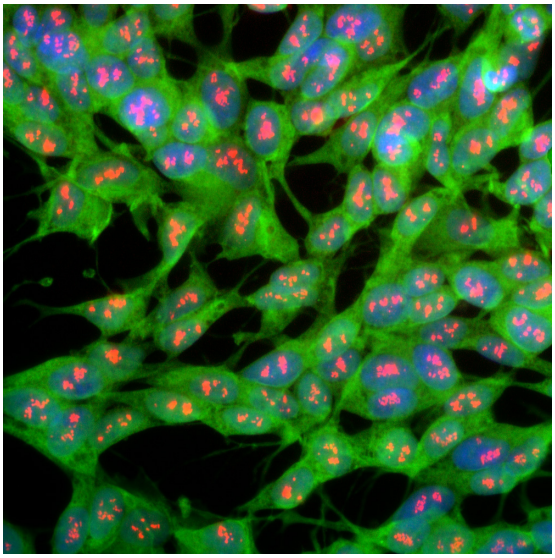
Ordering Information
Web www.encorbio.com
Email admin@encorbio.com
Phone 352-372-7022
Fax 352-372-7066

HGNC Name: *UCHL1*
UniProt: *P09936*
RRID: *AB_2210932*
Immunogen: *Recombinant full length human UCHL1 expressed in and purified from E. coli*
Format: *Supplied as an aliquot of serum plus 5mM NaN_3*
Storage: *Store at 4°C for short term, for longer term at -20°C*
Recommended dilutions:
WB: 1:5,000. IF/ICC and IHC: 1:500

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
WB, IF/ICC, IHC	Rabbit		~24kDa	Hu, Rt, Ms, Co, Pi, Ho, Ch



Western blot analysis of different tissue and cell lysates using rabbit pAb to UCHL1, RPCA-UCHL1, dilution 1:2,000 in red, and mouse mAb to HSP60, MCA-1C7, dilution 1:10,000, in green: [1] protein standard, [2] rat brain, [3] mouse brain, [4] NIH-3T3, [5] HEK293, [6] HeLa, [7] SH-SY5Y cells. The single band at 24kDa corresponds to the UCHL1 protein, while the 60kDa band represents HSP60 protein. UCHL1 is detectable in CNS extracts and cells with neuronal properties.



Immunofluorescent analysis of SH-SY5Y cells stained with rabbit pAb to UCHL1, RPCA-UCHL1, dilution 1:1,000 in green, and costained with mouse mAb to fibrillarin, MCA-38F3, dilution 1:1,000 in red. The blue is Hoechst staining of nuclear DNA. The UCHL1 antibody produces strong staining of the cellular cytoplasm of these cells which share many properties with neurons, while the MCA-38F3 antibody specifically labels nucleoli.

Background:

Ubiquitin C-terminal hydrolase 1 (UCHL1) is an extremely abundant protein of brain, where it is localized only in neurons. It was originally named PGP9.5 and discovered as a major protein spot on 2D gels of brain extracts which was absent on similar gels of other tissues (1). Later it was found that the PGP9.5 protein was an enzyme which could cleave ubiquitin monomers from ubiquitin conjugates and polyubiquitin chains, resulting in recycling of ubiquitin monomers and the renaming of PGP9.5 to UCHL1 to reflect this enzymatic activity (2). UCHL1 is an essential enzyme and defects in UCHL1 protein expression are involved in Parkinson's disease (PD) and other more serious disease states (3-6). Genetic studies defined defects in the *PARK5* gene as causative of PD in a German family, the *PARK5* gene encoding UCHL1 (7). In addition UCHL1 may be released into cerebrospinal fluid (CSF) and blood following CNS damage and disease resulting in neuronal loss. As a result detection of this protein may give information about CNS compromise and recovery (8,9).

The RPCA-UCHL1 antibody was made against full length recombinant human UCHL1 expressed in and purified from *E. coli* and can be used to identify neurons and their processes in culture or in sections. The immunogen used to generate this antibody is available from EnCor, PROT-r-UCHL1. The antibody works cleanly on appropriate lysates of cell and tissues. Considerable interest has been focused on the detection of UCHL1 in the blood and CSF of patients with traumatic injuries to the brain or spinal cord. This antibody has been widely used as both a capture and a detection reagent in ELISA type assays for measuring UCHL1 levels in blood and CSF samples. In addition EnCor supplies a widely used mouse monoclonal antibody to UCHL1, MCA-BH7, and also a chicken polyclonal CPCA-UCHL1. We also supply an ELISA kit for the detection of UCHL1 in blood, CSF and other biological fluids, ELISA-UCHL1.

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 246:670-3 (1989).
3. Kurihara LJ, Kikuchi T, Wada K, Tilghman SM. Loss of Uch-L1 and Uch-L3 leads to neurodegeneration, posterior paralysis and dysphagia. Hum. Mol. Genet. 10:1963-70 (2001).
4. Maraganore DM, et al. UCHL1 is a Parkinson's disease susceptibility gene. Ann Neurol. 55:512-21 (2004).
5. Bilguvar K, et al. Recessive loss of function of the neuronal ubiquitin hydrolase UCHL1 leads to early-onset progressive neurodegeneration. PNAS 110:3489-94 (2013).
6. Liu Y, et al. The UCH-L1 gene encodes two opposing enzymatic activities that affect alpha-synuclein degradation and Parkinson's disease susceptibility. Cell 111:209-18 (2002).
7. Leroy E, et al. The ubiquitin pathway in Parkinson's disease. Nature 395:451-2 (1998).
8. Day IN, Thompson RJ. UCHL1 (PGP 9.5): Neuronal biomarker and ubiquitin system protein. Prog. Neurobiol. 90:327-62 (2009).
9. Mondello S, et al. Clinical utility of serum levels of ubiquitin C-terminal hydrolase as a biomarker for severe traumatic brain injury. Neurosurgery 70:666-75 (2012).

FOR RESEARCH USE ONLY. NOT INTENDED FOR DIAGNOSTIC OR THERAPEUTIC USE.

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.