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-20C
#13179**UCHL1 (D3T2E) XP[®] Rabbit mAb**

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

Applications: W, W-S, IHC-P, IF-F, IF-IC, FC-FP	Reactivity: H M R Mk	Sensitivity: Endogenous	MW (kDa): 27	Source/Isotype: Rabbit IgG	UniProt ID: #P09936	Entrez-Gene Id: 7345
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Product Usage Information**Application**

Western Blotting
Simple Western™
Immunohistochemistry (Paraffin)
Immunofluorescence (Frozen)
Immunofluorescence (Immunocytochemistry)
Flow Cytometry (Fixed/Permeabilized)

Dilution

1:1000
1:50 - 1:250
1:200 - 1:800
1:100 - 1:400
1:800 - 1:1600
1:200 - 1:800

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.

For a carrier free (BSA and azide free) version of this product see product #33575.

Specificity/Sensitivity

UCHL1 (D3T2E) XP[®] Rabbit mAb recognizes endogenous levels of total UCHL1 protein. This antibody does not cross-react with other UCH family members.

Species predicted to react based on 100% sequence homology

Hamster, Bovine, Dog, Pig, Horse, Rabbit

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues near the carboxy terminus of human UCHL1 protein.

Background

Protein ubiquitination and deubiquitination are reversible processes catalyzed by ubiquitinating enzymes (UBEs) and deubiquitinating enzymes (DUBs) (1,2). DUBs are categorized into 5 subfamilies: USP, UCH, OTU, MJD, and JAMM. UCHL1, UCHL3, UCHL5/UCH37, and BRCA-1-associated protein-1 (BAP1) belong to the ubiquitin carboxy-terminal hydrolase (UCH) family of DUBs, which all possess a conserved catalytic UCH domain of about 230 amino acids. UCHL5 and BAP1 have unique, extended carboxy-terminal tails. UCHL1 is abundantly expressed in neuronal tissues and testes, while UCHL3 expression is more widely distributed (3,4). Although UCHL1 and UCHL3 are the most closely related UCH family members with about 53% identity, their biochemical properties differ in that UCHL1 binds monoubiquitin and UCHL3 shows dual specificity toward both ubiquitin (Ub) and NEDD8, a Ub-like molecule.

UCHL1 (PGP 9.5/PARK5) functions as a deubiquitinating enzyme and monoubiquitin stabilizer. *In vitro* studies have demonstrated that UCHL1 can hydrolyze isopeptide bonds between the carboxy-terminal glycine of Ub and the ε-amino group of lysine on target proteins. UCHL1 is also involved in the cotranslational processing of pro-ubiquitin and ribosomal proteins translated as ubiquitin fusions (5-7). Mice deficient in UCHL1 experience spasticity, suggesting that UCHL1 activity is required for the normal neuromuscular junction structure and function (5-7). Research studies have described loss of UCHL1 expression in numerous human malignancies, such as prostate, colorectal, renal, and breast carcinomas. Investigators have shown that loss of UCHL1 expression in breast carcinomas can be attributed to hyper-methylation of the *UCHL1* gene promoter (8). While loss of UCHL1 expression is implicated in human carcinogenesis, mutation of UCHL1 has been implicated in neurodegenerative diseases such as Parkinson's and Alzheimer's (6,7).

Background References

1. Nijman, S.M. et al. (2005) *Cell* 123, 773-86.
2. Nalepa, G. et al. (2006) *Nat Rev Drug Discov* 5, 596-613.
3. Leroy, E. et al. (1998) *Nature* 395, 451-2.
4. Kurihara, L.J. et al. (2001) *Hum Mol Genet* 10, 1963-70.
5. Todi, S.V. and Paulson, H.L. (2011) *Trends Neurosci* 34, 370-82.
6. Setsuie, R. and Wada, K. (2007) *Neurochem Int* 51, 105-11.
7. Day, I.N. and Thompson, R.J. (2010) *Prog Neurobiol* 90, 327-62.

Species Reactivity	Species reactivity is determined by testing in at least one approved application (e.g., western blot).
Western Blot Buffer	IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.
Applications Key	W: Western Blotting W-S: Simple Western™ IHC-P: Immunohistochemistry (Paraffin) IF-F: Immunofluorescence (Frozen) IF-IC: Immunofluorescence (Immunocytochemistry) FC-FP: Flow Cytometry (Fixed/Permeabilized)
Cross-Reactivity Key	H: Human M: Mouse R: Rat Mk: Monkey
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