

USP14 Antibody



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

Applications: W	Reactivity: H M R	Sensitivity: Endogenous	MW (kDa): 60	Source/Isotype: Rabbit	UniProt ID: #P54578	Entrez-Gene Id: 9097
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Product Usage Information

Application

Western Blotting

Dilution

1:1000

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA and 50% glycerol. Store at -20°C. Do not aliquot the antibody.

Specificity/Sensitivity

USP14 Antibody recognizes endogenous levels of total USP14 protein. Based on sequence alignment, this antibody is predicted to cross-react with both isoform a and isoform b of USP14.

Species predicted to react based on 100% sequence homology

Bovine, Dog, Pig, Horse

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues near the carboxy terminus of human USP14 protein. Antibodies are purified by protein A and peptide affinity chromatography.

Background

Ubiquitinating enzymes (UBEs) catalyze protein ubiquitination, a reversible process countered by deubiquitinating enzyme (DUB) action (1,2). Five DUB subfamilies are recognized, including the USP, UCH, OTU, MJD, and JAMM enzymes. In humans, there are three proteasomal DUBs: PSMD14 (POH1/RPN11), UCH37 (UCH-L5), and Ubiquitin-Specific Protease 14, which is also known as the 60 kDa subunit of tRNA-guanine transglycosylase (USP14/TGT60 kDa). USP14 is recruited to the proteasome through its reversible association with the PSMD2 (S2/hRPN1) subunit of the 19S regulatory particle. Whereas PSMD14 appears to promote substrate degradation (3,4), USP14 is thought to antagonize substrate degradation (5-8). While the underlying mechanism for the opposing roles of these two proteasomal DUBs is still uncertain, it is thought that USP14 removes ubiquitin from substrate upon docking of the substrate with the 26S proteasome. Furthermore, USP14 trims ubiquitin residues from the distal end of the polyubiquitin chain, thus decreasing the affinity of the chain for the ubiquitin receptors of the proteasome, and allowing for enhanced substrate stability (6,9,10). Studies have elucidated a physiologic role for USP14 in regulating synaptic activity in mammals (11). Research studies have shown that targeting this activity with small molecule inhibitors has potential benefits for the treatment of neurodegenerative diseases and cancer (5,12).

Background References

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3. Verma, R. et al. (2002) *Science* 298, 611-5.
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5. Lee, B.H. et al. (2010) *Nature* 467, 179-84.
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7. Koulich, E. et al. (2008) *Mol Biol Cell* 19, 1072-82.
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11. Wilson, S.M. et al. (2002) *Nat Genet* 32, 420-5.
12. D'Arcy, P. et al. (2011) *Nat Med*, Epub ahead of print.

Species Reactivity

Species reactivity is determined by testing in at least one approved affinity 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

Cross-Reactivity Key

H: Human **M:** Mouse **R:** Rat

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