

PRODUCT INFORMATION



USP2 active domain (human recombinant)

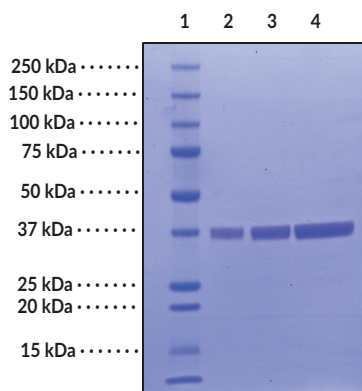
Item No. 22784

Overview and Properties

Synonyms:	Ubiquitin C-terminal Hydrolase 2, Ubiquitin-specific Protease 2
Source:	C-terminally Histidine-tagged human USP2 enzyme (active catalytic domain) purified from <i>E. coli</i>
Amino acids:	259-605 (active catalytic domain)
Uniprot No.:	O75604
Molecular Weight:	40.9 kDa
Storage:	-80°C (as supplied); avoid freeze/thaw cycles by storing protein in aliquots
Stability:	≥1 year
Purity:	<i>batch specific</i> (≥95% estimated by SDS-PAGE)
Supplied in:	50 mM HEPES, pH 8.0, 150 mM sodium chloride, 1 mM DTT, and 0.1 mM EDTA
Protein Concentration:	<i>batch specific</i> mg/ml
Activity:	<i>batch specific</i> U/ml
Specific Activity:	<i>batch specific</i> U/mg
Unit Definition:	One unit is defined as the amount of USP2 enzyme required to produce 1 pmol of AMC per minute at room temperature in 50 mM HEPES, pH 7.8, 0.5 mM EDTA, 1 mM DTT, and 0.2% CHAPS

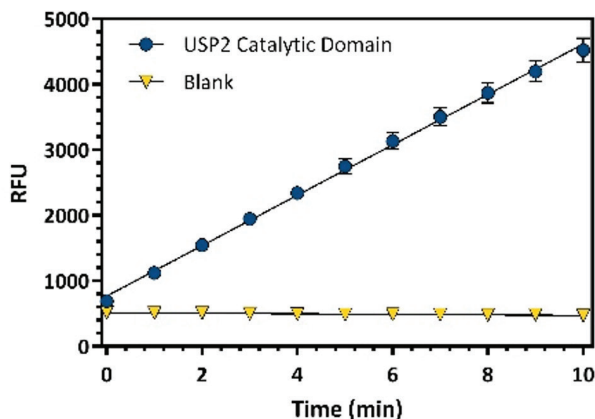
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Images



Lane 1: MW Markers
Lane 2: USP2 (1 µg)
Lane 3: USP2 (2 µg)
Lane 4: USP2 (4 µg)

Representative gel image shown; actual purity may vary between each batch.



WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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Description

Ubiquitin-specific protease 2 (USP2), also known as ubiquitin carboxyl-terminal hydrolase 2, is a cysteine protease involved in intracellular protein degradation by deubiquitinating degraded protein, including Mdm2, Mdm4, and CCND1.¹⁻³ In both normal and cancer cells, it regulates G₁/S cell-cycle transition.² It may regulate p53-dependent pathways by deubiquitinating Mdm2, indirectly promoting p53 degradation and limiting its activity.^{1,4,5} Regulated by androgen, USP2 is over-expressed in prostate cancer and stabilizes fatty acid synthase (FASN), which is associated with the malignancy of some aggressive prostate cancers.^{4,6} Some of these oncogenic properties may be linked to its deubiquitinating activity. One hypothesis is that USP2 may stabilize short-lived proteins that may act to induce apoptosis.⁷ USP2 has also been shown to regulate the intrinsic circadian rhythm and its capacity to respond to external cues, in a non-degradative manner by acting on the core clock component PER1.⁸ This protein is a truncation containing the active catalytic domain (residues 259-605) of USP2 and a C-terminal His-tag.

References

1. Stevenson, L.F., Sparks, A., Allende-Vega, N., *et al.* The deubiquitinating enzyme USP2a regulates the p53 pathway by targeting Mdm2. *EMBO J.* **26(4)**, 976-986 (2007).
2. Shan, J., Zhao, W., and Gu, W. Suppression of cancer cell growth by promoting cyclin D1 degradation. *Mol. Cell* **36(3)**, 469-476 (2009).
3. Allende-Vega, N., Sparks, A., Lane, D.P., *et al.* MdmX is a substrate for the deubiquitinating enzyme USP2a. *Oncogene* **29(3)**, 432-441 (2010).
4. Priolo, C., Tang, D., Brahamandan, M., *et al.* The isopeptidase USP2a protects human prostate cancer from apoptosis. *Cancer Res.* **66(17)**, 8625-8632 (2006).
5. Rénatus, M., Parrado, S.G., D'Arcy, A., *et al.* Structural basis of ubiquitin recognition by the deubiquitinating protease USP2. *Structure* **14(8)**, 1293-1302 (2006).
6. Graner, E., Tang, D., Rossi, S., *et al.* The isopeptidase USP2a regulates the stability of fatty acid synthase in prostate cancer. *Cancer Cell* **5(3)**, 253-261 (2004).
7. Gewies, A. and Grimm, S. UBP41 is a proapoptotic ubiquitin-specific protease. *Cancer Res.* **63(3)**, 682-688 (2003).
8. Stojkovic, K., Wing, S.S., and Cermakian, N. A central role for ubiquitination within a circadian clock protein modification code. *Front. Mol. Neurosci.* **7**, 69 (2014).