

# UBE2E2 (UbcH8) [untagged]

E2 – Ubiquitin Conjugating Enzyme

Alternate Name: UbcH8

Cat. No. 62-0066-020

Lot. No. 1539

Quantity: 20 µg

Storage: -70°C

FOR RESEARCH USE ONLY

NOT FOR USE IN HUMANS



CERTIFICATE OF ANALYSIS Page 1 of 2

## Background

The enzymes of the ubiquitylation pathway play a pivotal role in a number of cellular processes including regulated and targeted proteasomal degradation of substrate proteins. Three classes of enzymes are involved in the process of ubiquitylation; activating enzymes (E1s), conjugating enzymes (E2s) and protein ligases (E3s). UBE2E2 is a member of the E2 ubiquitin-conjugating enzyme family and cloning of the human gene was first described by Kimura *et al.* (1997). The Ubc domain of UBE2E2 shares over 90% identity with human UBE2E1, mouse UbcM2, and *Drosophila* UbcD2 (Kimura *et al.*, 1997). UBE2E2 has been shown to ubiquitylate the E3 ligase E6AP by binding to its HECT domain (Kumar *et al.*, 1997). A yeast two hybrid screen identified two UBE2E2 binding proteins, UbchH7-Associated Protein (H7-AP1) and Human Homologue of *Drosophila* ARLadne (HHARI); both of these proteins are characterized by the presence of a RING finger and In Between RING finger (IBR) domains (Moynihan *et al.*, 1999). Studies using deletion mutants of UBE2E2 and two point mutants - ARA54 and C220S - and RNF8 C403S, have demonstrated that ARA54 and RNF8 ring finger proteins interact with the Ubc domain of UBE2E2 (Ito *et al.*, 2001). UBE2E2 binds directly to the BRCA1 RING motif of the human heterodimeric RING E3 ligase complex BRCA1-BARD1

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## Physical Characteristics

**Species:** human

**Source:** *E. coli* expression

**Quantity:** 20 µg

**Concentration:** 1 mg/ml

**Formulation:** 50 mM HEPES pH 7.5, 150 mM sodium chloride, 2 mM dithiothreitol, 10% glycerol

**Molecular Weight:** ~24 kDa

**Purity:** >98% by InstantBlue™ SDS-PAGE

**Stability/Storage:** 12 months at -70°C; aliquot as required

### Protein Sequence:

GSHMASMTGGQ<sup>Q</sup>MGRGSMSTEAQRVDDSPST  
SGGSSDGDQRESVQQEPEREQVQPKKKEG  
KISSKTAALKLSTSAKRIQKELAEITLDP  
PNCAGPKGDNIYEWSTILGPPGSVYEGGVF  
FLDITFSPDYPFKPPKVTFRTRIYHCNIN  
SQGVICLDILKDNWSPALTISKVLLSICSLT  
DCNPADPLVGSIAQYMTNRAEHRMARQWT  
KRYAT

The residues underlined remain after cleavage and removal of the purification tag.

UBE2E2 (regular text): Start **bold italics** (amino acid residues 1-201)

Accession number: NP\_689866.1

## Quality Assurance

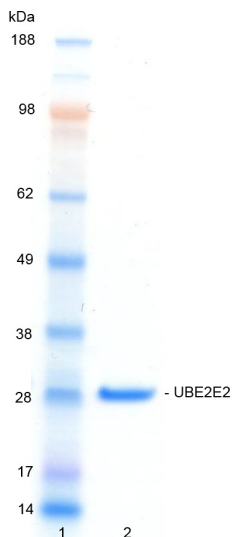
### Purity:

4-12% gradient SDS-PAGE

InstantBlue™ staining

Lane 1: MW markers

Lane 2: 1 µg UBE2E2



### Protein Identification:

Confirmed by mass spectrometry.

### E2-Ubiquitin Thioester Loading Assay:

The activity of UBE2E2 was validated by loading E1 UBE1 activated ubiquitin onto the active cysteine of the UBE2E2 E2 enzyme via a transthiolation reaction. Incubation of the UBE1 and UBE2E2 enzymes in the presence of ubiquitin and ATP at 30°C was compared at two time points, T<sub>0</sub> and T<sub>10</sub> minutes. Sensitivity of the ubiquitin/UBE2E2 thioester bond to the reducing agent DTT was confirmed.



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Lot-specific COA version tracker: v1.0.0

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and is active in causing autoubiquitylation *in vitro* (Christensen *et al.*, 2007). UBE2E2 has also been shown to bind the ubiquitin-protein ligase Parkin via its C-terminal ring-finger domain, resulting in ubiquitylation of the synaptic vesicle associated protein CDCrel-1 (Zhang *et al.*, 2000).

## References:

Christensen DE, Brzovic PS, Klevit RE (2007) E2-BRCA1 RING interactions dictate synthesis of mono- or specific polyubiquitin chain linkages. *Nat Struct Mol Biol* **14**, 941-8.

Ito K, Adachi S, Iwakami R, Yasuda H, Muto Y, Seki N, Okano Y (2001) N-Terminally extended human ubiquitin-conjugating enzymes (E2s) mediate the ubiquitination of RING-finger proteins, ARA54 and RNF8. *Eur J Biochem* **268**, 2725-32.

Kimura M, Hattori T, Matsuda Y, Yoshioka T, Sumi N, Umeda Y, Nakashima S, Okano Y (1997) cDNA cloning, characterization, and chromosome mapping of UBE2E2 encoding a human ubiquitin-conjugating E2 enzyme. *Cytogenet Cell Genet* **78**, 107-11.

Kumar S, Kao WH, Howley PM (1997) Physical interaction between specific E2 and Hect E3 enzymes determines functional cooperativity. *J Biol Chem* **272**, 13548-54.

Moynihan TP, Ardley HC, Nuber U, Rose SA, Jones PF, Markham AF, Scheffner M, Robinson PA (1999) The ubiquitin-conjugating enzymes UbcH7 and UbcH8 interact with RING finger/IBR motif-containing domains of HHARI and H7-AP1. *J Biol Chem* **274**, 30963-8.

Zhang Y, Gao J, Chung KK, Huang H, Dawson VL, Dawson TM (2000) Parkin functions as an E2-dependent ubiquitin-protein ligase and promotes the degradation of the synaptic vesicle-associated protein, CDCrel-1. *Proc Natl Acad Sci USA* **97**, 13354-9.



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