

# UBE2G2 (Ubc7) [untagged]

## E2 – Ubiquitin Conjugating Enzyme

Alternate Names: EC 6.3.2.19, UBC7, Ubiquitin-conjugating enzyme E2G 2

Cat. No. **62-0030-020**  
Lot. No. **30196**

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). UBE2G2 is a member of the E2 conjugating enzyme family and cloning of the human gene was first described by Katsanis and Fischer (1998). The UBE2G2 gene is 2.9-kb and encodes a 165-amino-acid protein that shares 57% sequence identity with UBE2G1. UBE2G2 is involved in protein degradation, including a process known as Endoplasmic Reticulum-Associated Degradation (ERAD). Binding of UBE2G2 to the E3 ligase GP78 via the G2BR domain significantly increases the affinity of UBE2G2 for GP78. The UBE2G2/GP78 interaction results in the preassembly of Lys-48-linked ubiquitin chains on the catalytic cysteine of UBE2G2. Growth of the polyubiquitin chain is mediated by an aminolysis-based transfer reaction between two UBE2G2 proteins; a mechanism for transferring preassembled ubiquitin chains from UBE2G2 to the lysine residue in a substrate (Das *et al.*, 2009; Li *et al.*, 2007). The E3 ligase HRD1 interacts with UBE2G2 to form Lys-48-linked polyubiquitin chains on the substrate 3-Hydroxy-3-MethylGlu-

Continued on page 2

### 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:** ~19 kDa

**Purity:** >90% by InstantBlue™ SDS-PAGE

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

### Protein Sequence:

GPLGSAGTALKRLMAEYKQLTLNPPE  
GIVAGPMNEENFFEWEALIMGPEDTCFEF  
GVFPAILSFPLDYPLSPPKMRFTCEMFHP  
NIYPDGRVCISILHAPGDDPMGYESSAER  
WSPVQSVEKILLSVVSMLAEPNDESGAN  
VDASKMWRDDREQFYKIAKIVQKSLGL

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

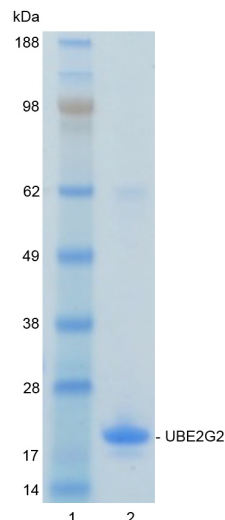
UBE2G2 (regular text): Start **bold italics** (amino acid residues 2-165)

Accession number: NP\_003334

### Quality Assurance

#### Purity:

4-12% gradient SDS-PAGE  
InstantBlue™ staining  
Lane 1: MW markers  
Lane 2: 1 µg UBE2G2



#### Protein Identification:

Confirmed by mass spectrometry.

#### E2-Ubiquitin Thioester Loading Assay:

The activity of UBE2G2 was validated by loading E1 UBE1 activated ubiquitin onto the active cysteine of the UBE2G2 E2 enzyme via a transthioylation reaction. Incubation of the UBE1 and UBE2G2 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/UBE2G2 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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## Background

Continued from page 1

taryl-coenzyme A Reductase (HMGR) targeting it for degradation (Kikkert *et al.*, 2004). A C4HC3 RING finger-containing ubiquitin ligase of the endoplasmic reticulum - TEB4 - catalyses Lys-48-linked polyubiquitylation employing UBE2G2 *in vitro* (Hassink *et al.*, 2005).

### References:

Das R, Mariano J, Tsai YC, Kalathur RC, Kostova Z, Li J, Tarasov SG, McFeeters RL, Altieri AS, Ji X, Byrd RA, Weissman AM. (2009) Allosteric activation of E2-RING finger-mediated ubiquitylation by a structurally defined specific E2-binding region of gp78. *Mol Cell* **34**, 674-85.

Hassink G, Kikkert M, Voorden SV, Lee SJ, Spaapen R, Laar TV, Coleman CS, Bartee E, Fruh K, Chau V, Wiertz V. (2005) TEB4 is a C4HC3 RING finger-containing ubiquitin ligase of the endoplasmic reticulum. *Biochem J* **388**, 647-55.

Katsanis N, Fisher EM (1998) Identification, expression, and chromosomal localization of ubiquitin conjugating enzyme 7 (UBE2G2), a human homologue of the *Saccharomyces cerevisiae* ubc7 gene. *Genomics* **51**, 128-31.

Kikkert M, Doolman R, Dai M, Avner R, Hassink G, Voorden SV, Thanedar S, Roitelman J, Chau V, Wiertz E. (2004) Human HRD1 is an E3 ubiquitin ligase involved in degradation of proteins from the endoplasmic reticulum. *J Biol Chem* **279**, 3525-34.

Li W, Tu D, Brunger AT, Ye Y (2007) A ubiquitin ligase transfers preformed polyubiquitin chains from a conjugating enzyme to a substrate. *Nature* **446**, 333-7.



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