# UBE2G2 (Ubc7) [GST-tagged]

E2 – Ubiquitin Conjugating Enzyme

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

Cat. No.	62-0029-020	Quantity:	20 µg
Lot. No.	1395	Storage:	-70°С
FOR RESEARCH USE ONLY		NOT FOR USE IN HUMANS	



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The enzymes of the ubiquitylation path-

way play a pivotal role in a number of cel-

lular processes including regulated and

targeted proteosomal degradation of sub-

strate proteins. Three classes of enzymes

are involved in the process of ubiquitylation; activating enzymes (E1s), conjugat-

ing 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 encodes a 165-amino-acid protein

that shares 57% sequence identity with UBE2G1. UBE2G2 is involved in protein

degradation, including a process known

Degradation (ERAD). UBE2G2 binds the E3

ligase GP78 and the affinity of this interaction is significantly increased by the G2BR domain on GP78. The UBE2G2/GP78 in-

teraction results in the preassembly of Lys-

48-linked ubiquitin chains on the catalytic

cysteine of UBE2G2. Growth of the polyu-

biguitin chain is mediated by an aminol-

ysis-based transfer reaction between two

UBE2G2 proteins; a mechanism for trans-

ferring preassembled ubiquitin chains from

UBE2G2 to the lysine residue in a substrate

(Das et al., 2009; Li et al., 2007). The E3 li-

gase HRD1 interacts with UBE2G2 to form

Lys-48-linked- polyubiquitin chains on

the substrate 3-Hydroxy-3-MethylGlutaryl-

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.,

Endoplasmic Reticulum-Associated

Background

as

2005).

# **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: ~45 kDa

Purity: >98% by InstantBlue<sup>™</sup> SDS-PAGE

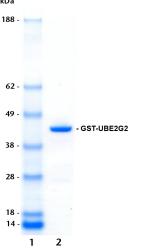
Stability/Storage: 12 months at -70°C; aliquot as required

## **Quality Assurance**

#### **Purity:**

4-12% gradient SDS-PAGE InstantBlue<sup>™</sup> staining lane 1: MW markers lane 2: 1 µg GST-UBE2G2





#### **Protein Sequence:**

**MSPILGYWKIKGLVQPTRLLLEYLEEKYEEH** LYERDEGDKWRNKKFELGLEFPNLPYYIDGD VKLTQSMAIIRYIADKHNMLGGCPKER AEISMLEGAVLDIRYGVSRIAYSKDFETLKVD FLSKLPEMLKMFEDRLCHKTYLNGDHVTHP DFMLYDALDVVLYMDPMCLDAFPKLVCFK **KRIEAIPQIDKYLKSSKYIAWPLQGWQAT** FGGGDHPPKSDLEVLFQGPLGSAGTALKRL MAEYKQLTLNPPEGIVAGPMNEENFFEWEAL IMGPEDTCFEFGVFPAILSFPLDYPLSPPKMRFT CEMFHPNIYPDGRVCISILHAPGDDPMGYES SAERWSPVQSVEKILLSVVSMLAEPNDESGANV DASKMWRDDREQFYKIAKQIVQKSLGL

Tag (bold text): N-terminal glutathione-S-transferase (GST) Protease cleavage site: PreScission™ (LEVLFQ▼GP) UBE2G2 (regular text): Start bold italics (amino acid residues 2-165) Accession number: NP\_003334

#### **Protein Identification:**

Confirmed by mass spectrometry.

#### **E2-Ubiquitin Thioester Loading Assay:**

The activity of GST-UBE2G2 was validated by loading E1 UBE1 activated ubiguitin onto the active cysteine of the GST-UBE2G2 E2 enzyme via a transthiolation reaction. Incubation of the UBE1 and GST-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/GST-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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**CERTIFICATE OF ANALYSIS** - Page 2 of 2

### Background

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#### **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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