

# UBE2V1 (Uev1) [untagged]

## E2 – Ubiquitin Conjugating Enzyme

**Alternate Names:** CIR1, CROC1, TRAF6-regulated IKK activator 1 beta Uev1A, UBE2V, Ubiquitin-conjugating enzyme variant Kua, Uev1, Uev1A

**Cat. No.** 62-0059-100  
**Lot. No.** 1476

**Quantity:** 100 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). UBE2V1 is a member of the E2 conjugating enzyme family and cloning of the human gene was first described by Rothofsky and Lin (1997). UBE2V1 is also known as Uev1A and there is an additional isoform of Uev1A referred to as Uev1B. UBE2V1 shares 90% sequence identity with UBE2V2 in its C-terminal domain but lacks the active cysteine site critical for E2 catalytic activity. Constitutive expression of exogenous Uev1A (UBE2V1) protein in colon carcinoma cells inhibits differentiation and induces a change in cell cycle behaviour which is associated with an inhibition of the mitotic kinase CDK1 (Sancho *et al.*, 1998). UBE2V1 forms a stable high affinity complex alongside the E2 conjugating enzyme UBE2N for the assembly of Lys-63-linked ubiquitin chains and it is by this mechanism the complex known as TRIKA1 mediates IKK activation together with TRAF6. The TRIKA2 complex comprising TAK1, TAB1 and TAB2 activates IKK in a TRIKA1 dependent manner. TAK1 phosphorylation of MKK6 has been shown to activate the JNK-p38 kinase pathway and is regulated by the Lys63-linked polyubiquitin chains on TRIKA1 (Wang

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### Physical Characteristics

**Species:** human

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

**Quantity:** 100 µg

**Concentration:** 1 mg/ml

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

**Molecular Weight:** ~21 kDa

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

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

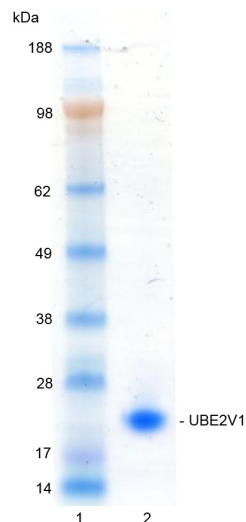
### Protein Sequence:

GSHMASMTGGQQMGRGSPGEVQASYLKSQSKLS  
DEGRLEPRKFHCKGVKVPNFRLLLEELEGQK  
GVGDGTVSWGLEDDEDMLTRWTGMIIGPRTI  
YENRIYSLKIECGPKYPEAPPFVRFVTKIN  
MNGVNSSNGVDDPRAISVLAKWQNSYSIKVV  
LQELRRLMMSKENMKLPQPEGCYSN

The residues underlined remain after cleavage and removal of the purification tag.  
UBE2V1 (regular text): Start **bold italics** (amino acid residues 2-170)  
Accession number: AAG24229

### Quality Assurance

**Purity:** 4-12% gradient SDS-PAGE InstantBlue™ staining  
Lane 1: MW markers  
Lane 2: 1 µg UBE2V1



### Protein Identification:

Confirmed by mass spectrometry.

### Polyubiquitin Chain Formation Assay:

The activity of UBE2V1 was validated in a polyubiquitin chain formation assay. Incubation of UBE1, UBE2N and CHIP - with and without UBE2V1 - in the presence of ubiquitin and ATP at 30°C was compared at two time points, T<sub>0</sub> and T<sub>60</sub> minutes. Polyubiquitin chains were detected by Western blot using a monoclonal anti-ubiquitin conjugate antibody. The ability of UBE2V1 to promote the formation of polyubiquitin chains was observed.



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CERTIFICATE OF ANALYSIS Page 2 of 2

## Background

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*et al.*, 2001). Distinct functions amongst the UBE2V1 variants exist, the yeast homologue Mms2 with UBE2N is involved in DNA damage repair whereas human UBE2V1 activates the NFκB pathway. These novel mechanisms are likely due to the alternative Lys-63-linked polyubiquitylation modulated by UBE2N (Andersen *et al.*, 2005). UBE2V1 has also been shown to upregulate Bcl2 providing evidence that UBE2V1 is a potential protooncogene (Syed *et al.*, 2006). In addition, significant upregulation of UBE2V1 expression has been shown in microarray analyses of 128 genes derived from nephrectomy samples of kidney transplant recipients with chronic allograft nephropathy and acute rejection (Nogueira *et al.*, 2009).

## References:

Andersen PL, Zhou H, Pastushok L, Moraes T, McKenna S, Ziola B, Ellison MJ, Dixit VM, Xiao W (2005) Distinct regulation of Ubc13 functions by the two ubiquitin-conjugating enzyme variants Mms2 and Uev1A. *J Cell Biol* **170**, 745-55.

Nogueira E, Ponciano VC, Naka EL, Marques GD, Cenedeze MA, Camara NO, Pacheco-Silva A (2009) Toll-like receptors-related genes in kidney transplant patients with chronic allograft nephropathy and acute rejection. *Int Immunopharmacol* **9**, 673-6.

Rothofsky ML, Lin SL (1997) CROC-1 encodes a protein which mediates transcriptional activation of the human FOS promoter. *Gene* **195**, 141-9.

Sancho E, Vila MR, Sánchez-Pulido L, Lozano JJ, Paciucci R, Nadal M, Fox M, Harvey C, Bercovich B, Loukili N, Ciechanover A, Lin SL, Sanz F, Estivill X, Valencia A, Thomson TM (1998) Role of UEV-1, an inactive variant of the E2 ubiquitin-conjugating enzymes, in *in vitro* differentiation and cell cycle behavior of HT-29-M6 intestinal mucosecretory cells. *Mol Cell Biol* **18**, 576-89.

Syed NA, Andersen PL, Warrington RC, Xiao W (2006) Uev1A, a ubiquitin conjugating enzyme variant, inhibits stress-induced apoptosis through NF-κappaB activation. *Apoptosis* **11**, 2147-57.

Wang C, Deng L, Hong M, Akkaraju GR, Inoue J, Chen ZJ (2001) TAK1 is a ubiquitin-dependent kinase of MKK and IKK. *Nature* **412**, 346-51.



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