

UBE2H (UbcH2) [untagged]

E2 – Ubiquitin Conjugating Enzyme

Alternate Names: 6.3.2.19, E2-20K, UBC8, UbcH, UbcH2, Ubiquitin-conjugating enzyme E2H

Cat. No. **62-0032-020**
Lot. No. **1467**

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). UBE2H is a member of the E2 conjugating enzyme family and cloning of the human gene was first described by Kaiser *et al.* (1994). Human UBE2H shares 54% identity with its yeast homologue (UbcH8) and full length forms of both the human and yeast enzymes showed similar enzymatic activities *in vitro* by catalyzing the ubiquitylation of histones (Kaiser *et al.*, 1995). In skeletal muscle whole cell extracts TNF α up-regulates and increases the conjugating activity of UBE2H *in vitro* via binding of NF- κ B to the promoter region of the gene (Li *et al.*, 2003). UBE2H has been mapped to a region on chromosome 7 (Hayashida *et al.*, 2000) and the gene has been identified as a candidate for involvement in an autistic disorder with neurodevelopmental complications. Single strand conformation analysis demonstrated a significant association between a polymorphism in the UBE2H gene suggesting it could be one of the 7q-susceptibility loci for Autistic Disorder (Vourc'h *et al.*, 2003). An association has also been made between UBE2H and the motor neuron disorder amyotrophic lateral sclerosis (ALS) where

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: ~21 kDa

Purity: >98% by InstantBlue™ SDS-PAGE

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

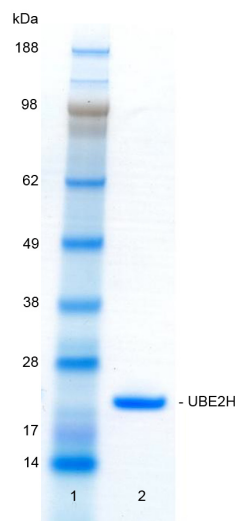
Protein Sequence:

GPGSMSSPSPGKRMDTDVVKLI**ES**KHEVTIL
GGLNEFVVVKFYGPQGTPYEGGVWVVRVDLPD
KYPFKSPS**I**GFMNKIFHPNIDEASGTVCLD
VINQ**T**WTALYDLTNIFESFLPQLLAYPNPID
PLNGDAAAMYLHRPEEYKQKIKEYIQKYATEE
ALKEQE**E**GTGDSSSESSMSDFSEDEA**Q**DMEL

The residues underlined remain after cleavage and removal of the purification tag: GPGS
UBE2H (regular text): Start **bold italics** (amino acid residues 1-183)
Accession number: NP_003335

Quality Assurance

Purity: 4-12% gradient SDS-PAGE InstantBlue™ staining
Lane 1: MW markers
Lane 2: 1 µg UBE2H



Protein Identification:

Confirmed by mass spectrometry.

E2-Ubiquitin Thioester Loading Assay:

The activity of UBE2H was validated by loading E1 UBE1 activated ubiquitin onto the active cysteine of the UBE2H E2 enzyme via a transthioester reaction. Incubation of the UBE1 and UBE2H enzymes in the presence of ubiquitin and ATP at 30°C was compared at two time points, T₀ and T₁₀ minutes. Sensitivity of the ubiquitin/UBE2H 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

single strand conformation polymorphism (SSCP) analysis identified a known and sporadic polymorphism in the gene (Martin *et al.*, 2008).

References:

Hayashida S, Yamasaki K, Asada Y, Soeda E, Niikawa N, Kishino T (2000) Construction of a physical and transcript map flanking the imprinted MEST/PEG1 region at 7q32. *Genomics* **66**, 221-5.

Kaiser P, Mandl S, Schweiger M, Schneider R (1995) Characterization of functionally independent domains in the human ubiquitin conjugating enzyme UbcH2. *FEBS Lett* **377**, 193-6.

Kaiser P, Seufert W, Hofferer L, Kofler B, Sachsenmaier C, Herzog H, Jentsch S, Schweiger M, Schneider R (1994) A human ubiquitin-conjugating enzyme homologous to yeast UBC8. *J Biol Chem* **269**, 8797-802.

Li YP, Lecker SH, Chen Y, Waddell ID, Goldberg AL, Reid MB (2003) TNF-alpha increases ubiquitin-conjugating activity in skeletal muscle by up-regulating UbcH2/E220k. *FASEB J* **17**, 1048-57.

Martin I, Vourc'h P, et al. (2009) Association study of the ubiquitin conjugating enzyme gene UBE2H in sporadic ALS. *Amyotroph Lateral Scler* **10**, 432-5.

Vourc'h P, Martin I, Bonnet-Brihault F, Marouillat S, Barthelemy C, Pierre Muh J, Andres C (2003) Mutation screening and association study of the UBE2H gene on chromosome 7q32 in autistic disorder. *Psychiatr Genet* **13**, 221-5.



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