## biotechne

## Recombinant Human Ubiquitin-activating Enzyme/UBE1

**R**DSYSTEMS

Catalog Number: E-305

DESCRIPTION	
Source	Spodoptera frugiperda, Sf 21 (baculovirus)-derived human Ubiquitin-activating Enzyme/UBE1 protein Accession # P22314.3
Predicted Molecular Mass	118 kDa

SPECIFICATIONS	
Activity	Recombinant Human Ubiquitin Activating Enzyme (UBE1) is a member of the Ubiquitin-activating (E1) enzyme family that is required for the first step of the enzymatic cascade that subsequently utilizes a Ubiquitin-conjugating (E2) enzyme and a Ubiquitin ligase (E3) to conjugate Ubiquitin to substrate proteins. Reaction conditions will need to be optimized for each specific application. We recommend an initial Recombinant Human Ubiquitin Activating Enzyme (UBE1) concentration of 50-200 nM.
Purity	>95%, by SDS-PAGE under reducing conditions and visualized by Colloidal Coomassie® Blue stain.
Formulation	Supplied as a solution in HEPES, NaCI and TCEP. See Certificate of Analysis for details.

PREPARATION AND STORAGE	
Shipping	The product is shipped with dry ice or equivalent. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	Use a manual defrost freezer and avoid repeated freeze-thaw cycles.
	<ul> <li>6 months from date of receipt, -70 °C as supplied.</li> </ul>
	<ul> <li>3 months, -70 °C under sterile conditions after opening.</li> </ul>

## BACKGROUND

Ubiquitin-activating Enzyme (UBE1), also known as Ubiquitin-like Modifier Activating Enzyme 1 (UBA1), is a 1058 amino acid (aa) canonical member of the Ubiquitinactivating (E1) enzyme family of proteins with a predicted molecular weight of 118 kDa. It is ubiquitously expressed and highly conserved; mouse and rat UBE1 share 95% and 96% aa sequence identity with the human UBE1 protein, respectively. UBE1 is found in the cytoplasm and nucleus, and contains a conserved activesite cysteine residue and ATP-binding site common to E1 enzymes (1-3). UBE1 is responsible for the first step in Ubiquitin-protein isopeptide bond formation (4,5). Ubiquitin is activated by UBE1 and thereafter linked to the side chain of a cysteine residue in UBE1, Cys632 in humans, yielding a Ubiquitin-UBE1 conjugate via a thioester bond (5-8). The activated Ubiquitin is then transferred to a lysine residue on the target protein via the Ubiquitin-conjugating – Ubiquitin ligase enzyme cascade. UBE1 is required for cell cycle progression and has been linked to cellular responses to DNA damage such as nucleotide excision repair (3,9,10). Mutations in UBE1 are associated with X-linked lethal infantile spinal muscular atrophy (11). UBE1 is a critical component for the initiation of *in vitro* ubiquitin conjugation reactions.

## References:

- 1. Handley, P.M. et al. (1991) Proc. Natl. Acad. Sci. USA 88:258.
- 2. Nagai, Y. et al. (1995) J. Cell Sci. 108:2145.
- 3. Stephen, A.G. et al. (1996) J. Biol. Chem. 271:15608.
- 4. Hershko, A. et al. (1983) J. Biol. Chem. 258:8206.
- 5. Schulman, B.A. & J.W. Harper (2009) Nat. Rev. Mol. Cell Biol. 10:319.
- 6. Haas, A.L. *et al.* (1982) J. Biol. Chem. **257**:2543.
- 7. Haas, A.L. & I.A. Rose (1982) J. Biol. Chem. 257:10329.
- 8. Pickart, C.M. *et al.* (1994) J. Biol. Chem. **269**:7115.
- 9. Nouspikel, T. & P.C. Hanawalt (2006) Proc. Natl. Acad. Sci. USA 103:16188.
- 10. Moundry, P. *et al.* (2012) Cell Cycle **11**:1573.
- 11. Ramser, J. et al. (2008) Am. J. Hum. Genet. 82:188.

Rev. 8/28/2023 Page 1 of 1



Global bio-techne.com info@bio-techne.com techsupport@bio-techne.com TEL +1 612 379 2956 USA TEL 800 343 7475 Canada TEL 855 668 8722 China TEL +86 (21) 52380373 Europe | Middle East | Africa TEL +44 (0)1235 529449