



LD Biopharma, Inc.
9924 Mesa Rim Road, Suite B
San Diego, CA 92121
Tel: 858-876-8266
<http://www.ldbiopharma.com>

- PRODUCT DATA SHEET -

Name of Product: Recombinant Human VCP Protein
Catalog Number: hRP-1800
Manufacturer: LD Biopharma, Inc.

Introduction

The protein encoded by human valosin-containing protein (VCP) gene is a member of a family that includes putative ATP-binding proteins involved in vesicle transport and fusion, 26S proteasome function, and assembly of peroxisomes. It is necessary for the fragmentation of Golgi stacks during mitosis and for their reassembly after mitosis. VCP is involved in the formation of the transitional endoplasmic reticulum (tER). The transfer of membranes from the endoplasmic reticulum to the Golgi apparatus occurs via 50-70 nm transition vesicles, which derive from part-rough, part-smooth transitional elements of the endoplasmic reticulum (tER). Vesicle budding from the tER is an ATP-dependent process. The ternary complex containing UFD1L, VCP and NPLOC4 binds ubiquitinated proteins and is necessary for the export of misfolded proteins from the ER to the cytoplasm, where they are degraded by the proteasome. The NPLOC4-UFD1L-VCP complex regulates spindle disassembly at the end of mitosis and is necessary for the formation of a closed nuclear envelope. VCP also regulates E3 ubiquitin-protein ligase activity of RNF19A. As a component of the VCP/p97-AMFR/gp78 complex that participates in the final step of the sterol-mediated ubiquitination and endoplasmic reticulum-associated degradation (ERAD) of HMGCR. It also involved in DNA damage response: recruited to double-strand breaks (DSBs) sites in a RNF8- and RNF168-dependent manner and promotes the recruitment of TP53BP1 at DNA damage sites. It recruited to stalled replication forks by SPRTN: may act by mediating extraction of DNA polymerase eta (POLH) to prevent excessive translesion DNA synthesis and limit the incidence of mutations induced by DNA damage. VCP is required for cytoplasmic retrotranslocation of stressed/damaged mitochondrial outer-membrane proteins and their subsequent proteasomal degradation.

Full-length human VCP (805aa, Isoforms-a, derived from BC110913) gene was constructed with codon optimized gene synthesis technology, and fusion with 30 aa N-terminal T7 / His / TEV cleavage site Tag (29aa) fusion at its N-terminal. This protein was expressed in *E. coli* as inclusion bodies. The final product was refolded using our unique “temperature shift inclusion body refolding” technology and chromatographically purified.



LD Biopharma, Inc.
9924 Mesa Rim Road, Suite B
San Diego, CA 92121
Tel: 858-876-8266
<http://www.ldbiopharma.com>

Gene Symbol:	VCP (ALS14; HEL-220; HEL-S-70; IBMPFD)
Accession Number:	NP_009057
Species:	Human
Size:	50 µg / Vial
Composition:	0.5 mg/ml, sterile-filtered, in 20 mM pH 8.0 Tris-HCl Buffer, with proprietary formulation of NaCl, KCl, EDTA, Sucrose and DTT.
Storage:	In Liquid. Keep at -80°C for long term storage. Product is stable at 4 °C for at least 7 days.

Key References

Hui Hui Wong, et al., *Genome-wide screen reveals valosin-containing protein requirement for coronavirus exit from endosomes*. J Virol. 89 1116 - 11128 (2015)

Locke M, et al., *Lys11- and Lys48-linked ubiquitin chains interact with p97 during endoplasmic-reticulum-associated degradation*. Biochem. J. 459 (1), 205-216 (2014)

Li JM, et al., *The p97-UFD1L-NPL4 protein complex mediates cytokine-induced IkappaBalpha proteolysis*. Mol. Cell. Biol. 34 (3), 335-347 (2014)

Glinka T, et al., *Signal-peptide-mediated translocation is regulated by a p97-AIRAPL complex*. Biochem. J. 457 (2), 253-261 (2014)

Applications

1. May be used for in vitro VCP mediated *tER* vesicle transport and fusion regulation study for various pathways, such as viral budding, protein degradation, et al, by intracellular delivery of recombinant VCP protein with ProFectin reagent.
2. May be used for protein-protein interaction mapping.
3. May be used as specific substrate protein for kinase, ad ubiquitin (Sumo pathway) related enzyme functional screening assays.
4. Potential anti-viral therapy host target protein, by specific inhibiting VCP/viral protein interactions, such as coronnaviral N protein may block viral early infection in vivo.
5. As immunogen for specific antibody production.



LD Biopharma, Inc.
9924 Mesa Rim Road, Suite B
San Diego, CA 92121
Tel: 858-876-8266
<http://www.ldbiopharma.com>

Quality Control

Purity: > 90% by SDS-PAGE.

Recombinant Protein Sequence

MASMTGGQQMGRGHHHHHENLYFQGGFEGSASGADSKGDDLSTAILKQKNRPNRLIVDEAINE
DNSVVSLSQPKMDELQLFRGDTVLLKGGKRREAVCIVLSDDTCSDEKIRMNRVVRNNLRVRLGD
VISIQPCPDVKYKRIHVLPIDDTVEGITGNLFEVYLKPYFLEAYRPIRKGDIFLVRGGMRAVE
FKVETDPSPYCIVAPDTVIHCEGEPKREDEEESLNEVGYYDDIGGCRKQLAQIKEMVELPLRH
PALFKAIGVKPPRGILLYGPPGTGKTLIARAVANETGAFFFLINGPEIMSKLAGESESNLRKAF
EEAEKNAPAIIFIDELDAIAPKREKTHGEVERRIVSQLLTLMMDGLKQRAHVIVMAATNRPNSID
PALRRFGRFDREVDIGIPDATGRLEILQIHTKNMKLADDVDLEQVANETHGHVGDLAALCSEA
ALQAIRKKMDLIDLEDETIDAEVMNSLAVTMDDFRWALSQSNPSALRETVVEVPQVTWEDIGGL
EDVKRELQELVQYPVEHPDKFLKFGMTPSKGVLFYGPFGCGKTLAKAIANECQANFISIKGPE
LLTMWFGESEANVREIFDKARQAAPCVLFFDELDSIAKARGGNIGDGGGAADRVINQILTEMDG
MSTKKNVFIIGATNRPDIIDPAILRPGRLDQLIYIPLPDEKSRVAILKANLRKSPVAKDVDLEF
LAKMTNGFSGADLTEICQRACKLAIRESIESEIRRERERQTNPSAMEVEEDDPVEIRRDFEE
AMRFARRSVSDNDIRKYEMFAQTLQQSRGFGSFRFPSGNQGGAGPSQSGGGGTGGSVYTEDNDD
DLYG