Active Valosin Containing Protein (VCP)

Catalog#:PEH12856

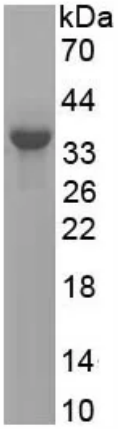
概述（Summary）

别称（Alternative Names）	IBMPFD; p97; TERA; Transitional Endoplasmic Reticulum ATPase; 15S Mg(2+)-ATPase p97 subunit
纯度（Purity）	Greater than 95% as determined by reducing SDS-PAGE.
内毒素（Endotoxin level）	Please contact with the lab for this information
蛋白构建（Construction）	【Gly125-Ile371】
Accession #	P55072
表达宿主（Host）	E.coli
种属（Species）	Homo sapiens (Human)
预测分子量（Predicted MW）	31.2 kDa
制剂（Form）	Lyophilized from a 0.2 μm filtered solution of PBS, pH7.4, containing 0.01% SKL, 1mM DTT, 5% Trehalose and Proclin300.
运输方式（Shipping）	The product is shipped with ice bag. Upon receipt, store it immediately at the temperature listed below.
稳定性&储存（Stability &Storage）	12 months at -20°C to -80°C in lyophilized state.6 months at -20°C to -80°C under sterile conditions after reconstitution.7-10 days at 2°C to 8°C under sterile conditions after reconstitution.Please minimize freeze-thaw cycles.
复溶（Reconstitution）	Reconstitute in 10mM PBS (pH7.4) to a concentration of 0.1-1.0 mg/mL. Do not vortex.
背景介绍（References）	Necessary for the fragmentation of Golgi stacks during mitosis and for their reassembly after mitosis. 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 UFD1, 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-UFD1-VCP complex regulates spindle disassembly at the end of mitosis and is necessary for the formation of a closed nuclear envelope. Regulates E3 ubiquitin-protein ligase activity of RNF19A. 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. Involved in endoplasmic reticulum stress-induced pre-emptive quality control, a mechanism that selectively attenuates the translocation of newly synthesized proteins into the endoplasmic reticulum and reroutes them to the cytosol for proteasomal degradation. Plays a role in the regulation of stress granules (SGs) clearance process upon arsenite-induced response. 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. 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. Together with SPRTN metalloprotease, involved in the repair of covalent DNA-protein cross-links (DPCs) during DNA synthesis. Involved in interstrand cross-link repair in response to replication stress by mediating unloading of the ubiquitinated CMG helicase complex. Required for cytoplasmic retrotranslocation of stressed/damaged mitochondrial outer-membrane proteins and their subsequent proteasomal degradation. Essential for the maturation of ubiquitin-containing autophagosomes and the clearance of ubiquitinated protein by autophagy. Acts as a negative regulator of type I interferon production by interacting with DDX58/RIG-I: interaction takes place when DDX58/RIG-I is ubiquitinated via 'Lys-63'-linked ubiquitin on its CARD domains, leading to recruit RNF125 and promote ubiquitination and degradation of DDX58/RIG-I. May play a role in the ubiquitin-dependent sorting of membrane proteins to lysosomes where they undergo degradation. May more particularly play a role in caveolins sorting in cells. By controlling the steady-state expression of the IGF1R

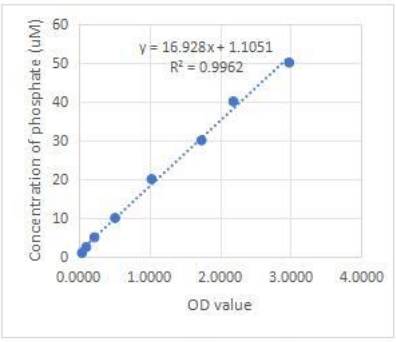
receptor, indirectly regulates the insulin-like growth factor receptor signaling pathway.

电泳图（SDS-PAGE image）



Greater than 95% as determined by reducing SDS-PAGE.

活性图（Bioactivity image）



OD(630nm)	Phosphate (uM)
2.9771	50
2.1898	40
1.7402	30
1.0328	20
0.5177	10
0.2256	5
0.1086	2.5
0.0492	1

Figure 1. The standard curve of Phosphate

VCP is an ATPase Associated with diverse cellular Activities (AAA) that has a key role in maintaining cellular homeostasis. VCP is ubiquitously expressed in tissues. At cellular level, VCP functions in many cellular compartments; VCP localizes mainly in the cytoplasm, while a smaller fraction binds to organelles or localizes in the nucleus, where it is implicated in different pathways. VCP assembles and acts as a homo-hexamer, in which each monomer is structured in an N-terminal domain that interacts with adaptors and co-factors; in two ATPase domains, D1 and D2, that by hydrolyzing ATP concur, respectively, in the hexamer formation and in supporting VCP activity; and in a C-terminal domain that binds to a small subset of co-factors and adaptors cooperating with D2 activity. The main role of VCP is to recognize and to extract ubiquitinated proteins from membranes, protein complexes, protein aggregates, or chromatin, modulating their ubiquitination or de-ubiquitination, and to enhance their degradation through the UPS or the autophagic pathway. The activity of recombinant human VCP was measured by its ability to hydrolyze the substrate ATP to phosphate which was detected by the malachite green phosphate detection Kit (Beyotime # S0196M). The reaction was performed in the assay buffer 20 mM HEPES, 13 mM NaCl and 1% glycerol, pH 8.5, initiated by addition 27 µL of various concentrations of VCP (diluted by assay buffer) to 3 µL of 100 mM ATP and 100 mM MgCl2 mixture. The final well serves as a negative control with no VCP, replaced with 27 µL assay buffer. Incubated at 37°C for 5min, then stop the reaction by quickly freezing samples in the dry ice and ethanol. 4 ul samples was added to 196 ul assay buffer after thawing at room temperature followed by adding 70 ul phosphate detection agent and incubated at room temperature for 30min, then

read at a wavelength of 630 nm. The specific activity of recombinant human VCP is >1000 pmol/min/μg.

注意事项（Note）

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