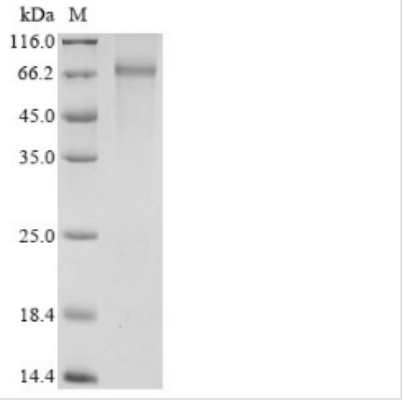
Recombinant Human Pyruvate dehydrogenase E1 component subunit alpha, somatic form, mitochondrial (PDHA1), partial

Product Code	CSB-EP017715HUc0
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P08559
Form	Liquid or Lyophilized powder
Storage Buffer	If the delivery form is liquid, the default storage buffer is Tris/PBS-based buffer, 5%-50% glycerol. If the delivery form is lyophilized powder, the buffer before lyophilization is Tris/PBS-based buffer, 6% Trehalose.
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 85% as determined by SDS-PAGE.
Sequence	ANDATFEIKKCDLHRLEEGPPVTTVLTREDGLKYYRMMQTVRRMELKADQLYK QKIIRGFCHLCDGQEACCVGLEAGINPTDHLITAYRAHGFTFTRGLSVREILAEL TGRKGGCAKGKGGSMHMYAKNFYGGNGIVGAQVPLGAGIALACKYNGKDEV CLTLYGDGAANQGQIFEAYNMAALWKLPCIFICENNRYGMGTSVERAAASTDY YKRGDFIPGLRVDGMDILCVREATRFAAAYCRSGKGPILMELQTYRYHGHSMS DPGVSYRTREEIQEVRSKSDPIMLLKDRMVNSNLASVEELKEIDVEVRKEIEDA AQFATADPEPPLEELGYHIYSSDPPFEVRGANQWIKFKSVS
Lead Time	3-7 business days
Research Area	Metabolism
Source	E.coli
Gene Names	PDHA1
Expression Region	31-390aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-GST-tagged
Mol. Weight	71.6 kDa
Protein Description	partial
Image	



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

Description

CUSABIO inserts the human Pyruvate dehydrogenase E1 component subunit alpha, somatic form, mitochondrial (PDHA1) (31-390aa) encoding gene fused with the N-terminal 6xHis-GST-tag gene into a plasmid vector to form recombinant plasmid, which is then introduced into E.coli cells. E.coli cells demonstrating successful uptake of the recombinant plasmid are selected based on their ability to survive in the presence of a specific antibiotic. The positive E.coli cells are cultured under conditions that promote the expression of the gene of interest. Following expression, affinity purification is used to isolate and purify the recombinant human PDHA1 protein from the cell lysate. Denaturing SDS-PAGE is then applied to resolve the resulting recombinant human PDHA1 protein, demonstrating a purity greater than 85%.

The PDHA1 gene is responsible for making a key part of an enzyme called pyruvate dehydrogenase complex (PDHα), which helps turn pyruvate into acetyl-CoA, an important step in how our bodies use glucose [1] [2] [3]. Problems with this gene can lead to diseases like Alzheimer's, epilepsy, Leigh's syndrome, and problems with memory in diabetes [2]. PDHA1 also plays a role in how cells use oxygen and seems to affect how aggressive prostate cancer cells are [4]. Some new research suggests that PDHA1 is important for how cancer cells change their metabolism to grow [5]. It's also involved in how our cells use pyruvate in the energy-making parts of cells, and changing how it's activated can affect its job [6]. When PDHA1 isn't working right, it can change how our cells respond to certain stresses, like when they need to clean up or when they're damaged [7]. Plus, PDHA1 seems to be involved in how cells respond to signals from insulin, which might be related to how cancer starts [8]. Overall, PDHA1 is a key player in many important processes in the body, and understanding it better could lead to new treatments for diseases.

References:
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[2] W. Chen, X. Sun, L. Zhan, W. Zhou, & T. Bi, Conditional knockout of pdha1 in mouse hippocampus impairs cognitive function: the possible involvement of lactate, Frontiers in Neuroscience, vol. 15, 2021. https://doi.org/10.3389/fnins.2021.767560
[3] Ö. Özden, S. Park, B. Wagner, H. Song, Y. Zhu, A. Vassilopouloset al., Sirt3

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[5] L. Deng, A. Jiang, H. Zeng, X. Peng, & L. Song, Comprehensive analyses of pdha1 that serves as a predictive biomarker for immunotherapy response in cancer, Frontiers in Pharmacology, vol. 13, 2022. https://doi.org/10.3389/fphar.2022.947372
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[7] Z. Geng, Y. Yuan, D. He, H. Lee, H. Wang, N. Niuet al., Rna-seq analysis of obese <i>pdha1^{fl/fl}</i>lyz2-cre mice induced by a high-fat diet, Experimental Animals, vol. 72, no. 1, p. 112-122, 2023. https://doi.org/10.1538/expanim.22-0054
[8] A. Hossain, R. Islam, J. Kim, O. Dogsom, K. Cuong, & J. Park, Pyruvate dehydrogenase a1 phosphorylated by insulin associates with pyruvate kinase m2 and induces linc00273 through histone acetylation, Biomedicines, vol. 10, no. 6, p. 1256, 2022. https://doi.org/10.3390/biomedicines10061256"

Reconstitution

We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.