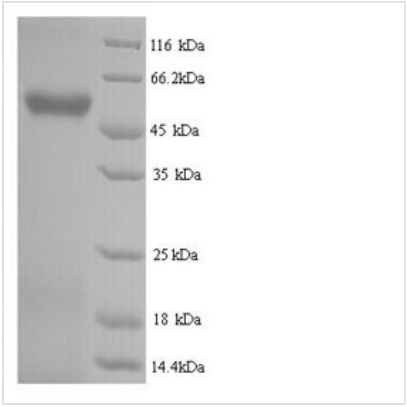
Recombinant Human Hyaluronidase-2 (HYAL2)

Product Code	CSB-YP618635HU
Relevance	Hydrolyzes high molecular weight hyaluronic acid to produce an intermediate-sized product which is further hydrolyzed by sperm hyaluronidase to give small oligosaccharides. Displays very low levels of activity. Associates with and negatively regulates MST1R.
Abbreviation	Recombinant Human HYAL2 protein
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.	Q12891
Alias	Hyaluronoglucosaminidase-2Lung carcinoma protein 2 ;LuCa-2
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	MELKPTAPPIFTGRPFVVAWDVPTQDCGPRLKVPLDLNAFDVQASPNEGFVN QNITIFYRDRLGLYPRFDSAGRSVHGGVPQNVSLWAHRKMLQKRVEHYIRTQ ESAGLAVIDWEDWRPVWVRNWQDKDVYRRLSRQLVASRHPDWPPDRIVKQA QYEFEFAAQQFMLETLRYVKAVRPRHLWGFYLFPDCYNHDYVQNWESYTGR CPDVEVARNDQLAWLWAESTALFPSVYLDETLASSRHGRNFVSFRVQEALRV ARTHHANHALPVYVFTRPTYSRRLTGLSEMDLISTIGESAALGAAGVILWGDAG YTTSTETCQYLKDYLTRLLVPYVVNVSWATQYCSRAQCHGHGRCVRRNPSAS TFLHLSTNSFRLVPGHAPGEPQLRPVGELSWADIDHLQTHFRCQCYLGWSGE QCQWDHRQAAGG
Research Area	Cancer
Source	Yeast
Target Names	HYAL2
Protein Names	Recommended name: Hyaluronidase-2 Short name= Hyal-2 EC= 3.2.1.35 Alternative name(s): Hyaluronoglucosaminidase-2 Lung carcinoma protein 2 Short name= LuCa-2
Expression Region	21-448aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-tagged
Mol. Weight	51.3kDa
Protein Length	Full Length of Mature Protein
Image	



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

Description

Recombinant human Hyaluronidase-2 (HYAL2) production begins with gene cloning. The gene encoding the HYAL2 protein (21-448aa) is inserted into an expression vector along with the N-terminal 6xHis-tag gene and introduced into host cells. The cells are cultured in bioreactors to produce the HYAL2 protein. Once sufficient protein is produced, the cells are lysed, and the HYAL2 protein is purified through affinity chromatography. The final product undergoes an SDS-PAGE test to measure its purity. Its purity is over 90%.

HYAL2 is a lysosomal hyaluronidase enzyme that plays a crucial role in the degradation of hyaluronic acid (HA) within cells. It is a glycosylphosphatidylinositol-linked protein and a member of the hyaluronoglucosaminidase family [1]. HYAL2 is located in lysosomes and is essential for cellular HA catabolism, generating different-sized oligosaccharide fragments for various physiological functions [2]. Research has shown that HYAL2 is a ~53 kDa acid-active hyaluronidase predominantly present in the acrosome and inner acrosomal membrane of sperm, aiding in cleaving high molecular weight HA polysaccharides [3].

Studies have indicated that HYAL2 digests hyaluronan to intermediate-sized fragments of approximately 20 kDa [4]. Additionally, HYAL2 has been identified as a receptor for jaagsiekte sheep retrovirus (JSRV) [5]. In the context of sperm function, HYAL2, along with other hyaluronidases, such as PH20, plays a role in cleaving HA in the cumulus layer to facilitate fertilization [3]. Furthermore, HYAL2 deficiency has been linked to severe cardiopulmonary dysfunction due to extracellular HA accumulation [1].

References:
[1] Y. Li, S. Yang, L. Guo, Y. Xiao, J. Luo, Y. Liet al., Differentiation of intracellular hyaluronidase isoform by degradable nanoassembly coupled with rna-binding fluorescence amplification, Analytical Chemistry, vol. 91, no. 10, p. 6887-6893, 2019. https://doi.org/10.1021/acs.analchem.9b01242
[2] P. Gunasekaran, M. Hemamalini, & V. Rajakannan, Structure prediction and binding site analysis of human sperm hyaluronidases, International Journal of Infertility & Fetal Medicine, vol. 13, no. 3, p. 96-100, 2022. https://doi.org/10.5005/jp-journals-10016-1280
[3] M. Yoshida, S. Sai, K. Marumo, T. Tanaka, N. Itano, K. Kimataet al., Untitled, Arthritis Research, vol. 6, no. 6, p. R514, 2004. https://doi.org/10.1186/ar1223
[4] ?. ??????????, A. Miller, & R. Strong, Ability of hyaluronidase 2 to degrade

extracellular hyaluronan is not required for its function as a receptor for jaagsiekte sheep retrovirus, Journal of Virology, vol. 81, no. 7, p. 3124-3129, 2007. https://doi.org/10.1128/jvi.02177-06
[5] S. Reitinger, J. Müllegger, B. Greiderer, & G. Lepperdinger, Designed human serum hyaluronidase 1 variant, hyal1δl, exhibits activity up to ph 5.9, Journal of Biological Chemistry, vol. 284, no. 29, p. 19173-19177, 2009. https://doi.org/10.1074/jbc.c109.004358

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.
Shelf Life	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.