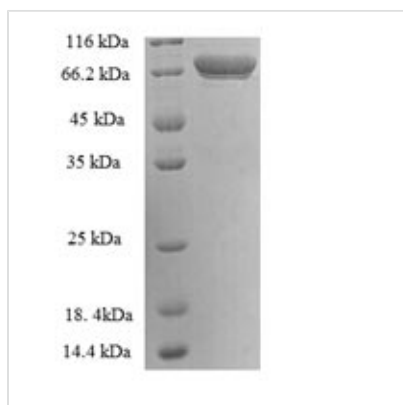




Recombinant Human Protein-glutamine gamma-glutamyltransferase 2 (TGM2), partial

Product Code	CSB-EP023462HU
Relevance	Catalyzes the cross-linking of proteins and the conjugation of polyamines to proteins.
Abbreviation	Recombinant Human TGM2 protein, partial
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.	P21980
Alias	Tissue transglutaminaseTransglutaminase C ;TG(C) ;TGC ;TGase CTransglutaminase H ;TGase HTransglutaminase-2 ;TGase-2
Product Type	Recombinant Protein
Immunogen Species	Homo sapiens (Human)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	ELVLERCDLELETNGRDHHTADLCREKLVVRRGQPFWLTLHFEGRNYEASVD SLTFSVVTGPAPSQEAGTKARFPLRDAVEEGDWTATVVDQQDCTLSLQLTTP ANAPIGLYRLSLEASTGYQGSSFVLGHFILLFNAWCPADAVYLDSEEERQEYVL TQQGFIYQGS AKFIKNIPWNFGQFEDGILDICLILLDVNPKFLKNAGRDCSRSS PVYVGRVVSGMVNCNDDQGVLLGRWDNNYGDGVSPMSWIGSVDILRRWKN HGCQRVKYGCWVFAAVACTVLRCLGIPTRVVTNYN SAHDQNSNLLIEYFRN EFGEIQGDKSEMIWNFHCWVESWMTRPDLQPGYEGWQALDPTPQEKSEGTY CCGPVPVRAIKEGDLSTKYDAPFVFAEVNADVVDWIQQDDGSVHKSINRSLIV GLKISTKSVGRDEREDITHYKYPEGSSSEEREAFTRANHLNKLA EKEETGMAM RIRVGQSMNMGSDFDVFAHITNNTAE EYVCRLLLCARTVSYNGILGPECGTKY LLNLNLEPFSGKALCS
Source	E.coli
Target Names	TGM2
Expression Region	4-544aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-SUMO-tagged
Mol. Weight	76.9kDa
Protein Length	partial of Isoform 2
Image	



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

Description

Generating recombinant human protein-glutamine gamma-glutamyltransferase 2 (TGM2) involves isolating the target gene coding for the human TGM2 (4-544aa). This gene is fused with an N-terminal 6xHis-SUMO-tag gene and then cloned into an appropriate expression vector. The vector is transformed into E. coli cells, which are induced to express the recombinant TGM2 protein. These cells are lysed to release the recombinant TGM2 protein. Purification of the collected TGM2 protein is typically achieved using affinity chromatography. Its purity is over 90% as determined by SDS-PAGE.

Human TGM2 is a member of the transglutaminase enzyme family, catalyzing the post-translational modification of proteins by forming isopeptide bonds [1]. TGM2 is a calcium-dependent enzyme that incorporates lysine residues or polyamines into protein-bound glutamine residues, facilitating protein cross-linking modifications [2]. TGM2 can serotonylate histone H3 tri-methylated lysine 4, enhancing TFIID binding to nucleosomes [3]. TGM2 is upregulated in various types of cancer, contributing to tumor-promoting inflammation [2]. It is involved in cellular processes such as apoptosis, being a major target of glutamine in apoptotic signaling [4].

Research has shown TGM2's role in various diseases and conditions. In heart failure, TGM2 has been studied in the context of circulating proteomics, providing insights into related programs [5]. TGM2 is associated with reprogramming transcription regulatory networks in epithelial cells through the constitutive activation of NF- κ B, indicating its involvement in inflammatory responses [6]. TGM2 is significantly upregulated in cystic fibrosis, suggesting a potential role in the disease's pathophysiology [7].

References:

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- [2] S. Cho, Y. Oh, E. Jeong, S. Park, D. Lee, X. Wanget al., Amplification of transglutaminase 2 enhances tumor-promoting inflammation in gastric cancers, *Experimental & Molecular Medicine*, vol. 52, no. 5, p. 854-864, 2020. <https://doi.org/10.1038/s12276-020-0444-7>
- [3] L. Farrelly, R. Thompson, S. Zhao, A. Lepack, Y. Lyu, N. Bhanuet al., Histone serotonylation is a permissive modification that enhances tfiid binding to h3k4me3, *Nature*, vol. 567, no. 7749, p. 535-539, 2019.



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[6] S. Kumar and K. Mehta, Tissue transglutaminase constitutively activates hif-1 α promoter and nuclear factor- κ b via a non-canonical pathway, *Plos One*, vol. 7, no. 11, p. e49321, 2012. <https://doi.org/10.1371/journal.pone.0049321>

[7] N. Rauniyar, V. Gupta, W. Balch, & J. Yates, Quantitative proteomic profiling reveals differentially regulated proteins in cystic fibrosis cells, *Journal of Proteome Research*, vol. 13, no. 11, p. 4668-4675, 2014.

<https://doi.org/10.1021/pr500370g>

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.