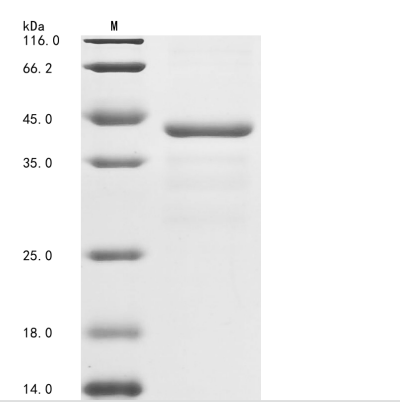
Recombinant Human Coagulation factor IX (F9), partial

Product Code	CSB-EP007936HU1
Abbreviation	Recombinant Human F9 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.	P00740
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	FCKNSADNKVVCSCTEGYRLAENQKSCEPAVPFPCGRVSVSQTSKLTRAETV FPDVDYVNSTEAETILDNITQSTQSFNDFTRVVGGEDAKPGQFP
Research Area	Cardiovascular
Source	E.coli
Target Names	F9
Expression Region	144-239aa
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	42.0 kDa
Protein Length	Partial
Image	



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

Description

The generation of the recombinant human coagulation factor IX (F9) protein begins with the co-cloning of the coagulation factor IX gene fragment (144-239aa) with the N-terminal 6xHis-GST tag gene into a vector. The constructed vectors are transformed into E.coli cells, which are induced with IPTG to express the recombinant protein. After cell lysis, Ni-NTA affinity chromatography is employed to purify the protein by exploiting the affinity between the 6xHis tag and nickel ions. The purified coagulation factor IX protein is then subjected to SDS-PAGE analysis to assess its purity, which consistently exceeds 85%.

Human coagulation factor IX (FIX/F9) is a crucial vitamin K-dependent plasma protein that plays a significant role in the intrinsic pathway of blood coagulation. It is primarily synthesized in the liver and is essential for the conversion of factor X to its active form FXa, in the presence of calcium ions and phospholipids, which is a critical step in the coagulation cascade [1]. Deficiencies or mutations in the FIX gene lead to hemophilia B, an X-linked bleeding disorder characterized by recurrent spontaneous bleeding episodes [2][3].

The structure of FIX consists of a light chain and a heavy chain, connected by a linker region, which is vital for its function [4]. The activity of FIX is tightly regulated, and its deficiency can result in severe clinical manifestations, including hemarthrosis and internal bleeding, which can be life-threatening [5]. Recent advancements in gene therapy have shown promise for treating hemophilia B by restoring FIX levels. For instance, studies utilizing CRISPR/Cas9 technology have successfully knocked in human FIX into the swine F9 locus, demonstrating significant therapeutic effects in hemophilia B models [1].

References:

[1] J. Chen, B. An, B. Yu, X. Peng, H. Yuan, Q. Yang, et al. Crispr/cas9-mediated knockin of human factor ix into swine factor ix locus effectively alleviates bleeding in hemophilia b pigs, Haematologica, vol. 106, no. 3, p. 829-837, 2020. https://doi.org/10.3324/haematol.2019.224063
[2] R. Nigam, R. Choudhary, R. Malik, S. Kothari, K. Verma, A. Shrivastavae, et al. Clinicohematological study of hemophilia patients in bhopal, Journal of Evolution of Medical and Dental Sciences, vol. 3, no. 11, p. 2910-2916, 2014. https://doi.org/10.14260/jemds/2014/2224
[3] L. Ramos-Petersen, A qualitative study exploring the experiences and

perceptions of patients with hemophilia regarding their health-related well-being, in salamanca, Journal of Clinical Medicine, vol. 12, no. 16, p. 5417, 2023. https://doi.org/10.3390/jcm12165417
[4] H. Kitano, A. Mamiya, T. Ishikawa, S. Kokubun, & C. Hidai, Coagulation factor ix regulates cell migration and adhesion in vitro, Cell Biology International, vol. 39, no. 10, p. 1162-1172, 2015. https://doi.org/10.1002/cbin.10491
[5] K. Ohashi, K. Tatsumi, R. Utoh, S. Takagi, M. Shima, & T. Okano, Engineering liver tissues under the kidney capsule site provides therapeutic effects to hemophilia b mice, Cell Transplantation, vol. 19, no. 6-7, p. 807-813, 2010. https://doi.org/10.3727/096368910x508924

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.