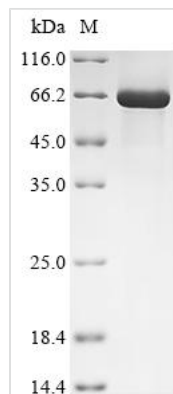




# Recombinant Human Coagulation factor X (F10)

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product Code</b>      | CSB-EP007915HU                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Abbreviation</b>      | Recombinant Human F10 protein                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Storage</b>           | 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.                                                                                                                                                                                                              |
| <b>Uniprot No.</b>       | P00742                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Form</b>              | Liquid or Lyophilized powder                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Storage Buffer</b>    | 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.                                                                                                                                                                                                                                                                   |
| <b>Product Type</b>      | Recombinant Human Coagulation factor X(F10)                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Immunogen Species</b> | Homo sapiens (Human)                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Purity</b>            | Greater than 90% as determined by SDS-PAGE.                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Sequence</b>          | ANSFLEEMKKGHLERECMEETCSYEEAREVFEDSDKTNEFWNKYKDGQCE<br>TSPCQNQGKCKDGLGEYTCTCLEGFEGKNCELFTRKLCSLDNGDCDQFCHE<br>EQNSVVCSCARGYTLADNGKACIPTGPYPGKQTLERRKRSVAQATSSSGEA<br>PDSITWKPYDAADLDPTENPFDLLDFNQTPERGDNNLTRIVGGQECKDGEC<br>PWQALLINEENEGFCGGTILSEFYILTAHCLYQAKRFKVRVGDNRNTEQEEGG<br>EAVHEVEVVIKHNRFTKETYDFDIAVLRLKTPITFRMNVAPACLPERDWAESTL<br>MTQKTGIVSGFGRTHEKGRQSTRKMLEVPYVDRNSCKLSSSFIITQNMFCAG<br>YDTKQEDACQGDSGGPHVTRFKDTYFVTGIVSWGEGCARKGKYGIYTKVTAF<br>LKWIDRSMKTRGLPKAKSHAPEVITSSPLK |
| <b>Research Area</b>     | Signal Transduction                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Source</b>            | E.coli                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Target Names</b>      | F10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Expression Region</b> | 41-488aa                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Notes</b>             | Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Tag Info</b>          | N-terminal 10xHis-tagged and C-terminal Myc-tagged                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Mol. Weight</b>       | 57.8 kDa                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Protein Length</b>    | Full Length of Mature Protein                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Image</b>             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |



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

## Description

The recombinant human coagulation factor X (F10) protein labeled with an N-terminal 6xHis tag and C-terminal Myc-tag is expressed in an *E. coli* system. The coagulation factor X gene fragment (41-488aa) is co-cloned into a suitable expression vector with the tag gene and then introduced into *E. coli* cells. IPTG is used to induce expression of the recombinant coagulation factor X protein, which is then extracted through cell lysis. The coagulation factor X protein is purified by Ni-NTA affinity chromatography, exploiting the His tag's affinity for nickel ions. Following purification, the protein is analyzed using SDS-PAGE, which demonstrates a purity greater than 90%.

Human coagulation factor X (FX) is a crucial component of the blood coagulation cascade, functioning as a vitamin K-dependent serine protease. It is synthesized in the liver as a zymogen (inactive form) and plays a pivotal role in both the intrinsic and extrinsic pathways of coagulation, ultimately leading to the formation of thrombin from prothrombin [1][2]. Upon activation, FX is converted to activated FXa, which catalyzes the conversion of prothrombin into thrombin, a key enzyme in the coagulation process that facilitates the transformation of fibrinogen into fibrin, thus forming a stable blood clot [3][4].

The activation of FX is a critical juncture in hemostasis, as it integrates signals from both the intrinsic and extrinsic pathways. The extrinsic pathway is initiated by the exposure of tissue factor (TF) at the site of vascular injury, which forms a complex with factor VIIa, leading to the activation of FX [5][6]. This process is essential for a rapid hemostatic response to vascular damage, as FXa subsequently activates thrombin, amplifying the coagulation response [1][7]. Additionally, FX is involved in various regulatory mechanisms that ensure the balance between coagulation and fibrinolysis, preventing excessive clot formation or bleeding [8][9].

### References:

- [1] J. Wilberding, Characterization of the murine coagulation factor x promoter, *Thrombosis and Haemostasis*, vol. 84, no. 12, p. 1031-1038, 2000.  
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[9] M. Schuliga, The inflammatory actions of coagulant and fibrinolytic proteases in disease, *Mediators of Inflammation*, vol. 2015, no. 1, 2015.

<https://doi.org/10.1155/2015/437695>

## 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.