

# Native Human Prothrombin Frag 1

**Cat. No.** Prothrombin-59H    **Lot. No.** (See product label)

## SPECIFICATION

**Product Overview**      Human prothrombin is prepared from fresh frozen human plasma.

**Species**                      Human

### Description

Prothrombin is a vitamin K-dependent plasma protein which is synthesized in the liver. Prior to secretion into plasma, prothrombin undergoes post-translational modification by a vitamin K-dependent carboxylase which converts ten specific glutamic acid residues to  $\gamma$ -carboxyglutamic acid (gla). The ten gla residues are located within the first 40 amino acids of the mature protein and contribute to the ability of prothrombin to bind to negatively charged phospholipid membranes. Prothrombin contains two regions of internal homology which are referred to as "kringle" structures. These regions of conspicuous secondary structure are located between residues 40 and 270 of the mature plasma protein and replace the growth factor domains found in several other plasma serine proteases. Thus far, no function has been ascribed to these regions, but there is suspicion that they may play a role in one of several binary protein interactions involving prothrombin. The mature single chain protein circulates in plasma as a zymogen and, during coagulation, is proteolytically activated to the potent serine protease  $\alpha$ -thrombin. This proteolysis is catalyzed by the prothrombinase enzyme complex. During activation, prothrombin is cleaved at Arg271-Thr272 (human) / Arg273-Thr274 (bovine) and at Arg320-Ser321 (human) / Arg323-Ser324 (bovine) to a "pro" fragment (fragment 1.2) and thrombin, the latter of which is composed of two chains covalently linked by a disulfide bond. In the case of human prothrombin/thrombin, there is an additional thrombin feed-back cleavage at Arg284-Thr285 resulting in an additional 13 amino acids being removed

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from the mature thrombin "A" chain.

<b>Form</b>	50% (vol/vol) glycerol/H <sub>2</sub> O
<b>Purity</b>	>95% by SDS-PAGE NOT tissue/cell culture grade. Not tested for endotoxin.
<b>Storage</b>	Purified prothrombin is supplied in 50% (vol/vol) glycerol/H <sub>2</sub> O and should be stored at -20°C .
<b>Concentration</b>	100 µg/ml

## GENE INFORMATION

<b>Gene Name</b>	F2 coagulation factor II (thrombin) [ Homo sapiens ]
<b>Official Symbol</b>	F2
<b>Synonyms</b>	F2; coagulation factor II (thrombin); prothrombin; serine protease; prothrombin B-chain; PT; THPH1;
<b>Gene ID</b>	2147
<b>mRNA Refseq</b>	NM_000506
<b>Protein Refseq</b>	NP_000497
<b>MIM</b>	176930
<b>UniProt ID</b>	P00734
<b>Chromosome Location</b>	11p11-q12

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**Pathway**

Angiopoietin receptor Tie2-mediated signaling, organism-specific biosystem; Blood Clotting Cascade, organism-specific biosystem; Cell surface interactions at the vascular wall, organism-specific biosystem; Class A/1 (Rhodopsin-like receptors), organism-specific biosystem; Common Pathway, organism-specific biosystem; Complement and Coagulation Cascades, organism-specific biosystem; Complement and coagulation cascades, organism-specific biosystem;

**Function**

calcium ion binding; growth factor activity; peptidase activity; protein binding; receptor binding; contributes\_to receptor binding; serine-type endopeptidase activity; thrombospondin receptor activity;

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