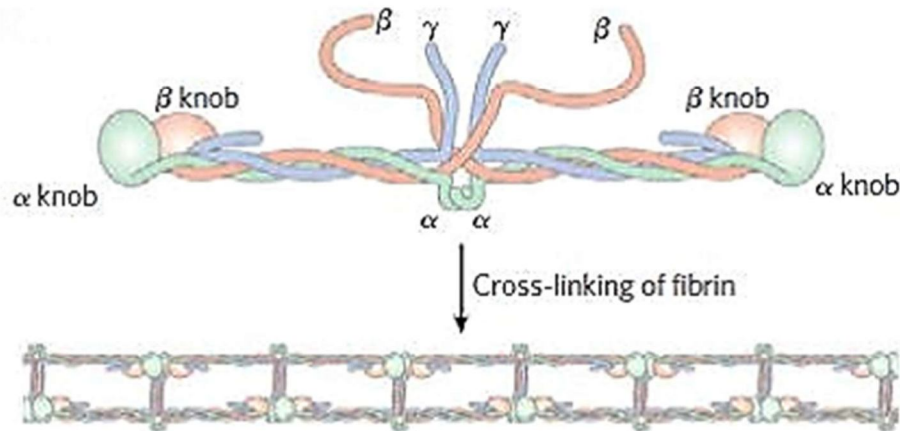


Blood clotting

Blood clotting

Fibrinogen is a dimer of heterotrimers ($\alpha_2\beta_2\gamma_2$). It has three different but evolutionarily related types of subunits. Fibrinogen is converted to fibrin, and thus activated for blood clotting. It undergoes proteolytic removal of 16 amino acid residues from the amino-terminal end of each α subunit and 14 amino acid residues from the amino terminus of each β subunit.



Peptide is removed by **thrombin**, a serine protease. The newly exposed amino termini of the α and β subunits fit precisely into binding sites in the carboxyl-terminal globular portions of the γ and β subunits, respectively. These interactions are stabilized by covalent cross-links generated by the condensation of particular Lys residues in one subunit with Gln residues in another, catalyzed by a transglutaminase, **factor XIIIa**. The resulting cross-linked fiber, **fibrin**, helps to tie together a blood clot. Fibrinogen activation to produce fibrin is the end point of two parallel intertwined regulatory cascades.

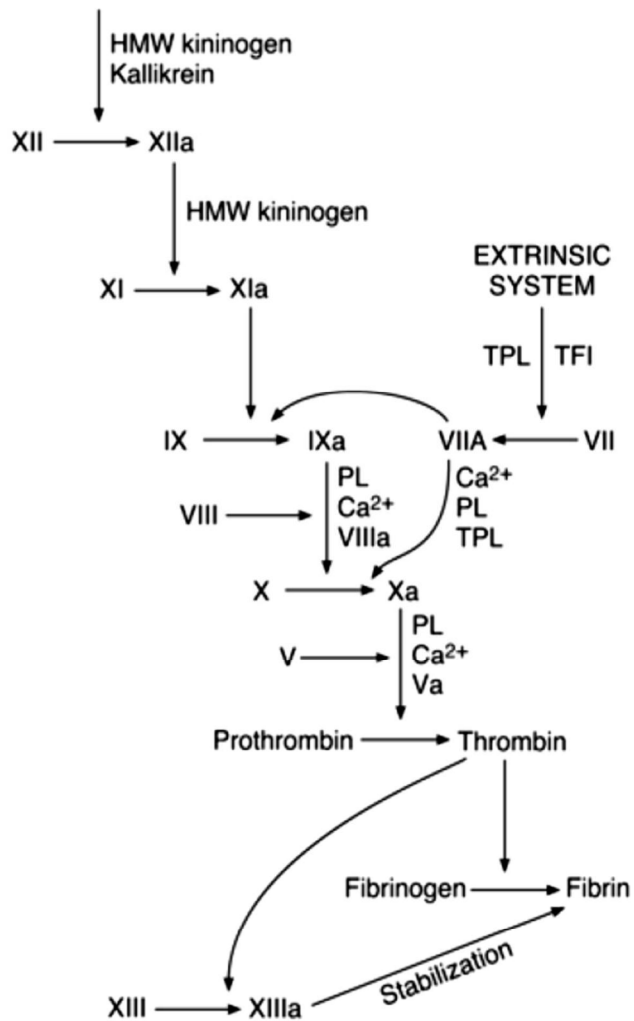
Factors	Names
I	Fibrinogen
II	Prothrombin
III	Thromboplastin
IV	Calcium
V	Proaccelerin, labile factor, accelerator globulin
VII	Proconvertin, SPCA, stable factor
VIII	Antihemophilic factor (AHF), antihemophilic factor A, antihemophilic globulin (AHG)
IX	Plasma thromboplastic component (PTC), Christmas factor, antihemophilic factor B

Blood clotting

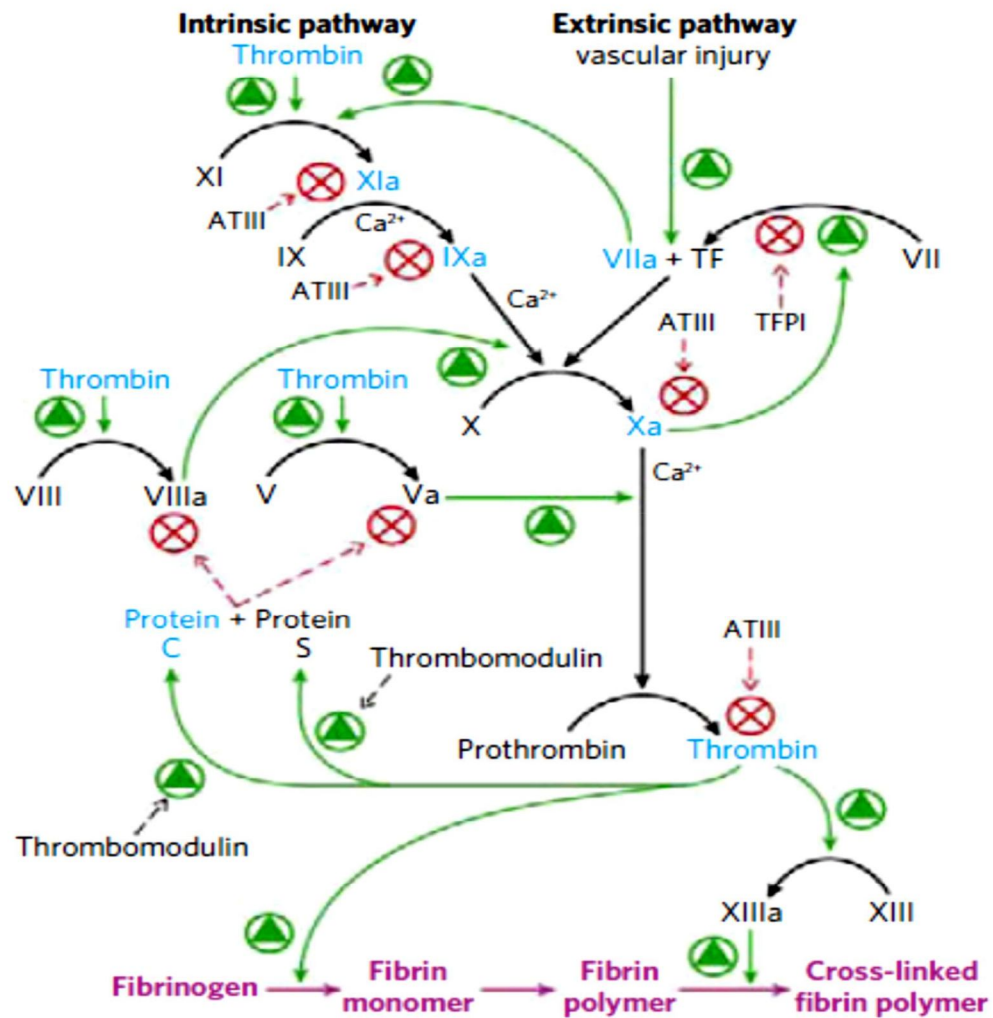
X	Stuart–Prower factor
XI	Plasma thromboplastin antecedent (PTA), antihemophilic factor C
XII	Hageman factor, glass factor
XIII	Fibrin-stabilizing factor, Laki–Lorand factor
HMW-K	High-molecular-weight kininogen, Fitzgerald factor
Pre-Ka	Prekallikrein, Fletcher factor
Ka	Kallikrein
PL	Platelet phospholipid

Pathways:

INTRINSIC SYSTEM



Blood clotting



Two pathways are involved in blood clotting:

1. **Intrinsic pathway or contact activation pathway**
2. **Extrinsic pathway or tissue factor pathway**

1. Intrinsic pathway:

This pathway is also called **contact activation pathway** (“contact” means interaction of key components of this system with anionic phospholipids that are presented on the surface of platelets at the site of a wound). All components of this pathway are found in the blood plasma; hence, it is also called the **intrinsic pathway**.