

KEYS TO THE CLOTTING CASCADE

HOW CLOTTING WORKS

Learning how the blood forms clots is no easy task! And the clotting cascade plays a large role. It's part of a larger process called hemostasis, so let's break that down first.

Hemostasis is a tightly controlled process that occurs at the site of an injury to form a clot and stop the bleed, consisting of two parts:

Primary hemostasis

Platelets are recruited to the site of the injury and, with the help of von Willebrand factor (vWF), create a "platelet plug" to reduce blood loss.

Secondary hemostasis

This is where the multistep clotting cascade is activated to form a fibrin mesh around the platelets to stabilize the clot.

In summary, the clotting cascade is a critical part of the body's ability to achieve hemostasis by stabilizing a clot.



Click the visual below to watch a video of the Clotting Cascade:

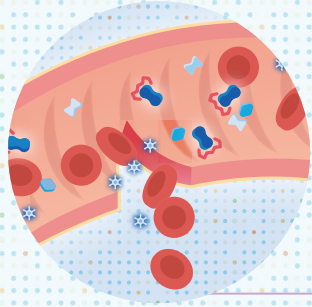


See page 2 for an in-depth breakdown of the clotting cascade.

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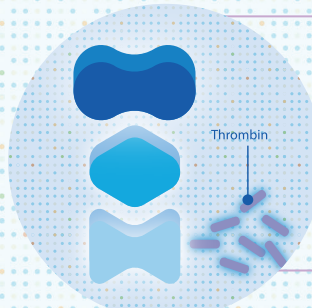
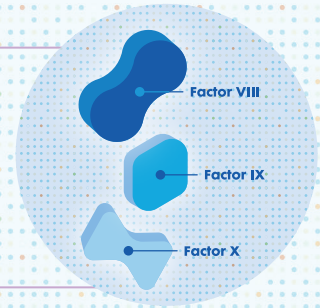
THE CLOTTING CASCADE UP CLOSE

When an injury occurs, the overall goal of the clotting cascade is to achieve hemostasis. So let's take a closer look at how it works, step by step.



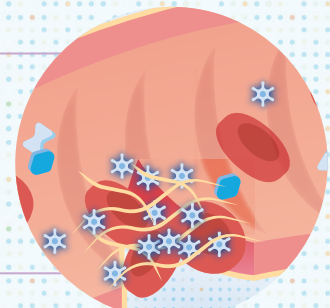
As platelets start assembling to stop the bleeding, the clotting cascade kicks into action to help them stick together. A dynamic natural process involving a series of proteins, it eventually forms a mesh around the unstable platelet plug to form a stable clot.

Once the clotting cascade is underway, factor VIII becomes activated factor VIII and then works together with activated factor IX to activate factor X. In hemophilia, the lack of factor VIII or IX prevents clot formation, requiring treatment to promote clotting.



After factor VIII, IX, and X are activated, they work together to generate thrombin, which is essential to form a stable clot.

Once thrombin is activated, it helps create the crucial fibrin mesh that spreads over the platelets, binding them together into the stable clot that stops the bleeding.



FOR HEMOSTASIS TO WORK ALL FACTORS NEED TO BE PRESENT

When just **one factor** is missing or not working, the clotting process is interrupted.

Click this visual to watch a video of the Clotting Cascade:



VON WILLEBRAND FACTOR & HEMOPHILIA A



von Willebrand factor attached to factor VIII

Factor VIII plays a key role in blood clotting, but how long it lasts in the body is limited by another protein called von Willebrand factor (vWF), which binds with factor VIII and protects it from being broken down.

Since vWF has a half-life of only about 15 hours, as it is cleared from the blood, factor VIII gets removed as well, limiting the half-life of natural and therapeutic factor VIII.

GET
COMMUNITY
SUPPORT

For additional resources on navigating life with a bleeding disorder, connect with your Sanofi CoRe Manager.