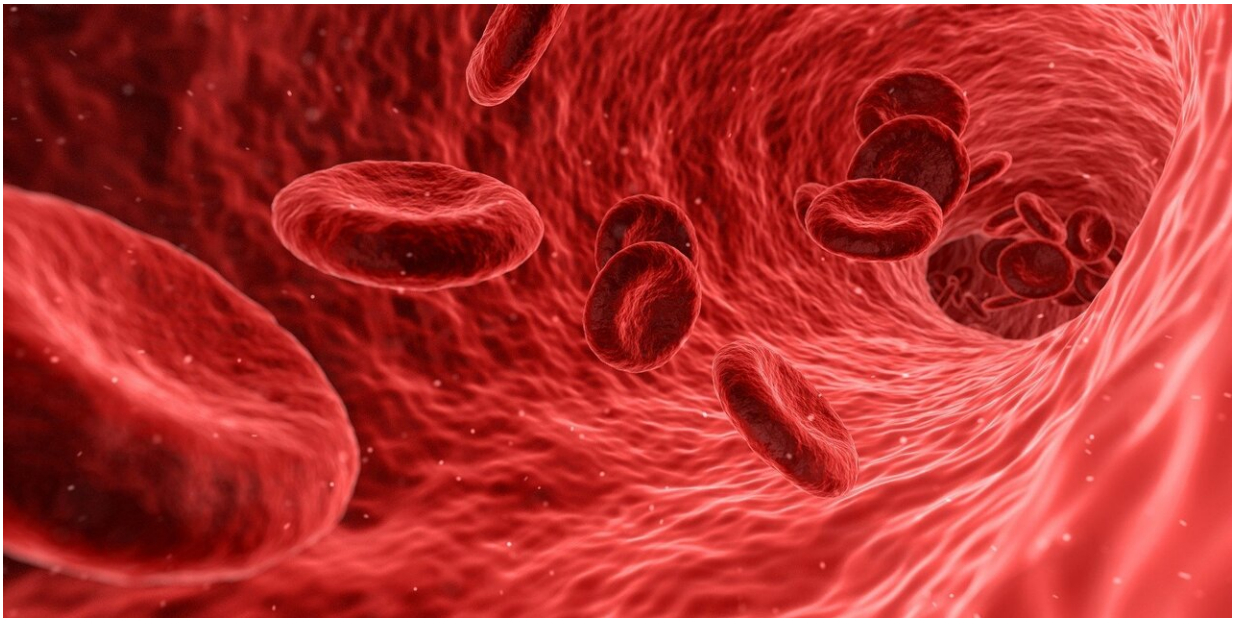


Biomedical engineer explores using synthetic platelets to treat inherited bleeding disorders

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Even as biomedical engineer Anirban Sen Gupta refines artificial platelets to stem traumatic bleeding, he and his colleagues are seeking new uses for their synthetic solution.

The latest application to show promise involves providing [synthetic platelets](#) to treat a [genetic condition](#) that prevents blood from [clotting](#), Von Willebrand disease (VWD). The most common of all bleeding

disorders, VWD is found in up to 1% of the U.S. population (roughly 3 million people), according to the Centers for Disease Control and Prevention.

"There simply hasn't been any study yet using our technology for treating genetic blood disorders, although it's something we've wanted to explore for some time," said Sen Gupta, the Leonard Case Jr. Professor of Engineering at the Case School of Engineering. "Almost all our work so far has been in heavy traumatic bleeding, but we often ask ourselves, 'Who else could we help?'"

Sen Gupta said the progress he and a global research team have made to date could someday expand to start testing for other genetic blood diseases. Their research recently appeared in the journal *Blood*.

"There is a lot of work ahead on this, but it's very exciting," Sen Gupta said. "We've shown that it can work, but we'll have to continue to work it out in appropriate animal models and someday human clinical trials."

Treating VWD requires injecting patients with a lab-created form of the protein, or a drug to stimulate the protein's production. In healthy people, VWF allows platelets to attach to a bleeding injury site to help them clot.

Sen Gupta's collaborators include Cécile Denis and Peter Lenting, directors of research at INSERM (Institut National de la Santé et de la Recherche Médicale) in Kremlin-Bicêtre Hospital in France; and Julie Rayes, associate professor of cardiovascular sciences at the University of Birmingham, England.

More information: Stéphanie Rouillet et al, Efficacy of platelet-inspired hemostatic nanoparticles on bleeding in Von Willebrand disease murine models, *Blood* (2023). [DOI: 10.1182/blood.2022018956](https://doi.org/10.1182/blood.2022018956)

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