

## A Message from Senior Investigator Robert Montgomery, MD

More than 3 million Americans live with hemophilia, von Willebrand disease and other rare bleeding and clotting disorders. In March, we celebrate Bleeding Disorders Awareness Month and recognize the lifesaving work Versiti Blood Research Institute investigators conduct each day to serve these patients.

Our internationally recognized investigators have been awarded numerous research grants, including a multinational National Institutes of Health grant that explores the DNA sequence of the whole genome in patients with von Willebrand disease, which is the most common bleeding disorder. This research is critical for implementing better diagnoses and treatments for patients with bleeding and clotting disorders.

But in order to accelerate their pace of discovery, investigators rely on support from the Versiti Blood Research



Institute Foundation. The Foundation enables investigators to innovate, collaborate and explore new avenues of research. This knowledge often leads to better understanding of diseases, improved clinical care, and novel diagnostic testing for patients worldwide.

This Bleeding Disorders Awareness Month, please join me in celebrating and supporting Versiti Blood Research Institute investigators.

## Focus on: CCBBD

Versiti Comprehensive Center for Bleeding Disorders (CCBD) provides a full spectrum of support and medical care for patients with bleeding and clotting disorders. Did you know:

- CCBBD is affiliated with Froedtert and the Medical College of Wisconsin and Children's Wisconsin
- It provides in-home care and education for patients and families
- CCBBD physicians serve as clinical researchers at Versiti Blood Research Institute (BRI) and Versiti Medical Sciences Institute (MSI)
- Observational research enables physicians to monitor patients and participate in collaborative research

**“We are one of the strongest groups of hematologists in the country, with national and international expertise.”**



*Lynn Malec, MD, MSc  
CCBD Medical Director and  
BRI Assistant Investigator*

# Community Beacon of Hope: Judy Guelig

*Spotlighting organizations and individuals in our community who go above and beyond in their support of Versiti Blood Research Institute.*

Judy Guelig has been a longtime supporter of Versiti, first as a blood donor and now as a member of the Versiti Legacy Society. "In the past, I had family members that needed blood donations and witnessed firsthand the importance of that gift of life," she says. Now, her financial gifts support the groundbreaking research being



done at Versiti Blood Research Institute. "I'm proud to be a part of the Versiti Legacy Society," she says. "As a member, I feel it's important that if you are going to leave something, you should leave it to a place that will do good for others." Visit [versiti.org/legacysociety](https://www.versiti.org/legacysociety) to learn more about the Versiti Legacy Society.

## COVID-19 vaccine: What you need to know

After more than a year living with the threat of COVID-19, hope is in sight: a vaccine. Typically, vaccines are not developed, tested and distributed in such a short timeframe; however, Versiti Blood Research Institute Interim Director and Senior Investigator Roy Silverstein, MD, is confident that the vaccine is safe. "The scientists who developed the vaccine went through all of the steps in the process that they normally would," he said. "But because of new technology and how prevalent the virus is, they were able to complete each step a lot faster."



The COVID-19 mRNA vaccine works by encoding the production of proteins, which are the working parts of cells and viruses. White blood cells process the mRNA and the immune system makes antibodies to the viral proteins and trains other cells, including T cells, to mount a response against it. "If the body sees a virus

that has that protein on its surface, it immediately recognizes that virus through the antibodies and T cells and works to destroy that virus before it can do harm," he said. "The vaccine was engineered to target that."

Both vaccines currently on the market have been approved for emergency use by the Food and Drug Administration (FDA). "These vaccines have undergone rigorous review by internal scientists at the FDA and an external committee," Dr. Silverstein said. "They both came to the

conclusion that the vaccine is safe and highly effective, preventing up to 95% of cases of COVID."

"There is a great public health value in individuals getting the vaccine," he continued. "Not only do you protect yourself from the virus ... you contribute to herd immunity, which would help eliminate the virus. You're being a good citizen of the world by getting vaccinated."

## Planned Giving: Versiti Legacy Society

Versiti Legacy Society recognizes our most dedicated and generous supporters who support our lifesaving research by making planned gifts from a will or trust, beneficiary designations, life insurance, appreciated securities and real estate, personal property and more. To learn more, visit [versiti.org/legacysociety](https://www.versiti.org/legacysociety).



## Upcoming Events

### Versiti Legacy Society Breakfast Seminar

**Date:** Thursday, May 20, 2021

**Time:** 8:00 am

**Location:** Wisconsin Club and via Zoom

Please email [BRIFoundation@versiti.org](mailto:BRIFoundation@versiti.org) for more information or if you are interested in attending.

# Innovations in Research

Why von Willebrand factor could be the key to understanding diseases like COVID-19

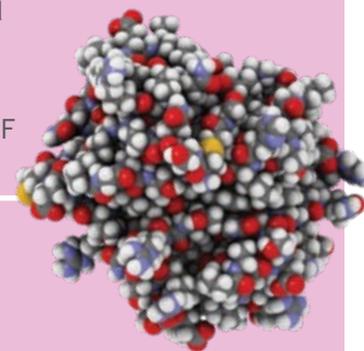
Von Willebrand disease (VWD), the most common bleeding disorder, is a genetic condition caused by missing or malfunctioning von Willebrand factor (VWF), a protein in platelets that helps blood to clot. Oftentimes, patients with VWD require treatment to boost or replace their VWF to minimize the risk of bleeding episodes, including nosebleeds, easy bruising, heavy menstrual bleeding, and bleeding that lasts longer than normal after an injury or surgery.

Versiti Blood Research Institute Director of Hemostasis Sandra Haberichter, PhD, focuses on understanding why patients with VWD clear their VWF so quickly. She believes the answer lies in glycosylation, a process that helps determine the structure, function and stability of cell proteins. “Most of these patients have some sort of sequence variation that causes VWD and causes glycosylation to be altered, which would result in clearing VWF,” she said.

But because VWF has a short half-life, “one of the problems with looking at samples from patients that have reduced VWF survival is that the ‘bad’ VWF has already been cleared from circulation,” she said. To combat this phenomenon, Dr. Haberichter and her colleagues are interested in collecting samples from patients treated with a medication called desmopressin, which releases VWF from the cells that line the blood vessels, allowing investigators more time to study the glycosylation process.

Dr. Haberichter feels that Versiti Blood Research Institute is perfectly positioned to make an impact in the fight against von Willebrand disease. “There are not many other places like the BRI,” she said. “It’s great to have a center of experts working on similar projects with a good opportunity for collaboration.”

VWF



## Developing new gene therapies for patients with bleeding disorders

Hemophilia affects 1 in 5,000 male births in the United States, and Versiti Blood Research Institute Senior Investigator Robert Montgomery, MD, has spent his career treating patients with Factor VIII deficiency in hemophilia A, as well as von Willebrand disease.

Factor VIII (FVIII) is a protein in the blood that is essential for clotting and is carried by von Willebrand factor (VWF), the gene that causes von Willebrand disease. VWF sticks to platelets, collagen and other materials beneath the blood vessel wall. When a healthy person cuts themselves, the cut creates a hole in the wall; VWF sticks to it, increasing the concentration of FVIII and platelets and causing the blood to clot. However, if someone lacks VWF, FVIII disappears rapidly, causing severe bleeding.

Normally, when physicians treat patients with hemophilia A and von Willebrand disease, they use recombinant FVIII, or FVIII that has been developed in a laboratory and helps normalize the coagulation process. Sometimes, these patients’ bodies identify

recombinant FVIII as a foreign substance and develop an antibody to it, which prevents it from working the way it is intended. Sometimes, it’s possible to trick the patient’s immune system into thinking recombinant FVIII is a good thing, by giving them overwhelming amounts of it. However, some patients cannot tolerate it at all, and must then receive recombinant Factor VIIa, an expensive substitute.

Dr. Montgomery and his colleagues sought a better, more accessible, way to treat these patients. “We have developed a gene therapy approach for hemophilia that targets patients who have inhibitory antibody,” he said. To accomplish this, they sought to remove the entire FVIII gene in a model of hemophilia A. When they attempted to remove the gene, they flipped it instead, causing it to become ineffective. Based on this knowledge, they realized that 50% of hemophilia patients have hemophilia that is based on an inversion of the FVIII gene. “Now, we’ve created an inversion that can be studied,” he said, giving new hope to patients who require alternate treatment options.



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# BRightLights

BRightLights is a quarterly newsletter published by the Versiti Blood Research Institute Foundation. Interested in learning more? Please contact the Foundation office: 414-937-6799.