

Message from Vice President of Philanthropy Kelley McCaskill

2023 is off to a busy start at Versiti Blood Research Institute. That said, I want to take a moment to offer my sincere gratitude to all of you, who support research through your philanthropy, your volunteerism and your event attendance. Your commitment to research will make a real difference in the lives of people living with blood diseases. Your dedication enables our researchers to dig deeper, seeking answers to the questions to which they have devoted their careers.

We look forward to sharing the impact of your generosity throughout the year ahead. We hope you'll join us at events scheduled throughout the year to learn more about advancements in our research. Stay tuned for more details about our Women in Science event, coming in May 2023, and our Imagine Gala, scheduled for Sept. 8, 2023.

Thank you, and warmest wishes to you for a wonderful 2023.



Kelley McCaskill
Vice President of Philanthropy

Innovations in Research

How genetically modified cells can be used to fight cancer

At first glance, "natural killer cells" sounds like something out of a sci-fi movie. But natural killer (NK) cells actually play an important role in human health. About 10-15% of your body's immune cells are NK cells, which your body needs to help clear viruses from your body. Researchers have identified different proteins within NK cells that are essential to killing harmful cells, including those that cause tumors.

Versiti Blood Research Institute (VBRI) Senior Investigator Subramaniam Malarkannan, PhD, studies natural killer (NK) cells, with a goal of understanding their functions in different contexts. "We want to know this for multiple reasons. Inflammation is really important—it's critical to mounting a useful immune response," he said. Inflammation is normal within a certain range; however, outside of that range, it can

be detrimental to a patient's health.

One option for treating patients with tumors is to use chimeric antigen receptor T-cell (CAR-T) therapy to genetically modify a patient's cells and increase their tumor-fighting abilities. However, an unfortunate side effect of CAR-T therapy is that it increases inflammation, which can cause more harm than good. But Dr. Malarkannan believes that it may be possible to control these cells to fight tumors while minimizing detrimental side effects.

If successful, this therapy could be used to treat patients with cancer and autoimmune diseases, as the inflammation that autoimmune patients experience is caused by the same cells that cause inflammation in cancer patients.



Subramaniam Malarkannan, PhD
Senior Investigator

Innovations in Research

Giving hope to patients with autoimmune diseases

Versiti Blood Research Institute (VBRI) immunologist Bonnie Dittel, PhD, has made it her life's mission to study multiple sclerosis (MS), an autoimmune disease of the central nervous system that affects more than 2.3 million people worldwide. MS causes inflammation in the brain and spinal cord, leading to inflammatory lesions that contain damaged brain and spinal cord tissue. Because different parts of the central nervous system have different functions, the location of these inflammatory lesions can affect the types of symptoms a person with MS experiences.

Currently, treatments for MS target the immune system and modify the disease course, but they do not stop or cure it. Dr. Dittel is interested in the mechanisms behind dampening inflammation in the central nervous system, with the hope of developing a universal treatment for all autoimmune diseases. Over the last 20 years, Dr. Dittel and her lab have focused on finding a population of B cells that, instead of contributing to an inflammatory response, keep it under control.

In 2019, Dr. Dittel discovered the B cell she'd been looking for. "We identified a new immune cell subset,

and that doesn't happen every day," she said. The B cell subset, named BDL, interacts T regulatory cells (Tregs), which regulate inflammation. BDL gives Tregs the boost they need to keep the immune system strong. But finding BDL and learning how it works with Tregs was only the first step. Now, Dr. Dittel wants to find a way to use BDL as a universal therapy for patients with different types of autoimmune diseases. "We want to be able to leverage what Versiti is already committed to in cell therapies to develop our therapeutic," she said. "Our goal is to generate a unique cell therapy that can be used to treat many different autoimmune diseases, not just multiple sclerosis."



*Bonnie Dittel, PhD
Versiti Blood Research
Institute*

March is Bleeding Disorders Awareness Month

Bleeding disorders like hemophilia and Von Willebrand disease are genetic conditions that occur when people lack a certain protein (also called a factor) in their blood that helps it to clot. Many patients with blood disorders require repeated factor infusions, which are replacements of their missing factor(s). Without proper treatment, these patients can experience bruising, severe bleeding or early death.

Unfortunately, some patients who receive regular factor infusions develop antibodies to the medication, preventing it from working. Versiti Comprehensive Center for Bleeding Disorders (CCBD) hematologist and medical director Lynn Malec, MD, MSc, focuses some of her clinical research on exploring the genetics behind immune tolerance and why some patients develop it while others do not. "If we can better understand that, we can further approach immune tolerance," she said.

She added that, over the last 10 years, there has been an influx of new products to treat patients with inherited bleeding disorders. "This has really given us the option to personalize patient treatment," she said, expanding treatment options for patients. The CCBD's critical mass of hematologists means they are poised to give patients the best care possible and provide additional support. "We are one of the strongest groups of hematologists in the country, with national and international expertise," she said.



*Lynn Malec, MD, MSc
Versiti Comprehensive
Center for Bleeding
Disorders*

Community Beacon of Hope: Versiti Blood Research Institute Junior Advisory Board

Versiti's Junior Advisory Board is a group of community-minded professionals who are working together to connect and network with their peers; get involved in Versiti's mission by volunteering, donating blood and/or making financial gifts toward research; and leading the way as the next generation of leaders.

In fall 2022, the group hosted its inaugural event, Wine and Discover, with special guest Senior Investigator Christian Kastrup, PhD, who spoke about his research in the area of thrombosis. The Board looks forward to its 2023 calendar of events, from blood drives to the next Wine and Discover. For more information about the Junior Advisory Board, please contact Director of Foundation Development Alberto Huerta at ahuerta@versiti.org.

Board members include Aletha Champine, Lisamarie Collins, Jane Decent, Nicole Harris, Rachel Margolis-Goodman, Leah Mortensen, Kiley Zellner and Joe Zizzo.



Planned Giving: Versiti Legacy Society

The Versiti Legacy Society celebrates our most dedicated and generous philanthropic supporters who invest in our research as part of their estate planning. By making a planned gift to the Versiti Legacy Society, you help grow Versiti Blood Research Institute's investment in innovation and discovery through research.

Elise and Mia Goebel

Elise Goebel was an active teenager when she became anemic and experienced excruciating ankle pain. Her doctors couldn't figure out what was wrong until they ran a blood test and found that her blood wasn't clotting properly. Soon after, Elise was diagnosed with severe factor VII deficiency, a rare bleeding disorder.

It wasn't long before Elise's younger sister Mia was tested and found to have a milder form of the disease. Now, both receive medical care and support from Versiti Comprehensive Center for Bleeding Disorders (CCBD), which taught Elise and Mia how to self-infuse the factor VII replacement that their blood lacks. Their mother, Bridget, credits CCBD's Lynn Malec, MD, MSc, for aiding in her daughters' care.

"Dr. Malec took the lead for us when we were faltering and didn't understand what this was and what was going to happen," she said. "Whenever we have questions, we're able to call Versiti and get answers. It's been a really good experience."

