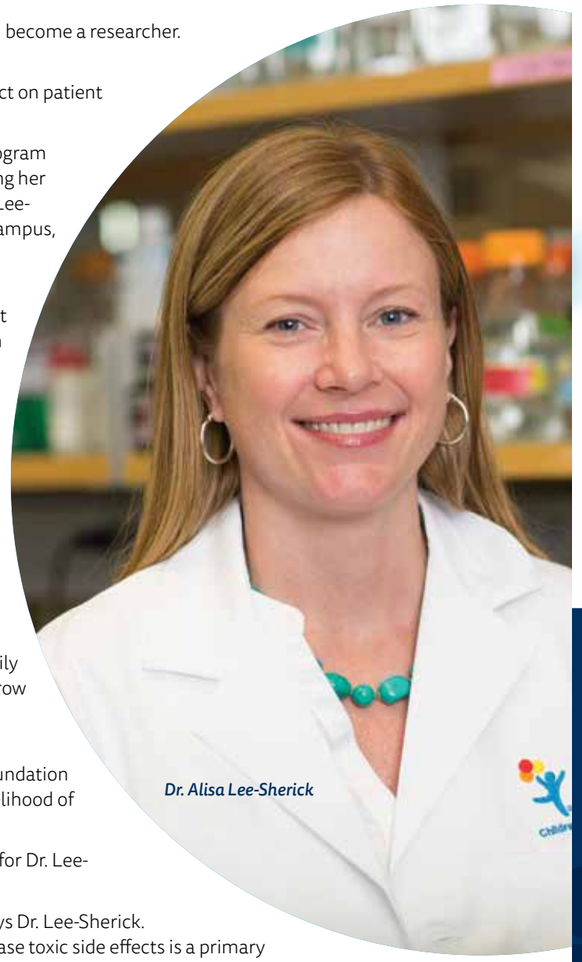
Young Investigator Seeks Cures Beyond Chemo

When she started medical school, Alisa Lee-Sherick, MD, never thought she'd become a researcher. Then she spent a semester working in a laboratory.

"It just clicked for me," says Dr. Lee-Sherick. "I realized I could have a big impact on patient outcomes. Instead of following the cookbook, I could make a new recipe."

Dr. Lee-Sherick went on to complete the Pediatric Scientist Development Program at Children's Colorado, which allowed her to pursue research while completing her fellowship in pediatric oncology. Today, with the support of philanthropy, Dr. Lee-Sherick is applying her knowledge in a laboratory on the Anschutz Medical Campus, where she works to find trailblazing treatments for pediatric cancer.

Dr. Lee-Sherick's research primarily focuses on immunotherapy, a promising new type of treatment that harnesses the body's own immune system to fight cancer. She's currently studying ways to energize the white blood cells known as T-cells, making them more inclined to attack cancer cells.



Dr. Alisa Lee-Sherick

Donors Make a Difference

Philanthropy has become increasingly critical for physician-scientists like Dr. Lee-Sherick who are a few years into their research careers.

"I can't emphasize enough how important philanthropy is to our research," she said. "With our current federal funding environment, there simply isn't enough money to bring new therapies to our patients. Philanthropy allows us to pursue cutting-edge ideas, which can result in novel treatments that no one has thought of before."

Dr. Lee-Sherick was recently awarded $25,000 from the Tanabe-Bobrow Family Young Investigator Award Endowed Fund. Established by donors Arlene Bobrow and Charles Tanabe, the fund supports early- and mid-career researchers at Children's Colorado.

"Their gift is helping to fund the data I need to apply for bigger federal and foundation grants," says Dr. Lee-Sherick. "Having solid preliminary data increases the likelihood of getting these larger grants."

A funding boost from one of these grants could have significant implications for Dr. Lee-Sherick's research – and for children fighting cancer.

"If I can take away even one cycle of chemo, that would be very beneficial," says Dr. Lee-Sherick. "Our patients are living longer than ever before, so anything I can do to decrease toxic side effects is a primary focus for me."

> "I can't emphasize enough how important philanthropy is to our research. Donors allow us to pursue cutting-edge ideas and outside-the-box thinking."
>
> **- DR. ALISSA LEE-SHERICK**

COMPLEX SCIENCE DRIVING RADICAL RESULTS

Immunotherapy Research at Children's Hospital Colorado

When donors invest in research at Children's Hospital Colorado, new treatments are identified, lives are saved and children around the world benefit. This is particularly true for immunotherapy research – a promising emerging treatment approach that harnesses the body's own immune system to fight cancer and other diseases.

With a world-class team and an exceptional array of resources on the Anschutz Medical Campus, Children's Colorado is uniquely positioned to advance the concepts of immunotherapy to fight pediatric disease. Our vision is to deploy these medical advances internationally to help children with cancer, auto-immune disorders, diabetes and a range of other debilitating conditions. **This work has the potential to drive radical progress in treating and curing pediatric disease.**

Through groundbreaking research, Children's Colorado is rapidly improving the efficacy of immunotherapy to outwit cancer cells. Our talented team of physician-scientists is working every day to find better, less invasive ways to treat pediatric cancer – and that could mean a future where cancer is effectively treated without the use of chemotherapy.

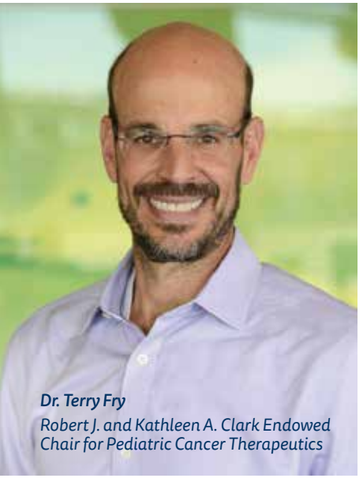
As federal research funding continues to decline, generous donors have stepped in to help. These philanthropic partners are funding discoveries that make a transformative difference for patients at Children's Colorado and worldwide. With continued donor support, we are poised to maximize immunotherapy breakthroughs and advance pediatric medicine in life-changing ways.

Children's Hospital Colorado Foundation

CHANGING THE FUTURE FOR CHILDREN WITH RESISTANT CANCERS

In recent decades, survival rates for the most common form of pediatric cancer, acute lymphoblastic leukemia, have jumped to nearly 90 percent. Yet some children fail to respond to traditional treatments and continue to relapse.

With the help of philanthropy, physician-scientist Terry Fry, MD, is changing the future for children with resistant cancers. Dr. Fry is one of the leading cancer researchers in the country, and he recently joined the Children's Colorado team as the Director of Cancer Immunotherapy on the Anschutz Medical Campus. His groundbreaking research aims to super-charge the body's cancer-fighting T-cells.



Dr. Terry Fry
Robert J. and Kathleen A. Clark Endowed Chair for Pediatric Cancer Therapeutics

"The opportunity to recruit Dr. Fry here is truly amazing," said Lia Gore, MD, Director of the Center for Cancer and Blood Disorders at Children's Colorado and the Ergen Family Chair in Pediatric Cancer. "We are fortunate that he chose to come here over the many other leading institutions in the country who wanted him. It shows the future is bright here."

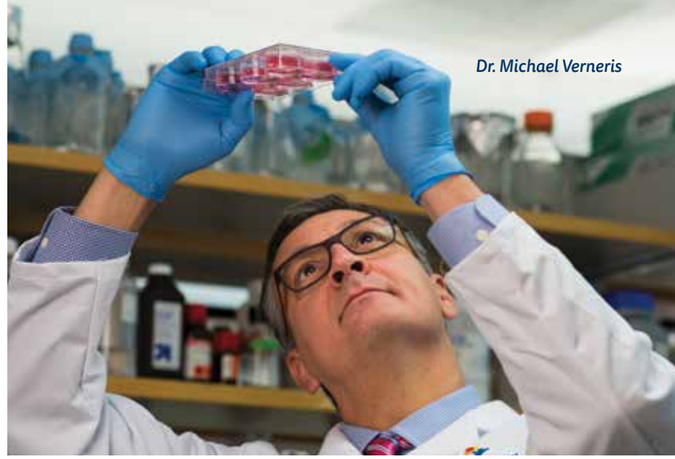
Dr. Fry was among the first scientists to investigate inserting modified genes into a child's own T-cells, making them better-equipped to seek out and kill leukemia cells. Approved by the Federal Drug Administration (FDA) for pediatric use in 2017, the therapy achieved an astonishing 80 percent remission rate in kids with unresponsive leukemia.

Now Dr. Fry is working on a therapy that targets two proteins found on the surface of leukemia cells. The goal: decrease cancer resistance and strengthen remissions. Dr. Fry believes his research could have implications for other diseases.

"Treatment for autoimmune diseases involves manipulating the same cells we're studying," says Dr. Fry. "This absolutely has potential beyond cancer."

Thomas was diagnosed with leukemia at age 4 and underwent more than three years of chemotherapy. After a hard fought battle, his cancer is now in remission. In the future, breakthroughs in immunotherapy could help patients like Thomas avoid the many side effects and difficulties of chemotherapy treatment.

EMPLOYING THE IMMUNE SYSTEM AS CANCER'S WORST ENEMY



Dr. Michael Verneris

A senior mentor once advised Michael Verneris, MD, Director of Bone Marrow Transplant and Cellular Therapy at Children's Hospital Colorado, to abandon his plans of studying the immune system as a treatment for pediatric cancer.

"'You're wasting your time,'" Dr. Verneris remembers him saying 25 years ago. His mentor worried that the mysteries of the immune system and cancer were too complex to make any meaningful conclusions.

"I didn't take his advice," Dr. Verneris says.

From the beginning of his career, Dr. Verneris was always attracted to the toughest cases, devoting his attention to patients with the most severe prognoses. "Those were the ones who needed it the most," Dr. Verneris says.

This determination perhaps made him perfectly suited to delve into the extraordinary complexities of immunity and cancer. At a time when everyone else was studying drug therapy, the largely dismissed field of cellular therapy needed him most.

"That's our vision — that cells are better than chemotherapy,"

DR. MICHAEL VERNERIS
The Barton Family Endowed Chair for Bone Marrow Transplant

Almost obsessively devoted to the study of the immune system and stem cells — "It's what I have thought about every day of my life for the last 25 years" — Dr. Verneris was the first to discover how to reduce the recurrence of leukemia after bone marrow transplant by using blood from two umbilical cord units.

Today, he and his research team are studying how to grow or activate aspects of the immune system, including natural killer (NK) cells and T cells, to treat children with cancer.

Roger Giller, MD, who founded the Bone Marrow Transplant Program at Children's Colorado 23 years ago, welcomes this next chapter of research that will inevitably lead to more cures.

"We're manipulating cells outside the body to have specific functions when they're infused back into patients," Dr. Giller says. "So they may have infection-preventing or -treating capabilities; they may have anti-cancer properties."

Dr. Verneris says that this investment in cellular therapy makes Children's Colorado different.

"Here, that's our vision," he says. "That activating the immune system will be an important adjunct to more traditional therapies, such as chemotherapy. Our goal is to be able to use the immune system to treat diseases that aren't currently being treated that way."

RESEARCH FUNDING CHALLENGES

Philanthropy Bridges the Gap

The National Institutes of Health (NIH), the federal government's primary source of research grants, used to fund nearly 1 in 3 research proposals; **today it funds fewer than 1 in 5.**

NIH spending power has **decreased by nearly 20 percent** since 2003 – and deeper cuts are being considered by Congress.

With numerous funding challenges, the percentage of physicians who dedicate significant time to research has **declined from 5 percent to 1.5 percent** since the 1980s.

In 1965, the U.S. federal government financed more than 60 percent of research and development. By 2006, the balance had flipped, with **65 percent of U.S. research being funded by private interests.**

Over the course of 20 years, the average age at which physician-scientists secure their first NIH grant has **increased from 36 to 43,** creating barriers for up-and-coming researchers.