

## What is the Dream Team?

Some of the most successful and exciting childhood cancer research of the last 50 years has been accomplished by the St. Baldrick's – Stand Up to Cancer Dream Team.

This Pediatric Cancer Dream Team is a fusion of experts from two cutting-edge fields of research – genomics and immunotherapy – funded jointly by Stand Up to Cancer and the St. Baldrick's Foundation for four years, beginning 2013.

Because of its success – called “lightening in a bottle” by some experts – the St. Baldrick's Foundation has renewed funding for four more years.

Using genomics to find targets for immunotherapy is truly the wave of the future. Our team of 150 experts at eight institutions across the U.S. and Canada are on the forefront of this discovery – saving lives.

## What is the problem?

Cancer is caused by cells that have gone rogue. Instead of behaving like normal cells, they continue to grow and divide, endlessly. Until now, doctors have had three main tools for fighting cancer:

1. **Surgery** – removing the tumor, often along with part of the body.
2. **Radiation** – X-rays or gamma rays that destroy cancer cells, but also surrounding tissues.
3. **Chemotherapy** – using drugs to poison cancer cells, with toxic effects on the whole body.

Today there is a new method for some patients:

4. **Immunotherapy** – training the patient's own immune system to fight cancer. While researchers have been pursuing immunotherapy for decades, we began to see its true power in 2010, and recent breakthroughs are only the tip of the iceberg.

For this new treatment, researchers take cells from the patient and reprogram them. Once injected back into the patient, these trained cells recognize and attack “targets” on cancer cells, destroying them and leaving healthy cells alone.

How do we find the *targets* for these trained immunotherapy cells to hit? Through **genomics**. Childhood cancers are caused by genetic mutations. While most of these “mistakes in the DNA” are mysteries to us today, the field of genomics research is accelerating rapidly thanks to new technologies that are faster and more available than ever before. (In 2016, it costs about \$1,500 to sequence a genome. A decade earlier, it would have cost \$14 million to sequence that same genome!)



Mitch bounced back from lifesaving treatment to graduate with honors.

When Mitch Carbon was a junior in high school, he was preparing to die. Now at 20, not only did he graduate with honors, the freshman at Whitworth University is cancer free, making friends, and having the most fun he's ever had.

“I feel that the modern and accepted practice of treating leukemia today could not have saved me. Only that trial could have saved me. That's why people need to have access to [these clinical trials], because I know there are kids who are in that same situation, who are waiting, and they'll die if they don't get it.”

## What are the goals of the Dream Team?

The Dream Team's goals are to:

1. *Discover new targets* on childhood cancer cells that the immune system can recognize.
2. *Develop immunotherapy treatments* to hit those targets and kill cancer cells.
3. *Conduct clinical trials* to test these new treatments.

So far, the results are astounding. Children and teens who would certainly have died – whose treatment options had been exhausted – are alive today because of this work. The Dream Team was a major force in developing and testing Kymriah, the first gene therapy approved by the FDA in the U.S. in August 2017. This immunotherapy results in an astounding 83% survival rate for relapsed acute lymphoblastic leukemia patients who have no other hope.

Much remains to be done to find all the reasons this therapy doesn't work for every child. And so far, immunotherapy works better for patients with blood cancers; progress is slower with solid tumors. But scientists already know a great deal about these obstacles and are working to overcome them, even for childhood cancers that no child today can survive.

## How can I help?

The initial 4-year grant of \$14.5 million ended on June 30, 2017. In 2018, the Dream Team began its next phase of changing the world for children with cancer.

When describing the team's impact to date, our Scientific Advisory Committee Chair, Jeff Lipton, MD, said that in the entire history of childhood cancer research, there are three teams he would have asked St. Baldrick's to support – three things that have changed paradigms:

1. Sidney Farber demonstrating in 1948 that chemotherapy works,
2. Brian Druker later showing that we can target molecular lesions, and
3. This Dream Team showing that we can harness the immune system to fight cancer.

And neither of the two above have had the kind of immediate success that this team has had.

These successes are exciting, but there's still a lot of work to be done. You can help the Dream Team find and perfect new, safe therapies to replace outdated, toxic treatments. You can help break new ground in immunotherapy and genomics, and usher in a new era for childhood cancer research.

Most of all, you can help save lives. Here's how:

- With a generous match from an amazing anonymous foundation, all new and increased gifts will be matched through 2020 – up to \$75,000 per donor annually.
- Visit our website to learn more about getting involved: [www.StBaldricks.org](http://www.StBaldricks.org)

## We can Discover Cures Together

The outlined process – from idea, to new therapy, to testing – will continue with your support: *Discovery* allows new treatments to be developed, which are *tested* in clinical trials, and the results of those trials feed more *new* discoveries, and the cycle of progress moves on.

**Your support in funding this Dream Team will continue to save lives.**