

New CAR-T Cell Therapy Shows Promise for Hard-to-Treat Cancers

CU researchers have developed ALA-CART, a next-generation therapy aimed at improving outcomes for patients with resistant cancers.

March 19, 2025 By Laura Kelley and University of Colorado Cancer Center

Researchers at the [University of Colorado Anschutz Medical Campus](#) have successfully developed a supercharged iteration of CAR-T cell therapy that can enhance the effectiveness and longevity of the cells, particularly against cancer cells that are harder for prior CAR-T therapies to detect and fight.

The study was published today in the journal [Cancer Cell](#).

“This next-generation approach, called ALA-CART (adjunctive LAT-activating CAR-T cells), optimizes CAR-T cells to more effectively eliminate cancer cells, including those that have been able to hide from traditional CAR-T cells,” said Catherine Danis, PhD, lead author and postdoctoral fellow at the [University of Colorado School of Medicine](#).

CAR-T cell therapy involves extracting a patient’s T-cells, modifying them to recognize cancer cells, and then reinfusing them into the patient where they target cancer cells throughout the body. But some cancer cells can evade detection by CAR-T cells, leading to treatment failure and relapse. Using human T cells and leukemia cells in specialized mouse models, researchers developed the novel ALA-CART cells which showed promising results in fighting acute [lymphocytic cancers](#) that were resistant to traditional CAR-T cells.

“ALA-CART improves the ability of CAR-T cells to detect and attack resistant cancer cells more effectively. This could lead to longer lasting results, even when other treatments have failed,” said [M. Eric Kohler, MD, PhD](#), corresponding author and member at the [University of Colorado Cancer Center](#). “It also shows signs it could reduce side effects that often accompany traditional therapies.”

Kohler said the same CAR-T cell therapies have been used for more than a decade.

“When you look back, it’s easy to see how revolutionary CAR-T cells have been. But, for many patients this therapy isn’t enough. And stepping back you realize that we have been driving these CAR-T cells with the same basic design for the last 15 years,” Kohler said. “When we began this

project, we wanted to understand why this design allowed certain leukemia cells to escape therapy. Once we understood that, we knew how to design our ALA-CART cells. What was surprising is that we didn't just fix the problem of leukemia cells escaping, we improved multiple aspects of the ALA-CART cells, and we're hopeful this will translate into improved outcomes for patients in the future."

The next step is advancing ALA-CART into clinical trials to assess its safety and efficacy in human patients. Danis said they hope to begin that phase within the next two years.

In the meantime, the researchers are also testing the treatment on other types of cancers including acute myeloid leukemia, multiple myeloma, and solid tumors.

"This marks a major shift in cancer immunotherapy, offering a groundbreaking innovation that could eventually improve survival and quality of life for patients with some of the most difficult-to-treat cancers," Danis said.

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