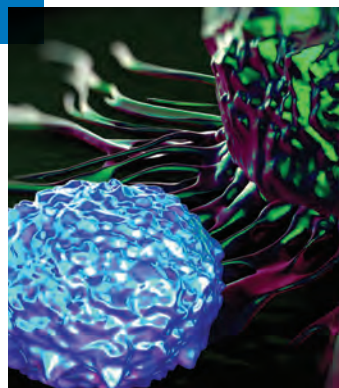


# CAR T CELL THERAPY AT CITY OF HOPE





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## WHAT IS CAR T CELL THERAPY?

One of the most promising areas of cancer research and treatment is known as immunotherapy, in which a patient's own immune system is enlisted in the fight against cancer. This approach is more than just a narrow field of study at City of Hope. It is the central component of groundbreaking research and clinical trials currently underway.

City of Hope continues to be at the forefront of a powerful form of immunotherapy known as chimeric antigen receptor (CAR) T cell therapy. Using this approach, immune cells are taken from a patient's bloodstream, reprogrammed to recognize and attack a specific protein found in cancer cells, then reintroduced into the patient's system, where they get to work destroying targeted tumor cells.

New City of Hope trials are being conducted with memory T cells, a stem cell-like subset of immune cells that remains in the body after attacking the cancer. The hope is that they then grow into an active reservoir of cancer-killing cells capable of stopping future outbreaks.

To learn more about this revolutionary treatment, or to see if you are eligible for a clinical trial, call **626-218-1133** or visit **[CityofHope.org/CART](https://www.cityofhope.org/CART)**.

## BENCH TO BEDSIDE

Among the diseases that City of Hope physicians and scientists are targeting with CAR T cell therapy are lymphoma, leukemia and glioblastoma, with trials for additional solid tumors opening in the years ahead. City of Hope's CAR T trials for glioblastoma — a type of aggressive brain tumor — were the first of their kind in the world to inject reengineered CAR T cells directly into the tumor site and cerebrospinal fluid. A case report was published in 2016 in the *New England Journal of Medicine*.

Our community includes researchers, scientists, doctors, nurses and supportive care professionals, each of whom is dedicated to giving patients the chance to live longer, better and more fully.

While it's being investigated for the treatment of many kinds of cancer, CAR T cell therapy is currently only available to certain patients, often those with relapsed disease or disease that has not responded well to other treatments.

## A LEGACY OF INNOVATION

Our history with CAR T cell therapy dates to the late 1990s and builds on the pioneering work of Stephen J. Forman, M.D. The City of Hope BMT program began in 1976 and has since grown into one of the largest, most successful programs of its kind in the United States. To date, more than 16,000 BMTs have been performed at City of Hope, with survival rates exceeding expectations for the past 14 consecutive years.

Currently, we are investigating CAR T cell therapy as a bridge to BMT for leukemia and lymphoma patients.

## WHY CHOOSE CITY OF HOPE?

1. We have one of the most comprehensive CAR T cell programs in the world, with numerous CAR T clinical trials ongoing and plans to open many more in the year ahead.
2. City of Hope, with its on-campus clinical care, research and manufacturing facilities, has the resources to deliver CAR T cell therapy all in one place.
3. Our history with CAR T builds on the pioneering work of our own Stephen J. Forman, M.D., in bone marrow transplantation.
4. We partner with global biopharmaceutical companies to make their therapies available to patients, including axicabtagene ciloleucel, a Kite Pharma Inc. product, and tisagenlecleucel, manufactured by Novartis. These products offer a significant breakthrough for the treatment of adult patients with several types of leukemia and non-Hodgkin's lymphoma.
5. City of Hope is built on the premise of "whole-patient care" — treating not just the illness but caring for the entire patient.

## HOW DOES CAR T CELL THERAPY WORK?

### STEP 5:

#### TARGET AND DESTROY

They multiply inside the patient's body and, with guidance from their engineered receptors, are able to recognize and then kill cancer cells.

### STEP 1:

#### ISOLATE

T cells are isolated from the patient by way of a specialized blood draw.

### STEP 2:

#### REPROGRAM

The T cells are then reprogrammed to produce special receptors on their surface called chimeric antigen receptors, or CARs. This enables the T cells to better recognize tumor cells.

### STEP 3:

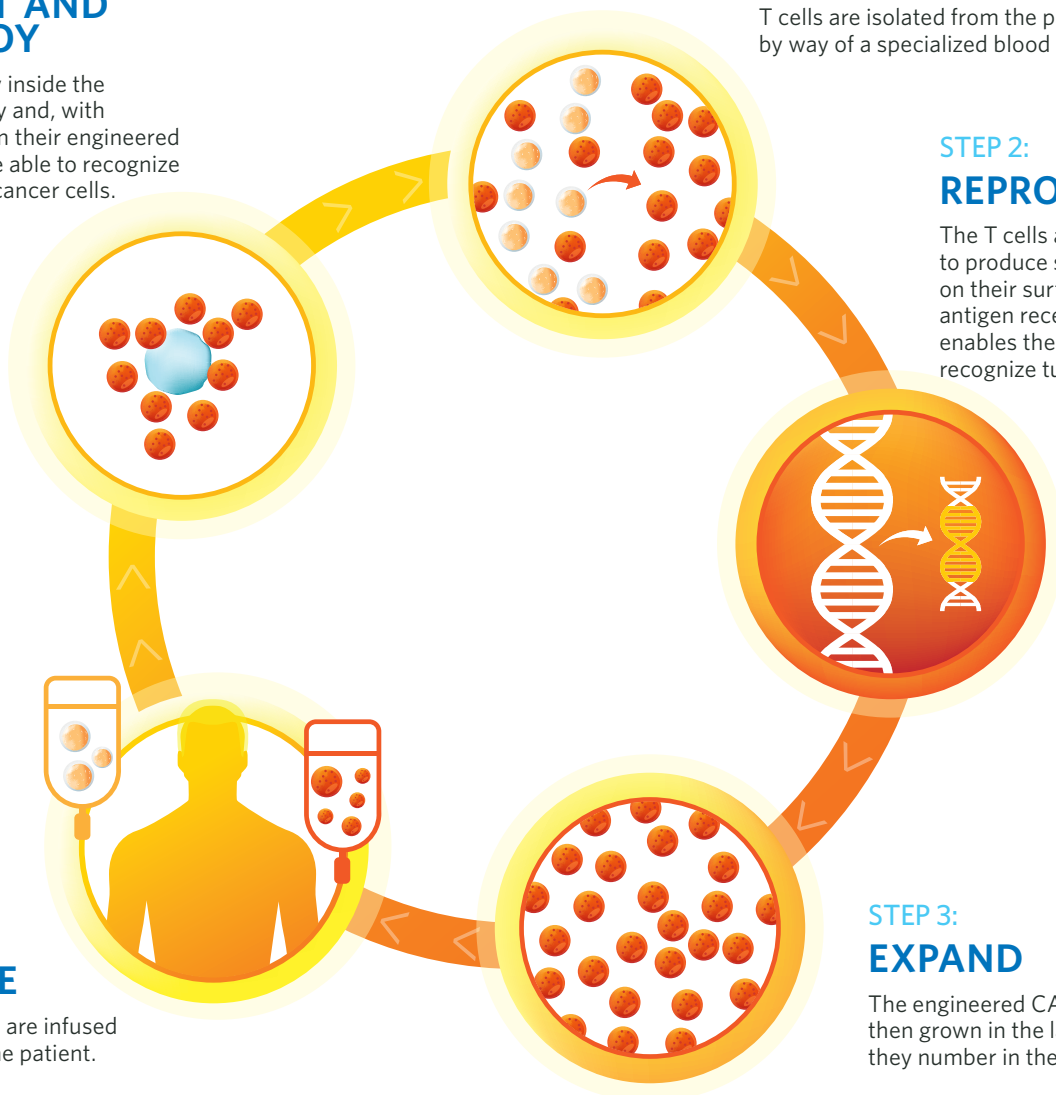
#### EXPAND

The engineered CAR T cells are then grown in the laboratory until they number in the billions.

### STEP 4:

#### INFUSE

CAR T cells are infused back into the patient.





[CityofHope.org](http://CityofHope.org)