

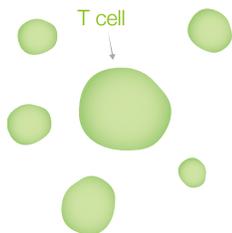
CAR-T Cell Therapy

Chimeric Antigen Receptor T cell therapy, or CAR-T cell therapy, is an investigational immunotherapy approach to treat cancer.

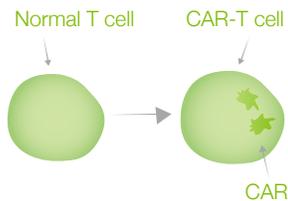
CAR-T CELL THERAPY PRODUCTION

The production of CAR-T cell therapy involves a number of steps.^{1,2}

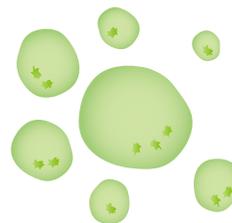
T cells, a type of white blood cell, are collected from a patient or a donor's blood.



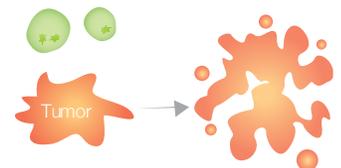
The collected T cells are then sent to a laboratory where they are engineered to produce chimeric antigen receptors (CARs) on their surface. The engineered T cells are now called CAR-T cells.



CAR-T cells are multiplied in the lab and infused into the patient's bloodstream.



CAR-T cells are intended to recognize and kill the cancerous cells that have the targeted antigen on their surface while also continuing to multiply within the body.

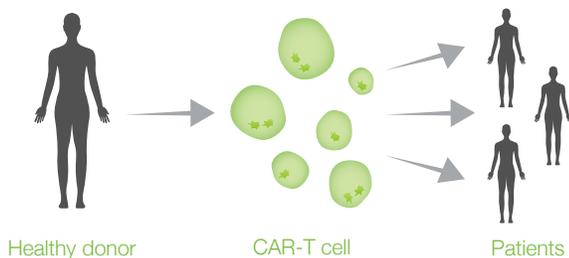


APPROACHES TO CAR-T CELL THERAPY DEVELOPMENT

There are two approaches to the production of CAR-T cell therapy. More research is needed to better understand the potential benefits and disadvantages of each approach.

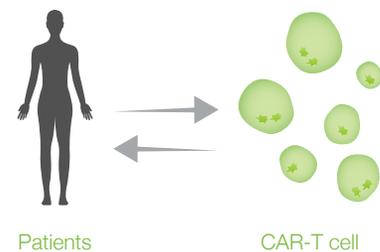
Allogeneic

Allogeneic CAR-T cells are engineered using T cells from a single donor that are utilized in multiple patients.



Autologous

Autologous CAR-T cells are engineered using a patient's own T cells.



PFIZER IS ACTIVELY PURSUING ALLOGENEIC CAR-T CELL THERAPY

Through collaborations with Collectis and Servier, Pfizer is actively investigating allogeneic CAR-T cell therapies across several targets.

Collectis' CAR-T platform technology provides a proprietary, allogeneic approach to developing CAR-T cell therapies that seek to produce genetically engineered immunotherapy treatments that could potentially be used by multiple patients.

The collaboration with Servier enables us to co-develop and potentially commercialize UCART19, an investigational allogeneic CAR-T cell therapy (T cells from healthy donors), in the United States. UCART19 has been observed to bind to the CD19 antigen found on the surface of B cells and is thought to eradicate CD19 positive cells through T-cell mediated pro-inflammatory cytokine production and cytotoxicity. More research is needed to fully understand the potential of UCART19 in cancer.



CLINICAL STUDIES

Pfizer is exploring the potential of CAR-T cells in a clinical development program to determine:

- Maximum tolerated dose
- Anti-tumor activity and safety profile
- Therapeutic potential

ONGOING STUDIES

The main objectives of the UCART19 clinical trials are to assess the safety and tolerability of UCART19. Ongoing trials have begun as part of Servier and Pfizer's co-development clinical trials, including:

- A Phase 1 clinical trial of UCART19 in the treatment of relapsed and refractory pediatric acute B lymphoblastic leukemia (B-ALL) at the University College of London GOSH¹ (NCT02808442).²
- A long-term follow-up safety study of patients with advanced lymphoid malignancies who have previously been exposed to UCART19 (NCT02735083).³
- A Phase 1 study as a single agent in adolescent/adult patients with relapsed or refractory B cell acute lymphoblastic leukemia (ALL) and chronic lymphocytic leukemia (CLL) (CALM) (NCT02746952).⁴

The safety and efficacy of the agent(s) under investigation have not been established. There is no guarantee that the agent(s) will receive regulatory approval and become commercially available for use(s) being investigated. All information is current as of May 2017.

REFERENCES

1. Collectis. (2016, June 20). Collectis Announces First Patient Treated in Phase 1 Trial of UCART19 in Pediatric Acute B Lymphoblastic Leukemia (B-ALL) Press release. <https://www.collectis.com/en/content/collectis-announces-first-patient-treated-phase-1-trial-ucart19-pediatric-acute-b-0>. Accessed March 16, 2017.
2. Study of UCART19 in Pediatric Patients with Relapsed/Refractory B Acute Lymphoblastic Leukemia (PALL). <https://clinicaltrials.gov/ct2/show/NCT02808442>. Accessed February 27, 2017.
3. A Study to Evaluate the Long-term Safety of Patients with Advanced Lymphoid Malignancies Who Have Been Previously Administered with UCART19. <https://clinicaltrials.gov/ct2/show/NCT02735083?term=UCART+19+Servier&rank=1>. Accessed February 27, 2017.
4. Dose Escalation Study to Evaluate the Safety, Tolerability and Biological Activity of a Single Dose of UCART19 in Patients With Relapsed / Refractory (R/R) B-cell Acute Lymphoblastic Leukaemia (ALL) and Chronic Lymphocytic Leukaemia (CLL) (CALM). <https://clinicaltrials.gov/ct2/show/NCT02746952>. Accessed February 27, 2017.