

# Using CAR-T-cells for cancer treatment

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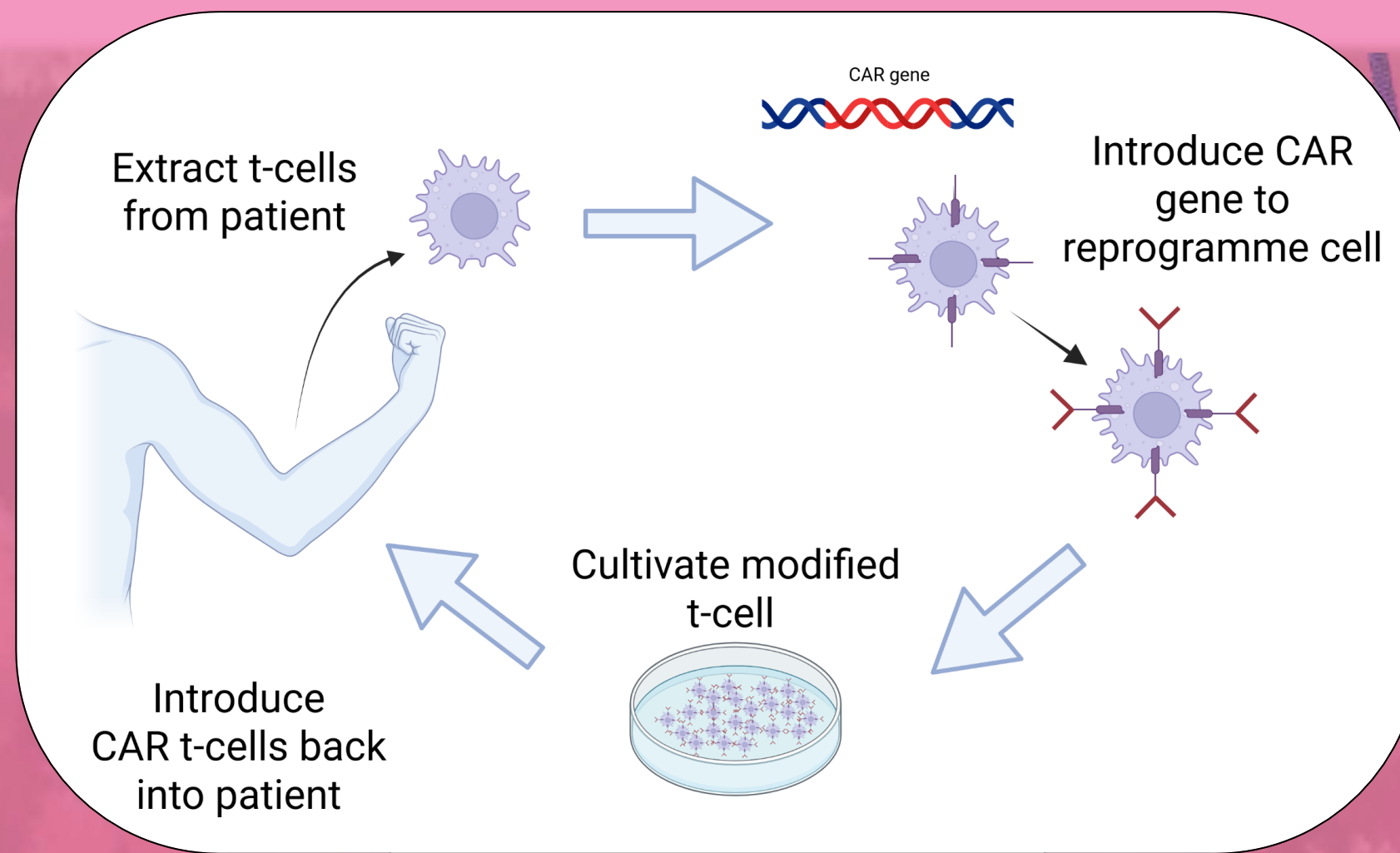


Figure 1: Illustration of how CAR t-cells are made from patients own t-cells

## What is it?

The immune system recognizes foreign substances in the body by detecting proteins on the surface of foreign cells. These proteins are known as **antigens**. CAR-T-cell immunotherapy is a new cancer therapy that uses the **body's own immune system** to fight the tumour. In CAR-T-cell therapy the patient's own immune cells (T-cells) are used, spliced with a Chimeric antigen receptor (CAR) gene.

## How does it work?

T-cells are extracted from the patient's blood and **genetically engineered** to recognize specific antigens on cancer cells. The genetically modified T-cells are **returned to the patient's body** where they seek out and destroy the tumor. Currently, this therapy is only used for certain types of cancer, such as **lymphoma** and **leukemia** and in Norway it is only available at University hospitals.

## Side effects:

These usually occur within the first 14 days, while the patient is still in hospital and closely monitored. Most severe side effects include:

- Cytokine release syndrome (CRS)
- Neurotoxicity
- Allergic reactions
- Weakened immune system

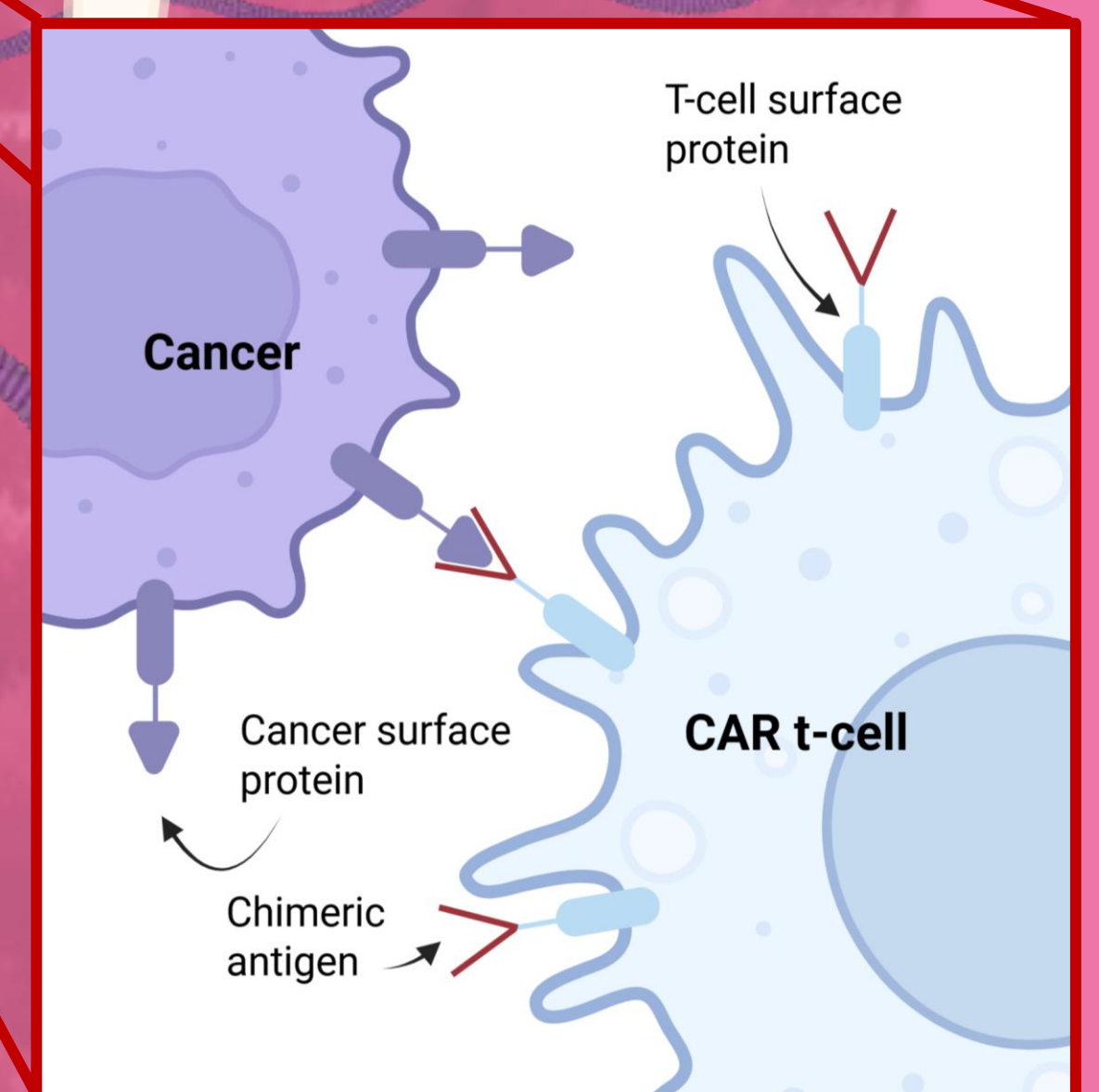


Figure 2: CAR t-cell attaching to cancer surface protein.

## Ethics:

### Pros:

- Less severe side effects than chemotherapy.
- More effective and precise than chemotherapy.
- No immune response to your own immune cells.

### Cons:

- Cost, 400 000 \$.
- Distribution of treatment.
- Potentially dangerous side effects.
- Effective on only certain types of cancer.

### References:

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