Methods of Treating Lymphoma with a Phagocyte Having a Chimeric Antigen Receptor

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BACKGROUND

Cellular immunotherapies using chimeric antigen receptor T-cells (CAR-T) are revolutionizing cancer treatment. In CAR-T therapy, a patient's T cells are removed, engineered to express a chimeric antigen receptor (CAR) that binds to a tumor antigen, expanded *ex vivo* and reinfused into the patient. Without question, CAR-T has prolonged lives; however, there is enormous room for improvement because CAR-T therapy is hampered by a number of limitations, including: 1) CAR-T-cells frequently fail to infiltrate into tumors; 2) CAR-T cells become exhausted; 3) tumor cells lacking the target antigen escape; 4) cytokine storms and auto-immune reactions interfere, and 5) the therapy is complex, expensive, and time-consuming.

DESCRIPTION

Researchers at the University of California, Santa Barbara have invented a novel approach for treating lymphoma in an individual by targeting engineered phagocytes to lymphoma cells. In particular, the phagocytes provided for administration to an individual, who has lymphoma, are engineered to express a chimeric antigen receptor (CAR) that specifically binds to an antigen present on lymphoma cells. The CAR localizes the engineered phagocytes to sites where lymphoma cells are present. In some embodiments, phagocytic activity of the phagocytes is enhanced by further engineering the phagocytes to express a hyperactive Rac GTPase.

ADVANTAGES

- Increases treatment efficiency
- Increases patient survivability

APPLICATIONS

- Cancer Treatment
- Pharmaceuticals
- Therapeutics

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	20240408204	12/12/2024	2022-773

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OTHER INFORMATION

KEYWORDS

pharmaceuticals, therapeutics, cancer treatment, immunotherapy, CAR-T therapy, chimeric antigen receptor

CATEGORIZED AS

- **Medical**
  - Disease: Cancer
  - Therapeutics

RELATED CASES

2022-773-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Stimulating Phagocytosis Of Cancer Cells By Activating Genes In Macrophages

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