Engineered Hcmv Protein-Derived Variants As Dr5 Agonist Immunotherapeutics For Solid And Pediatric Tumors

Tech ID: 33058 / UC Case 2022-630-0

ABSTRACT

Researchers at the University of California, Davis have developed a new method for enhancing immunotherapy for solid cancer tumors by targeting multiple cancer cell elimination mechanisms simultaneously.

FULL DESCRIPTION

The overall cancer death rates have been down ~20% in the past 25 years; however, mortality rates in ovarian, triple-negative breast, colon and other solid cancer patients have remained relatively unchanged in the last two decades. Cancer immunotherapy uses antibody-based approaches to activate immune cells against cancer cells and has proven effective in blood cancers and melanomas. However, most solid tumors tested for immunotherapy have been significantly discouraged compared to liquid tumors in clinical trials. The latter is attributed to 1) the limited infiltration of activated immune effector cells into the solid tumor bed, and 2) most immunotherapy agent targets one particular mechanism to eliminate cancer cells. The proposed invention focused on overcoming the latter by co-targeting the multiple cancer cell elimination mechanisms simultaneously to enhance the power of immunotherapy for solid tumor.

Researchers at UC Davis have engineered a novel variant of an hCMV protein that interacts with Death Receptor DR5 and activates its clustering and apoptotic signaling. The engineered variant protein not only activates DR5 to instigate cytotoxic cell death but also mediates its action on immune checkpoint target CD155-TIGIT. It sequesters CD155 to block immune inhibitory TIGIT activation on CD8+T-cell and NK cells. Due to its dual action, the engineered hCMV protein is a solution to overcome the clinical failures of DR5 and TIGIT antibodies.

APPLICATIONS

- Treatment of solid tumor cancer cells

FEATURES/BENEFITS

- Increased death receptor activation
- Increased TIGIT inhibition
- Co-targeting cell death and immune checkpoint pathway by a single agent

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Published Application	2024/050058	03/07/2024	2022-630

Additional Patent Pending

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OTHER INFORMATION

KEYWORDS

Death Receptor 5 (DR5), Cluster of Differentiation 155 (CD155), Variant, "Wild-Type" or "Parent"

CATEGORIZED AS

- **Medical**
  - Disease: Cancer

RELATED CASES

2022-630-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- A Stable BPTI Peptide as Cancer Therapeutic and for Cardiac Surgery to Reduce Blood Loss
- Novel Tumor-Specific Fas Epitope Targeting Antibodies

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