Docket #: S23-355

Enhanced Cancer Immunotherapy with CAR-T Cells Targeting Ganglioside GM2 or Both Gangliosides GM2 and GD2

Stanford researchers have suggested targeting ganglioside GM2, either alone or in combination with ganglioside GD2, to enhance CAR-T therapy for cancer.

Gangliosides are a group of glycosphingolipids prominently found in the cell membranes. Ganglioside GD2, highly expressed in certain types of cancer, has been extensively studied as a target for CAR-T therapy. However, an alternative strategy needs to be devised for cancers with low or heterogeneous GD2 expression levels.

Researchers at Stanford University have shown that ganglioside GM2 could be an effective target for CAR-T therapy. When GD2 is downregulated, there is a compensatory increase in surface GM2.CARs targeting GM2 exhibited enhanced anti-tumor function compared to GD2 CARs, both in vitro and in vivo. Various CAR constructs with different transmembrane domains, endodomains, and chain orientations were evaluated to identify the optimal design. Additionally, bispecific GD2-GM2 CARs had the better anti-tumor function than any of the monospecific CARs.

Stage of Development
Rsearch: in vivo

Applications

- Cancer immunotherapy

Advantages

- Overcomes antigen escape

Patents

- Published Application: WO2025096443

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