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NOVEL CELL THERAPY PLATFORM FOR CANCER USING ENGINEERED CDC1 DENDRITIC CELLS

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Value Proposition: *CAR-engineered cDC1 cells (syngeneic or allogeneic) that stably express a proprietary, modular chimeric antigen receptor and demonstrate strong in vivo efficacy against solid tumors, including immunologically 'cold' tumors.*

Technology Description:

The successes of CAR-Ts in hematologic tumors have generally not translated to solid tumors. Furthermore, CAR-Ts are heavily dependent on consistent expression of one or two tumor-specific antigens, which can be vulnerable to antigen escape and cancer recurrence. Conventional type 1 dendritic cells (cDC1) are central to orchestrating adoptive anti-tumor immunity. However, specifically targeting tumors with cDC1s is challenging, and there are numerous technical hurdles to reliably differentiate dendritic cell progenitors into cDC1s and to engineer them at therapeutic scale. A team led by Dr. Carl

DeSelm from Washington University in St. Louis has created multiple lines of engineered cDC1s with stable expression of proprietary CAR-like constructs. In vivo, monotherapy with these "CAR-cDC1" cells led to robust tumor antigen cross-priming, complete solid tumor remission, and rejection of tumor re-challenge in mouse models. Notably, CAR-cDC1s were effective even against heterogeneous tumors wherein a significant fraction of cells lacked the targeting antigen. Finally, CAR-cDC1s have demonstrated a favorable safety profile, with no observable CRS or ICANS.

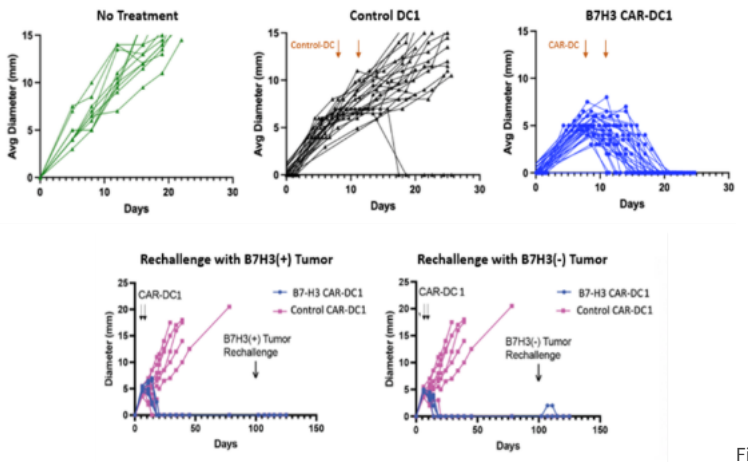

Figure: Tumor mouse model was treated with placebo, non-specific (no CAR) cDC1, and tumor-specific CAR-DC1. Antigen used is B7H3. Mice were subsequently rechallenged with antigen(+) or antigen(-) tumors to show therapeutic persistence.

Stage of Research: Small animal model efficacy and safety testing was extensively conducted for

different versions of CAR-DC1 (e.g. harboring proprietary tumor-specific targeting constructs for glioblastoma and pancreatic cancer, etc.) Current focus is on streamlined cGMP manufacturing of therapeutic doses for human administration.

Applications: Solid tumor monotherapy platform, highly effective against immunologically “cold” tumors.

Key Advantages:

- Broad tumor antigen coverage
- Immune activation and durable immune memory
- Efficacy in solid tumors and favorable safety profile.

Patents: PCT patent on composition pending.

Related Web Links: Carl DeSelm Profile and Lab