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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 a 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 rechallenge 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.

Stage of Development: Efficacy and safety testing in small-animal models was conducted extensively for different versions of CAR-DC1 (e.g., harboring proprietary tumor-specific targeting constructs for glioblastoma, pancreatic cancer, and beyond). 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 a favorable safety profile.

Patents: PCT patent on composition pending.

Related Web Links: Carl DeSelm Profile and Lab