

# SIRPant Technology:

## Cellular Immunotherapy for Solid Cancers



### EXECUTIVE SUMMARY

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#### TEAM

**Yuan Liu, MD, PhD**

Technical Lead

**Ned Waller, MD, PhD**

Clinical Lead

#### FUNDING

\$50K GRA Grant

\$174K Biocivity Grant

\$371K NIH Grant

#### INTELLECTUAL PROPERTY

Patents filed & pending  
Technology available for  
licensing and partnership

#### STATUS

Lead Discovery/  
Optimization

### TECHNOLOGY

Macrophages play a key role in the decision to either eliminate or tolerate cancer cells. Productive cancerous masses evade macrophage activity in part by engaging macrophage inhibitory receptor SIRP $\alpha$ , thereby suppressing macrophage phagocytic activity and cancer elimination. Additionally, SIRP $\alpha$  inhibits consequent anti-tumor adaptive immune responses, leading to impairment of cancer-specific T cell responses.

SIRPant technology comprises an innovative approach to engineer SIRP $\alpha$ low macrophages for robust phagocytosis and for initiation of tumor-specific immune responses. Cells from a simple blood draw, are manipulated in vitro, and are delivered directly into the tumor via injection. Our proprietary macrophage modification helps overcome resistance to the effects of immunosuppressive cytokines and the reprogramming of the tumor microenvironment toward a proinflammatory state. This results in digestion of the tumor and initiation of tumor specific adaptive immune response. This cellular therapy approach was chosen based on studies that demonstrated that this response cannot be recapitulated or even approximated using anti-SIRP $\alpha$  antibodies

### MARKET NEED

While immunotherapies have revolutionized solid tumor treatment, their efficacy has continued to be a point of concern as only a limited number of patients benefit. For example, 15-25% of patients treated with immune checkpoint inhibitors show a response, with the remaining 75-85% of patients seeing no benefit. The lack of efficacy in current immunotherapies has been associated with a "cold" tumor microenvironment in which anticancer T cells are scarce and functionally suppressed. The specific cancer types, stage of progression, genetics, and treatment history also play a role. SIRPant technology addresses one of the major challenges in advancing immunotherapy: developing agents that consistently elicit anti-tumor immunity in a broad set of patients and cancer types.

### STATUS

In vivo proof of principle has been completed for the technology in mouse cancer models and complemented by ex vivo human studies. Results show that the SIRPant technology enables rapid tumor elimination and potent induction of anti-cancer T cells and B cells with concomitant prevention of tumor recurrence.

Immediate next steps include completing Pre-IND testing for SIRP $\alpha$ low macrophages, and technology transfer to a cGMP cell manufacturing facility.

**For more information on this technology contact:**

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