

## **Project Summary**

### **John Hansen Research Grant 2026**

#### **Interleukin-10 Improves the Metabolic Fitness and Function of CAR $\gamma\delta$ T Cells**

Zhenyu Dai, MD, PhD

Stanford University, United States

Blood cancers affecting T cells remain difficult to treat, and many patients relapse even after intensive therapy or stem cell transplantation. Although CAR T-cell therapy has improved outcomes for some patients, current approaches still face important limitations. In particular, producing CAR T cells from a patient's own immune cells can be challenging when those cells are reduced in number, weakened by prior treatments, or mixed with cancer cells.

Our research aims to develop a new type of "off-the-shelf" cell therapy using  $\gamma\delta$  T cells, a naturally occurring immune cell population that can recognize cancer cells without strict donor matching. Because of this property, these cells may be safer and more broadly available, especially for patients undergoing stem cell transplantation.

Our early studies show that engineered  $\gamma\delta$  T cells can effectively attack cancer cells in laboratory and animal models. We are now testing whether adding a supportive immune signal called IL-10 can help these cells survive longer, function more effectively, and maintain their anti-cancer activity over time.

The goal of this project is to create a more durable and accessible cell therapy for patients with blood cancers who currently have limited treatment options. If successful, this work could lead to safer treatments, longer disease control, and improved quality of life for patients facing relapsed or difficult-to-treat hematological diseases.