CBC Catalyst Award Full Review R32 – Dr Ying Hu and Dr Adam Lin

*Prognostic Imaging of T Cell Health (PITCH) for CAR T Therapy*

The proposal focuses on evaluation of T cell thickness as a strategy to understand the potential to predict CAR T therapy outcomes. The objective of the application is to develop a cost-effective imaging technology for quantitative evaluation of T cell health. The hypothesis is that the endoplasmic reticulum (ER) calcium storage correlates with T cell function status and to clinical response of CAR T therapy.

Aim 1, will establish correlations between ER Ca superscript 2 + ER Ca storage and CAR T cell thickness. Experiments are proposed to determine the relationship between ER Ca storage and immunosuppressive culture conditions of T cells. The experiments will be repeated with primary T cells from healthy and cancer patients. In specific aim 2, a correlation between ER Ca stores as a function of days after cell infusion and patient survival will be performed. This will utilize patient’s biospecimens from patients who are undergoing CAR T therapy at Northwestern University, where Dr Lin is a cellular therapist.

The investigators are highly qualified. The environment is suitable for the proposed studies, and they will be able to gain access to biospecimens.

Overall, impact score is 2.