



CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP120241

Project Title:
T-Cell Therapy After Hematopoietic Stem Cell Transplantation

Award Mechanism:
Individual Investigator

Principal Investigator:
Cooper, Laurence

Entity:
The University of Texas M.D. Anderson Cancer Center

Lay Summary:

Patients with cancerous B cells (non-Hodgkin lymphoma, small lymphocytic lymphoma, follicular lymphoma, and mantle cell lymphoma) that have relapsed or are resistant to therapies are at high risk of death. To control disease progression, these patients undergo autologous hematopoietic stem-cell transplantation (HSCT) enabling high doses of chemotherapy to be administered with concomitant rescue of bone marrow function upon infusion of their peripheral blood-derived stem cells (hematopoietic stem cells, HSC). Despite this intensive therapy, patients with active disease at time of HSCT have a survival of less than 20% due to a relapse in tumor burden. We seek to improve the outcome by employing a new immune-based therapy to target such B-lymphoid malignancies. This is based on our ability to genetically modify T cells to redirect specificity to a molecule called CD19 on B cells. The CD19-specific T cells can be manufactured in our laboratory to sufficient numbers and quality for human application. We have completed the regulatory and laboratory steps for the "first-in-human" application of CD19-specific T cells and this CPRIT application funds the trial to infuse these T cells in patients with B-lymphoid malignancies undergoing autologous HSCT. Companion studies assess the potential of this T-cell therapy to treat cancerous B cells. In addition, we lay the groundwork for future studies to broaden the application of immunotherapy based upon CD19-specific T-cell therapy for patients undergoing HSCT in which the HSC are derived from donors related to the patient. Furthermore, to help assess the therapeutic potential of T-cell therapy we seek to develop the infrastructure to visualize the infused CD19-specific T cells using magnetic resonance based imaging. In summary, this grant enables Texans to be the first to receive CD19-specific T cells to treat B-lymphoid malignancies using our platform technologies and to ensure Texans benefit from future T-cell therapies.