CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP110322

Project Title:
Targeting Leukemia-Stromal Interaction to Overcome Drug Resistance in vivo: Novel mechanism and Development of a New Therapeutic Agent

Award Mechanism:
Individual Investigator

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

Lay Summary:

Chronic lymphocytic leukemia (CLL) is the most common adult leukemia in the United States. Recent progress in CLL treatment using fludarabine and other new drugs has significantly increased improved clinical treatment outcomes. However, development of drug resistance in leukemia cells remains as major challenge in the treatment of CLL patients. The patient bone marrow cells play a major role in protecting the leukemia cells and promoting drug resistance. Currently there is no effective therapeutic strategy to overcome this type of drug resistance in CLL due to in part to insufficient knowledge about who leukemia cells interact with the host tissue. We recently discover a unique biochemical process that seems to explain how bone marrow may protect leukemia cells though a unique metabolic pathway. The main goals of this research is to further investigate the underlying mechanisms for this pathway, to design and test a new treatment strategy to overcome this type of drug resistance, and to develop a new drug formulation for more effective treatment of CLL and improve therapeutic outcomes. This study, if successful, will (1) significantly advance our understanding of the biological interaction between leukemia cells and host tissue cells, (2) provide a biochemical basis to develop new therapeutic strategy to overcome drug resistance in patients, and (3) may lead to a development of a novel anticancer drug that can be potentially used in clinical treatment of CLL patients, with an opportunity for commercialization. Because CLL is the most common adult leukemia, the results of this study may have a significant impact on leukemia treatment.