CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP140001

Project Title:
Role of DNA METHYLTRANSFERASE 3A in Hematologic Malignancies

Award Mechanism:
Individual Investigator

Principal Investigator:
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Entity:
Baylor College of Medicine

Lay Summary:

Cancers of the blood, including leukemias, lymphomas, and myelodysplastic syndrome (MDS), are increasingly common with age. Recent advances in identifying genetic changes that occur in these cancers have revealed a number of new genes whose mutation drives the formation of these aggressive diseases. A gene called DNMT3A has been found to be altered in 5% to 50% of many different types of blood cancers, making this an extremely important contributor to blood malignancies. The goal of this project is to use a mouse model we developed, which has lost DNMT3A, to study the function of this gene in blood cancers. In these mice, we have found many of the same types of cancer that occur in humans with similar mutations. Using these mice, we will study how DNMT3A loss contributes to these cancers through altering the genome and interacting with other proteins inside the cell. DNMT3A mutations are also found at a lower frequency in a variety of other malignancies, including lung cancer, breast cancer, and others. Therefore, understanding how DNMT3A mutations drive blood cancers may also help us understand how these mutations promote other diseases. Our long-term goal is to use this knowledge to develop new therapeutic approaches to these devastating diseases.