CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP100329

Project Title:
Next Generation Genomic Sequence Identification of the 19q Familial Wilms Tumor Predisposition Gene

Award Mechanism:
Individual Investigator

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

Lay Summary:

Studying families who are genetically predisposed to cancer is a powerful approach for identifying cancer genes. We have localized a familial predisposition gene for one cancer, Wilms tumor (WT), a childhood cancer of the kidney, to chromosome 19. This result implies that every affected person within one of these WT families carries the same DNA alteration that predisposes them to cancer. To identify this genetic change, we will sequence the DNA from the most distantly related affected members of five WT families using the latest sequencing technologies. The significance of DNA changes shared by family members will be further assessed in other WT families, in tumors from WT patients who have no family history of WT, and in our mouse models for WT. From this work we will identify a new gene that plays an important role in WT development. Other "WT" genes are now known to also play important roles in embryogenesis and in the development of other types of cancers. Thus, the identification of the chromosome 19 WT predisposition gene will not only be a leap forward in understanding cancer predisposition, but will likely also accelerate work in cancer genetics in general, identify new therapeutic targets for cancer treatment, and provide insight into new approaches for cancer prevention. As one of the first projects to sequence a region of the human genome implicated in cancer predisposition, this work will also serve as a model for identifying other human disease genes using large-scale genomic sequencing.