



CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP120348

Project Title:
The University of Texas MD Anderson Cancer Center Science Park Next-
Generation Sequencing Facility

Award Mechanism:
Core Facility Support Awards

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

Lay Summary:

Cancer researchers at The University of Texas MD Anderson Cancer Center (UTMDACC) Science Park, UTMDACC Keeling Center, The University of Texas Austin, and Texas State University have collaborated on cutting-edge projects for over 15 years. This has been facilitated in part by shared access to the Molecular Biology Facility Core (MBFC) at Science Park, which provides services in DNA sequencing and many other molecular biology techniques. A recent technological advance, next-generation sequencing (NGS), allows massive parallel sequencing of millions of DNA fragments simultaneously and has opened up a vast potential for new ways to analyze the genetic, regulatory and epigenetic changes that drive cancer. We are proposing to enhance the MBFC by adding an Illumina HiSeq 1000 and its associated equipment to support NGS. This NGS facility will serve as a regional resource for Central Texas, facilitating a major expansion in the genomic cancer research capabilities of the participating faculty. The NGS facility will support research projects in three primary areas:

- Complete analysis of the transcriptome and its regulation
- Detection of rare "driver" mutations in cancer genomes
- Quick and comprehensive elucidation of the epigenome

The overall goals of this effort are to comprehensively understand the genetic, regulatory and epigenomic changes in specific cancer types, including melanoma, breast, pancreatic, prostate, renal, and hematopoietic cancer, and to study the basic mechanisms that are similar for all types of cancer. These studies are expected to drive the development of new therapeutic methods for cancer treatment, especially in terms of personalizing the therapy to the individual cancer. This cutting-edge NGS facility will combine an extremely powerful instrument with excellent management, strong institutional support, relevant technical expertise, and high-impact research projects that will lead to research breakthroughs from Central Texas investigators.