



CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP180684

Project Title:
Integrated Single Cell Genomics Core Facility

Award Mechanism:
Core Facility Support Awards

Principal Investigator:
Navin, Nicholas

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

Lay Summary:

We propose to establish an Integrated Single Cell Genomics (SCG) Core Facility at the MD Anderson Cancer Center to provide cutting-edge technologies for single cell sequencing and bioinformatics support to cancer research investigators in Texas. The core facility will be directed by Dr. Navin, who is a world-leader in single cell sequencing technologies and Dr. Chen who will provide bioinformatics and data analysis support. Single cell sequencing is a revolutionary new technology that can provide genomic information on individual cancer cells. In contrast, previous sequencing technologies have been limited to bulk tissue analysis, which reports an average signal from a complex mixture of millions of cells in the tumor. This is problematic, since tumors consist of many diverse cell types (eg. blood vessels, fibroblasts, immune cells) that are intermixed with different tumor clones that harbor diverse mutational patterns. In these bulk data sets important information is lost on rare subpopulations that may play an important role in tumor progression. Over the last 8 years, single cell technologies have already made a major impact on several diverse areas of cancer research, including immune cell profiling, understanding the tumor microenvironment (cells surrounding the tumor), profiling tumor cells in the blood, resolving tumor cell diversity, and improving our understanding of metastasis and therapeutic resistance. However, despite the many exciting applications in cancer research, these technologies have remained restricted to a handful of expert laboratories around the world. The major goal of the SCG core facility is to bring these powerful new technologies into the hands of cancer researchers in Texas. Our current user group includes about 30 cancer researchers that will take advantage of the core facility. This facility will have a major impact on improving the quality of life and decreasing morbidity of cancer patients in Texas.