

Bankhead-Coley Cancer Research Program

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*2010 Program
Technology Transfer Feasibility
(1-year project)*

Project Title: Replication Profiling as a Diagnostic Tool in B-cell Acute Lymphoblastic Leukemia

Project Summary: The purpose of this grant is to explore the feasibility of DNA replication maps to identify novel diagnostic markers of acute lymphoblastic leukemia cancer (ALL) linked to prognosis. We believe this methodology will create a novel database of chromosomal abnormalities that escape current cytogenetic detection (“cancer-specific replication fingerprints”), providing an important tool for risk stratification. This is a unique approach to determine the type of cancer and its clinical stage that we believe may ultimately provide an individualized recommended treatment to the physician to determine how aggressively to treat the cancer, offer prognosis of a response, and some prediction of cancer recurrence. We selected B-cell ALL as a model cancer due to the number of genetic subtypes that have been catalogued and linked to prognosis, the availability of cell lines that will assist in optimizing methods, and the opportunity to obtain samples from patients participating in existing studies. However, we anticipate the approach to be applicable to other cancers and other diseases as well. Once novel replication abnormalities are identified, future studies will adapt them to cytogenetic methods that can be applied in clinics already set up to do such analyses. If the work in this grant supports our hypothesis, we will seek other funding to extend our findings and begin discussions with a local biotechnology diagnostics company regarding commercialization.