**TITLE:** Screening for New Compounds That Kill Leukemia

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**RESEARCH PROJECT DESCRIPTION**

**BACKGROUND AND SIGNIFICANCE:** Acute myeloid leukemia (AML) and the myelodysplastic syndromes (MDS) are common cancers of adulthood. Nearly all patients will die of refractory disease. We discovered that blood vessels are sanctuary sites for leukemia, and that targeting blood vessels regressed leukemia in experimental models.

**HYPOTHESIS:** Dislodging leukemia cells from the vascular niche will chemosensitize the leukemia cells to conventional chemotherapy.

**METHODS AND MATERIALS AND DATA ANALYSIS:** Using established in vitro assays, we will screen for small molecules that interfere with leukemia adhesion to endothelial cell scaffolds. This project is in collaboration with Torrey Pines Institute for Molecular Studies and will screen 30 million compounds. The top 10 novel compounds that dislodge leukemia cells and chemosensitize leukemia to cytarabine chemotherapy will be patentable and developed for early phase clinical trials.

**ROLE OF MEDICAL STUDENT:** Medical students involved in this project will perform in vitro assays of leukemia cell culture, quantification of adhesion, viability assays, and flow cytometry. Data management and analysis will be taught. Statistical analyses will be taught. Students who discover effective compounds will be listed as co-inventors on patent applications and co-authors on publications.

**FUNDING SOURCES:** Leukemia & Lymphoma Society, Gatorade Foundation

**RELEVANT PUBLICATIONS:**

1. **Functional integration of acute myeloid leukemia into the vascular niche.**

2. **Leukemia regression by vascular disruption and antiangiogenic therapy.**