TITLE: Analysis of patient-derived glioblastoma cell lines lacking cilia-associated proteins.

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RESEARCH PROJECT DESCRIPTION:

Glioblastoma multiforme (GBM) is the most common and malignant brain tumor in adults. Less than 5% of patients survive 5 years despite surgery, chemotherapy and radiation. There is a critical need to better understand the cellular and molecular mechanisms that ensure successful proliferation, migration and survival of GBM cells to develop better therapy. Cilia are microstructural antennae that project from subsets of cells in GBM however their influence in GBM pathogenesis is unclear. The signaling pathways associated with cilia are reported to promote cell division, migration and survival. In some cancers, cilia regulate signaling pathways that promote tumorigenesis while in other cancers, the loss of cilia appears to promote a tumor growth advantage. Our lab is currently investigating how targeted removal of cilia and associated proteins influence GBM growth/survival in vitro and in the brain. Importantly, we have generated a unique set of primary GBM cell lines with or without cilia (as well as other cilia associated proteins), enabling an opportunity to explore how these structures or pathways contribute to the growth and survival of GBM cells. Thus, an opportunity exists for a medical student to learn and conduct cell culture, molecular and histological experiments using these cell lines. The student will be able to assess the proliferation and migration characteristics of patient-derived GBM cell line lacking key cilia genes, and whether or not targeting of these genes sensitizes these cell lines to current standard of care therapies. Funding for the project is provided by the American Cancer Society.