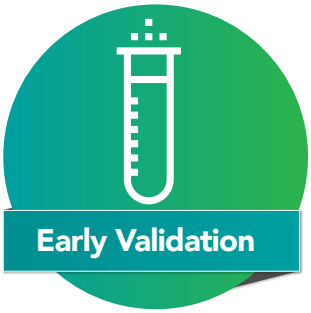
PROJECT TITLE

Unlocking New Hope: Targeting METTL13 for the Treatment of Diffuse Midline Glioma



PRINCIPAL INVESTIGATOR

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PROJECT SUMMARY

Brain tumours are the leading cause of cancer-related death in children, and diffuse midline glioma (DMG) is one of the deadliest types of these tumours. Unfortunately, current treatments for childhood DMG, such as radiation and chemotherapy, have had limited or no success in improving the survival rate of these children. Previous studies of the genetics of DMG have identified several genetic alterations that contribute to the development of DMG, but these are difficult to target for treatment. To better understand how these genetic changes affect the proteins in DMG cells, we conducted a comprehensive analysis of the proteins, and their modifications, present in DMG cells and compared them to those found in normal brain tissue.

Our analysis revealed that DMG cells have increased levels of methylation (changes to the chemical makeup of molecules resulting in higher levels of addition of the methyl group) in key proteins that participate in the process of protein production. Specifically, we found that a particular enzyme is responsible for this methylation and inhibiting this enzyme caused DMG cells to die. This is a promising finding, as it suggests that targeting this enzyme may be an effective way to treat DMG. While our current method of inhibiting this enzyme is not suitable for use in patients, we are working on developing a drug or small molecule that would be better suited for patient therapy. This is a crucial step in improving the survival rates of children with DMG. Given that increased protein production is a feature of many cancer cells, we expect that our target enzyme inhibition will not only be effective in treating DMG, but also other types of cancer. This is an exciting possibility, as it has the potential to improve the prognosis and quality of life for many cancer patients.