Glioblastoma multiforme (GBM), a malignancy of the glial stem cells of the brain, is one of the most aggressive types of brain cancer. When an individual is diagnosed with GBM, depending on the location of the tumor, there are three treatment options including surgery, radiation, and combination of these treatments. Many patients choose chemotherapy, however most GBM cases show little to no response to Temozolomide (TMZ), which is a common chemotherapeutic agent that could lead to IMPDH expression at such high levels under chemotherapeutic stress and whether it is a unique property of this cell type. Future directions involve determining a molecular pathway that could lead to IMPDH expression or whether the chemotherapeutic agent causes the increase in expression directly or whether it is a unique property of this cell type.}

Based off the data collected, it was determined that TMZ has some sort of influence on IMPDH activity levels. Simple inspection of the kinetic graphs, the longer exposure of TMZ the cells have, the more similar the kinetic curves seem to be. Overall, the analyzed data collected was somewhat what inconclusive but the trends changing were seen. More trials are being done and data is being analyzed to help develop a more conclusive understanding.

**Introduction**

Cancer is a disease of uncontrolled generation of cells based off the loss of function of tumor suppressor genes or gain of function of oncogenes. This disease can proliferate in any tissues in the body, including neural tissues such as the brain which is one of the most invasive types. Glioblastoma multiforme (GBM), a malignancy of the supporting cells of the brain, is one of the most aggressive forms of brain cancers. With a median survival of only 14.6 months, the bleak prognosis of GBM is a result of the high rate of recurrence in patients. When an individual is diagnosed with GBM, depending on the location of the tumor, there are three treatment options. These include surgery, radiation, chemotherapy or the combination of these treatments. If the patient decides to go through chemotherapeutic treatment, there is a high probability of intense damage done on the body in response to the treatment. Usually this type of treatment has a well-received response by the shrinking or eliminating of the tumor all together depending on the case.

**Abstract**

Cancer is a disease of uncontrolled generation of cells based off the loss of function of tumor suppressor genes or gain of function of oncogenes. This disease can proliferate in any tissues in the body, including neural tissues such as the brain which is one of the most invasive types. Glioblastoma multiforme (GBM), a malignancy of the supporting cells of the brain, is one of the most aggressive forms of brain cancers. With a median survival of only 14.6 months, the bleak prognosis of GBM is a result of the high rate of recurrence in patients. When an individual is diagnosed with GBM, depending on the location of the tumor, there are three treatment options. These include surgery, radiation, chemotherapy or the combination of these treatments. If the patient decides to go through chemotherapeutic treatment, there is a high probability of intense damage done on the body in response to the treatment. Usually this type of treatment has a well-received response by the shrinking or eliminating of the tumor all together depending on the case.

**Results**

Based off the data collected, it was determined that TMZ has some sort of influence on IMPDH activity levels. Simple inspection of the kinetic graphs, the longer exposure of TMZ the cells have, the more similar the kinetic curves seem to be. Overall, the analyzed data collected was somewhat what inconclusive but the trends changing were seen. More trials are being done and data is being analyzed to help develop a more conclusive understanding.

**Future Directions**

The future direction of the project involves optimizing our assay and using different lines of GBM to determine enzyme activities in correlation to the cell line used for this project. In addition, there is some interest in working with different types of cancer lines as well as HeLa cells to see how the results would correlate. In addition, some studies have shown that an IMPDH inhibitor drug, Mycophenolate Mofetil (MMF), has been approved as an anti-tumor effect in solid and blood cancers of which could be used in our lab in a cocktail with TMZ and see the correlating effects on cell line proliferation.

**Acknowledgements**


**References**