Zika virus strains for treatment of glioblastoma

Background:
Glioblastoma multiforme (GBM) is the most common malignant primary brain tumor representing approximately 16% of all primary brain tumors. GBM generally presents in adults aged 45-70 with an estimated 22,000 people diagnosed annually. A typical treatment strategy involves surgery to extract as much of the tumor as possible followed by radiation and chemotherapy to kill the remaining cancerous cells. Maximal removal of the tumor increases the survival rate; however, two-year survival for more aggressive forms of GBM is only 30%. Because of the aggressive nature, difficulty to remove the entire tumor, and complex composition of GMB tumors, new treatment strategies are needed in order to eradicate the tumor and prevent recurrence.

Technology Description:
Researchers at Washington University have characterized the ability of Zika virus (ZIKV) to preferentially kill GBM stem cells over differentiated tumor cells or normal neuronal cells. ZIKV was able to potently deplete patient derived GBM stem cells in culture and organoids. Mice harboring GBM tumors survived substantially longer when inoculated with various ZIKV strains further validating the \textit{in vitro} results.

Key Advantages:
- High specificity for glioblastoma stem cells
- Potent depletion of patient derived GBM stem cells \textit{in vitro}
- Increased survival of murine model \textit{in vivo}
- Potential for viral self-attenuation

Patent/Patent Application: Pending

Lead Inventor:
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