**Targets Crucial Cancer Stem Cell Factors to Inhibit Glioblastoma Growth**

This combination of cancer master regulators enables targeting glioblastoma (GBM) stem cells to inhibit their growth. According to the National Brain Tumor Society, only 5.5 percent of patients suffering from GBM survive five or more years after diagnosis, due to rapid cell growth and treatment resistance. The main culprit of treatment failure is the presence of large number of cancer stem cells in GBM. To beat this cancer, researchers seek to inhibit growth of GBM stem cells by attacking their respective functional genes. Targeting GBM stem cells is challenging, however, because few known master regulators specifically control only GBM stem cells without also regulating normal brain cells. Since available GBM treatments target only a few of the less critical contributor proteins, regulators that are more critical are free to induce GBM stem cell growth and ultimately cause tumor recurrence among patients.

Researchers at the University of Florida have identified eight master regulators, grouped into cancer and stem factor categories that together contribute principally to GBM development among brain cells. By targeting and inhibiting factors from both categories, UF researchers have significantly improved inhibition of tumor growth and GBM aggression in mouse models.

**Application**

Targeted cancer therapy that inhibits the growth of GBM stem cells, without affecting normal brain cells

**Advantages**

- Suppresses both proliferative and stem factors, limiting long-term GBM stem cells
- Targets expression of crucial regulator genes that accelerate GBM development, decreasing the probability of tumor recurrence in patients
- Specifically targets GBM stem cells while sparing normal cells, enabling better long-term survival without debilitating side effects

**Technology**

Blocking these eight core proteins, either individually or in combinations of two or three, can target GBM stem cells and profoundly inhibit GBM tumor development. The identified GBM master regulators make up two categories: stem and proliferative factors. The stem factors convert normal astrocyte cells to GBM stem cells, while proliferative factors regulate uncontrolled cell division that forms malignant tumors. Therapeutic treatments to target various combinations of these regulators should inhibit GBM tumor growth and recurrence, allowing patients to experience longer periods of remission.
Inventors

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