**Targeting Brain Cancer Stem Cells**

*Stem Cells*, January 28, 2010

New brain cancer research focuses on a small population of cells called cancer stem cells that are believed to drive the growth and spread of certain cancers. These cells, while small in number, appear to be a major force in cell growth by evading anticancer drugs and perpetually giving rise to the larger number of cancer cells that make up the bulk of tumors.

Now, in mice at least, brain cancer researcher Charles Eberhart, M.D., Ph.D., has used drugs to target and block a chemical pathway, called Notch, known to be important for cancer stem cell growth.

Eberhart and team used cells from glioblastomas, the most common brain cancer, to form neurospheres, clumps of cells that can only develop from stem cells. After treating the spheres with a drug that blocks the Notch pathway, more than 70 percent went away. But, when the remaining neurospheres where placed into mice, the Notch pathway was reactivated and the stem cell-driven neurospheres eventually grew into small tumors.

“This tells us that while the Notch pathway looks like a good target for drug development, the drug we tested did not get rid of all of the cancer stem cells,” says Eberhart. “It’s likely that we will need to add additional drugs or increase the dosage of the Notch-blocking drug.”

Eberhart and team also uncovered two additional pathways connected to Notch and believe combined therapies that target all three pathways could allow them to better target brain cancer stem cells and help keep the cancer from becoming resistant to therapy.

*The research was funded by the Accelerate Brain Cancer Cure Project Award, the American Brain Tumor Association, Voices Against Brain Cancer Research, the National Institutes of Health, and the Brain Tumor Funders Collaborative.*

