



CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP130548

Project Title:
Overcoming CXCL12 Mediated Resistance in Glioblastoma

Award Mechanism:
Individual Investigator

Principal Investigator:
Brenner, Andrew J

Entity:
The University of Texas Health Science Center at San Antonio

Lay Summary:

One major improvement in the treatment of cancer has come from the use of agents that block the growth of new blood vessels to tumors, referred to as antiangiogenics. This results in low levels of oxygen within the tumor, and essentially starves the tumor of much needed nutrients. Unfortunately, while this seemed like a clear way to overcome tumor growth, recent findings suggest that this only results in a temporary slowing of tumor growth. In patients who receive antiangiogenics, a consistent finding is that they have an increase in a protein called CXCL12 in their blood when their tumors are actively growing. This protein has several important functions in disease states such as recruiting immature cells to sites of injury and helping to form new blood vessels. While it was once thought that this protein only has one receptor that can recognize it and exert its effect, it is now known that two different receptors can assist in its function, named CXCR4 and CXCR7. It appears from studies in other diseases that these two receptors may have very different roles, with one responsible for helping in blood vessel growth and tumor cells movement while the other helps to sustain cancer cells under conditions of low oxygen. This proposal looks to evaluate the role of these two receptors in tumors growth despite antiangiogenics, and block each of the receptors to help prevent tumor growth. This may be of significance for a number of tumors, but particularly the brain tumor glioblastoma which is uniformly fatal, experiences very low oxygen levels and is uniquely dependent on blood vessel support.