Quaking

How do brain cancer cells thrive when they migrate to inhospitable sites within the brain?

A study at The University of Texas MD Anderson Cancer Center believes the cells' survival may be due to deficiency of a tumor suppressor gene called quaking (QKI)–a potential new target for therapies. This study was led by Jian Hu, Ph.D., assistant professor of the Department of Cancer Biology, and the findings were recently published in the Nov. 14 online issue of Nature Genetics.

“Cancer stem cells require 'niches' to remain viable but it is unclear how they survive in an environment outside of these niches both within the same tissues or during invasion to other organs,” said Hu. “We discovered that QKI is a major regulator of these cancer stem cells in glioblastoma, the deadliest type of brain tumor.”

He went on to explain, “Evidence is emerging that some brain cancer cells called glioma stem cells possess an inexhaustible ability to self-renew and produce tumors that resemble the features of original tumors.”

A unique feature of all stem cells in their self-renewing ability to create identical “daughter” stem cells. In order to do so, they must be in a suitable environment providing them proper cellular cues. Hu's team knew that glioma stem cells thrived when they reside in niche-structure called a subventricular zone, due to their ability to self-renew.

“Left unanswered is how glioma stem cells still manage to maintain this 'stemness' when they invade and migrate from their niches to other areas where optimal niches are less likely to be available,” said Hu.