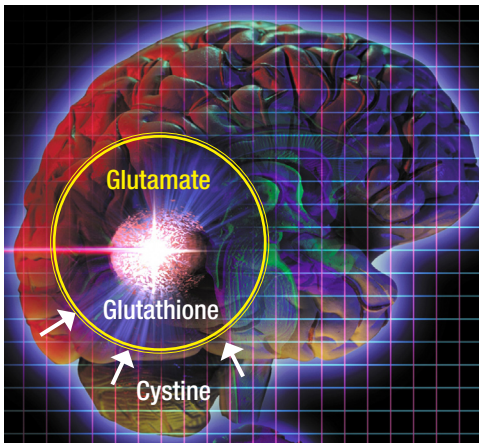


Starving Cancer

Putting the Brakes on Brain Cancer

UAB researchers have found a way to rein in the runaway growth of certain particularly aggressive forms of brain cancer. High-grade gliomas, the researchers have determined, rely on a unique transport system to take in the cystine they need to continue their unchecked expansion. By inhibiting this system with several existing drugs, UAB scientists have slowed tumor growth and increased cancer cell death. This new strategy could also lead to new therapies for other types of cancer.



Technology summary

Due to increased mitotic and metabolic activity, decreased cell differentiation, and enhanced cell migration, high-grade gliomas are one of the most aggressively malignant cancers. Researchers at UAB have determined that unlike normal brain cells, these cancer cells rely solely on the Na⁺-independent glutamate transport system, system Xc, for the uptake of cystine, which is necessary to maintain their increased metabolism. Furthermore, studies show that treatment, both in vitro and in preclinical animal models, with known inhibitors of system Xc results in the inhibition of tumor growth and caspase-mediated cell apoptosis. These studies strongly suggest that while these known inhibitors can be used to treat high-grade gliomas, the system Xc transport mechanism can also be used to identify novel cancer therapeutic agents.

Commercial Advantages

The inhibition of tumor cell growth and eventual apoptosis of tumor cells using compounds that specifically block the uptake of cystine and the consequential release of glutathione in tumor cells is an attractive target that has virtually no negative impact on the function of non-transformed cells.

Several known inhibitors of the system Xc transport system are currently FDA approved.

Provides a unique target for screening and identifying other novel and useful cancer therapeutics.

Patent Status

U.S. and European patent applications on this technology have been filed.

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