

'Trojan Horse' Approach Developed To Kill Brain Tumors From Within

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A new method for targeting malignant brain tumors through inducing the cancerous cells to “commit suicide” has been developed by a team of researchers headed by a Hebrew University of Jerusalem professor of biochemistry.

Alexander Levitzki, who is the Wolfson Family Professor of Biochemistry, his research associate, Dr. Alexei Shir, and his colleagues from the Ludwig-Maximilians University of Munich, Germany, have pioneered a technique in which a molecule containing long, double-stranded RNA is attached to epidermal growth factor (EGF) and delivered selectively to cells with an abnormally high number of epidermal growth factor receptors (EGFR).

This proliferation of EGFR is typical of certain types of cancer cells, including glioblastoma multiforme (GBM), the most lethal form of brain cancer.

The nucleic acid-EFG molecule acts as a “guided missile,” explained Prof. Levitzki, which, when injected into the blood stream, is avidly gobbled up by the multiple EGF receptors on the cancer cells, without harming normal cells. Once embedded in the tumor cells, it destroys them from within – a true “Trojan horse,” said Prof. Levitzki.

Normal cells, which possess 20 to 100 less receptors for EGF, are spared, since the amount of double-stranded RNA gobbled up is insufficient to induce them to die.

The lethal RNA approach has been applied to mice in which human brain tumors were grown. The tests proved 100% effective in eliminating the tumorous growths.

An article on the work of Prof. Levitzki, along with his associate Dr. Shir and Professors Manfred Orgris and Ernst Wagner of Ludwig-Maximilians University in Munich, was published in a recent article in the journal *PLOS Medicine*.

Further testing is planned in a clinical setting. In the meantime, a small start-up company, Algen Biopharmaceuticals Ltd., has been established through the Hebrew University's Yissum Technology Transfer Company to promote commercial development of the new drug. Prof. Levitzki believes that the project has great potential, especially in view of the fact that over-expression of EGF receptors is involved in over 25 % of all types of cancers. The strategy developed to combat GBM can also be applied to other types of receptors found on cancerous cells, he added.

Source: Hebrew University of Jerusalem

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