

New Drug Can 'Switch Off' Cancer Gene, Say Researchers

Northwestern University researchers have identified a drug that "switches off" a critical **gene** linked to the aggressive and incurable form of brain **cancer**—glioblastoma multiforme (GBM)—that killed U.S. Sen. Edward Kennedy.

The study, published in the journal *Science Translational Medicine*, found the therapeutic agent significantly increased survival rates in animals with the **disease** by "silencing" the gene.

The new **drug**, which is delivered by injection and is based on nanotechnology, targets a specific cancer-causing **gene** in cells, knocking out the proteins that keep cancer cells immortal. In mice with GBM treated with the drug, the survival rate increased nearly 20 percent, and tumor size was reduced three- to fourfold, as compared to the control group.

"This is a beautiful marriage of a new technology with the genes of a terrible disease," says Chad A. Mirkin, a **nanomedicine** expert and researcher. "Using highly adaptable spherical nucleic acids, we specifically targeted a gene associated with GBM and turned it off in vivo. This proof of concept further establishes a broad platform for treating a wide range of diseases, from lung and colon cancers to rheumatoid arthritis and psoriasis."

GBM kills approximately 13,000 Americans a year. The median survival rate is 14 to 16 months, and approximately 16,000 new cases are reported in the U.S. every year.

"The problems posed by glioblastoma and many other diseases are simply too big for one research group to handle," says Mirkin, who also is the director of Northwestern's International Institute for Nanotechnology. "This work

highlights the power of scientists and engineers from different fields coming together to address a difficult **medical issue.**"

The researchers now plan to test the therapeutic agent in **clinical trials.**

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