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RNA effective against brain cancer

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Double-stranded RNA (dsRNA)-dependent protein kinase PKR is a growth inhibitory protein that induces death in virally infected cells, but its potential in controlling tumor growth is unknown. In August 19 [Nature Biotechnology](#), Alexei Shir and Alexander Levitzki at [The Hebrew University of Jerusalem](#) show that activating PKR with a dsRNA molecule can be an effective method of inhibiting murine glioma growth (*Nat Biotechnol* 2002, DOI:10.1038/nbt730).

Shir & Levitzki used the U87MG Δ EGFR cell line that expresses a truncated form of epidermal growth factor receptor (EGFR) - $\Delta(2-7)$ EGFR. They observed that expression of a 39-nucleotide (nt) AS RNA complementary to the unique exon 1 to 8 junction activated PKR and caused selective death of cells harboring the truncated EGFR, both *in vitro* and *in vivo* but did not affect cells expressing wild-type EGFR. In addition, they showed that a lentiviral vector expressing the 39-nt AS sequence activated PKR and strongly inhibited glioblastoma growth in mouse brain when injected after tumor cell implantation.

This PKR-mediated killing strategy may be useful in treating many patients with cancers that express a unique RNA species, suggest the authors.

References

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2. The Hebrew University of Jerusalem, [<http://www.huji.ac.il/>]