

Genetic switch shuts down lung cancer tumors in mice

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Yale researchers manipulated a tiny genetic switch and halted growth of aggressive lung cancer tumors in mice and even prevented tumors from forming.

The activation of a single [microRNA](#) managed to neutralize the effects of two of the most notorious genes in cancer's arsenal, suggesting it may have a role treating several forms of cancer, the researchers report in the Nov. 1 issue of the journal [Cancer Research](#).

"This is pretty much the best pre-clinical data that show microRNAs can be effective in lung cancer treatment," said Frank Slack, professor of molecular, cellular & developmental biology, researcher for the Yale Cancer Center, and senior author of the paper. "These cancer genes are identical to ones found in many forms of human cancers and we are hopeful the microRNA will be of therapeutic benefit in human cancer."

Unlike drugs that act upon existing proteins, microRNAs are small pieces of genetic material that can shut down and turn off genes that produce the proteins. Slack and co-author Andrea Kasinski wanted to see if one of these microRNAs, miR-34, could block the actions of K-Ras and p53 genes, which promote proliferation and survival of cancer cells, respectively. Mice with these two mutant genes invariably develop tumors but were cancer-free when researchers activated miR-34. Also, tumor growth was halted in mice that were treated with miR-34 after they had developed cancer.

Provided by Yale University

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