

Tiny RNA molecule removal can inhibit cancer growth

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Research from the University of Louisville published today (June 6) in the *Proceedings of the National Academy of Sciences* indicates the removal of a tiny RNA molecule in mice suppresses carcinogenic tumor formation. The study appears in the journal's Early Edition [online](#).

Yong Li, Ph.D., associate professor of biochemistry and molecular biology, and his research team led by postdoctoral fellows Xiaodong Ma and Munish Kumar found that the removal of a non-coding RNA molecule known as [MicroRNA](#) 21 suppressed the formation of skin tumors in mice. This molecule – abbreviated as miR-21 – was targeted for study because of its presence in human cancer formation, Li said.

"In virtually all types of cancer, miR-21 is found to be present at elevated levels," Li said. "We believe it is essential to the growth of cancers."

Two groups of mice – 18 with miR-21 removed and a control group of 23 with miR-21 intact – were studied after skin tumors known as papillomas were induced with a heavy dose of a carcinogen. The group without miR-21 had just 1.5 tumors per mouse after 30 weeks as compared to 2.5 tumors per mouse in the control group. Moreover, one of the [mice](#) without miR-21 was tumor-free at the end of the study.

"Our work leads us to believe that miR-21 ablation (removal) increases the body's own [tumor](#) suppressing ability to hold back tumors," Li said. "The cancer research community is increasingly aware the importance of

the surroundings around tumor cells. Our ongoing study of miR-21 involves looking at how this molecule contributes to tumor environment."

The study's funding indicates the serendipitous aspect of bench science, Li said, because it was not funded by a cancer research agency or organization but in part by the American Heart Association and the UofL Diabetes and Obesity Center.

"We began our work in 2008 with the hypothesis that miR-21 plays a role in cardiovascular disease and diabetes," he said. "However, our research and reports from other groups suggest it does not, although we are continuing our work in these areas.

"Funding basic research is important because you never know where science will take you. It is clear from our research that miR-21 is taking us a bit closer to understanding [tumor formation](#)."

Provided by University of Louisville

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