

MicroRNA to combat cancer

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(PhysOrg.com) -- Researchers from the Queensland Institute of Medical Research, the Garvan Institute of Medical Research and the University of California-San Francisco have found a new way to kill cancer cells, opening the way for a new generation of cancer treatments.

By blocking the function of a type of genetic material called microRNA, researchers have dramatically decreased the size of a [cancerous tumour](#) in a mouse model.

“MicroRNAs originate from part of our DNA that has long been thought of as [junk DNA](#). Much is still unknown but we know they can interfere with the functioning of genes and can control the production of proteins in the body,” said QIMR researcher Dr Susan Woods.

“A lot of [cancer](#) research has focused on a protein called p53 that acts as a natural defence against cancer. Without p53, a normal cell can multiply out of control - in other words become cancerous.”

“We chose to study a particular type of cancer called neuroblastoma, which is a childhood cancer of the nervous system. We found that these cancers disable p53 by over-producing the microRNA that we study. This results in a reduction in the amount of protection against cancerous changes in that cell - leading to the growth of tumours.

“However when we blocked the microRNA, [p53](#) production resumed, the [cancer cells](#) died and the tumours became much smaller.”

MicroRNA inhibitors have been readily available for use in the laboratory for about the last five years.

“What is really exciting about this research is it is the first time that anyone has blocked the growth of a primary tumour by the simple delivery of a microRNA inhibitor.”

“While this finding is at an early research stage, our results indicate that this microRNA is a potential [therapeutic target](#) for future treatment of early childhood neuroblastomas and other microRNA-induced cancers.”

The study was done in collaboration with the Garvan Institute of Medical Research, Victor Chang Cardiac Research Institute, St Vincent’s Clinical School, University of New South Wales, The Children's Hospital at Westmead, Regulus Therapeutics, University of Texas, and University of California-San Francisco.

The study is published today in the journal *Nature Medicine* and is available online [dx.doi.org/10.1038/nm.2227](https://doi.org/10.1038/nm.2227)

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