

Gold nanoparticle delivery of microRNA impairs metastasis in triple-negative breast cancer

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Dr. Vivek Mittal. Credit: John Abbott

Weill Cornell Medicine researchers have shown that giving mice with triple-negative breast cancer therapeutic microRNA (miRNA) in a

protective gold nanoparticle results in significantly less spreading of cancer to the lung. Triple-negative breast cancer is a highly aggressive, difficult-to-treat form of the disease, with a high rate of metastatic recurrence. miR-708 is a non-coding microRNA that can block expression of genes that are crucial in metastasis.

In a study, published online Jan. 24 in the AACR journal *Molecular Cancer Therapeutics*, one out of eight mice with [triple-negative breast cancer](#) treated with miR-708 experienced metastasis to the lung, compared with the [control group](#), where six out of seven mice experienced metastasis. miR-708 does not affect the primary breast tumor; rather it inhibits metastasis by targeting a small number of cancer cells that have the potential to metastasize to the lung.

"Our preclinical findings provide evidence for potential success in preventing metastasis in this deadly form of breast cancer," said the study's senior author Dr. Vivek Mittal, a professor of cell and [developmental biology](#) in cardiothoracic surgery and research director of the Neuberger Berman Foundation Lung Cancer Laboratory at Weill Cornell Medicine.

"Given that miR708 is absent in human TNBC metastasis, we anticipate enormous clinical potential for miR708," said study's first author Dr. Divya Ramchandani, a postdoctoral associate in [cardiothoracic surgery](#) at Weill Cornell Medicine.

This study was performed in collaboration with Dr. Ching Tung, the Alexander R. Margulis, M.D. Distinguished Professor in Radiology at Weill Cornell Medicine and director of the Molecular Imaging Innovations Institute the institution's Department of Radiology.

More information: Divya Ramchandani et al. Nanoparticle Delivery of miR-708 Mimetic Impairs Breast Cancer Metastasis, *Molecular*

Cancer Therapeutics (2019). [DOI: 10.1158/1535-7163.MCT-18-0702](https://doi.org/10.1158/1535-7163.MCT-18-0702)

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