Researchers identify possible new target in fight against lung cancer

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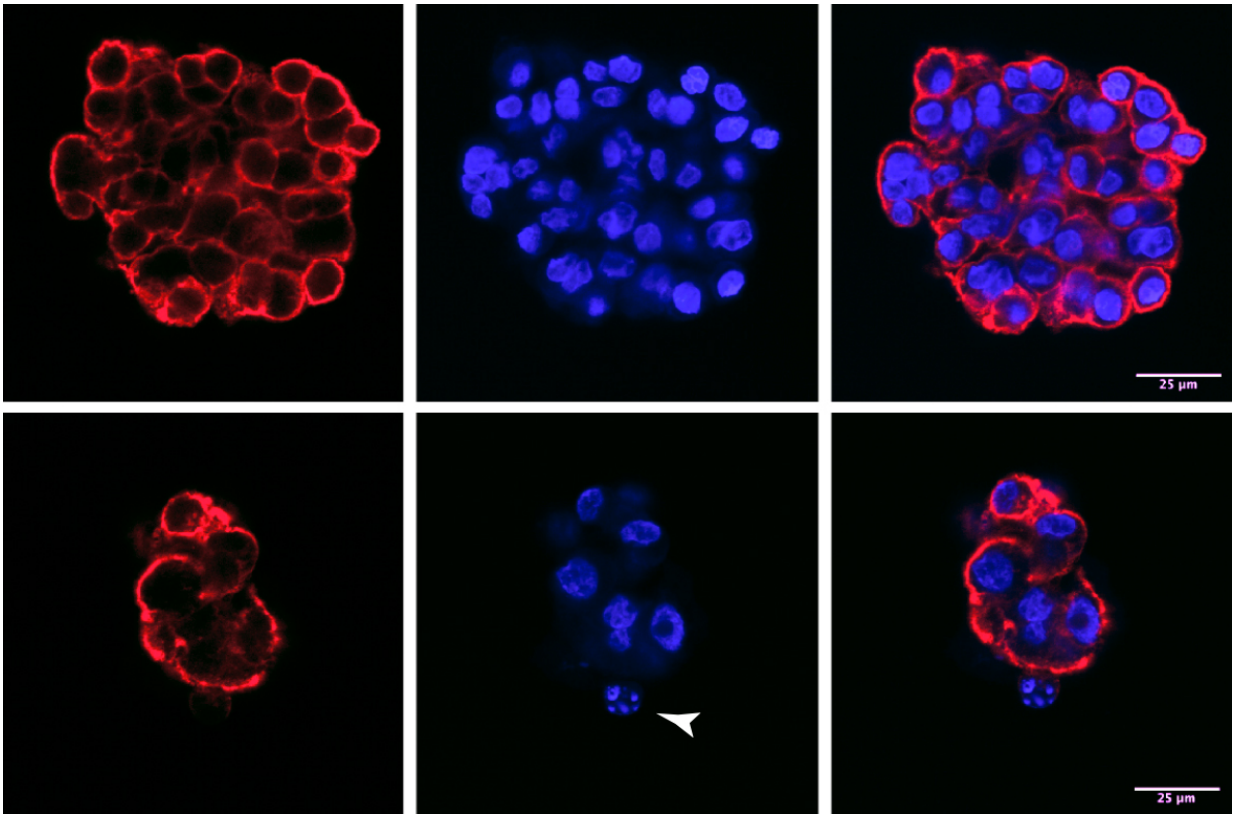


Researchers discovered microRNAs that suppress cancer cell growth. Credit: A.K. Mehta et al., Science Signaling (2017)

Researchers at Boston University School of Medicine (BUSM) have identified a molecule called miR-124 in non-small cell lung cancer cells that plays a regulatory role in the cancer cells' fate—determining

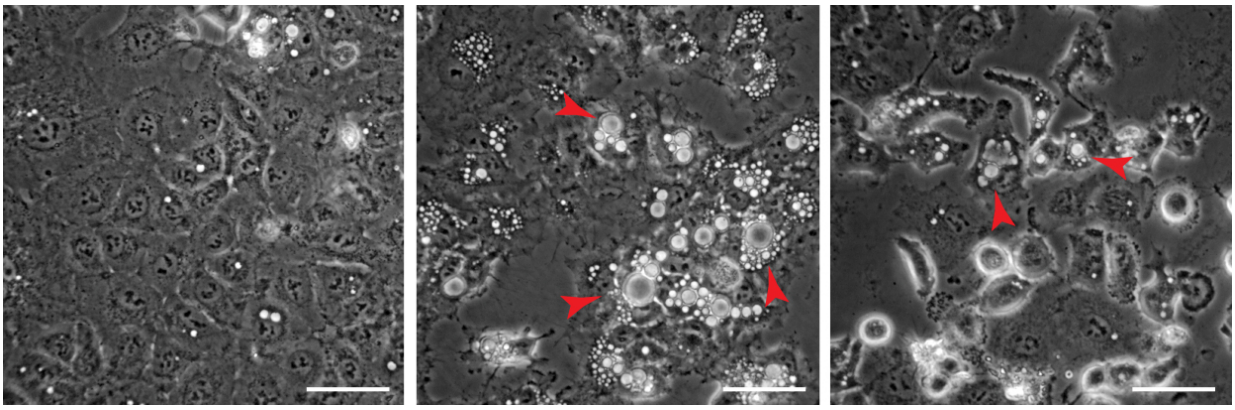
whether or not the specific subtype of cancer cell will undergo programmed cell death.

The findings, which appear in *Science Signaling*, may offer a new target in the fight against non-small cell lung cancer.

According to the researchers, the molecule miR-124 causes programmed cell death in a specific subtype of lung cancer cells that has undergone a switch known as epithelial to mesenchymal transformation. These mesenchymal-like cells, which have mutations in a cancer gene called KRAS, are typically resistant to the death-inducing effects of chemotherapeutic agents.

By analyzing human lung cancer derived cell lines, the researchers were able to determine the unique profiles of two subtypes of lung cancer cells. Upon comparing biochemical profiles they were able to identify the miR-124 molecule as the major player in the signaling cascade that determines whether or not the specific cell type will live or die.

"Lung cancers display widespread genetic, molecular and phenotypic variability and heterogeneity. It is critical to understand the implications of this heterogeneity to identify effective targeted therapeutic regimens and clinical diagnostics," explained corresponding author Anurag Singh, PhD, assistant professor of pharmacology and medicine at BUSM. "Understanding the mechanisms that are associated with phenotypic heterogeneity in lung cancer cells—specifically differences between epithelial and mesenchymal-like cells—allows these differences to be exploited to develop more selective therapeutic agents."



Scientists discovered microRNAs that cause growth defects in cancer cells (indicated by red arrows in right panels). Credit: A.K. Mehta et al., Science Signaling (2017)

The researchers hope their discovery leads to pre-clinical and early phase clinical trials to treat non-small cell lung cancer cells, however additional work must be done to explore this possible therapeutic target.

The American Cancer Society's estimates for lung cancer in the United States for 2017 are about 222,500 new cases of lung cancer and about 155,870 deaths from lung cancer. About 80 to 85 percent of lung cancers are non-small cell lung cancer.

More information: "Regulation of autophagy, NF-κB signaling, and cell viability by miR-124 in KRAS mutant mesenchymal-like NSCLC cells," *Science Signaling* (2017). stke.sciencemag.org/lookup/doi … 26/scisignal.aam6291

Provided by Boston University School of Medicine