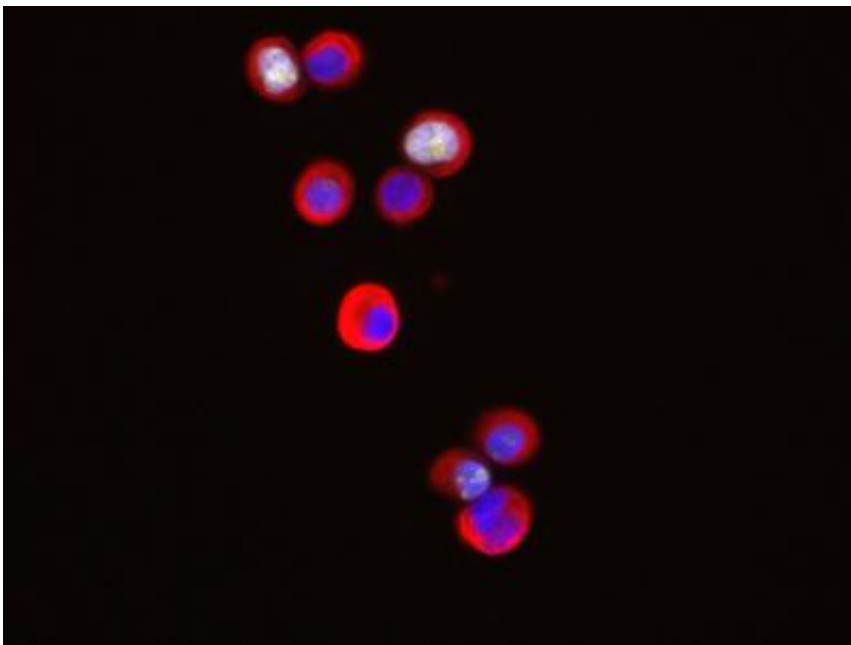


Stem cell researcher targets the 'seeds' of breast cancer metastasis

July 11 2014, by Cristy Lytal



Circulating tumor cells from the blood of a breast cancer patient are shown.
Credit: Maria C. Donaldson and Min Yu

For breast cancer patients, the era of personalized medicine may be just around the corner, thanks to recent advances by USC Stem Cell researcher Min Yu and scientists at Massachusetts General Hospital and Harvard Medical School.

In a July 11 study in *Science*, Yu and her colleagues report how they isolated [breast cancer cells](#) circulating through the blood streams of six

patients. Some of these deadly cancer cells are the "seeds" of metastasis, which travel to and establish secondary tumors in vital organs such as the bone, lungs, liver and brain.

Yu and her colleagues managed to expand this small number of cancer cells in the laboratory over a period of more than six months, enabling the identification of new mutations and the evaluation of drug susceptibility.

If perfected, this technique could eventually allow doctors to do the same: use [cancer cells](#) isolated from patients' blood to monitor the progression of their diseases, pre-test drugs and personalize treatment plans accordingly.

In the six estrogen receptor-positive [breast cancer](#) patients in the study, the scientists found newly acquired mutations in the estrogen receptor gene (ESR1), PIK3CA gene and fibroblast growth factor receptor gene (FGFR2), among others. They then tested either alone or in combination several anticancer drugs that might target tumor cells with these mutations and identified which ones merit further study. In particular, the drug Ganetespib—also known as STA-9090—appeared to be effective in killing [tumor cells](#) with the ESR1 mutation.

"Metastasis is the leading cause of cancer-related death," said Yu, assistant professor in the Department of Stem Cell Biology and Regenerative Medicine at the Keck School of Medicine of USC. "By understanding the unique biology of each individual patient's cancer, we can develop targeted drug therapies to slow or even stop their diseases in their tracks."

Provided by University of Southern California

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