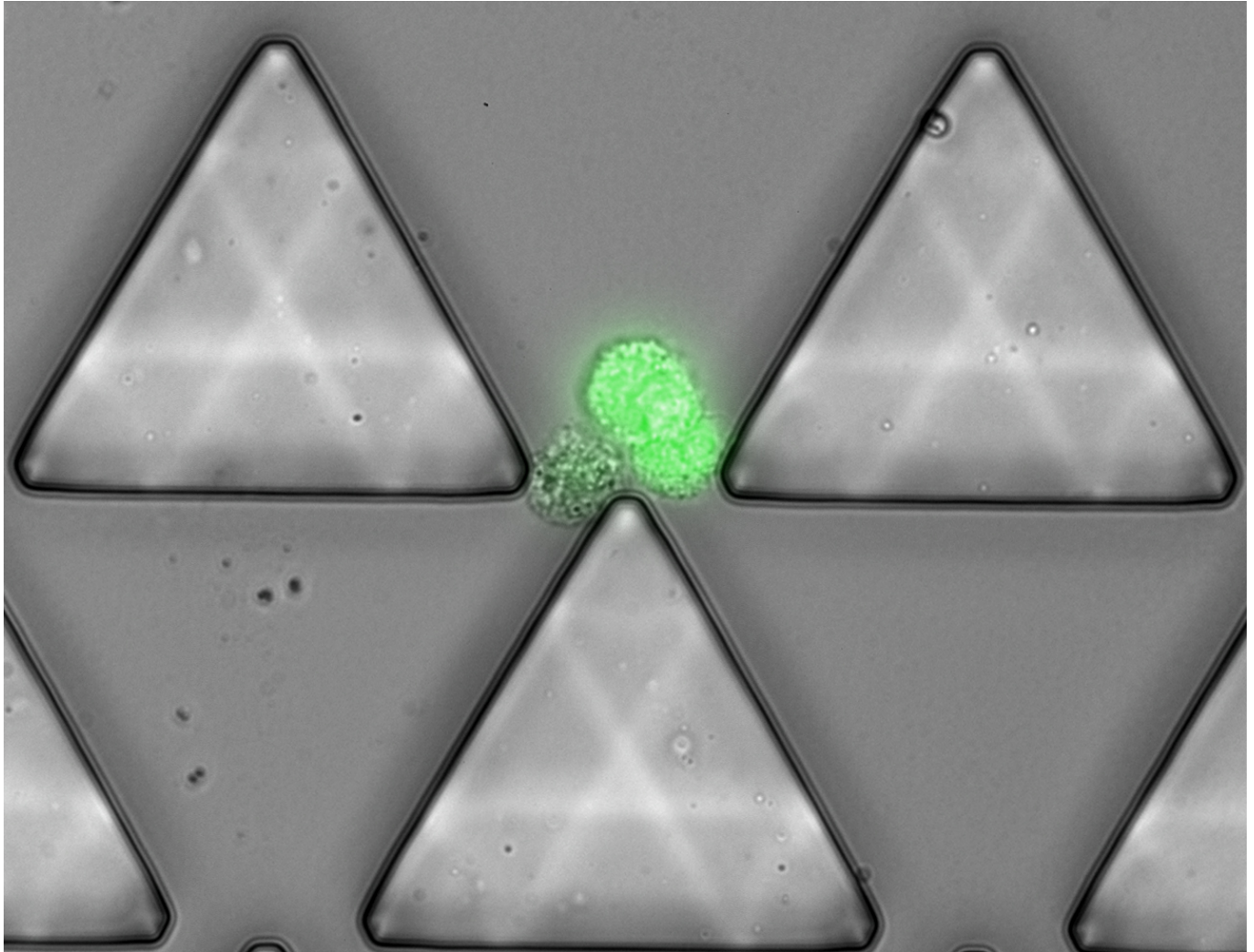


Microchip Captures Circulating Tumor Clusters, Providing Clue to Cancer's Spread

Seth Augenstein, Digital Reporter



A tiny microfluidic chip can capture circulating clusters of tumor cells, researchers said. The find could provide important new clues about how cancer spreads - and could even be a “breakthrough technology,” they said.

The Cluster-Chip essentially sifts through the blood and captures the unique structure of the clusters of circulating tumor cells, or CTCs, according to the study, published today in an online version of the journal [Nature Methods](#) [1].

Single CTCs typically make up fewer than one in one billion cells - and the clusters were believed to be even more rare. But when the researchers from Harvard University, Massachusetts General Hospital screened some 60 patients with metastatic breast, prostate and melanoma cancers, [they found the clusters appeared in 30 to 40 percent of patients](#) [1].

“The presence of these clusters is far more common than we thought in the past,”

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said Mehmet Toner, the lead author, and a professor of surgery and biomedical engineering at the hospital and Harvard. "The fact that we saw clusters in this many patients is really a remarkable finding."

The tiny chip is designed to slowly push blood through rows of microscopic triangle-shaped posts – and at the end, is a funnel that allows single cells to travel through, but which stops the clusters, the team said.

CTC clusters were discovered in the blood some 50 years ago – but since they are elusive, not much is known about their role in metastasis, the scientists said.

[The work was supported by the National Institutes of Health and its National Institute of Biomedical Imaging and Bioengineering](#) [2].

"Very little is known about CTC clusters and their role in the progression and metastasis of cancer," said Roderic I. Pettigrew, the director of the NIBIB. "This is the kind of breakthrough technology that could have a very large impact on cancer research.

[Cancer-cell clusters were found to have 23- to 50-fold increased metastatic potential over single cells in breast-cancer mouse models](#) [3], according to a study published in the journal *Cell* last year.

"It's like poking a sleeping bear," Toner added, of the cluster work. "It could really awaken the field to go after clusters and to develop even better technologies to understand their biology in cancer metastasis."

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