Yale Scientists Isolate Specific Tumor Cells that Cause Cancer

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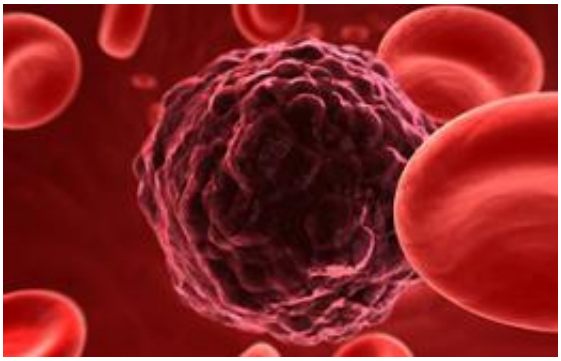

(PhysOrg.com) -- Researchers from Yale Cancer Center and other institutions are the first to demonstrate how distinct groups of cells from the same tumor are capable of forming tumors. Their findings, which appear January 1 in the journal *Cancer Research*, could impact the evaluation of patient therapy.

The research team, led by Marcus Bosenberg, M.D., Ph.D., lead author and associate professor of dermatology and pathology at Yale School of Medicine, generated new mouse models of melanoma to study differences between cells in the same tumor. Using stem cell markers, they were able to divide tumor cells into three distinct groups. One group of cells always formed tumors after injection of a single cell, a second sometimes formed tumors, and the third group of cells rarely formed

tumors.

These results are the first to show high rates of tumor formation following the injection of single purified cells. Until now, laboratories have attempted to purify cells capable of reforming tumors in mouse models but typically needed 100-100,000 purified cells, which slowed the analysis process.

“This is the only time a research group has been able to take individual cells from a cancer and determine that one will definitely form a tumor and the other will not,” Bosenberg said. “This detailed analyses will help us to develop more effective treatment options for our patients and may explain why some patients have a partial-response to treatment.”

The ability to purify the specific cancer-causing cells within a tumor may allow for a more comprehensive evaluation of the molecular features that define tumor-forming capability and resistance to chemotherapy.

Provided by Yale University