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# What identifies cancer cells causing relapse and metastasis? Not CD133

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New data, generated by Shahin Rafii and colleagues, at Weill Medical College of Cornell University, New York, through analysis of human colon cancer cells and mice, have shed doubt on the recently proposed designation of the protein CD133 as a marker of colon cancer stem cells — a term given to the small number of cells within a colon cancer that are thought to be able to give rise to a new tumor and that therefore are responsible for tumor recurrence and metastasis.

In the study, mice were engineered such that they expressed a reporter protein everywhere that CD133 is normally expressed. In contrast to previous studies in which CD133 expression had been shown to be expressed by very few cells in the colon, this reporter protein was detected in many cells in the colon, including non–stem cells.

A similarly broad expression of CD133 in the colon of both mice and humans was observed using antibodies that bind CD133. Analysis of human and spontaneous mouse primary colon tumors indicated that CD133 was expressed by most cells. Conversely, not all human colon cancer cells that had metastasized to the liver expressed CD133.

Further, both the CD133+ and CD133– cells generated tumors when transplanted into immunocompromised mice. Some of the reasons why this study and previous investigations reached such distinct conclusions as to whether or not CD133 is a marker of colon cancer stem cells are noted by the authors and discussed in detail in an accompanying commentary by Mark LaBarge and Mina Bissell, at Lawrence Berkeley

National Laboratory, Berkeley.

Source: Journal of Clinical Investigation