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The Cancer Stem Cell Theory: Is It Correct?

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The cancer stem cell hypothesis posits that tumor growth is driven by a rare subpopulation of cells, designated cancer stem cells (CSC). Studies supporting this theory are based in large part on xenotransplantation experiments wherein human cancer cells are grown in immunocompromised mice and only CSC, often constituting less than 1% of the malignancy, generate tumors. Herein, we show that all colonies derived from randomly chosen single cells in mouse lung and breast cancer cell lines form tumors following allografting histocompatible mice. Our study suggests that the majority of malignant cells rather than CSC can sustain tumors and that the cancer stem cell theory must be reevaluated.

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