

In the news

CONVERSION ON THE ROAD...

The concept of cellular de-differentiation is one that has been around for a long time, and most instances of a cell spontaneously converting from a mature to an immature phenotype have not been greeted with wild enthusiasm. A recent publication in *Proceedings of the National Academy of Sciences* has re-ignited the debate about de-differentiation with the finding that a culture of differentiated breast epithelial cells can spontaneously produce stem cell-like cells.

Christine Chaffer, the lead author on the paper, noticed that some cells in a culture of human breast epithelial cells were floating in the culture medium, but did not appear to be dying or dead. “We suspected that these floating cells may contain a high proportion of a stem-like cell population”, she said, and indeed some of these cells expressed low levels of CD24 and high levels of CD44 — two markers of breast epithelial stem cells. (*Not Exactly Rocket Science*, 12 Apr 2011). Moreover, injection of these cells into mice produced milk duct-like structures that contained both basal and luminal cells. Importantly, from a cancer research perspective, transformation of these floating cells with oncogenes gave rise to tumours in mice, and the cancer stem cells evident in these tumours were descendants of the injected cells.

“This plasticity can occur naturally”, said Chaffer, and this finding has substantial implications for the development of drugs that target cancer stem cells. “It might be that if one eliminates cancer stem cells within a tumour through some targeted agent, some of the surviving non-tumour stem cells will generate new cancer stem cells through spontaneous de-differentiation”, said Robert Weinberg, in whose laboratory this research was carried out. (*MIT Media Relations*, 12 Apr, 2011).

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