Breast cancer cells in mice tricked into turning into fat cells
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Epithelial cells undergoing EMT regress from terminally differentiated cells to a more immature state reminiscent of stem cells. EMT is essential for embryonic development, during which stem cells differentiate into a variety of cell types throughout the body, and for tissue regeneration such as wound healing. EMT and the inverse process, mesenchymal-epithelial transition (MET), are implicated in cancer's ability to metastasize.

Cells undergoing EMT or MET, Christofori says, are in a highly changeable state, providing a window of opportunity for therapeutic targeting, which the researchers tested in mouse models for metastatic breast cancer created by transplanting human breast cancer cells into the mammary fat pad of female mice.

When these mice received doses of two FDA-approved drugs—a cancer inhibitor and an anti-diabetic drug—their invasive cancer cells changed into fat cells. The drugs also suppressed the growth of primary tumors in the mice and prevented the tumors from metastasizing throughout the animals' bodies.

In particular, the researchers targeted a handful of aggressive cancer cells that had left the primary tumor and invaded surrounding tissue. These cells, which most likely had undergone an EMT, were readily converted to fat cells, while the remaining cancer cells within the tumor were no longer able to proliferate unchecked.

The researchers hypothesize that forcing a critical mass of cancerous cells to differentiate into fat cells could deplete a tumor's ability to fight off conventional chemotherapy. Next steps involve testing the EMT-targeted differentiation approach in combination with existing chemotherapies and in other types of cancers.

More information: Cancer Cell, Ronen et al.: "Gain Fat—Lose Metastasis: Converting Invasive
Breast Cancer Cells into Adipocytes Inhibits Cancer Metastasis*  
https://www.cell.com/cancer-ce ...  
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