

Cell plasticity may provide clues to origin of aggressive type of breast cancer

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Healthy breast cells may be able to reinvent themselves—some have the flexibility to change after they are mature—which leads researchers to postulate that similarities exist between this occurrence and the origins of a particularly aggressive type of breast cancer.

A team of researchers, led by Candice A.M. Sauder, M.D., while a resident at the Indiana University Department of Surgery, reported online in *BMC Cell Biology* that healthy [breast cells](#) separated from their normal environment were able to transform into types of cells similar to those seen in metaplastic carcinoma, a form of triple negative [breast cancer](#).

The team developed 12 [cell lines](#) from the normal, healthy [breast tissue](#) from volunteer donations to the Susan G. Komen Tissue Bank at the Indiana University Melvin and Bren Simon Cancer Center. Half of the cell lines were placed in normal culture dishes, and the other half were placed in culture dishes containing commercially available proteins that mimic the supporting structure of the breast.

The cells in the normal culture dishes remained unchanged, but the cells in the protein cultures differentiated into subtypes of cartilage, bone, muscle and nerve and into melanocytes, the pigment containing cells of the body. Some of these subtypes are also present in metaplastic carcinoma of the breast.

"The most interesting part is that we are taught in basic biology class that

once a cell has reached maturation it is done changing, known in science circles as terminal differentiation," Dr. Sauder said. "This is not what we found in our experiments. We removed breast tissue and developed cell lines and, much to our surprise, discovered that mature cells were plastic and were able to change into other types of cells.

"This would argue that there are cells in the mature breast that retain the ability to have some flexibility. Terminal differentiation may not exist for all [cells](#)," Dr. Sauder said.

Provided by Indiana University

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