

Scientists identify progenitor cells, potential new 'roots' of breast cancer

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Scientists have discovered new types of early cells in mammary glands, uncovering clues to the origins of different breast cancers - and potential new drug targets, according to findings published in *Breast Cancer Research*.

The team at Cancer Research UK's Cambridge Research Institute identified at least two types of early cells, called progenitor cells. Unlike stem cells, which can develop into any type of cell and keep on dividing, progenitor cells can only divide a limited number of times. Previously scientists only knew of one type of progenitor cells in [mammary glands](#).

Cancer is thought to begin in cells that can produce many [daughter cells](#), which form the tumour mass. So different progenitor cells may explain why there are different types of breast cancer.

The team discovered that one group of progenitor cells, called oestrogen positive progenitors, had [oestrogen receptors](#). This protein receives signals from the sex hormone, oestrogen. The other group - oestrogen negative cells - lacked this receptor.

Oestrogen positive progenitor cells survive better in a low oestrogen and progesterone environment - similar to the [breast tissue](#) of post-menopausal women. This suggests that tumours in post-menopausal women may develop from these cells, but further experiments are needed to confirm this.

The oestrogen negative progenitor cells have a [genetic fingerprint](#) resembling an aggressive type of breast cancer called basal-like breast cancer, more likely to affect younger women. This suggests the disease may develop from the oestrogen negative progenitors.

Study author, Dr John Stingl, at Cancer Research UK's Cambridge Research Institute, said: "This exciting discovery reveals that mammary glands are much more complicated than scientists initially thought. Uncovering new types of 'mother' cells may explain why there are different types of [breast cancer](#), and why young and older women tend to get different types. It could also provide new starting points for ways to diagnose and treat the disease in the future."

Dr Julie Sharp, Cancer Research UK's senior science information manager, said: "This research takes us right to the root of how breast cells develop. This fresh understanding could reveal new ways to block the development of cancer and tell us more about what happens when tumours become resistant to treatment.

More information: Phenotypic and functional characterization of the luminal cell hierarchy of the mammary gland. *Breast Cancer Research*. Mona Shehata et al.

Provided by Cancer Research UK

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