



## The factor that could determine future breast cancer treatment

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Australian scientists have shown how a 'transcription factor' causes breast cancer to develop an aggressive subtype that lacks sensitivity to oestrogen and does not respond to anti-oestrogen therapies such as Tamoxifen and aromatase inhibitors.

Transcription factors are molecules that switch genes on or off. In this case, the transcription factor known as 'ELF5' inhibits sensitivity to oestrogen very early in the life of a breast cancer cell.

In 2008, Associate Professor Chris Ormandy from Sydney's Garvan Institute of Medical Research showed that ELF5 was responsible for the development of the oestrogen-receptor-negative cells in the breast during pregnancy that produce milk.

In the current study Ormandy, in collaboration with Drs Maria Kalyuga and David Gallego-Ortega, has shown that the same molecular decision occurs in breast cancer and that ELF5 has the ability to change an existing tumour to an oestrogen-insensitive type.

The team has also described the genetic mechanisms by which ELF5 opposes the action of oestrogen, and has shown that it is possible to alter the subtype of breast cancer by manipulating ELF5 levels. The findings are published in the highly prestigious journal *PLoS Biology*, now online.

"This work tells us that cancers which become refractory to anti-oestrogen treatment often do so by elevating their levels of ELF5 and becoming functionally oestrogen receptor negative," said Ormandy.

"This raises the therapeutic option of manipulating ELF5 levels to treat breast cancer."

"As ELF5 is intracellular, this could possibly be done with small molecule therapies that target protein-to-protein interactions, or with small inhibitory RNAs."

"There is also the possibility of testing ELF5 levels in tumours to predict response to treatment and therefore guide treatment decisions."

"Our key discovery here is that by simply manipulating one transcription factor we can change the subtype of breast cancer."

## **ABOUT GARVAN**

The Garvan Institute of Medical Research was founded in 1963. Initially a research department of St Vincent's Hospital in Sydney, it is now one of Australia's largest medical research institutions with over 600 scientists, students and support staff. Garvan's main research areas are: Cancer, Diabetes & Obesity, Immunology and Inflammation and Neuroscience. Garvan's mission is to make significant contributions to medical science that will change the directions of science and medicine and have major impacts on human health. The outcome of Garvan's discoveries is the development of better methods of diagnosis, treatment, and ultimately, prevention of disease.

## **MEDIA ENQUIRIES**

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