

One gene that contributes to breast cancer's aggressive behavior identified

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Aggressive forms of cancer are often driven by the abnormal over-expression of cancer-promoting genes, also known as oncogenes.

Studies at the Genome Institute of Singapore (GIS), a research institute under the Agency for Science, Technology and Research (A*STAR) of Singapore, have identified a gene, known as RCP (or RAB11FIP1), that is frequently amplified and over-expressed in [breast cancer](#) and functionally contributes to aggressive breast cancer behaviour.

The research findings are published in the July 20th online issue of [Journal of Clinical Investigation](#) (JCI).

The GIS team, led by Lance Miller, Ph.D., and Bing Lim, Ph.D., initially discovered that RCP expression was positively correlated with cancer recurrence in a population of breast cancer patients. This suggested that RCP may be required by some tumours for growth and metastatic spread to other organs.

When the researchers over-expressed RCP in non-cancerous breast cells, they found that RCP promotes migration, or cellular movement, which is a precursor to the ability of tumours to invade neighbouring tissues.

However, breast cancer cells in which RCP is over-expressed take on a more aggressive behaviour, including faster proliferation, enhanced migration/invasion and anchorage-independent growth.

The researchers also found that when the gene is silenced in breast cancer cells, the ability of the cells to form tumours and metastasize to other organs is greatly diminished.

They also found that RCP can activate the potent oncogene, Ras, which is aberrantly activated by mutation in about 15% of all human cancers.

"One objective in my laboratory is to discover new oncogenes that drive breast [cancer progression](#) so that we can devise therapeutic strategies for shutting these [genes](#) down," said Dr. Miller, now at Wake Forest University School of Medicine in North Carolina. "The involvement of RCP in breast cancer progression may have significant clinical ramifications, and we are now working towards a better understanding of its mechanism of action."

Source: Agency for Science, Technology and Research (A*STAR), Singapore

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