

# Possible breast cancer 'achilles heel' discovered

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A leading team of Newcastle University scientists have found that 'turning off' two proteins reduces the ability of breast cancer cells to survive and grow.

The scientists, funded by charity Breast Cancer Campaign, believe this could be a possible 'Achilles' heel' approach that could work in many types of breast cancer, potentially helping to find a way to stop the return of tumours after treatment, increasing survival chances for women with the disease.

## Breast cancer treatment

Almost 50,000 women are diagnosed with breast cancer in the UK each year, and over 12,000 women in the country sadly die from the disease each year, primarily because their breast cancer has spread to other parts of the body.

In addition to surgery and targeted drug treatments, many breast cancers are treated with chemotherapy and radiotherapy, which damages the DNA of the [cancer cells](#), causing them to die. However, some [breast cancer cells](#) are able to recover from this damage, meaning they can continue to grow and can also spread from the breast to other parts of the body. When breast cancer cells break away from the original tumour and spread to other parts of the body (known as metastasis), the disease can sometimes be treated and controlled, but no longer cured.

In research published in the prestigious journal *Nature Communications*, Professor David Elliott and fellow researchers Dr Andrew Best and Dr Alison Tyson-Capper, all based at Newcastle University, are the first scientists to find a new 'pathway' that breast cancer cells rely on to survive.

The team investigated two proteins (Tra2 $\alpha$  and Tra2 $\beta$ ) that are found in large amounts in breast

cancer cells, and discovered that when they removed the proteins, they were able to 'turn off' a third [protein](#) (CHK1, also known as 'checkpoint kinase 1'), which reduced the ability of the cancer cells to divide and grow. The researchers are the first to find a link between the Tra2 $\alpha$ , Tra2 $\beta$  and CHK1, which is a well-known protein that helps cancer cells to repair mistakes in their chromosomes.

"We now want to look at different types of breast cancer and investigate if turning off the Tra2 proteins could be an 'Achilles' heel' for breast cancer cells' ability to divide and grow", says lead researcher Professor David Elliott.

## Breast cancer campaign

Katherine Woods, Research Communications Manager at Breast Cancer Campaign, says: "12,000 women in the UK die of [breast cancer](#) each year, the vast majority because their cancer has spread. We urgently need to find better treatments that stop all cancer cells in their tracks, and ensure that they don't find a way to survive beyond treatment.

"The research carried out by Professor Elliott and his team has provided us with crucial knowledge about the roles that two specific proteins can play in this process, bringing us one step closer to our goal that by 2030 we will have identified what causes different tumours to grow and progress, enabling us to select the best treatment for every patient, maximising their chances of survival."

**More information:** "Human Tra2 proteins jointly control a  $\gamma$ CHEK1 splicing switch among alternative and constitutive target exons." *Nature Communications* 5, Article number: 4760 [DOI: 10.1038/ncomms5760](#)

Provided by Newcastle University

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