

Researchers discover new way to target secondary breast cancer that has spread to the brain

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A study led by researchers at RCSI University of Medicine and Health Sciences and the Beaumont RCSI Cancer Centre (BRCC) has revealed a potential new way to treat secondary breast cancer that has spread to the brain, using existing drugs.

The study, published in *Nature Communications*, was funded by Breast Cancer Ireland with support from Breast Cancer Now and Science Foundation Ireland.

Most breast cancer related deaths are a result of treatment relapse leading to spread of tumors to many organs around the body. When [secondary breast cancer](#), also known as [metastatic breast cancer](#), spreads to the brain it can be particularly aggressive, sometimes giving patients just months to live.

The RCSI study focused on genetically tracking the tumor evolution from diagnosis of primary breast to the metastatic spread in the brain in cancer patients. The researchers found that almost half of the tumors had changes in the way they repair their DNA, making these tumors vulnerable to an existing type of drug known as a PARP inhibitor. PARP inhibitor drugs work by preventing cancer cells to repair their DNA, which results in the cancer cells dying.

"There are inadequate [treatment options](#) for people with breast cancer that has spread to the brain and research focused on expanding treatment options is urgently needed. Our study represents an important development in getting one step closer to a potential treatment for patients with this devastating complication of [breast cancer](#)," commented Professor Leonie Young, the study's Principal Investigator.

"By uncovering these new vulnerabilities in DNA pathways in brain metastasis, our research opens up the possibility of novel treatment strategies for patients who previously had limited targeted therapy options," said study author Dr. Damir Varešlija.

More information: Nicola Cosgrove et al, Mapping molecular subtype specific alterations in breast cancer brain metastases identifies clinically relevant vulnerabilities, *Nature Communications* (2022). [DOI:](#)

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