Protein to control breast cancer progression identified

July 5 2017

Dr Iman Azimi. Credit: University of Queensland

Switching off a protein produced in breast cancer cells can stop cancer progression, researchers from The University of Queensland have found.

Dr Iman Azimi from UQ School of Pharmacy and Mater Research Institute said, when breast cancer cells were made to stop producing a protein called TRPC1, some of the pathways important in breast cancer progression were deactivated.

"We identified TRPC1 as a regulator of several pathways that, when

activated by hypoxia, are critical in breast cancer progression," Dr Azimi said.

"As breast cancers grow, their supply of oxygen can decline. This is called hypoxia.

"This can trigger the breast cancer to become more aggressive and resistant to currently available therapies."

The new study has helped define a potential new therapeutic target for the control of breast cancer progression.

"The work is most relevant to women who will develop breast cancer in the future, as these studies may enable the development of more effective therapies for breast cancers that become resistant to current therapies," Dr Azimi said.

"This research is of global significance as it provides researchers a new understanding of the role of TRPC1 in the response of breast cancer cells to hypoxia and how breast cancers cells may become metastatic."

The researchers hope these results will have an impact on breast cancer research and the thousands of women who die every year from breast cancer.

Breast cancer takes the lives of more than 2500 women in Australia each year, with less than a 30 per cent survival rate for women with metastatic disease.

Despite significant advances in the development of new therapies, breast cancer still accounts for 15.5 per cent of all cancer deaths in Australian women.

"We are very excited about these findings that we aim to be used in future drug development research to improve current therapeutic interventions," Dr Azimi said.

Dr Azimi completed the study with senior investigator Professor Greg Monteith from UQ's School of Pharmacy.

The research has been published in the *Journal of Cell Science*.

More information: Iman Azimi et al. TRPC1 is a differential regulator of hypoxia-mediated events and Akt signaling in PTEN-deficient breast cancer cells, *Journal of Cell Science* (2017). DOI: 10.1242/jcs.196659

Provided by University of Queensland