

# Discovery opens door for breast, prostate cancer treatments

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The WAIMR researchers involved in the publication. [Back Row]: Dr Shane Colley, Prof Peter Leedman, Michael Epis, Dr Keith Giles. [Front Row]: Dianne Beveridge, A/Prof Andrew Redfern, Lisa Stuart.

(Medical Xpress)—A team of Western Australian cancer researchers interested in the strong link between hormones and cancer have discovered three new molecules that may have an important role to play in future breast and prostate cancer treatments.

The paper, which has just been published in the leading international journal the *Proceedings of the National Academy for Sciences (PNAS)*, is the result of many years of laboratory work by scientists at the Western Australian Institute for Medical Research (WAIMR) and it is hoped that the discovery will translate to better outcomes for breast and prostate cancer patients in the clinic.

First author on the paper, Perth oncologist Associate Professor Andrew Redfern said that about 200 West Australian cancer patients died each year because of a failure to control oestrogen in female [breast cancer patients](#) or testosterone in male prostate cancer patients.

"Currently, drugs used to treat these cancers are successful at first, but advanced cancer returns in a proportion of patients," Associate Professor Redfern said.

"Our current [breast cancer](#) treatments are only really targeting part of the signalling pathway related to oestrogen and in 70 percent of cases the tumours are finding a way to sneak around the oestrogen receptor block currently being used. In prostate cancer, the testosterone receptor blocking treatments are also failing and 95% of prostate cancers are testosterone driven. This medical research is looking for new approaches."

Endocrinologist Professor Peter Leedman who leads WAIMR's Laboratory for Hormone Dependent cancers said the team had discovered these molecules while on a "targeted fishing expedition" examining tissue samples from a [breast cancer gene](#) library, and using a molecule discovered by Texan collaborator Bert O'Malley from Baylor College of Medicine, as "bait."

"These newly identified molecules are key regulators in the oestrogen receptor and the testosterone receptor signalling pathways. In addition to regulating hormone action in these cancers, three of these molecules are part of a complex that processes tiny RNAs inside cells, called microRNAs. In so doing they can regulate a third of all human genes. That's what makes it so interesting, as it would appear that these molecules are great at multi-tasking and can do it from different parts of the cell".

"These molecules are all activating hormone action in these cancer cells, and there is some evidence that too much of one of these molecules in [prostate cancer](#) is not good news for cancer patients," he said.

"We hope our paper, which provides big insight into how these molecules work at the bench, will

translate towards the bedside and eventually be able to help improve outcomes."

Dr Redfern is using the findings of the *PNAS* paper in a follow up clinical study to explore the importance of each of the [molecules](#) in tissue samples from 500 breast [cancer patients](#) at Royal Perth Hospital.

**More information:** The paper is entitled "[RNA-induced silencing complex \(RISC\) Proteins PACT, TRBP and Dicer are SRA binding nuclear receptor coregulators.](#)"

Provided by University of Western Australia

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