

ZFAS1

A Breast Cancer Therapeutic and Cancer Diagnostic Target

Researchers at the Institute for Molecular Bioscience at The University of Queensland (UQ) have discovered a long non-coding RNA, *ZFAS1*. *ZFAS1* is significantly down-regulated in breast cancer and represents a novel target for RNA-based therapeutics and a molecular diagnostic target for a range of cancers.

Technology and Proof of Concept

In vitro RNAi experiments have demonstrated that *Zfas1* is a bioactive molecule, which modulates cell proliferation and differentiation, in the murine mammary gland cell line HC11. *ZFAS1* is transcribed from the antisense strand of the promoter for ZNFX-1 protein.

Investigation of the expression of human *ZFAS1* and ZNFX1 (including the ratios of *ZFAS1* and ZNFX1, which may be indicative of discordant gene regulation of a shared promoter) in a panel of carcinomas further demonstrated that:

- Expression of *ZFAS1* is down-regulated (2-fold) in a panel of invasive ductal carcinoma (IDC) breast samples, compared to normal breast tissue;
- Expression of *ZFAS1* is up-regulated in cancers including adrenal, colon, liver, testis and thyroid, compared to normal tissue;
- A negative ratio of *ZFAS1* to ZNFX1 is a marker of cancers including breast, ovary, cervix, endometrium, uterus, stomach and prostate;
- A positive ratio of *ZFAS1* to ZNFX1 is a marker of cancers including adrenal, colon, liver, lung, lymph, testis and thyroid.

Applications

- Breast cancer therapeutics using *ZFAS1* nucleic acid, or through activation of the *ZFAS1* promoter;
- Cancer diagnostics and prognostics.

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