Washington University in St. Louis
Office of Technology Management

A LONG NON-CODING RNA IN EARLY AND LATE-STAGE BREAST CANCER AS A PROGNOSTIC MARKER, DIAGNOSTIC MARKER, AND THERAPEUTIC TARGET.

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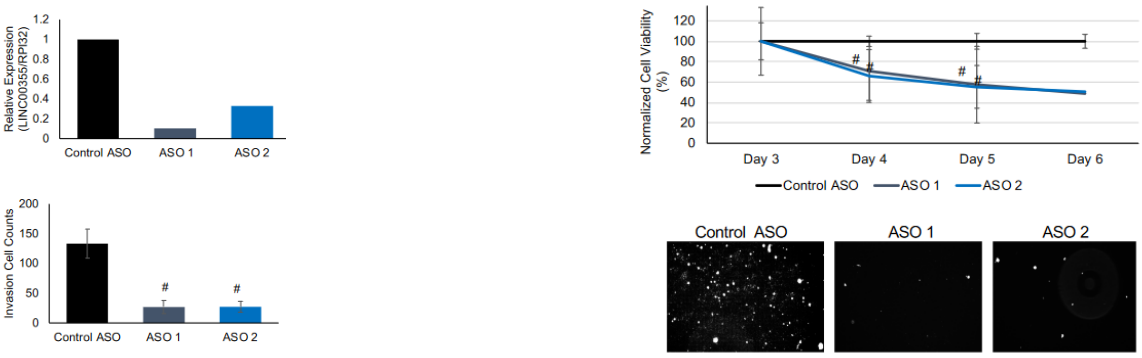
T-020366

Technology Description

Researchers in Dr. Jessica Silva-Fisher's laboratory have developed antisense oligonucleotide targeting a long non-coding RNA (lncRNA), LINC00355, as a treatment for late-stage relapse (LSR) breast cancer. LINC00355 is highly expressed in LSR breast cancer patients and promotes cellular proliferation by binding to the MENIN protein to decrease expression of p27Kip. This alters S phase cell cycle checkpoint that leads to increased cellular proliferation and contributing to phenotypes of LSR breast cancer.



Top left: Normalized cell (MCF7 LTED) viability 6 days post ASO treatment. Top Right: Quantitative invasive cell counts of ASO treated cells (bottom left) stained with DAPI (shown white, bottom right). #p value < 0.0005.

Stage of Research

Researchers have identified LINC00355 to be the most up-regulated lncRNA in LSR breast cancer patient samples and cancer cell lines. ASOs targeting LINC00355 resulted in a decrease in cell viability and invasion in MCF7 LTED cell lines.

Publications: Eteleeb AM, Thunuguntla PK, Gelev KZ, Tang CY, Rozycki EB, Miller A, Lei JT, Jayasinghe RG, Dang HX, White NM, Reis-Filho JS, Mardis ER, Ellis MJ, Ding L, Silva-Fisher JM, Maher CA. LINC00355 regulates $p27^{KIP}$ expression by binding to MENIN to induce proliferation in late-stage relapse breast cancer. NPJ Breast Cancer. Apr 13;8(1):49 (2022).

Applications

- Treatment for LSR breast cancer
- Diagnostic/prognostic marker for LSR breast cancer

Patents: Provisional filed

Related Web Links: Silva-Fisher Profile, Silva-Fisher Lab