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Office of Technology Management

NEW SET OF BIOMARKERS AS A THERAPEUTIC TARGET ACROSS CANCERS

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Value Proposition: *Predictive biomarkers that can identify patients that would respond well to HER2 targeted breast cancer treatment that are not currently being treated this way.*

Technology Description

Researchers at Washington University in St. Louis have established Breast Cancer Anti-Estrogen Resistant 4 (BCAR4), a known oncogene, as a predictive biomarker to non-invasively identify patients – beyond the existing HER2 amplified population – that would benefit from HER2-targeted treatments through development of a novel diagnostic assay. The HER2-positive (HER2+) breast cancer treatment landscape continues to rapidly expand with new effective therapies. Currently HER2-amplified targeted breast cancer therapies are approved for only 15% of the clinically subtypted HER2+ breast cancer population that is identified based on gene amplification and protein expression through tissue staining. No current test identifies this HER2-non amplified subgroup that might benefit from treatment with HER2 targeted therapies.

To address this unmet clinical need, this invention uses BCAR4-fusions to provide a more sensitive, less invasive method to detect molecular events to improve current clinical diagnosis and inform on patient treatment. Thus, expanding the identification of patients that would respond well to HER2 targeted treatment.

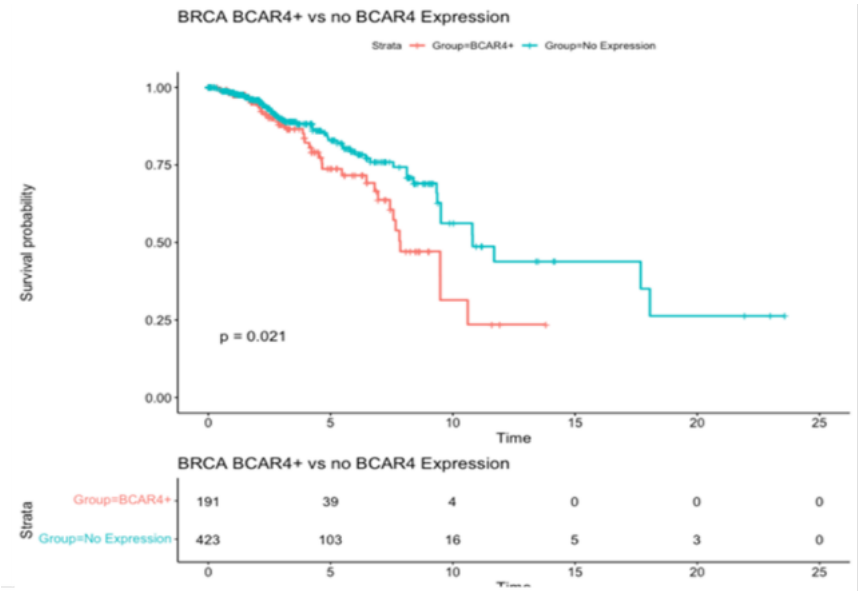

Figure 2 | *BCAR4*-expressing patients (red) have worse outcome in breast cancer.

Stage of Research

Proof of concept: Pan cancer analysis across 10,708 patients and 11 cancer types.

Publications

Nickless A, Zhang J, Othoum G, Webster J, Inkman MJ, Coonrod E, Fontes S, Rozycki EB, Maher CA, White NM. Pan-Cancer Analysis Reveals Recurrent BCAR4 Gene Fusions across Solid Tumors. Mol Cancer Res. 2022 Oct 4;20(10):1481-1488. doi: 10.1158/1541-7786.MCR-21-0775. PMID: 35852383; PMCID: PMC9530645.

Applications

- Cancer diagnostics
- HER2 targeted therapies for cancers that express HER2 such as stomach, cervical, breast, esophageal, ovarian, lung, colon, and prostate.

Key Advantages

- BCAR4 gene fusions are more prevalent than known recurrent gene fusions with immediate translational impact
- Less invasive, more sensitive detection method

Patents

Patent application filed

Related Web Links – Christopher Maher Profile; Maher Lab