

# Genomic Biomarkers of Locally Advanced Breast Cancer (LABC) and Inflammatory Breast Cancer (IBC)

## Value Proposition

Locally advanced breast cancers (LABCs) have a poor prognosis with an estimated five-year survival of only 50-60%. A rare subtype of LABC called inflammatory breast cancer (IBC), which is considered the most aggressive form of breast cancer, has a lower survival rate at 35%. This is in comparison to the 80% survival rate observed for early-stage breast cancers. Neoadjuvant combined therapy is typically used in LABC patients before surgery to down-stage tumors. This procedure allows a more conservative surgery and can even make an inoperative tumor operative. However, not all patients respond equally well to neoadjuvant treatment and effective biomarkers that can predict treatment response are lacking. A novel method to predict treatment response in LABC using biomarkers from a patient specimen would enter a global molecular diagnostic test market predicted to grow at a compound annual growth rate of 14.0% to reach \$12.5B by 2019.

## Technology

The present technology provides biomarkers useful for determining the aggressiveness of a breast cancer in a subject and/or the likelihood of survival for a subject suffering from breast cancer. These methods and kits entail quantifying the amount of numerous biomarkers for LABC and IBC (i.e., SULT1A1, SULT1A2, PARP6, MTA1, ARPC5L, HYOU1, AVEN, CHST11, TLN2, CHST3, PRKCA, COL4A4, and TNC) present in a biological sample. This method can also predict whether a subject has an increased chance of benefiting from a chemotherapeutic treatment if the amount of the biomarker is higher in the biological sample derived from the subject as compared to a reference control. The inventors have gene expression data supporting the claims of this technology.

## Advantages

- Novel prognostic biomarkers for locally advanced breast cancers
- Methods are noninvasive, highly specific, and sensitive
- Technology could enter a growing global molecular diagnostic test market

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## Publications

- Siamakpour-Reihani S, et al. (2015) Genomic profiling in locally advanced and inflammatory breast cancer and its link to DCE-MRI and overall survival. *Int J Hyperthermia*. 31(4):386-95.
- Craciunescu O, et al. (2009) DCE-MRI parameters have potential to predict response of locally advanced breast cancer patients to neoadjuvant chemotherapy and hyperthermia: a pilot study. *Int J Hyperthermia*. 25:405-15.

## Patents

Patent Number: 10,253,367

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