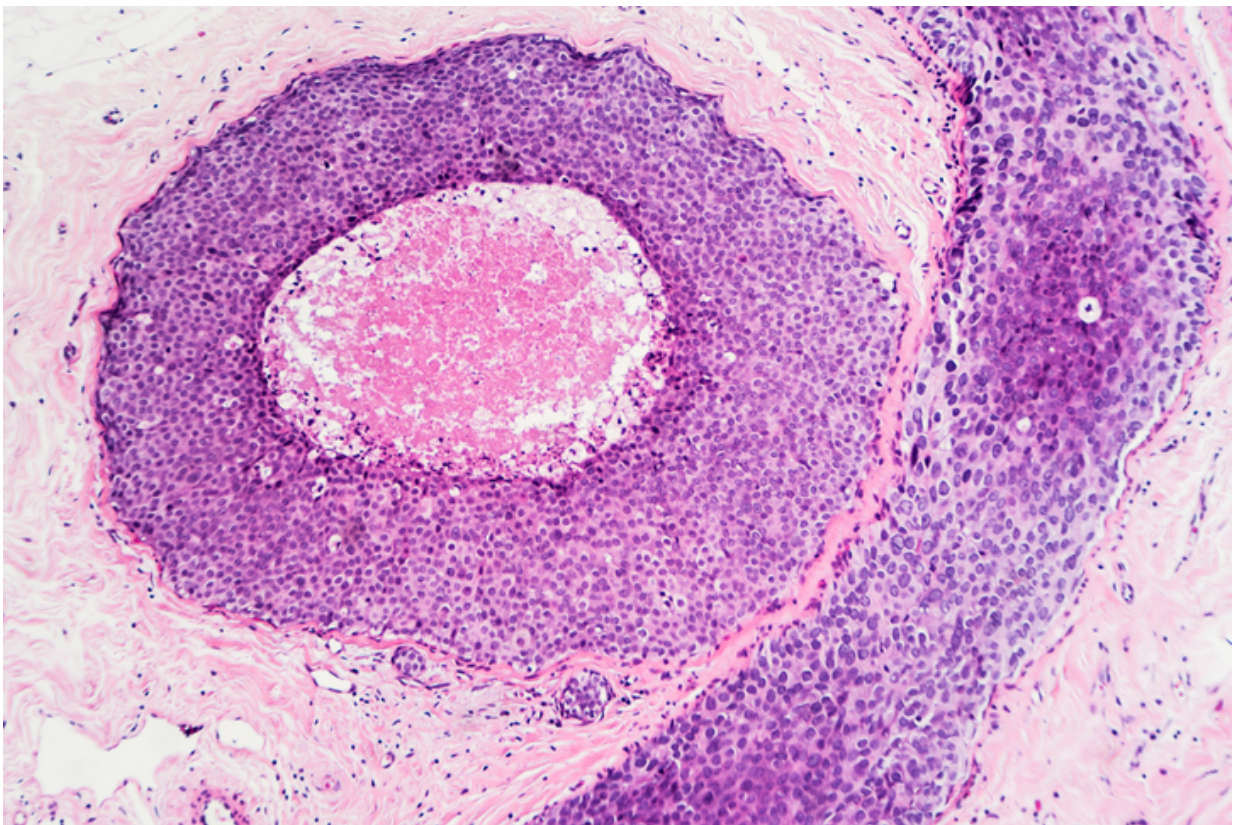# Biomarker predicts poor prognosis in African-Americans with triple-negative breast cancer

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Credit: Georgia State University

Having high levels of a certain biomarker is linked to poor prognosis in African-American patients with triple-negative breast cancer, while the

same biomarker doesn't influence disease outcomes in white patients, according to a new study.

Racial disparities in disease, particularly [breast cancer](#), continue to pose a major challenge in healthcare. African-American [breast cancer patients](#) are more likely to suffer from a more aggressive course of disease and higher mortality compared to other [racial groups](#). In particular, African-American [patients](#) with triple-negative breast cancer have a dismal prognosis.

The dire outcome of this group could indicate that high-risk, African-American breast cancer patients are not being identified as such using standard clinical prognostic tools and aren't being prescribed sufficiently aggressive treatment. Therefore, it's critical to find novel biomarkers that could identify differences in tumor biology between racial groups and serve as risk predictors to help alleviate health disparity in disease outcomes.

In this study, a research team led by Georgia State University examined whether a biomarker called nuclear KIFC1, which has been associated with worse outcomes in breast cancer, can predict risk in triple-negative breast cancer, a subtype that disproportionately affects African-American women.

The researchers assessed the nuclear KIFC1 biomarker in [triple-negative breast cancer](#) tissue samples from 163 African-American patients and 144 white patients who were treated between the years 2003-2008 at Grady Memorial and Emory University hospitals, 2005-2013 at Northside Hospital and 2001-2012 at Baylor Scott & White Medical Center. Race information in medical records was self-declared by patients. The findings are published in the online journal *Scientific Reports*.

"We looked at the levels of nuclear KIFC1 in their tumors, and interestingly, we found that African-American women had slightly higher levels, but it was only within African-American patients that the levels mattered for their outcome," said Angela Ogden, lead author of the study and a Ph.D. candidate in Dr. Ritu Aneja's laboratory in Georgia State's Biology Department. "African-American women with high nuclear KIFC1 levels tended to do poorly, whereas in white women, it didn't matter if they had high or low levels. It had no effect on their outcomes."

The researchers further investigated why the biomarker only seems to matter in African-American patients by studying triple-negative breast tumor cells from African-American and white patients.

"We found that if we silence the KIFC1 gene, it had a greater impact on the migration of the African-American cells than it did on the white cells," Ogden said. "It may be that for whatever reason, in African-American breast cancer tumors, KIFC1 helps the cells to migrate and spread to other parts of the body. And for reasons that we currently don't know, that's not the case in white tumors. Ultimately, it may even be that African-American patients could potentially be treated with a KIFC1 inhibitor to help prevent metastasis, but that's for future studies."

The study is multi-institutional with tumor samples from breast cancer patients treated at four different hospitals, so the results can likely be generalized. To ensure certain factors didn't confound the results, the researchers adjusted for tumor stage, age at diagnosis, receipt of chemotherapy and the hospital where patients received chemotherapy. They found nuclear KIFC1 had a significant effect on outcomes in African-American patients, even after adjusting for these factors.

Biomarkers of relevance to specific racial groups are starting to be explored more in scientific studies, Ogden said.

"The approach of treating all patients the same, regardless of their racial or ethnic background, may not be the best approach as genetic ancestry matters," she said. "There may be biomarkers and treatments that work better for people of a certain ancestry, race or ethnicity, instead of a one-size-fits-all approach."

More information: Angela Ogden et al, Multi-institutional study of nuclear KIFC1 as a biomarker of poor prognosis in African American women with triple-negative breast cancer, *Scientific Reports* (2017). DOI: 10.1038/srep42289

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