Lay Abstract

Women with a type of breast cancer called triple-negative breast cancer (TNBC) often die because the cancer cells don’t respond well to chemotherapy and spread aggressively, especially in younger African women. We found a protein called TRIM37 that makes TNBC cells resistant to chemotherapy and helps them spread. Our project, funded by METAvivor, aimed to find a treatment that targets cancer spreading in mice and understand why TNBC is dominant in women with African ancestry. We targeted TRIM37 and showed that loss of TRIM37 reduced TNBC dissemination in a murine model. Also, we discovered that African women with TNBC express TRIM37 at a higher level in the breast tissue compared to white women. We found a genetic difference that makes TRIM37 more active in African women with TNBC, which could accentuate cancer initiation and progression.

Our research suggests that targeting TRIM37 could help TNBC patients respond better to chemotherapy, especially Black women who are at higher risk. This project led to two scientific papers, one already published and another ready for submission. Because of this work, the project leader received an Innovative Development Award from UC Davis to study how specific genes in TNBC cells affect cancer growth.

This study could lead to new treatments for TNBC by targeting TRIM37, which could slow down tumor growth, make chemotherapy more effective, and prevent cancer from spreading. We also investigated why TNBC affects Black women more and found new ways to diagnose it early.