

For many people living with breast cancer that has spread to other organs (metastatic), targeted therapies can keep the cancer under control for years. This is a remarkable success, but it also means that patients often remain on treatment indefinitely, sometimes for the rest of their lives. Long-term treatment can cause ongoing side effects, limit daily activities, and create financial and emotional strain, especially if some of that treatment may no longer be needed to keep the cancer under control.

This study will look at a blood test called circulating tumor DNA, or “ctDNA.” This test looks for tiny pieces of genetic material from cancer cells in a patient’s blood. We want to see if ctDNA can help find patients whose cancer is under such good control that they might be able to safely take a break from some treatments. Finding ctDNA in the blood can be an early warning sign that cancer may be starting to grow again, even before it shows up on a scan. If no ctDNA is found, it could mean the cancer is well-controlled.

In the first part of the study, we will develop the systems needed to perform ctDNA testing quickly and reliably for patients at our cancer center. In the second part, we will enroll patients with HER2-positive (a marker that can be expressed in cancer cells) or hormone receptor-positive/HER2-negative metastatic breast cancer who have had an exceptional response (long duration of response to one treatment) to treatment and have no detectable ctDNA. These patients will pause part of their therapy. We will follow them very closely with regular ctDNA tests, scans, and clinic visits to make sure the cancer remains under control. If ctDNA becomes detectable or there are signs of progression, treatment will be restarted.

Our goal is to learn whether ctDNA can be used to make safe, personalized decisions about taking planned breaks from treatment. If successful, this approach could help patients avoid unnecessary side effects, improve quality of life, and reduce the burden of ongoing therapy while keeping the cancer in check. This research could lead to larger studies and, ultimately, make ctDNA-guided treatment breaks a standard part of care for people living with metastatic breast cancer.