TEAM EARLY AND DETECTING BREAST CANCER SOONER

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For nearly fifty years, mammography and biopsy have been the mainstays of breast cancer detection. While lifesaving, these tools are not perfect. Mammograms can miss cancers, especially in younger women or those with dense breast tissue, and biopsies often turn out to be unnecessary, showing benign findings. With support from the Fetting Fund for Breast Cancer Prevention, a group of breast cancer investigators and clinicians are focused on developing an innovative new way to detect breast cancer in its earliest stages, all from a small sample of blood. This group is known as Team Early.

Their work centers on DELFI, a liquid biopsy technology developed at Johns Hopkins by Victor Velculescu, M.D., Ph.D., and Jill Phallen, Ph.D., that analyzes fragments of DNA shed into the bloodstream. Research has shown that DNA fragmentation patterns differ between healthy, normal cells and cancer cells.
Team Early's goal is to determine whether DELFI can reliably distinguish women with breast cancer from those who do not have cancer, and eventually to use the test to complement mammography or, one day, potentially to be incorporated into routine bloodwork, such as cholesterol screening.

The clinical study is designed to mirror the way women are currently screened for breast cancer. Any woman without a prior breast cancer diagnosis may participate, whether she is a healthy volunteer coming in for a routine mammogram, or a patient having a biopsy for a suspicious finding. Participants provide a simple blood sample, which researchers test using DELFI to look for the unique DNA fragmentation patterns that signal cancer.

The blood test is always done alongside standard care, which includes mammography and, if needed, biopsy. This design allows Team Early to compare DELFI results with biopsy outcomes, helping them learn whether the test can both detect cancers earlier and reduce unnecessary biopsies. By gathering samples from both women with and without cancer, they are training and strengthening the DELFI model, making it more accurate and reliable over time.

The team plans to enroll 500 women and is already about a third of the way there, with recruitment underway at Johns Hopkins sites in East Baltimore and Greenspring.
"Launching such an ambitious project would have never been possible without the support of the Fetting Fund," says Dr. Tao.

The funding supported a dedicated research coordinator, helped establish the database, and covered the costs of writing and securing approval for the clinical protocol. It also enabled the collaboration of Dr. Tao, Jenna Canzoniero, M.D., and Emily Ambinder, M.D., along with colleagues in pathology, public health, and bioinformatics, laying the foundation for a truly multidisciplinary effort.

With that foundation in place, Team Early successfully competed for larger awards, including a four-year American Cancer Society Research Scholar Grant and a Discovery Award for team science. These grants now support laboratory studies, clinical coordination, and bioinformatics analysis, ensuring the work continues and expands. The team expects to generate its first validated model by the end of 2026.
"About 20% of cancers are missed by mammography, and less than 40% of women who undergo breast biopsies actually have cancer. We need to fix both ends," says Dr. Canzoniero.

Women interested in learning more about the study may email HopkinsBreastTrials@jhmi.edu