Special Edition Summer 2025

The Sister Study

Breast Cancer Research

Woman by woman, sister by sister, we can make a difference!

Dear Sister Study participants —

A lot has changed since our last newsletter. But the one constant I am grateful for is the dedication of the wonderful participants and staff who have kept the Sister Study going over the more than 20 years since we first reached out to you to join the study. As our tag line says: "woman by woman, sister by sister, we can make [and have been making] a difference".

The Sister Study continues to learn new things about breast cancer and other health concerns for women. Some of our many scientific publications this year are highlighted in this newsletter. We have been successful in obtaining competitive outside funding for newer efforts such as a recent award to underwrite some of the costs for collecting stool samples to study the microbiome as part of our Anniversary Biospecimen Collection (ABC), a study of biological precursors of systemic lupus and co-occurring autoimmune diseases that are more common in females than in males, and a study of the effects of extreme heat on metabolic function and disease risk. The latter two grants are for work that takes advantage of data and samples you have already shared. If you have already participated in the ABC, we are extremely grateful. We hope that others will agree to participate when contacted. To fully understand the contribution of environmental exposures in breast cancer incidence, it is important to have blood and urine samples from more than one timepoint besides baseline when you joined the study. The extra samples at a different timepoint will allow us to consider how changes in exposures or biomarkers over time or as women get older affect breast cancer risk.

As you probably know, the climate for funding health research in the U.S. is changing and we are not immune to the challenges scientists everywhere are facing. But we are confident in knowing that the Sister Study is considered a priority for our Institute, and we are committed to continuing forward with the study. We are taking steps to reduce our costs in the coming years without sacrificing high quality research. Our top priorities are to do meaningful research, continue to ensure the safety and privacy of the data you have given to the study, and to do all we can to maintain your trust in us. Some of the changes we are considering may be welcome news. For example, we are exploring ways to reduce the frequency and length of some of our questionnaires, consolidating collections where we can. This will have the benefit of reducing participant burden, a change some may consider long overdue. We also hope to switch many of our communications to email and texts for those who have given us permission to reach them electronically. We encourage everyone who has not already done so to provide us with an email address and cell phone number so we can further reduce the cost and environmental impact of sending out study materials. Other cost-reduction changes will simplify operations and may not be noticeable – such as extending the timeframe for completing the ABC collection, reducing the frequency of new data releases to those who work with the study data, and trying new ways to collect biospecimens from ABC participants who don't live in the regions covered by our home visit provider.

We have weathered a lot over the years, be it budget cuts or global pandemics. The Sister Study team remains committed to conducting high-quality and meaningful science to further our understanding of the causes of breast cancer and other chronic diseases. Thank you again for your continued participation.

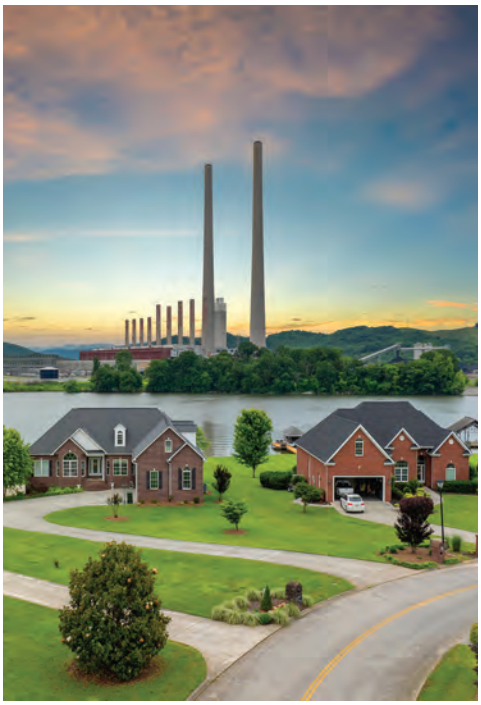
Dale Sandler, Ph.D., lead researcher for the Sister Study

New and Exciting Research

Frequent Use of Hair Relaxers/Straighteners During Adolescence Associated with Increased Risk of Fibroids Before age 36

NIEHS researchers recently published a study of the association between chemical hair straightener/relaxer use and uterine fibroids among Black women. They found that frequent use of hair straighteners in early adolescence (ages 10-13 years) was linked to a higher risk of developing fibroids before age 36. The link was potentially stronger for women born between 1928-1945 and 1965-1974, possibly due to changes in hair straightener product formulations over time. A weaker connection was found among women born between 1955-1964, possibly due to the popularity of wearing Afros and other natural hairstyles in the 1970s.

Similar positive associations were observed among non-Hispanic White women, despite lower usage rates. This study highlights concerns over endocrine-disrupting and carcinogenic chemicals found in hair products and their potential role in hormone-related diseases.



Certain Industrial Pollutants Associated with Breast Cancer Risk

A recent Sister Study investigation examined whether hazardous chemicals found in industrial air pollution are linked to breast cancer risk. Using the U.S. Environmental Protection Agency's Toxics Release Inventory, which tracks emissions from industrial facilities, researchers examined 28 chemicals released into the air near participants' homes in the decade before the study began. They found that higher levels of certain chemicals, like nickel compounds and trichloroethylene, were associated with an increased risk of developing breast cancer later in life. However, most of the chemicals studied showed no clear link to breast cancer, suggesting that while a few specific pollutants may contribute to risk, industrial air pollution as a whole does not appear to be a major driver of breast cancer incidence. Because exposure levels among women in the Sister Study were relatively low, further research is needed to determine whether stronger associations exist in populations with a greater burden of exposure to industrial pollution and to better evaluate long-term health effects.

Living in Areas with Lower Greenspace is Associated with Poor Sleep

Sleep is essential for overall health. Greenspace, which includes parks and other areas with grass, trees, or other vegetation, may contribute to sleep health by improving mood, reducing sleep disruptors (e.g., poor air quality, noise), and promoting physical activity. In the Sister Study, greenspace was measured by linking participants' addresses to a NASA-derived satellite-based measure of green space. Overall, living near low to moderate greenspace rather than high greenspace was associated with a higher prevalence of moderate or poor sleep health.

Early-life Trauma is Associated with Increased Risk of Adverse Pregnancy Outcomes

Dr. Sharonda Lovett, a former intern and new Postdoctoral Fellow at NIEHS continuing research with the Sister Study, recently examined the association between early life trauma and the risk of adverse pregnancy outcomes. Using data from the Sister Study cohort, Dr. Lovett found that trauma experienced before age 18 may increase the risk of conditions such as gestational diabetes and hypertensive disorders of pregnancy (HDP). We found that 47% of participants reported at least one type of early-life trauma and 31% reported high multiple early-life traumas. Women reporting physical trauma had the highest risk of gestational diabetes and HDP. We also observed an elevated risk of gestational diabetes and HDP for women reporting high multiple early-life traumas, relative to women with low trauma. This work suggests the type and quantity of co-occurring early-life traumas does matter and that it is important to consider patterns of traumatic experiences when studying adverse pregnancy outcomes.

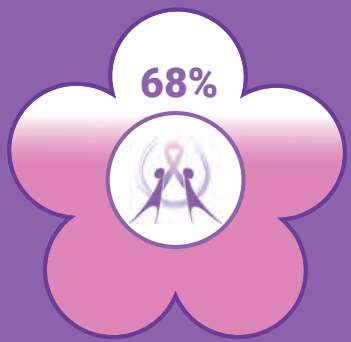
Hormone Therapy Use Associated with Young-Onset Breast Cancer in International Collaborative Study

Estrogen plus progestin hormone therapy is an established risk factor for breast cancer in postmenopausal women, but less is known about the association between hormone therapy use and breast cancer in younger women, who may use hormone therapy following gynecologic surgery or to relieve peri-menopausal symptoms. Sister Study investigators recently studied this topic using pooled data from 10 international cohorts. They found that unopposed estrogen therapy use was inversely associated with breast cancer before age 55 and that estrogen plus progestin hormone therapy use was positively associated with breast cancer before age 55, especially for longer-term use and among women without hysterectomy or bilateral oophorectomy. These results are similar to prior studies of hormone use and later-onset breast cancer, but provide novel evidence for informing clinical recommendations for hormone therapy use in young women.

In October 2024, we began contacting all Sisters about completing their health update. So far, **68%** of participants have responded.

Thank you if you have already completed your 2024 2025 Health Update! We are so appreciative of your continued participation.

If you have not completed your health update, it is not too late to help us reach our goal! As a reminder, once you complete your health update, you are entered into our $500 gift card drawing.



Meet Vicky Stevens, Ph.D. - Molecular Epidemiologist
Sister Study Laboratory Director

Vicky is one of the leaders of the Anniversary Biospecimen Collection where we are collecting blood, urine and stool.

A Message from Vicky:

I am very excited to be collecting these samples because comparison of them to those collected earlier in the study will help us better understand how changes in exposures and biological processes over time affect disease risk, quality of life, and survival after a breast cancer diagnosis. Active Sister Study participants will be eligible to participate over the next couple of years. I hope you will participate in the Anniversary Biospecimen Collection when we contact you!

Favorite part of working on the Sister Study:

"As a long-time cancer researcher and a breast cancer survivor myself, I know how important this study is. My favorite part of working on the Sister Study is constantly witnessing the amazing dedication and effort put forward by all of you Sisters to discover causes of breast cancer and other women's health conditions."

Anniversary Biospecimen Collection

20TH ANNIVERSARY BIOSPECIMEN COLLECTION
THE SISTER STUDY
BREAST CANCER RESEARCH

Thank You for Your Support!

We are so grateful to everyone who has participated in the Anniversary Biospecimen Collection so far! Your continued involvement in the Sister Study is helping us deepen our understanding of breast cancer and other important women's health conditions—20 years strong and still going!

If you haven't been contacted yet, don't worry! Invitations are being sent out in phases, and many more of you will have the opportunity to participate as we continue rolling this effort out. When it's your turn, we'll reach out directly with everything you need to get started.

In the meantime, thank you again for your incredible partnership and dedication to the Sister Study. We truly couldn't do this without you!

As always, please contact us at the Sister Study helpdesk toll-free at 877-4SISTER (877-474-7837) or email us at **update@sisterstudy.org** if you have updates or questions.