

THE JOHNS HOPKINS KIMMEL CANCER CENTER

BREAST MATTERS



The Power of Partnership

2026/2027

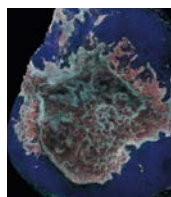
THE JOHNS HOPKINS KIMMEL CANCER CENTER

BREAST MATTERS

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The Power of Partnership
Breast Cancer Leadership



Inside the Tumor
How an Immune Cell
Drives Cancer Spread



At a Glance
Meet the Breast and
Gynecologic Cancer
Care Team



Unexpected Sources of Breast Cancer Risk
Microbes as Contributors
to Breast Cancer



Honoring Her Through Prevention
The Legacy of Brenda Cho



Detecting Breast Cancer Sooner
A Blood Test that Finds
Breast Cancer Early

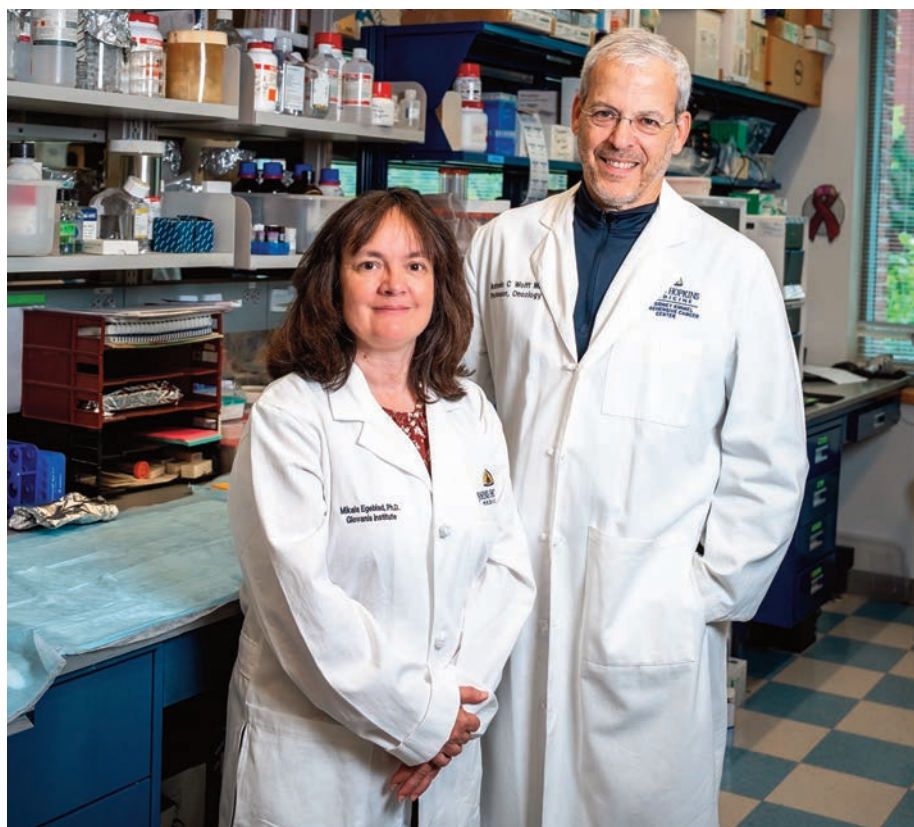


Not Too Much, Not Too Little
Smarter Breast Cancer Treatment



Ways to Give
How to Support Breast
Cancer Advances

THE POWER OF PARTNERSHIP IN BREAST CANCER LEADERSHIP



A BREAST CANCER diagnosis changes everything in an instant. For patients, it can bring fear, uncertainty, and a flood of decisions. For physicians and scientists, it brings urgency and a reminder of why their work matters.

In their new roles as co-directors of the Breast & Gynecologic Cancer Program in Oncology, **Antonio Wolff, M.D.**, and **Mikala Egeblad, Ph.D.**, are working side by side with this urgency front of mind. Their goal is to bring discovery and patient care together, so new insights benefit patients faster, treatments become more precise, and patients' lives are improved at every stage, from prevention to survivorship.

"We want every patient to feel seen beyond their diagnosis," says Dr. Wolff. "Each person brings their own story,

and every interaction is a chance to honor that and make a meaningful difference."

As a breast cancer researcher, Dr. Egeblad wants to ensure that questions asked in the lab are informed by patients.

"Patients help us understand which questions matter most, and the laboratory helps us answer these questions."

Partners in Progress

Drs. Wolff and Egeblad come from complementary worlds in breast cancer medicine, and together they share a vision to build a program in which new discoveries reach patients faster, treatments become more precise, access to effective clinical trials is expanded, and more patients live longer and healthier.

Dr. Wolff is a clinician-scientist whose work defines how breast cancer

is diagnosed and treated worldwide, including efforts to improve the testing of cancer biomarkers like HER2 so patients can receive the therapies most likely to help them. Dr. Egeblad is a laboratory scientist who has made pioneering discoveries about the tumor microenvironment's complex system of immune cells, signals, and structures that influence how cancer grows, spreads, and responds to therapy.

"No one person has all the answers. We bring complementary expertise," Dr. Wolff says. "When we push each other's thinking and sharpen our ideas, the result is far more powerful than anything we could create individually."

"Our strengths differ, but they fit together naturally," Dr. Egeblad says. "That's what makes the partnership work."

That spirit of shared leadership is the foundation of a collaborative program in which insights move between disciplines — and discovery and patient care move forward together as a single, integrated effort.

The Personal Experiences That Shaped Their Vision

For both leaders, the path to breast cancer research was personal. Dr. Egeblad's interest began when her grandmother's breast cancer returned after years of remission. Dr. Wolff's journey began in Brazil, where he entered medical school at just 17. Drawn equally to science and patient care, he found inspiration in mentors at Johns Hopkins and around the world who demonstrated both intellectual rigor and compassion.

Dr. Egeblad never forgot her grandmother's journey with metastatic breast cancer, and today, much of her research is directed at understanding how breast cancers spread and novel ways to combat this process.

“I want to look beyond the cancer cell to how the body responds to cancer and how that interaction shapes its ability to spread,” she says. “We need to better understand what roles factors like the immune system, metabolism, overall health, and stress play in fueling cancer.”

Inspired by the patients and families he served, Dr. Wolff built his career around advancing clinical trials internationally and helping shape global standards for breast cancer care. Having navigated cancer himself and been guided by generous mentors, he now feels a deep responsibility to mentor the next generation of clinicians and scientists.

Leadership in Discovery, Compassion in Care

At the Kimmel Cancer Center, collaboration among researchers and physicians was built into the culture from the day the Center opened its doors, but Drs. Wolff and Egeblad are working to deepen it.

“We want to foster an interdisciplinary environment where people are talking with each other across departments at Johns Hopkins, and ideas move easily between the clinic and the lab,” says Dr. Egeblad.

Clinical trials, which give patients access to new treatments that often later become standard of care, are the perfect reflection of the cohesion between laboratory research and clinical care.

“We are designing research studies that begin with patient needs, and building clinical trials that incorporate laboratory insights from the start,” says Dr. Wolff. “This includes expanding access to clinical trials across all Kimmel Cancer Center locations. We want patients to know that no matter where they are seen, they are part of one program.”

Taking on the Biggest Challenges

Despite decades of progress, they acknowledge that major challenges remain. Why do some cancers spread while others do not? Why do treatments stop working? How can cancer be prevented?

“We’ve made enormous progress, but we still don’t fully understand why

Insights move between disciplines — and discovery and patient care move forward together as a single, integrated effort.

patients get breast cancer or how metastasis happens. Without that knowledge, it’s hard to prevent or stop breast cancer,” says Dr. Egeblad.

However, she also points out a new, exciting frontier in breast cancer research. The breast cancer research team is increasingly focused on understanding cancer beyond the tumor itself. The team is working together to understand how factors such as the gut microbiome, metabolism, stress, and overall health shape cancer risk, progression, and response to treatment. By bringing together this work across disciplines, the program is building a more complete understanding of breast cancer, one that reflects the full complexity of the patient.

At the same time, Dr. Wolff is focused on ensuring that advances translate into better care for patients through more-precise therapies tailored to the unique features of each person’s cancer. Dr. Wolff also seeks to improve testing to detect cancers earlier and to monitor how therapies are working.

These discoveries have moved many patients with metastatic breast cancer — once thought hopeless — from the category of untreatable to longer-term survivor.

Dr. Wolff acknowledges that even as outcomes improve, the fear of breast cancer returning or spreading after an initial diagnosis of early-stage disease remains very real. “We must continue to help patients live longer and live better,” he says. “The good news is that most people diagnosed with breast cancer will survive, but we still need to lessen the burden of treatment and support patients as they transition back to full, healthy lives after breast cancer.”

To that end, he is also exploring whether some patients can safely receive less treatment. In addition, programs like the John Fetting Fund for Breast Cancer Prevention are helping expand research aimed at identifying risk earlier and how to prevent breast cancer.

Guiding the Next Generation for Breast Cancer Innovation

Both Drs. Wolff and Egeblad see mentorship as central to their roles, creating opportunities for the next generation of scientists and clinicians.

“Our role is to bring together the strongest possible team and create the conditions for each person to do their best work, to grow, and to succeed,” says Dr. Wolff.

He and Dr. Egeblad are focused on fostering a culture in which collaboration drives innovation. They also want to prepare the young physicians and scientists for a future where new technologies, including artificial intelligence, will play a growing role, while ensuring that human insight and creativity remain at the center of research and patient care.

“A lot of innovation comes from the next generation,” says Dr. Egeblad. “We need to make sure they have the support to pursue it.”

Teamwork – Two Leaders, One Mission

There is a theme that runs through every goal that Drs. Wolff and Egeblad have set for the Breast Cancer & Gynecologic Cancer Program: teamwork. Each member — clinician, scientist, nurse, trainees, and staff — brings a unique skill set. Together, they create something far more powerful than any one individual could alone.

Their vision for the program is grounded in collaboration, driven by science and centered on patients. For the patients and families who come to the Kimmel Cancer Center, this focus brings the promise of accelerated discovery, expanded access to clinical trials, delivery of more precise treatments and, one day, a future where breast cancer is no longer a life-altering diagnosis.

AT A GLANCE

Meet the Team Shaping the Future of Breast and Gynecologic Cancer Care

The Johns Hopkins Breast & Gynecologic Cancer Program brings together world-leading clinicians, scientists, nurses, and patient advocates to deliver state-of-the-art care and transform how cancer is detected, treated, and survived.



Armstrong



Visvanathan

Deborah K. Armstrong, M.D., is a professor of oncology, gynecology, and obstetrics and an internationally recognized leader specializing in breast, ovarian, and other gynecologic cancers. Along with **Kala Visvanathan, M.B.B.S., M.H.S.**, Dr. Armstrong and their team of genetic counselors study genetic risk factors, early detection, and risk-reduction strategies for high-risk patients.



Jenna Canzoniero, M.D., is an assistant professor of oncology focused on improving outcomes for people with breast cancer through molecular diagnostics such as liquid biopsy. Using emerging technologies, she can tailor the amount and type of therapy a patient requires, further personalizing targeted treatments when cancer metastasizes or spreads.



Couzi



Kalra

Rima J. Couzi, M.B.B.Ch., M.H.S., and **Maitra Kalra, M.B.B.S.**, are breast cancer physicians at the Kimmel Cancer Center Green Spring Station location, bringing expertise in diagnosis, treatment, and long-term patient management closer to home.



Mikala Egeblad, Ph.D., Bloomberg Distinguished Professor of Tumor Microenvironment and professor of oncology and cell biology, is co-director of the Breast & Gynecologic Cancer Program. She is an international leader on how the tumor microenvironment and the immune system influence therapy response and metastasis.



Stephanie Gaillard, M.D., Ph.D., is an associate professor of oncology specializing in the treatment of gynecologic cancers. Her research examines the immune environment and mechanisms of resistance to current therapies, translating her findings into more effective patient care.



Daniele Gilkes, Ph.D., is an assistant professor of oncology investigating how breast cancer cells spread and survive in organs such as the lungs, bones, liver and brain. By identifying the stress-adaptation “survival tools” the cancer cells use, her work is uncovering new therapeutic targets to prevent or treat metastasis.



Prowell



Houck

Tatiana Prowell, M.D., and **William Houck, III, M.D.**, at the Skip Viragh Outpatient Cancer Center on our East Baltimore campus and **Solmaz Sahebjam, M.D.**, at our Sibley Memorial Hospital location in D.C., offer a second-opinion consultative service for patients with breast cancer.



Sahebjam



Jill Mull is a patient navigator and adviser to the John Fetting Fund for Breast Cancer Prevention. As a survivor herself, she guides patients through the breast cancer care continuum by helping them understand their diagnosis, navigate appointments, and access resources.



Cesar Santa-Maria, M.D., is an associate professor of oncology who serves as both a primary oncologist and consultant for patients across all stages of breast cancer. His research focuses on developing new treatment strategies, with particular emphasis on immunotherapy and novel therapeutics.



Elizabeth Saylor is a patient navigator who supports patients living with and surviving breast cancer, with a focus on women with metastatic disease. As a survivor herself, she connects patients and families to resources that ease the emotional and financial impacts of cancer, allowing patients to thrive.



Dipali Sharma, Ph.D., is a professor of oncology who researches obesity, racial disparities and imbalance of gut bacteria. Her work is uncovering how these factors influence cancer risk and progression, paving the way for new prevention strategies and more personalized treatments.



Simard



Laslett

Jillian Simard, M.D., Nicole Laslett, D.O., Amanda Walker, M.D., and Aanika Warner, M.D., provide expert breast and gynecologic cancer care at Sibley Memorial Hospital. Together, they help patients in the National Capital Region access cutting-edge treatments and clinical trials, and receive Johns Hopkins care closer to home.



Walker



Warner



Jenni Sheng, M.D., is an assistant professor of oncology focused on reducing treatment side effects, improving cardiometabolic health, and advancing patient education. Her work includes studying nutritional interventions, such as water-only fasting, during chemotherapy, and leading a cardiometabolic screening program for early detection of diabetes. She was recently named a Fetting Fund Scholar.



Sara Sukumar, Ph.D., is a professor of oncology who develops highly sensitive and advanced blood tests to detect cancer DNA earlier and more accurately. Her work is advancing rapid, affordable detection approaches that can be used in low- and middle-income countries, expanding access to care worldwide.



Jessica Tao, M.D., is an assistant professor of oncology who leads a clinical-translational program to develop novel therapies for breast cancer. She focuses on identifying molecular drivers of disease, overcoming endocrine resistance in estrogen receptor-positive (ER+) breast cancer, and advancing the use of liquid biopsy for early detection and disease monitoring.



Antonio Wolff, M.D., is a professor of oncology and pathology, Breast Cancer Research Chair in Oncology, and co-director of the Breast & Gynecologic Cancer Program. An internationally recognized leader in breast cancer, his research has been pivotal to improving the quality of breast cancer diagnosis and treatment, particularly with the HER2+ subtype.

HONORING HER THROUGH PREVENTION

The Legacy of Brenda Cho Lives On

BRENDA CHO was an active and energetic wife and mother of a 2-year-old and 4-year-old when she was diagnosed with breast cancer in March 2015. The news seemingly came out of nowhere. There were no warning signs, no family history, and she was much younger than the average age of someone with breast cancer. Worse yet, at diagnosis, the cancer was already advanced. Brenda fought courageously, but the cancer took her life in 2019 at just 41

years old. The tragic loss rocked Brenda's entire family.

Her identical twin sister Elena took it particularly hard.

"She was so generous in spirit and showed so much kindness to people. Her kids were her main priority. She loved life. If anyone deserved a long life full of experiences and joy, it was Brenda," says Elena.

Brenda's oncologist was Dr. **John Fetting**, a champion of breast cancer

prevention, and the inspiration behind the John Fetting Fund for Breast Cancer Prevention. The Fetting Fund was established in 2010 by Leslie and Tom Ries, and many other generous donors, and its impact continues today.

Brenda was an avid supporter of the Fetting Fund from the start.

"Breast cancer prevention is very important to me as a mother and a sister," she said in 2016, speaking at a Fetting Fund event. "I'd love to find a cure, obviously, but I'm also focused on meaningful ways to prevent people from getting a breast cancer diagnosis."

Her sisters remembered her desire to support the Fetting Fund. This year, the Cho family made the largest gift to date for the next iteration of the Fetting Fund, an endowed professorship for Breast Cancer Prevention. One of the most powerful ways to drive progress in medicine, the endowed professorship will create a permanent breast cancer prevention research program at Johns Hopkins.

"We want the light of Brenda to go on forever," says her sister Amanda.



From left, sisters Elena, Amanda, Lenore and Brenda



NOT TOO MUCH, NOT TOO LITTLE

Smarter Breast Cancer Treatment

BREAST CANCER medical oncologist Cesar A. Santa-Maria, M.D., M.S.C.I.,



is rethinking the “one-size-fits-all” approach to treatment of aggressive triple-negative breast cancers, leading studies designed to make treatment more individualized, precise, and guided by the early response of each tumor. The goal is to change breast cancer care so it is adapted based on how the tumor responds, part of a broader effort to tailor care to each patient’s biology.

Triple-Negative Breast Cancer: The NeoADAPT Study

Triple-negative breast cancer presents a unique challenge because it lacks three common treatment targets: estrogen receptors, progesterone receptors, and HER2. As a result, hormone therapies and HER2-targeted drugs are not effective.

The current standard-of-care therapy for triple-negative breast cancer calls for an intensive six-month course of four chemotherapy drugs combined with an immunotherapy drug given before surgery. While the combination improves outcomes — raising complete response rates (no sign of the cancer) from about 55% with chemotherapy alone to 63% with chemo plus immunotherapy — it can also take a serious toll. Nearly 80% of patients experience significant side effects.

“We are likely overtreating some patients,” says Dr. Santa-Maria. “Conversely, we are undertreating others, particularly those whose cancer remains after treatment and is likely to come back.”

“It’s really about achieving that ‘Goldilocks’ balance. Not too little, not too much, but just right and centering on the needs of each patient.”

Finding the right balance between too much treatment and too little is the focus of a new clinical trial he is leading, called NeoADAPT, funded in part by Conquer Cancer Foundation, the Breast Cancer Research Foundation, and Susan G. Komen for the Cure.

Dr. Santa-Maria and his colleagues are testing a new strategy, which uses advanced imaging and blood-based biomarkers to see early on how cancer responds. This may allow many patients to safely receive less treatment, reducing side effects without compromising effectiveness.

After three months of the standard chemotherapy and immunotherapy, participating patients undergo an MRI. If the MRI shows no remaining tumor, patients proceed to surgery. If pathology of the tissue removed during surgery confirms there is no remaining cancer, these women can skip the final three months of chemotherapy. If MRI or pathology detects remaining cancer, patients continue with the standard full course of chemotherapy.

“The idea is to adapt treatment to how the tumor is actually responding,” explains Dr. Santa-Maria. “If we can identify early on who’s doing well, we can spare them the toxicity of more treatment. If we see signs a tumor

isn’t responding, we can change direction sooner.”

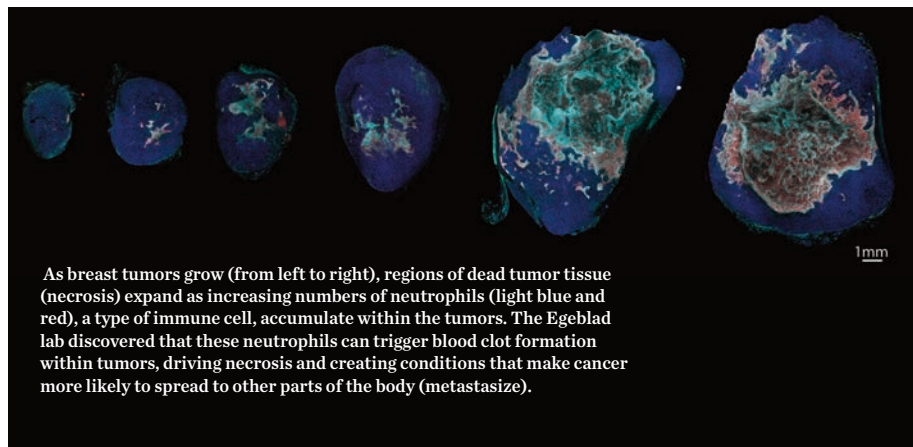
In addition to MRI, the trial incorporates PET scans performed after just one and three weeks of therapy. PET scans “light up” areas of active tumor, and decreases in signal intensity may be a very early sign that treatment is working, Dr. Santa-Maria explains.

Dr. Santa-Maria’s team is also exploring the value of combining PET imaging with liquid biopsy, a simple blood test that detects traces of tumor DNA circulating in the bloodstream (ctDNA). These ctDNA levels should fall if a tumor is responding well to treatment and vanish if the tumor disappears.

“We’re looking for complete clearance of ctDNA early on to help identify patients who may require less treatment,” he says. “It’s really about achieving that ‘Goldilocks’ balance,” he says. “Not too little, not too much, but just right and centering on the needs of each patient.”

INSIDE THE TUMOR

How an Immune Cell Type Drives Blood Clots and Cancer Spread



ONE OF THE most puzzling features of cancer is that large areas of dead tumor, called necrosis, are not necessarily a good thing, but often a sign of aggressive disease. Scientists long believed that necrosis reflects tumors growing so quickly that they outpace their blood supply, leaving their core starved of oxygen and nutrients. Because necrosis is linked to more aggressive disease, understanding how it forms could open new ways to slow cancer progression.



Now, a new study led by **Mikala Egeblad**, Ph.D., co-director of the Breast & Gynecologic Cancer Program and Bloomberg Distinguished Professor, paints a very different picture, one that shifts necrosis from a passive event to an active and potentially targetable process.

Using tumor samples from patients with triple-negative breast cancer and laboratory models, Dr. Egeblad and her team found that blood clots that form inside tumor

blood vessels trigger necrosis and may even help cancer spread. This work reflects the program's broader effort to connect clinical observations, such as tumor necrosis, with laboratory discoveries and translational research. The goal is to accelerate the development of new therapies for patients at the bedside.

A Surprising Culprit: Neutrophils

At the heart of these discoveries are neutrophils, the most common type of immune cell. They are the body's first responders when there is an infection or injury. Neutrophils rush from the bloodstream into tissue, release tiny enzyme-filled particles that help kill microbes and then expel a sticky mesh of DNA and toxins that traps pathogens. These webs are called neutrophil extracellular traps, or NETs, and the research team found that they can also block blood flow inside tumors.

When neutrophils release these sticky webs inside tumor vessels, they can clog the arteries and veins that

carry blood. Platelets, the blood cells involved in clotting, stick to NETs and become activated. They then recruit even more neutrophils and platelets, explains Dr. Egeblad. The result is a cascade of clot formation that cuts off circulation within the tumor and creates the necrotic zones seen in many aggressive cancers.

Why do neutrophils not trigger clots in healthy people? Dr. Egeblad and colleagues discovered that the tumor signals the immune system to produce a previously unrecognized type of neutrophil. Unlike normal neutrophils that exit blood vessels to fight infection, these neutrophils remain trapped inside tumor vessels, where they form NETs.

Necrosis As a Driver of Cancer Spread

Beyond being a marker of aggressive disease, necrosis reflects that tumor regions have been starved of oxygen. This creates conditions that can drive cancer cells out of the primary tumor, spreading to other parts of the body in a process known as metastasis, says Dr. Egeblad.

"When we target the NETs or neutrophils, the necrotic regions that still develop are much smaller, as are the oxygen-starved regions. This reduces the spread of cancer in laboratory models," she says.

This discovery opens the door to a new way of thinking about necrosis and to targeting clot-driving neutrophils and the NETs they form to slow or even prevent cancer spread. Ongoing research is focused on understanding how these processes work and translating these insights into new therapies for patients.

UNEXPECTED SOURCES OF BREAST CANCER RISK

WHEN IT COMES to breast cancer, researchers have long known the usual suspects. Age, family history, and inherited gene mutations, such as BRCA1 and BRCA2, are among the unchangeable risk factors. Others, including obesity, lack of physical activity, alcohol or tobacco use, and exposure to environmental toxins, are considered modifiable, meaning women may be able to reduce their risk by changing certain behaviors.

Yet these factors tell only part of the story.

Some women carrying the strongest known genetic risk factors never develop breast cancer, while others with no apparent risk receive a



diagnosis. For cancer prevention researcher and Fetting Fund Scholar **Dipali Sharma, Ph.D.**, those unexplained cases pointed to an important question.

“Clearly, there are other factors at play,” says Dr. Sharma. “We knew we had to look beyond the established risks if we truly wanted to understand who is most vulnerable and how we can prevent this disease.”

Gut Bacteria as a Suspect

Over the past several years, Dr. Sharma and her colleagues have uncovered evidence that an unexpected contributor may be microbes that normally reside in the body. Their growing body of work suggests that certain bacteria found in the gut, mouth and even breast tissue may help initiate or accelerate breast cancer by triggering inflammation, damaging DNA and altering tumor behavior.

The research began with seed funding from the Fetting Fund for Breast Cancer Prevention, which supported one of Dr. Sharma’s earliest high-risk, high-reward ideas—investigating whether bacteria previously linked to gastrointestinal disease might also influence breast cancer.

Dr. Sharma and team discovered that enterotoxigenic *Bacteroides fragilis* (ETBF), a microbe previously linked to chronic diarrhea and colon cancer, was also present in malignant breast tissue. The finding opened a new area of investigation for Dr. Sharma as she looked to see if the bacterium plays a role in breast cancer initiation or growth.

In a series of laboratory experiments, the team received international attention when it discovered that when ETBF was introduced to the gut or breast ducts of mice, it consistently induced growth and metastatic progression of tumor cells. Those surprising findings prompted the researchers to ask whether ETBF was only one member of a much larger group of microbes capable of influencing breast cancer.

Beyond the Gut

In subsequent studies, Dr. Sharma’s laboratory found that *Fusobacterium nucleatum*—an oral bacterium commonly associated with periodontal disease—can travel through the bloodstream, colonize breast tissue and promote inflammation, DNA damage, tumor growth, and metastasis. The effects were especially pronounced in breast cells carrying BRCA1 mutations, which retained the bacteria longer and accumulated greater DNA damage,

suggesting oral microbes may work together with inherited genetic risk factors to promote more aggressive disease.

A Common Thread

More recently, the team uncovered a common biological mechanism linking several pathogenic microbes to breast cancer. They found that ETBF, *Fusobacterium nucleatum* and toxin-producing *Escherichia coli* all activate spermine oxidase (SMOX), a metabolic enzyme that damages DNA and fuels tumor growth. The bacteria also trigger inflammatory molecules that further amplify SMOX activity, creating a self-sustaining cycle of inflammation and genetic instability.

Perhaps most encouraging, the researchers demonstrated that blocking SMOX with experimental drugs dramatically reduced DNA damage, slowed tumor growth and decreased cancer spread in laboratory models, even in the presence of cancer-promoting bacteria. The findings suggest that targeting SMOX could become a new strategy for preventing or treating breast cancers associated with microbial imbalance.

Investing in Prevention

“Projects like these often face steep hurdles at major funding agencies like the NIH, where highly innovative but untested ideas can be difficult to push through,” Dr. Sharma says. “The Fetting Fund gave us the opportunity to take that first step, generate the evidence we needed and build a research program that continues to uncover entirely new ways microbes may influence breast cancer.”

DETECTING BREAST CANCER SOONER

FOR DECADES, mammography and biopsy have been the mainstays of breast cancer detection. Although they are essential, lifesaving tools, there is room for improvement. 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.

“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 **Jenna Canzoniero, M.D.**



Canzoniero

A new effort known as Team Early, supported by the Fetting Fund for Breast Cancer Prevention, brings together Dr. Canzoniero, **Jessica Tao, M.D., Emily Ambinder, M.D., Jill Phallen, Ph.D.**, and colleagues in cancer biology, pathology, public health, and bioinformatics to pursue an innovative new way to detect breast cancer in its earliest stages, all from a small sample of blood.



Tao

Their work centers on DELFI, a type of specialized blood test known as a liquid biopsy, developed by Kimmel Cancer Center researchers Dr. Phallen, **Victor Velculescu, M.D., Ph.D.**, and others. DELFI uses artificial intelligence to analyze patterns in the DNA shed into the bloodstream. When DNA is released from a cell and shed into the bloodstream, it is broken into smaller pieces, called fragmentation. However, the process of fragmentation is not random.



Phallen

“Imagine trying to chop a rope into pieces, but in some places, parts of the rope are wrapped around large rocks. The places where the rope is wrapped around rocks would not get chopped up, resulting in a specific fragmentation pattern. A similar process happens with DNA,” explains Dr. Canzoniero.



Ambinder

Research has shown that DNA fragmentation patterns differ between healthy, normal cells and cancer cells. DELFI takes advantage of these differences to identify a DNA fragmentation profile indicative of cancer.

Team Early’s goal is to develop a blood-based test that can reliably distinguish women with breast cancer from those who do not have cancer. They continue to advance DELFI to make it even better at detecting breast cancer.

Team Early has opened a clinical study that is gathering samples from patients to help develop this new breast cancer-specific test. Any patient without a prior breast cancer diagnosis may participate, whether a healthy volunteer coming in for a routine mammogram or a patient having a biopsy for a suspicious finding. Additionally, patients who are newly diagnosed with breast cancer but have not yet received any treatment are also eligible. Participants provide a simple blood sample, which researchers then use to develop the test to identify breast cancer.

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 Green Spring Station.

“Launching such an ambitious project would have never been possible without the support of the Fetting Fund,” says Dr. Tao. “We rely on philanthropic support to advance our research.”

Since beginning their research, Team Early has successfully competed for additional grants, 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, helping to ensure the work continues and expands.

The team expects to generate results from its first blood test by the end of 2026, and with additional research, they are hopeful that the test could one day complement mammography or even be incorporated into routine bloodwork, such as cholesterol screening.

Patients interested in learning more about the study may email Early_Info@jh.edu.



THANK YOU

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To learn more about how your gift advances our mission, please contact Jocelyn Kantor, Senior Associate Director of Development, at 443-845-5586 or jkantor6@jh.edu.

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