

BREAST CANCER PROGRAM

Supporting advanced research and compassionate patient care for our community.

Breast cancer is the most commonly diagnosed cancer globally. According to data from the American Cancer Society and the National Cancer Institute, nearly 380,000 people were diagnosed with breast cancer in 2025 in the United States alone. At Michigan Medicine, we are driven to improve the quality of life for people affected by this disease. Led by a collaborative spirit and dedicated scientists and researchers, our premier team of experts is advancing precision medicine, personalized care, and innovative research. Novel, holistic approaches to the patient experience and survivorship continue to drive clinical excellence and are having an impact in our communities and around the world.

REFINING PRECISION MEDICINE AND PERSONALIZED CARE

Decades of research show that each person's breast cancer journey is unique and could benefit from treatment that is just as unique. **Erin Cobain, M.D.**, clinical associate professor of internal medicine, is focused on precision medicine and delivery of care that is informed by tumor molecular profiling. Occasionally, tumors undergo a molecular change that opens up additional treatment options. Dr. Cobain's work aims to understand these changes within tumors at the DNA and RNA level and select therapies that have the highest potential for success. Molecular testing of tumors spearheaded by Dr.

Cobain ensures potential treatment options are not overlooked. By utilizing MatchMiner, an AI-assisted tool designed to analyze tumor molecular data, Dr. Cobain has the critical ability to quickly determine if a patient is a match to a molecularly targeted clinical trial and potentially save lives.

Sofia Merajver, M.D., Ph.D., the GreaterGood Breast Cancer Research Professor, professor of internal medicine and epidemiology, is the medical director of the Breast and Ovarian Cancer Risk Evaluation program at the University of Michigan Health Rogel Cancer Center. Dr. Merajver studies brain metastasis and works tirelessly to understand drug-resistant metastasis at a cellular and molecular level in multiple types of cancers. To do so, Dr. Merajver uses Patient-Derived Xenografts (PDX), a crucial cancer research model where a patient's tumor tissue is implanted into immunocompromised mice. Using PDXs enables our scientists to test multiple treatments in the mouse model before treating a patient, safely guiding personalized medicine.

Dr. Merajver's lab is also home to one of the largest collections in the world of breast-to-brain metastasis samples. Using these valuable resources, her team is exploring new combination therapies for aggressive, triple-negative, and inflammatory breast cancer to attack brain metastasis, noting, "Whatever we





Erin Cobain, M.D.



Sofia Merajver, M.D., Ph.D.



Dan Hayes, M.D.



Lynn Henry, M.D., Ph.D.

discover in breast-to-brain metastasis could apply to other types.”

The broad application of similar scientific discoveries can save lives. In 1985, the risk of a woman dying of breast cancer in the United States was twice the level it is today. **Dan Hayes, M.D.**, professor emeritus of internal medicine, notes the vital importance of screening, as well as applying better therapies earlier. Dr. Hayes studies liquid biopsies, a process by which whole cells are extracted from blood. Current technology allows Dr. Hayes to see cancer cells alongside red and white blood cells. By isolating the cancer cells from the blood cells, we can sequence the DNA for hundreds of different genes with mutations that are important for identifying cancer. Tracking these data before, during, and after treatment of metastatic cancers will help guide therapy decisions and patient care into the future. Today, most women with metastatic breast cancer are living longer and living better, thanks to scientific advancements that are the result of philanthropy. Dr. Hayes says, “It’s all happened because of research,

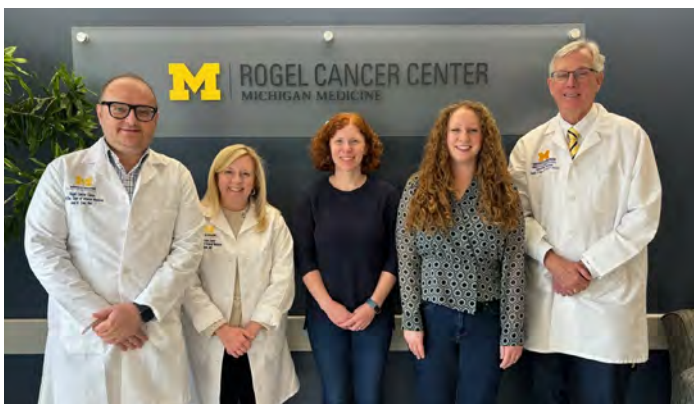
which is only possible because of our donors.”

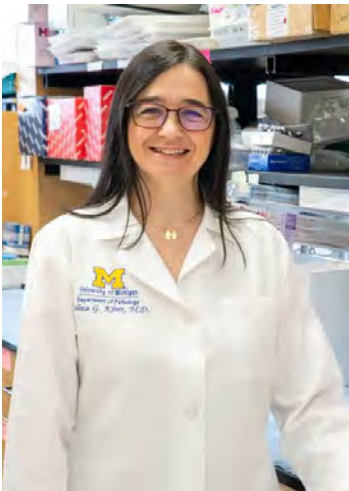
The breast cancer research that is essential to saving lives leads to the optimization of patient care. **Lynn Henry, M.D., Ph.D.**, the Daniel F. Hayes, M.D., Breast Cancer Research Professor, professor of internal medicine and associate division chief for clinical research, focuses on finding the optimal dose of medication with the fewest side effects. Dr. Henry says, “We want to support women in the decisions they make about their health and treatment.” By scouting ways of minimizing the toxicity of aromatase inhibitors and the efficacy of acupuncture versus acupressure, as well as establishing an innovative system of remote symptom monitoring with weekly symptom check-ins, Dr. Henry can catch changes in health sooner and ultimately keep more people on their treatment plans.

Dr. Henry recognizes the importance of philanthropy in medicine, saying, “The patient is at the heart of everything we do, and your support is the gift that keeps on giving.” Because of you, we can prioritize groundbreaking clinical trials, get new ideas off the ground, and care for the patient throughout their cancer journey with unique, leading-edge treatment options.

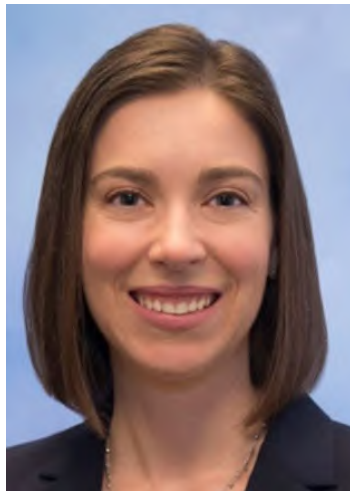
ACCELERATING DISCOVERIES

Celina Kleer, M.D., the Harold A. Oberman Legacy Professor of Pathology, and program director of clinical research, works in breast cancer invasion, where cancer cells break through the tissue wall of the primary tumor and metastasis. Invasion is the





Celina Kleer, M.D.



Monika Burness, M.D.



Catherine Van Poznak, M.D.



Aki Morikawa, M.D., Ph.D.

process of cancer cells growing into nearby tissues, while metastasis is the spread of those cells through the bloodstream or lymph system to form new tumors.

Dr. Kleer is studying the epigenetic regulator, EZH2, which regulates cell type identity, or what a cell is going to be. Published in 2003, it was found that EZH2 was often upregulated in invasive breast carcinomas. Since then, Dr. Kleer and her colleagues have discovered mechanisms by which EZH2 promotes invasion and metastasis in breast cancer.

Dr. Kleer is also investigating how the tumor microenvironment affects breast cancer aggressiveness by first establishing co-cultures of breast cancer cells and stromal cells, diverse connective tissue cells that form the structural framework of organs. She found that a subset of breast cancer cells can engulf, or phagocytize, stromal cells, becoming more invasive and more metastatic. Dr. Kleer is examining the possibility of blocking this process to prevent tumors from becoming aggressive. The exciting research from Dr. Kleer’s lab aims to fill gaps in knowledge that have translational potential through prognostic and predictive markers, as well as treatment. Speaking about her commitment to this challenging research, Dr. Kleer says, “My dedication to this research comes from each case I see.”

Recognizing the importance of research, **Monika Burness, M.D.**, clinical assistant professor of internal medicine, focuses her efforts on cancer stem cell-targeted therapies and DNA damage. Her lab is researching a new drug developed at Michigan Medicine that targets proteins called BET proteins. Philanthropic support from you has allowed the lab to apply cutting-edge science techniques such as spatial transcriptomics, a detailed way to study how a drug affects cells in a tumor. Guided by findings from her lab, Dr. Burness has developed clinical trials testing drugs that are approved for other diseases to see if they work in breast cancer. Her trials include collecting blood specimens from patients to test for cancer cells in the lab, a non-invasive way to see if the treatment is working. Dr. Burness says, “Going between the lab and the clinic allows us to test promising therapy combinations and more quickly improve treatments.”

Exciting research and trailblazing discoveries go hand-in-hand at Michigan Medicine. **Aki Morikawa, M.D., Ph.D.**, clinical associate professor of internal medicine, is interested in the survivorship of metastatic patients and discovering ways to provide the highest quality of life. She analyzes central nervous system metastasis, or the process of cancer cells breaking away from a primary tumor, like in the breast or lung, through the bloodstream to form

“Giving our experts the opportunity to do the work is the most important gift that someone can give.”

- Catherine Van Poznak, M.D.

“Complex problems require complex solutions.”

- Lori Pierce, M.D.



Lori Pierce, M.D.



Melissa Pilewskie, M.D.



Lesly Dossett, M.D.

new tumors in the brain, spinal cord, or surrounding membranes. These metastases are especially dangerous, in part because we don't completely understand how they form. Dr. Morikawa used two lab-based models that mimic key features of the brain environment: one recreated the blood-brain barrier, and the other measured how cancer cells move. These models showed that certain signals released by the brain attract cancer cells. Dkk-1, a protein released by brain cells called astrocytes, encourages cancer cells to move, and can then impact genes linked to movement and survival. "To understand something like this, you have to have a team of people who want to work together," says Dr. Morikawa. You are part of our team.

ENHANCING PATIENT EXPERIENCE AND SURVIVORSHIP

Our team is focused on improving quality of life during and after treatment through risk reduction and supportive care. **Lori Pierce, M.D.**, professor of radiation oncology and adjunct professor of nursing, says, "All of the work that I do has been inspired by the needs of the patients I see in the clinic every day." By focusing on improving the quality of life during radiation therapy, Dr. Pierce explores unconventional approaches to treatment, including understanding that some patients would benefit more from the absence of radiation. "Complex problems require complex solutions," says Dr. Pierce. To explore this approach, Dr. Pierce has an interest in developing radiation genomic classifiers that can incorporate the biology of the tumor as well as a radiation sensitivity factor. Her team has developed two genetic classifiers in conjunction with researchers in Scotland

and Sweden: Polar (potentially no radiation at all) and Arctic (more intensive). Both are being studied in Scandinavia to test how predictive they can be for radiation outcomes.

Closer to home, **Melissa Pilewskie, M.D.**, clinical associate professor of surgery and ambulatory care clinical chief, is a breast surgical oncologist examining breast cancer risk and risk reduction. Dr. Pilewskie heads a clinical research program that focuses on offering clinical trials with novel options for risk reduction. Exploring ways to minimize the morbidity of treatments offered to patients, her work looks at topical medications, dosages, and lifestyle changes to improve survivorship. Thanks to your support, Dr. Pilewskie's team has recently hired a full-time clinical advanced practice provider to follow high-risk individuals, expanding our ability to enroll patients in clinical trials that will help us understand optimal options for breast cancer prevention, and ultimately provide the best evidence-based care. "This is truly a game changer both for patient care and my ability to work in this area," she says.

RAISING THE STANDARD

There is no shortage of strong, passionate leadership at Michigan Medicine. **Lesly Dossett, M.D.**, the Maud T. Lane Research Professor of Cancer Quality Improvement, professor of surgery, chief of the division of surgical oncology, and deputy director for clinical innovation and engagement at the Rogel Cancer Center, aims to address the leadership challenge of how to best support her team to provide the highest quality of care for our patients. Improving cancer care quality and value is her direction, starting



Janet Bailey, M.D.



Anne Schott, M.D.

with reducing the use of unnecessary tests and treatments before surgery to improve value. In most situations, tests like EKGs, as well as blood and urine tests, are unnecessary and inconvenient for the patient. By treating the unseen complications from treatment, Dr. Dossett can ease the hidden burden of receiving care.

Dr. Dossett is also working in partnership with the American College of Surgeons (ACS) to measure the downstream effect on cancer care programs from increased quality standards from the Commission on Cancer (COC). Sponsored by the ACS, the COC is the largest cancer care accreditation body in the U.S., accrediting over 1,500 hospitals, including Michigan Medicine, and is seen as a marker of high-quality cancer care. They write and implement the quality standards required for accreditation, and recently launched an ambitious quality improvement initiative to standardize surgical technical quality, as well as reporting — a massive administrative task. Dr. Dossett employed her initiative and commitment to her team and our patients by writing a grant to the National Cancer Institute to evaluate the quality of this program. If the improvements now required by the COC are effective in improving quality, there is the potential to scale that to other types of surgery.

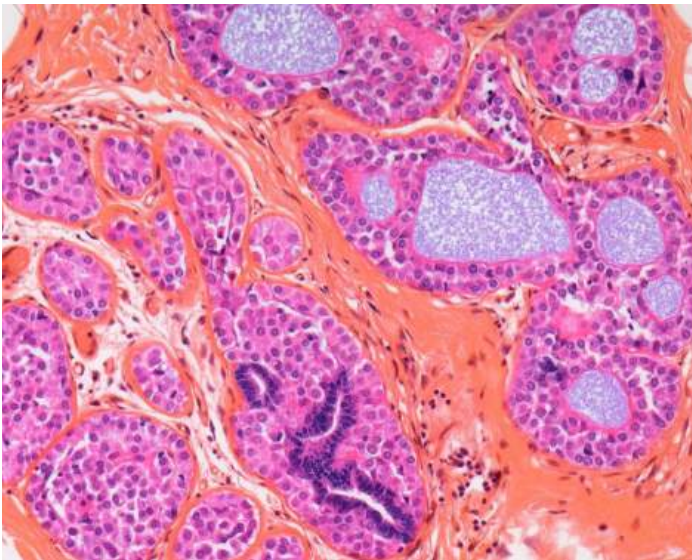
Leveraging leadership and collaboration to save lives is an important focus for **Janet Bailey, M.D.**, the Trygve O. Gabrielsen Legacy Professor of Radiology, associate chair of radiology education, and section head of breast imaging. Dr. Bailey’s clinical work as a radiologist is centered around interpreting breast

imaging like ultrasound, mammography, CT, and MRI. Her passion for patients and her team rings loud when she emphasizes their enthusiasm and drive to care for one another, saying, “We have a victory every single day.”

As a breast cancer medical oncologist, **Anne Schott, M.D.**, clinical professor of internal medicine and the IRB vice chair, applies the same enthusiasm for providing excellent care. Dr. Schott says, “This hospital is an exemplary one where we can do things that can’t be done elsewhere.” Dr. Schott is a principal investigator on clinical trials that are developing new medications for treating hormone-receptor-positive metastatic breast cancer. Understanding that the time window for clinical trials is incredibly small, and being able to provide better access for patients seeking clinical trials, Dr. Schott knows her team needs to move fast to take advantage of some of the most exciting new therapies being developed, offering improved outcomes for our patients. Some of the newest treatment recommendations are evolving in ways that lead physicians to do less and achieve the same outcomes. Dr. Schott leverages our passionate philanthropic community to support young investigator projects and encourage the next generation of scientists as they carry the torch of medicine into the future for the benefit of our patients and their families.

MENTORSHIP AND LASTING IMPACT

As a leader, Dr. Burness highlights the importance of research opportunities for junior scientists. In highly competitive fields, young scientists and researchers



could have their entire careers made because of the availability of these opportunities. Those essential chances prevent entire generations of knowledge from being lost. The collaborations formed during early career years often yield decades of unexpected results, such as Dr. Kleer’s international collaboration with the University of Calabria in Italy. Dr. Kleer recalls the leadership during her early days of research at Michigan Medicine, saying, “They really gave me an opportunity.”

Michigan Medicine is currently the only institution in Michigan that offers studies looking at different medications and doses for breast cancer risk reduction. Partners like you provided the resources to hire clinical research associates who helped manage the projects. Improving patient care and access to clinical trials has been a focal point at Michigan

Medicine for years. Dr. Pilewska noted that her first study took over 14 months to get approved, resulting in fewer patients being enrolled. Thanks to you, clinical trials are now opening in just four months on average. You are the catalyst for saving lives.

WITH GRATITUDE

Your support has an immediate impact on the quality of life for everyone who enters our doors.

As the revolutionary science being developed and perfected at Michigan Medicine enables life-saving treatment, clinical trial access, and increased survivorship resources, we are already impacting the lives of people with breast cancer. Together, we are inspiring hope for the future.

Thank you for believing in us.



ROGEL CANCER CENTER
UNIVERSITY OF MICHIGAN HEALTH

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