

For your physician

The Metastatic Breast Cancer Project is a research study being launched and funded by the Broad Institute of MIT and Harvard, a nonprofit academic research institution whose mission is to dramatically accelerate the understanding and treatment of disease. The study is being conducted in collaboration with Dana-Farber Cancer Institute as well as our advocacy partners. With this project, we are exploring a new approach to genomics research in which we partner directly with patients with metastatic breast cancer in order to speed important discoveries.

If you have any questions about this study, please reach out to us at info@mbcproject.org or 617-800-1622.

Over the past decade, genomic characterization of tumors has shed enormous light on the molecular underpinnings of cancer. These discoveries have led to the development of novel therapies and preventive measures that have already revolutionized cancer care. Despite this progress, the genomics of metastatic breast cancer, one of the leading causes of cancer death in the U.S., remains poorly understood.

The types of questions we strive to answer include:

- What are all the genes and mutations that can lead to metastatic breast cancer?
- What explains why some patients show extraordinary responses to a particular treatment?
- What explains why some tumors never respond to a particular treatment?
- What genetic changes explain why some tumors initially respond to therapy but later recur and metastasize?
- What are all the genes that can lead to developing metastatic breast cancer at a young age?
- How can we develop better treatments for metastatic breast cancer?

Despite the progress that has been made to begin to answer these questions, we remain far from the goal. To get there, the detailed genomic characterization of many thousands of clinically annotated cancer samples will be required.

The challenge in studying tumor samples from patients with metastatic breast cancer has been that the tumors from most patients are not available for research, largely because the vast majority of patients are cared for in community settings where genomics studies are not typically conducted. To address this, we have launched a nationwide study, The Metastatic Breast Cancer Project, which seeks to empower patients to accelerate cancer research through sharing their samples and clinical information. We have developed an outreach program in collaboration with a number of metastatic breast cancer advocacy organizations to connect metastatic breast cancer patients around the country with genomics research performed at the Broad Institute, allowing them to participate regardless of where they live.

Working with metastatic breast cancer patients and advocates, we designed a website (<http://www.mbcproject.org>) with an online questionnaire that allows patients with metastatic breast cancer to provide information about themselves and their cancer. Based on their answers, patients may be offered an electronic consent form that explains the risks and benefits of the study and asks for permission to obtain a portion of their stored tumor tissue, a saliva sample, and copies of their medical records. For patients who consent, our clinical research team will contact their physicians to request copies of their medical records, which will be reviewed by our study team to confirm eligibility. Enrolled patients are sent a saliva kit and asked to mail back a saliva sample, which is used to extract germline DNA. The clinical research team also contacts the patient's pathology department and requests a portion of the tumor to be sent to the Broad Institute for genomic analysis. We will ask pathology departments to share only a part of the tumor tissue, and not to share anything with us that might be needed for clinical care. Next generation sequencing (whole exome and transcriptome sequencing) is performed on tumor and germline DNA. Sequencing data are linked to de-identified clinical information, and the resulting data are used to identify drivers of tumorigenesis, mechanisms of response and resistance to therapies, and diagnostic, prognostic, and therapeutic biomarkers. The database of clinically annotated genomic information will be shared with the NIH and the cancer research community. Study updates and discoveries are shared at regular intervals with all patients who complete the initial questionnaire.

This direct-to-patient approach should be particularly enabling for the identification of patients with rare phenotypes or clinical behavior. For this reason, the first cohorts being studied are patients with extraordinary responses to therapies and patients who present with de novo metastatic breast cancer. Additional cohorts will be added in the future, including young women with metastatic breast cancer and patients with drug-resistant metastatic breast cancer. This project seeks to establish a patient-researcher partnership to accelerate genomic discoveries and improve outcomes in metastatic breast cancer, and may ultimately serve as a means to build a new clinical and translational research model for all patients with cancer.

The Metastatic Breast Cancer Project is a collaboration between these institutions

