

SUMMER 2018 Volume 21 | Issue 3

Impact

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THANKING THOSE WHO MAKE A DIFFERENCE



Gray Foundation seeds research on non-surgical breast cancer risk reduction

Jon Gray, president and chief operating officer of Blackstone, one of the world's leading investment firms, and his wife, Mindy, recently awarded \$1.5 million to fund an important collaboration between Dana-Farber and Harvard Medical School aimed at developing non-surgical alternatives for reducing breast cancer risk in women who carry *BRCA1* mutations.

The gift, made through the Gray Foundation, is part of their ongoing efforts around *BRCA*-related cancers. In 2012, the Grays established the Basser Center for *BRCA* at the University of Pennsylvania to serve as a hub for research and education on these inherited genetic anomalies, and they have subsequently funded *BRCA* research at leading institutions around the country.

While relatively uncommon, *BRCA1* is one of the widely recognized genes linked to breast cancer risk. Women who are carriers of *BRCA1* have a 55 to 65 percent chance of developing breast cancer by age 70, according to the National Cancer Institute. In comparison, the general population has an 8 percent risk of developing breast cancer by that age.

These mutations, as well as mutations in the *BRCA2* gene, also increase the risk of several other cancers, including ovarian, fallopian tube, and peritoneal cancer. Men and women with *BRCA1* or *BRCA2* mutations are more susceptible to pancreatic cancer, and men are at higher risk of developing aggressive prostate cancer.

Prophylactic mastectomy significantly lowers breast cancer risk in women with *BRCA1* mutations; however, it is a radical surgical procedure that carries potential physical and psychosocial ramifications for patients. Likewise, medical options such as FDA-approved tamoxifen and raloxifene can lower breast cancer risk, but these drugs have long-term side effects. Recently, Dana-Farber researchers identified a *BRCA1*-driven pathway that operates in breast cells and that, when interrupted, leads these cells to acquire aberrant properties. Their findings further suggest that these aberrant cells have taken specific steps toward *BRCA1* breast cancer development. By contrast, when this pathway functions normally, it appears to promote normal, cancer-free breast cell development.

Investigators from Dana-Farber will team with scientists at



Jon and Mindy Gray's gift to Dana-Farber funds research on *BRCA1* genetic mutations and breast cancer risk prevention.

Harvard Medical School in an effort to develop technologies that lead to the detection of aberrant, pre-malignant *BRCA1* mutation-bearing breast cells before these cells become fully malignant. The researchers have already applied cutting-edge single-cell technologies to search for these abnormal breast cells in women who carry inherited *BRCA1* and *BRCA2* mutations and, with Gray Foundation funding, they aim to develop strategies that can eliminate these cells without surgical intervention, thereby lowering *BRCA1* and *BRCA2* breast cancer risk. Non-interventional *BRCA1* and *BRCA2* breast cancer prevention has long been a major clinical objective.

"Since founding the Basser Center for *BRCA*, we have been awed by the advancements made possible through collaborations between talented researchers and institutions. We are proud to support this important work at Dana-Farber, led by Drs. David Livingston and Joan Brugge, and are optimistic about continued progress in understanding, treating, and ultimately preventing *BRCA*-related cancers," said Jon and Mindy Gray. ■