



# Breast Cancer Research Highlights

The American Cancer Society's Investment

**The American Cancer Society helps people with breast cancer in every community.** Our research program has played a role in many of the prevention, screening, and treatment advances that help save lives from breast cancer today. And, we continue to fund research to help save even more lives in the future.

## From Our Researchers on Staff

The American Cancer Society employs a staff of full-time researchers who pursue the answers that help us

understand how to prevent, find, and treat cancer, including breast cancer.

## Cancer Facts & Figures

Our Surveillance and Health Services Research program analyzes data on breast cancer each year as part of our *Cancer Facts & Figures* report and every 2 years in our *Breast Cancer Facts & Figures* report. These publications provide detailed analyses of cancer incidence and mortality trends in the United States, as well as the latest information on risk factors, early detection, treatment, and current research. Key breast cancer findings in the US include:

- About **266,120** women will be diagnosed with breast cancer in **2018**.
- About **40,920** women will die from the disease in **2018**.
- Breast cancer is not only a women's disease. In **2018**, nearly **2,550** men will be diagnosed with breast cancer, and **480** men will die from it.
- Breast cancer death rates decreased by **39%** between **1989** and **2015** (the most recent year for which data are available). That adds up to about **322,600 fewer breast cancer deaths**. This decrease is attributed to improvements in early detection (through increased awareness and screening) and treatment.

## Studying Breast Cancer Causes and Prevention

In addition to the *Facts & Figures* reports, our internal research team is also:

**Continually analyzing data from Cancer Prevention Study II (CPS-II).** We began this study in 1982 to study the link between lifestyle and cancer. Here are some things we've learned so far:

- Postmenopausal women who walk at least 7 hours a week lower their risk of breast cancer by 14%.
- Postmenopausal women who lose 10 or more pounds and keep it off for at least 5 years might reduce their risk for breast cancer.
- Gaining 60 or more pounds after age 18 doubles a woman's chance of breast cancer after menopause.
- Women who smoke – especially those who also drink alcohol – may be at an increased risk for breast cancer.

**Conducting a new multiyear cancer prevention study, Cancer Prevention Study-3 (CPS-3).** The focus of this study is to learn more about cancer risks and how to prevent cancer, including breast cancer. Visit [cancer.org/cps](https://www.cancer.org/cps) to learn more about our Cancer Prevention Studies.

## Research Grants

The American Cancer Society funds scientists and medical professionals who research cancer or train at medical schools, universities, research institutes, and

hospitals throughout the United States. We provide millions of dollars to multiple grants each year. Here are some examples of the research we fund.

### New 3-D Methods Help Researchers Study Precancerous Breast Cells from Women with a *BRCA1* Genetic Mutation



**Grantee:** Jennifer Rosenbluth, MD, PhD

**Institution:** Harvard Medical School in Boston

**Focus Area:** Cancer Drug Discovery

**The Challenge:** Women who inherit the altered form of the *BRCA1* gene have a high risk of developing breast cancer as well as ovarian cancer. Those cancers may develop when a woman is young, and they tend to be aggressive. The current strategies to prevent these cancers focus on frequent mammographs and prophylactic surgical removal of the breasts. One theory researchers have is that these cancers develop from abnormal precancerous cells (called precursor cells or progenitor cells) in the breast. But there hasn't been a good way to study these cells outside of a woman's body.

**The Research:** Rosenbluth and her team will use a new 3-dimensional method of growing breast tissue in a lab dish, where it can be more easily studied. They'll study the growth of these precancerous cells in hopes of finding ways they can be destroyed before they become tumors.

**The Goal and Long-term Possibilities:** Rosenbluth's goal is to understand the earliest events in *BRCA1*-associated cancer development. With that information, she may be able to identify new targets for new drugs that can be used to prevent breast cancer. They also hope their model to prevent cancer "in a dish" can be used to study the prevention of other types of cancer.

### Using DNA Barcoding in Mice to Search for Improved Treatments for Women with Triple Negative Breast Cancer



**Grantee:** Gloria Echeverria, PhD

**Institution:** University of Texas MD Anderson Cancer Center in Houston

**Focus Area:** Tumor Biology and Genomics

**The Challenge:** Nearly 50% of women with triple-negative breast cancer (TNBC) have cancer cells that survive after having chemotherapy as their first treatment. Cancers that aren't killed by chemotherapy are called chemoresistant. Without a helpful treatment, TNBC patients tend to have a very poor long-term prognosis.

**The Research:** Echeverria studies chemoresistance with TNBC. She's transplanting TNBC cells from women into mammary glands of mice. Then she tracks how they respond to the typical chemotherapies used to treat women with TNBC. She uses a state-of-the-art technique called DNA barcoding, which marks each human tumor cell with a unique tag.

**The Goal and Long-term Possibilities:** Echeverria's studies should reveal any unique properties of the TNBC cells that are not killed by chemotherapy. Finding them may help lead to strategies to target those properties. And that could help avoid the chemoresistance that affects so many TNBC patients today.

Thanks to the generous support of our donors, as of August 1, 2018, the American Cancer Society is funding:

155  
GRANTS

Total Breast Cancer Grants in Effect

\$61  
MILLION

Total Breast Cancer Grant Funding in Effect



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