# Breast Cancer Research
## Finding Answers. Finding Cures.


## Relentlessly Pursuing Answers

Thanks to **improvements in treatment and early detection,** more and more women are surviving breast cancer. In fact, the five-year survival rate for women with breast cancer today is 90%, up from only 63% in the 1960s. While **progress has clearly been made, breast cancer is still the most commonly diagnosed cancer in women in the US,** and the second leading cause of cancer death in women. The American Cancer Society research program has played a role in many of the advances that **save lives from breast cancer today,** and is relentlessly pursuing the answers that will **save even more lives in the future.**

**Almost one-third of all cancer diagnosed in women in 2011 will be breast cancer. Following are some of the top American Cancer Society scientists who are committed to finding answers that will help women stay well and get well.**

- **Mary-Claire King, PhD,** at the University of Washington, has ongoing work investigating BRCA1, BRCA2, and other breast cancer genes. This work continues to promote understanding of the underlying biology of the disease, in turn driving advances that can be translated to the clinic. King and others are harnessing knowledge of breast cancer genetics to develop a number of breast cancer screens, tests, and therapeutic procedures.
- **Ryan Jensen, PhD,** and **Stephen Kowalczykowski, PhD,** at the University of California-Davis, successfully purified the BRCA2 protein – an accomplishment that eluded other investigators for more than 15 years. This triumph will allow scientists to better understand how the BRCA2 protein functions, laying the groundwork for new breast cancer therapies.
- American Cancer Society Health Services Researcher **Stacey Fedewa, MPH,** has conducted research suggesting that African American and Hispanic patients are at significantly greater risk for delays in breast cancer treatment, which may be a contributing factor in persistent racial disparities in breast cancer outcomes.
- **Vanessa Sheppard, PhD,** at Georgetown University, developed the Sisters Informing Sisters intervention for African American women who are newly diagnosed with breast cancer in an effort to reduce treatment disparities in this population.
- Using data from the Society's Cancer Prevention Study II (CPS-II), American Cancer Society Senior Epidemiologist **Lauren Teras, PhD,** found that weight loss during a 10-year period did not appear to influence the risk of postmenopausal breast cancer. However, her research did reveal that weight loss of 10 or more pounds that was maintained over at least 5 years might reduce breast cancer risk among postmenopausal women.
- *Breast Cancer Statistics, 2011*, a report from the **American Cancer Society Surveillance Research** department, found that breast cancer mortality rates continue to decline steadily, and that the drop in mortality since 1990 has been larger among women under 50 (3.2% per year) than among women over 50 (2.0% per year). The report also finds that a slower and later decline in breast cancer death rates among women in poor areas has resulted in a shift in the highest breast cancer death rates from women residing in affluent areas to those in poor areas.

## The Facts

- An estimated **230,480** women in the US will be diagnosed with breast cancer in **2011**.
- An estimated **39,520** women in the US will die from the disease in 2011.
- Breast cancer death rates have decreased by **30%** between **1991** and **2007** (the most recent year for which data are available). This means that women in the US in **2007** had a **30%** lower risk of dying from breast cancer than in **1991**.
- More than **147,000** breast cancer deaths have been prevented since death rates started dropping in **1991**.

## Putting Answers into Action

**For more than 60 years, the American Cancer Society research program has been finding the answers that help us understand how to prevent, detect, and treat all cancer types, including breast cancer. With support from American Cancer Society funding during their careers, these pioneers in breast cancer research laid the foundation for breast cancer treatments that are saving lives today:**

**1950s – Stanley Cohen, PhD,** discovered the epidermal growth factor receptor (EGFR), which is linked to cell growth and multiple cancer types. Studies are currently under way to see if anti-EGFR drugs that are already used to treat other types of cancers, such as cetuximab (Erbitux®) and erlotinib (Tarceva®), might also work against breast cancer. Cohen was later awarded a Nobel Prize for his work.

**1974 – V. Craig Jordan, PhD,** showed that tamoxifen could prevent breast cancer in rats by binding to the estrogen receptor. Tamoxifen was approved by the FDA for treating estrogen receptor positive breast cancer in 1978.

**1978 – Bernard Fisher, MD, Richard Love, MD, and V. Craig Jordan, PhD,** developed and carried out the first trial of tamoxifen to prevent recurrence in breast cancer survivors.

**1979 – Arnold Levine, MD,** discovered the p53 protein, later shown to be a tumor suppressor gene mutated in more than half of all cancers, including breast cancer.

**1988 – Dennis Slamon, MD,** discovered that the her2/neu growth factor receptor is overexpressed in 15-30% of breast cancers, and is an unfavorable prognostic feature. Slamon went on to develop Herceptin (trastuzumab), which is used today to treat thousands of women with breast cancer.

**1998 – Bernard Fisher, MD,** reported that tamoxifen reduces the incidence of breast cancer by 49% in high-risk women.

**2001 –** Walt Disney-American Cancer Society Research Professor for Breast Cancer **Mary Claire King, PhD,** along with former Society grantee **Bernard Fischer, MD,** reported that tamoxifen prevents recurrence of breast cancer in BRCA2 but not BRCA1 patients.

**Today, the American Cancer Society is supporting more than 200 grants with $81.5 million to find the answers that will help save lives from breast cancer.**

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