NATIONAL BREAST CANCER COALITION

Department of Defense Breast Cancer Research Program (DOD BCRP)

Last Updated April 2023

7,000+ grants awarded

50+ products in clinical trials or development

20+ products and resources on the market

Millions treated

In 1992, in response to grassroots advocacy led by the National Breast Cancer Coalition, Congress created the Department of Defense Peer Reviewed Breast Cancer Research Program (**DOD BCRP**). Since then, Congress has appropriated **more than $4 billion** to the DOD BCRP. These funds have been well spent in lifesaving and impactful ways. With **over 62,000 applications** reviewed, **more than 7,000 competitive awards** have been granted, yielding **more than 20 commercialized products and resources**, in addition to **more than 50 promising products** that are currently in clinical trials and development. The program has resulted in **more than 1,200 patents and 18,700 publications** in scientific journals. The DOD BCRP has had a positive impact on all aspects of breast cancer, and **millions of individuals**, including members of the military and their dependents, have benefitted from this progress.

The DOD BCRP evaluates grant applications through a two-tier review process that involves a dynamic interaction between scientists, clinicians, members of the military, and educated consumers from the breast cancer community. DOD BCRP-funded projects also involve **knowledgeable breast cancer advocates** throughout the research continuum. The program thus gives breast cancer advocates the ability to inform decisions that ultimately impact their lives and all others affected by breast cancer. Their involvement is critical to the real-life application of this research.

Here, we highlight some of the most successful breast cancer treatments that have benefitted from DOD BCRP funding.

HER2 Targeted Therapy

Drug Name: Trastuzumab (Herceptin)

Type of Breast Cancer Treated: HER2+ breast cancer

How does it work? Herceptin is an antibody designed to attach to certain breast cancer cells, block their growth, and bring cancer-killing immune cells to the tumor. Because other antibodies had failed, there was a lot of skepticism surrounding Herceptin. However, with help from DOD BCRP funding, Herceptin proved to be successful and is now a key aspect of the standard of care for HER2+ breast cancers.

Impact: 20+ years of treating breast cancer. Over 2.3 million people treated. It is not an overstatement to say that Herceptin was a paradigm-shifting and life-saving discovery. Herceptin was so successful that the prognosis for this certain type of breast cancer went from one of the worst to one of the best.

CDK4/6 Inhibitors

Drug Names: Palbociclib (Ibrance), Ribociclib (Kisqali), and Abemaciclib (Verzenio)

Type of Breast Cancer Treated: HR+ HER2- breast cancer

How does it work? Instead of directly killing the cancer cells, CDK4/6 inhibitors block the cancer's ability to proliferate.

Impact: Ibrance was the first new treatment for this subset of breast cancer patients in over a decade and has been used to treat more than 450,000 breast cancer patients. After Ibrance was approved, two additional CDK4/6 inhibitors (Kisqali and Verzenio) proved to offer additional, meaningful benefits to breast cancer patients, including living longer.

Selective Estrogen Receptor Modulators

Drug Name: Tamoxifen (Nolvadex)

Type of Breast Cancer Treated: ER+ breast cancer

How does it work? A type of hormone therapy, tamoxifen binds to estrogen receptors to block estrogen from binding to cancer cells. This prevents the cancer cells from growing.

Impact: Tamoxifen can reduce the risk of breast cancer returning and reduce the risk of these patients dying of breast cancer. The ATLAS clinical trial, with the help of DOD BCRP funding, found that increasing tamoxifen treatment duration from 5 years to 10 years further enhanced these meaningful benefits of tamoxifen, halving breast cancer mortality during the second decade after diagnosis.

Radiotherapy

Name: Prone Radiation Therapy

Type of Breast Cancer Treated: Early-stage breast cancers

How does it work? Radiotherapy uses radiation to kill cancer cells and can decrease the risk of cancer returning, but the radiation can damage surrounding healthy tissue.

Impact: In projects funded by the DOD BCRP, researchers found that providing radiotherapy to a patient in the prone position (facing down) instead of the supine position (facing up) can spare the heart and lungs from significant radiation exposure.

Abbreviation Key

HER2:	Human Epidermal Growth Factor Receptor 2
HR:	Hormone Receptor (Estrogen Receptor and/or Progesterone Receptor)
ER:	Estrogen Receptor

Here, we highlight promising research areas with products currently advancing through clinical trials that have benefitted from DOD BCRP funding.

Vaccines and Immunotherapies

Goal: Stimulate or alter the patient's immune system to help their immune cells to kill cancer cells currently in their body, train their immune cells to prevent breast cancer cells from returning, or prevent breast cancer in the first place.

The Potential: 20 products are in clinical trials, with 1 product in the final stage of the clinical pipeline (Phase 3 trial).

Diagnosis, Prognosis, and Risk Assessment

Goal: Create sensitive and accurate technologies for determining one's risk of breast cancer, why and how some breast cancers become metastatic, and distinguishing deadly from non-deadly breast cancer.

The Potential: 3 products are currently in clinical trials. Importantly, beyond the clinical pipeline, more than 10 products in this area have made it to the market and are currently used to diagnose, evaluate risk of, or predict best treatment plans for breast cancer.

Therapeutics

Goal: Kill cancer cells, stop cancer cells from growing and spreading, or prevent breast cancer in the first place, with minimal toxicity and maximal benefits.

The Potential: Almost 20 treatments are in clinical trials, with 3 treatments in the final stage of the clinical pipeline (Phase 3 trial). Importantly, beyond the clinical pipeline, several treatments in this area have made it to the market and are currently used to treat breast cancer patients. Some are mentioned in detail above.

References

1. Department of Defense. Breast Cancer Research Program, Congressionally Directed Medical Research Programs. https://cdmrp.health.mil/bcrp/.
2. Genentech. How Herceptin is Thought to Work. https://www.herceptin.com/patient/early-breast-cancer/about-herceptin/how-it-works.html (2023).
3. Pfizer. Pfizer Announces Overall Survival Results from Phase 3 PALOMA-2 Trial of IBRANCE® (palbociclib) for the First-Line Treatment of ER+, HER2- Metastatic Breast Cancer | Pfizer. https://www.pfizer.com/news/press-release/press-release-detail/pfizer-announces-overall-survival-results-phase-3-paloma-2 (2022).
4. Pfizer. About IBRANCE® (palbociclib) For mBC | Safety Info. https://www.ibrance.com/about-ibrance#trial-results (2023).
5. Phillips, C. Ribociclib Improves Survival in Advanced Breast Cancer - NCI. https://www.cancer.gov/news-events/cancer-currents-blog/2021/ribociclib-improves-metastatic-breast-cancer-survival (2021).
6. Novartis. Overall Survival Results with KISQALI® (ribociclib). https://www.us.kisqali.com/metastatic-breast-cancer/about-kisqali/overall-survival-results/ (2023).
7. Eli Lilly and Company. What is Verzenio® for Early Breast Cancer | Verzenio (abemaciclib). https://www.verzenio.com/early-breast-cancer/what-is-verzenio.
8. Eli Lilly and Company. FDA Approves Verzenio® (abemaciclib) as the First and Only CDK4/6 Inhibitor for Certain People with HR+ HER2- High Risk Early Breast Cancer | Eli Lilly and Company. https://investor.lilly.com/news-releases/news-release-details/fda-approves-verzenior-abemaciclib-first-and-only-cdk46
9. National Cancer Institute. Hormone Therapy for Breast Cancer Fact Sheet - NCI. https://www.cancer.gov/types/breast/breast-hormone-therapy-fact-sheet (2022).
10. Davies, C. et al. Long-term effects of continuing adjuvant tamoxifen to 10 years versus stopping at 5 years after diagnosis of oestrogen receptor-positive breast cancer: ATLAS, a randomised trial. The Lancet 381, 805–816 (2013).
11. Formenti, S. C., DeWyngaert, J. K., Jozsef, G. & Goldberg, J. D. Prone vs Supine Positioning for Breast Cancer Radiotherapy. JAMA 308, 861–863 (2012).
12. Department of Defense. 2022 BCRP Program Book. https://cdmrp.health.mil/bcrp/pbks/2022BCRPProgramBook.pdf (2023).
13. Department of Defense. BCRP Program Summary Sheet 2020. https://cdmrp.health.mil/bcrp/pbks/bcrp_programsummarysheet2020.pdf (2020).

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