

**CDMRP**



Department of Defense

# Breast Cancer Research Program

## VISION

A world without breast cancer

## MISSION

To end breast cancer for Service members, Veterans, and the general public by funding innovative, high-impact research through a partnership of scientists and consumers

## PROGRAM HISTORY

The Department of Defense (DoD) Breast Cancer Research Program (BCRP) plays a leading role in the fight against breast cancer through its innovative approaches and its focus on research that addresses the overarching challenges to bring an

end to this disease. The BCRP was established in 1992 and has received annual appropriations totaling over \$3.6 billion through fiscal year 2019 (FY19) as a result of the dedicated efforts of breast cancer advocates. The BCRP challenges scientists to pursue high-risk, high-reward research; explore new paradigms that could lead to critical discoveries; and make an unprecedented impact on breast cancer. Research supported by the BCRP has led to the development of new standard of care treatments, diagnostic and imaging approaches, risk assessment tests, and resources for the breast cancer research and patient communities.

## RELEVANCE TO MILITARY HEALTH

Breast cancer is the most common non-skin cancer in women, causing the most cancer-related deaths in women under the age of 40<sup>1</sup>. Female active duty Service members have a 20–40% higher incidence rate of breast cancer than the general public<sup>2</sup>. The incident rate of breast cancer for active duty women is seven times higher than the average incident rate of fifteen other cancer types across all Service members<sup>3</sup>. The outcomes of BCRP-funded research will ultimately benefit military Service members, Veterans, military beneficiaries, and the general public.

## HIGH-IMPACT ADVANCES RESULTING FROM BCRP-FUNDED RESEARCH

### TREATMENTS

- Food and Drug Administration–approved therapeutics: Herceptin<sup>®</sup>, IBRANCE<sup>®</sup>, KISQALI<sup>®</sup>, and Verzenio<sup>™</sup>
- Long-term (10 years) tamoxifen treatment for ER+ breast cancer
- Prone radiotherapy treatment to reduce harmful radiation to the heart and lungs

### DIAGNOSTICS AND IMAGING

- Sentinel lymph node biopsy for tumor staging
- Digital mammography and digital breast tomosynthesis for advanced breast imaging

- Molecular breast imaging for high-resolution functional images of the breast

### RISK ASSESSMENT

- OncoVue<sup>®</sup> and BROCA: genetic-based breast cancer risk tests
- Breast Cancer Index<sup>SM</sup> for predicting disease recurrence
- Identification of breast cancer risk-associated mutations (BRCA2 617delT, PTEN, and PALB2)
- MetaSite Breast<sup>™</sup> test to predict the metastatic potential of a primary breast cancer
- MenaCalc<sup>™</sup> as a prognostic predictor of recurrence and metastasis

### RESOURCES

- Expression Arrest<sup>™</sup>: a research tool to identify therapeutic targets
- Patient-derived breast tumor models for tumor growth, metastasis, drug efficacy, and prognosis
- The Margaret Dyson Family Risk Assessment Program, which provides counseling and risk analysis to individuals who have a family history of breast or ovarian cancer

<sup>1</sup> [www.cdc.gov/cancer/dataviz](http://www.cdc.gov/cancer/dataviz)

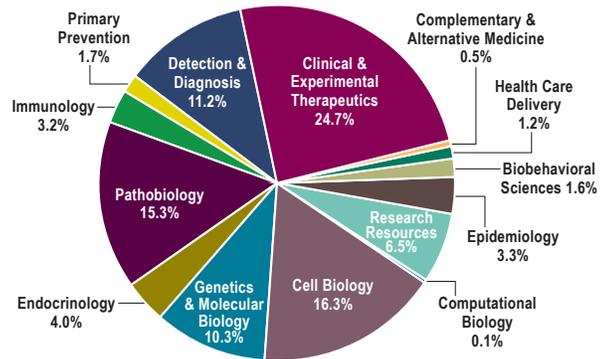
<sup>2</sup> Zhu et al. 2009. Cancer Epidemiol Biomarkers Prev 18(6): 1740-1745.

<sup>3</sup> Lee et al. 2016. MSMR 23(7): 23-31.

## PROGRAM PORTFOLIO

The BCRP funds scientifically meritorious research in accordance with Congressional intent. The BCRP's investment strategy emphasizes high-impact research with clinical relevance, encourages innovation and stimulates creativity, and facilitates productive collaborations. The BCRP's research portfolio is composed of awards across diverse research areas. To date, the BCRP has supported over 6,800 research awards, resulting in over 18,500 publications and over 1,100 patents.

### FY92-FY17 BCRP Portfolio



## CONSUMER REVIEWER QUOTES



*“The DoD funded Dr. Dennis Slamon’s early work on Herceptin® and thus benefited me as an active duty Service member and now as a Veteran. It is a full circle, with me giving 25 years of service to the DoD, and the DoD giving back to me as a breast cancer patient.”*

SMSgt (Ret.) Sheila McGlown



*“Beyond my personal medical care provided by the military, it means so much to me that the DoD is also providing for military families by funding such important research on breast cancer and metastasis.”*

Alexis Rhoads, Military Spouse, Warriors 4 Warriors  
Alexis passed away from metastatic breast cancer on October 29, 2017.

## NEW TRIALS IN THE CLINICAL PIPELINE

- **Denosumab (XGEVA®)**; Phase III (EudraCT Number: 2017-002505-35); *Josef Penninger, Ph.D.* — Determining whether prophylactic administration of denosumab in *BRCA1* mutation carrier women can prevent breast cancer.
- **HER2-pulsed IL-12 Secreting Dendritic cell (DC1) Vaccine and Multivalent Th1 Epitope DNA Vaccine (WOKVAC)**; Phase I (NCT03387553); Phase II (NCT03384914); *Brian Czerniecki, M.D.* — Testing whether combination treatment of DC1 with WOKVAC can improve pathological response (Phase I) and comparing safety profiles for DC1 and WOKVAC (Phase II) in HER2+ breast cancer patients.
- **HER2-Specific Helper T-Cell Epitope Vaccine**; Phase I; *Keith Knutson, Ph.D. and Amy Degnim, M.D.* — Assessing the safety and tolerability of a HER2 subdominant epitope-based vaccine.
- **Fatty Acid Synthase Inhibitor, TVB-2640**; Phase II (NCT 03179904); *Ruth Lupu, Ph.D. and Tufia Haddad, M.D.* — Evaluating the efficacy of TVB-2640 in combination with paclitaxel and trastuzumab in taxane-resistant metastatic HER2+ breast cancer patients.
- **Temozolomide with or without T-DMI**; Phase I/II (NCT03190967); *Patricia Steeg, Ph.D.* — Determining whether T-DMI with or without temozolomide can prevent the formation of new brain metastases in HER2+ breast cancer patients.
- **Meclofenamate**; Phase I (NCT02429570); *Joan Massague, Ph.D.* — Determining whether meclufenamate can prevent new brain metastases in breast cancer patients with recurrent or progressive brain metastasis.
- **Injectable Nanoparticle Generator with Polymeric Doxorubicin Conjugate (iNPG-pDox)**; Phase I/II planned; *Mauro Ferrari, Ph.D. and Jenny Chang, M.D.* — Assessing the safety of iNPG-pDox and determining the maximum tolerated dose for a Phase II study aiming to determine efficacy for treating lung and liver metastases in TNBC patients.
- **NY-ESO-1 TCR-Transduced T-cells**; Phase I planned; *Rongfu Wang, Ph.D. and Jenny Chang, M.D.* — Evaluating the safety and efficacy of NY-ESO-1 TCR-transduced T-cells for the treatment of TNBC.
- **Alpha-Lactalbumin Vaccine**; Phase I planned; *Vincent Tuohy, Ph.D. and George Budd, M.D.* — Determining safety and dosage of an alpha-lactalbumin vaccine in TNBC patients recovering from current standard-of-care therapy (Phase Ia) or administered to healthy subjects for use in a prophylactic setting (Phase Ib).
- **Trastuzumab/Pertuzumab with HER2 HLA-DR Vaccine Therapy**; Phase II planned; *Keith Knutson, Ph.D. and Saranya Chumsri, M.D.* — Determining whether HER2 HLA-DR vaccine administered during anti-HER2 maintenance therapy in patients with residual disease post neoadjuvant chemotherapy can block disease recurrence and progression to metastatic breast cancer.

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