UNIVERSITY OF CALIFORNIA

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DIVISION OF AGRICULTURE AND NATURAL RESOURCES

November 26, 2025

The Honorable Scott D. Wiener
Chair, Joint Legislative Budget Committee
1020 N Street, Room 553
Sacramento, California 95814

Dear Senator Wiener:

Pursuant to Section 104145 of the Health and Safety Code, enclosed is the University of California's report to the Legislature on *The California Breast Cancer Research Program, 2020-2025*.

If you have any questions, Associate Vice President Cain Diaz would be pleased to speak with you. Cain can be reached by telephone at (510) 987-9530, or by email at Cain.Diaz@ucop.edu.

Sincerely,

James B. Milliken
President

Enclosure

cc: Senate Budget and Fiscal Review
The Honorable John Laird, Chair
Senate Budget and Fiscal Review Subcommittee #1
(Attn: Mr. Diego Lopez)
(Attn: Mr. Kirk Feely)
The Honorable David A. Alvarez, Chair
Assembly Education Finance Subcommittee #3
(Attn: Mr. Mark Martin)
(Attn: Mr. Tobias Wolken)
Mr. Hans Hemann, Joint Legislative Budget Committee
Ms. Erika Contreras, Secretary of the Senate
Ms. Sue Parker, Office of the Chief Clerk of the Assembly
Ms. Jessica Holmes, Department of Finance
Ms. Jessica Deitchman, Department of Finance
Mr. Gabriel Petek, Legislative Analyst Office
Ms. Jennifer Pacella, Legislative Analyst Office

Mr. Ian Klein, Legislative Analyst's Office
Provost and Executive Vice President Katherine S. Newman
Executive Vice President and Chief Financial Officer Nathan Brostrom
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The California Breast Cancer Research Program

Five Year Report: 2020-2025

December 2025

California Breast Cancer Research Program

Report to the State of California Legislature 2025

The Five-Year 2020 - 2025 California Breast Cancer Research Program Report was prepared by the University of California, Office of the President pursuant to Article 1 of Chapter 2 of Part 1 of Division 103 of the California Health and Safety Code: The Breast Cancer Research Program (Sec. 104145).

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1. Executive Summary

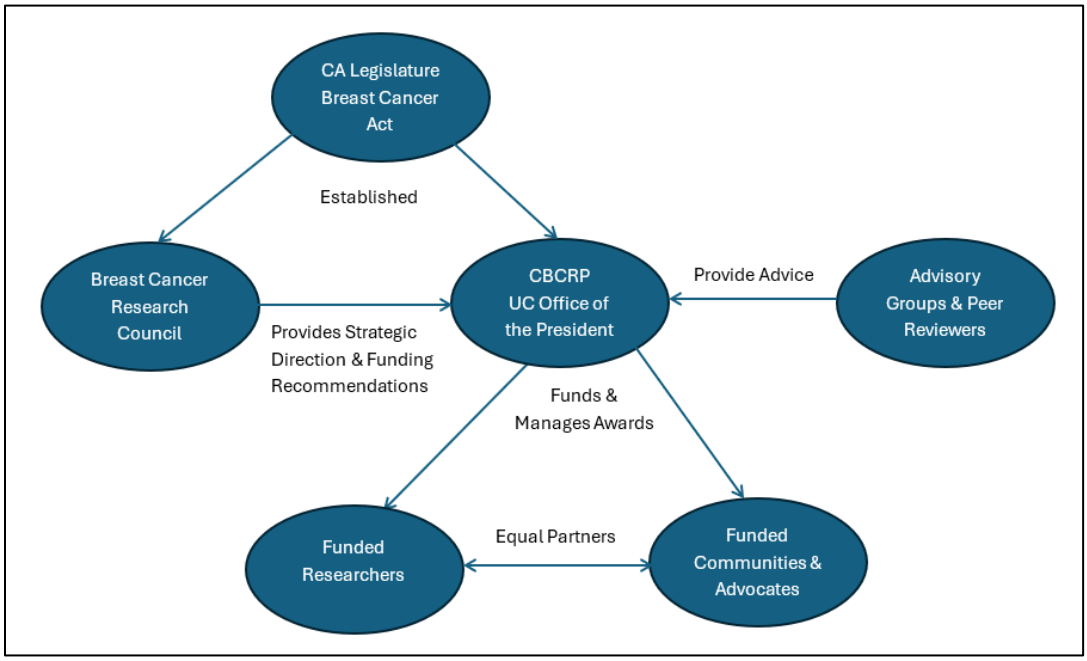
The California Breast Cancer Research Program (CBCRP) is an international leader in funding breast cancer research focused on prevention and innovative areas of investigation. The American Cancer Society (ACS) estimates that more than 32,000 California women will be newly diagnosed with breast cancer in 2025. In California alone, ACS estimates 4,620 women will die of breast cancer in 2025 — that's more than 12 women **every day** who die from the disease. To address this crisis, CBCRP works to prevent and eliminate breast cancer by leading innovation in research, communication, and collaboration in the California scientific and lay communities.

CBCRP is administered by the Research Grants Program Office (RGPO) within the Office of Research and Innovation in the Division of Academic Affairs of the University of California Office of the President (UCOP). Established with passage of the 1993 California Breast Cancer Act (AB 2055 and AB 478), CBCRP was created in response to the frustration that California breast cancer activists had with the slow pace of progress against the disease. Working closely with the activists — together with scientists, clinicians, and University of California officials — state legislators crafted legislation to create and fund a breast cancer research program that puts California in the vanguard. The California Breast Cancer Act increased the tax on cigarettes by 2¢ per pack, with 45% of the revenue going to CBCRP. CBCRP also receives funds through California's voluntary income tax checkoff program and individual donations made through the program website. Since the program's inception, more than $300 million in grant funds have been committed with less than 4.2% of funds going to administrative costs. See Table 3.1 for details of CBCRP's income for 2020 through 2025. In addition, CBCRP funding has helped California researchers attract further funding to the State, with CBCRP researchers reporting receiving over $28 million in follow-on grant funding from Federal sources since 2020. CBCRP funded research has also provided evidence to support legislation and policy changes in California. See the box below for an example.

CBCRP Study: Enhancing California's Green Chemistry Initiative
Principal Investigators: Gina Solomon, Public Health Institute & Peggy Reynolds, UCSF
This 2018 project evaluated California's Green Chemistry Initiative (an initiative to reduce public and environmental exposure to toxic chemicals) ten years after its establishment and produced a report with recommendations for improving the program. Four years later, a bill (SB-502, Allen) was passed in the California legislature that reformed the Green Chemistry program and implemented many of the recommendations of the report.

The Breast Cancer Act also established a Breast Cancer Research Council made up of California breast cancer advocates, scientists, clinicians and private industry representatives to provide strategic objectives and priorities for the program and make final recommendations on the research grants to be funded. CBCRP's review process is one of a handful of non-federal peer review systems certified by the National Cancer Institute to meet National Institutes of Health (NIH) standards of peer review and funding. Figure 1.1 illustrates CBCRP's organization.

Figure 1.1: CBCRP's Organization



In the past five years, CBCRP has deepened its commitment to the *prevention* of breast cancer. In 2023, the CBCRP Council recommended continuing to allocate about half of the Program's research funds through 2029 to prevention-oriented, program-initiated research. These Program-Directed Initiatives support coordinated, directed and collaborative research to address CBCRP's strategic needs. They have yielded significant breakthroughs in the field, some of which are documented in this report. See boxes for examples.

Air pollution and Puberty in Girls at Increased Breast Cancer Risk
Principal Investigator: Esther John, Stanford University
This was the first study to link polycyclic aromatic hydrocarbon (PAH) exposure of young girls in the San Francisco Bay Area to pubertal development and thus breast cancer risk. This study has generated three publications, including in Environmental Research.

Occupational Chemical Exposures in California and Breast Cancer Risk
PIs: Robert Harrison, Public Health Institute & Peggy Reynolds, UC San Francisco
This groundbreaking project developed the first comprehensive tool to understand occupational chemical exposures linked to breast cancer in California - available here: Exploring Chemical Exposure for California's Women Workers.

Building on the groundbreaking CBCRP-funded Paths to Prevention: The California Breast Cancer Primary Prevention Plan, published in 2020, CBCRP launched the 3rd round of Program-Directed Initiatives: "Preventing Breast Cancer: Community, Population and Environmental Approaches," funding projects that focus on systemic approaches to eliminating barriers to health in California as opposed to blaming individual health behavior. The Program has invested in research and communities working to implement and disseminate effective interventions to reduce the burden of breast cancer in California.

With the other half of its research funds, CBCRP has continued to fund the most meritorious investigator-initiated applications in all fields of breast cancer research, from basic biology through treatment options and public health interventions. Throughout CBCRP's portfolio, collaboration with breast cancer advocates and California communities is paramount, as the majority of CBCRP's grants use Community Partnered Participatory Research (CPPR) strategies and are co-led by California's communities on the ground. This has made CBCRP a nationally recognized leader in CPPR. See box below for examples.

Fertility services for rural young breast cancer survivors
PIs: Hui-Chun Su, UC San Diego & Helen Palomino, Cancer Resource Center of the Desert
This project improved access to cancer-related and fertility services for young breast cancer survivors in the Imperial Valley. It generated a publication in the journal Contemporary Clinical Trials.

Women Worker Biomonitoring Collaborative (WWBC)
PIs: Rachel Morello-Frosch, UC Berkeley, Erin Carrera, UCSF Nurse & Heather Buren, SFFD
A study working with female nurses, office workers, and firefighters to explore links between occupational exposures and breast cancer risk. This study has generated over 40 publications including one on how community-based participatory research can drive broad social change while advancing scientific knowledge.

This report describes the many ways that CBCRP has advanced the field of breast cancer research from 2020-2025. With more than 30 years of experience, CBCRP has empowered communities to engage in high impact research that allows for meaningful interventions to protect women. CBCRP is proud of its impact in prioritizing breast cancer prevention research.

CBCRP remains committed to funding innovative, investigator-initiated research that engages advocates and communities across California. CBCRP's primary fund source — the State cigarette tax — is declining due to reductions in sales. Unlike other research programs funded by a California state tobacco excise tax, CBCRP does not receive funds from taxes on non-cigarette tobacco products, such as cigars, chewing tobacco, or e-cigarettes, which are increasing in sales. This situation leaves CBCRP vulnerable to this steep decline in traditional cigarette usage and sales. A robust income stream is key to being able to effectively address these gaps and CBCRP will continue to invest in growing income from voluntary donations and exploring new partnerships. The work is far from over, but this report provides important insight into just how much has been accomplished.

2. Required Reporting Elements

This report has been prepared by the University of California, pursuant to California Health and Safety Code, Section 104145 and the Revenue and Taxation Code Sections 30461-30462 and18791-18796 (amended SB1172 July 15,2024). All data are current as of June 30, 2025.The following required reporting elements are addressed in this report (per Section 104145(d)(10)):

1. The number and dollar amounts of research grants, including the amount allocated to indirect costs.

From July 1, 2020, through June 30, 2025, CBCRP awarded 88 single- and multiple-year research projects, involving 60 different California institutions and totaling over $35 million in direct and indirect costs. Figure 2.1 provides a summary while Table 2.1 provides the number and dollar amounts of grants, including direct and indirect costs, for each year from 2020 to 2025.

Figure 2.1: Total Grant Costs 2020-2025

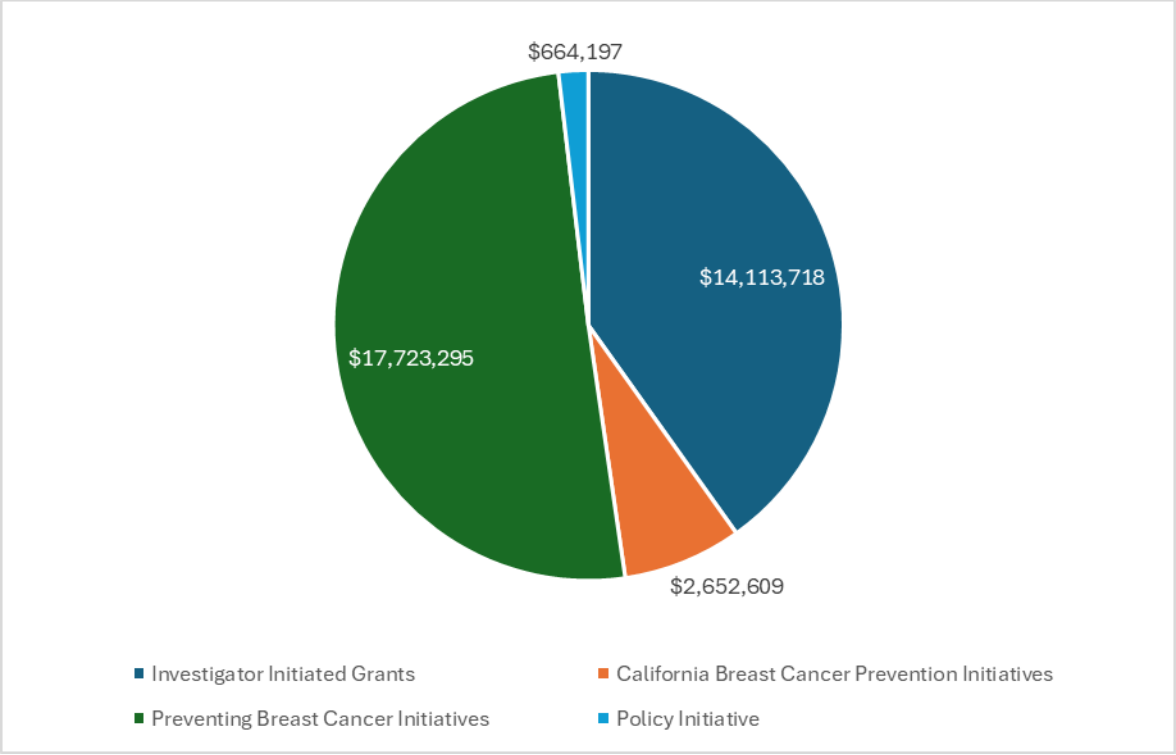


Table 2.1: Core and Initiative Grants Awarded, with funding levels, from 2020 to 2025.

Fiscal Year	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	5-Year Summary
TOTAL NUMBER OF GRANTS	15	17	17	22	17	88
TOTAL GRANT FUNDS	$4,641,835	$6,385,029	$4,744,217	$9,176,806	$10,205,932	$35,153,819
CORE INVESTIGATOR INITIATED GRANTS						
Grants Awarded	9	12	9	11	11	52
Direct Cost Total	$2,114,673	$2,593,123	$1,496,875	$2,503,600	$1,464,601	$10,172,872
Indirect Cost Total	$776,077	$1,075,844	$548,062	$993,169	$547,694	$3,940,846
Total Core Grant Costs	$2,890,750	$3,668,967	$2,044,937	$3,496,769	$2,012,295	$14,113,718
PROGRAM-DIRECTED INITIATIVES						
Round 2: California Breast Cancer Prevention Initiatives (CBCPI) Grants Awarded	4	0	0	1	0	5
Direct Cost Total	$470,569	-	-	$1,475,226	-	$1,945,795
Indirect Cost Total	$124,452	-	-	$582,362	-	$706,814
Total CBCPI Costs	$595,021	-	-	$2,057,588	-	$2,652,609
Round 3: Preventing Breast Cancer (PBC): Community, Population and Environmental Approaches Initiative Grants Awarded	2	4	7	9	6	28
Direct Cost Total	$982,742	$1,927,339	$1,768,099	$2,247,285	$6,287,082	$13,212,547
Indirect Cost Total	$173,322	$634,919	$625,916	$1,170,036	$1,906,555	$4,510,748
Total PBC Costs	$1,156,064	$2,562,258	$2,394,015	$3,417,321	$8,193,637	$17,723,295
Policy Initiative Grants Awarded	0	1	1	1	0	3
Direct Cost Total	-	$123,349	$200,000	$150,000	-	$473,349
Indirect Cost Total	-	$30,455	$105,265	$55,128	-	$190,848
Total Policy Initiative Costs	-	$153,804	$305,265	$205,128	-	$664,197

2. The subject of research projects.

As guided by our enabling legislation and Research Council, CBCRP funded projects address key questions in one or more of the following research priority areas, which are discussed further in Appendix 1: CBCRP Priority Areas and Appendix 2: Research Progress and Results 2020-2025:

1. Community Impact of Breast Cancer: The social context;
2. Etiology and Prevention: Finding the underlying causes;
3. Detection, Prognosis and Treatment: Delivering clinical solutions; and
4. Biology of the Breast Cell: The basic science of the disease.

Table 2.2 Research funded from July 1, 2020 to June 30 2025 by Priority Area

Priority Area	No. of Projects Funded	Funding Dollars	% of Total Funding
Community Impact of Breast Cancer	**28**	**$10,951,336**	**31%**
Etiology and Prevention	**37**	**$18,852,482**	**54%**
Detection, Prognosis, and Treatment	**17**	**$4,216,512**	**12%**
Biology of the Breast Cell	**6**	**$1,133,489**	**3%**
Grand Total	**88**	**$35,153,819**	**100%**

3. The relationship between federal and state funding for breast cancer research.

CBCRP's Breast Cancer Research Council sets the Program's funding priorities, taking into account the following:

1. Perspectives from national breast cancer experts;
2. Opinions from California advocates and activists, healthcare providers, public health practitioners, community leaders, biotechnology scientists, and academic researchers;
3. Current literature on breast cancer and current gaps in knowledge;

4. Analyses of portfolios and programmatic goals of other funding agencies; and
5. Data on the efficacy of CBCRP grant mechanisms and topic areas in fulfilling program goals.

CBCRP implements a priority-setting process to minimize, if not eliminate, duplication with other breast cancer research initiatives. This process focuses on filling important knowledge gaps. CBCRP is a founding member of the International Cancer Research Partnership (ICRP), an alliance of cancer organizations working to enhance global collaboration and strategic coordination of research. This further informs grant-making strategies by providing a means to compare CBCRP's portfolio to that of cancer research funding agencies throughout the world. More information is in Section 5.

4. The relationship between each project and the overall strategy of the research program.

Ten pillars guide CBCRP research priorities and inform calls for applications. Details of these are in Section 4:

1. California Specific
2. Capacity-building
3. Collaboration
4. Disparities, Underserved and Accessibility
5. Innovation
6. Non-Duplicative
7. Policy
8. Public Health Outcomes
9. Responsive
10. Translation and Dissemination

The review of each individual grant application is also designed to ensure that the research projects funded by CBCRP have both high scientific merit and programmatic alignment. Each individual application is evaluated by external scientific review committees for specific aspects of scientific merit, including impact on breast cancer, innovation, feasibility, and approach. All applications of sufficient scientific merit undergo a programmatic review by the Breast Cancer Research Council for responsiveness to program priorities, including whether each application fits the goals of the award type, integrates advocacy issues, and addresses an under-funded research field. More information is in Section 4: CBCRP's Grantmaking Strategy.

5. A summary of research findings including discussion of promising new areas.

Highlights of funded research concluded during this reporting period are included in Appendix 2: Research Progress and Results 2020-2025. See box for one example of compelling, policy-relevant findings completed in this period.

The Impact of Proposition 65 on Chemical Exposures Relevant to Breast Cancer

Principal Investigator: Megan Schwarzman, UC Berkeley

California's Proposition 65 (Prop 65) is a law whose intent is to protect people from chemicals that could cause cancer or reproductive harm. It requires warnings if a product or area will expose people to chemicals above certain risk levels and bans them from discharge into drinking water. This study examined whether Prop 65 reduced people's exposure to chemicals linked to breast cancer and how the law could be improved. It found that for many chemicals, like phthalates, exposure levels dropped after Prop 65 listing and that the law prompted companies to reformulate away from Prop 65 chemicals. In addition to analyzing biomonitoring data, the team interviewed businesses to see how the law affects their practices and analyzed emissions data on chemical ingredients and emissions to understand the extent of Prop 65 chemicals in products and workplaces. The project generated six publications, including in Ecology Law Quarterly.

6. The institutions and campuses receiving grant awards.

From 2020 to 2025, 60 distinct institutions across the state were awarded CBCRP funding. This funding distribution included $11.97 million to UC campuses, $11.28 million to private academic institutions, $10.87 million to community organizations, and $1.03 million to California State Universities. All funded grants with recipient institutions are listed in Appendix 2: Research Progress and Results 2020-2025.

3. About CBCRP

Origins of the CBCRP

The California Breast Cancer Research Program's mission is to harness the expertise and active collaborations among the diverse communities in California to eliminate breast cancer by leading innovation in research, communication, and equity initiatives. Established by the California Legislature with passage of the 1993 Breast Cancer Act (AB 2055 (B. Friedman) [Chapter 661, Statues of 1993] and AB 478 (B. Friedman) [AB 478, Statues of 1993]), CBCRP was created in response to the frustration that California breast cancer activists had with the slow pace of progress against the disease.

Since then, CBCRP has made California a leader among states for breast cancer research. CBCRP has awarded over 1,100 grants since 1993 to over 800 scientific institutions and community entities, totaling more than $300 million for research to prevent, treat, and cure breast cancer. From July 1, 2020, through June 30, 2025, CBCRP funded 88 single- and multiple-year research projects, totaling over $35 million in direct and indirect costs, at 60 institutions across California.

CBCRP Organization and Income

CBCRP is administered as a public service by the University of California. CBCRP's staff manages the solicitation, review, award, and oversight of grants and dissemination of research results, working at the University of California, Office of the President (UCOP) in Oakland. The program is housed in the Research Grants Program Office (RGPO), which is in the Office of Research and Innovation. CBCRP maximizes grant funding by sharing grant making and financial management resources and personnel with other RGPO statewide and systemwide research programs.

Funding for CBCRP comes primarily from a 2¢ per pack state tax on cigarettes, a declining source of revenue due to decreasing cigarette sales. Because the legislation establishing CBCRP specifies cigarettes as the tax basis and does not mention other tobacco products, CBCRP.is.currently.the.only.California.program.funded.through.a.state.tobacco.tax. that.does.not.receive.revenues.from.other.tobacco.products.such.as.cigars?.chewing. tobacco?.and.e_cigarettes. CBCRP funding is supplemented by taxpayer donations contributed through voluntary tax contributions from state income tax forms and by private contributions. See Table 3.1 for CBCRP's income this reporting period.

Table 3.1 CBCRP Income 2020-2025 By Fiscal Year

Fiscal Year	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	5-Year Summary
Breast Cancer Research Account (007) (Tobacco Tax)	$7,078,780	$8,545,244	$8,056,000	$6,459,000	$5,575,000	**$35,714,000**
California Breast Cancer Research Fund (0945) (Voluntary Tax Contributions)	$178,000	$178,000	$356,000	$178,000	$178,000	**$1,068,000**
External Funding*	-	$100,000	-	-	-	**$100,000**
Private Donations	$23,554	$38,968	$22,116	$23,680	$8,455	**$116,773**
Interest **	$20,559	$458	$2,248	$19,433	$9,272	**$51,970**
TOTAL FUNDS	**$7,300,893**	**$8,862,670**	**$8,436,364**	**$6,680,113**	**$5,770,727**	**$37,050,767**

* Community Foundation for Monterey County – Anita Tarr Turk Fund

**Interest returned on multi-year grants allocated to non-UC institutions.

While CBCRP is not as large as some of the national breast cancer research funders, such as NIH, its impact during its 32-year history is significant in California and around the world through its leadership role in the ICRP (see Section 5). Program successes include a CBCRP-funded researcher being awarded a Nobel Prize, investing in capacity to build research collaborations between members of California's diverse communities and scientific researchers to conduct research, informing national policy, and serving as a model for other funding programs and agencies. Just.since.8686?.CBCRP.researchers. have.reported.receiving.over.P$8❹.million.in.grant.funding.from.Federal.sources. following.on.from.CBCRP"s.initial.investments.

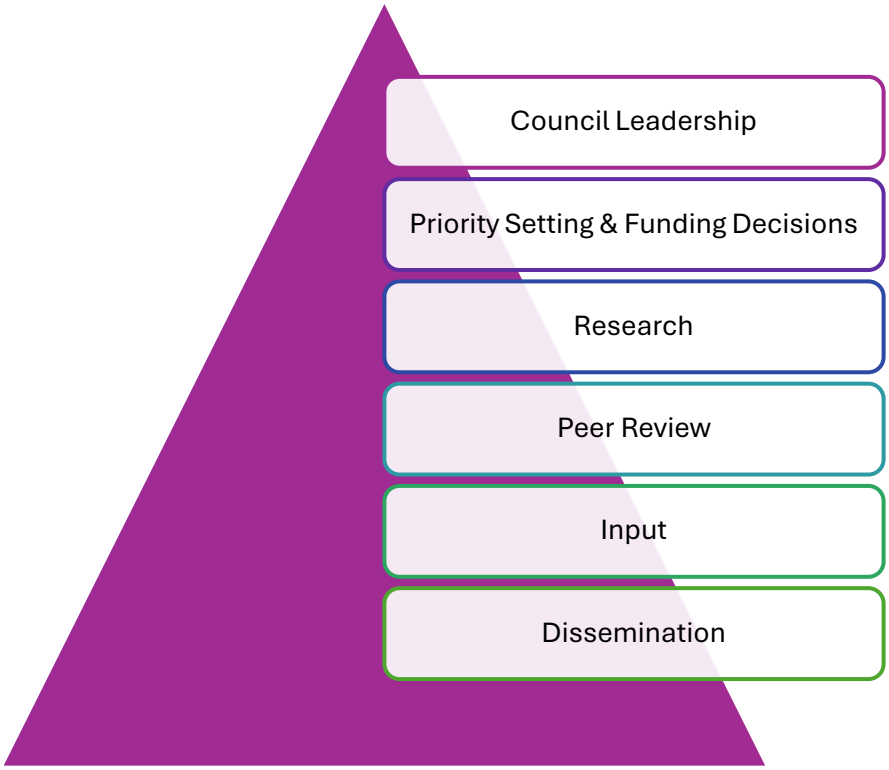
CBCRP's commitment to driving innovative research, engaging community advocates in research and forwarding a science-based public policy shift toward preventing breast cancer is unparalleled.

A Champion of Community Partnered Research

Community organizations are equal partners in the majority of CBCRP-funded projects. Research is stronger when those directly affected by a disease help shape it.

Community advocates offer real-world insights that improve research relevance, design, and impact. By partnering with local clinics, women's health groups, breast cancer organizations, and more, they help ensure findings are quickly applied to improve lives. CBCRP is a nationally-recognized leader in Community Partnered Participatory Research (CPPR). Since 1993, CBCRP has supported advocate involvement in research, and since 2011, has required all investigator-led projects to include community partners as part of the research process.

Figure 3.1. Integration of Breast Cancer Advocates into CBCRP



Advocates in Leadership

Leadership from breast cancer advocates throughout the research enterprise, as shown in Figure 3.1, plays a key role in making sure CBCRP funds research that matters most to the people most affected by the disease.

- Advocates make up one-third of the CBCRP's 16-member Research Council, the group responsible for selecting which research projects receive funding. An advocate is always the Chair or Vice-Chair of the Council.
- Advocates work alongside scientists on review panels, where they help evaluate all research proposals for scientific quality.
- Advocates also serve on advisory groups that guide CBCRP's program-initiated research and help set priorities for the research funding CBCRP provides.

- Since 2011, CBCRP has required all investigator-led projects to include community partners as part of the research process – from project proposal to dissemination of the results.

Communities Conducting Research

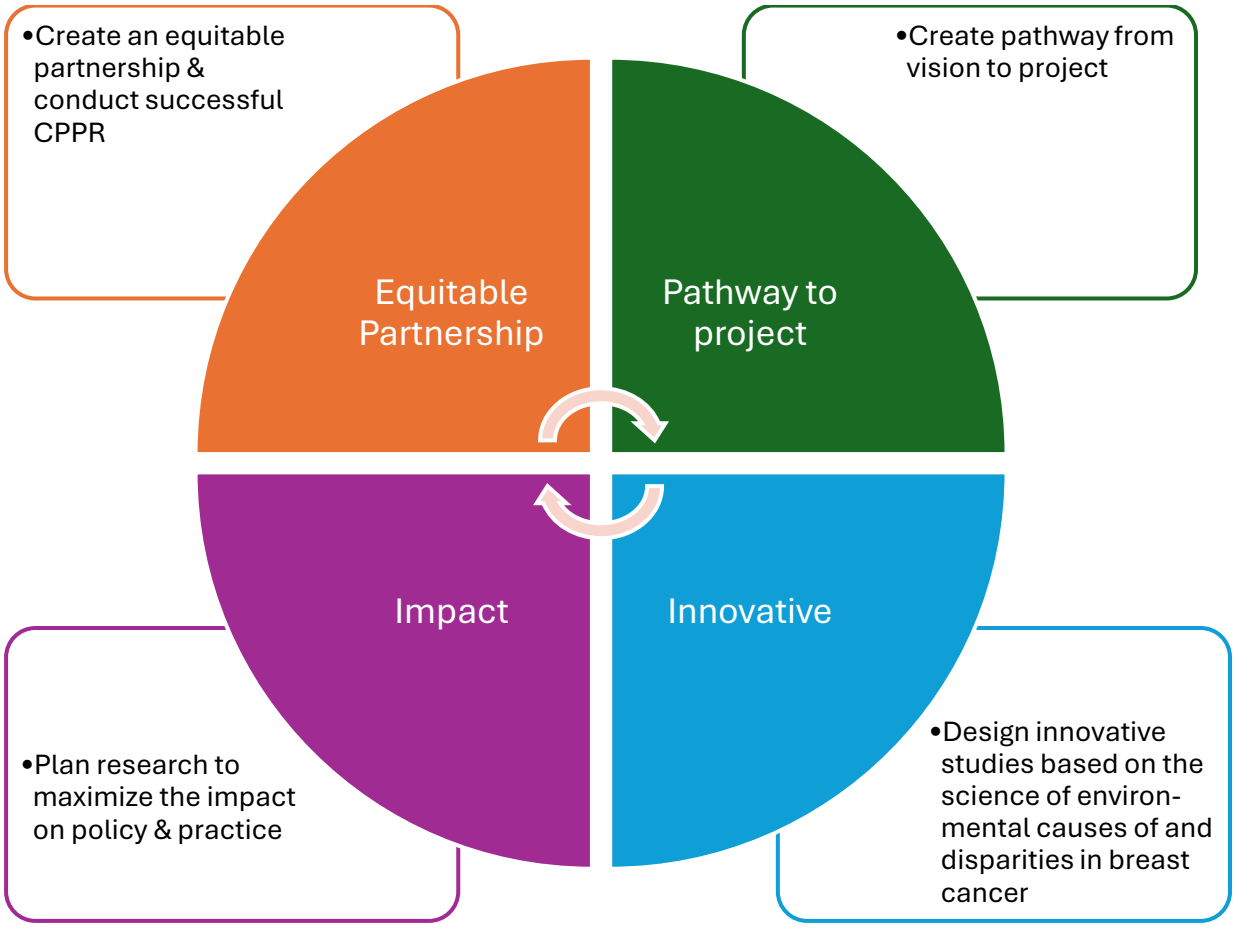
Since 1997, CBCRP's Community Research Collaboration (CRC) awards have supported advocacy-centered, community-based participatory research. These grants fund partnerships between community organizations - such as breast cancer advocacy groups and clinics - and academic researchers. Together, they identify priority breast cancer questions, design and conduct studies, and share findings with communities, scientists, and the public. This approach ensures that research reflects real-world concerns and promotes meaningful, community-driven outcomes.

Supporting Advocate Involvement in Research & Dissemination

Because most advocates new to CBCRP have little research experience, CBCRP offers programs to build their capacity for community-partnered participatory research (CPPR):

- QuickStart – An intensive program that helps community and academic teams build strong research partnerships (see Figure 3.2 for goals). The community and academic partners attend this program together and are given tools and resources to help establish an equitable partnership. They are also guided through exercises to help them translate their vision into an innovative project that can make an impact on policy or practice. At the end of the program, they are given the option to submit a mock application for a CBCRP award and receive feedback on their project which they can use to refine a real application.
- Technical Assistance – free assistance to anyone interested in getting involved in community-based research (CPPR) including personalized support and online webinars.
- Community Research Collaboration Planning Awards – Launched in 2024, these $15,000, 12-month grants support teams in completing QuickStart and preparing CRC grant proposals.
- Community-led Conference Awards – Since 2017, $25,000 grants help grassroots organizations plan convenings that generate research ideas and inform breast cancer work.

Figure 3.2: QuickStart Goals



CBCRP's Impact on Community Partnered Research Beyond Breast Cancer

In recent years, CBCRP staff expertise in community-partnered research has extended beyond the breast cancer program, strengthening other statewide initiatives.

For example, California Strategic Growth Council offered a $250K supplement to the $100M California Climate Action Program administered by the University of California Office of Research and Innovation. With their expertise, the RGPO CBCRP staff developed the Community-Engaged S/Hero Climate Action Grant Supplements that were awarded to ten UC, CSU, and community research teams who were executing Climate Action grants. These researchers comprised a Community Engagement in Climate Action Research (CEinCAR) Advisory Team. The CEinCAR Advisory Team collectively identified best practices to promote equitable, community-engaged climate research and developed a resource hub and workshop series to disseminate these to the broader research community.

CBCRP staff expertise was also critical to the successful establishment the California Firefighter Cancer Prevention and Research Program, funded by the California Legislature through AB 700 (2023). Administered by RGPO, this program supports UC-firefighter partnered research teams, modeled on the types of partnerships championed by CBCRP. Staff expertise informed the collaborative grant design, partner engagement, and technical assistance components, thereby enhancing the involvement of firefighters in high-impact, high priority cancer prevention research.

Sharing Research with Scientists and the Public

CBCRP is committed to sharing and disseminating research opportunities and findings. Below are highlights of ways CBCRP publicizes the outcomes of its research and collaboration with scientists and community groups across the state.

Research Conferences/Events

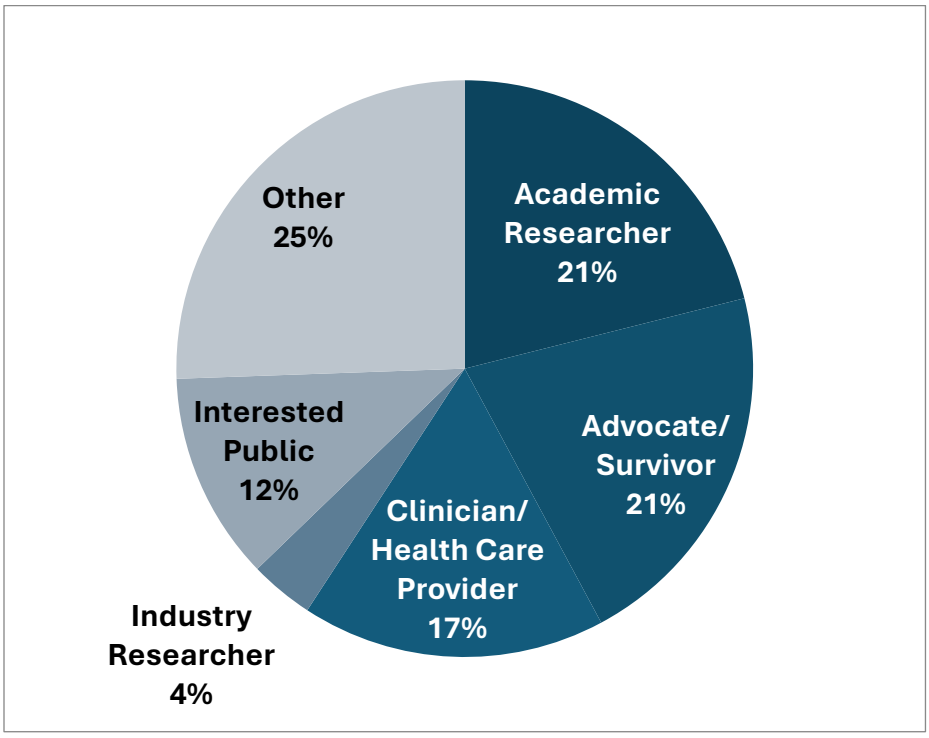
Virtual and In Person Convenings

On January 19, 2024, CBCRP hosted a virtual conference entitled "Occupational Risks and Consumer Products Contributing to Breast Cancer," in which CBCRP-funded investigators shared insights into what is known about Californians' exposures to environmental toxins linked to breast cancer and steps that can be taken to eliminate them. The conference was designed to balance knowledge sharing by academic and community researchers with thought-provoking, interactive sessions in which attendees identified scientifically informed actions that they could take in research, clinical practice, policy and individually. Fig. 3.3 presents the breakdown of the 172 attendees at the event.

Full details of the symposium including the session recordings and post-conference resources can be seen here: https://www.cbcrp.org/about/symposium/.

CBCRP also hosted in-person convening of investigators funded through our Program-Directed Initiatives focused on Environmental Exposures and Breast Cancer. The grantees met in April 2025 to share new knowledge and findings, identify solutions to roadblocks in their research, and build collaborations. Attendees made new connections and identified novel resources that they could apply to their CBCRP-funded investigations.

Figure 3.3: Attendees at Occupational Risks Symposium.



Sponsored Conferences

CBCRP offers conference awards for both academic-led and community-led events. CBCRP awarded eight conference awards from 2020-2025 (See Table 3.2). Event organizers used this conference funding to bring together stakeholders who do not normally collaborate to explore topics that advance understanding of breast cancer causes, prevention, diagnosis, and treatment. The organizers report outcomes from these events that include online resources for communities, development of new research collaborations and research into topics that are insufficiently investigated in breast cancer, seed funding for promising research ideas, and follow up events.

Table 3.2: CBCRP Conference Awards 2020-2025

Event	Event Organizer	Organization
11th International Symposium of the Breast	Michelle Woodhill	Dr. Susan Love Research Foundation
A multigenerational dialogue: reducing our exposures of toxic chemicals and breast cancer risk	Pastor Rhonda Holbert	Celebrate Life Cancer Ministry
Advocates and scientists partner to strengthen US testing of chemicals that can affect breast health	Jayla Burton	Breast Cancer Action
Breast Cancer and the Environment Workshop	Michele Rakoff	Breast Cancer Care and Research Fund
Nail Salon Worker Health and Safety Research Conference	Lisa Fu	Asian Health Services
Orange County Complete Breast Cancer Care Continuum Conference	Hai Hoang	Illumination Institute
RISE UP for Breast Cancer	Laura Esserman	UCSF
Women's Health & Environmental Justice	Luis Pardo	Worksite Wellness LA

CBCRP funded researchers have also hosted symposia and informational sessions that leveraged knowledge acquired from the CBCRP grants, such the Latino Cancer Institute's October 4th, 2024 convening of the One Step Forward, Two Steps Back – Advances and Barriers in Latina Breast Cancer conference, which discussed the gaps in access to genetic and genomic testing in Latina breast cancer care. These events informed policy makers and stakeholders of the most current, evidence-based findings to create and deliver strategies that will decrease breast cancer incidence of and/or mortality.

Sharing Research over the Internet and in Social Media

CBCRP is committed to proactive communications with stakeholders, achieved through a variety of online methods:

- **Website:** The CBCRP website is designed to provide information opportunities to learn about the status of the breast cancer research field and to engage with CBCRP. Webpages include the following:
    - RGPO's Funded Research Database, which includes the abstracts of each CBCRP-funded research project with links to the grant-funded open access publications;
    - Funding opportunity announcements and applicant technical assistance;
    - Downloadable versions of all CBCRP publications;

    - Opportunities to request specific information from CBCRP and make online donations to CBCRP; and
    - Reports on progress and outcomes of CBCRP's research strategy development.
- **E-newsletter:** CBCRP's email newsletter gives subscribers timely announcements of funding opportunities, early notification of new research resources and breast cancer conferences, and avenues to stay involved, informed, and active in the pursuit of breast cancer cure and prevention. It is distributed to over 2,800 stakeholders each month.
- **Social media:** CBCRP currently has nearly 2,000 followers on our Facebook page. Our Facebook page presents information about breast cancer research, along with an online space to exchange ideas, ask questions, and follow links to information about CBCRP-funded research studies. Facebook users can also access invitations to events, announcements of CBCRP-funded research findings, and links to other breast-cancer-related organizations.

Publications

In 2020, the International Journal of Environmental Research and Public Health released a special issue devoted entirely to CBCRP's Global Challenge to Prevent Breast Cancer, Advancing Primary Prevention of Breast Cancer, and published follow-up articles through 2021. CBCRP staff contributed to this special issue and have also published in other academic publications, including the European Society of Medicine.

4. CBCRP Grantmaking Strategy

CBCRP combines ongoing strategy assessment with program/funding evaluation to ensure that funding investments remain up-to-date with the changing scientific landscape and continue to provide unique funding opportunities to move the field of breast cancer research forward.

CBCRP's Programmatic Pillars

CBCRP routinely reviews its mission and revises programmatic goals to ensure that funding opportunities remain at the cutting edge of the field. CBCRP completed its latest programmatic review in 2023 and, from that process, CBCRP Research Council refined and reaffirmed the ten pillars for funding as below:

1. **California Specific:** Fund research that utilizes resources particular to California and/or addresses a breast cancer need that is specific but not necessarily unique to the burden of breast cancer in California.
2. **Capacity-building:** Fund research that helps recruit, retain, develop, and remove barriers for California-based investigators who engage in research and training that advances CBCRP initiatives.
3. **Collaboration:** Fund research that uses multi-disciplinary approaches and advances close collaborations among California scientists, clinicians, advocates, community members, patients, survivors, and others.
4. **Disparities, Underserved and Accessibility:** Fund research that specifically addresses disparities, and the needs of California's underserved populations who bear a disproportionately high burden of breast cancer or have disproportionate exposures or conditions linked to breast cancer.
5. **Innovation:** Fund research (e.g., novel treatments, strategies, paradigms, technologies, applications in new populations and contexts; high-risk, high reward) that brings new ideas and new paths forward that address the CBCRP's mission.
6. **Non-Duplicative:** Fund research that complements, builds on, and/or feeds into, but is not duplicative of other funded research.
7. **Policy:** Fund research and evaluation that will have policy implications that support the CBCRP's mission for breast cancer in California.
8. **Public Health Outcomes:** Fund research that will improve public health outcomes (e.g., preventing breast cancer, identifying environmental links to

breast cancer, detection of breast cancer, effective treatments, quality of life, and survivorship) in California's diverse communities.

9. **Responsive:** Fund research that is responsive to the CBCRP's breast cancer research needs, opportunities, and expectations as identified by scientists and the public in California.
10. **Translation and Dissemination:** Fund research that is on a critical path for practical application and leads to more effective solutions (e.g. products, technologies, interventions, policies) and their delivery to Californians.

Grant Review to Support Program Goals

Every grant CBCRP funds must be both scientifically meritorious and responsive to program goals. Grants undergo two tiers of review: scientific merit and program relevance.

Scientific merit is determined by a peer review panel consisting of scientists highly knowledgeable about the topics of the applications they consider and advocate reviewers who are active in breast cancer advocacy organizations, many of them also living with the disease. The committees use a review process based on established NIH practices but tailored to focus on assessing the qualities of the applications that are important to CBCRP (e.g., impact on breast cancer, translation potential, and community benefit). CBCRP's review process is one of a handful of non-federal peer review systems certified by the National Cancer Institute to meet NIH standards of peer review and funding.

The CBCRP Council evaluates every scientifically meritorious application for programmatic relevance and scores them according to programmatic criteria (response to priorities, response to award type, dissemination and translation potential, underfunded area, quality of the lay abstract, addressing the needs of the underserved, advocacy involvement and specificity to California). Only applications with strong scientific merit and programmatic scores are funded.

The members of CBCRP's Council and review committees for 2020-2025 are listed in Appendices 3 and 6.

Funding Mechanisms

In order to meet a range of research needs, CBCRP funds research under two funding umbrellas: program-directed research and investigator-initiated research. Both categories have multiple award types that support academically trained researchers, community researchers, and advocates. As shown in Table 3.1, over $35 million was distributed in grants through these award types from 2020 to 2025 to fund 88 projects.

Table 4.1 Research funded from July 1 2020 to June 30 2025 by Award Type

Award Type	No. of Projects Funded	Funding Dollars	% of Total Funding
Program-Directed Initiatives	33	$20,375,904	57%
Policy Initiative	3	$664,197	1.8%
IDEA	25	$5,498,819	16%
Translational Research Award	2	$1,968,012	6%
CRC Full Research Award	5	$4,095,415	12%
CRC Pilot Award	10	$2,321,707	7%
CRC Planning Grant	3	$55,043	0.1%
Conference Award	7	$174,722	0.4%
Grand Total	**88**	**$35,153,819**	

Program-Directed Research

In 2004, CBCRP began devoting a portion of its funding to support coordinated, directed, and collaborative research in areas that are understudied and could contribute significantly to new ways of understanding breast cancer. These program-directed and policy-oriented initiatives are designed to leverage California's unique and diverse population and research resources to support critical studies that significantly move these fields forward and create solutions. Since 2020, CBCRP has funded two rounds of Program-Directed Initiatives, making a $20 million investment in topics addressing environmental causes, health disparities, and interventions to reduce the burden of breast cancer.

Researchers can apply for program-directed funding through one of the following mechanisms, depending on the specific requirements for each research initiative:

- **Requests for Qualifications (RFQs)** solicit applications to identify the most qualified researcher to conduct studies with specific predetermined research questions and plans through a contract;
- **Program Directed Awards (PDAs)** fund specific projects identified during strategy development and approved by the CBCRP Council through a cooperative agreement; and

- **Request for Proposals (RFPs)** support investigator-initiated grants that respond to a specific initiative topic.

The two rounds of Program-directed Initiatives included in this report are:

- **California Breast Cancer Prevention Initiatives (CBCPI):** Globally, prevention research comprises only 5% of total breast cancer investments (see Figure 5.2 in the next section). To address this critical gap, in March 2010, CBCRP launched CBCPI. Half of CBCRP research funds were devoted to program-directed initiatives to deepen the knowledge on causes and possible prevention strategies for the disease. Research funded through CBCPI addressed one of the following research areas:
  - Identification and elimination of environmental causes of breast cancer;
  - Identification and elimination of disparities/inequities in the burden of breast cancer in California;
  - Population-level prevention interventions (including policy research) on known or suspected breast cancer risk factors and protective measures; and
  - Targeted prevention interventions for high-risk individuals, including new methods for identifying or assessing risk.

  The majority of grants issued under this initiative have been completed; the last award was made in 2024 and that project is ongoing. Highlights of the outcomes of CBCPI-funded research projects completed in 2020-2025 are included in Appendix 2. A total of 27 grants totaling $22 million have been funded through this initiative.

- **Preventing Breast Cancer: Community, Population, and Environmental Approaches (PBC):** In 2015, the CBCRP Council approved setting aside 50% of CBCRP funds for a third round of program-directed initiatives in the following research areas:
  - Identification and elimination of environmental contributors to breast cancer;
  - Identification and elimination of fundamental causes of health disparities with a focus on breast cancer in California; and
  - Development and application of population-level prevention interventions that incorporate approaches to address the needs of the underserved and/or populations experiencing disparities in the burden of breast cancer.

  Grants issued through this initiative are at different stages of completion. Highlights of the outcomes of completed PBC-funded research projects are included in Appendix 2. A total of 27 grants have been awarded totaling almost $20 million through this initiative.

Future Program-Directed Initiatives

In 2023, the CBCRP Council approved setting aside 50% of CBCRP funds for 5 years for a fourth round of program-directed initiatives in the same research areas as PBC. CBCRP staff are working with the CBCRP Council and with breast cancer experts including scientists, clinicians, survivors, advocates and policy makers from across California and beyond to identify pressing research and funding gaps which the Program can address in a targeted and impactful manner.

In 2025, in response to changes in Federal research priorities, the Council recommended that the first tranche of this fourth round of Program Initiative funding be directed to funding Pre- and Post-Doctoral Fellowships in Program Initiative research areas and one-time bridge funding for Fellows whose federal grants had been rescinded. The first of these grants will be awarded in 2026. (See Pipeline section below).

Policy Initiative

CBCRP also allocates $260,000 annually for research that addresses breast cancer-related policy issues in California. A Policy Research Advisory Group identifies key policy areas that deserve further investigation. The first CBCRP Policy Initiative ran from 2015-2022. Two teams, selected through an open peer-reviewed competition, were on-call, poised to conduct rapid-response policy research projects to inform emergent breast cancer relevant policy. In August 2022, CBCRP redesigned the Policy Initiative to establish an open call for each research question. Any policy research team in California is eligible to apply. Details of the projects funded under the Policy Initiative are described in Appendix 2. One example of the success of this initiative is a 2018 project that evaluated California's Green Chemistry Initiative (an initiative to reduce public and environmental exposure to toxic chemicals) ten years after its establishment and produced a report with recommendations for improving the program. Four years later, a bill (SB-502, Allen) was passed in the California legislature that reformed the Green Chemistry program and implemented many of the recommendations of the report.

Investigator-Initiated Research

For investigator-initiated research, CBCRP solicits applications from researchers (and in the case of CRC awards, community-academic teams) based in California for five different types of awards. All research funded through these award types must address at least one CBCRP priority area: Community Impact of Breast Cancer; Etiology and Prevention; Detection, Prognosis and Treatment; and Biology of the Breast Cell. (More details in Appendix 1.) Following is a description of the investigator-initiated funding mechanisms

CBCRP offered during this reporting period. Funding outcomes are summarized in Appendix 2.

Community Research Collaboration Awards (CRC)

CBCRP supports community partnered research that unites community groups and academic scientists to address crucial breast cancer questions. This has included the need for fertility services for young breast cancer patients, occupational exposures linked to breast cancer in firefighters, nurses and office workers and access to cancer services in rural areas. CRC awards often include co-PIs from affected communities, ensuring focus on underserved populations and key research gaps. Newly introduced in 2024, CRC Planning Awards provide $15,000 to support grant proposal development. CRC Pilot Awards fund collaboration-building and pilot data collection, with $150,000 awarded (increased in 2024 to $200,000) over 18 months. CRC Full Awards support mature projects with strong preliminary data and integrated teams, providing $600,000 over three years.

Innovative, Developmental, and Exploratory Awards (IDEAs)

IDEA grants are used to fund the beginning stages of novel projects (e.g., new drugs, new strategies, new paradigms, new technologies, new applications of tested strategies in new populations and contexts), establish new collaborations, develop new technologies, or adapt technologies from other fields to breast cancer research. Applicants must show how their project is part of a longer-term research process that will lead to practical applications, such as breast cancer diagnosis, treatment, or prevention. Additionally, IDEAs create opportunities for new researchers by focusing the peer review on the innovation of the idea rather than the track record of the investigator, which gives early career investigators a more equal opportunity. IDEAs are funded at $100,000 to $150,000 for 18 months (in 2024 this was increased to $150,000 – $200,000) and require recipients to describe the public health outcomes of their research.

Conference Awards

CBCRP conference awards support events aimed at fostering new collaborations and novel directions in breast cancer research. CBCRP offers two types of conference awards: Standard and Community-Led awards. The Community-Led award offers grassroots organizations more time or resources to develop and execute a successful event.

CBCRP allocates up to $50,000 per year for conferences awards, ideally one of each type. All conference proposals must do one or more of the following:

- Highlight resources particular to California;
- Encourage new collaborations;

- Recruit high quality researchers to the field;
- Examine and create solutions for disparities/inequities;
- Inspire paradigm-shifting research;
- Inform policy;
- Promote translational and/or outcome driven research; or
- Create tools for educating members of the public about breast cancer.

Translational Research Awards

Translational Research awards (discontinued in 2024) funded projects that lead to more effective products, technologies, interventions, or policies, and to their application and delivery to Californians. They were designed to quickly apply basic science findings toward treatment, diagnosis, prevention, or other applications that could directly affect individuals with breast cancer, either in a medical clinic setting or through a public health measure. Areas of focus included the following:

- Prevention, detection, diagnosis, or treatment of breast cancer;
- Improved quality of life for survivors;
- Reduction in the social burden caused by the disease in California; and
- Advances in medical practices, health systems changes, health policies, or environmental modifications.

To ensure that these studies translated their application and delivery to Californians, CBCRP required applicants to demonstrate how the project fit in a defined research continuum leading to implementation. Translational Awards were $750,000 for three years.

Following the Council's evaluation of CBCRP in 2023, and considering both CBCRP's declining tax revenue and the large size of these grants, CBCRP discontinued the Translational Awards. The realignment has allowed CBCRP to increase investment in IDEA and CRC awards. The final Translational Award was made in 2024.

Expanding the Pipeline of Breast Cancer Researchers

Trainee Supplements

CBCRP maintains its commitment to strengthening California's workforce development of future breast cancer researchers and supporting research capacity building that reflects the state's diversity. Launched in 2021, the CBCRP Trainee Supplement expands opportunities for entry to and training in breast cancer research. The initiative provides supplements of $10,000 to fund high school students, undergraduates, and community members in California to engage in research under the mentorship of CBCRP-funded investigators. Trainees may focus their research on issues affecting communities

disproportionately affected by breast cancer or facing disproportionate exposures linked to breast cancer. The supplement offers short-term research experiences, typically over a summer or for up to six months, and is available across most CBCRP award types. Through this program, CBCRP continues to broaden participation in the field and foster more inclusive, community-centered research. Between 2021 and 2025, 24 trainee supplements were awarded.

Fellowships

In response to shifting federal research priorities that have created critical gaps in breast cancer research and training, CBCRP is reinstating Fellowship Awards for the 2025–2026 cycle. All fellows including those from groups underrepresented in breast cancer research and/or those who wish to pursue careers focused on questions on environmental contributors to breast cancer, health disparities and population-level prevention of breast cancer are encouraged to apply.

The Predoctoral Fellowship supports doctoral-level graduate students in California pursuing breast cancer research under the guidance of an experienced breast cancer faculty advisor.

The Postdoctoral Fellowship is designed to support early career researchers pursuing careers in breast cancer under the guidance of an experienced mentor.

In addition, CBCRP launched a one-time bridge funding award in 2025 to support California predoctoral and postdoctoral fellows whose breast cancer research was prematurely terminated due to changes in federal funding. The funds may be used to complete ongoing work, publish findings, or transition to new breast cancer-related opportunities.

Program Evaluation and Future Strategies

CBCRP is focused on identifying opportunities to make the maximal impact on breast cancer. With tobacco tax revenues expected to decline by 23% over the next five years, CBCRP is redoubling efforts to make sure every dollar spent will support this goal. In April 2023, in partnership with the CBCRP Council, the program completed a comprehensive evaluation of its funding strategy. CBCRP refined its key programmatic pillars (see Programmatic Pillars); assessed the impact of its current strategy on preventing, treating, and living with breast cancer; and identified key research gaps and unique California resources CBCRP grantmaking could draw upon.

Analysis of stakeholder surveys showed how CBCRP grantees have leveraged the funding to bring more research dollars and expertise to California, to bolster the understanding of breast cancer and to develop tangible strategies to combat it. The analysis revealed that

while CBCRP successfully supported research that met or exceeded program goals, the existing funding strategy would not be financially sustainable considering declining revenue. The newly crafted funding strategy will maintain CBCRP's core priorities and focus on investments where CBCRP can make unique contributions in the breast cancer funding landscape. This strategy is comprised of:

- Devoting 50% of the research portfolio to support coordinated, directed, and collaborative breast cancer research that addresses strategic needs;
- Supporting IDEA awards, CRC Pilot awards, Conference awards (both Standard and Community-Led), Policy Initiative awards and Trainee Supplements on an annual basis;
- Launching a new award in 2024, the CRC Planning Award, offered in alternate funding cycles with the CRC Full Awards;
- Prioritizing projects that will impact health outcomes and supporting projects addressing the needs of people who bear a disproportionately high burden of breast cancer or have disproportionate exposures or conditions linked to breast cancer;
- Prioritizing projects that address questions that specifically impact Californians and/or leverage resources that are unique to California; and
- Beginning in 2024, discontinuing the Translational Research award and increasing investments in our IDEA and Community Research Collaboration awards.

By consolidating our award offerings and adjusting the cadence of when they are offered, CBCRP expects to continue supporting the critical contributions that Californians make to solving breast cancer.

5. Relationship between Federal and State Funding for Breast Cancer Research

CBCRP is distinct from research programs funded by the federal government in both the sources of funding and in the types of research funded.

CBCRP's Sources of Funding: Unique Among the Nation's Breast Cancer Research Agencies

The primary source of funding for CBCRP is a 45% share of revenue from a 2¢ State tax on cigarettes, comprising 96% of all program revenue. This source of funding is unique among agencies that fund breast cancer research across the nation. See Table 3.1 for a description of all CBCRP income and sources between July 1, 2020 and June 30, 2025.

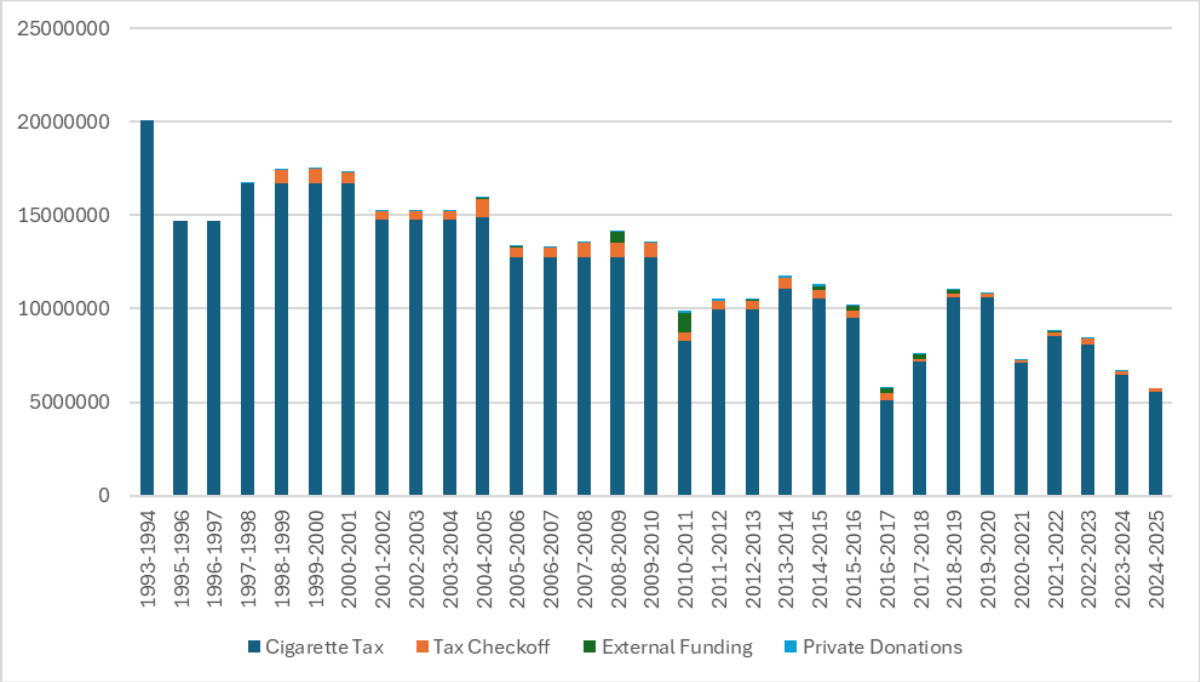
In contrast, funding for breast cancer research at other programs in the U.S. comes from a variety of different sources: Federal Agencies, donor-funded National Voluntary Health Organizations and Regional NGOs, and State Agencies (the latter may come from state general funds, license fees, lottery sale or voluntary donations on state tax returns).

CBCRP's primary fund source — the State cigarette tax — is declining due to reductions in sales. Unlike other research programs funded by a California state tobacco excise tax, CBCRP does not receive funds from taxes on non-cigarette tobacco products, such as cigars, chewing tobacco, or e-cigarettes, which are *increasing* in sales. This situation leaves CBCRP vulnerable to this steep decline in traditional cigarette usage and sales.

CBCRP relies on additional funding sources to address a small portion of this gap. California's voluntary income tax checkoff program allows individuals to make donations on state income tax returns and designate them for CBCRP. Legislation renewed by the California State Legislature in 2024, SB-1172, authorized donations for five years, extending the tax checkoff option to 2031, providing an additional source of fairly reliable funding. Additional individual donations can also be made through the CBCRP program website.

To increase donations, CBCRP conducts public outreach and fundraising efforts, which has increased donations from individuals, businesses, and foundations. CBCRP's activities in these areas are discussed more fully in Section 6: Activities to Increase Funding for Breast Cancer Research and Awareness of Breast Cancer Research. Figure 5.1 provides an overview of all revenue sources since the program's inception.

Figure 5.1: CBCRP Funding Sources, 1994–2025



CBCRP's Unique Funding Contribution to Breast Cancer Research

Between 2020 and January 2025, federal funding sources supporting breast cancer research remained stable. For example, the Department of Defense maintained its annual breast cancer research funding allocation at $150 million from 2020 to 2025. In 2022, the National Cancer Institute committed to the next phase its Cancer Moonshot initiative, building on the $1.8 billion in cancer research funding from 2016-2023 that was allocated in the 21st Century Cures Act. However, since February 2025 significant changes to federal scientific funding levels and priorities have the potential to dramatically impact the funding landscape for breast cancer research, particularly in areas important to California, and to addressing disparities in breast cancer incidence and outcomes that CBCRP has prioritized. This change raises the importance of CBCRP as filling a critical gap.

CBCRP funds research that is often not considered in these large, national funding streams. CBCRP uses the funds provided by the State of California in the most efficient and cost-effective manner and adheres to its mandate as defined by the California Legislature. One such mandate is to "fund innovative and creative research, with a special emphasis on research that complements, rather than duplicates, the research funded by the federal government." CBCRP fulfills this mandate in four ways:

1. Funding research that could have a major impact on breast cancer — including its prevention and cure — that are not prioritized in federal funding;
2. Leveraging national experts to evaluate proposals for their innovation and impact;

3. Reviewing grant applications for topical overlap with current and pending funding from other agencies prior to funding decisions; and
4. Taking a leadership role in reducing duplication in state, federal, and international breast cancer research funding.

These four ways of assuring that CBCRP-funded research does not duplicate federally funded research are each discussed in more detail below.

Funding Promising Areas of Research That Have Not Received Sufficient Attention

The NIH is the federal agency that funds most health-related research. The NIH's "plant many seeds" approach to funding supports important questions of theoretical and empirical interest, but in the case of breast cancer, has often resulted in some promising avenues for prevention and cure being under-funded.

CBCRP employs a complementary, targeted approach, which is to fund scientifically meritorious research that is focused on speeding progress in preventing and curing breast cancer specifically.

CBCRP's Research Council sets the Program's funding priorities, taking into account:

- Perspectives from national breast cancer experts;
- Input from California advocates and activists, healthcare providers, public health practitioners, community leaders, biotechnology scientists, and academic researchers; and
- Analyses of current literature on breast cancer and current gaps in knowledge.

Based on this input, CBCRP is prioritizing three overlapping research areas through its program initiatives that California is uniquely positioned to address (see Appendix 2):

- the environment's role in breast cancer;
- breast cancer prevention; and
- reasons for the unequal burden of breast cancer among various populations of women.

Identifying Innovative Research with Potential for High Impact

CBCRP's proposal evaluation and scoring criteria facilitates reviewers' ability to differentiate applications that are especially innovative and that have the most potential impact. This tailored scoring system has improved the Program's ability to choose the most innovative research for funding.

Instead of assigning a single, overarching score to rank proposals, CBCRP experts score applications separately for innovation, impact, approach, and qualities that are specific to the award type. The separate scores are then used to inform funding decisions. For example, to address CBCRP's "impact" criterion, researchers are required to describe the steps necessary to turn their research into products, technologies, interventions, or policies that will have an impact on breast cancer and to describe where their study fits on this critical path. Because reviewers are considering only this component when assigning a component score, the individual and combined final scores provide a more comprehensive picture of the strengths, innovation and impact.

The CBCRP Council also evaluates every application for programmatic relevance by including criteria that assess Distinction from Other Funding, and since 2024 on whether the research is of specific relevance to California or uses resources (e.g., cohorts) that are only available in California .

Reviewing Grant Proposals for Topical Overlap with Federal Funding

As a final step to ensure that CBCRP investments do not duplicate federally funded projects, the expert reviewers and CBCRP program officers review all grants recommended for funding for topical overlap with current and pending federal grants. If overlap with federal funding is found, the overlapping grant (or portion of the grant) is not funded.

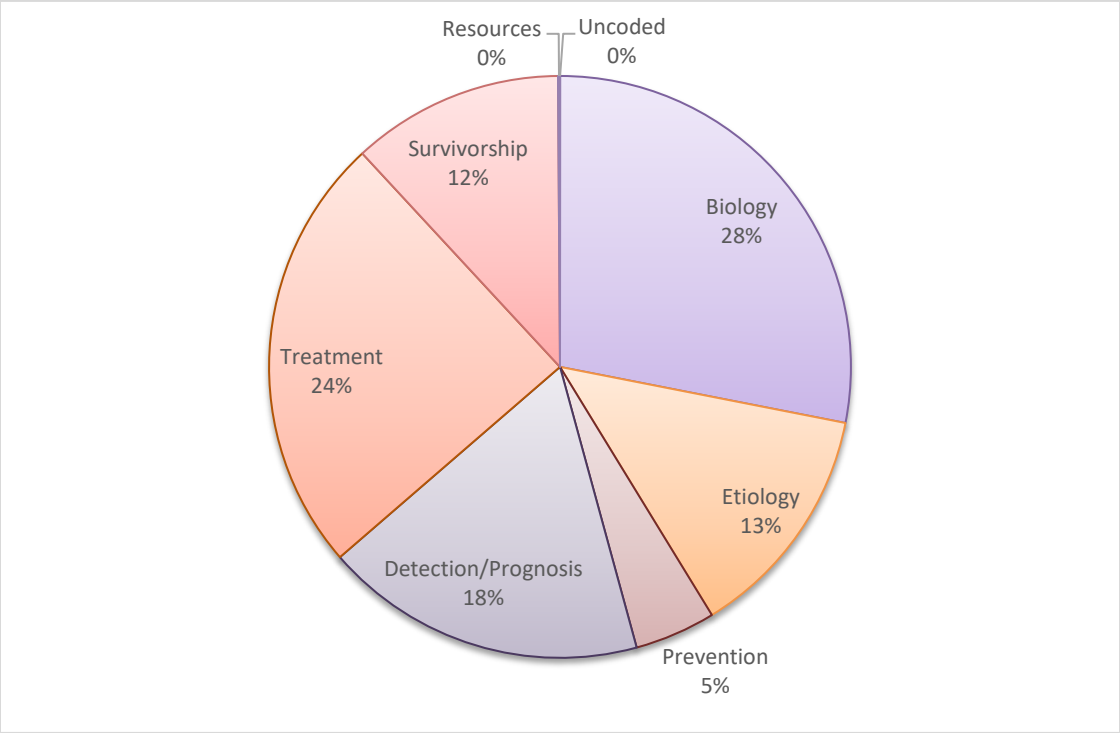
Taking a Leadership Role to Reduce Duplication in Federal, State, and International Funding

CBCRP was a founding member and plays a leadership role in the International Cancer Research Partnership (ICRP), an international effort to reduce duplication in cancer research. Member organizations include over 100 government and charitable research funding agencies in the U.S., United Kingdom, Canada, the Netherlands, Australia, and Japan, that together distribute more than $50 billion in cancer research funding annually, about 10% of which goes to breast cancer. Better communication and data sharing by the organizations that make up the ICRP is intended to speed progress in all fields of cancer.

One way ICRP pursues these goals is through a research classification system to encourage agencies to report their funding in an accessible and meaningful way. The ICRP website (https://www.icrpartnership.org/) includes research abstracts from more than 75,000 research projects. The online database is searchable by cancer type, scientific area, funding organization, and other criteria. The web site facilitates dialogue among cancer researchers, allows scientists to identify possible collaborators and better plan their research. CBCRP requires that Principal Investigators consult ICRP's database and describe how their proposals are distinct from work that is already funded to ensure that their proposals are truly breaking new ground. CBCRP uses this data to identify funding gaps to target with its comparatively small funding footprint. For example, ICRP's data

indicate that only 5% of entire ICRP breast cancer portfolio goes to prevention of the disease (See Figure 5.2) – highlighting a major gap in international breast cancer research funding that CBCRP is targeting. CBCRP's participation in leadership roles in ICRP has enhanced visibility of breast cancer and California in partnership activities.

Figure 5.2: ICRP Breast Cancer Portfolio



6. Activities to Increase Funding for Breast Cancer Research and Awareness of Breast Cancer Research

While CBCRP funded $14,113,718 in investigator-initiated research during 2020-2025, CBCRP had to turn down $13,122,607 in proposed research, much of it meritorious and likely to advance progress in the field. Funding for CBCRP from the State tobacco tax decreases every year, even as the costs of research increase, and breast cancer continues to impact the well-being and morbidity of women in California and beyond. Current funds cannot meet the demand for critical research. Additionally, CBCRP has had to shift funding and discontinue support, such as the Translational Research Awards, in order to continue funding the rest of the portfolio at adequate levels.

Action is needed to maintain present funding sources and increase funds from new sources. By increasing awareness of breast cancer research through public education and highlighting compelling projects, CBCRP is bolstering public support for our mission. CBCRP's Faith Francher Research Award is a special designation intended to highlight a funded project that has the potential to affect the lives of underserved communities. CBCRP also actively fundraises through a California state voluntary contribution funds program, private foundations, and donations from the public. Progress in these areas is highlighted in this section.

Increasing Voluntary Donations to the California State Income Tax Checkoff Program

To address the pressing need to increase funds, CBCRP is pursuing two goals:

- Increasing donations to CBCRP through the California income tax voluntary contribution program and new sources; and
- Increasing public awareness of breast cancer, breast cancer research, and the California Breast Cancer Research Program.

CBCRP conducts outreach campaigns focused on raising awareness of breast cancer research results and the Program's work to encourage donations through state tax return contributions. A special CBCRP website, "405–Check the Box Fund the Fight" (http://www.endbreastcancer.org), informs stakeholders about fundraising progress. It also summarizes progress researchers achieved with the grants funded via contributions made on state income tax returns. CBCRP has used Google, Facebook, and YouTube ads to alert California taxpayers to these resources.

During 2020-2025, over $2.2 million was donated to CBCRP through the state income tax checkoff program by an annual average of 26,000 individuals. This made CBCRP one of the

checkoff program's top beneficiary organizations. CBCRP is working closely with UCOP and the California Department of Finance to ensure all designated donations are allocated to the Program. In 2025, the annual allocation increased to $363,000, which is progress toward this goal.

The grants that were funded in part through voluntary tax contributions are listed in Appendix 2.

Donations from the Public

Californians continue to demonstrate enthusiasm for CBCRP's research. Thanks to many generous individuals, CBCRP received over $216,000 in donations during 2020–2025. Donations can be made through the following website: https://www.cbcrp.org/support-us/.

The following organizations and businesses also raised funds for CBCRP through events and campaigns: Barbara & Douglas Hillestad memorial gift, Brianna Rachelle Mets, Charities Aid Foundation of America-Cyber grants LLC, Community Foundation for Monterey County Anita Tarr Turk, Elazar Harel & C.J.H Cozen, Frontstream, Hemming Morse LLP CPA, Mayfield Junior School of the Holy Child Jesus, Melvin S Cohen Foundation, St. Didacus Parish School, Super League Gaming, The Blackbaud Giving Fund YourCause, Tolosa Winery, United Way, and Wells Fargo Community Support YourCause. The program has also received funding from bequests between 2020 and 2025 from the Dorothy A Raulin Estate, the Dorothy M. Booth Estate, and the Walter Brown Trust.

Honoring a Pioneer in CBCRP Visibility and Fundraising: The Faith Fancher Research Award

Faith Fancher was a long-time television news anchor and personality with KTVU (Oakland) who waged a very public battle against breast cancer. She also was the founding member of the CBCRP Executive Team, which formed in 2001 to help raise the visibility and fundraising profile of the Program. Faith passed away in October 2003 after a six-year struggle with breast cancer. In Faith's honor, CBCRP created the annual Faith Fancher Research Award. The award is presented each year to a researcher or research team embarking on a CBCRP-funded breast cancer study that reflects the values that Faith held most closely and extends the work that Faith did for all women facing breast cancer. The recipients of the Faith Fancher Research Award in 2021-2025 are highlighted in Appendix 2.

7. Looking Forward

Since its creation 32 years ago, CBCRP has centered the views and needs of breast cancer advocates and California communities. The Program has made great progress advancing the field of breast cancer research, especially related to environmental factors (such as chemical pollution of California's air, water and farmland), prevention and health disparities. The three rounds of Program-Directed Initiatives to date have both deepened and broadened research in these areas and have expanded the network of researchers around the world aware of and contributing to our mission.

Recent shifts in federal research priorities and funding levels have the potential to create critical gaps in funding for research and training – especially in areas that CBCRP has funded for decades. CBCRP continues to lead, and this report has described how CBCRP is already responding. Notably, to support the pipeline of breast cancer researchers, CBCRP is directing the first tranche of the fourth round of Program Initiative funding to Pre- and Post-Doctoral Fellowships in the Program Initiative research areas of environmental factors, breast cancer prevention and reducing health disparities. CBCRP has also launched a call for one-time bridge funding for Fellows who had federal grants rescinded. These first grants will be awarded in 2026.

In 2026, CBCRP's Council will consider how best to invest subsequent rounds of Program Initiative funds to continue to fill important gaps in breast cancer research. CBCRP remains committed to funding innovative, investigator-initiated research that engages advocates and communities across California. A robust income stream is key to being able to effectively address these gaps and CBCRP will continue to invest in growing income from voluntary donations and exploring new partnerships.

CBCRP's focus on cutting-edge research, deep community engagement, and innovative partnerships is key to its continued leadership in breast cancer research. CBCRP remains committed to learning, evolving with a rapidly changing world, and grounding its work in the real needs and concerns of California's diverse population.

Appendix 1: CBCRP Priority Areas

CBCRP funds Program-initiated and Investigator-initiated research to address the topics of:

- The Community Impact of Breast Cancer: The social context
- Etiology and Prevention: Finding the underlying causes
- Detection, Prognosis and Treatment: Delivering clinical solutions
- Biology of the Breast Cell: The basic science of the disease

The Community Impact of Breast Cancer

California's great strength comes from the diversity of the people who live here. But these differences in ethnicity, race, culture, language, sexual orientation, immigration history, and socioeconomic status also contribute to disparities in prevention, detection, treatment, and care of people with or at risk for breast cancer.

CBCRP supports research that addresses disparities and the burden of breast cancer among California's diverse communities. CBCRP seeks to address these disparities by investing in research that answers critical questions, such as the following:

- How do poverty, race/ethnicity, and social factors affect incidence and mortality for breast cancer?
- What are the sociocultural, behavioral, and psychological issues faced by women at risk for or diagnosed with breast cancer?
- What services are needed to improve access to care in order to improve quality of life and reduce suffering?
- What policies can help reduce disparities related to prevention, detection, and treatment of breast cancer?

Etiology and Prevention

Despite progress in understanding the underlying environmental and biological causes of breast cancer, significant gaps remain. CBCRP's grants in etiology and prevention aim to answer questions such as: What environmental and biological factors interact to increase the risk of developing breast cancer? What approaches can be used to reduce or eliminate breast cancer risk? How are different communities in California affected by environmental and lifestyle contributors to breast cancer?

Specific topics of interest for research in these areas include:

- **Etiology: The role of environment and lifestyle —** Studies on breast cancer initiation that may be due to environmental exposures that subject women to agents that they, as individuals, cannot control; breast cancer causes related to lifestyle

(e.g., diet, exercise) and the underlying metabolic, hormonal, and environmental interactions; and studies on causative gene-environment interactions specific to breast cancer, especially those having the potential to lead to prevention strategies.

- **Prevention and risk reduction: Ending the danger of breast cancer —** Research exploring methods to prevent breast cancer or reduce risk, including elimination of external causative factors and the identification of surrogate markers for use in prevention trials. Examples include nutritional factors, xenoestrogens, exercise, studies of genetic variation, and methods to modify known breast cancer genes and risk factors.

Detection, Prognosis, and Treatment

Until researchers learn how to prevent all breast cancers, research on detection, prognosis, and treatment is critical. CBCRP funds research focused on utilizing novel imaging technologies for detection and developing new biomarkers and genomic/proteomic approaches for more accurate diagnosis and prognosis. CBCRP supports research on less toxic and more individualized therapies, mechanisms of drug resistance, and evaluations of alternative medicines and natural products.

Specific topics of interest for research in these areas include:

- **Imaging, biomarkers, and molecular pathology: Improving detection and diagnosis —** Research into new, cost-effective technological and biological approaches for molecular imaging and new approaches for tumor analysis at the individual patient level. This includes advanced types of molecular classification, new biomarker development, and improved technologies for patient diagnosis and prognosis, especially using techniques to replace the current practice of screening mammography and biopsy.
- **Innovative treatment modalities: Search for a cure —** Promising leads from biology-based studies are encouraged to begin translating research findings into clinical applications. Examples include immunotherapy, delivery technologies, gene therapy, new drug development/testing, and new approaches to clinical decision-making. Testing investigational anti-breast cancer agents for mechanism of action and identifying target patient populations is of particular interest.

Biology of the Breast Cell

Although basic science research in cancer is well-supported by other agencies, there remains a critical need to understand the pre-neoplastic, causative events of breast cancer at the tissue level, including the stroma. The genetic changes in disease progression and the tumor heterogeneity need clarification at the basic science level. CBCRP encourages

breast cancer stem cell research. Specific topics for research in this area include the following:

- **Biology of the normal breast: The starting point —** Research exploring aspects of normal breast biology (e.g., aging) that are linked to the earliest stages of breast cancer, and which could provide insights into new approaches to prevent, detect, or treat the disease.
- **Pathogenesis: Understanding the disease —** Research specifically focused on breast cancer tumor and stromal biology, including:
    - Studies of relevant proteins and genes with an emphasis on their relationship to the actual disease; and
    - Studies on elucidating key cell signaling, growth control, cell cycle, and apoptosis pathways.

Appendix 2: Research Progress and Results 2020-2025

CBCRP continues to be a leader in expanding the scope and possibility of what breast cancer research can be. Between 2020 and 2025, CBCRP funded challenging research areas by completing its California Breast Cancer Prevention Initiatives (CBCPI); launching the Preventing Breast Cancer Initiatives and increasing its impact in community based participatory research. CBCRP is pushing the field forward by asking questions about breast cancer prevention and treatment of advanced disease that few other funders support. See Table A2.1 for details of the funding distribution across CBCRP priority areas.

Table A2.1 Research funded from July 1, 2020 to June 30 2025 by Priority Area

Priority Area	No. of Projects Funded	Funding Dollars	% of Total Funding
Etiology and Prevention	**37**	**$18,852,482**	**54%**
Detection, Prognosis, and Treatment	**17**	**$4,216,512**	**12%**
Community Impact of Breast Cancer	**28**	**$10,951,336**	**31%**
Biology of the Breast Cell	**6**	**$1,133,489**	**3%**
Grand Total	**88**	**$35,153,819**	**100%**

Program-Directed Research

Since 2020, CBCRP has dedicated more than $20 million to funding program-initiated research. Through multi-year efforts planned with the assistance of national experts, these efforts seek to identify gaps in breast cancer research and develop research initiatives to fill these gaps. Between 2020 and 2025, 24 program-initiated research projects developed under the California Breast Cancer Prevention Initiatives (CBCPI) were completed. One project is still ongoing. Nine projects under the Preventing Breast Cancer: Community, Population, and Environmental Approaches Initiative (PBC) were completed and a further 16 were funded. The next round of Program-Directed Initiatives is currently under development.

The 2020 Legislative Report contained a detailed description of the results of the first round of Program-Directed Research – the Strategic Research Initiatives (SRI). Below are

highlights of progress made under CBCRP's program-directed initiatives since 2020, followed by listings of the concluded projects during that period (Table A2.2) and all the funded projects that are currently in progress (Table A2.3).

California Breast Cancer Prevention Initiatives

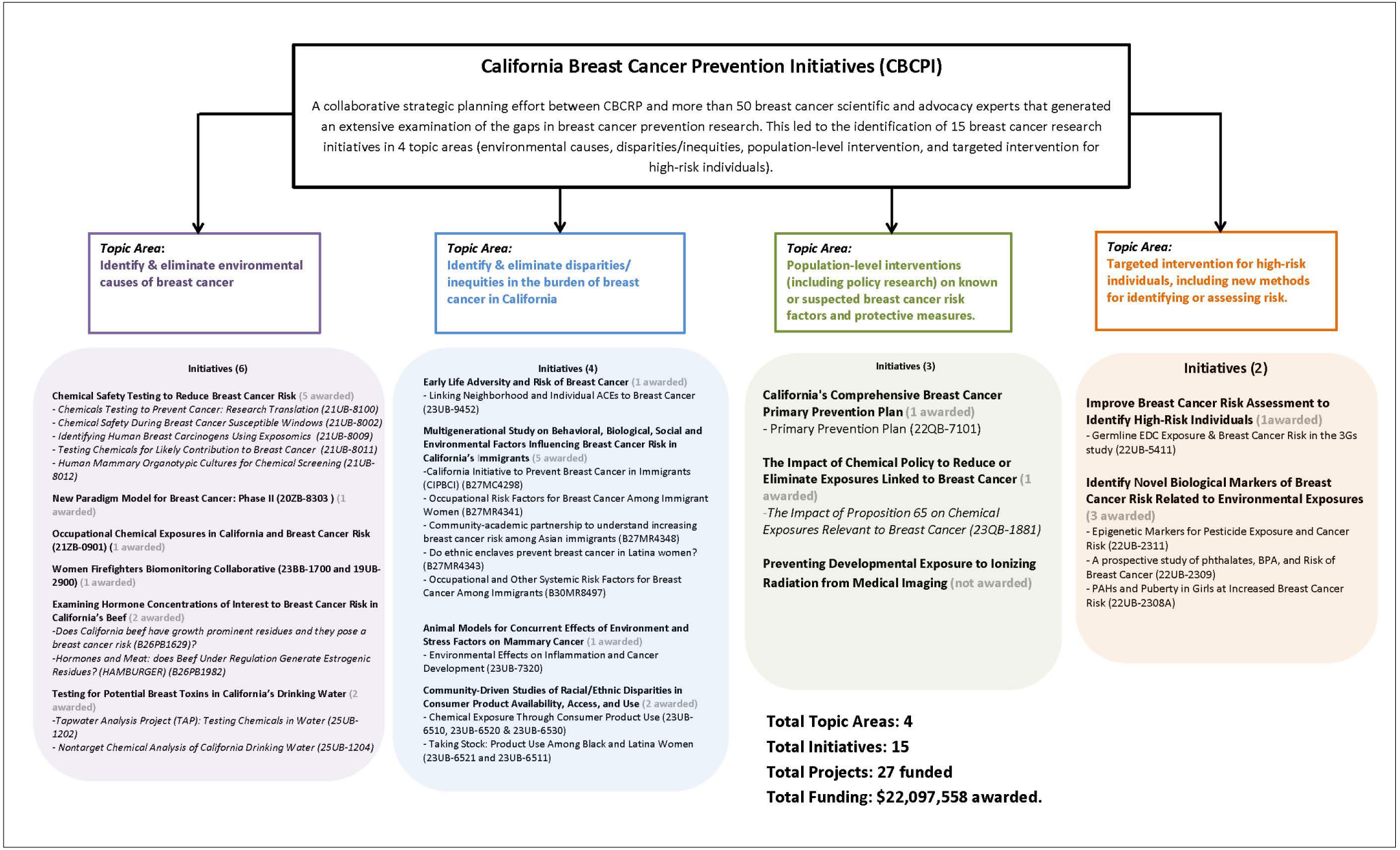
In March 2010, the Council decided to devote 50% of CBCRP research funds between 2011 and 2015 to program-initiated research. This effort was titled the California Breast Cancer Prevention Initiatives (CBCPI). The ultimate goal of this funding strategy was to support research that not only increases knowledge but also points to solutions that will reduce the suffering from breast cancer and move science closer to eliminating the disease.

A collaborative strategic planning effort between CBCRP and more than 50 breast cancer scientific and advocacy experts generated an extensive examination of the gaps in breast cancer prevention research. This led to the identification of 15 breast cancer research initiatives under four topic areas, as described in Figure A2.1. Within each initiative, there are one or more research projects that have been funded, depending on the research needs identified in the process. Approximately $22 million was dedicated to supporting directed, coordinated, and collaborative research projects to pursue approaches to the following four topic areas:

1. Identification and elimination of environmental causes of breast cancer;
2. Identification and elimination of disparities/inequities in the burden of breast cancer in California;
3. Population-level prevention interventions (including policy research) on known or suspected breast cancer risk factors and protective measures; and
4. Targeted prevention interventions for high-risk individuals, including new methods for identifying or assessing risk.

Highlights of these topic areas and their related initiatives and research projects follow. A number of these were completed and fully described in the 2020 Legislative Report. Those initiatives and projects are listed below for completeness, but their details were provided in the earlier report.

Figure A2.1. California Breast Cancer Prevention Initiatives by Topic Area



Identify and Eliminate Environmental Causes of Breast Cancer

Chemical Safety Testing to Reduce Breast Cancer Risk

This initiative aimed to advance the science of chemical testing and the understanding of biological pathways to breast cancer with the ultimate goal of developing policies related to breast cancer prevention. All five research projects under this initiative were completed before 2020 and the details were included in the 2020 Legislative Report.

- **Chemicals Testing to Prevent Cancer: Research Translation**
  PI: Megan Schwarzman, UC Berkeley

- **Chemical Safety During Breast Cancer Susceptible Windows**
  PI: Barbara Cohn, Public Health Institute

- **Identifying Human Breast Carcinogens Using Exposomics**
  PI: Martyn Smith, UC Berkeley

- **Testing Chemicals for Likely Contribution to Breast Cancer**
  PI: Susan Fisher, UC San Francisco

- **Human Mammary Organotypic Cultures for Chemical Screening**
  PI: Paul Yaswen, Lawrence Berkeley National Laboratory

New Paradigm Model for Breast Cancer: Phase II

PI: Robert Hiatt, UC San Francisco

This project funded a follow up to a 2009 project where Dr Hiatt created a conceptual framework extending complexity theory to the study of breast cancer causation for postmenopausal women. In the second phase, Dr Hiatt included a broader range of considerations in the complex contributors to breast cancer risk. The conceptual model can be viewed here: https://www.cbcrp.org/research-topics/causal-model.html.

Occupational Chemical Exposures in California and Breast Cancer Risk

PIs: Robert Harrison, Public Health Institute & Peggy Reynolds, UC San Francisco

Occupational exposure to breast carcinogens is likely to be an area of considerable concern. However, there is very limited data on where women work in California and what their potential occupational exposures are. An important first step towards furthering our understanding of breast cancer risks associated with occupational chemical exposures is to map out what women's employment looks like in California, what the significant chemical exposures are in the jobs where substantial numbers of women work, what differences in exposures there are between different

races and different ages, and what the gaps are in our knowledge. This project was fully described in the 2020 Legislative report and findings from the project and a tool to understand chemical exposures in the workplace can be found here: http://cbcrp.org/worker-exposure/. The visualization tool has served as a basis for targeted workforce studies by the UCSF group and others, and the developmental work with the stakeholder group has helped to set the stage for logistics in conducting field work in the cleaning industry. A paper describing this work was published in New Solutions (2022).

Women Firefighters Biomonitoring Collaborative
PIs: Rachel Morello-Frosch, UC Berkeley, Heather Buren, United Fire Service Women & Tony Stefani (unaffiliated).

Women firefighters in San Francisco are concerned that occupational exposures may be increasing their risk for breast cancer. In 2012 they formed the Woman Firefighter Biomonitoring Collective to compare levels of chemicals in the bodies of women firefighters compared to civilian workers in San Francisco. This project was fully described in the 2020 Legislative Report. The detection methods developed in this project were leveraged in a follow-on study funded by CBCRP comparing three cohorts: firefighters, nurses (who face known occupational breast cancer risk factors), and office workers (see below).

Examining Hormone Concentrations of Interest to Breast Cancer Risk in California's Beef
The goal of this initiative was to improve understanding and quantify exposures to various concentrations of both endogenous and exogenous hormones of interest for breast cancer risk from beef production.

- **Hormones And Meat: does Beef Under-Regulation Generate Estrogenic Residues? (HAMBURGER)**
  PI: Gina Solomon, Public Health Institute
  Beef cattle in the U.S. are commonly dosed with hormones such as estrogen to spur rapid weight gain so animals can get to market faster. Estrogens are known to increase the risk of breast cancer, so there is reason to be concerned about potential hormone residues in beef. This study tested beef sold in California for hormone residues, surveying 41 retailers across six counties and analyzing beef consumption patterns among different demographics. Based on this, they collected 108 beef samples from stores around the state. Lab tests detected progesterone in 41 samples, solely from female animals, suggesting naturally occurring hormones. However, analysis also detected testosterone, epitestosterone, and melengestrol acetate (MGA), a synthetic hormone used to regulate cattle growth. While most hormone levels were low, MGA was found at levels that could exceed the Acceptable Daily Intake (ADI) for young children. This finding raises concerns about potential health impacts, and further research is needed to better understand the prevalence and risks associated with MGA in beef. Results were published in the Journal of Exposure Science & Environmental Epidemiology.

- **Does California beef have growth promotant residues and do they pose a breast cancer risk?**
  PI: Russel Hovey, UC Davis
  Slow-release hormonal growth promotants (HGP) are used widely in beef production and are proposed to be safe based on the premise they only transfer minimal amounts of hormone to end consumers. Cells within the normal breast and some breast cancers are acutely sensitive to steroid hormones and chemicals that mimic their activity, including a woman's own hormones, so any HGP residues in beef could potentially increase a woman's risk for developing breast cancer. This project investigated the levels of HGP in samples of beef from retail outlets across California and in controlled beef samples from treated animals. The team developed the first ever methods for detecting HGP and distinguishing them from naturally occurring hormones by determining the sex of the animal. The study resulted in two scientific publications, detailing HGP levels in retail beef and estimated dietary exposure, and HGP detection methods. These findings contribute to ongoing discussions on food safety and hormone exposure from the consumption of beef.

Testing for Potential Breast Toxins in California's Drinking Water

California's public water supplies come from diverse sources and are subject to varying degrees and types of treatment. Differential exposures to environmental contaminants via drinking water may contribute to breast cancer risk.

- **Tapwater Analysis Project (TAP): Testing Chemicals in Water**
  PI: Gina Solomon, Public Health Institute
  The Tapwater Analysis Project (TAP) investigated potential breast cancer-related contaminants in drinking water across different California regions, including Gold Country, the Bay Area, the Central Valley, and Southeast Los Angeles. Working closely with community partners and local residents, the study team collected tap water samples, which were analyzed for 251 organic chemicals, 32 inorganic constituents and hormonal activity in a cell-based bioassay. The study found a mix of both regulated and unregulated contaminants, varying by region and water source. Disinfection byproducts, pesticides, PFAS, and pharmaceuticals were the most commonly detected, with most detections at low concentrations, but some samples exceeding regulatory thresholds. Although no hormonal activity was found in the water samples, non-targeted analysis identified 38 contaminants with potential health risks. This research, published in Science of The Total Environment underscores the need for deeper investigations into water quality, especially in disadvantaged communities, to better understand environmental exposures linked to breast cancer. The findings lay the groundwork for expanded studies to explore the connections between drinking water contaminants and breast cancer risk across California.

- **Nontarget Chemical Analysis of California Drinking Water**
  PI: Thomas Young, UC Davis
  This study explored whether chemicals in drinking water contribute to breast cancer risk by analyzing water from 120 households across eight public water systems—half from areas with high breast cancer rates. Researchers used advanced chemical analysis to identify contaminants, focusing on those that interact with estrogen receptors. They found multiple concerning compounds, including disinfection byproducts, PFAS, and chemicals from plastics and industrial processes. Some compounds showed a direct link to estrogen activity, while others, like certain polycyclic aromatic hydrocarbons (PAHs), appeared to block it. Bottled water contained a wider variety of contaminants, with limited toxicity data available. The research team shared their findings with households, water utilities, and breast cancer advocacy groups, along with recommendations for reducing exposure. Results and action steps are available online for public access and research was published in ACS ES&T Water. The group also created a website to describe the study and its findings to the public and to provide information about options for addressing the contaminant found in the study. This study highlights the need for more awareness and regulation of potentially harmful chemicals in drinking water.

Identify & eliminate disparities/ inequities in the burden of breast cancer in California

Early Life Adversity and Risk of Breast Cancer

This initiative aimed to retrospectively investigate whether childhood adversity contributes to increased breast cancer risk, risk of specific breast cancer subtypes, and/or major risk factors for breast cancer.

- **Linking Neighborhood and Individual ACEs to Breast Cancer**
  PI: Barbara Cohn, Public Health Institute
  Do adverse childhood experiences (ACEs), like growing up in low-income or racially segregated neighborhoods, influence breast cancer risk later in life? To study this question, researchers analyzed data from a long-term study of over 9,300 California women born between 1959 and 1967. The analysis focused on three areas: early puberty (linked to aggressive breast cancer), higher breast density in midlife (a strong cancer risk factor), and breast cancer before age 55 (more common and aggressive in African Americans). The study geocoded childhood addresses and analyzed neighborhood factors. Results suggest that growing up in low-education and low-income areas is linked to earlier puberty, while living in a wealthy, predominantly white neighborhood at birth was associated with a higher risk of early breast cancer. The team shared findings through conferences, publications, and community advocacy efforts.

Animal Models for Concurrent Effects of Environment and Stress Factors on Mammary Cancer

This initiative aimed to investigate the combined effect of environmental chemicals and stress factors on the development of mammary cancer using animal models with the objective of developing new animal studies testing the effects of concurrent exposure to environmental chemical(s) and social stressors on the development of mammary cancer, with consideration of the timing of exposure/impact risk, and the duration of exposure/impact risk.

- **Environmental Effects on Inflammation and Cancer Development**
  PI: Donald Lamkin, UC Los Angeles
  This project set out to explore how environmental chemicals, combined with social isolation, influence inflammation and breast cancer development in mice. Initial data suggested that long-term exposure to PBDE-47, a flame retardant, weakened the immune system's ability to fight tumors. When the investigators tested this in a new mouse model, the results confirmed greater tumor growth. Even more concerning, the PBDE levels in these mice matched high levels found in human breast tissue. This raises the possibility that PBDEs act like a chronic infection, weakening immune defenses. The research was published in an article in Frontiers in Genetics. Future research will dig deeper into this theory.

Community-Driven Studies of Racial/Ethnic Disparities in Consumer Product Availability, Access, and Use

The goal of this initiative was to advance understanding of racial/ethnic disparities in consumer product availability, access, and use among California women and girls. These disparities may lead to differences in exposures to chemicals that may impact breast cancer risk. Research projects under this initiative included the following:

- **Chemical Exposure Through Consumer Product Use**
  PIs: Kim Harley, UC Berkeley, Phyllis Clark, Healthy Heritage Wellness & Lisa Fu, Asian Health Services
  This study looked at whether personal care products expose women to potentially harmful chemicals, and whether exposure differs across racial and ethnic groups. To do this, they partnered with community groups and surveyed 318 women of different racial/ethnic backgrounds in California. They also studied the most popular products sold in stores catering to Black, Latina, and Vietnamese shoppers. After analyzing ingredient labels and testing select products in labs, they identified chemicals of concern. The study produced a paper in the Journal of Exposure Science & Epidemiology specifying racial/ethnic differences in product use. They've also shared their findings with communities to help people make safer choices and push for better product formulations. Their work highlights the need for transparency in personal care products labeling and for safer alternatives.

- **Taking Stock: Product Use Among Black and Latina Women**
  PIs: Bhavna Shamasunder, Occidental College & Janette Robinson Flint, Black Women for Wellness
  The Taking Stock Study investigated consumer product use among women of color in in South Los Angeles, an environmental justice community. Researchers developed and distributed an online survey that reached 600 women (ages 18-54) about household and personal care product use, closing in March 2020 due to the COVID-19 pandemic. A community-based study engaged 35 Black and 35 Latina women, who provided detailed product-use data via a custom smartphone app with barcode scanning. Over 1,400 products were scanned, with 35 tested for phthalates and phenols. Outcomes included a research app, a peer-reviewed publication in the Journal of Exposure Science & Environmental Epidemiology, community report-backs via infographics, and a public-facing website. The study led to an intervention project examining Black women transitioning away from chemically treated hair.

Population-level interventions (including policy research) on known or suspected breast cancer risk factors and protective measures

California's Comprehensive Breast Cancer Primary Prevention Plan

- **Breast Cancer Primary Prevention Plan**
  PI: Nancy Buermeyer, Breast Cancer Prevention Partners
  This initiative created the comprehensive Paths to Prevention: The California Breast Cancer Primary Prevention Plan, which serves as a road map for legislators, local and state regulators, community members, and advocates to work toward preventing breast cancer in California. This was fully described in the 2020 Legislative Report. CBCRP has built on this Plan in following rounds of Program-directed initiatives by funding projects designed to implement and evaluate interventions recommended in the Plan (see "Preventing Breast Cancer" section).

The Impact of Chemical Policy to Reduce or Eliminate Exposures Linked to Breast Cancer

This initiative aimed to identify effective policy or market-based interventions to reduce exposure to chemicals that may cause or contribute to breast cancer including known and suspected mammary gland carcinogens, mammary gland toxicants, endocrine disruptors, and/or chemicals with similar properties or similar mechanisms of action.

- **The Impact of Proposition 65 on Chemical Exposures Relevant to Breast Cancer**
  PI: Megan Schwarzman, UC Berkeley
  California's Proposition 65 is a law whose intent is to protect people from chemicals that could cause cancer or reproductive harm. It requires warnings if a product or area will expose people to chemicals above certain risk levels and bans them from discharge into drinking water. Has Proposition 65 actually reduced people's exposure to chemicals linked to breast cancer? And how could the law be improved? This study found that for many chemicals, like phthalates,

exposure levels dropped after Proposition 65 listing and that the law prompted companies to reformulate away from Prop 65 chemicals. In addition to analyzing biomonitoring data, the team interviewed businesses to see how the law affects their practices and analyzed emissions data on chemical ingredients and emissions to understand the extent of Prop 65 chemicals in products and workplaces. Their findings were described in 6 publications to date, including in Ecology Law Quarterly.

Targeted intervention for high-risk individuals, including new methods for identifying or assessing risk

Improve Breast Cancer Risk Assessment to Identify High-Risk Individuals

This initiative aimed to advance the science of breast cancer risk modeling/assessment through funded projects that include a wider range of known and suspected risk factors and take into consideration cumulative effects and timing of environmental exposure(s).

- **Germline EDC Exposure & Breast Cancer Risk in the 3Gs Study**
  PI: Barbara Cohn, Public Health Institute
  A mother's exposure to environmental chemicals during pregnancy can affect three generations: the mother, her daughter in the womb, and the daughter's reproductive cells that will create the granddaughter. This study explored how endocrine-disrupting chemicals (EDCs) found in grandmothers' pregnancy serum might affect breast cancer risk factors in their granddaughters. Findings show that certain chemicals, including PCBs and DDT, may increase obesity risk across generations. Notably, PCBs in grandmothers were linked to obesity in both daughters and granddaughters, possibly through direct effects on the ovum. A three-generation team worked with Zero Breast Cancer (ZBC) to create an educational campaign, Generations, which includes posters and a website encouraging families to reduce EDC exposure during pregnancy to protect future generations. The team has gained media attention for their work and published findings on DDT in the journals Cancer Epidemiology, Biomarkers & Prevention and JNCI Cancer Spectrum. Future work will continue exploring the impact of socio-economic status and race on these associations.

Identify Novel Biological Markers of Breast Cancer Risk Related to Environmental Exposures

This initiative aimed to investigate upstream biomarkers of breast cancer risk and identify novel biomarkers of previous exposure to chemicals known or suspected to contribute to breast cancer. The goal of this initiative was to pursue innovative approaches using tissue culture, animal models, or human samples to identify and characterize novel biomarkers of breast cancer susceptibility or risk that have the potential to identify individuals (or communities) with high risk and inform intervention strategies to lower risks.

- **A Prospective Study of Phthalates, BPA, and Risk of Breast Cancer**
  PI: Anna Wu, University of Southern California
  Phthalates and BPA are two chemicals associated with increased cancer risk, but few good studies (namely, prospective studies following women over time) exist exploring their role in breast cancer specifically. Researchers analyzed biological samples (collected on average 6 years before breast cancer diagnosis) from over 1,000 women of different ethnic backgrounds who were diagnosed with breast cancer, and an equal number of individually matched control subjects. Analysis found a small but not significant link between phthalate exposure and breast cancer risk overall (after adjusting for established breast cancer risk factors). However, for invasive breast cancer specifically, women with the highest phthalate levels had a 36% increased risk compared to those with the lowest. The link was strongest in African American, Native Hawaiian, and Latino women. Urinary BPA, on the other hand, was not linked to breast cancer risk. They also found that BPA and certain phthalates were higher in White women and those from lower socioeconomic backgrounds. Future research will explore whether genetic differences affect how the body processes these chemicals. Researchers published four articles from this study, including in the journal Breast Cancer Research.

- **Epigenetic Markers for Pesticide Exposure and Cancer Risk**
  Hannah Park, UC Irvine
  This project aimed to identify biological markers linked to pesticide exposure and assess their connection to breast cancer risk. Researchers recruited 400 postmenopausal women in Southern California, collecting detailed health data, dietary information, and biospecimens. Samples were analyzed for glyphosate, a widely used pesticide, and its metabolite AMPA. The team identified DNA methylation changes in cancer-related genes linked to these chemicals. Using machine learning, they developed a predictive model for glyphosate exposure with 74% accuracy, and discovered DNA methylation markers associated with breast density, a key breast cancer risk factor. A novel analysis pipeline ensures reliable results, and findings have been shared through three published papers, including an article in Environmental Health Perspectives and multiple conference presentations. Future research will explore other environmental exposures and their impact on breast cancer risk, including diet and hormone levels, using the extensive data and biospecimens collected in this study.

- **PAHs and Puberty in Girls at Increased Breast Cancer Risk**
  Esther John, Stanford University
  Puberty is a time when the developing breast is sensitive to carcinogens. Are exposures to environmental chemicals contributing to the earlier start of puberty? This study explored this question through a focus on polycyclic aromatic hydrocarbons (PAHs), widespread air pollutants from automobile exhausts, cigarette smoke, wood burning, and commercial incinerators, which have carcinogenic effects and have been linked with breast cancer. This study investigated the

prevalence of PAH biomarkers in girls aged 6-16 in the San Francisco Bay Area and their association with puberty timing and breast tissue composition. Researchers found that most girls had detectable levels, with variations based on sociodemographic factors and environmental exposures. Their findings suggest that higher PAH exposure is linked to earlier breast development, particularly in overweight girls, and earlier menarche in non-overweight girls. Additionally, PAH metabolites in urine were associated with breast tissue composition, while serum PAH-albumin adducts were not. This study has generated three publications, including in Environmental Research. It is among the first to link PAH exposure to pubertal development using long-term exposure markers. Future research with larger sample sizes is needed to confirm these findings.

Preventing Breast Cancer: Community, Population, and Environmental Approaches

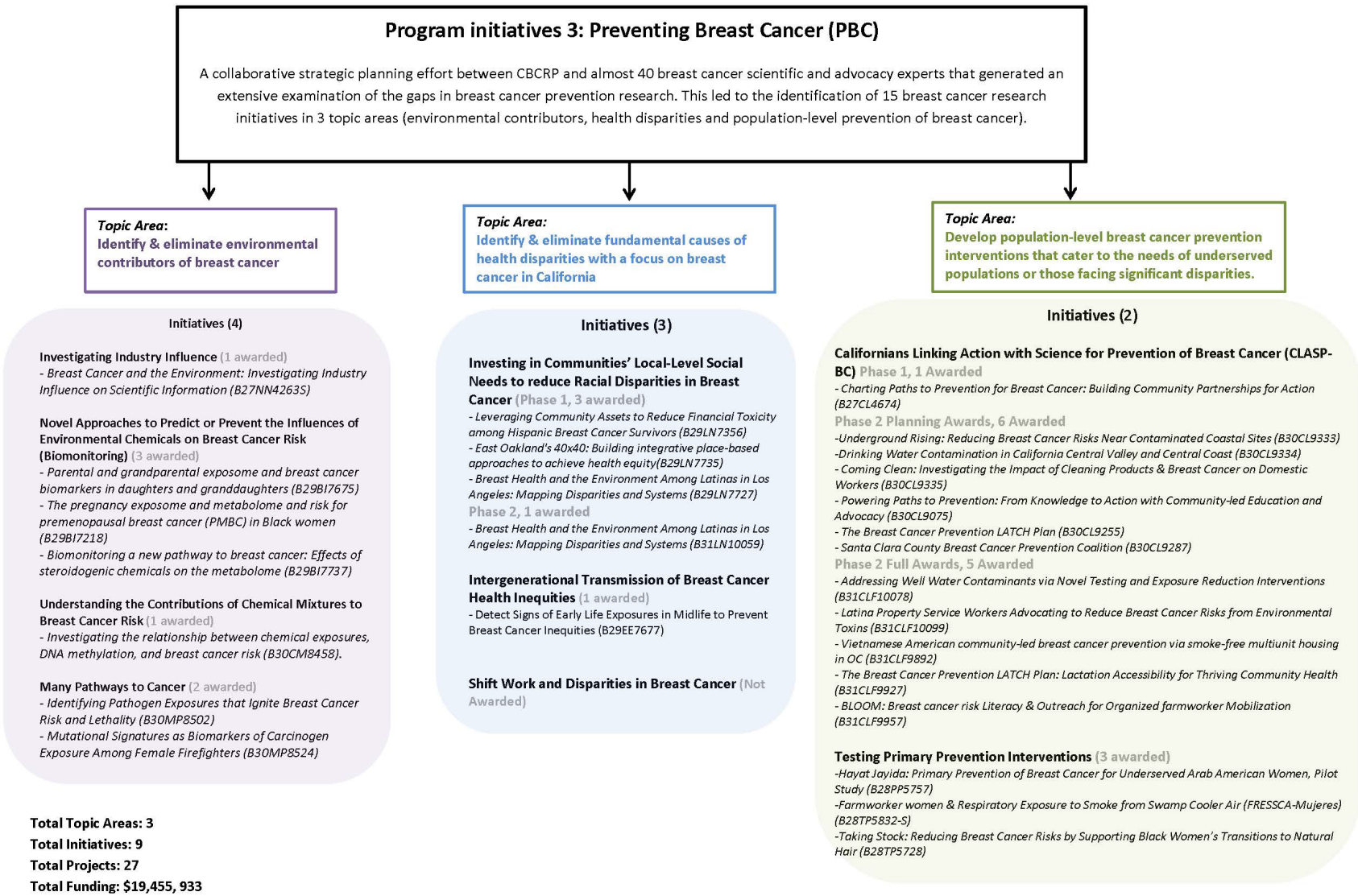
In 2015, CBCRP's Council decided to build on the existing Program-Directed Initiatives by devoting 50% of CBCRP research funds between 2017 and 2021 to a third round of Program-Directed Initiatives - Preventing Breast Cancer (PBC): Community, Population, and Environmental Approaches. Approximately $20 million was dedicated to directed, coordinated, and collaborative research to pursue the most compelling and promising approaches to:

- Identify and eliminate environmental contributors to breast cancer.
- Identify and eliminate fundamental causes of health disparities with a focus on breast cancer in California.
- Develop and test population-level prevention interventions that incorporate approaches to address the needs of the underserved and/or populations experiencing disparities in the burden of breast cancer.

CBCRP worked with a Steering Committee of members of the research and advocacy communities with valued expertise from outside of California to provide strategic direction for the new Initiative. They provided detailed input and made recommendations throughout the process to refine and prioritize research questions and topics and develop blueprint concept papers. Their expertise was supplemented by a team of Strategy Advisors – researchers and advocates with relevant expertise, located both within and outside of California – who provided detailed input on topics that benefited from their expertise. This led to the identification of nine breast cancer research initiatives under the three topic areas as described in Figure A2.2.

Highlights of these topic areas and their related initiatives and research projects follow.

Figure A2.2: Preventing Breast Cancer: Community, Population, and Environmental Approaches Initiatives by Topic Area



Identify and eliminate environmental contributors to breast cancer.

Investigating Industry Influence Over Scientific Information on Breast Cancer and the Environment: Exploring the UCSF Industry Documents Library.

This initiative aimed to examine past efforts by the tobacco, chemical, drug, food, and fossil fuel industries to suppress public awareness of the link between breast cancer and environmental exposures by conducting an exploratory study to investigate if there were documents in the UCSF online Industry Documents Library that describe (1) research on links between breast cancer and environmental exposures that was never published or publicly released and/or (2) actions to influence public opinion across a variety of communities in California and beyond related to breast cancer and environmental exposures.

- **Breast Cancer and the Environment: Investigating Industry Influence on Scientific Information**

  PI: Cristin Kearns, UC San Francisco

  This project, led by UCSF investigators in collaboration with Breast Cancer Action, explores industry influence on breast cancer science. With breast cancer affecting thousands annually and environmental risk factors largely overlooked, the study investigates whether industries—tobacco, chemical, drug, food, and fossil fuels—had prior knowledge of links between their products and breast cancer and whether they worked to suppress or manipulate public perception. Using UCSF's Industry Documents Library (IDL), researchers analyzed corporate records for evidence of scientific interference and targeted marketing towards marginalized communities. Findings revealed significant industry efforts to obscure environmental connections to breast cancer. To share insights, the team engaged advocacy organizations, researchers, and journalists through workshops and symposia in 2023. These efforts not only raised awareness but also fostered collaborations for further research and policy change. This project establishes IDL as a valuable resource for exposing industry tactics and advancing breast cancer prevention.

Novel Approaches to Predict or Prevent the Influences of Environmental Chemicals on Breast Cancer Risk (Biomonitoring)

Biological measurements of environmental exposure and of the molecular pathways involved in transitioning a normal cell to cancer are crucial pieces of knowledge for discovering the causes of breast cancer and informing prevention strategies. This initiative aims to expand the methods and application of biomonitoring beyond the chemicals, populations, and mechanistic pathways that have been well-studied so far and to explore: (1) biomonitoring and links to biological response endpoints in exposed populations and (2)

the development/ discovery and application of a novel assay or marker to predict/ prevent risk of breast cancer. Three projects are underway.

- **Parental and grandparental exposome and breast cancer biomarkers in daughters and granddaughters**
  PI: Barbara Cohn, Public Health Institute
  This project is working with the unique Child Health and Development Studies (CHDS) cohort of women, their daughters and granddaughters which has been followed up for over 60 years to screen for thousands of chemicals in grandmothers and grandfathers blood collected at the time of pregnancy for correlations with a new breast cancer biomarker in daughters and granddaughters (DNA methylation, DNAm). The investigators aim to find new environmental chemicals that correlate with breast cancer risk across 3 generations with unique findings about grandfathers that will inform prevention messages for young men on how fathers' exposures may contribute to breast cancer risk.
- **The pregnancy exposome and metabolome and risk for premenopausal breast cancer (PMBC) in Black women**
  PI: Kimberly Berger, Sequoia Foundation
  Premenopausal breast cancer (PMBC) is increasing and disproportionately fatal among Black women, who often have greater exposure to environmental pollutants. This project aims to understand how chemical exposures interact with internal biological processes to affect PMBC risk in Black women during pregnancy, when physiological changes increase vulnerability to toxins. The investigators also aim to identify patterns of biological markers that may predict future development of PMBC. This will be the first study to evaluate PMBC risk in relation to hundreds of environmental chemicals and thousands of markers of biological processes during pregnancy, a critically susceptible window of exposure to toxic substances.
- **Biomonitoring a new pathway to breast cancer: Effects of steroidogenic chemicals on the metabolome**
  PI: Rachel Morello-Frosch, UC Berkeley
  This study targets a novel hypothesis and a new class of endocrine disrupting chemicals (EDC) that increase estradiol (E2) and progesterone (P4) production - and then directly measures hormone levels and the blood biomarkers to detect early biological effects of EDC exposures to understand the pathways that link exposure and hormone levels. They will also test whether chemicals that increase the ability of cells to produce E2 and P4 are associated with higher levels of these hormones in women's blood, strongly suggesting that exposures could increase breast cancer risk. These results could help accelerate screening of environmental chemicals for their ability to

alter hormones in women and strengthen regulations for exposure reduction and reformulation of these compounds to avoid them.

Understanding the Contributions of Chemical Mixtures to Breast Cancer Risk

Women are exposed to a wide array of toxic chemicals throughout their life course that are known to increase breast cancer risk. This initiative aims to identify chemical mixture exposures associated with risk of breast cancer and/or biomarkers of early changes linked to breast cancer. One project is underway:

- **Investigating the relationship between chemical exposures, DNA methylation, and breast cancer risk**
  PI: Kimberly Badal, UC San Francisco
  This project is looking at DNA methylation as a biomarker that changes in response to environmental exposures. It aims to identify which mixtures of chemicals have the greatest impact on breast cancer risk using non-targeted analysis and determine whether there are DNA methylation signatures that can serve as biomarkers of exposure. The findings can inform regulations on the use and release of toxic chemical mixtures. DNA methylation biomarkers could then be included in breast cancer risk models to find women at highest risk and intervene to reduce their risk.

Many Pathways to Cancer: Identifying Exposures Linked to the Key Characteristics of Carcinogens

The goal of this initiative is to address the urgent need to identify chemicals and other environmental exposures that influence the development of breast cancer by (1) developing new assays to fill gaps in coverage for key characteristics of carcinogens relevant for breast cancer, (2) analyzing results from existing assays and/or (3) identifying new biomarkers relevant to the key characteristics of carcinogens that can be applied as early effect markers for breast cancer in studies in women. Two projects are underway.

- **Identifying Pathogen Exposures that Ignite Breast Cancer Risk and Lethality**
  PI: Daniel Hollern, The Salk Institute for Biological Sciences
  This project is investigating the impact of persistent infection by the Lyme Disease bacterium Bb on breast cancer initiation, development, and response to therapy. There is epidemiological evidence demonstrating the presence of infectious organisms including Bb in human breast cancer (BC). The clinical significance remains unknown, yet Bb shuts down responses which facilitate anti-tumor immune responses in patient tumors. The investigators hypothesize that BC patients with persistent Bb infection will be disproportionately impacted by cancer risk and treatment failure. They are testing the influence of persistent infection on tumor progression, immunology, and

requirements for effective therapy. They hope to guide novel personalized precision therapy and cancer prevention.

- **Mutational Signatures as Biomarkers of Carcinogen Exposure Among Female Firefighters**
  PIs Derek Urwin, UC Los Angeles & Shehnaz Hussain, UC Davis
  This project is studying the exposures and biological mechanisms that increase breast cancer risk among female firefighters. Since mutations are an intermediate step between DNA damage and cancer, and can also result from non-genotoxic processes, assessing mutations may provide a more predictive biomarker for cancer risk. They are therefore measuring the burden and patterns of mutations associated with firefighting using two comparisons: 1) female firefighters compared to matched office workers and 2) female firefighters at recruitment baseline and after 2-3 years of firefighting. Their novel computational approach was published in 2024 in the Proceedings of the National Academy of Sciences.

Identify and eliminate fundamental causes of health disparities with a focus on breast cancer in California.

Investing in Communities' Local-Level Social Needs to reduce Racial Disparities in Breast Cancer

This initiative aims to implement and test the effectiveness of promising intervention frameworks to address local level social and environmental risk factors for breast cancer in historically marginalized communities. It was offered in two phases with Phase I projects as planning grants of one year in duration for community-partnered participatory research teams to enable them to apply for a Phase II grant where they would test interventions to meet social needs, prevent breast cancer and reduce disparities. Three Phase I projects were completed and a single Phase II grant was awarded in 2025:

- **Leveraging Community Assets to Reduce Financial Toxicity among Hispanic Breast Cancer Survivors (Phase I)**
  PIs: Eunjeong Ko, San Diego State University & Michelle Avila, Kern County Cancer Foundation
  Financial challenges increase the likelihood of delays in seeking treatment, poor quality of life, and early death from breast cancer. This project used community-based participatory research to map financial resources and strengthen partnerships in Kern County, a rural area with limited healthcare access. The team created a Google Map highlighting available financial support and held focus groups with Latina breast cancer patients, their families, and community leaders to understand barriers to care. The

study found that key challenges to cancer care included lack of information, limited outreach in rural areas, and cultural factors like stigma and the expectation to "stay strong." Participants suggested better rural outreach and stronger partnerships with local leaders to improve resource access. Moving forward, the team plans to explore how coalition-building can reduce health disparities, particularly in connecting Latina breast cancer patients to financial resources. Their findings highlight the need for better collaboration among community organizations to streamline support services, with future funding opportunities being pursued to expand this impactful work.

- **East Oakland's 40x40: Building integrative place-based approaches to achieve health equity (Phase I)**
  PIs: Jamaica Sowell, Roots Community Health Center, Mindy Hebert-DeRouen, UC San Francisco & Antwi Akom, Dope Labs
  Due to its broad impact on conditions that hinder good health, structural racism is a fundamental cause of poor health among minoritized racial groups. It has been linked to later breast cancer stage at diagnosis and worse survival for Black females. Oakland, California has historically been a location of segregation and structural racism for African Americans. This project worked with the African American community in East Oakland to create a community-level intervention that addresses structural needs. The team partnered with the People's Advisory Council (PAC), a local group supporting Black health, culture, and belonging. Through multiple presentations and discussions, they introduced the Streetwyze platform—a community mapping tool—to PAC members and other key partners. The main concerns raised were pedestrian and street safety, so the team plans to incorporate a resource directory and safety-related features into the platform. By integrating community knowledge and digital tools, they hope to empower residents and create real, systemic change in East Oakland.
- **Breast Health and the Environment Among Latinas in Los Angeles: Mapping Disparities and Systems (Phase I & II)**
  PIs: Jill Johnston, University of Southern California & Nancy Ibrahim, Esperanza Community Housing
  Breast cancer is the most common cancer and the leading cause of cancer deaths among Latina women in the US and the rates are increasing. How do environmental racism and systemic factors affect breast cancer risk for Latinas in South Los Angeles? Partnering with the community, researchers held a symposium where community health workers (promotores) and residents discussed the challenges and opportunities for reducing breast cancer risks. Conversation focused on local environmental hazards and structural inequalities impact Latina women's health. The project also brought together community members, health professionals, and policymakers to discuss the social and environmental burdens contributing to breast cancer disparities. Moving

forward with their Phase II award, the team will build on their established partnership and work with community research fellows and the BELLA cohort of Latina women in South LA to identify key opportunities to implement community engaged, and place-based strategies to reduce local breast cancer risk factors. By amplifying community voices and bridging the gap between research and action, this initiative hopes to drive meaningful public health changes to reduce breast cancer risk in underserved communities.

Intergenerational Transmission of Breast Cancer Health Inequities

This initiative aims to examine whether intergenerational transmission of breast cancer susceptibility can be influenced by environmental exposures (e.g. chemical exposures; multi-level exposures to social determinants of health). One project was awarded.

- **Detect Signs of Early Life Exposures in Midlife to Prevent Breast Cancer Inequities**
  PIs: Barbara Cohn & Akilah Shahid, Public Health Institute
  This project is examining whether there are patterns in our DNA in midlife (DNA methylation, DNAm, which impact how genes are regulated) that signify exposure to environmental chemicals in the womb; whether those DNAm signals reflect changes in biological pathways that lead to breast cancer; whether Black women have more or different exposures in the womb and if the consequences are worse because of neighborhood stressors, experiences of discrimination and cumulative life stress; and whether there are midlife exposures that magnify effects of exposures in the womb and if these are more intense in Black women. This new evidence could support ways to intervene early in life to reduce inequities over generations and may reveal some midlife strategies. The team will provide this information to women and decision makers to reduce inequities in risk of fatal breast cancer for Black women.

Develop and test population-level breast cancer prevention interventions

Californians Linking Action with Science for Prevention of Breast Cancer (CLASP-BC)

This initiative aims to advance the primary prevention of breast cancer by developing, disseminating, implementing, and evaluating high-impact population-based primary prevention interventions with a focus on California's culturally, ethnically, and racially diverse and medically underserved communities. This builds on the CBCRP-sponsored Paths to Prevention: the California Breast Cancer Primary Prevention Plan (see description earlier) by leveraging existing community cancer and chronic disease prevention efforts and focusing on identified risk factors for breast cancer.

Phase 1 of this initiative focused on: 1) understanding the breast cancer concerns and prevention priorities of community leaders, researchers, practitioners, and policy experts

across California; 2)engaging community and opinion leaders, research, practice, and policy specialists in regional California meetings to identify opportunities for working together in breast cancer prevention coalitions based on shared concerns and priorities; and 3) helping build community-partnered participatory research and dissemination and implementation research capacity and research engagement within these coalitions. Phase 2 funded the implementation of strategies generated in Phase 1. The Phase 1 project was completed in 2024. Planning grants were offered to support potential applicants who do normally apply for research grants and need support to build their infrastructure. Six $25,000 Phase 2 planning grants were awarded to help applicants build coalitions to prepare full award applications. Five full awards were awarded in 2025.

- **Phase 1: Charting Paths to Prevention for Breast Cancer: Building Community Partnerships for Action**
  PI: Nancy Buermeyer, Breast Cancer Prevention Partners
  California needs more effective community and policy interventions to prevent breast cancer. This project brought together a diverse advisory group of 19 experts and reviewed over 300 prevention strategies, narrowing them down to 84 evidence-based interventions. Through a Group Concept Mapping exercise, 340 participants ranked these interventions based on importance and feasibility. The team hosted 8 regional meetings across California, gathering input from stakeholders, and held over 50 discussions with scientists, NGOs, and community leaders. A two-day training event further explored collaborative research opportunities. Next, 10 smaller planning grants were awarded to develop and test intervention ideas, with multiple projects now in progress. This initiative successfully fostered cross-sector collaboration and laid the groundwork for targeted, high-impact breast cancer prevention efforts driven by community needs and scientific research. Findings were published in the International Journal of Environmental Research and Public Health.
- **Phase 2 Planning Grants:**
  - **Underground Rising: Reducing breast cancer risks near contaminated coastal sites**
    PI: Kristina Hill, UC Berkeley
  - **Drinking Water Contamination in California Central Valley and Central Coast**
    PI Rainbow Rubin, Breast Cancer Prevention Partners
  - **Coming Clean: Investigating the Impact of Cleaning Products & Breast Cancer on Domestic Workers**
    PI: Nancy Zuniga, IDEPSCA
  - **Powering Paths to Prevention: From Knowledge to Action with Community-led Education and Advocacy**

PI: Nancy Buermeyer, Breast Cancer Prevention Partners

- **The Breast Cancer Prevention LATCH Plan**
  PI: Jasmine Pettis Marquez, California Breastfeeding Coalition
- **Santa Clara County Breast Cancer Prevention Coalition**
  PI: Julia Barba, Community Health Partnership of Santa Clara County

- **Phase 2 Full Awards:**
  - **Addressing Well Water Contaminants via Novel Testing and Exposure Reduction Interventions**
    PIs: Rainbow Rubin & John Erickson, Breast cancer Prevention Partners & Community Water Center
    Millions of people living in low-income communities in California depend on unregulated domestic well water as their main water source for drinking, bathing, and cooking. These communities are also often located near industrial or agricultural operations, which can lead to chemical contamination of their water, contaminants that may be linked to breast cancer. This project will be conducted in Tulare County, a region – a region that is heavily reliant on domestic wells that are high risk for water contamination. The project will offer residents domestic well water testing for breast cancer chemicals of concern and opportunities to engage in advocacy for cleaner water. When community members and health practitioners understand more about their water quality, they can take steps to protect themselves and advocate for safer water at the community and state level.
  - **Latina Property Service Workers Advocating to Reduce Breast Cancer Risks from Environmental Toxins**
    PIs: Michelle Burton & Janet Pregler, Community Health Councils Inc & UC Los Angeles.
    Latina Property Service Workers (PSWs), or janitorial staff, face threats of exposure to environmental toxins at work, home, and in the community, experiencing higher risks of breast cancer. This project will determine if educating PSWs as lay health educators, will increase the confidence levels of these PSWs in reducing exposures to toxins, as well as in mobilizing their friends, family, and community members in voicing their environmental concerns to elected officials. The project will observe if any behavior or lifestyle changes occur when PSWs educate friends, family, and other community members about the impact of dangerous chemicals on breast cancer risks. The project will investigate the impact of digital reminders on the likelihood of adopting risk reduction behavior and/or engaging in advocacy campaigns and what helps or

hinders Latinas in lowering contact with harmful chemicals and in voicing concerns about exposures with elected officials.

- **Vietnamese American community-led breast cancer prevention via smoke-free multiunit housing in OC**
  PIs: Jimi Huh & Thu Tran, University of Southern California & Boat People SOS
  Breast cancer rates among Asian American women are rising faster than in other racial or ethnic groups. This project will adapt and test a health initiative called Supporting Healthy Asian Pacific Empowerment for Orange County (SHAPE-OC), which encourages apartment and other multi-unit buildings to voluntarily adopt smoke-free policies. The goal is to reduce the risk of breast cancer among Vietnamese American women in Orange County by raising awareness about the link between secondhand smoke exposure and breast cancer risk. They will work with Vietnamese American residents living in apartment buildings Orange County to share real-life stories and community-driven, culturally competent messages, delivered by trained peer educators and measure how well this approach increases awareness and reduces secondhand smoke exposure. Additionally, they will assess how effectively the program is implemented and whether it can be sustained over time.
- **The Breast Cancer Prevention LATCH Plan: Lactation Accessibility for Thriving Community Health**
  PIs: Jasmine Pettis Marquez & Mimi Demissew, California Breastfeeding Coalition & Our Family Coalition
  Equitable access to breastfeeding support is essential for improving public health and reducing breast cancer risk, especially in underserved populations. Despite breastfeeding's proven role in lowering breast cancer incidence, systemic barriers—such as limited culturally informed care, inadequate resources, and language disparities—prevent many families from breastfeeding successfully. These challenges disproportionately affect Black, Indigenous, low-income, and LGBTQIA+ families, who face the greatest inequities in health outcomes. This project will implement evidence-based strategies to ensure families across California can access the breastfeeding support they need. This project will enhance the existing breastfeeding support landscape and improve health outcomes by creating and testing the efficacy of: 1) a Comprehensive Lactation Support Directory that is easily accessible statewide, providing parents with up-to-date and valuable breastfeeding information to fit their needs; and 2) a non-emergency phone line called the LATCH Line will allow parents to dial in with questions about their lactation concerns, which will be triaged to the right resource.

- **BLOOM: Breast cancer risk Literacy & Outreach for Organized farmworker Mobilization**
  PIs: Nyisha Green-Washington, Adrienn Borsika Rabin, Suguet Lopez & Yunuen Ibarra, Breast Cancer Prevention Partners, UC San Diego & Lideres Campesinas
  Growing evidence links environmental exposures, such as pesticides and other toxic chemicals, to increased breast cancer risk. Farmworkers, especially women, face disproportionate exposure to these harmful substances while also experiencing barriers to healthcare and prevention resources. However, few programs effectively share this knowledge or provide farmworker communities with tools to reduce their risk. This project seeks to increase Environmental Health Literacy and promote advocacy in farmworker communities. A partnership between farmworker organizations, health experts, advocates, and researchers, this project will develop, implement, and evaluate culturally and linguistically appropriate educational materials and strategies to raise awareness of environmental breast cancer risks. Based on community feedback, the educational products and implementation strategies will be refined and compiled into a universal playbook to support broad adoption in farmworker communities across California.

Testing Primary Prevention Interventions

This initiative aimed to fill gaps in evidence about the effectiveness of community-level intervention strategies for a priority set of breast cancer risk factors detailed in Paths to Prevention, the California Breast Cancer Primary Prevention Plan. The initiative funded three projects to assess intervention strategies to address risk factors identified in the Plan. Two are still ongoing.

- **Hayat Jayida: Primary Prevention of Breast Cancer for Underserved Arab American Women, Pilot Study**
  PIs: Juliet Lee, PIRE CA & Gamila Abdelhalim, Holistic Underground
  This pilot study focused on preventing breast cancer among underserved Arab American women by raising awareness of secondhand smoke (SHS) exposure and physical inactivity as risk factors. A grassroots group of Yemeni Arab American women, Hayat Jayida (“a good life”), worked together to assess SHS exposure in their multi-unit housing, identify barriers to exercise, and develop advocacy strategies. The study found that participants became more aware of SHS risks and felt more confident advocating for policy changes and improved resources, such as an all-women’s gym. The team shared findings with the community and presented a poster at an international conference. They also responded to participants’ requests for more breast cancer education and applied for further funding to expand their work. This study highlights the

importance of culturally tailored interventions to support health advocacy and prevention.

- **Farmworker women & Respiratory Exposure to Smoke from Swamp Cooler Air (FRESSCA–Mujeres)**
  PIs: Gina Solomon, Public Health Institute & Nayamin Martinez, Central California Environmental Justice Network
  This project aims to design, produce, and evaluate innovative Evaporative Cooler (EC) filters in homes of women agricultural workers in Fresno, Kings, and Kern Counties to see if they may reduce exposure and health effects from chemicals that are linked to breast cancer. Specific carcinogens of interest include polycyclic aromatic hydrocarbons (PAHs) found in soot, volatile organic compounds (VOCs), and certain metals that have previously been identified in wildfire smoke. Videos produced by the project are available on their website.
- **Taking Stock: Reducing Breast Cancer Risks by Supporting Black Women's Transitions to Natural Hair**
  PIs: Bhavna Shamasunder, Occidental College & Janette Robinson Flint, Black Women for Wellness LA
  This project builds on previous work by the research partner to develop Curls and Conversations, a community education intervention to reduce exposures to toxic hair product chemicals by supporting Black women achieve and maintain natural hair styles. This project will enhance and evaluate the efficacy of CC as an educational intervention to reduce exposures to chemicals linked to breast cancer. This is expected to result in the production and dissemination of a replicable toolkit that will support diverse Black women who choose to transition away from chemically treated hair so they can make healthier choices and reduce their exposures to endocrine disrupting chemicals (EDC) and breast cancer risk.

Policy Initiative

In 2015, CBCRP launched the Policy Initiative to close the gap between research and policy (both public and private), with the goal of funding research that contributes to creating an environment in California that leads to less breast cancer. The CBCRP Council sets aside $260,000 per year for policy projects.

Research topics can be nominated by the public or by the Policy Research Advisory Group (PRAG), which is composed of California-based policymakers, representatives of organizations involved in breast cancer-related policy development, and advocates. The PRAG recommends selected topics to the CBCRP Council for approval. Projects are

designed to be brief (typically a six-month research project period, followed by a dissemination and public engagement period).

To date, the Policy Initiative has funded seven projects two of which were completed and described in the 2020 Legislative Report (Barriers to Breast Cancer Care in California and Enhancement of California's Green Chemistry Initiative). Since then the Barriers project was extended to look at metastatic breast cancer care and, in 2022, the recommendations from the Green Chemistry Initiative report were incorporated into the California bill (SB-502, Allen) that reformed the Green Chemistry Program. Five projects were completed or initiated since 2020, two which are still ongoing:

- **Barriers to Metastatic Breast Cancer Care in California**
  PI: Ninez Ponce, UC Los Angeles
  This project focused on spreading the word about the challenges women in California face when trying to access care for metastatic breast cancer, and exploring policy solutions to improve access. The team took a multi-step approach: they worked with support groups to connect with patients, conducted interviews, attended a metastatic breast cancer conference, reviewed relevant research and legislation, and hosted an online discussion through social media. With barriers identified, the team created fact sheets, shared them through media and social platforms, hosted a webinar, and briefed 19 key legislative and state health agency staff members. The findings and outreach efforts helped raise awareness of the barriers metastatic breast cancer patients face and potential policy solutions to address them. These are summarized in a Policy Research Report on their website.

- **Awareness of Alcohol as a Risk Factor for Breast Cancer**
  PIs: Priscilla Martinez, Public Health Institute
  Many young women in California don't realize that drinking alcohol increases their risk of breast cancer. To change that, researchers developed a public awareness campaign called Drink Less for Your Breasts. They started by reviewing research on alcohol use, breast cancer risk, and past health campaigns. Then, they held focus groups with young women to see how they felt about the risk and tested draft messaging. Based on feedback, they refined their messages with help from an advisory group. Finally, they launched a website (https://drinklessforyourbreasts.org/), ran a social media campaign, and even held a webinar — all of which got national and international media attention, including in WIRED magazine. Now, they're expanding the project to study how healthcare providers discuss alcohol and breast cancer risk with patients, with plans to develop new interventions to improve awareness in diverse medical settings.

- **Strategies for Increasing Breastfeeding in Disadvantaged Communities**
  PI: Ninez Ponce, UC Los Angeles
  There are significant racial/ethnic inequities in breastfeeding rates as well as rates of breast cancer and mortality. Breastfeeding has been shown to help prevent breast cancer, but most people surveyed didn't know this. CBCRP developed a prevention plan highlighting the barriers to breastfeeding and identifying goals to improving breastfeeding rates, and this study set out to determine how and whether goals outlined in the report may need to be adapted to address the specific social and cultural characteristics of disadvantaged groups. Through a literature review, consulting an advisory board, and interviewing key experts, researchers explored the challenges African American, Asian American, and Native Hawaiian/Pacific Islander mothers face when trying to breastfeed. The study detected hurdles including a lack of community and family support, workplace barriers like insufficient leave and inadequate pumping accommodations, limited education on breastfeeding, and poor insurance coverage for lactation consultants and doulas. Many mothers also noted that breastfeeding campaigns didn't reflect their cultural backgrounds, making it harder to connect with the message. The report didn't just highlight problems — it also provided recommendations for policies and programs to better support breastfeeding mothers.

- **Achieving Equity in Genomic Testing for Breast Cancer through Partner-led Strategies and Policies**
  PI: Manali Patel, Stanford University
  Genomic testing, tests that can identify specific breast cancer tumor changes to guide appropriate treatment, is recommended by national organizations after diagnosis of breast cancer. However, people from low-income households and racial and ethnic minorities are less likely than White, affluent populations to receive genomic testing and corresponding treatments. In California, it remains unknown whether testing is routinely delivered and used to guide breast cancer care equitably and what barriers can successfully be addressed by policy to ensure equity. This project is currently underway and aims to determine the extent of and barriers to genomic testing for breast cancer among low-income and minority populations in California and design policy recommendations to overcome barriers.

- **Policy Priorities for Equitable Access to Fertility Preservation by Breast Cancer Patients**
  PIs: Hui-Chun Su, UC San Diego
  One in ten breast cancer patients is of reproductive age when they are diagnosed. Young breast cancer patients are at risk of infertility from cancer treatments due to direct ovarian toxicity from chemotherapy, sterilization from removing ovaries, and/or

reproductive aging during prolonged time on hormone therapy. Fertility preservation before breast cancer treatment can decrease infertility risks. Patients want to learn about their risks, engage in shared decision-making on fertility preservation, and do fertility preservation when appropriate. The goal of the project is to gather evidence on oncofertility care of young breast cancer patients in California, summarize the evidence and make policy recommendations to promote the equitable delivery of oncofertility care to young breast cancer patients in California.

Table A2.2 Program Initiated Awards with Projects Completed in 2020-2025

Initiative	Fund Year	Title	Investigator(s)	Institution(s)	Total Award ($)
CBCPI: Occupational Chemical Exposures in California and Breast Cancer Risk	2016	Occupational Chemical Exposures in California and Breast Cancer Risk	Robert Harrison	Public Health Institute	1,303,784
CBCPI: Identify Novel Biological Markers of Breast Cancer Risk Related to Environmental Exposures	2016	PAHs and puberty in girls at increased breast cancer risk	Esther John	Stanford University	1,093,998
		Epigenetic markers for pesticide exposure and cancer risk	Hannah Park	University of California, Irvine	1,249,970
		A prospective study of phthalates, BPA, and breast cancer	Anna Wu	University of Southern California	1,588,898
CBCPI: California's Comprehensive Breast Cancer Primary Prevention Plan	2016	Primary Prevention Plan	Nancy Buermeyer	Breast Cancer Prevention Partners	460,000
CBCPI: Improve Breast Cancer Risk Assessment to Identify High-Risk Individuals	2017	Germline EDC Exposure & Breast Cancer Risk in the 3Gs Study	Barbara Cohn	Public Health Institute	1,054,479

Initiative	Fund Year	Title	Investigator(s)	Institution(s)	Total Award ($)
PBC: Initiative Coordination	2017	Science Convener for Program Initiatives	Gina Bartlett	Consensus Building Institute, Inc.	876,346
PBC	2017	Ambient Air Toxics and Breast Cancer Risk	Julia Heck	University of California, Los Angeles	354,385
CBCPI: Early Life Adversity and Risk of Breast Cancer	2017	Linking Neighborhood and Individual ACEs to Breast Cancer	Barbara Cohn	Public Health Institute	754,299
CBCPI: The Impact of Chemical Policy to Reduce or Eliminate Exposures Linked to Breast Cancer	2017	The Impact of Proposition 65 on Chemical Exposures Relevant to Breast Cancer	Megan Schwarzman	University of California, Berkeley	808,000
CBCPI: Animal Models for Concurrent Effects of Environment and Stress Factors on Mammary Cancer	2017	Environmental Effects on Inflammation and Cancer Development	Donald Lamkin	University of California, Los Angeles	788,340

Initiative	Fund Year	Title	Investigator(s)	Institution(s)	Total Award ($)
CBCPI: Community Driven Studies of Racial/Ethnic Disparities in Consumer Product Availability, Access, and Use	2018	Chemical Exposure through Consumer Product Use	Kim Harley; Phyllis Clark; Julia Liou & Lisa Fu	University of California Berkeley; Healthy Heritage Movement; Asian Health Services	406,834
		Taking Stock: Product Use Among Black and Latina Women	Bhavna Shamasunder; Janette Robinson Flint	Occidental College; Black Women for Wellness	445,802
CBCPI: Testing for Potential Breast Toxins in California's Drinking Water	2019	Tapwater Analysis Project (TAP): Testing Chemicals in Water	Gina Solomon	Public Health Institute	686,497
		Nontarget Chemical Analysis of California Drinking Water	Thomas Young	University of California, Davis	731,027
CBCPI: Examining Hormone Concentrations of Interest to Breast Cancer Risk in California's Beef	2020	Hormones And Meat: does Beef Under-Regulation Generate Estrogenic Residues? (HAMBURGER)	Gina Solomon	Public Health Institute	232,092
		Does California beef have growth promotant residues and	Russell Hovey	University of California, Davis	260,000

Initiative	Fund Year	Title	Investigator(s)	Institution(s)	Total Award ($)
		do they pose a breast cancer risk?			
PBC: Investigating Industry Influence on Breast Cancer and the Environment	2021	Breast Cancer and the Environment: Investigating Industry Influence on Scientific Information	Cristin Kearns	University of California, San Francisco	236,359
CBCPI: Breast Cancer Risk in Immigrants Phase 1 Convener	2021	California Initiative to Prevent Breast Cancer in Immigrants (CIPBCI)	Krystal Redman	Breast Cancer Action	137,500
CBCPI: Breast Cancer Risk in Immigrants Phase 1 Research Teams	2021	Occupational Risk Factors for Breast Cancer Among Immigrant Women	Rachel Morello-Frosch; Erin Carrera; Antoinette Ricafort;	University of California, Berkeley; Breast Cancer Prevention Partners	154,926
		Do ethnic enclaves prevent breast cancer in Latina women?	Marilyn Tseng; Alex Espinoza-Kulick;	California Polytechnic State University – SLO; Cultural and Creative Arts Center of the Santa Maria Valley	135,100
		Community-academic partnership to understand	Kimberly Miller; Hai Hoang; Sherry Huang	University of Southern California;	167,495

Initiative	Fund Year	Title	Investigator(s)	Institution(s)	Total Award ($)
		increasing breast cancer risk among Asian immigrants		Illumination Institute; Orange County Herald Center	
PBC: Californians Linking Action with Science for Prevention of Breast Cancer (CLASP-BC): Phase 1 Convener	2021	Charting Paths to Prevention for Breast Cancer: Building Community Partnerships for Action	Nancy Buermeyer	Breast Cancer Prevention Partners	919,705
PBC: Testing Primary Prevention Interventions: Component 2 Pilot	2022	Women HEALERS Reducing Toxic Environmental Exposures and Preventing Breast Cancer	Kim Rhoads; Michelle Pierce	University of California, San Francisco; Bayview Hunters Point Community Advocates	114,036
		Hayat Jayida: Primary Prevention of Breast Cancer for Underserved Arab American Women, Pilot Study	Juliet Lee; Gamila Abdelhalim	PIRE California, Inc.; Holistic Underground Inc.	316,823
PBC: Investing in Communities' Local-level Needs to Reduce Racial Disparities in Breast Cancer Phase 1	2023	Leveraging Community Assets to Reduce Financial Toxicity among Hispanic Breast Cancer Survivors	Eunjeong Ko; Michelle Avila	San Diego State University; Kern County Cancer Foundation	21,263
		Breast Health and the Environment Among Latinas in	Jill Johnston; Nancy Ibrahim	University of Southern California;	30,398

Initiative	Fund Year	Title	Investigator(s)	Institution(s)	Total Award ($)
		Los Angeles: Mapping Disparities and Systems		Esperanza Community Housing	
		East Oakland's 40x40: Building integrative place-based approaches to achieve health equity	Mindy Hebert-Derouen; Jamaica Sowell; Antwi Akom	University of California, San Francisco; Roots Community Health; San Francisco State University	17,240
PBC: Californians Linking Action with Science for Prevention of Breast Cancer (CLASP-BC), Phase 2 Planning Grants	2024	Powering Paths to Prevention: From Knowledge to Action with Community-led Education and Advocacy	Nancy Buermeyer	Breast Cancer Prevention Partners	31,250
		The Breast Cancer Prevention LATCH Plan	Jasmine Pettis Marquez	California Breastfeeding Coalition	31,250
		Santa Clara County Breast Cancer Prevention Coalition	Julia Barba	Community Health Partnership of Santa Clara County	28,750
		Underground Rising: Reducing breast cancer risks near contaminated coastal sites	Kristina Hill	University of California, Berkeley	33,528

Initiative	Fund Year	Title	Investigator(s)	Institution(s)	Total Award ($)
		Drinking Water Contamination in California Central Valley and Central Coast	Rainbow Rubin	Breast Cancer Prevention Partners	31,250
		Coming Clean: Investigating the Impact of Cleaning Products & Breast Cancer on Domestic Workers	Nancy Zuniga	Instituto De Educacion Popular Del Sur De California	31,250
Policy	2019	Barriers to Metastatic Breast Cancer Care in California	Ninez Ponce	University of California, Los Angeles	108,713
Policy	2020	Awareness of Alcohol as a Breast Cancer Risk Factor	Priscilla Martinez	Public Health Institute	263,208
Policy	2022	Strategies for Increasing Breastfeeding in Disadvantaged Communities	Ninez Ponce	University of California, Los Angeles	153,804

Table A2.3 – Program Initiated Awards with Projects in Progress in 2020-2025

Initiative	Fund Year	Title	Investigator(s)	Institution(s)	Total Award ($)
PBC: Testing Primary Prevention Interventions: Component 1	2022	Taking Stock: Reducing Breast Cancer Risks by Supporting Black Women's Transitions to Natural Hair	Bhavna Shamasunder; Janette Robinson Flint	Occidental College; Black Women for Wellness	1,152,548

Initiative	Fund Year	Title	Investigator(s)	Institution(s)	Total Award ($)
		Farmworker women & Respiratory Exposure to Smoke from Swamp Cooler Air (FRESSCA–Mujeres)	Anne Kelsey Lamb; Nayamin Martinez; Gina Solomon	Public Health Institute; Central California Environmental Justice Network; University of California, San Francisco	978,851
PBC: Novel Approaches to Predict or Prevent the Influence of Environmental Chemicals on Breast Cancer Risk (Biomonitoring)	2023	The pregnancy exposome and metabolome and risk for premenopausal breast cancer (PMBC) in Black women	Kimberly Berger	Sequoia Foundation	622,851
		Parental and grandparental exposome and breast cancer biomarkers in daughters and granddaughters	Barbara Cohn	Public Health Institute	546,337
		Biomonitoring a new pathway to breast cancer: Effects of steroidogenic chemicals on the metabolome	Rachel Morello-Frosch	University of California, Berkeley	622,017
PBC: Inter-generational Transmission of Breast Cancer Health Inequities	2023	Detect Signs of Early Life Exposures in Midlife to Prevent Breast Cancer Inequities	Barbara Cohn; Akilah Shahid	Public Health Institute	534,061
PBC: Understanding the Contribution of Chemical	2024	Investigating the relationship between chemical exposures,	Kimberly Badal	University of California, San Francisco	1,374,850

Initiative	Fund Year	Title	Investigator(s)	Institution(s)	Total Award ($)
Mixtures to Breast Cancer Risk		DNA methylation, and breast cancer risk.			
PBC: Many Pathways to Cancer	2024	Identifying Pathogen Exposures that Ignite Breast Cancer Risk and Lethality	Daniel Hollern	Salk Institute for Biological Studies	1,064,000
		Mutational Signatures as Biomarkers of Carcinogen Exposure Among Female Firefighters	Derek Urwin	University of California, Los Angeles	791,193
CBCPI: Breast Cancer Risk in Immigrants, Phase 2	2024	Occupational and Other Systemic Risk Factors for Breast Cancer Among Immigrants	Rachel Morello-Frosch; Erin Carrera; Megan Whelan;	University of California, Berkeley; Breast Cancer Prevention Partners; Center for Empowered Politics Education Fund	2,057,588
PBC: Investing in Communities' Local-level Needs to Reduce Racial Disparities in Breast Cancer Phase 2	2025	Breast Health and the Environment Among Latinas in Los Angeles: Mapping Disparities and Systems	Jill Johnston; Nancy Ibrahim	University of Southern California; Esperanza Community Housing	526,000
PBC: Californians Linking Action with Science for Prevention of Breast	2025	Addressing Well Water Contaminants via Novel Testing	Rainbow Rubin; John Erickson	Breast cancer Prevention Partners;	1,555,680

Initiative	Fund Year	Title	Investigator(s)	Institution(s)	Total Award ($)
Cancer (CLASP-BC), Phase 2 Full Awards		and Exposure Reduction Interventions		Community Water Center	
		Latina Property Service Workers Advocating to Reduce Breast Cancer Risks from Environmental Toxins	Michelle Burton; Janet Pregler	Community Health Councils Inc; UC Los Angeles	1,513,648
		Vietnamese American community-led breast cancer prevention via smoke-free multiunit housing in OC	Jimi Huh; Thu Tran	University of Southern California; Boat People SOS	1,705,200
		The Breast Cancer Prevention LATCH Plan: Lactation Accessibility for Thriving Community Health	Jasmine Pettis Marquez; Mimi Demissew	California Breastfeeding Coalition; Our Family Coalition	1,499,980
		BLOOM: Breast cancer risk Literacy & Outreach for Organized farmworker Mobilization	Nyisha Green-Washington; Adrienn Borsika Rabin; Suguet Lopez & Yunuen Ibarra,	Breast Cancer Prevention Partners; UC San Diego; Lideres Campesinas	1,393,129
Policy	2023	Achieving Equity in Genomic Testing for Breast Cancer through Partner-Led Strategies and Policies	Manali Patel	Stanford University	305,265
Policy	2024	Policy priorities for equitable access to fertility preservation by breast cancer patients	Hui-Chun Su	University of California, San Diego	137,033

Investigator Initiated Research

This section highlights the investigation that breast cancer researchers and community members have undertaken to answer questions they identified to be crucial for making inroads against breast cancer and for supporting people and communities affected by breast cancer. The investigators have researched topics spanning all four CBCRP priority areas described in Appendix 1: Community Impact of Breast Cancer; Etiology and Prevention; Detection, Prognosis and Treatment; and Biology of the Breast Cell. Over the past five years, these projects have led to progress across the spectrum of the priority areas including identifying ways to improve health care for young women during breast cancer treatment, identifying approaches to address the breast cancer needs of California's rural populations, gaining a greater understanding of the effects of chemicals in personal care products on breast tissue and genes linked to breast cancer as well as how biomarkers of inflammation can help predict risk of a second breast cancer in survivors, and developing tools and models to better understand the key metastatic events that affect patient survival.

CBCRP invested $14,113,718 million in 52 investigator-initiated projects that were funded between 2020 and 2025. Below are highlights of a selection of research projects that concluded between 2020 and 2025, followed by listings of all of the concluded projects during that period (Table A2.4) and all the funded projects that are currently in progress (Table A2.5).

Highlights of Projects Completed in 2020-2025

- **Project SOAR: Speaking Our African American Realities**
  PIs: Annette Stanton, UC Los Angeles & Tammie Denyse, Carrie's Touch African American Breast Cancer
  Project SOAR explored the impact of the "Strong Black Woman" concept on Black American women diagnosed with breast cancer. This community-academic partnership conducted focus groups and a survey to examine how the concept influences coping strategies and health outcomes. The study revealed that while the Strong Black Woman identity helped participants navigate challenges, it was also associated with negative mental and physical health outcomes, such as greater fatigue and depressive symptoms. Positive race-related concepts, like racial pride, were linked to more active coping strategies and better psychological health. Findings from this study, including key themes around resilience, support, and identity, are being shared with participants and the broader community. Future phases will focus on using these insights to develop interventions to improve the well-being of Black women breast cancer survivors. Research was presented at the 2021 San Antonio Breast Cancer Symposium.

- **Evaluating a multi-component oncofertility care intervention for rural young breast cancer survivors**
  PIs: Hui-Chun Su, UC San Diego & Helen Palomino, Cancer Resource Center of the Desert
  Many young breast cancer survivors (YBCS) face fertility challenges, but resources to understand, treat and deal with these issues are limited, especially in rural areas. A team from UC San Diego partnered with the Cancer Resource Center of the Desert in California's Imperial Valley to test a supportive, multi-part program to improve access to cancer-related, or oncofertility, care. The program included screening in clinics, patient navigation support, and telehealth consultations. Along the way, researchers worked closely with a Community Advisory Board and gathered feedback from patients and health care teams to refine their approach. As a result, they not only delivered helpful care but also developed strategies and tools to improve future implementation. Now, the program intervention will continue at El Centro Regional Medical Center, becoming part of ongoing care for YBCS in rural California. This research generated a publication in the journal Contemporary Clinical Trials.

- **Rural Latinas' breast cancer narratives: Metaphor analysis as a window into cultural values**
  PIs: Dalia Magana UC Merced & Candice Adam-Medefind, Healthy House within a Match Coalition
  How do cultural beliefs and metaphors shape a patient's experience of breast cancer diagnosis? Partnering with Healthy House, UC Merced researchers worked closely with the community to bridge the gap between academic research and real-life experiences of Latina breast cancer survivors in medically underserved Merced County. By analyzing 20 video testimonies, the team identified 451 metaphors commonly used by survivors, with themes of journeys, religion, and emotions playing key roles. These findings were transformed into comics to make the research more accessible and shared at community events. Despite pandemic-related challenges, the project thrived, highlighting the need for more breast cancer support in the region. Looking ahead, the team hopes to expand their study, train medical residents on spirituality in cancer care, and improve cultural competence in healthcare. This work is making a real impact on how breast cancer is understood and supported in this community.

- **Women Worker Biomonitoring Collaborative (WWBC)**
  PIs: Rachel Morello-Frosch, UC Berkeley, Erin Carrera, UCSF Nurse & Heather Buren, SFFD

Women firefighters and nurses work on the front lines to protect community well-being, yet little is known about their exposures to chemicals, particularly potential breast carcinogens. This study compared chemical exposures between three professions: female nurses, office workers, and firefighters, to explore links between occupational exposures and breast cancer risk. Over a hundred participants provided blood and urine samples, which were analyzed to detect possible carcinogens and other chemicals. The study yielded valuable insights and developed a new workflow strategy combining biomarkers and metabolomics to better capture chemical exposures. Recently awarded additional funding from the California Breast Cancer Research Program, the team will now focus on targeted analysis of chemicals like phthalates, bisphenols, and parabens. The study generated 46 publications and has strengthened partnerships with nurses and firefighters, who are actively involved in identifying relevant exposures, and the future study aims to provide clearer results for participants. Recently the team highlighted how community-based participatory research (CBPR) can drive broad social change while advancing scientific knowledge.

- **Reducing Latina Women's Exposure to Cleaning Chemicals**
  PIs: Kim Harley, UC Berkeley & Norma Morga, Clinica de Salud del Valle de Salinas
  The Lifting Up Communities through Interventions and Research (LUCIR) study examined how household cleaning products expose Latina women to harmful chemicals that may increase breast cancer risk, and whether switching to "green" or low-chemical alternatives could lower their exposure. Co-led by the CHAMACOS Youth Council in Salinas, California, this project empowered high school students to take part in research, education, and advocacy. The study found that using green cleaning products significantly reduced air levels of harmful chemicals like benzene, chloroform, and toluene — but that even some products labeled as “green” still contained fragrances that could cause harm, indicating that fragrance-free options may be safer. Student scientists and their community contacts embraced the findings, with 98% saying the green products worked just as well, and 90% willing to keep using them. Alongside the research, the youth involved gained valuable skills and created educational videos to help others reduce chemical exposure at home. The project generated three publications, including a paper in the journal Indoor Air and Environmental Health Perspectives.

- **In vivo impact of xenoestrogen exposure on the human breast**
  PIs: Shanaz Dairkee, California Pacific Medical Center Research Institute & Polly Marshall, Breast Cancer Over Time

How do chemicals in personal care products — like phthalates and parabens — affect breast tissue and cancer risk? Researchers teamed up with a motivated group of breast cancer survivors to design a study where participants switched to phthalate- and paraben-free PCPs for one menstrual cycle. They compared breast cell samples before and after the switch and found something striking: genes linked to cancer risk shifted toward a more "normal" pattern when participants stopped using products with these chemicals. Despite challenges due to COVID-19, they successfully gathered samples and found strong evidence that cutting out these chemicals could reduce breast cancer risk. They also noticed that participants' urine had lower paraben levels, confirming reduced exposure. This study suggests that even "safe" levels of these chemicals might be harmful over time — but reducing exposure could reverse some of the damage, lowering breast cancer risk. These results were published in Chemosphere.

- **Physical activity intervention for young cancer survivors**
  PIs: Sheri Hartman, UC San Diego & Stori Nagel, Social Good Fund
  Young breast cancer survivors often have poor quality of life compared to older survivors. Physical activity can improve quality of life, but its use has been understudied among survivors. In this study, thirty-four participants, averaging 43 years old and several years post-diagnosis, worked with a trained peer mentor, tracked physical using Fitbits, and engaged in a private Fitbit community for social support. The study found that the intervention was feasible, with high retention and good adherence. Participants reported improvements in physical activity, body image, fatigue, anxiety, and emotional support. Participants appreciated the peer mentorship and the convenience of a digital/remote intervention. Overall, this study suggests that a remote peer-based approach using wearable technology can effectively support survivors in enhancing physical activity and overall well-being. Research was published in the journal JMIR Publications.

- **Inflammatory biomarkers and risk of second breast cancer in a diverse population**
  PI: Esther John, Stanford University
  With earlier detection and better treatments, there are now over 3.8 million survivors with a first primary breast cancer (FPBC). These survivors are at high risk of developing a second primary breast cancer (SPBC). After a breast cancer diagnosis, many women are very fearful of a recurrence or a second breast cancer, which can lead to anxiety and adversely affect their quality of life. This study explored how inflammation might influence the risk of developing a SPBC in women who already had a first invasive breast cancer FPBC. Researchers analyzed blood samples from women with FBC to measure inflammation-related biomarkers. They found that higher levels of the

biomarkers CRP, adiponectin, and PAI-1 were linked to increased risk of SPBC. Some cytokines were also linked to higher or lower SPBC risk. For example, higher levels of IL-18 and PDGF were linked to higher risk, while IL-1a and IL-12p70 were linked to lower risk. These findings suggest that measuring inflammation markers after an initial breast cancer diagnosis could help identify women at higher risk of a second cancer, opening doors for more personalized monitoring and prevention.

- **Tumor and Liquid Biopsy-based Biomarkers for Immunotherapy**
  PI: Laura van 't Veer, UC San Francisco
  This study analyzed how tumors respond to a combination of SD-101 (a drug that stimulates a key immune system protein, TLR9) and pembrolizumab (an immunotherapy drug) in the I-SPY 2 trial. Researchers aimed to find biomarkers—molecular signs in tumors and blood—that could predict which tumors would respond best to treatment. They examined tumor samples and blood from patients diagnosed with either triple-negative or HR+/HER2- forms of breast cancer, using advanced techniques to track immune cell activity. They found that triple-negative breast cancer patients responded more strongly to the combination of drugs, while certain immune-related biomarkers were more predictive in HR+/HER2- patients. However, adding SD-101 to pembrolizumab didn't significantly improve outcomes, possibly because TLR9 expression wasn't strongly linked to treatment response. The team will continue studying immune responses in other treatment groups. Their goal is to refine biomarker-based treatment strategies, helping doctors personalize therapy to improve outcomes for high-risk breast cancer patients. The grant generated five publications, including a paper in NPJ Breast Cancer.

- **Immunotherapeutic Exosomes for Triple Negative Breast Cancer**
  PI: Yong Zhang, University of Southern California
  Triple-negative breast cancer (TNBC) is a particularly aggressive type of breast cancer that lacks three key receptors, making it harder to treat than other forms. This study focused on developing a new kind of therapy that uses the body's immune system to target and destroy TNBC cells. Scientists engineered particles called exosomes—tiny structures that can send signals between cells—to help activate and direct immune cells against TNBC. Over two years, researchers studied these engineered exosomes, testing their properties and effectiveness in both lab and animal models. The results were promising: the exosomes triggered strong, long-lasting immune responses against TNBC, showing potential as a future treatment. These findings lay the groundwork for further studies and possible clinical applications, bringing hope for more effective

TNBC therapies. The project generated three publications, including in the journal Molecular Therapy.

- **Viro-immunotherapy for Triple Negative Breast Cancer**
  PI: Shyambabu Chaurasiya, Beckman Research Institute of the City of Hope
  This project focused on developing a virus that can both kill cancer and boost the immune system's ability to fight tumors. The goal was to engineer the virus to produce two immune-stimulating proteins: mLIGHT and IL-15. Initially, researchers struggled to insert the IL-15 gene alongside mLIGHT, so they tested the two singly modified viruses in combination. This approach improved survival in a mouse model of triple-negative breast cancer (TNBC), though tumor shrinkage was only moderate. However, the viruses were more effective in human-derived TNBC tumors in immune-compromised mice. Through continued experiments, the team successfully created the doubly armed virus (CF33-mLIGHT-sIL15). Testing showed that, while the virus alone had limited impact, combining it with a PD-1 checkpoint inhibitor significantly improved results—leading to complete tumor regression in some cases. Moving forward, the team plans to explore how this virus works with different immune therapies to enhance TNBC treatment. The project generated two publications, including in the journal Molecular Therapy.

- **A novel agent to treat breast cancer brain metastases**
  PI: Melanie Hayden Gephart, Stanford University
  No effective treatments exist for conditions like leptomeningeal disease, a rapidly fatal brain metastasis most common in breast cancer. Could a new drug, QBS72S, target this condition while minimizing harm to normal brain cells? In preclinical studies, QBS72S slowed tumor growth and extended survival in aggressive triple-negative breast cancer models. The Phase 2 clinical trial of patients with breast cancer brain metastases has shown initial efficacy in 3 of 10 patients with breast cancer leptomeningeal disease. Most had exhausted all other treatment options. So far, the drug shows minimal toxicity, but one patient whose cancer responded to the drug, also experienced severe cerebral swelling, which was reported to the FDA. The team is now expanding the trial to include patients with leptomeningeal disease from different primary cancers and plans to move toward multi-center Phase 2 trials. They're also exploring biomarkers to predict treatment response and resistance. Findings were published in Molecular Cancer Therapeutics.

- **Cell Surface Enablers of Breast Cancer Metastasis**
  PI: Jeroen Roose, UC San Francisco

By analyzing metastatic breast cancer samples from the bone and brain, researchers have identified unique surface markers that distinguish actively growing cancer cells from dormant ones. What are the key cell surface markers linked to metastatic breast cancer metabolism, and how can a better understanding different "archetypes" of metastasis improve treatments? By analyzing single-cell RNA sequencing (scRNAseq) data, researchers identified two potential markers—TM4SF1 and SLC39A6—that seem to define distinct metastatic profiles. The study yielded insights in three key areas: 1) Defining metastatic archetypes in brain tumors using scRNAseq and CyTOF, expanding insights beyond breast cancer, 2) Identifying gene expression patterns in patient-derived xenograft (PDX) mouse models of breast cancer, and 3) Optimizing SCENITH staining to analyze metabolism at a single-cell level. The study yielded a high-impact publication in the journal Cell and another manuscript analyzing 15 patient-derived breast cancer samples. Future studies aim to deepen these findings and explore therapeutic potential.

- **An activated stem cell signature as a biomarker to predict malignant progression of DCIS**
  PI: Jay Desgrosellier, University of California, San Diego
  Ductal carcinoma in situ (DCIS) is the most commonly diagnosed pre-malignant lesion in the breast. Only about half of these cases will progress to invasive breast cancer, yet many women with DCIS needlessly undergo aggressive treatment. To better understand which cases of DCIS are likely to become invasive, researchers studied whether an activated stem cell signature will identify DCIS lesions that are likely to progress to invasive breast cancer, in hopes of reducing unnecessary treatment. One of their most exciting discoveries was a specific type of cancer cell marked by a protein called RSAD2 (also known as Viperin). These RSAD2+ cells have stem-like properties, respond to immune signals, and are found more often in invasive cancers than in DCIS. The team also found that these cells can attract immune cells that actually help tumors grow and push neighboring cancer cells toward a more aggressive state. These findings suggest that RSAD2+ cells may play a central role in the shift from non-invasive to invasive cancer. The study generated 5 publications, including a report in Frontiers in Cell and Developmental Biology

- **Small RNAs that mediate DNA damage repair as a new target for breast cancer prevention**
  PI: Jennifer Rosenbluth, University of California, San Francisco
  New findings in the study of class of small RNA molecules — called sdRNAs — lay the groundwork for studying whether these molecules influence breast cancer

development. These sdRNAs are involved in DNA repair and are produced with help from BRCA1, a well-known tumor suppressor. Researchers measured sdRNA levels in breast tissues from women with different cancer risk factors, as well as in premalignant lesions and tumors. They also tested whether these sdRNAs could be detected in blood samples, aiming for a future non-invasive test. In the lab, they grew healthy breast tissue and introduced sdRNAs at levels seen in tumors. Two sdRNAs, linked to two genes, caused cells to grow more and changed gene expression patterns tied to how breast cells mature. These findings suggest sdRNAs might drive early cancer development and could one day be used for early detection or targeted therapies.

- **Pharmacological targeting of cholinergic receptors as a novel breast cancer immunotherapy**
  PI: Brian Eliceiri, UC San Diego
  This research led to the discovery of a promising combination therapy for triple-negative breast cancer. The team found that using AR-R17779, a drug that activates the nicotinic acetylcholine receptor (CHRNA7), alongside an immune checkpoint inhibitor (anti-PD-L1) resulted in significantly improved anti-tumor effects in mice. They first confirmed that AR-R17779 alone could slow tumor growth, reduce metastasis, and improve survival. Further investigations revealed that CHRNA7 plays a key role in immune cell function, particularly in how antigen-presenting cells activate T cells. This led them to test the combination therapy, which proved far more effective than either treatment alone. Despite challenges in commercializing an off-patent drug, the team is now exploring ways to develop a novel version of AR-R17779. They plan to seek NIH funding and publish their findings, which could have a major impact on TNBC treatment and immune checkpoint therapy strategies.

Table A2.4 Investigator Initiated Projects Completed in 2020-2025

Award Type	Fund Year	Title	Investigator (s)	Institution (s)	Total Award ($)
Community Impact of Breast Cancer					
CRC Full Award	2016	Building Mixtec Community Capacity for Breast Health, Phase 3	Annette Maxwell; Sandra Young	University of California, Los Angeles; Mixteco/ Indigena Community Organizing Project	723,227
CRC Full Award	2021	Evaluating a multi-component oncofertility care intervention for rural young breast cancer survivors	Hui-Chun Su; Helen Palomino	University of California, San Diego; Cancer Resource Center of the Desert	718,694
CRC Pilot Award	2018	Project SOAR: Speaking Our African American Realities	Annette Stanton; Tammie Denyse	University of California, Los Angeles; Carrie's Touch African American Breast Cancer	176,342
CRC Pilot Award	2019	Ethnic Enclave Effect on Vietnamese Breast Cancer Patients	Lihua Liu; Hai Hoang	University of Southern California; BPSOS Center for Community Advancement	38,367
CRC Pilot Award	2019	Nail Salon Worker Leadership and Reducing Breast Cancer Risk	Laura Stock; Lisa Fu	University of California, Berkeley; Asian Health Services	175,202
CRC Pilot Award	2019	Creating Bridges to Women's Health Care in Young Survivors	Hui-Chun Su; Helen Palomino	University of California, San Diego; Cancer Resource Center of the Desert	177,870
CRC Pilot Award	2020	Peer navigation for African American women during the breast cancer peri-diagnostic period	Lisa Goldman Rosas; Starla Gay;	Stanford University; Roots Community Health Center	188,405

Award Type	Fund Year	Title	Investigator (s)	Institution (s)	Total Award ($)
CRC Pilot Award	2020	Rural Latinas' breast cancer narratives: Metaphor analysis as a window into cultural values	Dalia Magana; Candice Adam-Medefind	University of California, Merced; Healthy House within a Match Coalition	170,972
CRC Pilot Award	2021	Ethnic Enclave Effect on Vietnamese American Women's Breast Cancer Experience	Lihua Liu; Hai Hoang	University of Southern California; Illumination Institute	205,503
CRC Pilot Award	2022	Financial Toxicity among Underserved Hispanic Breast Cancer Survivors	Eunjeong Ko; Michelle Avila	San Diego State University; Kern County Cancer Foundation	216,188
IDEA	2021	Women in Janitorial Services: Breast Cancer Risks from Chemical Exposures	Robert Harrison	Public Health Institute	188,091
Translational Research Award	2020	Adverse Health Outcomes in Breast Cancer Survivors exposed to Pain Medications	Reina Haque	Kaiser Foundation Research Institute	973,300
Community-led Conference Award	2020	Nail Salon Worker Health and Safety Research Conference	Lisa Fu	Asian Health Services	25,000
Community-led Conference Award	2021	Orange County Complete Breast Cancer Care Continuum Conference	Hai Hoang	Illumination Institute	24,722

Award Type	Fund Year	Title	Investigator (s)	Institution (s)	Total Award ($)
Etiology and Prevention					
CRC Full Award	2017	Women Worker Biomonitoring Collaborative (WWBC)	Rachel Morello-Frosch; Erin Carrera; Heather Buren	University of California, Berkeley; Breast Cancer Prevention Partners	790,314
CRC Full Award	2018	In vivo impact of xenoestrogen exposure on the human breast	Shanaz Dairkee; Polly Marshall	California Pacific Medical Center Research Institute; Breast Cancer Over Time	971,554
CRC Full Award	2018	Reducing Latina Women's Exposure to Cleaning Chemicals	Kim Harley; Norma Morga	University of California, Berkeley; Clinica de Salud del Valle de Salinas	705,729
CRC Full Award	2019	Breast Cancer Risks from California's Gold Mining Legacy	Peggy Reynolds; Taylor Schobel	University of California, San Francisco; Sierra Streams Institute	735,397
CRC Pilot Award	2017	Reducing Breast Cancer Risk in Korean American Women	Janice Tsoh; June Lee	University of California, San Francisco; Korean Community Center of the East Bay	176,089
CRC Pilot Award	2018	Assessing breast health in urban oil drilling communities	Jill Johnston; Nancy Ibrahim	University of Southern California; Esperanza Community Housing	220,000
CRC Pilot Award	2018	Physical activity intervention for young cancer survivors	Sheri Hartman; Stori Nagel	University of California, San Diego; Social Good Fund	163,069
CRC Pilot Award	2020	GRAton PEsticides (GRAPE): Exposure potential from groundwater and air in California Wine Country	Jane Sellen; Peggy Reynolds; Nichole Warwick;	Pesticide Action Network - North America; University of California, San Francisco; Sonoma Safe Ag Safe Schools	171,081

Award Type	Fund Year	Title	Investigator (s)	Institution (s)	Total Award ($)
CRC Pilot Award	2023	Promotora Training: Reducing Impact of Environmental Toxins on Breast Cancer & Reproductive Health	Janet Pregler; Luis Pardo	University of California, Los Angeles; Worksite Wellness LA	187,100
IDEA	2019	Enhancing muscle strength and immunity in breast cancer	Joanna Davies	San Diego Biomedical Research Institute	285,838
IDEA	2022	Risk factors for second breast cancer in racial/ethnic minority populations	Esther John	Stanford University	162,775
IDEA	2022	The pregnancy exposome and risk for premenopausal breast cancer (PMBC) across race/ethnicities	Kimberly Berger	Sequoia Foundation	215,262
IDEA	2023	Inflammatory biomarkers and risk of second breast cancer in a diverse population	Esther John	Stanford University	154,431
Translational Research Award	2019	Ambient Air Toxics and Breast Cancer Risk, Phase 2	Julia Heck	University of California, Los Angeles	489,101
Conference Award	2020	Breast Cancer and the Environment Workshop	Michele Rakoff	Breast Cancer Care and Research Fund	19,709
Community-led Conference Award	2022	Advocates and scientists partner to strengthen US testing of chemicals that can affect breast health	Jayla Burton	Breast Cancer Action	25,000

Award Type	Fund Year	Title	Investigator (s)	Institution (s)	Total Award ($)
Community-led Conference Award	2023	Women's Health & Environmental Justice	Luis Pardo	Worksite Wellness LA	25,000
Detection, Prognosis and Treatment					
CRC Pilot Award	2019	Cancer Navigation for Vietnamese Americans (CANVAS)	Sora Tanjasiri; Becky Nguyen	University of California, Irvine; Vietnamese American Cancer Foundation	180,352
IDEA	2018	Dietary asparagine limitation to augment immune therapy	Simon Knott	Cedars-Sinai Medical Center	255,830
IDEA	2018	Metformins in Triple-Negative Breast Cancer Immunotherapy	Richard Pietras	University of California, Los Angeles	187,238
IDEA	2018	Targeting tumor-initiating niche to overcome chemoresistance	Jing Yang	University of California, San Diego	187,500
IDEA	2018	Targeting IGF2 and Androgen Receptors for TNBC Therapy	Nalo Hamilton	University of California, Los Angeles	187,436
IDEA	2018	Improving Health of Women on Aromatase Inhibitors	Catherine Carpenter	University of California, Los Angeles	127,286
IDEA	2019	Novel Ab-(IL-12) Fusion Proteins for Breast Cancer Therapy	Manuel Penichet	University of California, Los Angeles	187,499
IDEA	2019	Non-contrast MRI Breast Cancer Screening	Rebecca Rakow-Penner	University of California, San Diego	160,072

Award Type	Fund Year	Title	Investigator (s)	Institution (s)	Total Award ($)
IDEA	2019	Tumor and Liquid Biopsy-based Biomarkers for Immunotherapy	Laura van 't Veer	University of California, San Francisco	187,438
IDEA	2019	Immunotherapeutic Exosomes for Triple Negative Breast Cancer	Yong Zhang	University of Southern California	246,957
IDEA	2020	Viro-immunotherapy for Triple Negative Breast Cancer	Shyambabu Chaurasiya	Beckman Research Institute of the City of Hope	263,614
IDEA	2020	Targeting immunometabolism to increase the efficacy of breast cancer immunotherapy	Michael Campbell	University of California, San Francisco	191,631
IDEA	2020	Targeting FBXO44/SUV39H1 Silencing of LINE-1 Retrotransposons to Prevent Breast Cancer Recurrence	Charles Spruck	Sanford Burnham Prebys Medical Discovery Institute	292,500
IDEA	2020	A Genomic Insert of Immune Suppression for the Negative Prediction of Cancer Survival	Paola Betancur	University of California, San Francisco	213,224
IDEA	2021	Treating and Preventing Breast Cancer Using Beneficial Bacteria	Jack Bui	University of California, San Diego	212,425
IDEA	2021	Targeted therapy to reverse triple negative breast cancer health disparities and boost immunotherapy	Diana Marquez-Garban	University of California, Los Angeles	195,000

Award Type	Fund Year	Title	Investigator (s)	Institution (s)	Total Award ($)
IDEA	2022	Electroacupuncture for the management of cancer-related cognitive impairment in breast cancer (ECCO)	Alexandre Chan	University of California, Irvine	200,792
IDEA	2022	Evaluation of cerebrospinal fluid to improve outcomes in breast cancer patients with CNS metastases	Michelle Melisko	University of California, San Francisco	195,000
IDEA	2022	Single cell multi-omic analysis of tumor and immune cells in malignant pleural effusions and ascites	Mark Jesus Magbanua	University of California, San Francisco	194,763
IDEA	2022	Blocking the Entry of Breast Cancer-derived Extracellular Vesicles into Normal Cells	Shizhen Emily Wang	University of California, San Diego	204,330
IDEA	2023	Arming macrophages to eliminate triple negative breast cancer stem cells	David Cheresh	University of California, San Diego	203,730
Translational Research Award	2020	A novel agent to treat breast cancer brain metastases	Melanie Hayden Gephart	Stanford University	1,076,921
Community Conference Award	2019	7th Annual Metastatic Breast Cancer Conference	Sharon Schlesinger	Susan G. Komen Foundation	25,000

Award Type	Fund Year	Title	Investigator (s)	Institution (s)	Total Award ($)
Conference Award	2024	RISE UP for Breast Cancer	Laura Esserman	University of California, San Francisco	25,000
Biology of the Breast Cell					
IDEA	2018	Adipose-rich microenvironment in breast cancer	Fahumiya Samad	San Diego Biomedical Research Institute	288,000
IDEA	2019	Defining the metastasis-initiating cancer stem cells	Olga Razorenova	University of California, Irvine	184,337
IDEA	2019	Unraveling the Mutagenic Mechanisms of Breast Cancer	Remi Buisson	University of California, Irvine	125,000
IDEA	2019	Mechanisms underlying cellular addiction to HER2	Mark Moasser	University of California, San Francisco	186,533
IDEA	2020	Pharmacological targeting of cholinergic receptors as a novel breast cancer immunotherapy	Brian Eliceiri	University of California, San Diego	195,000
IDEA	2020	Cell Surface Enablers of Breast Cancer Metastasis	Jeroen Roose	University of California, San Francisco	130,000
IDEA	2021	Defining the Cellular Origin of BRCA1-associated Breast Cancer	Hua Wang	Lundquist Institute for Biomedical Innovation at Harbor-UCLA Medical Center	231,150
IDEA	2022	Uncovering a novel pathway in triple negative breast cancer stem cells regulated by GULP1	Shaheen Sikandar	University of California, Santa Cruz	195,000

Award Type	Fund Year	Title	Investigator (s)	Institution (s)	Total Award ($)
IDEA	2022	An activated stem cell signature as a biomarker to predict malignant progression of DCIS	Jay Desgrosellier	University of California, San Diego	195,000
IDEA	2023	Small RNAs that mediate DNA damage repair as a new target for breast cancer prevention	Jennifer Rosenbluth	University of California, San Francisco	195,000
Conference Award	2023	11th International Symposium of the Breast	Michelle Woodhill	Dr. Susan Love Research Foundation	25,000

Table A2.5 Investigator Initiated Projects in Progress in 2020-2025

Call Name	Fund Year	Project Title	Investigator(s)	Institution(s)	Total Award ($)
Community Impact of Breast Cancer					
CRC Full Award	2021	Faith in Action! A Church-Based Navigation Model to Increase Breast Cancer Screening in Korean Women	Robert Haile; Jeong Yup Lee	Cedars-Sinai Medical Center; Los Angeles Onnuri Church	920,165
CRC Full Award	2022	Supporting African American Women During Treatment and Survivorship Through Peer Navigation	Lisa Goldman Rosas; Starla Gay	Stanford University; Charlotte Maxwell Clinic	825,697

Call Name	Fund Year	Project Title	Investigator(s)	Institution(s)	Total Award ($)
CRC Full Award	2024	Financial Navigation to Address Financial Toxicity among Latinas with Breast Cancer	Eunjeong Ko; Michelle Avila	San Diego State University Research Foundation; Kern County Cancer Foundation	846,342
CRC Pilot Award	2024	Breast Cancer in Young Women: Awareness, Views, Experiences (BRAVE) Study	Alice Lee; Nicole Wells	California State University, Fullerton; The Young Breast Cancer Project	210,183
CRC Pilot Award	2025	A Pilot Air Quality Intervention in California Nail Salons	Paula Johnson; Mary Nguyen	Public Health Institute; California Healthy Nail Salon Collaborative	226,820
CRC Pilot Award	2025	Enhancing Linguistic/Cultural Competency in Latina BC Care: UC Medical Education Initiative in SJV	Dalia Magana; Candice Adam-Medefind	University of California, Merced; Healthy House within a Match Coalition	260,000
CRC Pilot Award	2025	Lost in Transition: Primary Care Access and Continuity for Long-Term Breast Cancer Survivors	Cody Ramin; Jennifer Henry	Cedars-Sinai Medical Center; Links for Life, Inc.	30,2612
Translational Research Award	2022	Influence of comorbidities on survival disparities in women with metastatic breast cancer	Reina Haque	Kaiser Foundation Research Institute	1,041,037
Community-led Conference Award	2024	A multigenerational dialogue: reducing our exposures of toxic chemicals and breast cancer risk	Pastor Rhonda Holbert	Celebrate Life Cancer Ministry	25,000

Call Name	Fund Year	Project Title	Investigator(s)	Institution(s)	Total Award ($)
Etiology and Prevention					
CRC Full Award	2020	Breast health and the Environment among Latinas in Los Angeles (BELLA) Study	Jill Johnston; Nancy Ibrahim	University of Southern California; Esperanza Community Housing	918,051
CRC Full Award	2023	Wristbands, biomonitoring, and metabolomics to detect nurses' chemical exposure and early effects	Rachel Morello-Frosch; Lisa Hartmayer	University of California, Berkeley; Breast Cancer Prevention Partners	804,399
CRC Pilot Award	2024	Impact of feminine hygiene products on Black women's body burden of breast cancer-related chemicals	Kimberly Berger Astrid Williams;	Sequoia Foundation; California Black Health Network	198,305
CRC Pilot Award	2024	Tobacco exposure as a breast cancer risk factor among Vietnamese American women in California	Jimi Huh; Thu Tran	University of Southern California; Boat People SOS	233,930
CRC Pilot Award	2025	Culturally-Tailored Food is Medicine for Black/African American Breast Cancer Patients and Survivors	Lisa Goldman Rosas; Starla Gay	Stanford University; Roots Community Health Center	281,066
IDEA	2021	A fiber-diverse, anti-inflammatory diet and aerobic exercise reduce risk of breast cancer recurrence	William McCarthy	University of California, Los Angeles	195,000

Call Name	Fund Year	Project Title	Investigator(s)	Institution(s)	Total Award ($)
IDEA	2023	Assessing environmental & social factors influencing breast cancer prevention in Latina farmworkers	Nicolas Lopez-Galvez	San Diego State University Research Foundation	235,750
Detection, Prognosis and Treatment					
IDEA	2023	Assessing effectiveness and toxicity of FLASH radiotherapy in breast cancer care	Frederick Dirbas	Stanford University	234,409
IDEA	2024	Leveraging Radiomics and Artificial Intelligence with Mammography for Early Breast Cancer Detection	Bino Varghese	University of Southern California	238,834
IDEA	2024	Developing covalent PolQ inhibitors for targeted treatment of breast cancer	Xiaohua Wu	Scripps Research Institute	296,000
IDEA	2024	A targeted approach to eliminate metastatic tumor cells to inhibit TNBC metastasis	Terumi Kohwi-Shigematsu	University of California, San Francisco	202,500
IDEA	2025	Exploring the impact of post-viral lung damage on breast cancer metastasis	Shaheen Sikandar	University of California, Santa Cruz	259,754
IDEA	2025	Intranasal Delivery of NEO212 to Radio-Sensitize and Eliminate Brain Metastases of Breast Cancer	Axel Schonthal	University of Southern California	332000

Call Name	Fund Year	Project Title	Investigator(s)	Institution(s)	Total Award ($)
IDEA	2025	Targeting post-transcriptional gene regulation in Triple-negative breast cancer	Dinesh Rao	University of California, Los Angeles	270,000
Translational Research Award	2024	AI-Driven Advancements in Mammography: Assessing Efficiency and Burnout to Enhance Patient Care	Joann Elmore	David Geffen School of Medicine at UCLA	926,975
Conference Award	2025	RISE UP for Breast Cancer	Laura Esserman	University of California, San Francisco	25,000
Biology of the Breast Cell					
IDEA	2024	Disrupting Breast Cancer Metastasis with compound #26 via Myo10 - Integrin Interaction Targeting	Celine DerMardirossian	San Diego Biomedical Research Institute	293,700

Tax Checkoff Funded Grants

Table A2.6: Grants funded in part through voluntary tax contributions

Grant Title	Investigator(s)	Institution(s)
Evaluating a multi-component oncofertility care intervention for rural young breast cancer survivors	Helen Palomino Hui-Chun Su	Cancer Resource Center of the Desert UC San Diego
A fiber-diverse, anti-inflammatory diet and aerobic exercise reduce risk of breast cancer recurrence	William McCarthy	UCLA
Targeted therapy to reverse triple negative breast cancer health disparities and boost immunotherapy	Diana Marquez-Garban	UCLA
Financial Toxicity among Underserved Hispanic Breast Cancer Survivors	Eunjeong Ko Michelle Avila	San Diego State University Kern County Cancer Foundation
Evaluation of cerebrospinal fluid to improve outcomes in breast cancer patients with CNS metastases	Michelle Melisko	UCSF
The pregnancy exposome and risk for premenopausal breast cancer (PMBC) across race/ethnicities	Kimberly Berger	Sequoia Foundation
Arming macrophages to eliminate triple negative breast cancer stem cells	David Cheresh	UC San Diego
Detect Signs of Early Life Exposures in Midlife to Prevent Breast Cancer Inequities	Barbara Cohn Akilah Shahid	Public Health Institute
Financial Navigation to Address Financial Toxicity among Latinas with Breast Cancer	Michelle Avila Eunjeong Ko	Kern County Cancer Foundation San Diego State University Research Foundation

Grant Title	Investigator(s)	Institution(s)
AI-Driven Advancements in Mammography: Assessing Efficiency and Burnout to Enhance Patient Care	Joann Elmore	David Geffen School of Medicine at UCLA
Identifying Pathogen Exposures that Ignite Breast Cancer Risk and Lethality	Daniel Hollern	Salk Institute for Biological Studies
A Pilot Air Quality Intervention in California Nail Salons	Paula Johnson Mary Nguyen	Public Health Institute California Healthy Nail Salon Collaborative
Intranasal Delivery of NEO212 to Radio-Sensitize and Eliminate Brain Metastases of Breast Cancer	Axel Schönthal	University of Southern California

Faith Fancher Awards

Table A2.7: Recipients of the Faith Fancher Research Award, 2021-2025

Year	Title	Investigator(s) and Institution (s)
2025	Culturally-Tailored Food is Medicine for Black/African American Breast Cancer Patients and Survivors	Lisa Goldman Rosas at Stanford University and Starla Gay at Roots Community Health Center
2024	Impact of feminine hygiene products on Black women's body burden of breast cancer-related chemicals	Kimberly Berger at UCLA and Sylvie Wilson at California Black Health Network
2023	Assessing environmental & social factors influencing breast cancer prevention in Latina farmworkers	Nicolas Lopez-Galvez at San Diego State University Research Foundation
2022	Supporting African American Women During Treatment and Survivorship Through Peer Navigation	Lisa Goldman Rosas at Stanford University and Starla Gay at Charlotte Maxwell Clinic

Year	Title	Investigator(s) and Institution (s)
2021	Faith in Action! A Church-Based Navigation Model to Increase Breast Cancer Screening in Korean Women	Jeong Yup Lee at Los Angeles Onnuri Church and Robert Haile at Cedars-Sinai Medical Center

Emergency COVID-19 Research Seed Funding

To help California address some of the critical needs brought on by the COVID-19 public health crisis, the grantmaking programs of the UC Office of the President, the Research Grants Program Office (RGPO), immediately made $2.7 million available in emergency funding to support urgent research to help mitigate the negative impacts of the pandemic.

Of that figure, $2.1 million was awarded by the Tobacco-Related Disease Research Program, the California Breast Cancer Research Program, the California HIV/AIDS Research Program, the Multicampus Research Programs and Initiatives, and the Type-1 Diabetes Research Fund to support $25,000 seed funding proposals submitted in response to a request for applications (RFA). These six-month projects addressed critical needs resulting from the pandemic and placed focused on innovations that would benefit individuals at high risk for coronavirus infection, particularly those in racial and ethnic communities experiencing disparate health outcomes. In all, 85 projects totaling $2.1 million were awarded to investigators throughout the state. An additional $623,725 was provided by UC Research Initiatives to support UC campus research to address the pandemic.

Building upon the initial Emergency COVID-19 Research Seed Funding Initiative, RGPO provided an additional $2.4 million for a competition limited to seed awardees to support the continuation of rapid research to prevent coronavirus infection, improve clinical management of COVID-19, track and monitor viral dynamics, and inform the development of vaccines and therapeutics. Priority was given to applications that addressed such co-morbid conditions as cancer, HIV infection, and tobacco-related diseases. In addition, a special focus was placed in funding decisions on addressing the needs of populations at greatest risk for coronavirus infection and associated adverse health outcomes. Twelve grantees successfully competed for the $150,000 direct cost continuation awards.

A full listing of funded grants and their outcomes can be found here: https://www.californiaaidsresearch.org/covid-19-research/

Appendix 3: California Breast Cancer Research Program Council (2020–2025)

Chairs
Erika Bell (2024-2025)
Sharon Pitteri (2023-2024)
Clara Omogbai (2022-2023)
Rati Fotedar (2021-2022)
Ana Navarro (2019-2021)

Vice-Chairs
Bryan Goldner (2024-2025)
Erika Bell (2023-2024)
Sharon Pitteri (2022-2023)
Clara Omogbai (2021-2022)
Rati Fotedar (2020-2021)

Advocates
Wendy Shurelds, Many Shades of Pink (2024-2027)
Christopher Clinton Conway, Tower Cancer Research Foundation (2023-2026)
Lori Petitti, MBA Breast Cancer Care and Research Fund (2023-2026)
Kelly Shanahan, M.D., METAvivor (2023-2024)
Erika Bell, Ph.D., Bay Area Cancer Connections (2022-2026)
Yamini Ranchod, Ph.D., Bay Area Young Survivors (2021-2023)
Phyllis Howard, Women's Cancer Resource Center (2021-2024)
Abigail Arons, M.P.H., Breast Cancer Action (2019-2023)
Michele Atlan, Breast Cancer Care and Research Fund (2019-2023)
Colleen Carvalho, Bay Area Cancer Connections (2019-2021)
Dolores Moorehead, Women's Cancer Resource Center (2017-2021)
Joan Venticinque, Cancer Patient Advocacy Alliance (2015-2021)

Scientists/Clinicians
Svasti Haricharan, Ph.D., San Diego State University (2023-2026)
Hisashi Tanaka, M.D., Ph.D., Cedars-Sinai Medical Center (2023-2026)
Salma Shariff-Marco, Ph.D., M.P.H., University of California, San Francisco (2022-2025)
Bryan Goldner, D.O., Kaiser Baldwin Park Medical Center (2021-2026)
Angelique Richardson, M.D., University of California, San Diego (2021-2022)

Sharon Pitteri, Ph.D., Stanford University (2019-2025)
Rati Fotedar, Ph.D., San Diego Community College District (2019-2023)
Sharon Lum, M.D., Loma Linda University (2018-2022)
Ana Navarro, Ph.D., UCSD Cancer Center (2016-2023)
Veronica Vieira, D.Sc., UC Irvine (2017-2021)

Industry Representatives
Maura Dickler, M.D., Genentech (2023-2026)
Thomas Jascur, Ph.D., Invitae/Mayo Clinic (2022-2025)
Christine Meda, M.S., IncelDx Inc. (2019-2023)
Melanie Smitt, M.D., Genentech/Seattle Genetics (2019-2022)

Medical Specialists
Lesley Taylor, M.D., City of Hope Comprehensive Cancer Center (2023-2026)
Ujwala Rajgopal, M.D., MD Professional Corporation (2019-2022)

Nonprofit Health Organization Representatives
Argelia Flores, California Health Collaborative (2024-2027)
Barbara Perry, MHSL, San Diego Black Nurses Association (2023-2026)
Clara Omogbai, Dr.PH, California Health Collaborative (2018-2024)
Amanda Heier, Breast Cancer Prevention Partners (2022-2023)
Tasha Stoiber, Ph.D., Environmental Working Group (2018-2022)

Ex Officio
Svetlana Popova, M.D., M.P.H., Every Woman Counts Program (2019-ongoing)

Appendix 4: California Breast Cancer Research Program Staff (2020–2025)

Current Program staff

Sharima Rasanayagam, Ph.D., Director, California Breast Cancer Research Program & Cancer Initiatives (formerly Environmental Health & Health Policy Sciences Program Officer)
Katherine McKenzie, Ph.D., Senior Program Officer, Clinical and Prevention Sciences
Sen Fernandez Poole, Ph.D., Community Initiatives & Public Health Sciences Program Officer
Lisa Minniefield, Program Specialist

Former staff between 7/1/2020–6/30/2025

Marion H. E. Kavanaugh-Lynch, M.D., M.P.H. Director
Nicholas Anthis, D. Phil., Environmental Health & Health Policy Sciences Program Officer
Carmela Lomonaco, Ph.D., Environmental Health & Health Policy Sciences Program Officer
Lyn Dunagan, Project Coordinator

Appendix 5: Steering Committee and Strategy Advisors Lists

California Breast Cancer Prevention Initiative Steering Committee

Co_Chairs¿

Tracey Woodruff, M.P.H., Ph.D., UCSF
Marion (Mhel) Kavanaugh-Lynch, M.D., M.P.H., California Breast Cancer Research Program

Members¿

Julia G. Brody, Ph.D., Silent Spring Institute
Richard Clapp, D.Sc., MPH, Boston University School of Public Health
Jeanne Rizzo, R.N., Breast Cancer Fund
Saraswati Sukumar, Ph.D., Johns Hopkins Medical Institute
Beti Thompson, Ph.D., Fred Hutchinson Cancer Research Center
David Williams, Ph.D., Harvard University

Ex_Officio.Members¿

Marc Hurlbert, Ph.D., Avon Foundation for Women Kimberly Sabelko, Susan G. Komen for the Cure
Chandini Portteus, MPH, Vice President, Research, Evaluation and Scientific Programs, Susan G. Komen for the Cure, Medical & Scientific Affairs

California Breast Cancer Prevention Initiative Strategy Advisors

Electra D. Paskett, Ph.D., Ohio State University
Jessica Schifano, J.D., M.P.H., U.S. Department of Labor, Occupational Safety & Health Administration
Sarah Gehlert, Ph.D., University of Chicago
George Sawaya, M.D., UCSF
Judy E. Garber, M.D., MPH, Dana Farber Cancer Institute
Kala Visvanathan, M.B.B.S., FRACP, M.H.S., Johns Hopkins Medical Institute
Lisa A. Bero, Ph.D., UCSF
Nsedu Obot Witherspoon, M.P.H., Children's Environmental Health Network
Toshihiro Shioda, M.D., Ph.D., Harvard Medical School
William H. Dow, Ph.D., UC Berkeley Marjorie Kagawa-Singer, Ph.D., UCLA
Rachel Morello-Frosch, Ph.D., M.P.H., UC Berkeley

Sue Fenton, Ph.D., National Institute of Environmental Health Sciences

Preventing Breast Cancer: Community, Population, and Environmental Approaches Initiative Steering Committee

Marion H.E. Kavanaugh-Lynch, M.D., MPH, California Breast Cancer Research Program
Susan Braun, The V Foundation
Julia G. Brody, Ph.D., Silent Sprint Institute
Ross Brownson, PhD, Washington University in St. Louis Brown School and School of Medicine
Sarah Gehlert, M.A., MSW, Ph.D., University of South Carolina and University of Southern California
Jeanne Mandelblatt, M.D., MPH, Lombardi Comprehensive Cancer Center; Georgetown University
Shyrea Thompson, IRIS
David R. Williams, Ph.D., Harvard University
Lori L. Wilson, M.D., FAC, Howard University Hospital

Preventing Breast Cancer: Community, Population, and Environmental Approaches Initiative Strategy Advisors

Deborah Bowen, Ph.D., University of Washington
Shiuan Chen, Ph.D., Beckman Research Institute of the City of Hope
Mark Clanton, M.D., MPH, FAAP, American Cancer Society
Gwen Darien, National Patient Advocate Foundation
Suzanne Fenton, Ph.D., M.S., NIEHS/NIH
Debra Flores, MBA, Valley Children's Healthcare
Marthe R. Gold, M.D., MPH, New York Academy of Medicine
Nikia Hammonds-Blakeley, MBA, Ph.D., The CHAMPION Promise Foundation
Richard Jackson, M.D., MPH, FAAP, Center of Occupational and Environmental Health, UCLA
Jon Kerner, Ph.D., retired
K. Alice Leung, MBA, BS, Sapientiae
Rodney Lyn, Ph.D., MS, Georgia State University
Rachel Morello-Frosch, Ph.D., MPH, UC Berkeley
Amelie Ramirez, Dr.PH., South Texas Research Center
Gina Solomon, M.D., MPH, UCSF
Mary Beth Terry, Ph.D., Columbia University

Mary White, Ph.D., MPH, RN, Centers for Disease Control and Prevention
Amy Wu, Journalist, Advocate, and Young Survivor
Nerissa Wu, Ph.D., California Department of Public Health

Policy Research Advisory Group

Garen Corbett, M.S., University of California, Berkeley, CA (2015-2022)
Usha Ranji, M.S., Kaiser Family Foundation (2015-2026)
Nancy Buermeyer, Breast Cancer Prevention Partners (2015-2026)
Karren Ganstwig, Los Angeles Breast Cancer Alliance (2015-2026)
Sarah Huchel, Legislative Director, Health Services and Sciences, State Government Relations (2020-2022)
Catherine Peters, Director, State and Local Campaigns, American Cancer Society Cancer Action Network, Waukesha, WI (2020-2023)
JoAnn Loulan, Breast Cancer Action (2020-2026)
Rick Kreutzer, M.D., Assistant Deputy Director of Environmental and Occupational Health (retired), California Department of Public Health (2020-2026)
Georgette Lewis, Senior Advisor for Policy and Strategy, University of California Health (2020-2026)
Adara Citron, MPH, Principal Analyst, California Health Benefits Review Program University of California Berkeley (2023-2025)
Laura Fenster, Ph.D., MPH, Epidemiologist, Division of Environmental and Occupational Health (retired), California Department of Public Health (2023-2025)
Pagan Morris, Director of Research Initiatives, Center for Data-driven Insights and Innovation, University of California Health (2023-2026)

Appendix 6: CBCRP 2020-2025 Research Review Committees

Reviewer Role	Reviewer	Title	Affiliation	Location
Community Impact 2021				
Chairs	Vernal Branch	Patient Research Advocate		Mooresville, NC
	Phoenix Matthews, PhD	Professor and Associate Dean for Equity and Inclusion	University of Illinois	Chicago, IL
Scientific	Ella Greene-Moton	Community Director	University of Michigan School of Public Health	Ann Arbor, MI
	Fernando Pineda-Reyes	Chief Executive Officer	CREA Results	Denver CO
	Grace Sembajwe, ScD, MSc	Epidemiologist & Associate Professor	Northwell Health	Great Neck, NY
	Beti Thompson, PhD	Professor Emeritus	Fred Hutchinson Cancer Center University of Texas	Seattle, WA Houston, TX
Advocate	Jane Segelken, MA MSW	Volunteer Health Advocate	Cancer Resource Center of the Finger Lakes	Ithaca, NY

Reviewer Role	Reviewer	Title	Affiliation	Location
Observer	Melanie Canter		Breast Cancer Care and Research Fund	Santa Monica, CA
Clinical, Prevention & Biological Sciences 2021				
Chair	Douglas Yee, MD	Director & Professor of Medicine	University of Minnesota	Minneapolis, MN
Scientific	Abenaa Brewster, MD, MHS	Professor	Anderson Cancer Center	Houston, TX
	E. Shelley Hwang MD, MPH	Professor	Duke University	Durham, NC
	Ruth Keri, PhD	Professor	Western Reserve University School of Medicine	Cleveland, OH
	Peter Kabos, MD	Associate Professor	University of Colorado	Aurora, CO
	Erk Nelson, PhD	Assistant Professor	University of Illinois	Urbana IL
	William Redmond, PhD	Director	Providence Cancer Institute	Portland, OR
	Danny Welch, PhD	Professor	University of Kansas	Kansas City, KS
Advocate	Anna Cluxton		Young Survivor Coalition	Columbus, OH
	Eunice Hostetter		ACS Cancer Action Network	Seattle, WA
	Susan Siegel		Virginia Breast Cancer Foundation	Richmond, VA

Reviewer Role	Reviewer	Title	Affiliation	Location
Ad-hoc	Zhihong Gon, PhD	Associate Professor	Roswell Park Comprehensive Cancer Center	Buffalo, NY
Observer	Patty Harrington		Women in Bio	Rio Vista, CA
CBCPI Immigration and Breast Cancer Risk 2021				
Chair	Francesca Gany, MD MS	Chief	Memorial Sloan Kettering	New York, NY
Scientific	Heide Castañeda, PhD, MPH, MA	Professor and Associate Chair	University of South Florida	Tampa, FL
	Lauren Houghton, PhD, MSc	Assistant Professor	Columbia University	New York, NY
	Sandy Pruitt, PhD	Associate Professor	University of Texas Southwestern	Dallas, TX
Advocate	Esther Herrera	Advocate	La Unión del Pueblo Entero (LUPE)	San Juan, TX
	Amy Wu	Social Media Manager	National Asian Breast Cancer Initiative	New York, NY
Preventing Breast Cancer Industry Influence on Breast Cancer 2021				
Chair	David Michaels, PhD, MPH	Professor	George Washington University	Washington, DC

Reviewer Role	Reviewer	Title	Affiliation	Location
Scientific	Jeffrey Reznick. PhD	Chief	National Library of Medicine	Bethesda, MD
	Ruthann Rudel, MS	Director	Silent Spring Institute	Newton, MA
Advocate	Laura Weinberg	President and Director	Great Neck Breast Cancer Coalition	Great Neck, NY
Californians Linking Action with Science for Prevention of Breast Cancer (CLASP-BC): Phase 1 Convener Review Committee 2021				
Chair	Jon Kerner, PhD	CBCRP Strategy Advisor	Independent Consultant	Bethesda, MD
Scientific				
	Ella Greene-Moton	Administrator	Community Ethics Review Board	Flint, MI
	Polly Hoppin, ScD	Research Professor	University of Massachusetts Lowell	Lowell, MA
	Rodney Lyn, PhD, MS	Professor and Dean	Georgia State University	Denver , CO
	Jennifer Moreland, MPH	Chronic Disease Manager	Denver Public Health	Denver, CO
Advocate	Nikia Hammonds-Blakeley	Founder and Executive Director	The CHAMPION Promise Foundation	Frisco, TX
Community Impact 2022				
Chairs	Vernal Branch	Patient Research Advocate		Mooresville, NC

Reviewer Role	Reviewer	Title	Affiliation	Location
	Phoenix Matthews, PhD	Professor	University of Illinois	Chicago, Ill
Scientific	Sherry Flynt Wallington, PhD	Assistant Professor	George Washington University	Washington, DC
	Jean McDougall, PhD, MPH	Assistant Professor	University of New Mexico	Albuquerque, NM
	Al Richmond, MSW	Executive Director	Patient Engagement Advocacy Panel/PCORI	Raleigh, NC
Advocate	Beverly Parker	Advocate	Living Beyond Breast Cancer	Ardmore, PA
Observer	Amanda Heier	President CEO	Breast Cancer Prevention Partners	San Francisco, CA
Clinical, Prevention & Biological Sciences 2022				
Chair	Douglas Yee, MD	Director and Professor	University of Minnesota	Minneapolis, MN
Scientific	Abenaa Brewster, MD, MHS	Professor	MD Anderson Cancer Center	Houston, TX
	Dai Horiuchi, PhD	Assistant Professor	Northwestern University	Chicago, Ill
	Julie Ostrander, PhD	Assistant Professor	University of Minnesota	Minneapolis, MN
	Amos Sakwe, PhD, MSCI	Associate Professor	Meharry Medical College	Nashville, TN
	Eva Sevick-Muraca, PhD	Professor	University of Texas	Houston, TX

Reviewer Role	Reviewer	Title	Affiliation	Location
	Zhihong Gong, PhD	Associate Professor	Roswell Park Comprehensive Cancer Center	Buffalo, NY
Advocate	Valerie Fraser	Advocate	Michigan Breast Cancer Coalition	Huntington Woods, MI
	Eunice Hostetter	Advocate	ACS Cancer Action Network	Seattle, WA
	Susan Siegel	Advocate	Virginia Breast Cancer Foundation	Richmond, VA
Ad-Hoc	Despina Kontos, PhD	Associate Professor	University of Pennsylvania	Philadelphia, PA
Observer	Lianna Hartmour	Advocate	Zero Breast Cancer	Marin, CA
Local Level Needs and Testing Primary Prevention 2022				
Chairs	Mary C. White, ScD	Professor	Emory University	Atlanta, GA
	Ella Greene-Moton	Administrator	Academic Bridge	Flint, MI
Scientific	Rodney Lyn, PhD	Professor	Georgia State University	Atlanta, GA
	Grace Sembajwe, ScD, MSc	Associate Professor	Northwell Health	Great Neck, NY
Advocate	Jane Segelken, MA, MSW	Advocate	Cancer Resource Center of the Finger Lakes	Ithaca, NY
Observer	Linda Holden	Advocate	ACS Cancer Acton Network	Burlingame, CA

Reviewer Role	Reviewer	Title	Affiliation	Location
Community Impact 2023				
Chairs	Vernal Branch	Advocate	Social Marketing and Communication	Mooresville, NC
	Phoenix Matthews, PhD	Professor	University of Illinois	Chicago, IL
Scientific	Sherrie Flynt Wallington, PhD	Associate Professor	George Washington University	Washington, DC
	Ella Greene-Moton	Director	University of Michigan	Ann Arbor, MI
	Grace Sembajwe, ScD, MSc, CIH	Associate Professor	Northwell Health	Great Neck, NY
Advocate	Beverly Parker		Living Beyond Breast Cancer	Ardmore, PA
Observer	Stephanie Beverly Smith	Director	Women of Color Breast Cancer Survivors Support Project	Inglewood, CA
Clinical, Prevention & Biological Sciences 2023				
Chair	Douglas Yee, MD	Director	University of Minnesota	Minneapolis, MN
Scientific	Dai Horiuchi, PhD	Assistant Professor	Northwestern University	Chicago, Il
	Amos Sakwe, PhD, MSCI	Associate Professor	Meharry Medical College	Nashville, TN
	Eva Sevick-Muraca, PhD.	Professor	University of Texas	Houston, TX

Reviewer Role	Reviewer	Title	Affiliation	Location
	Julie Ostrander, Ph.D.	Assistant Professor	Ohio State University	Columbus, OH
	Adetunji Toriola, MD	Professor	Washington University	St Louis, MO
Advocate	Ann Fonfa	Advocate	Annie Appleseed Project	Delray Beach, FL
	Valerie Fraser	Advocate	Michigan Breast Cancer Coalition	Huntington Woods, MI
Observer	Rainbow Rubin		Breast Cancer Prevention Partners	San Francisco, CA
Local Level Needs and Intergenerational Transmission 2023				
Chairs:	Rodney Lyn, PhD	Professor and Associate Director for Basic Research Center	Stony Brook School of Medicine	Stony Brook, NY
	Ella Greene-Moton	Administrator	Michigan State University	Ann Arbor, MI
Scientific	Traci Bethea, PhD	Assistant Professor	Georgetown University	Washington, DC
	Leena Hilakivi-Clarke	Professor	University of Minnesota	Austin, MN
	Grace Sembajwe, ScD	Associate Professor	Hofstra University	Hempstead, NY
	Bo Qin, PhD	Assistant Professor	Rutgers University	New Brunswick, NJ

Reviewer Role	Reviewer	Title	Affiliation	Location
Advocate	Nikia Hammonds Blakeley, PhD, MBA	Executive Director	The CHAMPION Promise Foundation	Frisco, TX
Biomonitoring 2023				
Chair	Suzanne Fenton, PhD	Scientist	NIEHS Mechanistic Toxicology Branch	Durham, NC
Scientific	Justin Colacino, PhD	Associate Professor	University of Michigan	Ann Arbor, MI
	Agnes Kane, MD, PhD	Professor	Brown University	Providence, RI
	Maricel Maffini, PhD		MvM Consulting	Frederick, MD
	Melissa Troester, PhD	Professor	University of North Carolina	Chapel Hill, NC
	Laura Vandenberg, PhD	Professor	University of Massachusetts	Amherst, NY
Advocate	Susan Braun, PhD	Advocate	Ex Jimmy V Foundation	Cary, NC
Policy Initiative – Genomic Testing 2023				
Chair	Marybeth Terry, PhD	Professor	Columbia University	New York, NY
Scientific	J. Zoe Beckerman, JD, MPH	Associate Professor,	The George Washington University	Washington, DC

Reviewer Role	Reviewer	Title	Affiliation	Location
	Joel Tickler, PhD	Professor	University of Massachusetts	Lowell, MA
	Alexandra White, PhD, MSPH	Investigator	NIEHS	Durham, NC
	Tracy Weitz, PhD	Professor	American University	Washington, DC
Advocate	Taylor Beaumont Morton	Director	WE ACT for Environmental Justice	New York, NY
Clinical Prevention and Biological Sciences 2024				
Chairs	Sherrie Flynt Wallington, PhD	Associate Professor	George Washington University	Washington, DC
	Ella Greene-Moton	Administrator	Community Ethics Review Board (CERB)	Flint, MI
Scientific	Farrah Jacquez, PhD	Professor	University of Cincinnati	Cincinnati, OH
	Silifat Musttapha, MPH, RN	Adjunct Instructor	Unity Health Care	Leesburg, VA
	Antonio Tovar, PhD	Associate	National Family Farm Coalition	Washington, DC
	Erika Trapl, PhD	Associate Professor	Case Western Reserve University	Cleveland, OH
	Emma Tsui, MPH, PhD	Associate Professor	CUNY Graduate School of Public Health & Health Policy	New York, NY

Reviewer Role	Reviewer	Title	Affiliation	Location
Advocate	Beverly Canin	Advocate	Breast Cancer Options, Inc	Rhinebeck, NY
	Beverly Parker, M.S.W., Ph.D.	Advocate	Living Beyond Breast Cancer	Ardmore, PA
Advocate Observer	Wendy Shurelds	Executive Director	Many Shades of Pink	San Diego, CA
Clinical, Prevention & Biological Sciences 2024				
Chairs	Douglas Yee, MD	Director	University of Minnesota	Minneapolis, MN
Scientific	Gaorav Gupta, MD, PhD	Associate Professor	University of North Carolina	Chapel Hill, NC
	Amos Sakwe, PhD, MSCI	Associate Professor	Meharry Medical College	Nashville, TN
	Gina Sizemore, PhD	Associate Professor	Ohio State University	Columbus, OH
	Adetunji Toriola, MD, PhD	Professor	Washington University	St Louis, MO
	Wei Xu, PhD	Professor Outreach and Engagement	University of Wisconsin	Madison, WI
Advocate	Jackie Benson	Advocate	National Breast cancer Coalition	Leesburg, VA
	Eunice Hostetter	Advocate	Fred Hutchinson Evergreen Health	Seattle, WA
Ad hoc	Imon Banerjee, PhD	Associate Professor	Arizona State University	Phoenix, AZ

Reviewer Role	Reviewer	Title	Affiliation	Location
Observer	Maureen McGee, RN, PHN, BSN		Central Coast Survive Oars	Morro Bay, CA
Chemical Mixtures and Many Pathways to Cancer 2024				
Chairs	Suzanne Fenton, PhD	Scientist	National Institute of Environmental Health Sciences	Durham, NC
	Melissa Troester, PhD	Professor	University of North Carolina, NC	Chapel Hill, NC
Reviewers	Shuk-Mei Ho, PhD	Professor	University of Arkansas	Little Rock, AR
	Maricel Maffini, PhD		MvM Consulting	Frederick, MD
	Alexandra White, PhD	Investigator	National Institute of Environmental Health Sciences (NIEHS)	Research Triangle Park, NC
Advocate	Nikia Hammonds-Blakeley, PhD, MBA	Executive Director	The CHAMPION Promise Foundation	Frisco, TX
Immigration Phase 2 2024				
Chair	Heide Castaneda, PhD, MPH, MA	Professor	University of South Florida	Tampa, FL
Scientific	Lauren Houghton, PhD, MSc	Assistant Professor	Columbia University	New York, NY
	Sandy Pruitt, PhD	Associate Professor	UT Southwestern	Dallas, TX

Reviewer Role	Reviewer	Title	Affiliation	Location
	Lindsay Collin, PhD, MPH		University of Utah	Salt Lake City, Utah
Advocate	Amy Wu	Social Media Manager	National Asian Breast Cancer Initiative	New York, NY
Policy Initiative: Fertility Preservation 2024				
Chair	Mary Beth Terry, PhD	Professor	Columbia University	New York, NY
Scientific	J. Zoe Beckerman, JD, MPH	Associate Professor	George Washington University	Washington, DC
	Tracy Weitz, PhD	Professor	American University	Washington, DC
	Alexandra White, PhD, MSPH	Stadtman Investigator	NIEHS	Durham, NC
Advocate	Desiree Walker	Advocate		New York, NY
Community Impact 2025				
Chairs	Sherrie Flynt Wallington, PhD	Associate Professor	George Washington University	Washington, DC
	Ella Greene-Moton	President	Community Ethics Review Board	Flint, MI
Scientific	Farrah Jacquez, PhD	Professor	University of Cincinnati	Cincinnati, OH

Reviewer Role	Reviewer	Title	Affiliation	Location
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	Antonio Tovar, PhD	Senior Policy Associate	National Family Farm Coalition	Washington, DC
	Erika Trapi, PhD	Associate Professor	Case Western Reserve University	Cleveland, OH
	Emma Tsui, PhD, MPH	Associate Professor	CUNY Graduate School of Public Health & Health Policy	New York, NY
Advocate	Beverly Parker	Advocate	Living Beyond Breast Cancer	Ardmore, PA
Clinical, Prevention, and Biological Sciences 2025				
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Scientific	Romi Gupta, PhD	Associate Professor	University of Alabama	Birmingham, AL
	Amos Sakwe,PhD, MSCI	Professor	Meharry Medical College	Nashville, TN
	Gina Sizemore, PhD	Associate Professor	The Ohio State University	Columbus, OH
	Adetunji Toriola,MD, PhD	Professor	Washington University School of Medicine	St.Louis, MO
Advocates	Jackie Benson	Advocate	National Breast Cancer Coalition	Leesburg, VA

Reviewer Role	Reviewer	Title	Affiliation	Location
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Ad-hoc Member	Shelley Hwang, MD, PhD	Professor	Duke University School of Medicine	Durham, NC
Advocate Observer	Debroah Romer	Advocate	California Breast Cancer and Research Fund	San Francisco, CA
CLASP-BC: Phase 2 Full Awards & Local Level Needs: Phase II 2025				
Chairs	Rodney Lyn, PhD, MS	Professor	Georgia State University	Atlanta, GA
	Ross Brownson, PhD	Professor	Washington University	St. Louis, MO
Scientific	Traci Bethea, PhD	Assistant Professor	Georgetown University Medical Center	Washington, DC
	Tisha Felder, PhD, MSW	Professor	University of South Carolina	Columbia, SC
	Grace Sembajwe, ScD, MSc	Professor	University of Indiana	Bloomington, IN
	Parisa Tehranifar, DrPH	Professor	Columbia University	New York, NY
	Cynthia Thomson, PhD, RD	Professor	University of Arizona	Tucson, AZ
	Julia Varshavsky, MPH, PhD	Professor	Northeastern University	Boston, MA

Reviewer Role	Reviewer	Title	Affiliation	Location
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Advocates	Jackie Mattila		Advocate	Las Cruces, NM
	Amy Wu		Advocate	New York, NY