



Assessing Direction and Outcomes: Evaluating the New Investigator Awards



California Breast Cancer Research Program

Assessing Direction and Outcomes: Evaluating the New Investigator Awards

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This report describes an evaluation of the California Breast Cancer Research Program's New Investigator Awards granted during cycles I-V (1995-2001). The purpose of the evaluation was to assess the influence the award had on the career development of the recipients and to collect feedback that will improve the New Investigator Award program. This report describes the goals, methods, and findings of the evaluation and provides recommendations to improve the program.



Introduction

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The mission of the California Breast Cancer Research Program (CBCRP) is to reduce the impact of breast cancer in California by supporting breast cancer research and facilitating both the dissemination of research findings and their translation into public health practice. The CBCRP was founded in 1993, when breast cancer activists, scientists, clinicians, state legislators, and University of California officials collaborated to lobby the state legislature to seek passage of the California Breast Cancer Act. Sponsored by Assemblywoman Barbara Friedman, this legislation pushed breast cancer research into new creative directions. The act raised the tobacco tax by two cents per pack with 45% of the proceeds going to the CBCRP. Since 1994, the CBCRP has awarded more than \$130 million for 520 grants at 63 institutions throughout the state. In 2002, the CBCRP awarded almost \$15 million for 68 single and multiple-year grants at 23 California institutions.

The overall objectives, strategies, vision, and research priorities of the CBCRP are set by the Breast Cancer Research Council, an advisory committee to the CBCRP. The council consists of scientists, clinicians, members from non-profit health organizations, representatives from private industry, and representatives of breast cancer survivor/advocacy groups.

The focus of this evaluation is the New Investigator Award, a career development award that provides support for newly independent investigators who wish to initiate their own breast cancer research programs.¹ Due to the relatively small number of investigators in the field of breast cancer research, the New Investigator Award is designed to attract and retain newly independent investigators in breast cancer research. New investigators are individuals with an M.D. or Ph.D. degree just completing postdoctoral fellowships, or individuals who are entering research careers from clinical practice or other non-research related activities who have less than three years experience as an independent investigator.

To date, the CBCRP has invested \$15,290,601 in New Investigator Awards representing 12% of the total dollars it has invested in breast cancer research. This year, the New Investigator Award maximum per grant is \$300,000 for up to three years. This study evaluated funding cycles I-V (1995-1999) and marks the first evaluation of the New Investigator Awards since its first funding cycle in 1995.

¹ For initial award abstracts and final reports of New Investigator Awards, please see the CBCRP Web site at: <http://www.cbcrp.org>

Goals of the Study

2 The evaluation's goals were to achieve the following:

- 8 Assess the impact of the CBCRP New Investigator Award Program, especially on the career development of the recipients; and
- 8 Improve the New Investigator Award Program at the CBCRP.



Expected Outcomes

The following short and intermediate outcomes were expected from the New Investigator Awards:

1. High quality new investigators will be encouraged to submit proposals addressing important questions of relevance to breast cancer.
2. The award will help develop the careers of the recipients.
3. New researchers will be recruited into the breast cancer field.
4. Newly independent breast cancer researchers will remain in the field.
5. More research conducted by talented researchers will be devoted to breast cancer.
6. Promising new avenues of breast cancer research will be created and continued by studies that build logically on the work of the new investigator.

Methods

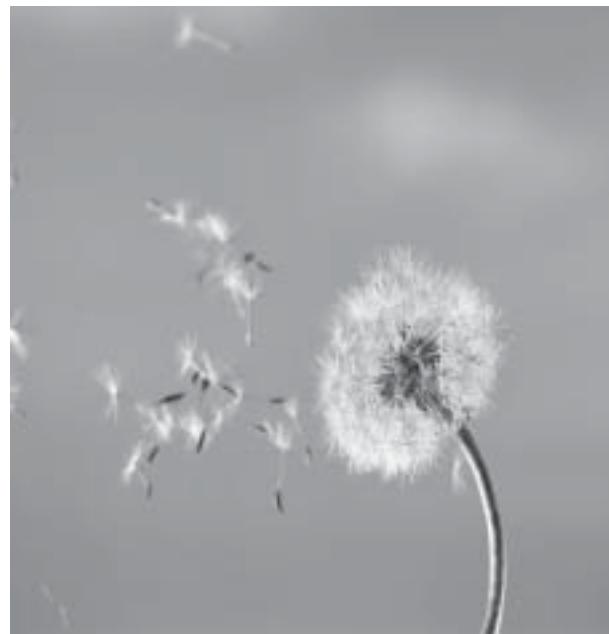
The CBCRP evaluation intern conducted twenty surveys with new investigators from funding cycles I-V.² The survey included both closed and open-ended questions and was administered either over the phone or electronically via e-mail. The survey was similar to a previously employed survey designed by the CBCRP to evaluate the Postdoctoral Fellowship Awards, another career development award. The survey was designed to assess whether the new investigators were currently working in the field of breast cancer, evaluate the impact of the award on their current career, determine measurable outcomes from the research conducted such as number of published papers, and elicit feedback from respondents about the CBCRP. The survey was pilot tested and minor changes were made before implementation.

The evaluation intern updated contact information, sent initial contact letters via e-mail, and followed up with each potential respondent to explain the study and arrange telephone interviews. Telephone interviews lasted between 15 and 45 minutes.

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Eligibility for the study consisted of the following requirements:

- ② Award of a New Investigator Award from CBCRP during cycles I-V (1995-1999)³
- ② Acceptance of the award
- ② Utilization of at least half of the awarded funds



²Cycles I-V occurred during 1995-1999. Awards from the fifth cycle typically ended in 2001.

³The evaluation was limited to cycles I-V to capture information from completed grants only .

Findings

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Since 1995, the CBCRP has invested \$15,290,601 in 43 New Investigator Awards.⁴ Funding of New Investigator Awards represents 12% of the total dollars invested by CBCRP and 8% of the total number of grants awarded. During the period evaluated in this study, cycles I-V, the CBCRP invested a total of \$8,866,948 in 28 New Investigator Awards.⁵

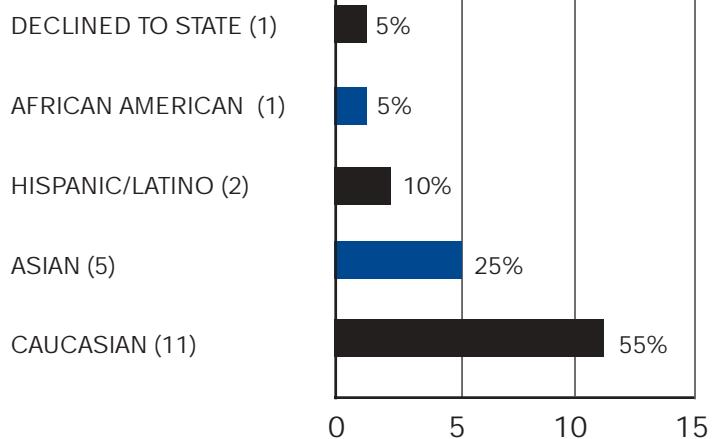
I. Description of the Sample

Of the 28 new investigators in cycles I-V, 24 were eligible to participate,⁶ and 20 (83%) respondents participated in the study.⁷ Twelve respondents agreed to a telephone interview and eight respondents preferred the electronic questionnaire.⁸ On average, approximately three years have passed since respondents completed their CBCRP new investigator funded research and the range was from one to five years since funding completion.

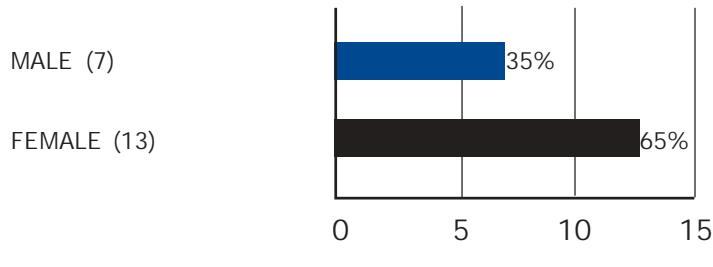
Data were gathered on gender, ethnicity, priority area of the grant, and institution associated with the grant. Thirteen (65%) of the respondents were female, and seven (35%) were male. Eleven (55%) were Caucasian, five (25%) were Asian, two (10%) were Latino/Hispanic/Chicano, one (5%) was African American, and one (5%) respondent declined to state his ethnicity (see figure 1).

Figure 1. Gender and Ethnicity of Respondents

Ethnicity



Gender



N=20

⁴ This amount is representative of cycles I-VIII (1995-2002).

⁵ See Appendix A for a complete list of New Investigator Awards by institution and years grant was awarded.

⁶ Four new investigators were ineligible to participate because they either did not utilize at least half of their awarded funds or their studies were still in progress.

⁷ Contact information for two eligible respondents was not located, one eligible respondent is deceased, and one respondent declined to participate without providing a reason.

⁸ Respondents most often cited lack of time to commit to a telephone interview as the reason for completing the electronic version of the survey.

The 20 New Investigator Awards were affiliated with 15 different institutions (see table 1).

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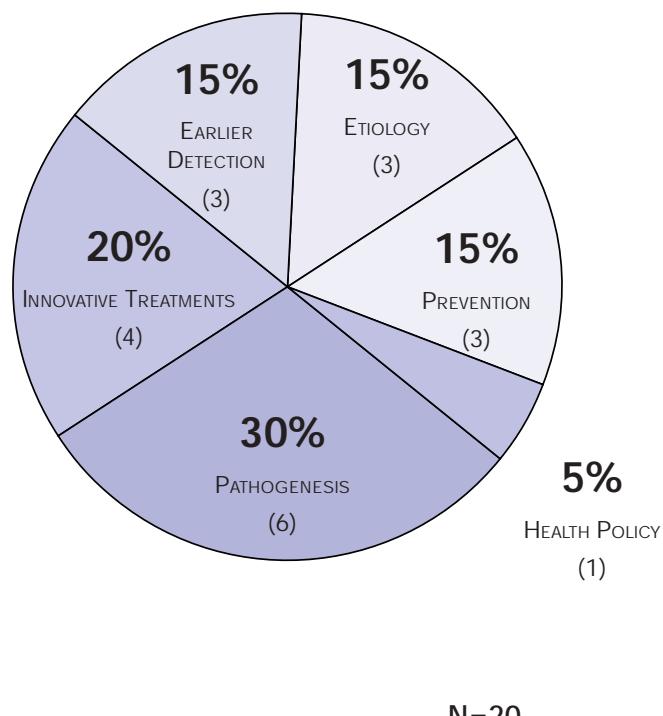
Table 1. New Investigator Funds Invested by Institution: Cycles I-V (1995-1999)

INSTITUTION	NUMBER OF GRANTS
University of Southern California	3
University of California, Los Angeles	2
University of California, San Francisco	2
Stanford Research Institute International	2
Stanford University	1
California Pacific Medical Center	1
California Public Health Foundation	1
California School of Professional Psychology	1
City of Hope	1
Kaiser Foundation Research Institute	1
Loma Linda University	1
Northern California Cancer Center	1
University of California, San Diego	1
The Burnham Institute	1
The Salk Institute for Biological Studies	1
TOTAL	20

N=20

Six of the grants sought new information on the progression and spread of breast cancer, four grants focused on discovering innovative treatments for the disease, three aimed at finding ways to detect breast cancer at an earlier stage, three concentrated on breast cancer prevention, three sought to better understand the causes of breast cancer, and one focused on health policy and health services relevant to breast cancer (see figure 2).

Figure 2. Priority Area of New Investigator Awards

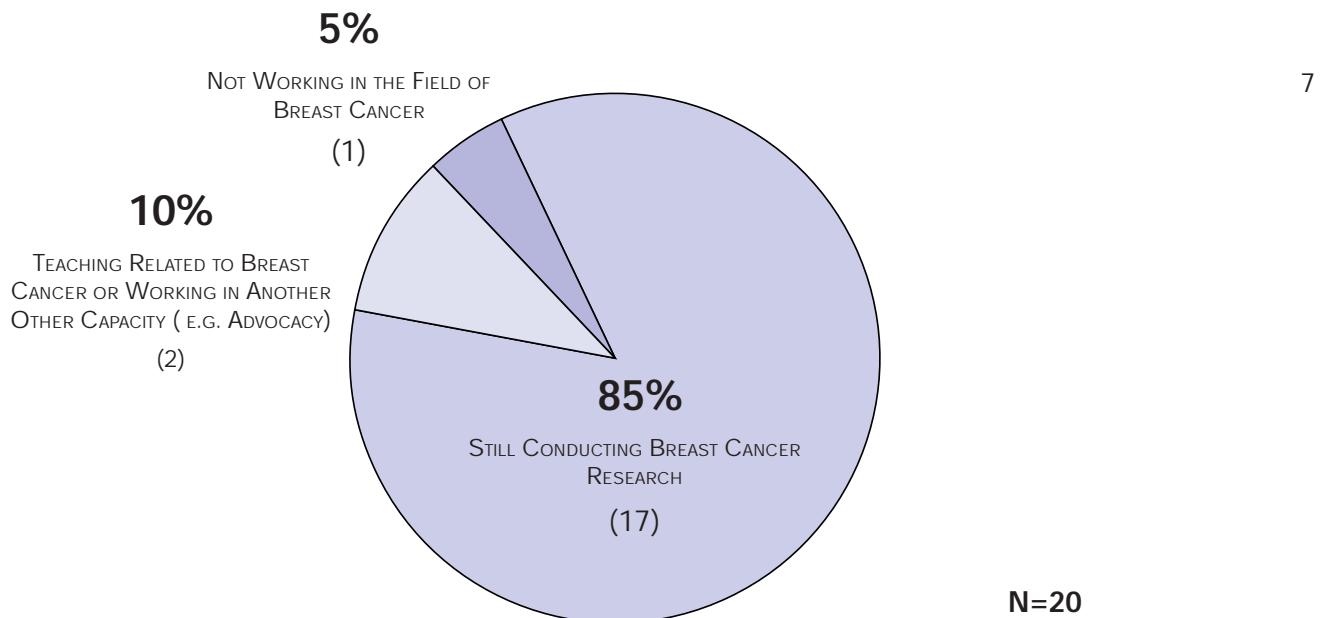


II. Current Career and Employment of Respondents

The first area of the survey pertained to the current career of the respondents. Primarily, we were interested in whether the new investigators were still involved in breast cancer research. We found that 17 (85%) respondents are still conducting breast cancer research, including basic science research that is applicable to breast cancer (see figure 3). Additionally, two (10%) respondents who are not currently conducting breast cancer research are active in breast cancer teaching and advocacy. Only one respondent is not working in the field of breast cancer. Eleven (58%) respondents stated they devote between 50 and 100% of their work time specifically to breast cancer related activities (see figure 4).

Eighty-five percent of the respondents are still doing breast cancer research.

Figure 3. Type of Breast Cancer Work Currently Done by Respondents



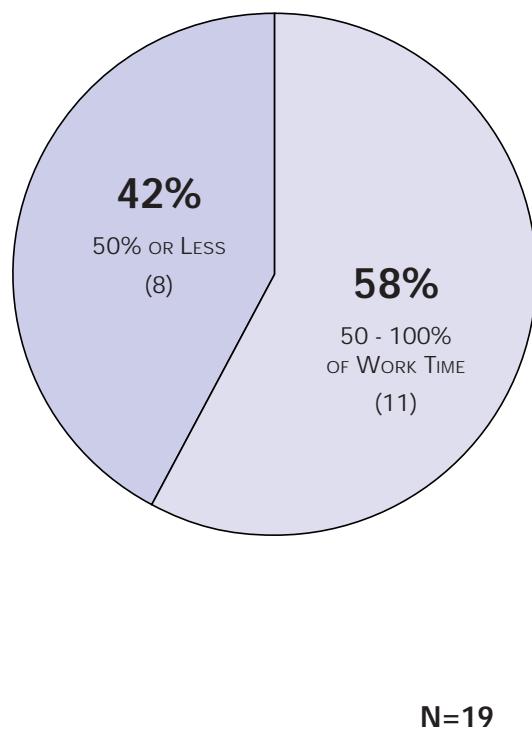
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When surveying the 19 respondents still doing some type of breast cancer work, the majority 13 (69%) felt that if they had not received the New Investigator Award, they would not currently be involved in breast cancer work now.

III. Impact of CBCRP New Investigator Award on Career

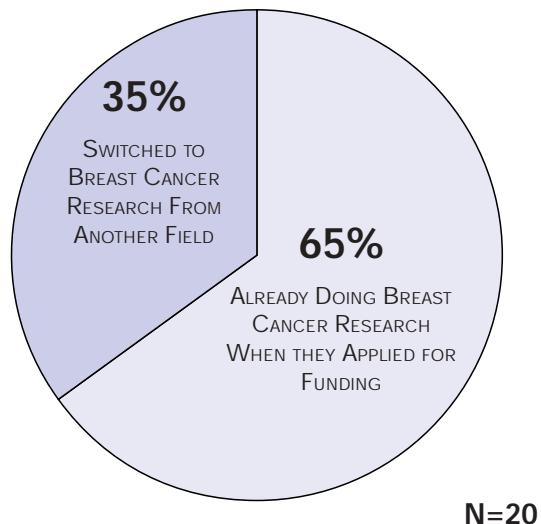
The next area of inquiry was the impact that the CBCRP New Investigator Award had on the career of award recipients. Specifically, we wanted to assess whether the New Investigator Award recruited and retained researchers in the field of breast cancer. Seven (35%) respondents reported using the award to switch into breast cancer research from another field and all seven have remained in breast cancer research. The remaining 13 (65%) were already doing research related to breast cancer when they applied for the award (see figure 5).

Figure 4. Percent of Work Time Devoted to the Field of Breast Cancer



Ninety-five percent of respondents felt that the award gave them the opportunity to do work relevant to breast cancer research that they would otherwise not have been able to do.

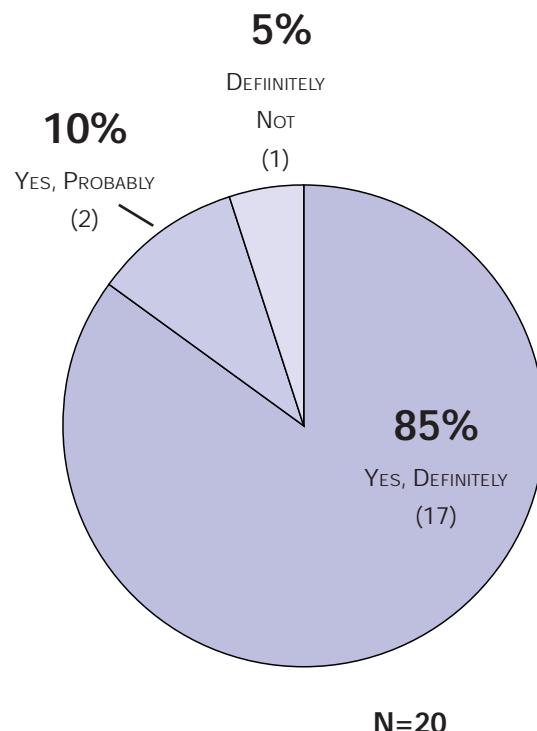
Figure 5. Recruiting Breast Cancer Researchers



For those respondents new to the field, some said the award allowed them to study an area of research in which researchers around them were not interested. For those already in the field, some respondents said the award provided them with an opportunity to develop their own research ideas.

Ninety-five percent (19 of 20) of respondents felt that the New Investigator Award gave them the opportunity to do work relevant to breast cancer research that they otherwise would have been unable to do (see figure 6). Several respondents stated that they could not find any other funding agencies that would invest in their specific idea without extensive preliminary data. Other respondents stated that without CBCRP funding they would not have conducted the research at all and they would have been forced to work in other fields. Only one respondent felt that she still would have done the research without CBCRP funding because her personal and professional commitment to breast cancer was so strong.

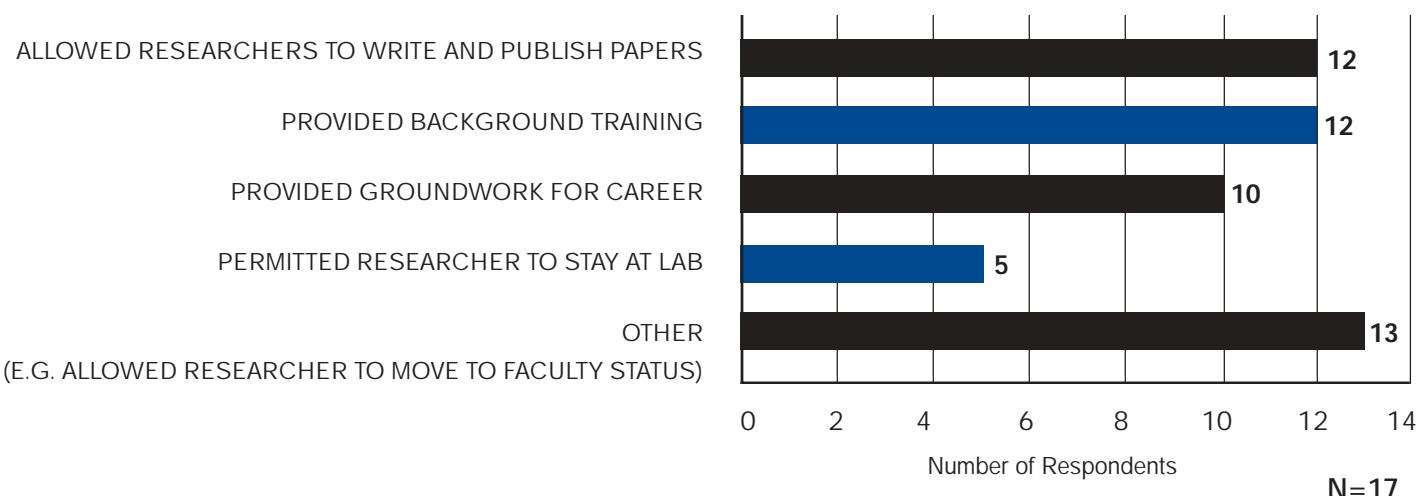
Figure 6. Did the Award Give You the Opportunity to do Work Relevant to Breast Cancer That You Would Not Have Otherwise Been Able to Do?



"The award gave me greater contact with other experts in the field, which is why I'm still in breast cancer."

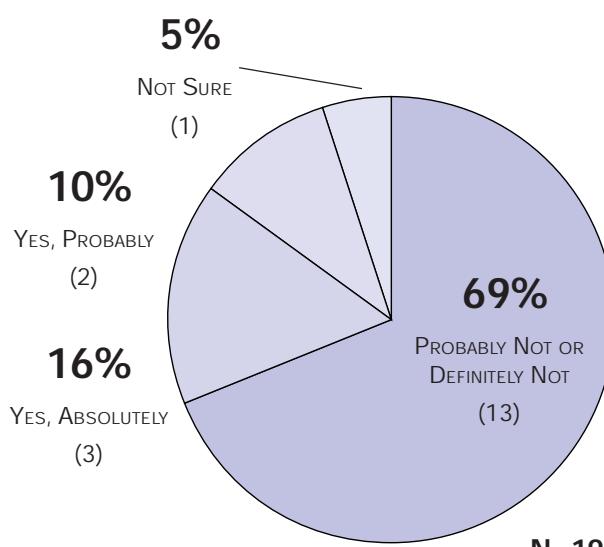
Seventeen respondents (85%) said that the CBCRP New Investigator Award helped them stay in breast cancer research once their award ended. When asked how the award encouraged them to stay in the field, twelve (60%) said that it gave them the background and training they needed, twelve (60%) believed it gave them the chance to write and publish papers, ten (50%) stated it provided the groundwork for the rest of their career, and five (25%) said that it helped them to stay at the lab they were working in and continue working on their project (see figure 7). Additional reasons given included that the award allowed them to switch from postdoctoral status to faculty status, assisted them in obtaining an adjunct research position, and helped them to prove themselves in the field.

Figure 7. How Did the Award Help You Stay in the Breast Cancer Field?



Additionally, respondents currently working in some capacity related to breast cancer research were asked if they would still be involved in the field had they not received the CBCRP New Investigator Award. While five (26%) said they would either absolutely or probably still be in the field, thirteen (69%) reported they would not have stayed in the field had they not received the CBCRP New Investigator Award (see figure 8).

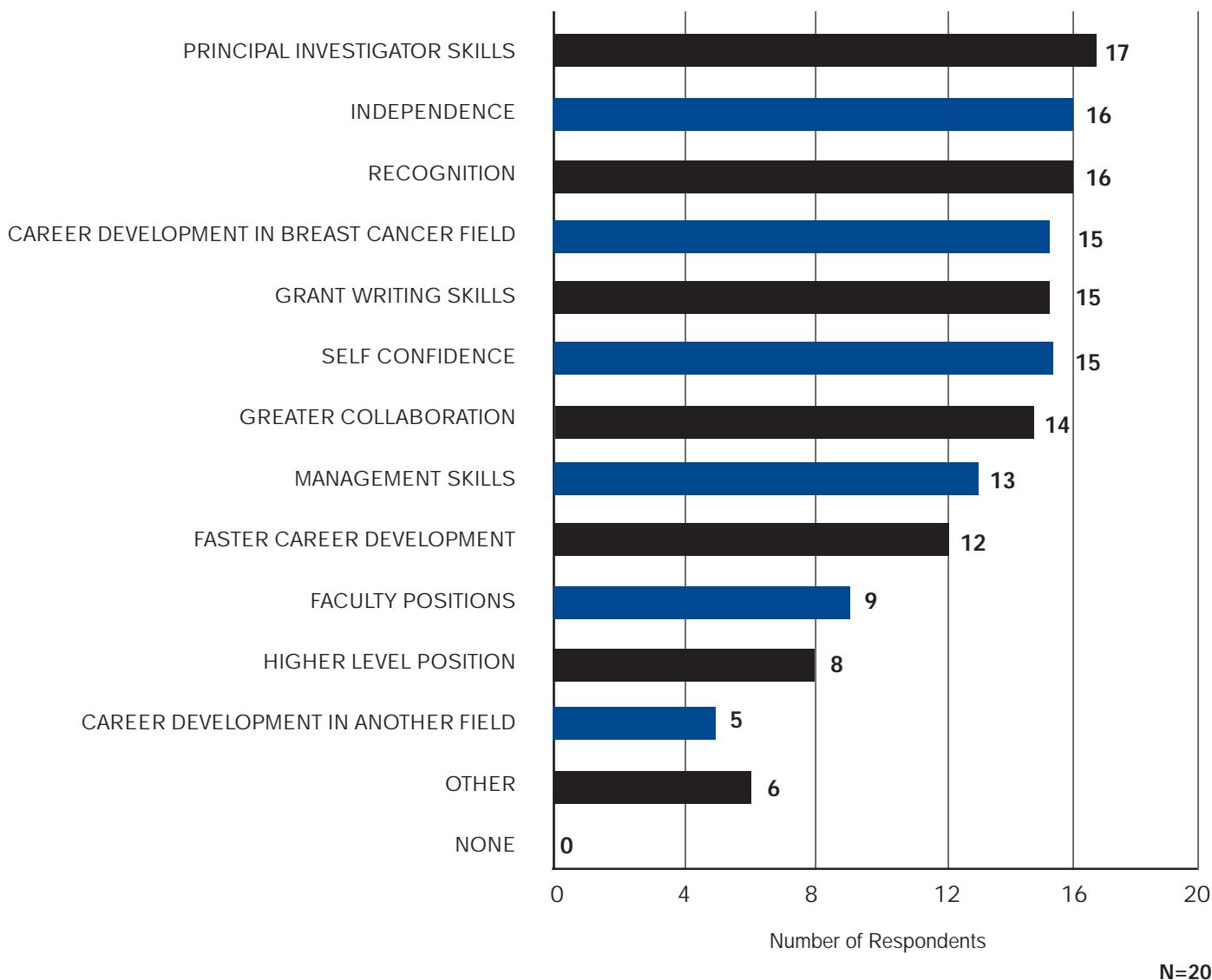
Figure 8. If You Had Not Received Your New Investigator Award, Do You Think That You Would Still Be Involved in Breast Cancer Work Now?



"The award created my credentials as a researcher and set me free as an independent researcher."

As a career development award, a main goal of the CBCRP New Investigator Award is to provide newly independent researchers with career gains. When asked about the benefits of the award, almost all respondents felt the award influenced their career by providing them with the opportunity to develop their skills as a principal investigator, giving them independence as a researcher, and enabling recognition for their work (see figure 9).

Figure 9. What Did the Award Help You to Gain?



N=20

IV. Outcomes from the Research Conducted with CBCRP Funds

Accepted indicators of scientific productivity include both the quantity and quality of publications produced, citations of the work in peer-reviewed journals, patents submitted, and subsequent grants awarded based upon the research performed. For the purposes of this study, we ascertained the number of publications, number of citations from these publications, patents, and presentations that at least in part resulted from the research funded by the CBCRP. We also asked respondents about subsequent grants obtained at least partially due to their CBCRP New Investigator Award. We found thirteen (65%) respondents reported 38 publications in peer reviewed journals (see table 2),⁹ and there were at least 1,234 subsequent citations that resulted from these publications.¹⁰ Thirteen respondents presented at least 43 oral presentations,¹¹ two respondents filed a patent, and three honors were presented to one (5%) respondent for the CBCRP funded research.

The ultimate goal of the New Investigator Award is to help new investigators develop independent careers in breast cancer research, which means that the researchers establish themselves as principal investigators and obtain future funds to secure their careers. We asked the grantees if they were able to obtain additional funds for breast cancer research because of the research they conducted with the New Investigator Award. Many respondents stated that this award was the first grant where they had served as the principal investigator and that the results of the award put them in a position to apply for future funds. Nine (45%) respondents reported obtaining additional funds at least partially based on the data from their CBCRP New Investigator Award. The total amount leveraged for additional breast cancer research was \$6,155,424, of which \$878,452 was obtained through subsequent awards from the CBCRP (see table 3).

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Table 2. Publications Resulting From the New Investigator Award and Subsequent Citations

NUMBER OF PUBLICATIONS	RANGE PER RESPONDENT	AVERAGE PER RESPONDENT	NUMBER OF RESPONDENTS WHO HAVE PUBLISHED AT LEAST ONE PAPER	NUMBER OF CITATIONS FROM THE PUBLICATIONS
38	0-6	1.9	65%	1,234

⁹ This number does not include publications reported that were still under revision or had been submitted but not yet accepted to be published.

¹⁰ This number is under-reported. References for six publications were not available to include in the citation analysis.

¹¹ This number is under-reported because many respondents could not report the exact number of presentations they had given.

Table 3. Subsequent Funds Obtained by Respondents

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	TOTAL	FROM CBCRP	FROM OTHER FUNDERS
Total in Funds	\$6,155,424	\$878,452	\$5,276,972
Total in Numbers	23 grants	6 grants	17 grants

V. Case Studies

New Investigator Profile:

Sonoko Narisawa, Ph.D.:

Searching for the molecule that lets breast cancer spread to bone

Why does breast cancer often spread to a woman's bones? Sonoko Narisawa, Ph.D., was a post-doctoral researcher at The Burnham Institute in La Jolla when she came up with an idea for a research project that could help answer this question.

The project would tap her experience in both bone biology and cancer research. A 1998 New Investigator Award from the California Breast Cancer Research Program allowed her to develop and implement the project.

"When I was a post-doctoral researcher, my supervisor decided which projects I worked on. The New Investigator Award gave me total freedom to pursue my research hypothesis," says Dr. Narisawa.

In the first step of metastasis to the bone, breast cancer cells circulate in the blood, and then attach themselves to bone marrow. "Using the method I developed, I want to find the molecule(s) involved in breast cancer metastasis to bone," Dr. Narisawa says. She began to search for key molecules.

Her research established the methodology for finding the "bone homing" molecule or molecules. She is currently preparing a paper based on this research for submission to a scientific journal.

"When I was a post-doctoral researcher, my supervisor decided which projects I worked on. The New Investigator Award gave me total freedom to pursue my research hypothesis."

Dr. Narisawa, now a Research Associate at The Burnham Institute, is also submitting grant applications to fund the next steps in her research.

Once the key molecule is found, the molecule itself or a part of the molecule could be used to block the receptor molecule on the bone marrow cells, leaving nowhere for breast cancer cells to stick. The bone homing molecule coupled with an anti-cancer drug may have potential to be used to target cancer cells already metastasized to bone.

Dr. Narisawa, originally from Japan, has chosen to work in the US. She believes the United States gives much greater opportunities to women scientists.

She became interested in cancer research when her father and several other family members died of cancer.

"My hobby is doing science in the lab," she says. "My long term goal is to contribute to the improvement of human health. I often need to spend long hours in the lab, but for me, it's fun."

New Investigator Profile:

Ling Jong, Ph.D.:

Toward a Drug that Prevents and Treats Breast Cancer

Ling Jong had an idea. She wanted to modify a molecule found in broccoli, to see if she could make its breast-cancer-preventing action more potent.

A Ph.D. chemist at the Menlo Park research institute SRI International, Dr. Jong was assisting other more senior researchers at the time. She couldn't just try out her idea. She needed a grant to fund the laborious synthesis of compound after compound, each with a slightly different molecular structure, in order to improve the anti-cancer activity while preserving the safe biological profile. She also needed funds for a biologist. The biologist would test the new compounds on breast cancer cells growing in lab cultures, to see which compound best inhibited cancer cell growth.

"It's impossible for a really junior researcher to get a grant from the National Institutes of Health. You need to be much more established and famous," says Dr. Jong.

"The New Investigator Award allowed me to pursue research when I had very limited data, just some computer modeling analysis to support my theory," she says. "Now, it may result in a breast cancer drug in the future."

A 1998 New Investigator Award from the CBCRP gave her the opportunity to test her idea. Today, Dr. Jong's most promising compound is on track to become a drug for both prevention and treatment of breast cancer.

"Most compounds fail to become drugs because they are toxic. I wanted to start with a natural compound, something people have been eating for thousands of years. That way, there's less chance of toxicity," she says.

Dr. Jong modified Indole-3-carbinol to improve its anti-cancer activity. This substance, found in broccoli, cauliflower, and other related vegetables, is known to prevent breast cancer. However, eating broccoli won't work to treat breast cancer, because Indole-3-carbinol is not potent enough.

So Dr. Jong searched for chemical variations of Indole-3-carbinol that would work most powerfully at the lowest possible dose. Once she found the compound that was most effective against breast cancer cells in the lab, she tested it on mice. She found that low doses prevented tumors and high doses stopped the growth of tumors, with no toxic side effects.

"We're especially excited because this compound works both against estrogen-dependent tumors and estrogen-independent tumors," she says. "Estrogen-independent tumors are harder to treat. Very few other compounds inhibit them."

The CBCRP gave Dr. Jong a second grant in 2001 to push forward the process of turning this promising compound into a drug. She has applied for a patent on the new compound, and the

National Cancer Institute (NCI) has encouraged her to apply for funds for a Phase I clinical trial, the first step in testing her candidate breast cancer drug in humans.

Today a Senior Organic Chemist at SRI International, Dr. Jong credits the CBCRP New Investigator Award for establishing her breast cancer research career. Before she received the CBCRP grant, she assisted other more senior chemists with research into various types of cancer. She was part of a team that created the molecule that has been developed into the drug Targretin, which is used to treat a type of lymphoma.

But Dr. Jong wanted to specialize in breast cancer. "I worked very closely with a colleague whose wife got breast cancer. It's one thing to read the statistics, but it's another thing to see breast cancer in someone close to you. It scared me, and gave me an urgency to do research to help cure this disease," she says.

For now, Dr. Jong is very busy doing research necessary to prepare to test her candidate drug in humans. "The New Investigator Award allowed me to pursue research when I had very limited data, just some computer modeling analysis to support my theory," she says. "Now, it may result in a breast cancer drug in the future."

VI. Feedback from Respondents

The last section of the survey asked respondents to reflect on their experience as a CBCRP funded new investigator and to provide suggestions for improving the New Investigator Award program, such as how we might draw new investigators into the field of breast cancer, how further we can help develop the careers of new investigators, and how the CBCRP can improve the call for applications.

All 20 new investigators interviewed for this evaluation reported general satisfaction with the program and most reported being grateful for the funding opportunity. The majority of respondents felt this award had an impact on their career, especially in terms of helping them establish themselves as independent researchers. Many respondents stated this was the best award they had ever been granted because the CBCRP had “taken a chance” with them and the publications, presentations, and subsequent funding obtained had a significant impact on their career.

Suggestions for Improvement

Respondents proposed the following ways to improve the CBCRP:

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Encourage More New Investigators

- Continue offering career development awards to new investigators.
- Identify cutting edge issues and fund these topics to encourage new investigators to study them.
- Target graduate students and other potential applicants earlier in their careers to encourage them into the field of breast cancer research. (CBCRP currently offers awards to graduate students, postdoctoral fellows, and new faculty members).



Increase Consultation and Networking Opportunities

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- Host an annual meeting to assemble senior researchers, experts in breast cancer, faculty, and new investigators. Many respondents felt this could increase networking with people who have complementary skills, as well as help make connections with mentors that could foster support and encouragement.
- Increase consultation between CBCRP research administrators and new investigators to assure proper grant management and personnel supervision, and to enhance CBCRP's supportive role.
- Provide a session on how new investigators can publish and continue their work.
- Offer statistical help for evaluating study outcomes, either by adding funding to contract a statistician, or by having a statistician on staff from whom new investigators can seek advice.



Application/Funding/Advertisement

- Increase the size of the grants to pay for a graduate student researcher or a laboratory technologist.
- Promote the CBCRP and its available funding opportunities. Increase advertisement of the call at different universities throughout California, at non-university settings, and in magazines/journals.
- Actively reach out to potential investigators to let them know this funding opportunity is available.
- Continue to offer informational sessions regarding the call for applications.
- Change the application deadline so it is not so close to the holidays.

Conclusions

Has the CBCRP encouraged high quality new investigators to submit proposals addressing important questions of relevance to breast cancer?

The quality of new investigator scholars funded by the CBCRP during the first five grant cycles can be assessed in part by publications, presentations, and patents produced as a result of the research and by the additional funds for breast cancer research obtained by the scholars (see Outcomes of the CBCRP Funded New Investigator Research). The results of this study indicate New Investigator Award recipients have been moderately productive. Some respondents have published numerous papers, some have papers still under revision, and yet others have not published any papers at all. Similarly, some respondents have subsequently obtained large grants at least partially based on their CBCRP funded New Investigator Award, some have funds currently pending, while others have not obtained any further funding. This disparity may indicate that it is too early to determine the appropriate level of productivity because only three years on average have elapsed since the new investigators completed their work.

Has the award helped to develop the careers of grant recipients?

When we asked respondents to identify the best outcome that occurred because of the research they conducted with the new investigator funds, most respondents credited the award with specific career gains such as establishing themselves

as independent researchers, facilitating the transition into a faculty position/adjunct research position, allowing them to publish papers and obtain subsequent funding, and learning enough about breast cancer to pursue further research. We also found that the award provided opportunities in breast cancer research that would not have been available without the CBCRP's support. Respondents stated that they could not find any other funding agencies that would invest in their idea without extensive preliminary data, and others stated that without this funding opportunity they would have been restricted in studying what their sponsors were interested in and would not have developed their own research programs. These data suggest that the award has helped provide significant career development opportunities for new investigators (see Impact of CBCRP New Investigator Award on Career).

Have new researchers been recruited into the breast cancer field?

The main purpose of the New Investigator Award is to provide career development opportunities for newly independent investigators; however, a lesser goal of the award is to recruit new investigators into the field of breast cancer research. Data from this study show that the CBCRP recruited 35% of respondents from other fields, all of whom have stayed in breast cancer research.

Have new researchers remained in the breast cancer field?

The CBCRP anticipates that with the provision of career gains, a significant number of award recipients will chose to remain in breast cancer research. The study found that thirteen (65%) respondents were already in breast cancer research before they received the New Investigator Award; however, 69% of respondents stated they would not be involved in breast cancer research today had they not received the CBCRP New Investigator Award. Additionally, respondents identified significant career gains as the reason why they have remained in the field, suggesting that the award provides significant benefits that facilitate both recruitment and retention of researchers into breast cancer research.

Has more research been devoted to breast cancer by talented researchers?

While this is difficult to measure, particularly in a descriptive study, subsequent grants awarded to new investigators at least partially based on their work can be used as a proxy to determine whether more research has been devoted to breast cancer. The study found that while CBCRP has invested over \$8 million in New Investigator Awards, over \$6 million in subsequent grants have been obtained by respondents for breast cancer research. This suggests that the award provided an opportunity for some new investigators to initiate significant research programs.

Has the CBCRP helped to fund promising new avenues of breast cancer research?

The study found that 65% of respondents have published at least one paper, 38 papers have been published in total, and 1,234 succeeding studies have cited these papers. Additionally, respondents reported presenting at least 43 oral presentations, filing two patents, and obtaining over \$6 million for breast cancer research based on the work funded by the CBCRP. These figures indicate that new areas of research were created and built upon by CBCRP funded new investigators.



Recommendations

Based on the results of this study, the CBCRP should:

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1. *PROVIDE AN ANNUAL GATHERING*

As stated earlier, many respondents felt it would be beneficial for new investigators if the CBCRP would host an annual meeting to assemble senior researchers, experts in breast cancer, faculty, and new investigators. The event would encourage networking with people who have complementary skills, as well as help new investigators develop connections with mentors that will foster support and encouragement.

2. *INCREASE DIALOGUE WITH GRANTEES*

The CBCRP should be more proactive and increase the dialogue between CBCRP research administrators and new investigators. Increased consultation between the two parties can ensure proper grant management and personnel supervision, and provide support at a critical time in scientists' careers.

3. *CONTINUE TO EVALUATE THE AWARDS*

Given the limitations of a small sample size of respondents, we recommend evaluating the New Investigator Awards approximately every five years, or when there is a group of 30 or 40 new investigators who qualify for an evaluation study. This timeframe would provide a reasonable sample size, and enough time to assess whether the careers of new investigators have been enhanced and whether they have stayed in the field of breast cancer.

Acknowledgments

The authors of this study would like to thank the respondents who agreed to participate in the study and who took time from their busy schedules and dynamic careers to consider their past experiences as a CBCRP new investigator. Thank you for your willingness to participate. Your comments on how to improve the CBCRP and keep supporting and encouraging more investigators into the field of breast cancer were both thoughtful and practical. The results of this study will help improve the New Investigator Award program. Additionally, we would like to thank the following people for their contributions to this study:

- Sandy Walsh, B.S. (MdT), CBCRP Council Member, who helped fine tune the survey and edit the report.
- Katherine McKenzie, Ph.D., CBCRP Research Administrator, for providing advice and support for the study.

Appendix A.

New Investigator Grants by Principal Investigator, Institution, Title, and Years Awarded.

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NAME AND INSTITUTION	TITLE OF GRANT	YEARS AWARDED
Deborah Cadena Ph.D. University of California, San Diego	ErbB2 and Control of Growth in Breast Cancer Cells.	1995 -1997
Daisy De Leon Ph.D. Loma Linda University	Balance of Growth Factors in Breast Cancer Growth and Metastasis.	1996 -1999
David Delgado Ph.D., M.P.H. University of Southern California	Race/Ethnicity and Late Stage Breast Cancer.	1995 -1996
Pierre-Yves Desprez Ph.D. California Pacific Medical Center	The Invasive Nature of Epithelial Breast Cancer Cells.	1995 -1998
Noreen Facione Ph.D., R.N., F.N.P. University of California, San Francisco	How Women Decide to Seek Evaluation of Breast Symptoms.	1995 -1998
Heather Feigelson Ph.D. USC/Norris Comprehensive Cancer Center Department of Preventive Medicine	Multi-Ethnic Study of Genetic Control of Plasma Hormones.	1998 - 2001
Phillip Gardiner Dr. P.H. Northern California Cancer Center	False-Positive Mammograms: A Barrier to Annual Screening?	1995 -1998
Ann Geiger Ph.D. Kaiser Foundation Research Institute	Breast Cancer Risk Factors and Hormone Receptors.	1996 -1999
Ling Jong Ph.D. Stanford Research Institute International	Dietary Indole Analogs for Breast Cancer Prevention	1998 - 2001
Gordon Louie Ph.D. The Salk Institute for Biological Studies	Heregulin-Specific Diphtheria Toxin as a Cancer Therapy.	1998 - 2001
Cara Marks Ph.D. University of California, San Francisco	Architecture of the ErbB2 Molecule Leading to Breast Cancer.	1996 -1999
Jamil Momand Ph.D. City of Hope National Medical Center	Loss of p53 Tumor Suppressor Function in Breast Cancer.	1995 -1998
Cyllene Morris D.V.M., MPVM., Ph.D. California Public Health Foundation	Determinants of Breast-Conserving Surgery and Survival.	1995 -1999
Sonoko Narisawa Ph.D. The Burham Institute	Understanding Breast Cancer Metastasis to Bone.	1998 - 2001
Jacqueline O'Connor Ph.D. University of California, Davis	Benign Breast Disease, Biopsy & Cancer Preventive Self-Care.	1995 - 1998
Moire Robertson-Creek Ph.D., M.P.H Stanford Research Institute International	Xenoestrogens and Genetic Damage in Breast Cancer.	1995 - 1998
Lisa Shames Ph.D. University of Southern California	Exercise, Ovarian Function, and Breast Cancer Prevention.	1995 - 1998
Ke Shuai Ph.D. University of California, Los Angeles	Growth Inhibition of Breast Cancer Cells by Interferons.	1995 - 1998
Devon Thompson Ph.D. Stanford University	Characterization of hAG-2 and Its Role in Breast Cancer.	1999 - 2002
Daniel J. Valentino Ph.D. University of California, Los Angeles	Digital Imaging for Hospital and Community-Based Mammography.	1995 -1998
Paul Webb Ph.D. University of California, San Francisco	Understanding Tamoxifen- a Drug for Breast Cancer.	1995 - 1998
Mary Wieneke Ph.D., M.S. California School of Professional Psychology	Breast Cancer Chemotherapy: Does It Impair Brain Function?	1995-1998
Donna Williams-Hill Ph.D. University of Southern California	BRCA1 Regulation in Breast Cancer: A Rat Mammary Model.	1996-1999
Nurulain Zaveri Ph.D. Stanford Research Institute International	Analogs of Tea Polyphenols for Breast Cancer Chemoprevention.	1996-1999



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