Understanding the Impact:

Second Evaluation of the CBCRP Postdoctoral Fellowship Awards

2009

Implications and insights

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Understanding the Impact:
Second Evaluation of the CBCRP Postdoctoral Fellowship Awards

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Background

The mission of the California Breast Cancer Research Program (CBCRP) is to eliminate breast cancer by leading innovation in research, communication, and collaboration in the California scientific and lay communities. Since its founding in 1993, with the passage of the Breast Cancer Act by the California legislature, the program has worked towards the goals of funding innovative research, facilitating dissemination of research findings and promoting their translation into public health practices. Funded primarily by a California state tax on tobacco, the CBCRP has awarded 803 grants totaling over $189 million in research funds to investigators throughout California.

Awards are granted in a spectrum of disciplines addressing the many facets of breast cancer, including basic and clinical sciences, public health, and social sciences. The CBCRP award portfolio is comprised of a number of different award types, among them the career development awards. Career development awards, including the Dissertation Award and the Postdoctoral Fellowship, are designed to encourage the training of California's best young scientists in the field of breast cancer research. The Postdoctoral Fellowship Award is designed to support fellows, including graduate students having recently completed their Ph.D.'s, physicians continuing research activity, and individuals in transition to breast cancer research from another field to obtain their postdoctoral training under a designated mentor in the field of breast cancer research.

Since 1995 the CBCRP has granted 161 Postdoctoral Fellowship Awards totaling an investment of over $11.3 million, 6% of total funding and 20% of all grants given. Awards are granted for a maximum duration of three years and a maximum cap of $45,000 per year. The awards have no stipulation as to the applicant's citizenship or nationality, but research supported must be performed at an institute within the state of California. Additionally, applicants are expected to be working under the guidance of a mentor who is an established breast cancer researcher and who is required to include a breast cancer-focused training plan as part of the award application. The goal of the award is to support the training and career development of future breast cancer scientists.

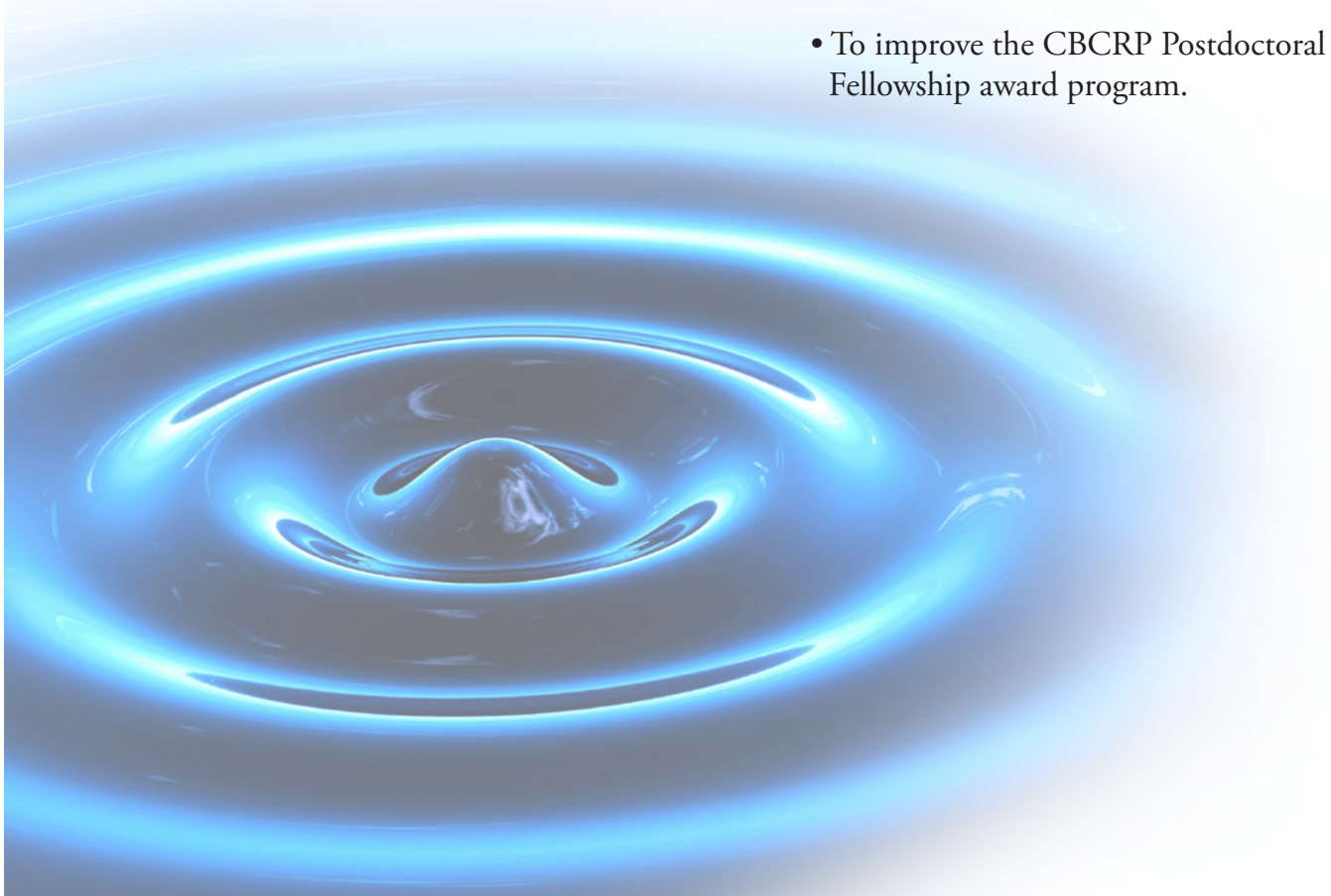
In 2001 the CBCRP evaluation staff performed the first evaluation study of the postdoctoral fellowship awards, including awards from cycles I-IV (1995-1998). This study clearly demonstrated the success of the postdoctoral fellowship award in contributing to the training of future breast cancer scientists, with two thirds of respondents still involved in breast cancer research. Additionally, a majority of respondents said that receipt of the CBCRP award allowed them to pursue work relevant to breast cancer that they would not otherwise have been able to pursue. Respondents credited the fellowship award with major career gains such as recognition and independence as a researcher, and half of them felt their fellowship helped them gain a faculty position in research. The respondents also proved to be very productive, averaging

almost 3 papers each with over 80% of then having published at least one paper. Furthermore, they were able to leverage each dollar the CBCRP invested for $3.05 additional dollars for breast cancer research from several funders. This evaluation will build on the previous study, allowing us to broaden our understanding of the outcomes of the CBCRP postdoctoral fellowship.

Goals of Study

The goals of this study are:

- To assess the short-term outcomes of the V-XII funding cycles (1999-2006) of the CBCRP Postdoctoral Fellowship Award program.
- To build on the data from the 2001 Postdoctoral Fellowship evaluation, and get a more complete picture of the award program.
- To improve the CBCRP Postdoctoral Fellowship award program.



Expected Outcomes

1. Awardees will gain career development skills important in their pursuit of careers as independent researchers.
2. Awardees will publish articles in peer reviewed journals, file for patents, and give presentations at meetings from their funded project during and in the years following their fellowship, and complete their postdoctoral training.
3. A majority of awardees will move onto either academic faculty positions or scientist positions within industry. Positions will be in breast cancer or other fields of research.
4. Fellows will leverage work done with their CBCRP funding into additional funding for subsequent breast cancer research.
5. Mentors will leverage work done by fellows into additional funding for breast cancer research.

Methods

Eligibility for this study consisted of the following criteria:

1. The awardee must have accepted a CBCRP Postdoctoral Fellowship Award during the annual funding cycles V-XII (1999-2006).
2. They must have used at least 6 months of award funding.
3. Their award must have ended at least 6 months before the initiation of this study.

The CBCRP evaluation staff and committee designed an online survey and distributed it to previous CBCRP Postdoctoral Fellowship recipients meeting the eligibility criteria via email. Several questions from the previous 2001 Postdoctoral Fellowship evaluation were repeated in order to allow pooling of data and comparison along with new questions about awardees current and future career plans. Together the studies covered current positions, future career plans, outputs generated as a result of their funded research both during and after the award period, influence of the award on their involvement in breast cancer research, personal assessments of outcomes associated with CBCRP funding, and allowed opportunity for comments about CBCRP and the Postdoctoral Fellowship Award.

The CBCRP evaluator collected and confirmed current email addresses for each potential respondent and an email was sent to all respondents containing a link to the online survey. The survey remained open for one month and three reminder emails were sent to those awardees that did not complete the survey. Follow up phone calls were made to 4 respondents.

Upon completion of the surveys, reported outputs were verified by CBCRP evaluation staff in both the 2001 and 2008 studies. Publications were assessed for relevance to the funded project and additional funds leveraged were verified against online databases, when available. Funds leveraged by the awardees' mentors were verified with the mentor.

Upon analysis of the outcome data, the evaluation staff deemed it necessary to clarify emerging trends around publication and funds leveraged seen in the comparison of the 2001 and 2008 survey results. A follow up telephone survey was conducted of a random sub-sample of awardees responding to the original online survey. Evaluation staff scheduled half hour telephone conversations with the selected respondents and asked them to send their current CV or NIH biographical sketch prior to their scheduled conversation.

Publications and funds leveraged reported during the telephone surveys were compared to those reported via the online survey. Qualitative responses to additional questions about the respondents' experiences relevant to the state of publication and funding in breast cancer research and research in general were also collected.

Findings

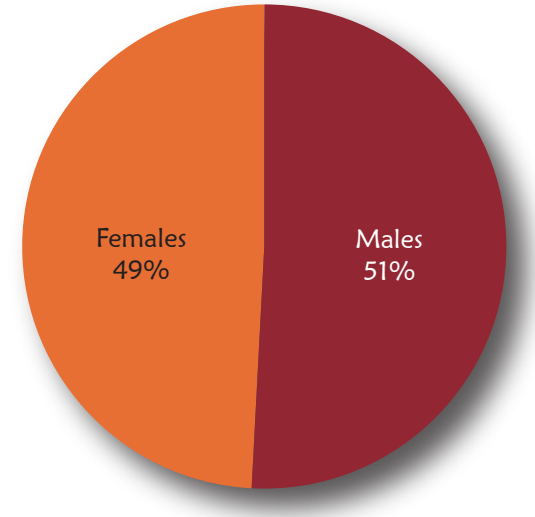
During the V-XII annual funding cycles the CBCRP funded 84 Postdoctoral Fellowship Awards. Of those, 2 were not accepted by the awardee therefore disqualifying them from inclusion in our study. Of the 82 eligible respondents information was received from 61, giving this study a 74% response rate. When appropriate, data from the 2001 Postdoctoral Fellowship survey (39 respondents) was pooled with the current data (61 respondents) to give a combined sample size of 100 awardees. Data from the pooled sample will be presented unless significant differences between the two studies were observed, in which case data from the 2001 study will be included alongside data from the current sample.

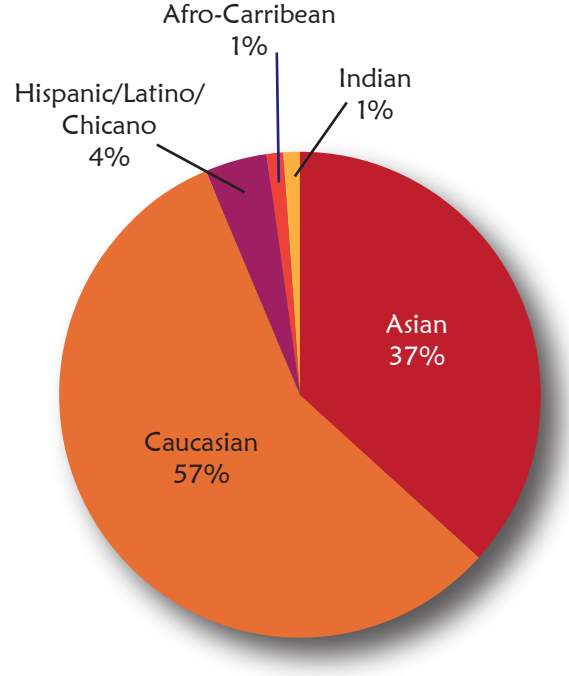
Additionally, a follow up telephone survey was administered to a sub-sample of 13 randomly selected respondents of the original online survey.

Description of Sample

Respondents to both the 2001 and 2008 studies were asked to identify their gender and ethnicity. The pooled sample was almost perfectly split down the middle with 49% Females and 51% Males.

Combined Sample: Gender (n=100)



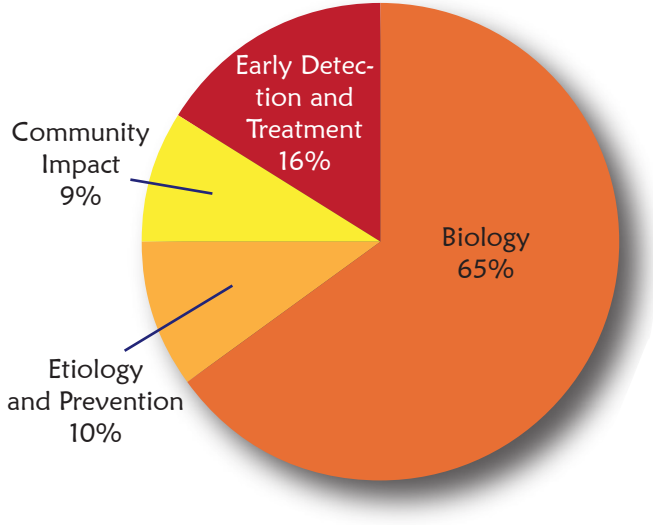


Fifty seven percent of respondents identified as Caucasian, 37% Asian, 4% Hispanic, 1% Afro-Caribbean and 1% Indian.

Combined Sample: Ethnicity (n=98)

Postdoctoral Fellowships were awarded in all research priority areas with almost two thirds (65%) in the Biology priority area, 16% in Early Detection and Treatment, 10% in Etiology and Prevention and 9% in Community Impact.

Combined Sample: Priority Area (n=100)

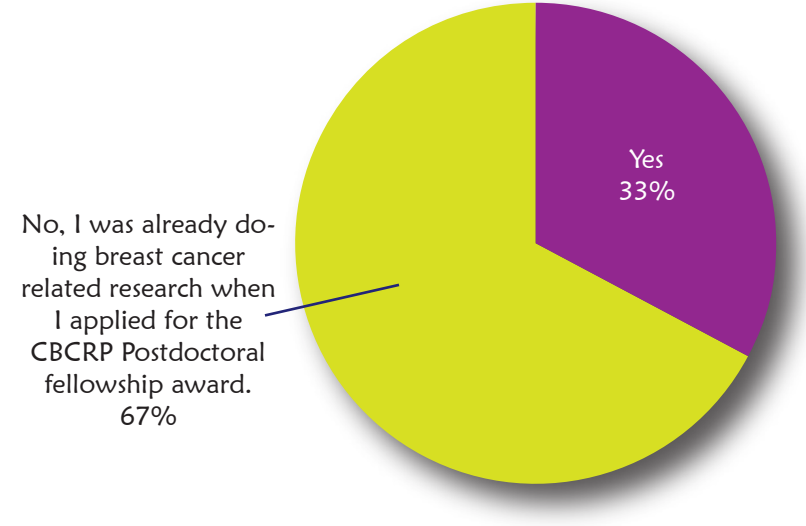


Impact of Award on Career

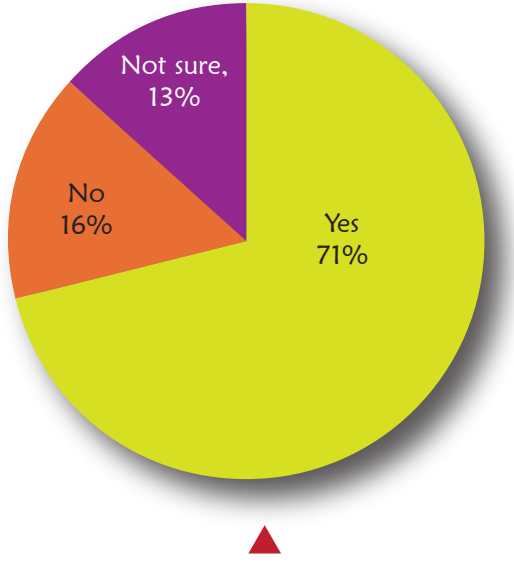
Postdoctoral Fellowship recipients' current positions and the impact of the award on their career choices were addressed in this study. We were interested in how many awardees used the award to transition into breast cancer from other fields, how many continued to be involved on breast cancer research after their fellowship and in what sorts of positions, as well as whether the award had afforded them the opportunity to do research they would not otherwise have been able to do.

As part of both the 2001 and 2008 studies, respondents were asked if they used the CBCRP Postdoctoral Fellowship award to switch into breast cancer research from another field. Of the total sample, one third reported using the award to switch fields, while two third reported already being involved in breast cancer research prior to receiving their award.

Combined Sample: did you use your CBCRP award to switch into breast cancer research? (n=100)



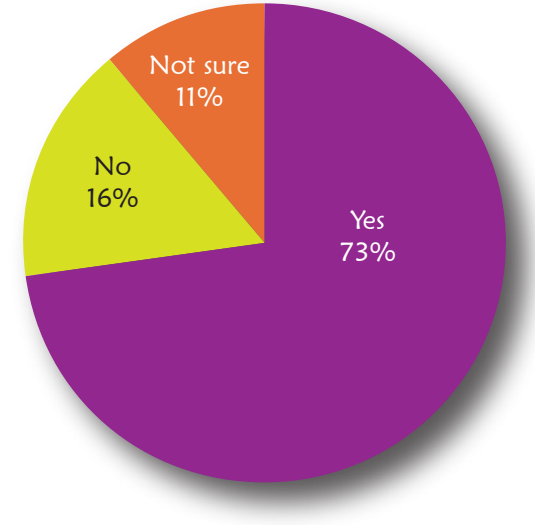
Combined Sample: Do you think that you would have become involved in breast cancer research if you had not received your CBCRP postdoctoral fellowship? (n=90)



Respondents who remained in breast cancer research (n=90) were asked whether they thought they would have been involved in breast cancer research had they not received the CBCRP Postdoctoral Fellowship. Sixteen percent of respondents felt that without the CBCRP Postdoctoral Fellowship award they would not have become involved in breast cancer research while 71% said they would have become involved in breast cancer research regardless of their award and 13% were not sure.

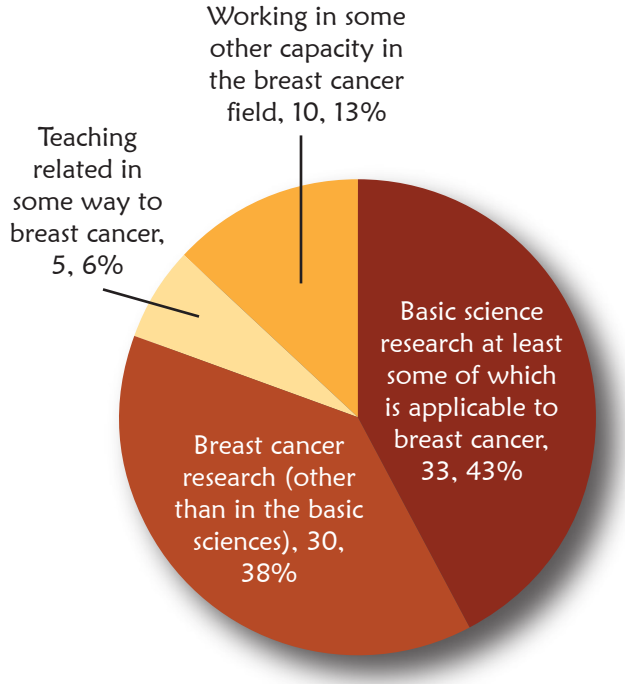
Awardees were also asked if their CBCRP Postdoctoral Fellowship award allowed them to do work relevant to breast cancer research that they would not have otherwise been able to do. Almost three quarters of all respondents indicated that this was the case, while 16% did not think their award afforded them the opportunity to do research they would not have otherwise done and 11% were not sure.

Combined Sample:
Did the award give you the opportunity to do work relevant to breast cancer that you would not have otherwise been able to do? (n=100)



Eighty four percent of awardees remained involved in breast cancer-related work after the termination of their CBCRP Postdoctoral Fellowship award. Of these, 43% were involved in basic science research at least some of which is applicable to breast cancer, 38% were involved in breast cancer research other

than in the basic sciences, 13% were working in some other capacity in the breast cancer research field and 6% were involved in teaching related in some way to breast cancer research.

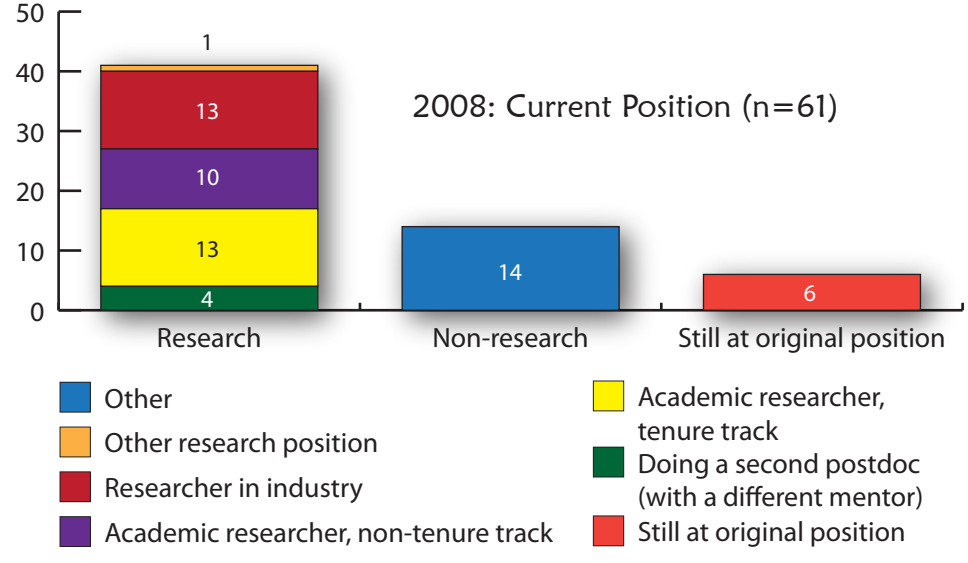


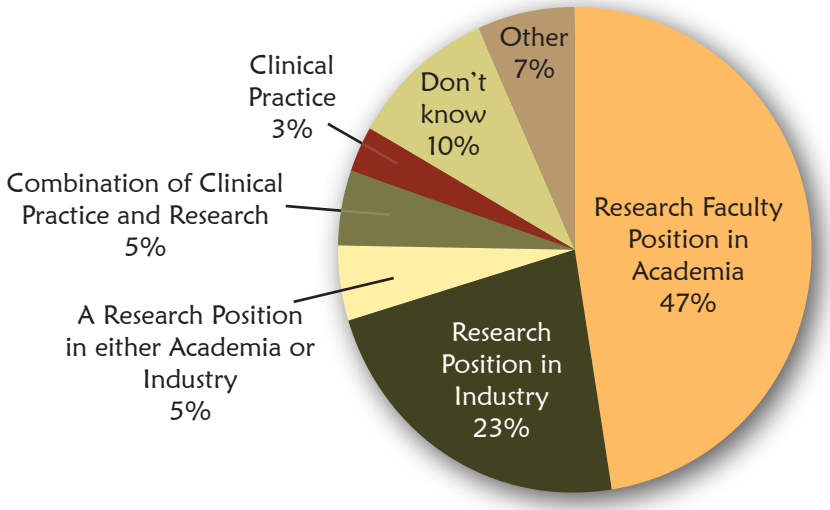
Combined Sample:
Type of work Done by Respondents Still in Breast Cancer Research Field (n=84)

Current Positions and Future Career Plans

The 2008 CBCRP Postdoctoral Fellowship award survey addressed the current position and future career plans of all awardees. Those planning on leaving research as part of their long term career plans were asked about the motivating factors behind this decision.

Respondents were asked to state their current position at the time of the survey. Two thirds (41 of 61) of awardees were in research positions, 14 in non-research positions and 6 were still in their original postdoctoral position. Of the 41 research positions, 13 were in academic tenure track positions, 13 researchers in industry, 10 academic non-tenure track positions, 4 were doing a second postdoc with a different mentor and 1 was the director of core facilities at a medical research center. Almost one quarter of the awardees (14 of 61) were in non-research positions including clinical practice, several business positions in biotech, medical writer, editor of a scientific journal, statistical programmer, medical resident and independent consultant among others.



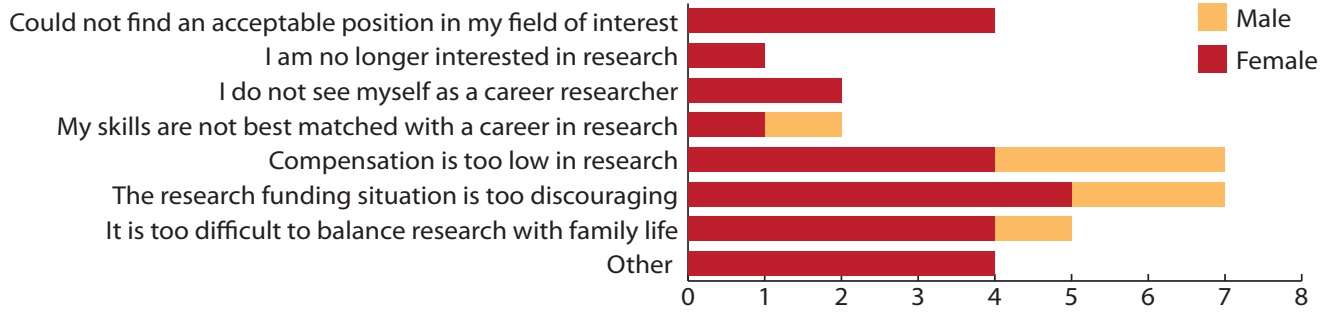


2008: What are your long Term Career Plans? (n=61)

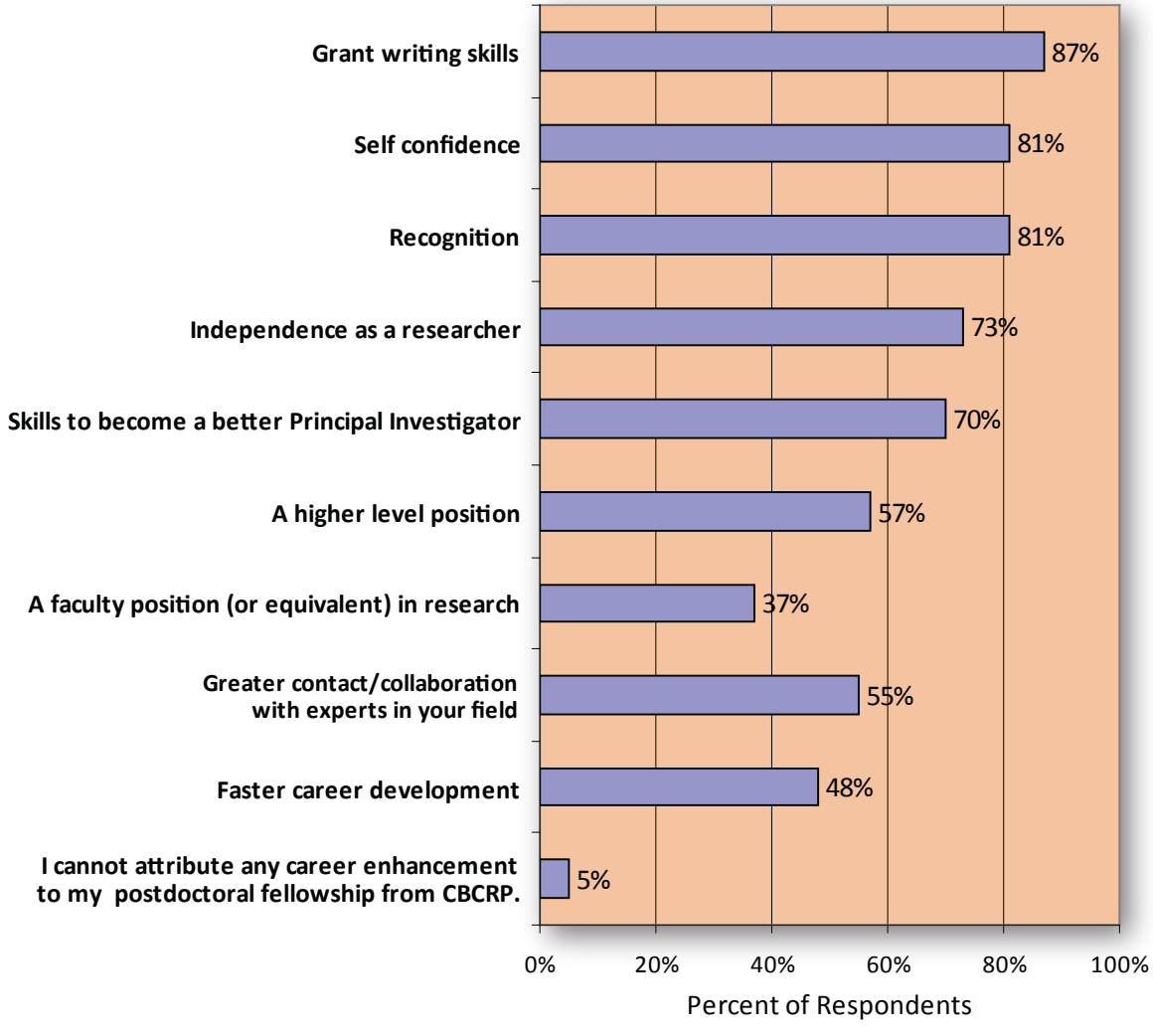
Awardees were also asked about their future career plans. Almost half (47%) indicated that their long-term career goal was a research faculty position in academia, another 23% a research position in industry, 5% a research position either in academia or industry, 5% a combination of clinical practice and research, 3% clinical practice alone, 10% didn't know and 7% listed other positions including public health, research administration, sales and marketing in biotech and consulting.

Those respondents who were considering leaving research as part of their future career plans were asked about the motivating factors behind their decision. Half of them (7 out of 14) stated that low compensation in research jobs was a factor, followed by the research funding situation being too discouraging (6), balancing research with family life being too difficult (5) and not being able to find a acceptable position in their field of interest (5) were the top responses given. Six respondents gave other reasons for considering leaving research including wanting to be involved in a more multidisciplinary setting and being more suited to clinical practice. Only three of the fourteen respondents considering leaving research as part of their long term career plans were male. The most common reason they gave for considering leaving research was low compensation.

2008: Reasons for Leaving Research by Gender (n=14)



Combined Sample:
Please indicate whether you agree with the following statements:
The CBCRP postdoctoral fellowship award helped me gain. . . (n=100)



Impact of CBCRP Postdoctoral Fellowship on Career Gains

Career gains attributed by awardees to their CBCRP Postdoctoral Fellowship awards were assessed in both the 2001 and 2008 surveys. Respondents were asked if their award helped them attain certain skills and achieve a number of important career development goals during their postdoctoral research careers. A vast majority of respondents reported gaining grant writing skills, self confidence, recognition, independence as a researcher, skills to become a better principal investigator, and a higher level position. Fifty-five percent of respondents reported that their CBCRP Postdoctoral Fellowship award allowed them to have greater contact with experts in their field, and 48% reported that it allowed them faster career development.

Outcomes from Research Conducted with CBCRP Funds

Short-term outcomes of the CBCRP Postdoctoral Fellowship Awards, including publication in peer-reviewed journals, patents and the presentation of work at professional conferences and meetings, from both the 2001 and 2008 surveys are described in the next section of this report.

Publications

Respondents were asked to submit references of papers published from work done with their Postdoctoral Fellowship Award. Evaluation staff verified publications submitted for their relevance to the CBCRP award given. A total of 198 publications were attributed to the Postdoctoral Fellowship awards included in our combined sample. Publication numbers, relevant to the funded project and published during or subsequent to the awardees fellowship, per awardee ranged from 0-10, with an average of 2.0 publications per person and 74.5% of the respondents publishing at least one paper. The average number of publications per respondents and percentage of respondents publishing at least one paper fell significantly between the 2001 and 2008 surveys from 2.8 to 1.5 and 82% to 67%, respectively.

Report Year	Total Publications	Publication Range	Average # of Publications	Publish at least one
2001	108	0-10	2.8	82%
2008	90	0-10	1.5	67%
Combined sample	198	0-10	2.0	74.5%

Patents

Research funded by awards included in both the 2001 and 2008 survey samples resulted in patents for the CBCRP funded investigators. A total of 12 verified patents were awarded to the combined sample with the number of patents filed doubling from 4 to 8 between the 2001 and 2008 surveys.

Report Year	Patent Range	Total Number of Patents
2001	0-1	4
2008	0-3	8
Combined sample	0-3	12

Presentations

Dissemination of research results from CBCRP Postdoctoral Fellowship awards through presentation at professional meetings was assessed by both surveys. The 2001 and 2008 studies found that the awardees included in their samples gave a total of 78 and 83 presentations respectively. A total of 161 presentations were given by CBCRP Postdoctoral Fellowship awardees of the combined sample.

Report Year	Total Number of Presentations
2001	78
2008	83
Combined sample	161

Patents awarded to investigators included in the 2008 study

- Enzyme Activity Profiles
- Proteomic Analysis
- Small Molecule Potentiator of Hormonal Therapy for Breast Cancer
- Anti -MUC -1 single chain antibodies for tumor targeting
- Human CDC4 modulates cyclin E degradation
- Human inflammatory breast carcinoma xenograft capable of lymphovascular invasion and methods for its use
- Compositions and methods for intraductal gene therapy
- Methods and kits for identif ying ductal orifices in a nipple

Obtaining Additional Funds for Research
Postdoctoral research is widely viewed as the launching pad for a career as an independent researcher. Given this, the receipt of a Postdoctoral Fellowship is an important demonstration by a recent graduate that he or she is able to successfully compete for his or her own research funding. Leveraging the work done with this award for additional funding is critically important as their career progresses and to maintain an independent research program.

Respondents of both studies were asked if the work done with their CBCRP Postdoctoral Fellowship was used to obtain additional funding and this information was verified by the CBCRP evaluation staff when possible. There was a significant decrease in the number of additional grants leveraged by awardees between the 2001 and 2008 studies. Respondents to the 2008 survey reported leveraging 18 grants for over $4.5 million, including 2 RO1s, an NIH K99 and a CBCRP IDEA grant, as compared to 34 grants leveraged by the 2001 sample for over $8 million. Similarly the funds leveraged per CBCRP dollars invested also dropped dramatically between the 2001 and 2008 studies from $3.05 to $0.86.

Report Year	Number of Grants Leveraged by Awardees	% of Respondents Receiving Additional Grants	Total Amount of Grants Leveraged	Funding Leveraged per CBCRP $ Invested
2001	34	49%	$8,186,358	$3.05
2008	18	26%	$4,627,086	$0.86
Combined sample	52	37.5%	$12,813,444	$1.59

Additional Funds Obtained by Mentors
Work done by postdoctoral fellows is most commonly continued either by the fellow themselves as an independent investigator or by their mentors. Additional funding leveraged based on the work done by the CBCRP Postdoctoral Fellowship awardees by their mentors was also assessed by both evaluation studies. A difference similar to that observed in the funds leveraged by the awardees themselves is evident. Awardees' mentors included in the 2008 study leveraged less than half the number of grants as the 2001 study (9 compared to 21) for less than half the total amount (almost $28 million compared to almost $10.4 million).

The differences observed in funding leveraged by both the awardees themselves and their mentors may be a function of greatly reduced research budgets nationwide[1]. This has led to reduced funding success rates and has likely influenced more young investigators to leave academic research as a career and therefore not pursuing additional funding.

Report Year	Number of Grants Leveraged by Mentors	Total Amount of Grants Leveraged by Mentors	Funding Leveraged by Mentors per CBCRP $ Invested
2001	20	$27,931,460	$10.42
2008	9	$10,360,559	$1.92
Combined sample	29	$38,292,019	$4.75

Follow up Survey on Decreasing Publication and Funding Rates

In order to understand the trend of decreasing publication and funding rates among CBCRP postdoctoral fellows between the 2001 and 2008 studies, a follow up telephone survey was conducted of a sub-sample of awardees responding to the original 2008 online survey. As part of the follow up telephone survey, respondents were asked to comment on hurdles they encountered in publishing their research results and obtaining additional funding, as well as changes they noticed in the ability of researchers, in general, to publish or obtain funding in breast cancer research or research in general.

Hurdles to Publishing

Respondents reported encountering a range of hurdles in publishing their research results. Many of these extended to their impressions of changes happening across the field of breast cancer research and in some cases cancer research in general. The major themes that emerged are described below.

Increased reviewer expectations
Respondents felt that reviewer expectations for the amount and complexity of

[1]NIH funding doubled from $13B to $26B from 1998 to 2003, since then budget increases have not kept pace with inflation, resulting in a net decrease.

the data included in a manuscript had increased significantly in the last several years. This change was felt to favor larger, more established labs with access to many resources such as patient material, or those taking a high throughput approach.

Fellowship lengths too short
The limited lengths of postdoctoral fellowships, in this case 2-3 years, were found by respondents to be insufficient time to carry out their funded projects and produce enough data to warrant a publication. This was especially true of respondents involved in research involving animal models.

Increased competition
Increased competition for academic positions, and the high profile publications many felt were needed to compete for these, has influenced the sorts of projects taken on by postdoctoral researchers. Some respondents felt this encouraged postdocs to more high risk-high reward lines of research that can be more likely to fail or more difficult to publish.

Inadequate support
Some respondents felt they received inadequate support from their postdoctoral mentors and as a result had a hard time publishing their results, or doing the work needed to generate these results.

Hurdles to Obtaining Funding

All respondents interviewed cited the decreasing research funding budgets nationwide as the primary hurdle to obtaining additional funding. Some added that they had observed that competition had been further increased by an influx of new young scientists trained during the NIH boom years now competing for their own individual funding.

Feedback and Suggestions

Respondents to the 2008 survey were given the opportunity to give feedback about various aspects of the CBCRP application process and Postdoctoral Fellowship award. Responses were overwhelmingly positive with the vast majority of respondents indicating their satisfaction with the application process, the feedback they received, support from the CBCRP research administrators, their stipend, and the CBCRP symposium.

When asked for individual comments, respondents specifically highlighted the CBCRP symposium and feedback from their applications.

"The feedback CBCRP provides for the grant application is very valuable for young scientists."

"The symposium is great; but the research administrators are even greater!"

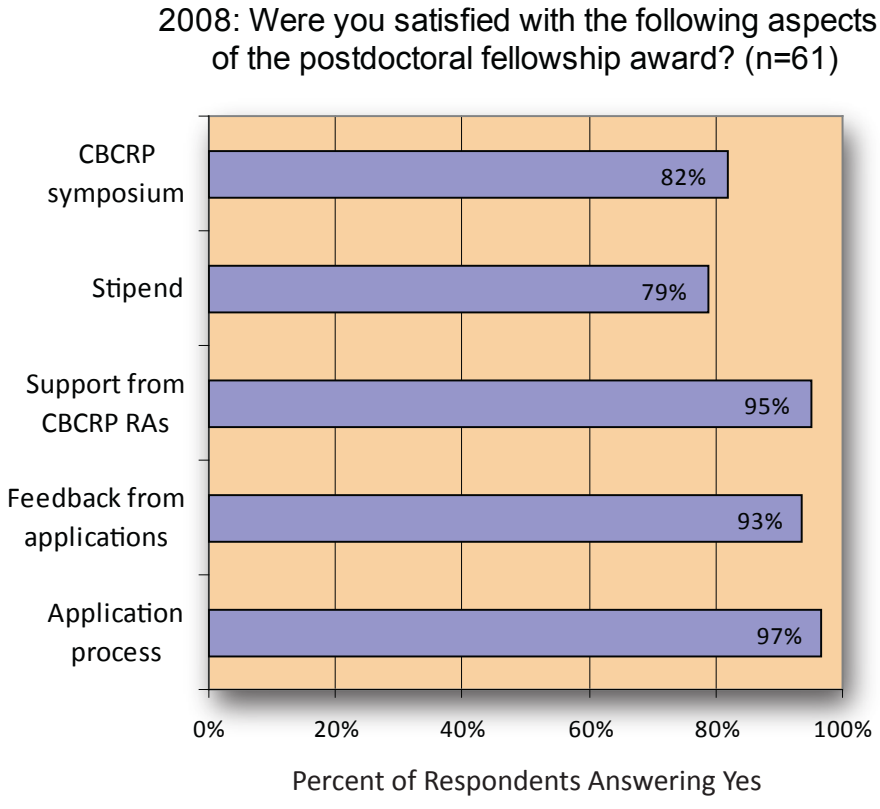
"It was indeed an honor to receive this grant. It was extremely supportive and informative, since it allowed for special meetings and interactions with patients, doctors and researchers."

"The CBCRP meeting - and the opportunity to meet and listen to breast cancer survivors - was a unique and eye-opening experience. It made the meeting distinct from other scientific meetings."

Their recommendations for improving the award included increasing the stipend and hosting seminars for awardees.

"Overall, CBCRP award is great. However, for a postdoc, the stipend is lower than average."

"Specific Training programs: 1. Mentoring by other faculty; 2. Grant writing seminars; 3. Career planning".



Conclusions

Has the CBCRP helped develop the careers of the Postdoctoral Fellowship awardees?

As a career development award, one of the goals of the CBCRP Postdoctoral Fellowship is provide the funded fellow with the opportunity to acquire career skills that will be vital to them in their pursuit of a position as an independent researcher. Respondents to both the 2001 and 2008 surveys reported that their CBCRP award helped them gain a number of important skills and attributes. Among these were specific skill sets such as grant writing skills and skills to become a better Principal Investigator, which they will draw from in their future careers. Additionally, they also reported using their award to acquire a number of less tangible qualities such as independence, self confidence and recognition which are invaluable in the extremely competitive academic job search. In fact, more than half of respondents felt that their CBCRP award helped them get a higher level position and over a third felt it helped them get a faculty position (or equivalent) in research.

Outcomes, such as publications, patents, presentations and additional grants, resulting from the CBCRP-funded work are crucial for a postdoctoral fellow to advance as an independent researcher. Respondents from both surveys succeeded in disseminating their results through publications and presentations and securing their intellectual property through patents. However, publication rates decreased significantly between the 2001 and 2008

surveys both in the average number of publications per awardee and percent of awardees publishing at least one paper. Similarly the percentage of awardees leveraging additional funding from the work done with their CBCRP awards decreased from 49% in 2001 to 26% in 2008.

The reason for these decreases is unclear. One major difference between the two reports is the ways the surveys were conducted; the 2001 was a telephone interview while the 2008 was an online survey. It is possible that the more hands-off nature of the online survey lead to under-reporting of publications by the respondents of the 2008 survey. In order to address this possibility the evaluation staff contacted a sub-sample of the awardees included in the 2008 survey and scheduled telephone interviews with them. Respondents participating in the follow up telephone survey were asked to identify the publications and grants leveraged associated with their CBCRP Fellowship on their current CV. The results from these telephone surveys were compared to those reported by the respondents via the original online survey. No major differences were identified between the two reporting methods. What is clear is that the nationwide decreases in funding budgets that happened between 2001 and 2008 have changed the state of the research field, affecting all aspects, including publication and ability to leverage additional funding.

Respondents' career progression after their postdoctoral fellowship was also assessed as an important indicator of the success of the award as a vehicle for career development. All but 6 of the respondents to the 2008 survey had moved on from their original postdoctoral position to a variety of different careers. Two thirds of them continued on to a number of different research positions, including 10 tenure-track academic appointments. Three quarters of respondents reported planning to pursue research positions in either academia or industry as their long term career plans, and an additional 5% planned to combine research with clinical practice.

In comparison with Postdoctoral Fellowship awardees from other organizations, the percentage of awardees publishing at least one paper in the combined sample of CBCRP fellows (74.5%) was lower than that reported by Komen for the Cure (100%) and Damon Runyon (91%). However, variations in the methodology between the studies may explain these differences. It is unclear whether publications were verified for relevance to the funded award in either the Komen or Damon Runyon study and the studies varied greatly in the time that had passed since the award was granted. Additional funding leveraged rates were also reported by other groups to be higher than CBCRP (Komen 59%, Damon Runyon 90%, CBCRP 37.5%). However, these numbers are also subject to the same methodological differences as the publication rates, and are additionally influenced by the much changed funding climate since the publication of the earlier reports.

By all measures, CBCRP postdoctoral fellows indicated that receiving their

award helped in their pursuit of future positions as breast cancer researchers. The vast majority of recipients used their awards to support productive, successful postdoctoral research stints and were able to use their experiences to move onto subsequent positions. Together these measures demonstrate success in the development of awardees' careers.

Has the CBCRP Helped Train Future Researchers in Breast Cancer Research or Other Fields?

The CBCRP funds Postdoctoral Fellowship awards in order to contribute to the training of future breast cancer researchers. The program strives to do this by supporting outstanding researchers already working in the field of breast cancer research as well as attracting outstanding researchers from other fields to switch into breast cancer research. A third of all respondents from the pooled sample indicated that they used their CBCRP Postdoctoral Fellowship to switch into breast cancer from another field and 15% said that they would not have become involved in breast cancer research had they not received their CBCRP fellowship.

Both surveys also assessed the continued commitment of awardees to remain in breast cancer research after their postdoctoral fellowships. Eighty four percent of respondents from the pooled sample continued to be involved in breast cancer-related work after their fellowship ended, 63% in either basic or applied breast cancer research. This number is in contrast to 26% of the awardees of the CBCRP Dissertation award remaining in breast cancer research after their award and is indicative of a greater investment on the part of the researcher in the field as their career progresses.

CBCRP Postdoctoral Fellowship recipients included in the 2008 survey indicated a long term commitment to research in general with 80% planning to continue in research, in one form or another, as part of their long term career goals. Respondents from both surveys were able to leverage their CBCRP awards for almost $13 million dollars in additional research funding from a number of organizations including the NIH, AACR, the DOD, and the CBCRP. These funds will help ensure the futures of these awardees as independent researchers.

Has the CBCRP Helped Fund Promising New Avenues of Breast Cancer Research that have Continued?

The CBCRP strives to fund its postdoctoral fellows to perform high quality, innovative breast cancer research that will continue to have an impact in the field long after their awards have ended. One of the ways a funding agency exerts an affect on the work done in a field is by providing the opportunity for young investigators to do work that would not have been possible with out the agency's funding. Almost three quarters of respondents from the pooled sample of CBCRP Postdoctoral Fellows indicated that their award gave them the opportunity to do work relevant to breast cancer

that they would not have otherwise been able to do.

Awardees were very successful in disseminating the results of their research findings through presentations at professional meetings and conferences as well as publishing in peer-reviewed journals. This exchange of information will contribute to the progress of the field and to the development of new lines of research. Additionally the awardees and their mentors were able to leverage additional research funds from the work done with CBCRP funds. Together this represents over $51 million in additional funding for breast cancer and other cancer research, ensuring that the lines of work funded by the CBCRP Postdoctoral Fellowship award program will be continued.

Recommendations for Possible Program Modifications:

1. Require mentors to submit yearly progress reports on scientific and career development. (Already done by DRCRF)

2. Allow for renewal of the award with increased accountability—more reports from awardee and/or renewal review (resulting possible increase in staff and/or reviewer time/effort should be considered).

Acknowledgments

The authors are grateful to the participants of this study who took time from their busy schedules to provide information and give insightful feedback on their experiences as CBCRP awardees.

We would also like to acknowledge the hard work contributed by several additional members of the CBCRP staff in the production of this report: Mhel Kavanaugh-Lynch, Katherine McKenzie, Laurence Fitzgerald, Eric Noguchi, and Lyn Dunagan.

Thank you to the members of the Advisory Breast Cancer Research Council Evaluation Committee who provided valuable feedback and guidance: Angela Padilla, Mary Alice Yund, Catherine Quinn, Roxanna Bautista, Karren Ganstwig, Christopher Bowden, Shelley Hwang, Larry Greene, Jim Ford, and Jeanne Rizzo.