

CDMRP



Department of Defense

Congressionally Directed Medical Research Programs

Annual Report September 30, 2009



U.S. Army Medical Research
and Materiel Command



I invite you to look through the Congressionally Directed Medical Research Programs' (CDMRPs') 2009 Annual Report. This document highlights who we are, what we do, our business practices, and the people who make this possible.

Our vision is to find and fund the best research to eradicate diseases and support the warfighter for the benefit of the American public. We encourage "outside-of-the-box" thinking to develop investment strategies that fill unique gaps and support groundbreaking research. Our proposal review and management processes are rigorous and focus on addressing the individual vision and goals of our programs. I am truly grateful for the dedicated individuals who are making a difference in the lives of people with significant health issues, our military, veterans, and their families. Together we are striving for excellence to bring our vision to realization.

E. Melissa Kaime, M.D.
Captain, Medical Corps, U.S. Navy
Director, CDMRP



Department of Defense
U.S. Army Medical Research and Materiel Command
Congressionally Directed Medical Research Programs

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CDMRP Key Features

- ◆ Federal agency for supporting disease-specific research as directed by Congress
- ◆ Program visions are adapted annually
- ◆ Two-tier competitive review of proposals as recommended by the Institute of Medicine
- ◆ Consumer advocates involved throughout process
- ◆ Funds highly innovative research
- ◆ Unique partnership among Congress and the scientific, consumer advocacy, and military communities



Who We Are and What We Do

The Congressionally Directed Medical Research Programs (CDMRP) arose from a unique partnership among the U.S. Congress, the public, and the military. In the early 1990s, grassroots breast cancer research advocates campaigned for an increase in research for breast cancer. This grassroots advocacy movement resulted in an initial congressional appropriation in 1992 of \$25 million (M) for breast cancer research to be managed by the Department of Defense (DOD) U.S. Army Medical Research and Materiel Command (USAMRMC).¹ The following year Congress appropriated \$210M to the DOD for extramural, peer-reviewed breast cancer research. This was the beginning of the CDMRP, a research directorate within USAMRMC.

The success in managing the initial congressional appropriations in breast cancer research combined with additional advocacy movements and the need for focused biomedical research catapulted the CDMRP into a principal funding organization for cancer research, military relevant medical research, and other disease-specific research. Through fiscal year 2009 (FY09) the CDMRP has been responsible for managing \$5.4 billion in targeted appropriations (see Figure 1, CDMRP Funding History).

Vision

Find and fund the best research to eradicate diseases and support the warfighter for the benefit of the American public.

Mission

Provide hope by promoting innovative research, recognizing untapped opportunities, creating partnerships, and guarding the public trust.

¹ Known as the U.S. Army Medical Research and Development Command prior to 1995.

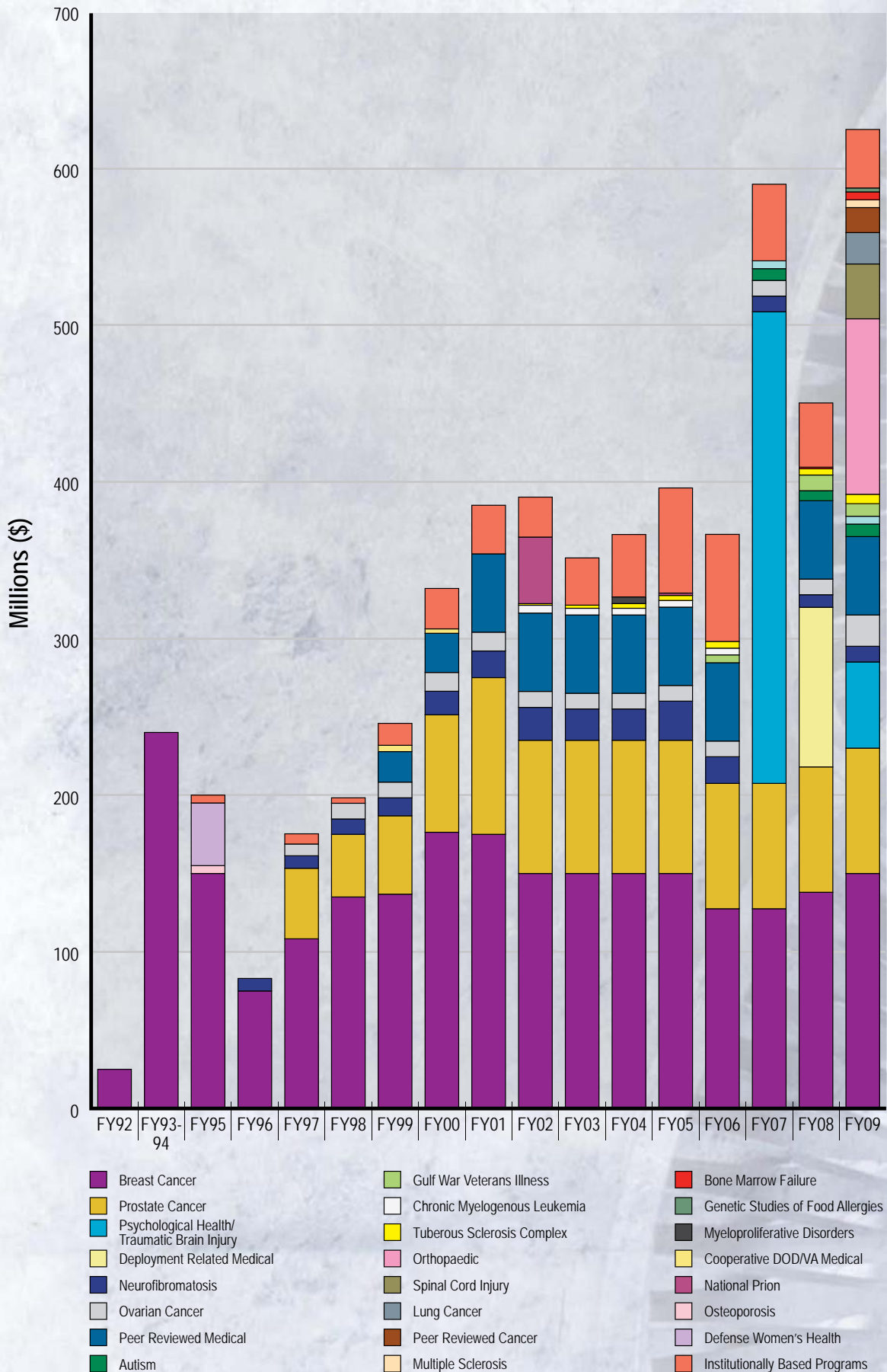


Figure 1. CDMRP Funding History

Programs Managed by the CDMRP

To date, the CDMRP has managed 94 separate research programs spanning cancer research, military relevant research, and other disease-specific research. All of these programs are aimed at improving the health of all Americans. Individual program books are available on the CDMRP website or can be requested by phone (301-619-7071) or by e-mail (CDMRP.PublicAffairs@amedd.army.mil). Congressional appropriations directed toward these research programs total \$5.4B. From FY92 through FY08 appropriations, the CDMRP has managed 8,996 research grants, contracts, and cooperative agreements. An overview of the appropriations and proposals received and funded can be found in Appendix A.

In FY09, the CDMRP completed execution of the FY08 appropriations that resulted in 680 new awards. The CDMRP also initiated execution of appropriations for FY09, which has become the most highly funded year in CDMRP history with a total of \$626.4M in funding across 33 programs. In addition, six new programs were funded in FY09. Table 1 depicts the FY08 and FY09 funding summary information while complete financial data for these fiscal years can be found in Appendix B.

Table 1. CDMRP Programs, Appropriations, Proposals Received and Awarded

Program	FY08			FY09	
	Appropriations Received (in millions)	Proposals Received	Proposals Funded	Appropriations Received (in millions)	Proposals Received to date
<i>Cancer Research Programs</i>					
Breast Cancer	\$140.1**	3,701	324	\$151.5**	2,060
Lung Cancer*	—	—	—	\$20.0	416
Ovarian Cancer	\$10.0	148	17	\$20.0	180
Peer Reviewed Cancer*	—	—	—	\$16.0	223
Prostate Cancer	\$80.0	1,342	176	\$80.0	849
<i>Military Relevant Medical Research Programs</i>					
Amyotrophic Lateral Sclerosis	—	—	—	\$5.0	—
Deployment Related Medical	\$101.9	1,094	50	—	—
Gulf War Illness	\$10.0	32	12	\$8.0	44
Orthopaedic*	—	—	—	\$112.0	179
Peer Reviewed Medical	\$50.0	872	35	\$50.0	818
Psychological Health/Traumatic Brain Injury	—	—	—	\$55.0	220
Spinal Cord Injury*	—	—	—	\$35.0	—
<i>Other Disease-Specific Research Programs</i>					
Autism	\$6.4	102	17	\$8.0	155
Bone Marrow Failure	\$1.0	21	1	\$5.0	80
Genetic Studies of Food Allergies*	—	—	—	\$2.5	12
Institutionally Based Programs	\$41.0	25	25	\$37.4	21
Multiple Sclerosis*	—	—	—	\$5.0	—
Neurofibromatosis	\$8.0	72	14	\$10.0	75
Tuberous Sclerosis Complex	\$4.0	55	9	\$6.0	65
Total	\$452.4	7,464	680	\$626.4	5,397

* New programs in FY09

** Breast Cancer appropriations include Breast Cancer Research Semipostal funds of \$2.1M in FY08 and \$1.5M in FY09.

Our Team

There are several offices within the U.S. Army Medical Research and Materiel Command that the CDMRP works with to execute its research programs as shown in Figure 2. This team works collectively to ensure that congressional appropriations are used judiciously to find and fund the best research to eradicate diseases and support the warfighter for the benefit of the American public.

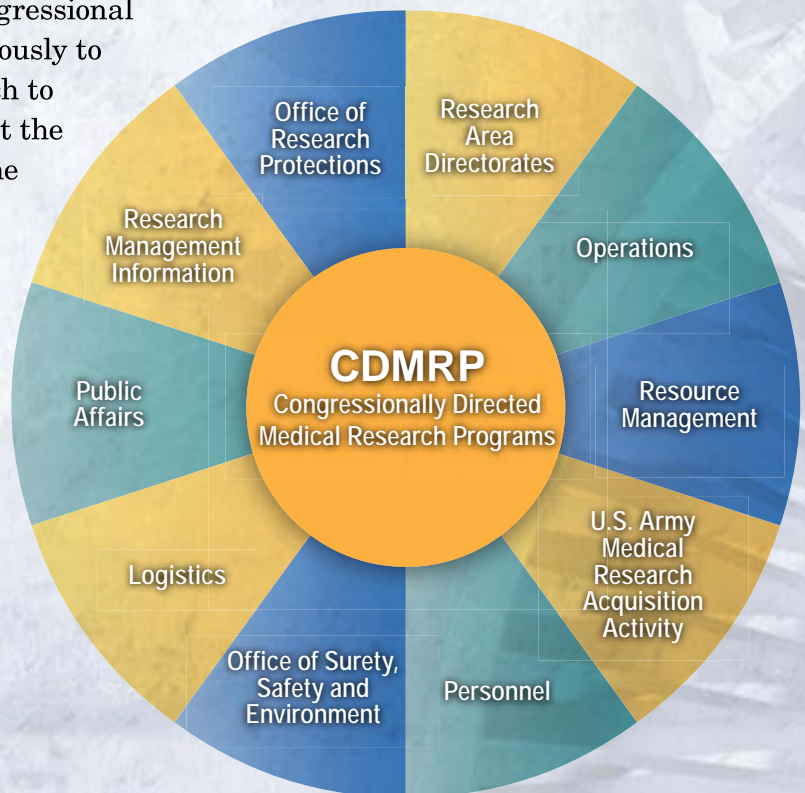


Figure 2. The CDMRP Team

Our Management Cycle



Although the programs within the CDMRP share many common features, each program is unique and emphasizes the specific needs of its research and advocacy communities.

The CDMRP employs a flexible management cycle to maintain the individuality of each program while also meeting the needs of Congress, the DOD, the research and advocacy communities, and the public at large. This management cycle spans 7 years and begins with a congressional appropriation and ends with the completion of research grants. Each step in the execution and management cycle is depicted in Figure 3 followed by descriptions of each milestone on pages 6–11.

Figure 3. CDMRP Flexible Execution and Management Cycle



Congressional Appropriation and Receipt of Funds

All programs within the CDMRP exist because of yearly, individual congressional appropriations. These funds are not in the President's budget; Congress adds them annually to the DOD appropriation to fund new programs or continue existing programs. Once the DOD identifies managers for each medical research appropriation, dollars are forwarded to USAMRMC for execution.

Stakeholders Meeting

A stakeholders meeting is held the first time the CDMRP receives an appropriation for the management of a new, peer-reviewed program. In FY09, the CDMRP organized six stakeholders meetings. The goal of each stakeholders meeting is to determine the current state of the research in a particular field as well as to identify research gaps so that the CDMRP can design a program to fill these gaps. Stakeholders for each program are world-renowned scientists, clinicians, and consumer advocates (i.e., survivors or family members affected by the target disease and representatives of consumer advocacy organizations; additional information about consumer advocates can be found on page 13). Recommendations from the stakeholders meeting are then used to facilitate Vision Setting.

Vision Setting

A vision setting meeting is held after the stakeholders meeting or annually for existing programs to define an annual investment strategy (i.e., research categories, award mechanisms, and recommended investment of the appropriated funds toward each award mechanism). The CDMRP held 16 vision setting meetings for the FY09 programs. The development of an annual investment strategy was recommended by the National Academy of Sciences Institute of Medicine (NAS IOM) to guide allocations of funds that best address the current needs in breast cancer research.² The CDMRP adopted this recommendation and has since recruited the most visionary scientists, clinicians, and consumer advocates for each program to function as an Integration Panel (IP). Individual IP members facilitate the development of an annual investment strategy to identify underfunded and underrepresented areas of research and encourage research in those areas that are considered the most critical to patients, consumers, clinicians, and laboratory researchers. The annual investment strategy provides a high degree of flexibility and the framework and direction necessary to most effectively obligate each congressional appropriation while avoiding unnecessary duplication with other funding agencies. Since members of the IP recommend an investment strategy, it is appropriate that these individuals also participate in recommending proposals for funding during programmatic review (see page 8 for further information on programmatic review).

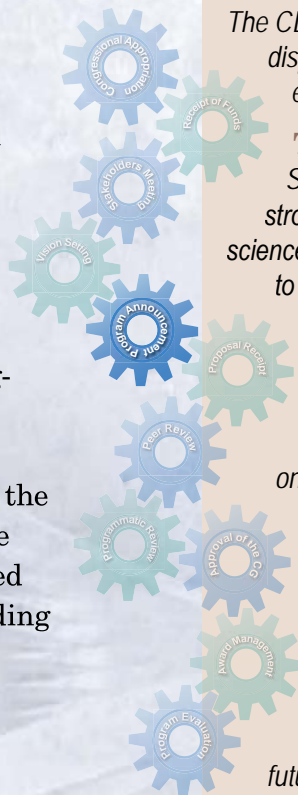
² Institute of Medicine, *Strategies for Managing the Breast Cancer Research Program: A Report to the U.S. Army Medical Research and Development Command*, The National Academies Press, 1993.

Program Announcement

The result of vision setting is an annual investment strategy that develops the framework for specific award mechanisms to achieve the program's vision. Award mechanisms, which capture the current needs of the research, advocacy, and military communities for each program, are released to the research community in the form of program announcements. Individual program announcements provide details about a particular award mechanism, the application process, and requirements for submitting proposals, including pre-proposals, if required for that award mechanism.

In FY09, the CDMRP released 77 program announcements.

Program announcements have focused on clinical research, innovative research, high-impact research, health disparity, team science, training and recruitment, and research resources, as highlighted in the text box. Some of these cutting-edge award mechanisms developed by the CDMRP have been emulated by other funding agencies.



Focus Areas

Clinical Research

The CDMRP has supported clinical research projects from small pilot studies to international trials. Clinical research is patient-oriented research that will help to better understand the nature of human disease or the effectiveness of a drug, device, or technology.

Innovative Research

The CDMRP's central philosophy remains innovation. The CDMRP strives to stimulate new scientific knowledge by funding high-risk, high-gain research that other agencies will not venture to fund. Many of the award mechanisms offered by the CDMRP emphasize support for the exploration of revolutionary ideas and concepts that could ultimately advance scientific research toward disease eradication.

High-Impact Research

An important area of research that the CDMRP supports is high-impact research. This type of research focuses on the potential of having a revolutionary impact in a specific disease field.

Health Disparity

The CDMRP is committed to supporting the best research focused on addressing health disparities that exist in the incidence, morbidity, and mortality among different racial and ethnic groups for relevant disease programs managed by the CDMRP.

Team Science

Several different award mechanisms have been launched by the CDMRP to foster strong partnerships and collaborations within the scientific community. This team science approach enables investigators to pool and leverage their resources and knowledge to address a major issue in the field.

Training and Recruitment

The CDMRP has played a major role in training scientists at all points in their careers. The CDMRP's commitment to training the best and the brightest to eradicate human diseases is demonstrated by its portfolio of funded projects, nearly one-third of which focuses on training and recruitment. The CDMRP has supported new researchers in the field as well as established scientists interested in extending their expertise to the study of other diseases.

Research Resources

The CDMRP has sustained a significant investment in research resources. These awards are designed to provide researchers with support to (1) create or obtain materials and data from multiple sources that would otherwise be difficult to acquire or (2) establish and support centers or consortia that can provide a foundation for future research.

Proposal Receipt

The number of proposals submitted to the CDMRP has risen drastically since its inception. For many of the award mechanisms supported by the CDMRP, proposal submission requires a two-step process consisting of a pre-application submission (which includes a letter of intent, pre-proposal, and/or nomination) followed by a full application submission. Pre-applications that require a pre-proposal and/or nomination are screened by the program, and invitations for full applications are sent to only those selected for submission. This pre-application process reduces the burden on an investigator as well as increases the likelihood that the full application will meet the intent of the award mechanism and be funded. In FY09, CDMRP received 5,805 pre-proposals and nominations which, after screening and invitation, have resulted in 718 full proposals received as of the date of this report. Several mechanisms have full proposal deadlines in the next fiscal year. In addition, CDMRP received 4,679 full proposals from mechanisms that did not require pre-proposals or nominations for a total of 5,397 full proposals received to date.

Proposal Review

The CDMRP adopted the recommendations set forth in 1993 by the National Academy of Sciences Institute of Medicine committee, which concluded that the CDMRP would be best served by a two-tier review process that reflects the traditional strengths of existing review systems but is tailored to accommodate individual program goals. Although the two tiers of review are fundamentally different, they are complementary.

All reviewers for the CDMRP must uphold the highest standards of conduct to ensure the credibility of these highly visible programs and their participants are not compromised. Additional details about the two tiers of review follow and can also be accessed on the CDMRP website at <http://cdmrp.army.mil/fundingprocess>

Peer Review

Peer review is a criteria-based process where proposals are evaluated based on their scientific and technical merit. This review is performed by external scientific peer review contractors. Proposals are evaluated by scientific discipline, specialty area, or award mechanism by both scientific and consumer peer reviewers. A two-part scoring procedure is used. Proposals are assigned an overall score as well as individual evaluation criteria scores. In FY09, 126 peer review panels were convened.

Programmatic Review

After proposals have been scientifically peer reviewed, they are programmatically

reviewed by members of the program's IP. Programmatic review is a comparison-based process in which submissions from multiple research areas compete in a common pool. Programmatic review balances the potential outcomes and risks of scientifically meritorious applications. A typical set of criteria used by members of the IP to make funding recommendations includes: ratings and evaluations by the scientific and consumer peer reviewers, programmatic relevance, relative innovation, program portfolio balance, research targeting special populations, and adherence to the intent of the award mechanism. A total of 15 programmatic review meetings were held in FY09.

Approval of the Commanding General

Scientifically sound proposals that most effectively address the unique focus and goals of each program are recommended to the Commanding General, USAMRMC, for funding. For the DRMRP, approval was obtained by the Deputy Assistant Secretary of Defense for Force Health Protection and Readiness. Upon approval, electronic notification letters are sent to program applicants to inform them of their funding status.

In rare instances (less than 1 percent), applicants may voice objections regarding the scientific peer review or programmatic review of their proposals. The CDMRP established an Inquiry Review Panel (IRP) to address applicant queries. These appeals must be based on the occurrence of factual or procedural errors that occur at receipt, peer review, or programmatic review.

Award Management

CDMRP awards are made in the form of grants, contracts, or cooperative agreements. With 8,996 awards made with funding through FY08 and approximately 600 to 700 new awards being processed each year, the negotiation and management of these grants, contracts, and/or cooperative agreements are a major focus of the CDMRP. Award management is throughout the life of the award beginning with the recommendation for funding through closeout of the award. To ensure success, award management encompasses a partnership between the CDMRP, the U.S. Army Medical Research Acquisition Activity (USAMRAA), the Office of Research Protections (ORP), and the Office of Surety, Safety and Environment.

Following award notification, the USAMRAA initiates negotiations with the performing institute. Formalized analysis of the budget with respect to the scope of work to be done is performed through detailed discussions among the CDMRP, the USAMRAA, the institute, and the researchers to ensure cost sharing when possible and avoidance of overlap in research funding with other funding agencies. In addition, the CDMRP facilitates regulatory review of each research project. The ORP manages and provides oversight on the human subjects' protection review, and animal welfare review for all CDMRP-funded research. Once all aspects of negotiation are completed, an assistance agreement is awarded by the USAMRAA.

The life-cycle management of awards continues throughout the period of performance with monitoring of the technical progress, financial reporting, and regulatory review. Awards are assigned a Grants Manager ensuring a broad knowledge of each grant, communication among all parties involved, and the most comprehensive assistance possible to the Principal Investigator (PI). All PIs are required to submit annual and/or quarterly progress reports that are reviewed to provide fiscal, technical, and regulatory feedback to investigators. The progress of large grants and consortia is monitored through external advisory boards, site visits, and other meetings throughout the entire period of performance.

To assist with award management, in FY02, the CDMRP developed a state-of-the-art database called the Electronic Grants System (EGS) to enable real-time electronic management of CDMRP proposals from proposal receipt to award closeout. EGS is



an internal, customized, and integrated business system that securely allows each partner to input data, download reports, and manage daily administrative tasks associated with grants. The implementation of EGS has allowed the CDMRP to virtually eliminate the paper processing of grants, which not only saves time and money but also increases the accuracy of the life-cycle award management process.

Constant Evaluation of Our Programs and Processes

CDMRP programs are highly visible research programs that address health issues of high public priority. As such, a variety of stakeholders have a vested interest in these programs and their outcomes, including Congress, scientists, consumer advocates, and the military. To provide information to these stakeholders, the CDMRP maintains a program evaluation committee to ensure that it is finding and funding the best research to eradicate diseases. Two ongoing program evaluation initiatives are summarized in the following boxes.

Evaluation of CDMRP Research Outcomes

Since the inception of the CDMRP, the progress of every grant/contract has been monitored for the duration of the award. Funded investigators are required to submit annual and final progress reports that summarize their research efforts as well as the accomplishments of the project. All reports are technically and contractually reviewed. During each review, outcomes generated from the funded research are identified and classified according to a taxonomy system, developed by the program evaluation steering committee. This taxonomy system classifies each research outcome by type, tracks the phase(s) of development supported by CDMRP funding, and groups research outcomes into families. Each piece of the taxonomy system (i.e., type, phase of development, and family) is captured for each new research outcome and updated for each previously identified research outcome. As such, the taxonomy system not only identifies the outcomes of CDMRP-funded research but tracks its progress along the pipeline from initial discovery through clinical validation throughout the life of each award. Thus, some awards may have multiple outcomes and phases. The CDMRP's portfolio of research outcomes by type and phase is illustrated in Figures 4 and 5.

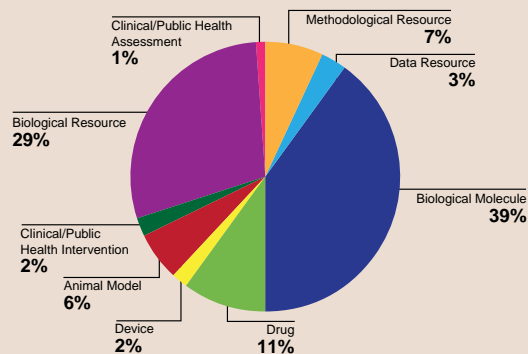


Figure 4. CDMRP Research Outcomes by Type

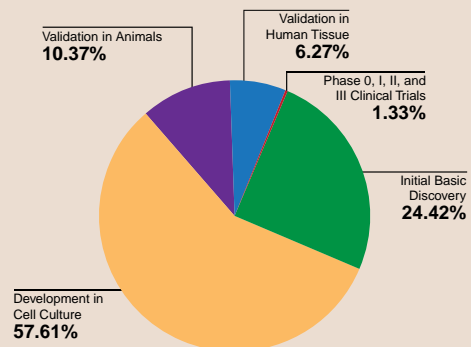


Figure 5. CDMRP Research Outcomes by Phase(s) of Development

The New Investigator Award Mechanism: Evaluating the Return on Investment

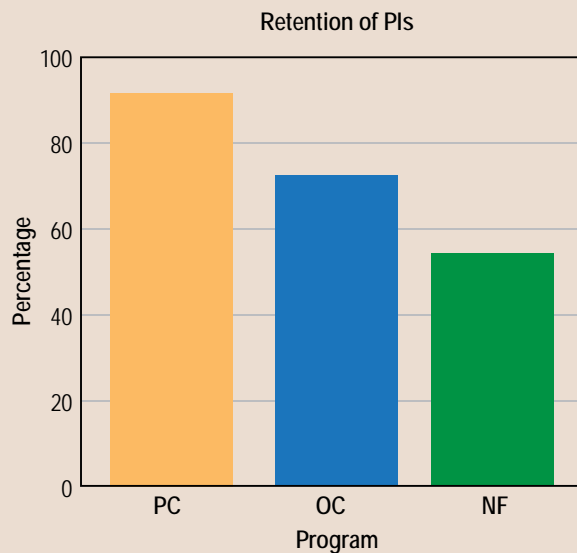
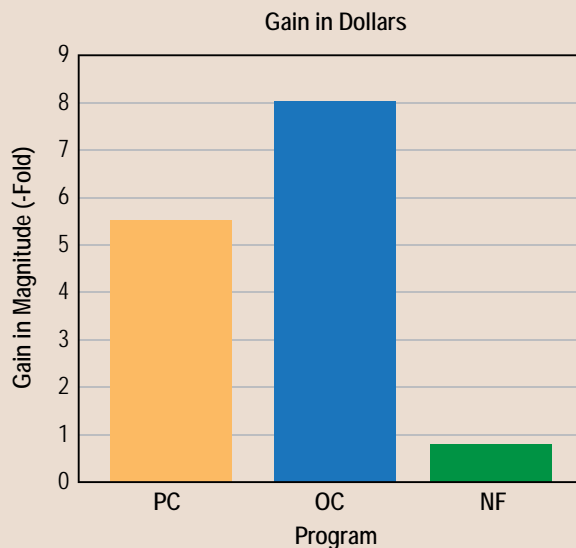
The CDMRP conducted a 5-year retrospective review to analyze the effectiveness of the New Investigator Award (NIA) mechanism in recruiting and retaining talented young investigators to the fields of prostate cancer, ovarian cancer, and neurofibromatosis research. Evidence of retention in the field included publishing research findings and/or obtaining additional funding for research in the field of interest. Data were obtained from the CDMRP's Research Outcomes Database (as described in the previous box story) and publicly accessible databases including PubMed and the NIH's CRISP. For the Prostate Cancer Research Program (PCRP), the sample population consisted of 45 funded investigators in 1999; for the Ovarian Cancer Research Program (OCRP), the population consisted of 25 funded investigators funded from 1998 to 2001; and for the Neurofibromatosis Research Program (NFRP), the population consisted of 17 funded investigators from 1999 to 2001.

For the PCRP, a 5-year follow-up of the 45 NIA recipients from 1999 revealed that 40 (89 percent) were still active in prostate cancer research. Thirty-six of the awardees received 94 new extramural grants, 45 of which were specifically in the field of prostate cancer. Thus, the initial \$14.3M invested by the PCRP in this award mechanism in 1999 resulted in a retention rate of 89 percent and a total of \$76.4M of additional funding in cancer research (\$61.7M) and other fields (\$13.7M).

Of the OCRP's 25 NIA recipients, 18 (72 percent) were still active in cancer research. These 25 awardees were successful in securing 46 new extramural grants totaling \$85.5M. This corresponds to an almost eightfold return on the original \$10.72M invested by the OCRP.

For the NFRP, 9 (53 percent) of the 17 NIA recipients were found to still be active in neurofibromatosis and related research. Fourteen new extramural grants were awarded to these NIA recipients during the 5-year follow-up period. The \$6.6M invested by the NFRP in this award mechanism from 1999 to 2001 resulted in \$5.7M of additional funding in neurofibromatosis and related research areas.

These results indicate that the CDMRP's NIA mechanism is an effective tool in attracting and retaining new investigators to the fields of prostate cancer, ovarian cancer, and neurofibromatosis research. And, as measured by the NIA recipients' ability to secure follow-on funding, the NIA is also effective in helping new investigators establish successful scientific careers.





Vital Partnerships

The CDMRP recognizes that scientific and administrative advances are not made in isolation. Rather, progress is achieved through connections or partnerships with individuals and organizations. The CDMRP is establishing and maintaining effective partnerships with consumer advocates, researchers, military, minority and underserved populations, other professional organizations, and policy makers to find and fund the best research to eradicate diseases and support the warfighter. Some of the most important partnerships within the CDMRP are highlighted on the following pages.



Consumer Advocates

The CDMRP developed an unprecedented model of consumer involvement in every aspect of program execution. Consumer advocates for the CDMRP are survivors or family members affected by the target disease, injury, or condition and representatives of consumer advocacy, support, or military organizations. The unique voices and experiences of survivors and their families continue to play a pivotal role in the establishment and growth of programs within the CDMRP. The value of consumer involvement is derived from each individual's firsthand experience with the disease, injury, or condition. This adds perspective, passion, and a sense of urgency that ensures the human dimension is incorporated in the program policy, investment strategy, and research focus. For instance, approximately 75 consumers have served as IP members from 1993 to the present while others have been active participants in executing research projects. Approximately 1,100 consumers have served on scientific peer review panels since 1995. Finally, consumers have had opportunities to learn about scientific advances by attending multidisciplinary meetings held by the CDMRP, such as the Breast Cancer Research Program's (BCRP's) Era of Hope meetings, the Military Health Research Forum, and the PCRPs Innovative Minds in Prostate Cancer Today meeting. For more information on consumer involvement and serving as a consumer reviewer in the first tier of review (peer review), see the consumer involvement pages on the CDMRP website (<http://cdmrp.army.mil>).

Breast Cancer Research Semipostal Program

As a result of the Stamp Out Breast Cancer Act (Public Law 105-41 [H.R. 1585]), the DOD BCRP is one of two designated recipients of revenues from sales of the U.S. Postal Service's Breast Cancer Research Semipostal (BCRS). The Stamp Out Breast Cancer Act resulted from the work of advocates for breast cancer research. This legislation led to the U.S. Postal Service's issuance of a new first-class breast cancer stamp, which costs 55¢, and can be purchased on a voluntary basis by the public. Net revenues from the stamp are used to support breast cancer research at the DOD CDMRP and the National Institutes of Health. Since the stamp was first offered for sale in 1998, the monies received by the DOD from the BCRS through FY08 have been used to fully fund 38 BCRP Idea Awards and partially fund 3 additional Idea Awards. Idea Awards have been an essential part of the BCRP portfolio and support highly innovative, high-risk, high-reward research that could lead to critical discoveries in breast cancer. In FY07, stamp funds began supporting Synergistic Idea Awards, which also foster innovative research through collaborative efforts. In 2007, BCRS revenues were able to fully fund 1 Synergistic Idea Award and partially fund 2 others. A list of all awards supported by the BCRS can be found in Appendix C.



The Scientific Community

The growth and magnitude of the CDMRP can be attributed in part to the organization's research funding and management environment, and the scientific community is instrumental in these processes. The fulfillment of program goals requires cooperation, communication, and integration across multiple scientific and clinical disciplines. To date, more than 7,200 scientists and clinicians have provided the necessary subject matter expertise on peer review panels. Approximately 375 world-renowned basic scientists, clinicians, and policy makers have participated in vision setting and programmatic review as IP members, and more than 250 scientists have served as ad hoc programmatic reviewers. More than 130 CDMRP scientists, clinicians, and professionals currently are involved in the day-to-day program execution and science management. Collectively, these scientists have assisted the CDMRP in funding nearly 7,000 researchers in an effort to tackle the complex causes of disease and translate this knowledge to improved disease prevention, patient survival, and quality of life.

Military Partnerships

Military partnerships are fundamental to the success of the CDMRP. The first example of a military partnership can be reflected in the day-to-day coordination and administration of the CDMRP. A dedicated team of individuals, including military personnel and civilian and contractor staff, is responsible for executing the congressional directives for targeted diseases and works together to implement each program's unique vision. Additionally, several past and current programs managed by the CDMRP have a unique military focus. For instance, in FY09, there are 6 individual research programs managed by the CDMRP that have direct application to the military sector. For these military relevant programs, the guiding body that determines programmatic priorities is composed of representatives from the branches of the military, including the Army, Air Force, Navy, Marine Corps, Department of Defense (Health Affairs), Department of Health and Human Services, and Department of Veterans Affairs. In addition, one of the current military relevant programs, the Psychological Health/Traumatic Brain Injury Research Program, partners with the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury to maximize opportunities for service members and their family members, veterans, and other beneficiaries needing help with psychological health and traumatic brain injuries. Moreover, within USAMRMC, the CDMRP partners with other research area directorates that focus on military infectious diseases, combat casualty care, military operational medicine, and clinical and rehabilitative medicine to ensure that congressional special interest programs meet the intent of Congress while ensuring the sponsorship of excellent science that has application to the military and/or civilian sectors. Finally, the CDMRP partners with the military to support the development of scientific and technically innovative products through the DOD Small Business Innovation Research and Small Business Technology Transfer (SBIR and STTR) programs. The DOD SBIR and STTR programs are congressionally mandated, government-wide programs that are designed to harness the innovative talents of U.S.

small businesses for our country's military and economic strength. These are technology- and product-driven programs intended to develop goods and services that the government can potentially use and the small business can continue to commercialize outside the SBIR and STTR programs. The CDMRP has been working with the SBIR program since FY00 and the STTR program since FY04 to fill gaps and leverage research and product development not supported elsewhere in the CDMRP portfolio.

Working with Minority and Underserved Populations

The CDMRP established the Minority and Underserved Populations Program in 1998, originally titled the Special Populations Program, to provide focus to CDMRP initiatives addressing minority and underserved populations. The primary goal of the program is to implement strategies that promote cultural competency throughout all deliberations and products of the CDMRP, including solicitation of proposals addressing health disparities relevant to research programs managed by the CDMRP, recruitment of scientists and consumer advocates representing minority and underserved populations, and working with other funding agencies toward portfolio coordination and minimization of duplication of funding efforts.

International Cancer Research Partners: One Voice, One Vision

In 2000, the CDMRP joined the National Cancer Institute and the National Cancer Research Institute of the United Kingdom to form the International Cancer Research (ICR) Partners in an effort to maximize the benefits of the global investment in cancer research. The mission of the ICR Partners is to enhance the impact of research to benefit all individuals affected by cancer through global collaboration and strategic coordination of research. Today, the ICR Partners include 52 cancer funding organizations from the United States, Canada, United Kingdom, and the Netherlands that have come together to classify their respective research portfolios using a common coding scheme (called the Common Scientific Outline). The most recent member to join was the Dutch Cancer Society. Other interested partner organizations are anticipated in 2010 and 2011 from France, Australia, and other European Union countries.

The ICR Partners are currently involved in discussions with other interested cancer research funding organizations in the United States, Europe, and elsewhere to join the partnership, making it even more globally strategic in its efforts.

Additional information about the ICR Partners and research supported by its members can be found at <http://www.cancerportfolio.org/>.



Current Research Programs

- **New Research Programs for 2009:**
[Food Allergies; Lung Cancer; Multiple Sclerosis; Peer Reviewed Cancer; Orthopaedic; Spinal Cord Injury](#)
- [Amyotrophic Lateral Sclerosis](#)
- [Autism](#)
- [Bone Marrow Failure](#)
- [Breast Cancer](#)
- [Deployment Related Medical](#)
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- [Tuberous Sclerosis Complex](#)

Funding Opportunities

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- [Program Announcement Archives](#)
- [Frequently Asked Questions](#)

Consumer Involvement

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- [Consumer Profiles](#)
- [Consumer Participation](#)
- [How Do I Apply?](#)
- [Tree of Facts](#)
- [States Consumer Reviewers Represent](#)
- [For Research Funders](#)
- [Frequently Asked Questions](#)

Search Awards

What's New

FY09 PRORP Funding News Release **NEW**

The PCRFP Recognizes Prostate Cancer Awareness Month

Obesity Increases Risk of Prostate Cancer Recurrence (external link)

Seeking Consumer Reviewers

Physician Trust, Early Screening Reduces Disparities for Prostate Cancer (external link)

FY09 Funding Opportunities:

- [Amyotrophic Lateral Sclerosis](#)
- [Bone Marrow Failure](#)

Promoting Public Awareness

The programs managed by the CDMRP are transparent to provide public awareness of how congressional funds are used and managed. The CDMRP has supported several efforts to educate the public and share the results from CDMRP-supported research highlighted as follows.

<http://cdmrp.army.mil>

The CDMRP website disseminates up-to-date program information to the public and the research community. In addition to facts and news about the CDMRP, individual research programs, funding opportunities, and award information, the CDMRP posts new and archived publications including press releases, annual reports, and research highlights on its website. These documents detail some of the exciting research and achievements being accomplished by CDMRP-funded investigators.

Research Highlights

Research highlights are written and posted on the CDMRP website (<http://cdmrp.army.mil>) to inform the public about innovative research being conducted by CDMRP-supported investigators. Research highlights are typically developed by each program to convey funded studies, the importance of the research to the field, progress to date, and future research directions and implications. The latest research highlights are posted on the home page of the CDMRP website and previous highlights are archived by program and year. Thirty-six new research highlights were posted this fiscal year.

Multidisciplinary Meetings

A number of programs managed by the CDMRP have sponsored multidisciplinary scientific meetings to facilitate dissemination of research accomplishments, communication, and the development of future partnerships. A few examples of CDMRP multidisciplinary meetings include the following.

Military Health Research Forum

The third Military Health Research Forum (MHRF), hosted by the Peer Reviewed Medical, Gulf War Illness, and Psychological Health and Traumatic Brain Injury Research Programs, was held August 31 – September 3, 2009 in Kansas City, Missouri. The agenda for this conference was designed to facilitate the interchange of research ideas, the development of new partnerships, and the translation of research findings into field-ready methods and products. The variety of research topics presented at the MHRF included a wide span of diseases and conditions relevant to members of the military and their families, the veteran population, and the American public. The meeting was attended by over 500 prominent academic and military scientists and clinicians, consumer advocates, and policymakers.

Era of Hope

The BCRP has sponsored five Era of Hope meetings that have been recognized as premier breast cancer conferences in the United States where a forum is provided for thousands of the nation's top scientists, clinicians, health care providers, and consumer advocates to communicate ideas and develop future collaborations in breast cancer research. The most recent Era of Hope meeting was held in Baltimore, Maryland in June 2008 and plans are under way to host another Era of Hope in the next few years.

IMPACT

The PCRCP hosted its first meeting in September 2007, during National Prostate Cancer Awareness Month, called "IMPACT: Innovative Minds in Prostate Cancer Today." The IMPACT meeting attracted approximately 850 attendees from all over the world, including scientists, clinicians, prostate cancer survivors, and advocates. The intent of the meeting was to promote the exchange of ideas and explore innovative avenues of research that will advance the prostate cancer field in a forum highlighting PCRCP-supported studies. All PCRCP awardees since the inception of the program were invited to submit abstracts, and more than 500 investigators representing all 10 years of the PCRCP submitted abstracts. The PCRCP is planning its next IMPACT meeting in early spring 2011 to recognize the program's achievements.



Program Announcement Outreach

The CDMRP makes every effort to alert the scientific research community when new program announcements are released. Dissemination strategies include:

- ◆ Alerting more than 800 research administrators of upcoming award opportunities
- ◆ Posting program announcements on Grants.gov and the CDMRP website
- ◆ Notifying websites that specialize in biomedical grant notification
- ◆ Notifying more than 60 professional associations, 225 Veterans Affairs facilities and military and medical research laboratories, 6 federal agencies, and more than 200 consumer advocacy organizations of upcoming funding opportunities
- ◆ Advertising in professional journals and on federal business websites
- ◆ Using targeted e-mails and advertising for specific award mechanisms and outreach
- ◆ Maintaining an e-mail distribution list of approximately 22,700
- ◆ Distributing electronic news items to more than 200 consumer advocacy groups
- ◆ Exhibiting the CDMRP display at national scientific meetings
- ◆ Providing research institutions with award details for news releases
- ◆ Presented CDMRP funding opportunities in cancer research at the American Association for Cancer Research 100th Annual Meeting 2009

Program Books

Program Books are designed to publicize individual CDMRP research programs managed by the CDMRP. Program Books are developed for each program to highlight that program's vision and mission, partnerships, and detailed highlights of notable research funded by that research program. Program Books are distributed at program-specific and national meetings and also can be downloaded from the website.

Interagency Collaborative Efforts

The CDMRP has teamed up with several federal agencies to promote cross-communication on military health-related research including traumatic brain injury (TBI), psychological health (PH), and Gulf War Illness (GWI), as follows.

- ◆ Member of the Federal Interagency Traumatic Brain Injury Research Working Group whose goal is to establish best practices and quality standards for research, clinical care, education, training, and prevention focused on TBI.
- ◆ Contributor to the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury Working Group to develop common data elements and consensus on definitions, metrics, and outcomes, related to PH and TBI research.
- ◆ Contributor to a congressional report compiled by the U.S. Department of Veterans Affairs on the status of federally funded research focused on GWI.
- ◆ Member of several workshops and conferences among federal agencies including the Defense and Veterans Brain Injury Center-hosted workshop, which focused on the psychological health of warriors and their families.



The Opportunities Before Us Today

The CDMRP has been given significant responsibility in managing congressional appropriations for targeted diseases and has taken this responsibility seriously. The CDMRP has recognized untapped opportunities to move science and medicine to new heights. These opportunities include investing in innovative research, a hallmark of its programs; funding established scientists and supporting the next generation of scientific minds; supporting clinical research to prevent, detect, diagnose, and treat cancer and other diseases; supporting the warfighter for the benefit of the nation; supporting research resources and large centers and consortia to provide the foundation of research; and partnering with the nation's finest people and organizations to find and fund the best research. The CDMRP remains committed to improving the nation's health. On the following pages are select accomplishments spanning CDMRP programs highlighted by year of award.

1993/1994

- Dr. Dennis Slamon discovers the biological effects of the anti-HER2/neu monoclonal antibody Herceptin®.
- Dr. Richard Peto initiates the ATLAS trial, the largest breast cancer treatment trial ever undertaken.
- Dr. Constantin Ioannides characterizes immunodominant epitopes in breast cancer, leading to the E75 peptide vaccine now entering Phase III clinical trials.
- Dr. David Goldgar and Dr. Susan Neuhausen discover the founder BRCA2 617delT mutation in Ashkenazi Jews.

1996

- Dr. Kevin Shannon develops mouse models of neurofibromatosis types 1 and 2.
- Dr. James Marks conducts research that contributes to the development of human single-chain Fv antibodies that can be internalized into tumor cells to deliver drugs; now in a Phase 1/2 clinical trial.

1998

- Dr. Eldon Jupe conducts studies leading to development of the Oncovue® breast cancer risk test.
- Dr. Sundaram Ramakrishnan develops Anginex, a potent anti-angiogenic peptide that shows efficacy against ovarian cancer.

1995

- Dr. Susan Love develops the ductal lavage technique for breast cancer detection.
- Dr. Mary Disis develops a HER2/neu peptide-based vaccine for breast cancer, now in a Phase II clinical trial.

1997

- Dr. David McConkey conducts early studies on PS-341 (Velcade®) in prostate cancer; now an approved treatment of multiple myeloma and advanced lymphoma.
- Dr. Bruce Korf and Dr. William Slattery begin natural history studies of neurofibromatosis types 1 and 2.
- Dr. Kathryn Verbanac conducts validation studies on sentinel lymph node biopsy, the current standard of care for breast cancer staging.
- Dr. Glenn Prestwich develops novel drugs, now in Phase III clinical trials, which target hyaluronic acid receptors on breast cancer cells.

1999

- Dr. Funmi Olopade examines how genetic risk factors contribute to the high incidence and mortality from breast cancer in young African American women.
- Dr. Richard Pietras develops a treatment for ovarian cancer with squalamine in combination with other anti-cancer agents/modalities. Squalamine is currently in Phase II clinical trials.
- Dr. Michele Pagano demonstrates Skp2 and p27 as breast cancer biomarkers correlating with poor survival; now a common test in pathology labs.
- Dr. Lawrence Lum develops HER2Bi-armed T cells to induce immunity to HER2 in breast cancer; now in a Phase I clinical trial.

2000

- Dr. Brad Nelson demonstrates that CD8+ T cell response to ovarian cancer results in tumor regression in 75% of cases without surgery or chemotherapy.
- Dr. Robert Abraham develops a high-quality reagent antibody against HIF-1alpha in prostate cancer, which has been used by dozens of cancer research laboratories and enabled identification of three potential cancer therapeutics.

2002

- Dr. Evan Keller demonstrates that the RANKL protein can be blocked to effectively diminish progression of prostate cancer growth in bone, contributing to the development of denosumab, now in 20 Phase III clinical trials.
- Dr. Mia MacCollin identifies the schwannomatosis locus in neurofibromatosis.
- Dr. Babs Soller develops a noninvasive sensor system to determine tissue perfusion and guide resuscitation.
- Dr. Laura Esserman leads a Breast Cancer Center of Excellence that initiates BreastCancerTrials.org, a public web service designed to help breast cancer patients find appropriate clinical trials.

2004

- Dr. Steven Kridel begins studies on prostate cancer cell death induced by fatty acid synthase (FAS) inhibition, and discovers the crystal structure of the bound FAS domain, enabling development of novel FAS inhibitors.
- Nobel Laureate Dr. Roger Tsien develops activatable cell-penetrating peptides to deliver imaging and therapeutic agents to breast cancer cells.
- Dr. Nimmi Ramanujam and Dr. Melissa Skala develop diffuse reflectance spectroscopy for use in optical imaging to better identify breast lesions; Phase I clinical trial is completed.
- Dr. Randolph McKinley and Dr. Martin Tornai develop Computed mammoTomography to overcome the limitations of conventional mammography.

2001

- Dr. Erkki Ruoslahti identifies peptides that specifically home to breast tumors and have the potential to deliver treatment to tumors with higher efficacy and reduced side effects.
- Dr. Santo Nicosia and Dr. Jin Cheng discover VQD-002, a compound now in Phase I clinical trials for ovarian cancer; selected as one of the Top 10 most promising oncology projects in development by Windhover Information.
- Dr. Zhou Wang studies enhancement of intermittent androgen ablation (IAA) therapy and shows that IAA combined with finasteride provides a robust antitumor response against prostate cancer.
- Dr. Jeffrey Mason develops a liposome polymerase chain reaction assay to detect cholera toxin beta subunit in human urine.
- Dr. Kai Thomenius develops components for an ultrasound imager suited to remote emergency medicine such as imaging associated with combat casualty care.

2003

- Dr. Lili Chen determines that using magnetic resonance imaging (MRI) for treatment planning of intensity-modulated radiation therapy for prostate cancer is as effective as standard CT imaging but has decreased duration, radiation exposure, and costs.
- Dr. Li Niu identifies aptamers that may aid in the cessation of glutamate-associated neurotoxicity linked to amyotrophic lateral sclerosis.
- Dr. Sara Sukumar leads a Breast Cancer Center of Excellence in a multi-institutional effort on metastatic breast cancer; initiates the rapid autopsy and tissue donation program, a unique research resource.
- Dr. Zhen Zhang and colleagues develop a panel of ovarian cancer predictive biomarkers, OVA1, now approved by the FDA for detection of ovarian cancer and determining surgical options.

2005

- Dr. Martin McIntosh discovers that the matrix metalloproteinase MMP7 is elevated in serum samples up to 3 years prior to diagnosis of ovarian cancer.
- Dr. George Coukos identifies 9 tumor vascular markers specific to ovarian cancer that can function as imaging or therapeutic targets; one therapeutic, MORab-004, is now in a Phase I clinical trial.
- The Prostate Cancer Clinical Trials Consortium is funded to bring institutions together to design and execute more rapid, efficient, precise, and cost-effective Phase I, I/II, and II clinical trials.
- Dr. Arul Chinnaiyan discovers that gene fusions (rarely seen in solid tumors) between TMPRSS2 and ERG or ETV1 play a widespread role in the development of prostate cancer.
- Dr. Sarah Blair develops a proximity camera for real-time intraoperative cancer cell detection at breast tumor margins during partial mastectomy; now in clinical trials.
- Dr. Patricia Steeg leads a multi-institutional Breast Cancer Center of Excellence to investigate the mechanisms of brain metastasis of breast cancer and to discover new therapeutics that will cross the blood-brain barrier.

2007

- Dr. Pervin Anklesaria conducts preclinical studies in advance of Phase I clinical trials for apocynin to treat ALS.
- Dr. Douglas McNeel conducts a Phase II trial to show that prostate tumor growth can be delayed by immunization with DNA encoding prostatic acid phosphatase.
- The Tuberous Sclerosis Research Resources Initiative is established to facilitate collaboration and information sharing.
- Dr. Murray Stein directs the Consortium, INTRuST, which is participating in clinical trials in PTSD/TBI to improve the overall quality of life for service members.
- Dr. Alan Peterson leads the STRONG STAR Consortium to develop effective early interventions for detection, prevention, and treatment of PTSD.
- Dr. Alex Valadka leads the Mission Connect Consortium's goal to reduce disabilities caused by mild TBI by improving diagnosis and treatment.
- Dr. Sherie Novotny conducts a clinical trial to investigate omega 3 fatty acids as a potential new therapy for autism.
- Dr. Alberto Ascherio, Dr. Susan Santagelo, and Dr. Marc Weisskopf investigate the potential role of both maternal dietary factors and environmental toxins in autism.

CDMRP

2006

- Dr. Carrie Hruska shows that molecular breast imaging has comparable sensitivity and specificity to MRI and may be a more cost-effective alternative.
- Dr. Julia Golier conducts a crossover clinical trial of mifepristone to improve physical health and cognitive function in veterans with Gulf War Illness.
- Dr. Beatrice Golomb conducts a clinical trial of coenzyme Q10 to ameliorate symptoms and improve quality of life for veterans with Gulf War Illness.
- Dr. Douglas Faller shows that T-oligonucleotides may be used as a potential therapeutic to induce apoptosis in ovarian cancer cells with no toxicity to normal cells.
- Dr. J. Rebecca Liu demonstrates that ovarian cancer cells are sensitive to glucose deprivation and resveratrol treatment and that resveratrol can inhibit the PI3K/Akt/Tor pathway in ovarian cancer cells.
- Dr. Patricia Kruk discovers elevated urinary levels of Bcl-2 in ovarian cancer patients; a device for ovarian cancer detection of ovarian cancer is now being developed.
- Dr. Nuori Neamati validates SC144, a small molecule inducer of IL24, to treat drug-sensitive and drug-resistant ovarian cancer.
- Dr. Bruce Korf and colleagues establish the Neurofibromatosis Clinical Trials Consortium.

2008

- Dr. Lisa Conboy conducts a clinical trial investigating the effectiveness of acupuncture in treating ill Gulf War veterans.
- Dr. Ronald Bach investigates the role of disseminated intravascular coagulation in Gulf War Illness symptomatology to identify therapeutic targets.
- Dr. Bruce Zuraw investigates enhanced airway sensitivity brought on by Gulf War exposures as a root cause of respiratory symptoms in Gulf War veterans.
- Dr. Andrew Feinberg and Dr. Walter Kaufmann explore the contribution of epigenetic abnormalities to the etiology of autism.
- Dr. Renata Pasqualini begins to develop a hybrid vector-based imaging technology to monitor disease progression and response to therapy in breast cancer patients.
- Dr. Matthew Robinson and Dr. Alan Johnson begin to develop an all-electronic system of prostate cancer detection in blood using antibody-functionalized carbon nanotubes.

Appendix A: FY92–FY08

Table A-1. Overview of Appropriations, Proposals Received, and Awards Made for FY92–FY08

Program	Fiscal Year	Appropriations Received (in millions)	Proposals Received	Proposals Funded
<i>Cancer Research Programs</i>				
Breast Cancer	1992–2008	\$2,229.8	38,156	5,511
Chronic Myelogenous Leukemia	2002–2006	\$22.1	252	61
Ovarian Cancer	1997–2008	\$121.7	2,023	187
Prostate Cancer	1997–2008	\$890.0	9,743	2,013
<i>Military Relevant Medical Research Programs</i>				
Amyotrophic Lateral Sclerosis	2007	\$5.0	21	3
Defense Women's Health	1995	\$40.0	559	69
Deployment Related Medical	2008	\$101.9	1,094	50
DOD/VA	1999–2000	\$6.8	88	9
Gulf War Illness	2006, 2008	\$15.0	63	21
Peer Reviewed Medical	1999–2006, 2008	\$394.5	3,179	282
Psychological Health/Traumatic Brain Injury	2007	\$301.0	2,110	201
<i>Other Disease-Specific Research Programs</i>				
Autism	2007–2008	\$13.9	391	35
Bone Marrow Failure	2008	\$1.0	21	1
Institutionally Based Programs	1995–2008	\$406.6	260	221
Myeloproliferative Disorders	2004	\$4.3	18	9
National Prion	2002	\$42.5	136	38
Neurofibromatosis	1996–2008	\$190.3	871	223
Osteoporosis	1995	\$5.0	105	5
Tuberous Sclerosis	2002–2006, 2008	\$17.5	228	57
Total		\$4,808.8	59,318	8,996

Appendix B: FY08–FY09

Table B-1. FY08–FY09 Breast Cancer Research Program Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs	Investment Strategy
2008	\$138M for the Peer-Reviewed Breast Cancer Research Program	Withholds^a SBIR: \$3,450,000 USAMRMC: \$3,364,000 Management Costs^b \$13,862,749 (10.4%)	Research Clinical Translational: \$300,000 Era of Hope Scholar: \$3,750,051 Idea: \$34,203,529 Impact: \$13,273,392 Innovator: \$7,014,069 Synergistic Idea: \$7,133,557 Collaborative Innovators: \$6,962,207 Concept: \$9,632,522 Era of Hope Scholar Research: \$8,951,988 Postdoctoral: \$15,247,859 Training/Recruitment Era of Hope Postdoctoral: \$956,222 HBCU/MI Partnership Training: \$2,581,662 Predoctoral Traineeships: \$8,165,028 Communication \$1,232,110
	\$2,080,945 in proceeds from the Stamp Out Breast Cancer Act		
	Total: \$140,080,945	Total: \$20,676,749	Total: \$119,404,196
2009	\$150M for the Peer-Reviewed Breast Cancer Research Program	Withholds^a USAMRMC: \$3,750,000 Budgeted Management Costs^b \$11,818,516 (8%)	Research Budgeted Peer-Reviewed Research: \$135,890,000
	\$1,458,516 in proceeds from the Stamp Out Breast Cancer Act		
	Total: \$151,458,516	Total: \$15,568,516	Total: \$135,890,000

^a The following abbreviations are used for withholds: SBIR, Small Business Innovation Research; USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation–withholds).

Table B-2. FY09 Lung Cancer Research Program Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs	Investment Strategy
2009	\$20M for the Peer-Reviewed Lung Cancer Research Program	Withholds^a USAMRMC: \$501,000 Budgeted Management Costs^b \$1,559,000 (8%)	Research Budgeted Peer-Reviewed Research: \$17,940,000
		Total: \$20M	Total: \$2,060,000

^a The following abbreviation is used for withholds: USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation–withholds).

Peer Reviewed Lung Cancer Research Program: The bill includes \$20,000,000 for lung cancer research. Lung cancer is the most lethal of all cancers taking more lives each year than all the other major cancers combined. Furthermore, the five-year survival rate for lung cancer remains 15 percent and a major challenge is that 70 percent of the diagnoses are late stage. Military personnel have heightened exposure to lung cancer carcinogens. These funds shall be for competitive research and the establishment of a tissue bank. Priority shall be given to the development of the integrated components to identify, treat and manage early curable lung cancer. The Army is expected to provide a plan for these funds and to include Walter Reed Army Medical Center in the formulation of this plan. The plan shall be submitted to the congressional defense committees 120 days after enactment of this Act.

Table B-3. FY08–FY09 Ovarian Cancer Research Program Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs	Investment Strategy
2008	\$10M for the Ovarian Cancer Research Program	Withholds^a SBIR: \$250,000 USAMRMC: \$244,000 Management Costs^b \$706,973 (7.4%)	Research Career Development Award, Phase 1 - Early Career Investigator: \$1,663,505 Career Development Award, Phase 1 - Postdoctoral Fellowship: \$909,599 Consortium Development: \$485,174 Idea Development: \$4,325,665 Translational Research Partnership: \$1,415,084
		Total: \$10M	Total: \$1,200,973
2009	\$20M for the Peer-Reviewed Ovarian Cancer Research Program	Withholds^a USAMRMC: \$500,000 Budgeted Management Costs^b \$1,550,000 (8.0%)	Research Budgeted Peer-Reviewed Research: \$17,950,000
		Total: \$20M	Total: \$2,050,000

^a The following abbreviations are used for withholds: SBIR, Small Business Innovation Research; USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation–withholds).

Table B-4. FY09 Peer Reviewed Cancer Research Program Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs	Investment Strategy
2009	\$16M for the Peer-Reviewed Cancer Research Program	Withholds ^a USAMRMC: \$400,000	Research Budgeted Peer-Reviewed Research: \$14,355,000
		Budgeted Management Costs ^b \$1,245,000 (8%)	
	Total: \$16M	Total: \$1,645,000	Total: \$14,355,000

^a The following abbreviation is used for withholds: USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation-withholds).

Peer-Reviewed Cancer Research Program: The bill provides \$16,000,000 for a peer-reviewed cancer research program that would research cancers not addressed in the breast, prostate, and ovarian cancer research programs currently executed by the Department of Defense, and specifically the U.S. Army Medical Research and Materiel Command (USAMRMC). The funds provided are directed to be used to conduct research in the following areas: \$4,000,000 for research of melanoma and other skin cancers as related to deployments of servicemembers to areas of high exposure; \$2,000,000 for research of pediatric brain tumors within the field of childhood cancer research; \$8,000,000 for genetic cancer research and its relation to exposure to the various environments that are unique to a military lifestyle; and \$2,000,000 for non-invasive cancer ablation research into non-invasive cancer treatment including selective targeting with nano-particles. The funds provided under the Peer-Reviewed Cancer Research Program shall be used only for the purposes listed above. The Department of Defense is directed to provide a report by March 16, 2009, to the congressional defense committees on the status of this new Peer-Reviewed Cancer Research Program as to the relevance of this type of research for servicemembers and their families.

Table B-5. FY08–FY09 Prostate Cancer Research Program Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs	Investment Strategy
2008	\$80M for the Prostate Cancer Research Program	Withholds^a SBIR: \$2,000,000 USAMRMC: \$1,950,000 Management Costs^b \$5,542,160 (7.3%)	Research Clinical Consortium - Clinical Research Site: \$4,564,003 Clinical Consortium - Coordinating Center with Option for Clinical Research Site: \$2,122,391 Clinical Trial: \$2,608,869 Health Disparity - Early Career Investigator: \$690,760 Health Disparity - Established Investigator: \$2,911,713 Health Disparity - Transitioning Investigator: \$667,479 Health Disparity - Prostate Scholar: \$85,313 Idea Development: \$27,237,104 Laboratory Clinical Transition Stage 1: \$3,926,525 New Investigator: \$8,597,916 Synergistic Idea: \$5,443,380 Training/Recruitment Collaborative Undergraduate HBCU Student Summer Training Program: \$1,520,157 Health Disparity Training Award - Postdoctoral - Ph.D.: \$240,345 Health Disparity Training Award - Postdoctoral - M.D.: \$128,597 Physician Research Training: \$4,598,427 Prostate Cancer Training - Postdoctoral - Ph.D.: \$2,932,304 Prostate Cancer Training - Postdoctoral - Ph.D. and M.D./Ph.D.: \$2,032,557 Communication \$200,000
		Total: \$80M	Total: \$9,492,160
2009	\$80M for the Peer-Reviewed Prostate Cancer Research Program	Withholds^a USAMRMC: \$2,000,000 Budgeted Management Costs^b \$6,240,000 (8.0%)	Research Budgeted Peer- Reviewed Research: \$71,760,000
		Total: \$80M	Total: \$8,240,000

^a The following abbreviations are used for withholds: SBIR, Small Business Innovation Research; USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation–withholds).

Table B-6. FY09 Amyotrophic Lateral Sclerosis Research Program Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs	Investment Strategy
2009	\$5M for Amyotrophic Lateral Sclerosis	Withholds ^a USAMRMC: \$125,000	Research Budgeted Peer-Reviewed Research: \$4,485,000
		Budgeted Management Costs ^b \$390,000 (8.0%)	
Total: \$5M		Total: \$515,000	Total: \$4,485,000

^a The following abbreviation is used for withholds: USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation-withholds).

Table B-7. FY08 Deployment Related Medical Research Program Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs	Investment Strategy
2008	\$273.8M for Battle Casualty and Psychological Health Research	Management Costs ^a \$6,987,746 (7.0%)	Research ^b Blood Products-RAD2: \$4,780,376 Blood Safety-RAD2: \$5,636,779 Eye-CRM: \$5,749,170 Facial/Dental-CRM: \$492,604 Facial/Dental-RAD2: \$827,816 Injury Prevention-Blast: \$12,415,844 Injury Prevention-RAD2: \$215,665 Other Trauma-CRM: \$415,639 Other Trauma-RAD2: \$4,482,059 Psychological Health & Resilience-RAD3: \$31,726,584 Rehab-CRM: \$9,286,146 TBI-Mild-RAD3: \$5,027,313 TBI-Moderate/Severe-RAD2: \$2,530,611 Wound Infection & Healing-RAD1: \$900,417 Wound Infection & Healing-RAD2: \$9,522,005 Wound Infection Vaccines-RAD1: \$912,620
	Less Funds Managed by Others \$171,890,606		
Total (CDMRP): \$101,909,394		Total: \$6,987,746	Total: \$94,921,648

^a Percentage of management costs=management costs/(appropriation-withholds).

^b The following abbreviations are used for withholds: RAD, Research Area Directorate; CRM, Center for Regenerative Medicine.

Battle Casualty and Psychological Health Research: The recommendation includes an additional \$273,800,000 to address prevention, diagnosis, treatment, and mitigation of deployment-related injuries and psychological health concerns. These funds are targeted to accelerate ongoing programs and are for peer reviewed research into emergent approaches and technologies. These funds are directed towards the following research areas: final development of medical devices for use in theater (including portable suction machines and EKGs for theater hospitals); blood safety and blood products; burns (including tissue viability and fluid resuscitation); orthopedic and other trauma treatment and rehabilitation (including face, visual/ocular and nerve damage, dental, and auditory systems); suicide prevention and counseling (including reducing nurse stress and fatigue at military treatment facilities); traumatic brain injury and psychological health (including Post Traumatic Stress Disorder); injury prevention; wound infection and healing; treatment for severe cutaneous leishmaniasis; and wound infection vaccines. These funds shall be executed through the Army's Medical Research and Materiel Command. The Army is directed to work in conjunction with the Navy and the Air Force to augment all Department of Defense research efforts in these areas. The Department is directed to provide a report with a detailed plan for the use of these funds and timeline for execution by August 1, 2008.

Table B-8. FY08–FY09 Gulf War Illness Research Program Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs		Investment Strategy
2008	\$10M for Gulf War Illness Research Program	Withholds^a		Research Idea: \$614,135 Clinical Trial: \$2,079,374 Investigator-Initiated Research: \$5,819,458
		Section 8097:	\$16,000	
		Section 8104:	\$46,000	
		SBIR:	\$250,000	
		STTR:	\$29,000	
		USAMRMC:	\$241,000	
		Management Costs^b \$905,033 (9.6%)		
	Total: \$10M	Total: \$1,487,033		Total: \$8,512,967
2009	\$8M for Gulf War Illness Peer-Reviewed Research Program	Withholds^a		Research Budgeted Peer-Reviewed Research: \$6,950,000
		Section 8101:	\$22,000	
		Section 8026:	\$6,000	
		SBIR:	\$200,000	
		STTR:	\$24,000	
		USAMRMC:	\$192,000	
		Budgeted Management Costs^b \$606,000 (8%)		
	Total: \$8M	Total: \$1,050,000		Total: \$6,950,000

^a The following abbreviations are used for withholds: SBIR, Small Business Innovation Research; STTR, Small Business Technology Transfer; USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation–withholds).

Table B-9. FY09 Peer Reviewed Orthopaedic Research Program Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs		Investment Strategy
2009	\$61M for Peer-Reviewed Orthopedic Research	Withholds^a		Research Budgeted Peer-Reviewed Research: \$99,350,000
		SBIR:	\$1,275,000	
		USAMRMC:	\$2,768,000	
	\$51M for Orthopedic Research	Budgeted Management Costs^b \$8,607,000 (8%)		
	Total: \$112M	Total: \$12,650,000		Total: \$99,350,000

^a The following abbreviations are used for withholds: SBIR, Small Business Innovation Research; USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation–withholds).

Consolidated Security, Disaster Assistance, and Continuing Appropriation Act, 2009 provided \$61M for peer-reviewed orthopedic research.

Supplemental Appropriations Act, 2009 provided the following: **Peer Reviewed Orthopedic Research Program**: The conference agreement provides \$51,000,000 for orthopedic and other trauma research, treatment and rehabilitation including regenerative medicine. This funding will continue and expand the existing orthopedic trauma research program, amputee rehabilitation and reset research, and restoration of function. Serious limb trauma, vascular injuries, major limb tissue damage, and blood flow disruption contribute heavily to United States military casualties in Iraq and Afghanistan. The Department of Defense estimates indicate that nearly two thirds of injuries sustained in combat in Iraq and Afghanistan are musculoskeletal. Extremity injuries are the most prevalent injury, and amputations following battlefield injury now occur at twice the rate as in past wars. Understanding how to treat and facilitate rapid recovery from orthopedic injuries should be one of the top priorities in the Military Health System.

Table B-10. FY08–FY09 Peer Reviewed Medical Research Program Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs	Investment Strategy
2008	\$50M for the Peer Reviewed Medical Research Program	Withholds^a SBIR: \$1,250,000 USAMRMC: \$1,219,000 Management Costs^b \$4,027,416 (8.5%)	Research Alcoholism Research: \$695,593 Amyotrophic Lateral Sclerosis: \$918,000 Blood Cancer: \$8,586,123 Drug Abuse: \$1,221,709 Epilepsy Research: \$3,653,625 Eye and Vision Research: \$5,897,352 Inflammatory Bowel Disease: \$1,385,840 Integrated Tissue Hypoxia Research: \$1,041,856 Interstitial Cystitis: \$1,313,012 Kidney Cancer: \$721,819 Leishmaniasis: \$2,215,469 Lupus: \$1,363,500 Mesothelioma: \$1,363,465 Multiple Sclerosis: \$3,831,381 Nutrition and Health Promotion: \$3,777,742 Paget's Disease: \$1,142,507 Polycystic Kidney Disease: \$1,323,040 Pulmonary Hypertension: \$970,215 Tinnitus: \$1,940,086 Communication \$141,250
		Total: \$50M	Total: \$6,496,416
2009	\$50M for the Peer Reviewed Medical Research Program	Withholds^a USAMRMC: \$1,250,000 Budgeted Management Costs^b \$3,900,000 (8.0%)	Research Budgeted Peer-Reviewed Research: \$44,850,000
		Total: \$50M	Total: \$5,150,000

^a The following abbreviations are used for withholds: SBIR, Small Business Innovation Research; USAMRMC, U.S. Army Medical Research and Materiel Command

^b Percentage of management costs=management costs/(appropriation-withholds).

FY2008 Peer Reviewed Medical Research Program: The conferees agree to provide \$50,000,000 for the Peer Reviewed Medical Research Program, and recommend the following projects as candidates for study: amyotrophic lateral sclerosis; alcoholism research; blood cancer; drug abuse; epilepsy research; eye and vision research; integrated tissue hypoxia research; Interstitial Cystitis; inflammatory bowel diseases; leishmaniasis; Lupus; kidney cancer; mesothelioma; multiple sclerosis; nutrition and health promotion; Paget's disease; polycystic kidney disease; pulmonary hypertension; scleroderma; social work research; and tinnitus. The conferees reiterate that funds provided under the Peer Reviewed Medical Research Program shall be used only for the purposes listed above. The conferees direct the Department to provide a report by March 3, 2008, on the status of this Peer Reviewed Medical Research Program.

FY2009 Peer Reviewed Medical Research Program: The bill provides \$50,000,000 for a Peer-Reviewed Medical Research Program. The Secretary of Defense is directed, in conjunction with the Service Surgeons General, to select medical research projects of clear scientific merit and direct relevance to military health. Research areas considered under this funding are restricted to: Alcoholism, Autoimmune Diseases, Blood Cancer, Childhood Asthma, Drug Abuse, Epilepsy, Kidney Cancer, Listeria Vaccine for infectious disease and cancer, Lupus, Mesothelioma, Molecular Signatures in Tumors, Neuroblastoma, Osteoporosis and related bone disease, Paget's Disease, Pediatric Cancer, Polycystic Kidney Disease, Social Work Research, Tinnitus, and West Nile Virus Vaccine. Additional funding provided under the Peer-Reviewed Medical Research Program shall be devoted only to the purposes listed above.

Table B-11. FY09 Traumatic Brain Injury/Psychological Health Research Program Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs	Investment Strategy
2009	\$90M for Traumatic Brain Injury/ Psychological Health Research Less Funds Managed by Others \$33,216,514	Budgeted Management Costs^a \$3,290,376 (5.8%)	Research Budgeted Peer-Reviewed Research: \$53,493,110
	Total (CDMRP): \$56,783,486	Total: \$3,290,376	Total: \$53,493,110

^a Percentage of management costs=(management costs/(appropriation–withholds)).

Traumatic Brain Injury and Psychological Health: Traumatic brain injury (TBI) and psychological health issues have emerged as a significant cause of death to the war fighters in Iraq and Afghanistan. Whether mild, moderate or severe brain injury, the level of assessment and standard of care provided to the war fighter is in need of enhancement. Diagnosis, treatment, and rehabilitation must be at a level to ensure the best possible outcome. To this end, the bill includes \$300,000,000 above the budget request to address all levels of brain injury and psychological health issues that servicemembers and their families have experienced during the Global War of Terror. The Department is expected to request any additional resources for these requirements in the upcoming supplemental request for fiscal year 2009.

The Department continues to work diligently to establish a center of excellence to provide specialized treatment and rehabilitation for brain injured troops, but much more is needed and the Department is expected to continue to provide the necessary care and treatment to servicemembers and their families. The vast majority of disabled troops will ultimately return to their home communities, which may be far removed from specialized centers. Therefore, the identification of local services is crucial to an appropriate rehabilitation plan and the Department of Veterans Affairs and military centers should coordinate with civilian centers to guarantee that optimal treatments and assistance are available throughout the country.

The Department is aware of gaps within TBI and psychological treatment methods that need to be addressed. The Department is expected to continue working with the Department of Veterans Affairs, Department of Health and Human Services, academia and industry to focus on the research and treatment necessary to address the gaps that have been identified.

An area of particular interest is the provision of appropriate and accessible counseling to servicemembers and their families who live in locations that are not close to military treatment facilities, other Military Health System health facilities or TRICARE providers. Web-based delivery of counseling has significant potential to offer counseling to personnel who otherwise might not be able to access it. Therefore, the Department is directed to establish and use a web-based Clinical Mental Health Services Program as a way to deliver critical clinical mental health services to servicemembers and their families in rural areas. Further, the Department is directed to report to the congressional defense committees on how they have incorporated a web-based program within the Defense Center of Excellence (DCoE) and its entities by March 16, 2009.

Funding provided in the bill is also to be used for the development and operation of the DCoE and the various centers, programs and initiative that fall within its purview and resources to support the service medical departments as they continue to build and expand their TBI and psychological health capacity through initiatives and many supportive programs. Other initiatives, such as telehealth, clinical standards supporting TBI and psychological health, and training and education outreach should also be included.

Funding has also been provided to continue medical research and development on TBI and psychological health. The following research topics are recommended for consideration under this program: studies of mental health disorders and Post Traumatic Stress Disorder (PTSD) to include neuropsychiatric studies, biochemical mechanisms that underlie human emotional reactions to combat stress and resulting clinical disorders, metrics for mental health assessment and methods to evaluate and improve PTSD rehabilitation efforts; studies of Traumatic Brain Injury (TBI) including basic research on neural injury treatments, cell replacement and regrowth strategies, specific therapies to prevent and reverse spinal cord and other neuro-traumatic damage, pharmaceutical interventions to stimulate neural circuits, "activity-based" physical therapy, and extended rehabilitation focused on impairments in vision and cognitive functioning; clinical research of blast-related cell damage and the resulting effects on neurological response; 3D models of IED blast waves to develop equipment to mitigate injury to service members; a fully automated, self contained, disposable chip to diagnose TBI at the point of onset; DA-EEG assessment and MRI quantization to allow an accurate assessment of TBI; computational approaches to integrate global transcriptomics and proteomics information to identify the biological networks altered following TBI; studies of PTSD and/or TBI including basic research in neurorehabilitation, the integration of informatics, and advanced computational research to analyze brain tissue and activities, the use of advanced neuroimaging, behavioral and genetic information to develop biomarkers, diagnostics, and treatments for semi-acute and chronic injury stages. Funding provided for research and development shall incorporate all aspects of research in the areas of TBI and psychological health by conducting basic science and translational research for the purposes of understanding the etiology and developing preventive interventions and new treatments and evaluating the outcomes to arrive at best-practice solutions. This requirement includes incorporating training, combat theater operations, and post deployment evidence-based preventive and early intervention measures, practices, or procedures to reduce the likelihood that personnel in combat will develop PTSD or other stress-related conditions or sustain traumatic brain injuries.

Table B-12. FY09 Peer Reviewed Spinal Cord Research Program Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs	Investment Strategy
2009	\$35M for the Peer Reviewed Spinal Cord Research Program	Withholds^a USAMRMC: \$875,000	Research Budgeted Peer-Reviewed Research: \$31,395,000
		Budgeted Management Costs^b \$2,730,000 (8%)	
Total: \$35M		Total: \$3,605,000	Total: \$31,395,000

^a The following abbreviation is used for withholds: USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation-withholds).

FY2009 Peer Reviewed Spinal Cord Research Program: Spinal cord injuries are one of the many serious wounds resulting from conflicts in Iraq and Afghanistan that require many levels of research and treatment. Significant funding has been provided for research and treatment for neuro-traumatic wounds. However, given the complexity of these types of injuries and the steep learning curve with establishing effective treatment regimes, there is much more to be done. For the coming years, research into regenerating damaged spinal cords and improving rehabilitation therapies offers real promise for enhancing the long-term care of wounded soldiers. The bill provides \$35,000,000 to establish a competitive, peer-reviewed spinal cord injury research and treatment program. The Secretary of Defense is directed to submit a report to the congressional defense committees not later than 120 days after the enactment of this Act that describes the criteria to be used to determine how these funds are to be allocated.

Table B-13. FY08–FY09 Autism Spectrum Disorder Research Program Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs	Investment Strategy
2008	\$6.4M for Autism Research Program	Withholds^a SBIR: \$160,000 USAMRMC: \$156,000	Research Clinical Partnership: \$656,250 Concept: \$1,001,336 Idea Development: \$2,164,571 Synergistic Idea: \$1,745,646
		Management Costs^b \$516,197 (8.5%)	
Total: \$6.4M		Total: \$832,197	Total: \$5,567,803
2009	\$8M for Autism Research	Withholds^a USAMRMC: \$200,000	Research Budgeted Peer-Reviewed Research: \$7,175,000
		Budgeted Management Costs^b \$625,000 (8.0%)	
Total: \$8M		Total: \$825,000	Total: \$7,175,000

^a The following abbreviations are used for withholds: SBIR, Small Business Innovation Research; USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation-withholds).

Table B-14. FY08–FY09 Bone Marrow Failure Disorder Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs		Investment Strategy
2008	\$1M for Bone Marrow Failure Disorder Research Program	Withholds^a		Research Investigator Initiated: \$900,000
		SBIR:	\$25,000	
		USAMRMC:	\$24,000	
		Management Costs^b	\$51,000 (5.4%)	
	Total: \$1M	Total: \$100,000		Total: \$900,000
2009	\$5M for Bone Marrow Failure Research	Withholds^a		Research Budgeted Peer-Reviewed Research: \$4,485,000
		USAMRMC:	\$125,000	
		Budgeted Management Costs^b	\$390,000 (8%)	
	Total: \$5M	Total: \$515,000		Total: \$4,485,000

^a The following abbreviations are used for withholds: SBIR, Small Business Innovation Research; USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation-withholds).

Table B-15. FY09 Genetic Studies of Food Allergies Research Program Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs		Investment Strategy
2009	\$2.5M for Genetic Studies of Food Allergies	Withholds^a		Research Budgeted Peer-Reviewed Research: \$2,242,000
		USAMRMC:	\$63,000	
		Budgeted Management Costs^b	\$195,000 (8%)	
	Total: \$2.5M	Total: \$258,000		Total: \$2,242,000

^a The following abbreviation is used for withholds: USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation-withholds).

Table B-16. FY09 Multiple Sclerosis Research Program Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs		Investment Strategy
2009	\$5M for Multiple Sclerosis	Withholds^a		Research Budgeted Peer-Reviewed Research: \$4,485,000
		USAMRMC:	\$125,000	
		Budgeted Management Costs^b	\$390,000 (8%)	
	Total: \$5M	Total: \$515,000		Total: \$4,485,000

^a The following abbreviation is used for withholds: USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation-withholds).

Table B-17. FY08–FY09 Neurofibromatosis Research Program Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs	Investment Strategy
2008	\$8M for Neurofibromatosis Research Program	Withholds^a Section 8097: \$13,000 Section 8104: \$38,000 SBIR: \$199,000 STTR: \$24,000 USAMRMC: \$193,000 Management Costs^b \$608,994 (8.1%)	Research Clinical Trial: \$1,883,336 Exploration - Hypothesis Development: \$870,794 Investigator-Initiated Research: \$2,932,000 New Investigator: \$1,237,876
		Total: \$8M	Total: \$1,075,994
2009	\$10M for Neurofibromatosis Research	Withholds^a Section 8101: \$27,000 Section 8026: \$6,000 USAMRMC: \$249,000 Budgeted Management Costs^b \$768,000 (8.0%)	Research Budgeted Peer-Reviewed Research: \$8,950,000
		Total: \$10M	Total: \$1,050,000

^a The following abbreviations are used for withholds: SBIR, Small Business Innovation Research; STTR, Small Business Technology Transfer; USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation-withholds).

Table B-18. FY08–FY09 Tuberous Sclerosis Research Program Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs	Investment Strategy
2008	\$4M for Tuberous Sclerosis Complex Research Program	Withholds^a SBIR: \$100,000 USAMRMC: \$97,000 Management Costs^b \$303,133 (8%)	Research Career Transition: \$567,840 Concept: \$415,275 Idea Development: \$2,516,752
		Total: \$4M	Total: \$500,133
2009	\$6M for Tuberous Sclerosis Complex	Withholds^a USAMRMC: \$150,000 Budgeted Management Costs^b \$468,000 (8%)	Research Budgeted Peer-Reviewed Research: \$5,382,000
		Total: \$6M	Total: \$618,000

^a The following abbreviations are used for withholds: SBIR, Small Business Innovation Research; USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation-withholds).

Table B-19. FY08–FY09 Institutionally Based Research Programs Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy

Fiscal Year	Congressional Appropriation	Withholds and Management Costs		Investment Strategy
Amyotrophic Lateral Sclerosis Therapy Development for Gulf War Research				
2008	\$1.2M for Amyotrophic Lateral Sclerosis Therapy Development for Gulf War Research	Withholds^a Section 8097: \$2,000 Section 8104: \$5,000 SBIR: \$30,000 STTR: \$4,000 USAMRMC: \$29,000 Management Costs^b \$33,000 (2.9%)		Research ALS TDI: \$1,097,000
	Total: \$1.2M	Total: \$103,000		Total: \$1,097,000
Biological and Immunological Infectious Agent and Cancer Vaccine Research				
2009	\$.8M for Biological and Immunological Infectious Agent and Cancer Vaccine Research	Withholds^a Section 8101: \$2,000 Section 8026: \$1,000 USAMRMC: \$20,000 Budgeted Management Costs^b \$37,000 (5%)		Research Budgeted Peer-Reviewed Research: \$740,000
	Total: \$.8M	Total: \$60,000		Total: \$740,000
Cancer Prevention Through Remote Biological Sensing Research				
2008	\$1.6M for Cancer Prevention Through Remote Biological Sensing	Withholds^a Section 8097: \$3,000 Section 8104: \$7,000 SBIR: \$40,000 STTR: \$5,000 USAMRMC: \$39,000 Management Costs^b \$46,000 (3%)		Research New York, State University of, Stony Brook: \$1,460,000
	Total: \$1.6M	Total: \$140,000		Total: \$1,460,000
2009	\$1.6M for Cancer Prevention Through Remote Biological Sensing	Withholds^a Section 8101: \$4,000 Section 8026: \$1,000 USAMRMC: \$40,000 Budgeted Management Costs^b \$75,000 (5%)		Research Budgeted Peer-Reviewed Research: \$1,480,000
	Total: \$1.6M	Total: \$120,000		Total: \$1,480,000
Christian Sarkine Autism Treatment Center Research				
2008	\$2.0M for Christian Sarkine Autism Treatment Center Research	Withholds^a SBIR: \$68,000 USAMRMC: \$48,000 Management Costs^b \$97,039 (5.2%)		Research Riley Hospital for Children and Clarian Health Partners Inc.: \$1,786,961
	Total: \$2.0M	Total: \$213,039		Total: \$1,786,961

^a The following abbreviations are used for withholds: SBIR, Small Business Innovation Research; STTR, Small Business Technology Transfer; USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation–withholds).

Table B-19. FY08–FY09 Institutionally Based Research Programs Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy (cont.)

Fiscal Year	Congressional Appropriation	Withholds and Management Costs	Investment Strategy
COG/USOC Pediatric Cancer Center Research			
2008	\$1.6M for COG/USOC Pediatric Cancer Center Research	Withholds^a Section 8097: \$3,000 Section 8104: \$7,000 SBIR: \$40,000 STTR: \$5,000 USAMRMC: \$39,000 Management Costs^b \$46,367 (3.1%)	Research National Childhood Cancer Foundation: \$1,459,633
		Total: \$1.6M	Total: \$140,367
2009	\$1.6M for Oncology Group Pediatric Cancer Research	Withholds^a Section 8101: \$4,000 Section 8026: \$1,000 USAMRMC: \$40,000 Budgeted Management Costs^b \$75,000 (5%)	Research Budgeted Peer-Reviewed Research: \$1,480,000
		Total: \$1.6M	Total: \$120,000
Cold Spring Harbor Laboratory Cancer Genomics Center			
2008	\$3.2M for Cold Spring Harbor Laboratory Women's Cancer Genomics Center	Withholds^a Section 8097: \$6,000 Section 8104: \$13,000 SBIR: \$80,000 STTR: \$10,000 USAMRMC: \$77,000 Management Costs^b \$89,000 (3%)	Research Cold Spring Harbor Laboratory: \$2,925,000
		Total: \$3.2M	Total: \$275,000
2009	\$2.8M for Cold Spring Harbor Laboratory Women's Cancer Genomics Center	Withholds^a Section 8101: \$8,000 Section 8026: \$2,000 USAMRMC: \$69,000 Budgeted Management Costs^b \$136,000 (5%)	Research Budgeted Peer-Reviewed Research: \$2,585,000
		Total: \$2.8M	Total: \$215,000
Cooperative International Neuromuscular Research Group			
2008	\$5.2M for Cooperative International Neuromuscular Research Group	Withholds^a Section 8097: \$9,000 Section 8104: \$24,000 SBIR: \$130,000 STTR: \$15,000 USAMRMC: \$126,000 Management Costs^b \$146,009 (3%)	Research Children's Research Institute: \$4,749,991
		Total: \$5.2M	Total: \$450,009

^a The following abbreviations are used for withholds: SBIR, Small Business Innovation Research; STTR, Small Business Technology Transfer; USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation–withholds).

Table B-19. FY08–FY09 Institutionally Based Research Programs Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy (cont.)

Fiscal Year	Congressional Appropriation	Withholds and Management Costs	Investment Strategy
Duchenne Muscular Dystrophy Research			
2008	\$4.0M for Duchenne Muscular Dystrophy Research	Withholds^a SBIR: \$100,000 USAMRMC: \$97,000 Management Costs^b \$106,036 (2.8%)	Research Children's Hospital of Pittsburgh: \$1,850,000 Children's National Medical Center: \$1,846,964
		Total: \$4.0M	Total: \$303,036
2009	\$4.0M for Duchenne Muscular Dystrophy Research	Withholds^a USAMRMC: \$100,000 Budgeted Management Costs^b \$200,000 (5%)	Research Budgeted Peer-Reviewed Research: \$3,700,000
		Total: \$4.0M	Total: \$300,000
Gallo Prostate Cancer Research Program			
2008	\$2.4M for UMDNJ Cancer Initiative (Note: Includes continuation of the Gallo Prostate Cancer Center)	Withholds^a Section 8097: \$4,000 Section 8104: \$11,000 SBIR: \$60,000 STTR: \$7,000 USAMRMC: \$58,000 Management Costs^b \$70,000 (3.1%)	Research University of Medicine and Dentistry of New Jersey: \$2,190,000
		Total: \$2.4M	Total: \$210,000
2009	\$2.4M for UMDNJ Cancer Initiative	Withholds^a Section 8101: \$7,000 Section 8026: \$2,000 USAMRMC: \$60,000 Budgeted Management Costs^b \$116,000 (5%)	Research Budgeted Peer-Reviewed Research: \$2,215,000
		Total: \$2.4M	Total: \$185,000
Infectious and Inflammatory Disease Center at the Burnham Institute for Medical Research			
2009	\$2.4M for Infectious and Inflammatory Disease Center at the Burnham Institute for Medical Research	Withholds^a Section 8101: \$7,000 Section 8026: \$2,000 USAMRMC: \$59,000 Budgeted Management Costs^b \$117,000 (5%)	Research Budgeted Peer-Reviewed Research: \$2,215,000
	Total: \$2.4M	Total: \$185,000	Total: \$2,215,000

^a The following abbreviations are used for withholds: SBIR, Small Business Innovation Research; STTR, Small Business Technology Transfer; USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation-withholds).

Table B-19. FY08–FY09 Institutionally Based Research Programs Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy (cont.)

Fiscal Year	Congressional Appropriation	Withholds and Management Costs	Investment Strategy
Mary Bird Perkins Cancer Center			
2009	\$2.4M for Mary Bird Perkins Cancer Center	Withholds^a Section 8101: \$7,000 Section 8026: \$2,000 USAMRMC: \$59,000 Budgeted Management Costs^b \$117,000 (5%)	Research Budgeted Peer-Reviewed Research: \$2,215,000
	Total: \$2.4M	Total: \$185,000	Total: \$2,215,000
Molecular Switching Vaccine for Biodefense and Cancer Program Research			
2008	\$1.6M for Molecular Switching Vaccine for Biodefense and Cancer Program Research	Withholds^a Section 8097: \$3,000 Section 8104: \$7,000 SBIR: \$40,000 STTR: \$5,000 USAMRMC: \$39,000 Management Costs^b \$46,000 (3.1%)	Research Aduro Biotech: \$1,460,000
	Total: \$1.6M	Total: \$140,000	Total: \$1,460,000
Neutron/Hadron Particle Therapy and Proton Therapy Research			
2008	\$1.6M for Neutron/Hadron Particle Therapy \$2.4M for Proton Therapy	Withholds^a Section 8097: \$7,000 Section 8104: \$17,000 SBIR: \$100,000 STTR: \$13,000 USAMRMC: \$97,000 Management Costs^b \$116,000 (3.1%)	Research Northern Illinois University: \$3,650,000
	Total: \$4.0M	Total: \$350,000	Total: \$3,650,000
2009	\$1.2M for Neutron/Hadron Particle Therapy \$4.8M for Proton Therapy	Withholds^a Section 8101: \$3,000 Section 8026: \$1,000 USAMRMC: \$150,000 Budgeted Management Costs^b \$296,000 (5%)	Research Budgeted Peer-Reviewed Research: \$5,550,000
	Total: \$6.0M	Total: \$450,000	Total: \$5,550,000
Novel Approaches to Reduce Severity of Battlefield Combined Tissue Injury			
2009	\$1.6M for Novel Approaches to Reduce Severity of Battlefield Combined Tissue Injury	Withholds^a Section 8101: \$5,000 Section 8026: \$1,000 USAMRMC: \$39,000 Budgeted Management Costs^b \$75,000 (5%)	Research Budgeted Peer-Reviewed Research: \$1,480,000
	Total: \$1.6M	Total: \$120,000	Total: \$1,480,000

^a The following abbreviations are used for withholds: SBIR, Small Business Innovation Research; STTR, Small Business Technology Transfer; USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation–withholds).

Table B-19. FY08–FY09 Institutionally Based Research Programs Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy (cont.)

Fiscal Year	Congressional Appropriation	Withholds and Management Costs		Investment Strategy
Pediatric Brain Tumor and Neurological Disease Institute				
2008	\$1.6M for Pediatric Brain Tumor and Neurological Disease Institute	Withholds^a Section 8097: \$3,000 Section 8104: \$8,000 SBIR: \$40,000 STTR: \$5,000 USAMRMC: \$39,000 Management Costs^b \$70,493 (4.7%)	Research Miami Children's Hospital: \$1,434,507	
	Total: \$1.6M	Total: \$165,493		Total: \$1,434,507
Prader-Willi Syndrome				
2008	\$1.5M for Prader-Willi Syndrome (PWS) Research	Withholds^a Section 8097: \$2,000 Section 8104: \$7,000 SBIR: \$38,000 STTR: \$4,000 USAMRMC: \$36,000 Management Costs^b \$49,690 (3.5%)	Research California State University, Fullerton: \$1,363,310	
	Total: \$1.5M	Total: \$136,690		Total: \$1,363,310
2009	\$1.6M for Prader-Willi Syndrome (PWS) Research	Withholds^a Section 8101: \$5,000 Section 8026: \$1,000 USAMRMC: \$39,000 Budgeted Management Costs^b \$75,000 (5%)	Research Budgeted Peer-Reviewed Research: \$1,480,000	
	Total: \$1.6M	Total: \$120,000		Total: \$1,480,000
Prevention of Radiation Through the Use of Statins Research				
2008	\$1.6M for Prevention of Radiation Injury Through the Use of Statins Research	Withholds^a Section 8097: \$3,000 Section 8104: \$8,000 SBIR: \$40,000 STTR: \$4,000 USAMRMC: \$39,000 Management Costs^b \$46,000 (3%)	Research Nevada Cancer Institute: \$1,460,000	
	Total: \$1.6M	Total: \$140,000		Total: \$1,460,000

^a The following abbreviations are used for withholds: SBIR, Small Business Innovation Research; STTR, Small Business Technology Transfer; USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation-withholds).

Table B-19. FY08–FY09 Institutionally Based Research Programs Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy (cont.)

Fiscal Year	Congressional Appropriation	Withholds and Management Costs	Investment Strategy
Preventive Medicine Research Institute			
2008	\$2.0M for Impact of Intensive Lifestyle Modification on Chronic Medical Conditions	Withholds^a Section 8097: \$4,000 Section 8104: \$8,000 SBIR: \$50,000 STTR: \$6,000 USAMRMC: \$48,000 Management Costs^b \$60,902 (3.2%)	Research Preventive Medicine Research Institute: \$1,823,098
		Total: \$2.0M	Total: \$176,902
2009	\$1.75M for Expanding Access to Proven Lifestyle Modification Treatments Focused on Preventing and Reversing Chronic Diseases	Withholds^a Section 8101: \$5,000 Section 8026: \$1,000 USAMRMC: \$44,000 Budgeted Management Costs^b \$85,000 (5%)	Research Budgeted Peer-Reviewed Research: \$1,615,000
		Total: \$1.75M	Total: \$135,000
Prostate and Ovarian Cancer Biomarkers Research			
2009	\$1.2M for Prostate and Ovarian Cancer Biomarkers Research	Withholds^a Section 8101: \$3,000 Section 8026: \$2,000 USAMRMC: \$29,000 Budgeted Management Costs^b \$56,000 (5%)	Research Budgeted Peer-Reviewed Research: \$1,110,000
		Total: \$1.2M	Total: \$90,000
Respiratory Biodefense Initiative Research			
2008	\$1.6M for Respiratory Biodefense Initiative Research	Withholds^a Section 8097: \$3,000 Section 8104: \$7,000 SBIR: \$40,000 STTR: \$5,000 USAMRMC: \$39,000 Management Costs^b \$46,000 (3%)	Research National Jewish Medical and Research Center: \$1,460,000
		Total: \$1.6M	Total: \$140,000
2009	\$1.6M for Respiratory Biodefense Initiative Research	Withholds^a Section 8101: \$4,000 Section 8026: \$1,000 USAMRMC: \$40,000 Budgeted Management Costs^b \$75,000 (5%)	Research Budgeted Peer-Reviewed Research: \$1,480,000
		Total: \$1.6M	Total: \$120,000

^a The following abbreviations are used for withholds: SBIR, Small Business Innovation Research; STTR, Small Business Technology Transfer; USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation–withholds).

Table B-19. FY08–FY09 Institutionally Based Research Programs Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy (cont.)

Fiscal Year	Congressional Appropriation	Withholds and Management Costs		Investment Strategy
Spinal Muscular Atrophy Research Program				
2008	\$3.2M for Spinal Muscular Atrophy Research Program	Withholds^a		Research Columbia University: \$2,925,000
		Section 8097:	\$6,000	
		Section 8104:	\$13,000	
		SBIR:	\$80,000	
		STTR:	\$10,000	
		USAMRMC:	\$77,000	
		Management Costs^b		
		\$89,000 (3%)		
	Total: \$3.2M	Total: \$275,000		Total: \$2,925,000
2009	\$3.2M for Spinal Muscular Atrophy (SMA) Research Program	Withholds^a		Research Budgeted Peer-Reviewed Research: \$2,950,000
		Section 8101:	\$9,000	
		Section 8026:	\$3,000	
		USAMRMC:	\$79,000	
		Budgeted Management Costs^b		
		\$159,000 (5%)		
	Total: \$3.2M	Total: \$250,000		Total: \$2,950,000
Targeted Radiation Therapy				
2008	\$1.0M for Targeted Radiation Therapy for Cancer Initiative	Withholds^a		Research Geneva Foundation: \$890,473
		Section 8097:	\$2,000	
		Section 8104:	\$4,000	
		SBIR:	\$25,000	
		STTR:	\$3,000	
		USAMRMC:	\$24,000	
		Management Costs^b		
		\$51,527 (5.5%)		
	Total: \$1.0M	Total: \$109,527		Total: \$890,473
Veterinary Manpower for Defense				
2008	\$5M for Veterinary Manpower for Defense	Withholds^a		Research Tufts University: \$457,000
		Section 8097:	\$1,000	
		Section 8104:	\$2,000	
		SBIR:	\$12,000	
		STTR:	\$2,000	
		USAMRMC:	\$12,000	
		Management Costs^b		
		\$14,000 (3%)		
	Total: \$5M	Total: \$43,000		Total: \$457,000

^a The following abbreviations are used for withholds: SBIR, Small Business Innovation Research; STTR, Small Business Technology Transfer; USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation-withholds).

Table B-19. FY08–FY09 Institutionally Based Research Programs Congressional Language and Appropriations, Withholds and Management Costs, and Execution of Investment Strategy (cont.)

Fiscal Year	Congressional Appropriation	Withholds and Management Costs	Investment Strategy
Warfighter Cancer Care Engineering			
2008	\$1.2M for Warfighter Cancer Care Engineering	Withholds^a	Research
		Section 8097: \$2,000 Section 8104: \$5,000 SBIR: \$30,000 STTR: \$4,000 USAMRMC: \$29,000 Management Costs^b \$45,000 (4%)	Indiana University: \$1,085,000
	Total: \$1.2M	Total: \$115,000	Total: \$1,085,000
2009	\$2.4M for Warfighter Cancer Care Engineering	Withholds^a	Research
		Section 8101: \$7,000 Section 8026: \$2,000 USAMRMC: \$59,000 Budgeted Management Costs^b \$117,000 (5%)	Budgeted Peer-Reviewed Research: \$2,215,000
	Total: \$2.4M	Total: \$185,000	Total: \$2,215,000

^a The following abbreviations are used for withholds: SBIR, Small Business Innovation Research; STTR, Small Business Technology Transfer; USAMRMC, U.S. Army Medical Research and Materiel Command.

^b Percentage of management costs=management costs/(appropriation-withholds).

Appendix C: BCRS Research Funded Awards¹

Fiscal Year	Principal Investigator	Amount	Institution	Proposal Title	Outcomes
FY99	Daly	\$283,649	Garvan Institute	Identification of Novel Prognostic Indicators for Breast Cancer Through Analysis of the EMS1/ Cortactin Signaling Pathway	A cortactin/CD2-associated protein (CD2AP) complex provides a novel link between epidermal growth factor receptor endocytosis and the actin cytoskeleton – 1 publication, 3 patents, 6 presentations, and 3 employment opportunities
	Deuel	\$5,000 ²	Scripps Institute	Novel Angiogenic Domains: Use in Identifying Unique Transforming and Tumor-Promoting Pathways in Human Breast Cancer	Functional analysis of midkine, regulator of the renin-angiotensin pathway – 3 publications, 1 patent, 6 grants awarded, and 4 animal models
	Heyer	\$111,444	University of California, Davis	In Vitro Recombination Activities of the Breast Cancer Predisposition Protein BRCA2	Studied the interaction of BRCA2 in complex with other proteins to understand the fundamentals of this protein
	Musgrove	\$222,652	Garvan Institute	Role of Cyclin D1 and p27 in Steroidal Control of Cell Cycle Progression in the Mammary Gland in Vivo	Discovered that the CDK inhibitor p27 (Kip1) regulates both DNA synthesis and apoptosis in mammary epithelium – 1 publication and 6 presentations
	Shah	\$279,000	University of Arkansas	Role of a Novel Matrix-Degrading Metalloproteinase in Breast Cancer Invasion	Discovered that meprin-like metalloproteinase is a possible participant in breast tumor development – 2 presentations
	Wang	\$317,510	Texas A&M University	Scanning Microwave-Induced Acoustic Tomography	Engineered thermoacoustic tomography for the detection of breast cancer – 14 publications, 29 presentations, 3 degrees obtained, and 1 employment opportunity
	White	\$334,094	University of Texas Southwest Medical Center	Isolation of Factors That Disrupt Critical Protein/Protein Interactions Within the Telomerase Holoenzyme for Use in Breast Cancer Therapeutics	Studied the protein/protein interactions of telomerase in breast cancer and its consequences in therapy
	Wreschner	\$225,000	Tel Aviv University	Analysis of the Secreted Novel Breast Cancer-Associated MUC1/Zs Cytokine	Studied a novel protein derived from MUC1 by alternative splicing and frameshifting – 2 publications

¹ Table has been updated to include new outcomes for the 2009 publication.

² Award was only partially funded by breast cancer stamp funds; total funding amount for award was \$404,176. The DOD BCRP supplied the majority of the funds for the award.

Fiscal Year	Principal Investigator	Amount	Institution	Proposal Title	Outcomes
FY00	Adamson	\$578,183	Burnham Institute	Cripto: A Target for Breast Cancer Treatment	Found that Cripto promotes cardiomyogenesis – 3 publications and 1 biological molecule
	Akporiaye	\$454,500	University of Arizona	Tumor-Mediated Suppression of Dendritic Cell Vaccines	Discovered that alpha-tocopheryl succinate sensitizes tumors to vaccination – 4 publications, 1 patent, 7 presentations, and 1 grant awarded
	Penn	\$296,142	University of Toronto	Exploiting the Novel Repressed Transactivator Assay to Identify Protein Interactors and Peptide Inhibitors of the Myc Oncoprotein	Identified genes regulated by Myc – 2 publications and 1 presentation
FY01	Cai	\$560,144	Vanderbilt University	Genetic Polymorphisms, Mitochondrial DNA Damage, and Breast Cancer Risk	Studied genetic polymorphism in MnSOD gene, antioxidant intake, and breast cancer risk – 2 publications and 4 presentations
	Carraway	\$427,225	University of California, Davis	Identification of a Functional Human Homolog of Drosophila Kek1, an Inhibitor of Breast Tumor Cell Growth	Studied the negative regulation of ErbB family receptor tyrosine kinase – 2 publications
	Chaudhary	\$312,434	University of Texas Southwest Medical Center	The Role of Ectodysplasin A (EDA) and Its Receptors in the Pathogenesis of Breast Cancer	Examined the role of TRAF3 and TRAF6 in the activation of the NF-kappa B and JNK pathways by X-linked ectodermal dysplasia receptor – 5 publications
	Geahlen	\$425,425	Purdue University	Characterization of Syk in Breast Carcinoma Cells	Characterized peptide-protein interactions and designed phosphotyrosine peptidomimetic prodrugs – 2 publications, 4 presentations, 1 grant awarded, and 1 degree obtained
	Rosner	\$454,181	St. Luke's-Roosevelt Hospital Center	Autocrine and Paracrine Control of Breast Cancer Growth by Sex Hormone-Binding Globulin	Found human sex hormone-binding globulin (Shbg) gene expression: Utilization of multiple promoters and complex alternative splicing of transcripts – 4 presentations
FY02	Dou	\$491,999	University of South Florida	Synthetic Beta-Lactam Antibiotics as a Selective Breast Cancer Cell Apoptosis Inducer: Significance in Breast Cancer Prevention and Treatment	Discovered N-thiolated beta-lactam antibiotics selectively induce apoptosis in human tumor and transformed, but not normal or nontransformed, cells – 8 publications, 23 presentations, 6 grants awarded, and 5 degrees obtained
	Godwin	\$504,000	Fox Chase Cancer Center	The Nuclear Death Domain Protein p84N5, a Candidate Breast Cancer Susceptibility Gene	Studied methods to overcome breast cancer radiation resistance – 4 publications, 5 presentations, and 1 biological molecule
	Perkins	\$490,500	Yale University	Rapid Genomic Approach to Cancer Gene Discovery in Breast Cancer	Developed models to study breast cancer and studied genes involved in breast cancer development – 2 employment opportunities, 1 animal model, and 1 biological molecule

Fiscal Year	Principal Investigator	Amount	Institution	Proposal Title	Outcomes
FY03	Chung	\$490,447	Yale University	Quantitative in Situ Assessment of the Somatostatin Receptor in Breast Cancer to Assess Response to Targeted Therapy with 111-in-Pentetreotide	Studied the expression of somatostatin receptor-2 in a breast cancer tissue by microarray analysis – 3 publications and 2 presentations
	Kaaks	\$367,639	International Agency for Cancer Research	Fatty Acid Synthesis Gene Variants and Breast Cancer Risk: A Study Within the European Prospective Investigation into Cancer and Nutrition (EPIC)	Haplotype-based analysis of common variation in the acetyl-coA carboxylase alpha gene and breast cancer risk – 2 publications
	Yaswen	\$508,790	Lawrence Berkeley National Laboratory	Functional Analysis of BORIS, a Novel DNA-Binding Protein	Examined the function of BORIS through the use of cultured mammary epithelial cells – 2 presentations
	Ziv	\$767,171	University of California, San Francisco	Admixture and Breast Cancer Risk Among Latinas	Studied breast cancer risk factors and genetic ancestry among Latinas – 3 publications, 2 presentations, and 2 grants awarded
FY04	Bissell	\$386,569	Lawrence Berkeley National Laboratory	Use of HA-Metal Nanoparticles to Identify and Characterize Tumorigenic Progenitor Cell Subsets in Breast Tumors	Pharmacokinetics and pharmacodynamics of nanoparticles in human volunteers – 5 publications, 2 patents, and 3 grants awarded
	Clarke	\$588,738	Northern California Cancer Center	The Hygiene Hypothesis and Breast Cancer: A Novel Application of an Etiologic Theory for Allergies, Asthma, and Other Immune Disorders	Epidemiological study under way – examination of the hygiene hypothesis – 1 presentation
	Giorgio	\$453,000	Vanderbilt University	Surface Functionalized Nanoparticles and Nanocrystals for Proximity-Modulated, Early Neoplasia Detection, Imaging, and Treatment of Breast Cancer	Production of multivalent enzyme-nanoparticle conjugates – 3 publications, 8 presentations, and 1 degree obtained
	Lemmon	\$475,500	University of Pennsylvania	Harnessing Novel Secreted Inhibitors of EGF Receptor Signaling for Breast Cancer Treatment	Studied the structural basis for EGFR ligand sequestration by Argos – 2 publications, 1 patent, 14 presentations, 1 grant awarded, and 1 degree obtained
FY05	Zinn ³	\$436,500	University of Alabama at Birmingham	Novel Screening and Precise Localization of Early Stage Breast Cancer in Animal Model	Studied breast cancer metastasis to bone by evaluating bioluminescent imaging and microSPECT/CT in immunodeficient mice – 2 publications and 9 presentations
	Huang	\$483,600	Cornell University, Weill Medical College	Migrastatin Analogues as Potent Inhibitors of Breast Cancer Metastasis	Generated migrastatin analogues to study in breast cancer metastasis models
	Liu	\$448,500	Ohio State University	Hunting for Novel X-Linked Breast Cancer Suppressor Genes in Mouse and Human	Analysis of ErbB2 in a Foxp3 murine model – 1 publication
	Rao	\$468,000	Stanford University	Ribozyme-Mediated Imaging of Oncogene Expression in Breast Tumor Cells	Developed tools to visualize RNA splicing in vivo – 3 publications, 4 presentations, 1 grant awarded, and 1 poster award

³ The original Principal Investigator, Dr. Tandra Chaudhuri, is deceased.

Fiscal Year	Principal Investigator	Amount	Institution	Proposal Title	Outcomes
FY06	Devi	\$155,085 ⁴	Duke University Medical Center	Modulation of Regulatory T Cells as a Novel Adjuvant for Breast Cancer Immunotherapy	Targeted FOXP3 using phosphorodiamidate morpholino oligomers to develop a novel adjuvant for breast cancer immunotherapy – 2 publications and 1 presentation
	Lee	\$489,000	University of Southern California	A New Mechanism for Estrogen-Starvation Resistance in Breast Cancer	Study under way to look at GRP78, a stress-induced protein, and estrogen starvation
	Li	\$438,455	Baylor College of Medicine	The ER/PR Status of the Originating Cell of ER-Negative Breast Cancer	Developing models to study receptor status in the murine model – 2 presentations
	Mousa	\$377,620	Albany College of Pharmacy	Enhancing the Efficacy of Chemotherapeutic Breast Cancer Treatment with Non-Anticoagulant Heparins	Study under way on site-directed delivery of chemotherapy and non-anticoagulant sulfated heparin in breast cancer – 1 presentation
	Rastinejad	\$454,500	University of Virginia	Structural Characterization of the Interdomain Features of the Estrogen Receptor	Study under way of macromolecular crystallography and x-ray diffraction to show interactions of ER alpha with different ligands – 1 publication
FY07 SIA ⁵	Kuperwasser	\$817,500	Tufts University	Mechanisms of Breast Cancer Associated with Obesity	Study under way to look at the breast cancer risk due to obesity-induced immune response – 1 presentation
	Kelly	\$244,450 ⁶	Massachusetts General Hospital	Genetically Encoded Targeted, Amplifiable, Imaging Agents for Early Detection of Breast Cancer	Study currently under way
	Gerbi	\$155,550 ⁷	Brown University	Hormonal Involvement in Breast Cancer Gene Amplification	Study currently under way to develop methods for analysis of comparative genome hybridization

⁴ Remaining monies for Devi were from the BCRP FY06 funds for a total amount awarded of \$461,933.

⁵ Synergistic Idea Award

⁶ Award was partially funded with \$244,450 of the BCRS funds; the remaining monies are from the FY06 BCRP funds. Total award amount is \$687,397.

⁷ Award was partially funded with \$155,550 of the BCRS funds; the remaining monies are from FY06 and FY07 BCRP funds. Total award amount is \$787,325.

Fiscal Year	Principal Investigator	Amount	Institution	Proposal Title	Outcomes
FY08	Park	\$111,663	North Dakota State University	In Utero Exposure to Dietary Methyl Nutrients and Breast Cancer Risk in Offspring	Study currently under way
	Radosz	\$528,939	University of Wyoming	Breast Cancer-Targeted Nuclear Drug Delivery Overcoming Drug Resistance for Breast Cancer Therapy	Study currently under way
	Hill	\$577,500	Oregon Health and Science University	Vaccine Vector for Sustained High-Level Antitumor CTL Response	Study currently under way
	You	\$503,666	South Dakota State University	Targeted Delivery and Remote-Controlled Release of Chemotherapeutic Agents	Study currently under way
	Seagroves	\$166,667 ⁸	University of Tennessee Health Science Center	The Role of HIF-1 Alpha in Breast Cancer: A Positive Factor in Cancer Stem Cell Expansion via Notch?	Study currently under way

⁸ Award was partially funded with \$166,667 of the BCRS funds; the remaining monies are from FY08 BCRP funds. Total award amount is \$554,987.

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