I. Overview

In 1971, President Richard M. Nixon declared a "War on Cancer" and signed the National Cancer Act, which mandated a $100 million (M) investment in the U.S. cancer research enterprise. Today, we are still fighting this war, as cancer remains the second-leading cause of death in the United States. In 2008, it is estimated that 1,437,180 Americans will be newly diagnosed with cancer and 565,650 Americans will die of cancer.[1] These staggering numbers and continued public awareness about cancer and other diseases have influenced scientific policy and research. In 1992, a grassroots breast cancer research advocacy effort resulted in an initial congressional appropriation of $25M for breast cancer research to be managed by the Department of Defense (DOD) U.S. Army Medical Research and Materiel Command (USAMRMC).[2] The following year, Congress appropriated $210M to the DOD for extramural, peer-reviewed breast cancer research. This was the beginning of the Congressionally Directed Medical Research Programs (CDMRP), a research directorate within USAMRMC, which has been responsible for managing the breast cancer appropriation, as well as other targeted appropriations totaling $4.8 billion (B) through fiscal year 2008 (FY08) for research on breast, prostate, and ovarian cancers; neurofibromatosis; military health; chronic myelogenous leukemia; tuberous sclerosis complex; autism; psychological health and traumatic brain injury; amyotrophic lateral sclerosis; Gulf War Illness; deployment-related health research; and other health concerns (see Figure I-1, CDMRP Research Program Funding History).

[1] American Cancer Society, *Cancer Facts & Figures,* 2008. Estimate of new cancer cases excludes carcinoma in situ of all sites except urinary bladder, as well as basal and squamous cell skin cancers.
[2] Known as the U.S. Army Medical Research and Development Command prior to 1995.

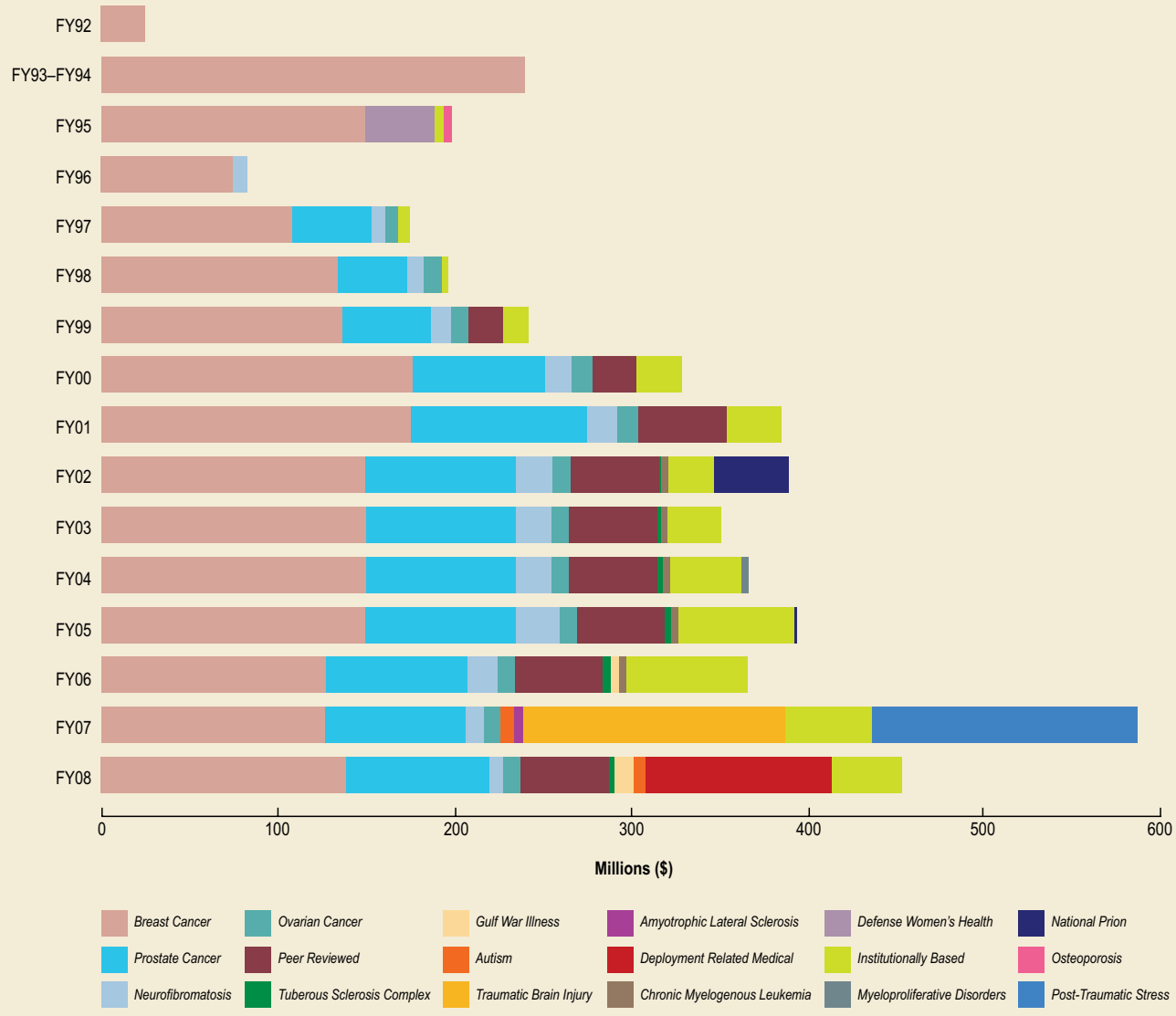


Figure I-1. CDMRP Funding History

Programs Managed by the CDMRP

Since its inception, the CDMRP has managed 84 separate research programs that are aimed at improving the health of all Americans. Congressional appropriations directed toward these 84 research programs total $4.8B. From FY92 through FY07, the CDMRP has managed 8,316 research grants, contracts, and cooperative agreements (Table I-1). Today, 12 of the programs managed by the CDMRP are considered primary programs because they either have received or have the potential to receive multiple appropriations and are characterized by Integration Panels (additional information on Integration Panels can be found on page I-8). The other programs managed by the CDMRP are characterized by a one-time appropriation, and/or they are institutionally based research programs.

Table I-1. FY92–FY07 Awards Managed by the CDMRP

Program Fiscal Years	Grants Managed	Investment
Breast Cancer Research Program (FY92–FY07)	5,187	$1,801.1M
Prostate Cancer Research Program (FY97–FY07)	1,837	$709.9M
Neurofibromatosis Research Program (FY96–FY07)	209	$158.6M
Ovarian Cancer Research Program (FY97–FY07)	170	$96.9M
Peer Reviewed Medical Research Program (FY99–FY06)	247	$295.7M
Chronic Myelogenous Leukemia Research Program (FY02–FY06)	61	$19.3M
Tuberous Sclerosis Complex Research Program (FY02–FY06)	48	$11.9M
Gulf War Illness Peer-Reviewed Research Program (FY06)	9	$4.5M
Autism Research Program (FY07)	18	$6.5M
Amyotrophic Lateral Sclerosis Research Program (FY07)	3	$4.5M
Psychological Health and Traumatic Brain Injury Research Program (FY07)	201	$277.3M
Other Programs (FY95–FY07)	326	$412.7M
Total	**8,316**	**$3,798.9M**

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. 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 to continue existing DOD programs. Because of the variability of the congressional appropriations and restrictions on how and when funds may be spent, 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 vision through the completion of research grants (Figure I-2).

The effectiveness of the programs, the work of consumer advocates, and the need for additional, focused biomedical research have led to the continuation of appropriations for many of the programs managed by the CDMRP. Highlights of the CDMRP's primary programs that received congressional appropriations in FY07 and/or FY08 can be found in the corresponding program sections. Section XIII of this report contains information on the other programs managed by the CDMRP.

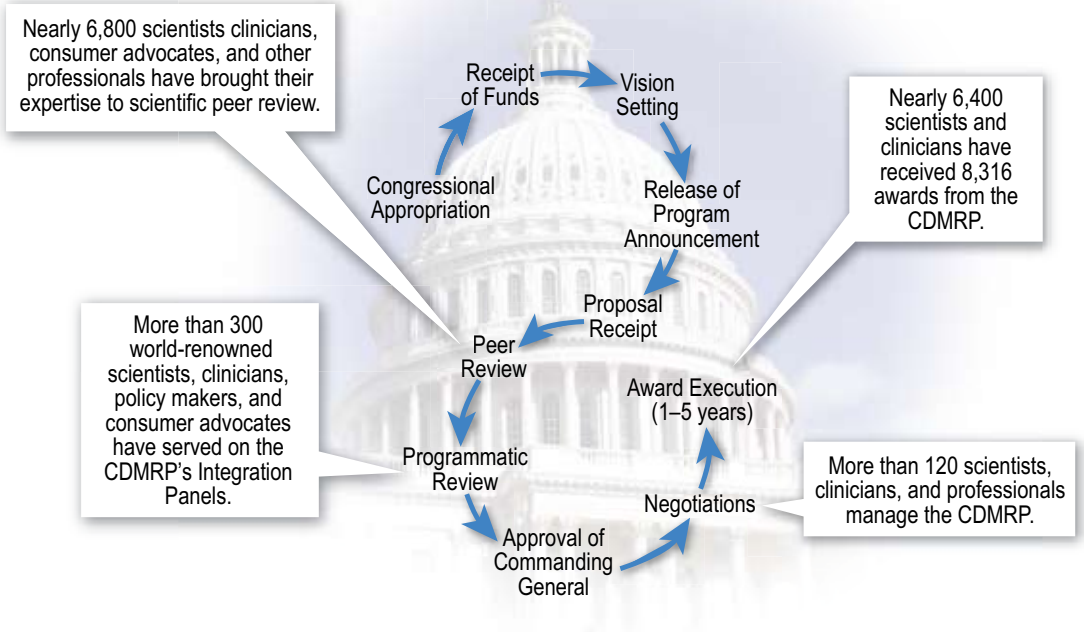


Figure I-2. CDMRP Flexible Execution and Management Cycle

Targeting Excellence:

From Program Development Through Science Management

The CDMRP's commitment to excellence can be attributed to five best business practices. These business practices are employed in every program administered by the CDMRP. While these business practices have proven to be efficient and effective over time, the CDMRP continually evaluates its processes in an effort to better find and fund the best research to eradicate diseases.

"Outside-the-Box" Thinking ● Innovative and Rigorous Proposal Submission and Review Process ● Exceptional People and Partnerships ● Sound Stewardship ● Effective Dissemination Strategies

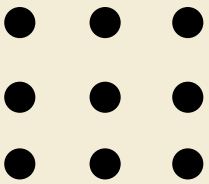
Best Business Practice:

"Outside-the-Box" Thinking ● Innovative and Rigorous Proposal Submission and Review Process ● Exceptional People and Partnerships ● Sound Stewardship ● Effective Dissemination Strategies

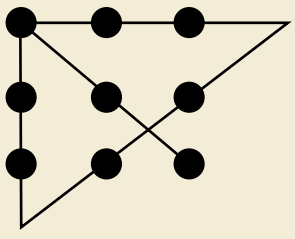
From the beginning, the CDMRP was willing to do things differently and thus adopted a culture of innovation and flexibility. When the CDMRP began managing a $210M appropriation for breast cancer research, it recognized that breast cancer was outside of its core expertise and, therefore, sought the advice of the top advisors to the nation on science, engineering, and medicine—the National Academy of Sciences (NAS). In response, the NAS Institute of Medicine (IOM) committee issued a report entitled *Strategies for Managing the Breast Cancer Research Program: A Report to the U.S. Army Medical Research and Development Command*. While the IOM committee made several important recommendations in this report, two of its recommendations have become part of the foundation of the CDMRP. First, the IOM committee recommended an annual investment strategy to guide allocations of funds that best address the current needs in breast cancer research. Second, it recommended a two-tier review strategy consisting of scientific peer review and programmatic review (for more information about the review process, see Best Business Practice: Innovative and Rigorous Proposal Submission and Review Process on page I-13).

The phrase "outside-the-box" is believed by some to relate to the "nine dots puzzle" (pictured below) that challenges users to connect all nine dots without lifting the pencil from the paper. This puzzle can be easily solved by going outside the confines of the square area, and thus the slogan was born.[3]

Nine Dots Puzzle



One of many solutions to the puzzle



[3] *Thinking outside the box,* Wikipedia, "The Free Encyclopedia."

Setting the Vision and the Framework to Move Toward It

The CDMRP recruits the most visionary scientists, clinicians, and consumer advocates to serve on each core program's Integration Panel (IP). The IP is a collection of forward-thinking individuals who meet to deliberate the issues and concerns unique to the individual program, propose a vision to guide the investment strategies for the upcoming year, and eventually recommend a broad-based portfolio to cure disease (for more information on the IP's role in the review of research proposals, see Programmatic Review, page I-15). The expert opinions of IP members facilitate the development of an annual investment strategy to identify underfunded and underrepresented areas of research and to 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 provides the framework and direction necessary to most effectively obligate each congressional appropriation while avoiding unnecessary duplication with other funding agencies. A critical component of the investment strategy is developing the framework of specific award mechanisms to achieve the vision. Specific award mechanisms for each program are developed and released each fiscal year and capture the current needs of both the research and the advocacy communities. The CDMRP has utilized more than 50 different types of award mechanisms that fall predominantly into four categories spanning clinical research, innovative research, training and recruitment, and research resources, as shown in Figures I-3–I-7. Some of these cutting-edge award mechanisms developed by the CDMRP have been emulated by other funding agencies.

Figure I-3. CDMRP Funding Philosophy

Clinical Research

The CDMRP has enabled researchers to conduct clinical research projects from small pilot studies to international trials. While extensive laboratory and animal research must be performed to gather essential feasibility, safety, and iterative testing data, clinical research is patient-oriented research that will help us better understand the nature of human disease or the effectiveness of a drug, device, or technology. The CDMRP has supported several award mechanisms that promote the application of new knowledge and techniques to patient care as shown in Figure 1-4. Through FY07, the CDMRP has funded 149 clinical research awards.

Figure I-4. Examples of CDMRP Award Mechanisms That Emphasize Clinical Research

Innovative Research

Another important recommendation made by the IOM committee in its report to USAMRMC was to "create an environment in which creative ideas and first-rate research can flourish and in which investigators are not afraid to gamble on risky but alluring ideas."[4] Today, 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 (Figure I-5). While each award mechanism has different requirements, all share the common goal of advancing innovative ideas, creative solutions, and breakthrough technologies. Through FY07, the CDMRP has funded 4,519 innovative research awards.

Figure I-5. Examples of CDMRP Award Mechanisms That Emphasize Innovative Research

[4] 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.

Training and Recruitment

A critical investment in research is "the development of career scientists who contribute to the long-term success of the [research] enterprise through both their own research efforts and their training of future generations of scientists."[5] The IOM committee reiterated this sentiment in its 1993 report to USAMRMC by stating that the "best investment the program can make is to stimulate talented new investigators…."[6] 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 (Figure I-6). 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. A total of 2,221 training and recruitment awards were made through FY07.

- Multidisciplinary Postdoctoral Training
- Sabbatical
- Career Development
- Historically Black Colleges and Universities/Minority Institutions Partnership Training
- Postdoctoral Training
- Physician Scientist Training
- Prion Techniques Fellowship
- Predoctoral Training
- Clinical Translational Research Postdoctoral Fellowship
- Clinical Research Nurse
- Health Disparity Training–Prostate Scholar
- Institutional Training
- Minority Population Focused Training
- Era of Hope Postdoctoral Training
- Career Transition
- Undergraduate Summer Training Program

Figure I-6. Examples of CDMRP Award Mechanisms That Emphasize Training and Recruitment

[5] Institute of Medicine, *Funding Health Services Research: A Strategy to Restore Balance,* The National Academies Press, 1990.
[6] 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.

Research Resources

Today, researchers must work together in an interdisciplinary environment where they can exchange not only ideas but also newly emerging technologies and research resources. Fifteen years ago, the IOM committee noted that "research in breast cancer is impeded by inadequate access to resources that are appropriate for sharing—including tumor samples, cell lines, animal models, DNA probes, follow-up data on women diagnosed with breast cancer, information about ongoing clinical trials, and economic data to evaluate the cost of care."[7] Based on this clear need in 1993 and the need to continue to build and expand the nation's research resources, the CDMRP has sustained its investment in this arena, as 172 research resources awards were made through FY07 (Figure I-7). 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.

Advanced Technology-Therapeutic Development

Behavioral Center of Excellence

Therapeutic Development

Infrastructure Enhancement for Research Support

Center of Excellence Pilot/Center of Excellence

Cancer Center Initiation/Program Project

Collaborative–Clinical Translational Research

Cancer Consortium Development/ Cancer Consortium

Special Mammography Demonstration Project

NF Consortium

Advanced Technology Development

Mammography/Breast Imaging Equipment

Natural History Development/ Natural History Study

PTSD/TBI Clinical Consortium Coordinating Center and Sites

Multidisciplinary Research Consortia

Figure I-7. Examples of CDMRP Award Mechanisms That Emphasize Research Resources

[7] 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.

Best Business Practice:

"Outside-the-Box" Thinking ● Innovative and Rigorous Proposal Submission and Review Process ● Exceptional People and Partnerships ● Sound Stewardship ● Effective Dissemination Strategies

The CDMRP has administered appropriated funds for congressionally directed medical research since 1992. Beginning in 1992, the CDMRP managed one program in which 72 hard-copy proposals were received and 26 awards were made. In FY07, the CDMRP managed 34 programs, received 6,931 electronic proposals, and made 794 awards. In response to this enormous growth, the CDMRP has developed an innovative and rigorous proposal submission and review process.

Electronic Proposal Submission

President George W. Bush signed the Electronic Government, or E-Government, Act in 2002 to improve the government's customer service to citizens and businesses. One of the initiatives under this act is Grants.gov, a common portal for all grant applications submitted to the federal government. Although the CDMRP has been receiving electronic submissions through eReceipt since 2002, in 2007 it joined the National Institutes of Health, the National Science Foundation, and more than 20 other government agencies in using the Grants.gov site for electronic submission of grant proposals. This unified site provides applicants with easy access to standardized forms, eligibility information, funding levels, and help with the application process. In FY07, the CDMRP had approximately $400M available for research from a pool of more than $500B available from Grants.gov.

Two-Tier Review Process

The two-tier review process is a central element of the CDMRP. The CDMRP adopted the recommendations set forth in 1993 by the NAS IOM 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. Scientifically sound proposals that most effectively address the unique focus and goals of the program are recommended to the Commanding General, USAMRMC, for funding.

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. The criteria used for conflict of interest and confidentiality are similar to those used at the National Institutes of Health.

Additional details about the two tiers of review follow and can also be accessed on the CDMRP website at http://cdmrp.army.mil/fundingprocess.htm.

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 an external scientific peer review contractor. 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 global priority score as well as individual evaluation criteria scores. The peer review process for evaluating proposals includes:

- Evaluation of scientific merit
- Criteria-based evaluation
- Evaluation by scientific discipline, specialty area, or award mechanism

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. Programmatic review entails:

- Evaluation of programmatic relevance
- Comparison-based evaluation
- Evaluation across multiple disciplines

Inquiry Review Panel

The Inquiry Review Panel (IRP) was established by the CDMRP to enable grant applicants to address queries and voice objections regarding the scientific peer review or programmatic review of their proposals. IRP appeals must be based on the occurrence of factual or procedural errors that occur at receipt, peer review, or programmatic review. While less than 1 percent of all funding decisions were appealed across all programs from FY99 to FY05, this process is an integral part of our business practices.

Best Business Practice:

"Outside-the-Box" Thinking ● Innovative and Rigorous Proposal Submission and Review Process ● **Exceptional People and Partnerships** ● Sound Stewardship ● Effective Dissemination Strategies

The CDMRP recognizes that scientific and administrative advances are not made in a vacuum. Rather, progress is achieved through connections or partnerships with individuals and organizations. To move science forward, the CDMRP is establishing and maintaining effective partnerships with consumer advocates, researchers, 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 as follows.

"Participating in this program has been one of the most rewarding experiences of my life. As cancer victims, we often feel isolated and hopeless. Being a consumer reviewer made me feel like I was doing something to restore the peace and stability I once enjoyed in life. Seeing the honesty, integrity, and brilliance of the people involved in the program gives me great hope for the future."

Shannon Walker
Ovarian Cancer Research Program
FY08 Peer Reviewer
Granulosa Cell Tumor Foundation

Consumer Advocates and the CDMRP

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 and representatives of consumer advocacy 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 relentless work of thousands of advocates has resulted in $4.8B in appropriations for targeted diseases through FY08. The value of consumer involvement is derived from each individual's firsthand experience with the disease. 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 50 consumers have served as IP members from 1993 to the present while others have been active participants in executing research projects. Approximately 1,000 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 and the Prostate Cancer Research Program's (PCRP's) inaugural 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).

The Scientific Community and the CDMRP

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 6,800 scientists and clinicians have provided the necessary subject matter expertise on peer review panels. Approximately 300 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 120 CDMRP scientists, clinicians, and professionals currently are involved in program execution and science management. Collectively, these scientists have assisted the CDMRP in funding nearly 6,400 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.

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 identification of targeted funding mechanisms, solicitation of proposals addressing disease disparity, solicitation of proposals from scientists at Historically Black Colleges and Universities and Minority Institutions (HBCU/MI), and recruitment of scientists and consumer advocates representing minority and underserved populations. Recommendations set forth by the IOM and the CDMRP Minority Health Initiative provide the basis for these strategies. The CDMRP's effort to achieve these goals has been effective. For example, in total, the CDMRP has made 108 health disparity and HBCU/MI partnership awards totaling $45.1M.

Recently, the Minority and Underserved Populations Program worked with the BCRP to coordinate a symposium called Building Networks to bring scientists funded by the BCRP together for discussion and networking opportunities toward the common goal of addressing disease disparity. Read more about this symposium on page I-24 under Multidisciplinary Meetings, Building Networks Symposium.

International Cancer Research Partners: One Voice, One Vision

In 2000, the CDMRP joined the National Cancer Institute (NCI) and the National Cancer Research Institute (NCRI) 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. Today, the ICR Partners include 51 cancer funding organizations from the United States, Canada, and throughout the United Kingdom that have come together to classify their respective research portfolios using a common coding scheme (called the Common Scientific Outline, or CSO). 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.

As a first step in achieving their mission, the ICR Partners developed a relational database of cancer research supported by its members called the ICR Portfolio (ICRP). The ICRP allows users to find information about actively funded research in one central, searchable database. Researchers can use the site to identify scientists doing similar work, as well as obtain contacts for multidisciplinary research and collaborations. Moreover, the ICRP is useful to cancer research funding organizations and government/policy officials to enhance their awareness of the research funded by the ICR Partners—either to gauge the state-of-cancer science or set directions for future research efforts.

As a second step in achieving their mission, the ICR Partners are actively engaged in an initial strategic analysis of their joint and respective research portfolios. This work has necessitated the development of common terminology, search features, and currency conversions in addition to the already established coding platform using the CSO. The Partners are also developing plans for future joint primary analyses using new measures and outcomes as benchmarks. Finally, the 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.

The ICR Partners are: the NCI; the CDMRP; the American Cancer Society; the California Breast Cancer Research Program; the Oncology Nursing Society Foundation; the Prostate Cancer Foundation; Susan G. Komen for the Cure; Avon Foundation Breast Cancer Crusade; the Canadian Cancer Research Alliance, which includes 23 Canada-based funding organizations; and the NCRI, which includes 20 U.K.-based funding organizations (http://www.cancerportfolio.org/).

Collaborative Research Mechanisms

The CDMRP has supported several different award mechanisms that foster strong partnerships and collaborations in the scientific community (Figure I-8). Since 1997, $357.1M has been invested across the programs to establish 183 consortia, centers, and program projects. In addition, 108 awards totaling $45.1M were awarded to HBCU/MI under different mechanisms that support collaboration. Combined, these award opportunities are enabling research communities to pool and leverage their resources and knowledge to move one step closer to disease eradication.

Neurofibromatosis Clinical Consortia Cancer Center Initiation Behavioral Center of Excellence Prostate Cancer Clinical Consortia Minority Population Focused Collaborative Training Research Consortia Collaborative–Clinical Translational Research Program Projects HBCU/MI Collaborative Partnership Health Disparity Research–Prostate Scholar Award Health Disparity Training–Prostate Scholar Award HBCU/MI Focused Training Award Biotechnology Clinical Partnership Breast Cancer Center of Excellence Consortia Development Translational Research Partnership Collaborative Undergraduate HBCU Student Summer Training PTSD/TBI Clinical Consortium Coordinating Center and Sites Multidisciplinary Research Consortia

Figure I-8. Examples of CDMRP Award Mechanisms That Support Collaborative Research

Breast Cancer Research Semipostal Program

The Breast Cancer Research Semipostal stamp, a 55-cent semipostal stamp, is the first semipostal stamp in our nation's history. The Breast Cancer Research Semipostal stamp was introduced by Public Law 105-41, which resulted from the work of breast cancer advocates who raised the national public interest in breast cancer research. Net revenues from the Breast Cancer Research Semipostal stamp are used to support breast cancer research at both the DOD BCRP and the National Institutes of Health. Since the stamp was first offered for sale in 1998, the DOD BCRP has received 30 percent of the sales of the stamp revenue, totaling $18.5M. Through FY07, these monies have been used to fully fund 34 BCRP Idea Awards and partially fund 2 Idea Awards. Beginning in FY07, the stamp funds began supporting Synergistic Idea Awards. To date, 1 Synergistic Idea Award has been fully funded and 2 others have been partially funded with revenue from the Breast Cancer Research Semipostal stamp. An additional $2.1M received in FY08 has yet to be allocated to research projects. Idea Awards support highly innovative, high-risk/high-reward breast cancer research that ultimately could lead to critical discoveries or major advancements that will accelerate the eradication of breast cancer. Synergistic Idea Awards add collaboration to the Idea Award mechanism to promote synergy to accelerate the research effort. The DOD carefully invests the income from the stamp in the best science from among the nation's most innovative, qualified scientists and clinicians. Highlights of research supported by the Breast Cancer Research Semipostal stamp and the complete investment strategy can be found in Appendix C of this report.

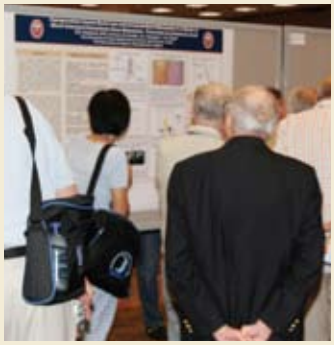
Multidisciplinary Meetings

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

IMPaCT

The PCRP 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 PCRP-supported studies. All PCRP awardees since the inception of the program were invited to submit abstracts, and more than 500 investigators representing all 10 years of the PCRP submitted abstracts. Prostate cancer advocacy groups were invited to submit abstracts highlighting projects or programs having an impact on prostate cancer research, advocacy, education, and/or survivorship, and eight organizations did so. In addition, 21 undergraduate students participating in Collaborative Undergraduate HBCU Student Summer Training Programs submitted abstracts. These abstracts were presented in 24 symposium sessions and 34 poster sessions. There were more than 60 distinguished invited speakers at IMPaCT. Many of them have provided their presentations for download on the CDMRP website (http://cdmrp.army.mil/pcrp/impact/default.htm). The PCRP is planning its next IMPaCT meeting in the next 2 to 5 years to recognize the program's achievements.






Military Health Research Forum

The Peer Reviewed Medical Research Program (PRMRP) has sponsored two Military Health Research Forums to provide a means for investigators funded by the program to present their research findings, products, and technologies and to develop future collaborations related to military health research. In addition, the forums emphasized ways for investigators to expedite the transition from research to field-usable products. The third Military Health Research Forum is being planned for 2009.

Building Networks Symposium

The Minority and Underserved Populations Program recently worked with the BCRP to coordinate a symposium called Building Networks to bring scientists funded by the BCRP together for discussion and networking opportunities toward the common goal of addressing disease disparity. The Building Networks Symposium was held June 24–25, 2008, in Baltimore, Maryland (immediately preceding the Era of Hope meeting), and more than 50 attendees assembled to listen to the accomplishments of investigators funded by the BCRP and discuss future efforts to eliminate disease disparities. This meeting featured presentations by BCRP awardees supported by HBCU/MI Partnership Training Awards as well as interactive panel sessions spanning the entire career development continuum. Additional information about this symposium can be accessed on the CDMRP website at http://cdmrp.army.mil.

Era of Hope

BCRP-sponsored Era of Hope meetings have been recognized as premier breast cancer conferences in the United States, providing a forum 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 BCRP recently celebrated its fifth Era of Hope meeting held in Baltimore, Maryland, from June 25–28, 2008. The meeting was filled to capacity with nearly 1,600 attendees, who listened to and discussed the latest thinking and accomplishments supported by the BCRP. More than 1,200 abstracts and presentations were showcased with some receiving national press.

Era of Hope 2008

©Mark Sincevich, DigitalPhotoInstitute.com

Mr. Robert Bazell, chief science and health correspondent for MSNBC, co-chaired the opening armchair discussion of unanswered questions in breast cancer with Ms. Fran Visco, president of the National Breast Cancer Coalition at the Era of Hope meeting on June 25, 2008. A prominent panel composed of leading experts in breast cancer research and advocacy were challenged with difficult questions posed by the co-chairs and audience. As Mr. Bazell noted, "despite a better understanding of some of the causes of breast cancer, there are still a number of key unanswered questions. [Dr. Robert] Weinberg [of the Massachusetts Institute of Technology] offered a fascinating summary [of the questions]:

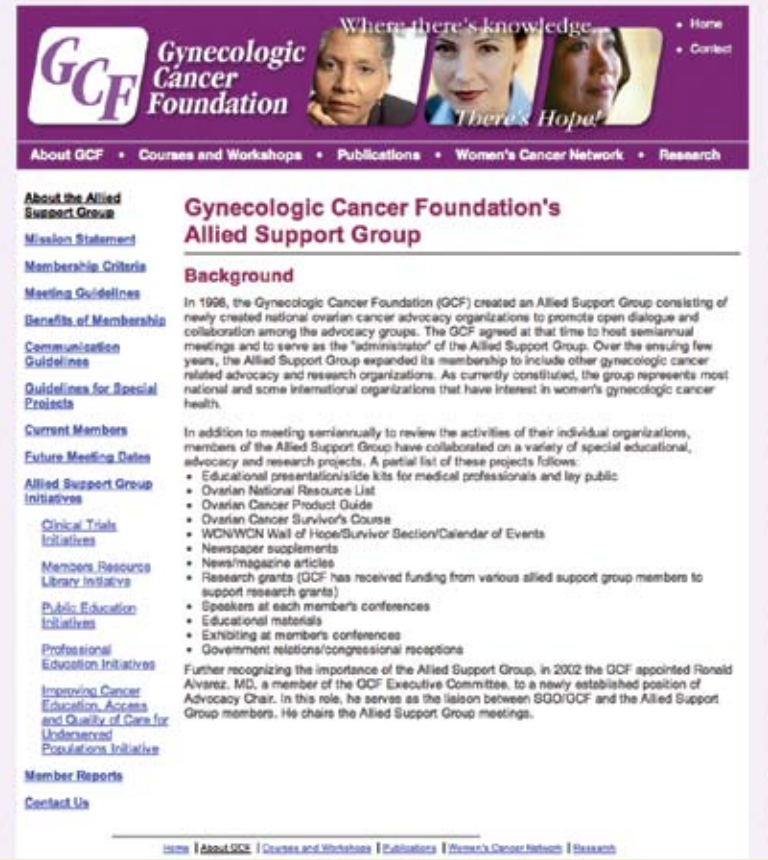
- What is it about the normal breast that determines which cells are vulnerable to cancer?
- Which cells in the normal breast are likely to spread to other tissues (metastasize) if they become cancerous?
- Is the ability to metastasize determined early or late in the multistep process that converts a normal cell to cancer?
- How do metastatic cells acquire the ability to live in other tissues, essentially a foreign environment?
- Why are breast cancer cells much more sensitive than other tissues to DNA changes that can bring on cancer?
- Why are women with dense breast tissue more susceptible to cancer?

"A few years ago I wouldn't have even known to ask them," [Dr. Weinberg] explained. "The questions build on other findings, illustrating how science—pushed by activists—progresses."

(Adapted from a commentary by Mr. Bazell entitled "Bazell: Why Isn't There a Cure for Breast Cancer?" This entire feature article can be accessed at http://www.msnbc.msn.com/id/25460731/.)

Gynecological Cancer Foundation Allied Support Group

The CDMRP is a member of the Gynecologic Cancer Foundation's Allied Support Group. The Allied Support Group was originally created in 1998 by the Gynecologic Cancer Foundation to promote communication and collaboration among ovarian cancer advocacy groups. Over the years, the Allied Support Group has added other gynecologic cancer-related advocacy and research organizations to its membership. Currently, the Allied Support Group is composed of 10 research funding agencies and 17 advocacy organizations—organizations that share the goals of prevention and early detection of gynecological cancers. This Allied Support Group meets semiannually to review the activities of each individual organization as well as collaborate on educational, advocacy, and research projects.






Best Business Practice:

"Outside-the-Box" Thinking ● Innovative and Rigorous Proposal Submission and Review Process ● Exceptional People and Partnerships ● **Sound Stewardship** ● Effective Dissemination Strategies

The CDMRP was created in response to the voices of women and men throughout the country affected by cancer and disease. Congress responded to these concerns by appropriating more than $4.8B for peer-reviewed biomedical research that is being managed by the CDMRP. The CDMRP, in turn, has a responsibility to Congress and the public to use those appropriations judiciously to find and fund the best research to eradicate diseases and support the warfighter for the benefit of the American public. Thus, the CDMRP maintains the highest code of ethics in all of its practices—from program development through science management—to ensure efficient and reliable stewardship of congressional research appropriations.

Low Management Costs

Funding is maximized by keeping management costs as low as possible. For example, the average management costs for CDMRP core programs from FY00–FY07 were 6.2 percent. These significant savings in management costs enabled the greatest amount of funds to be directed to excellent research.

An Effective Grants Management Process

CDMRP awards are made in the form of grants, contracts, or cooperative agreements, and the research is executed over 1 to 5 years, depending on the type of award mechanism. With 8,316 awards made through FY07, and with approximately 600 to 700 new grants being processed each year, the negotiation and management of these grants, contracts, and/or cooperative agreements are a major focus of the CDMRP. As such, the CDMRP ensures fiscal responsibility through cost containment and clear cost-benefit analyses. Additionally, the CDMRP ensures that the research supported by the American public is monitored thoroughly for technical progress and compliance with animal and human use regulations.

Grants Negotiations

Funding is maximized through effective grant negotiations. A detailed analysis of each budget is performed to realize cost savings. Cost sharing is pursued when possible. As grants are negotiated, overlap of research funded by other grants or other funding agencies is verified to ensure that research funds and efforts are not duplicated.

Grants Management Team

The research management infrastructure involves a proactive grants management team to facilitate success of the research. Each CDMRP award is assigned to a Grants Manager for the life of that grant, ensuring a broad knowledge of each grant, continuity among all parties involved in the award, and the most comprehensive assistance possible to the Principal Investigator. All Principal Investigators are required to submit annual and/or quarterly progress reports, which are carefully reviewed, and feedback is provided to investigators. The annual reporting requirement ensures that the research plan is consistent with the statement of work. The progress of large grants and consortia is also monitored by site visits and other meetings throughout the entire period of performance.

Electronic Grants System

To assist with the grants management process, 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 multiple users within USAMRMC 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 grant management processes.

Constant Evaluation of Our Programs and Processes

CDMRP programs are highly visible research programs that address health issues of high public priority. The inherent urgency of these programs creates a substantial requirement for evaluating and reporting program outcomes, as Congress, DOD, scientists, consumer advocates, and the public anxiously await results of CDMRP-supported research. Thus, the CDMRP established a program evaluation division to ensure that it is finding and funding the best research to eradicate diseases. Monthly meetings of the Program Evaluation Steering Committee (PESC) are held to design and monitor progress on evaluation projects that assess research relevance, productivity, and accomplishments. Subcommittees are then formed to pursue specific program evaluation projects. Final reports are delivered to the PESC once a project has been completed. In addition, evaluation projects of interest to the public have been presented at national and international meetings and/or posted on the CDMRP website.

The CDMRP tracks productivity and results from the research it funds so that its stakeholders can be kept up-to-date on progress being made from these investments. To facilitate this process, the PESC developed an innovative electronic classification system (taxonomy) that enables program staff to identify, catalog, and track research outcomes (defined as physical, intellectual, and procedural outcomes that may lead to clinical and/or public health application or provide resources for research) on an ongoing basis. This taxonomy system (summarized in Table I-2) classifies each research outcome by type, tracks the phase(s) of development supported by CDMRP funding, and groups research outcomes into families.

Table I-2. CDMRP Taxonomy System for Research Outcomes

Type	Phase of Development	Family (selected examples)
Biological Molecule	Discovery	Biomarkers
Drug	Development	Cell Lines
Device	Animal Validation	Risk Factors and Assessments
Clinical or Public Health Assessment	Human Validation	Pharmacologic/ Therapeutic Interventions
Clinical or Public Health Intervention	Phase 0 Clinical Trials	Vaccines
Animal Model	Phase I Clinical Trials	Behavioral Interventions
Biological Resource	Phase II Clinical Trials	Statistical Models and Methods
Data Resource	Phase III Clinical Trials	Detection and Diagnostic Tools
Methodological Resource		

Each award funded by the CDMRP is monitored annually for progress. During each review, research outcomes are identified and each piece of the taxonomy system (type, phase of development, and family) is captured for both each new research outcome and previously identified research outcomes. As such, the taxonomy system not only identifies the outcomes of CDMRP-funded research but tracks the progress along the pipeline from initial discovery through clinical validation throughout the life of each award. For example, if a drug is developed and tested in cell lines during the first year of a CDMRP-funded award, it would be coded in the discovery and development phases and assigned to the "Pharmacologic/Therapeutic Interventions" family. If that same drug is tested in animal models during the second year of that award, the phase "Animal Validation" would be marked during the review of the second annual report. If animal validation continued through the third year of the award, no further changes would be made to that research outcome. However, if the drug entered a Phase I clinical trial during the third year, "Phase I Clinical Validation" would be marked during the review of that reporting period. Therefore, while each research outcome can be identified by a single type, multiple phases may be identified for each research outcome. The CDMRP's portfolio of research outcomes by type and phase are illustrated in Figures I-9 and I-10, respectively.

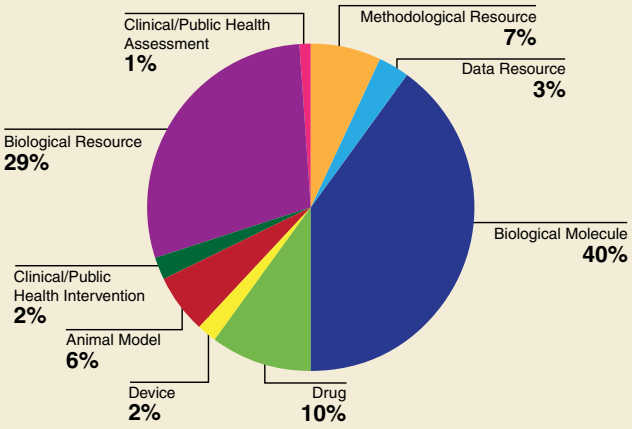


Figure I-9. CDMRP Research Outcomes by Type

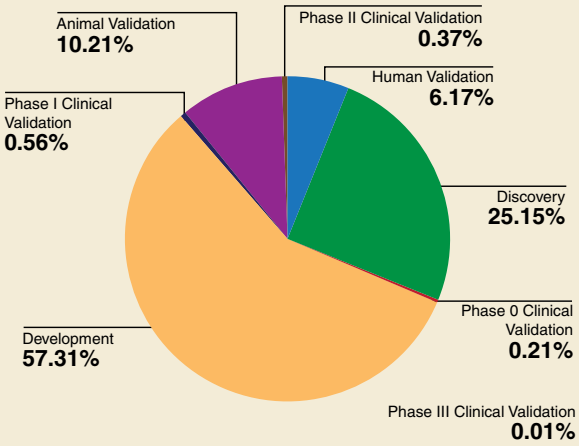


Figure I-10. CDMRP Research Outcomes by Phase(s) of Development

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Timely, accurate, understandable, and credible information must be communicated to the scientific and advocacy communities, Congress, DOD, patients and their families, and the public at large so that cancer and other health concerns are conquered. The programs managed by the CDMRP are transparent for the sake of public awareness of how congressional funds are used and managed. The CDMRP continues to recognize the importance of timely communication and dissemination of program information to its multiple stakeholders and has supported several efforts to foster program awareness, as follows.

http://cdmrp.army.mil

The CDMRP website disseminates up-to-date program information to the public and the research community. Features of the website include:

- Research Programs—New and historical information on individual programs managed by the CDMRP
- Funding Opportunities—Calls to the scientific and clinical communities to submit proposals under individual award mechanisms offered by research programs
- Consumer Involvement—Information on consumer involvement in scientific peer review
- Search Awards—Search engines for posted awards that search by various criteria (including research program, fiscal year, Principal Investigator, institution, research topic, award mechanism, and clinical trial); the award amount, an abstract, and resulting publications are provided for each award
- Publications—New and archived documents including press releases, annual reports, and fact sheets
- What's New—The most recent CDMRP happenings, including CDMRP-supported meetings, funding opportunities, scientific accomplishments by CDMRP-funded investigators, and press releases
- About Us—Summary information about the CDMRP, its program cycle, funding history and process, and staff with links to Fort Detrick, Maryland and the USAMRMC Commanding General
- Related Links—Links to other sites

Funding Opportunities and Award Information

Programs within the CDMRP prepare and issue program announcements that provide details on individual award mechanisms, the application process, and requirements for submitting proposals. The following marketing efforts are directed toward alerting the scientific research community when new program announcements are released and spreading the word on funded awards:

- Posting program announcements on Grants.gov and the CDMRP website
- Posting award information on the CDMRP website
- Notifying websites that specialize in biomedical grant notification
- Alerting more than 800 research administrators of upcoming award opportunities with preannouncements and release date announcements
- Notifying more than 60 professional associations, 180 Veterans Affairs facilities and military and medical research laboratories, 6 federal agencies, and more than 250 consumer advocacy organizations of upcoming funding opportunities
- Advertising both in broadly focused professional journals and on federal business websites
- Utilizing targeted e-mails and advertising for specific award mechanisms and outreach
- Sending approximately 231,000 e-mails to prior applicants, scientific peer reviewers, and individuals who have requested that their names be placed on the CDMRP notification list
- Providing research institutions with award details for news releases
- Distributing CDMRP electronic news items to more than 250 consumer advocacy groups
- Exhibiting the CDMRP display at national scientific meetings

The Promise of Today's Research

While our challenge is daunting—to find and fund the best research to eradicate diseases and support the warfighter for the benefit of the American public—our opportunities are enormous. We believe our commitment to training the best and the brightest, establishing research resources, creating an innovative environment to advance science, and supporting clinical and translational research will impact patient care and move us closer to our vision.