

Program Announcement

Department of Defense (DOD)

Defense Medical Research and Development Program (DMRDP)

Applied Research and Advanced Technology Development Award

Funding Opportunity Number: W81XWH-09-DMRDP-ARATDA

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I. FUNDING OPPORTUNITY DESCRIPTION

A. Program Objectives

The Assistant Secretary of Defense for Health Affairs, Defense Health Program Medical Research and Development Office is soliciting proposals for the Defense Medical Research and Development Program (DMRDP) Applied Research and Advanced Technology Development Awards to be funded beginning in fiscal year 2010 (FY10). The goal of the DMRDP is to advance the state of medical science in those areas of most pressing need and relevance to today's battlefield experience, for example in the areas of psychological health and traumatic brain injury (TBI) and to the capability needs of the Joint Force Health Protection (JFHP) Concept of Operations (CONOPS), as delineated in the tasks described in this Program Announcement/Funding Opportunity. The objectives of the DMRDP are to discover and explore innovative approaches to protect, support, and advance the health and welfare of military personnel, families, and communities; to accelerate the transition of medical technologies into deployed products; and to accelerate the translation of advances in knowledge into new standards of care for injury prevention, treatment of casualties, rehabilitation, and training systems that can be applied in theater or in the clinical facilities of the Military Health System (MHS).

B. Award Description

The DMRDP Applied Research and Advanced Technology Development Award is being offered for the first time in FY10. These awards are intended to provide support for research that is designed to advance state-of-the-art solutions for world class medical care with an emphasis on post-traumatic stress disorder (PTSD), TBI, prosthetics, restoration of eye sight and advancing eye care, and other conditions directly relevant to the injuries our service members are currently receiving on the battlefield, as well as the capability needs of the JFHP CONOPS. DMRDP efforts will assess scientific and/or military field deployment feasibility of promising new products, pharmacologic agents (drugs and biologics), behavioral and rehabilitation interventions, diagnostic and therapeutic devices, clinical guidance, supporting medical information and training systems, and/or emerging approaches and technologies. These awards are expected to yield potential health products, approaches, or technologies positioned for human testing. **Awards under this announcement will consist solely of assistance agreements.**

This award is focused on applied research, defined as work that refines concepts and ideas into potential solutions with a view toward evaluating technical feasibility, and advanced technology development, defined as development of candidate solutions and components of early prototype systems **up to the point where test and evaluation can be conducted in human trials or other relevant operational environments. Awards may support human studies but may not be used to support clinical trials. Awards may not be used to support fundamental basic research. Other DMRDP Program Announcements/Funding Opportunities for these areas of research are forthcoming.**

The DMRDP anticipates that approximately \$97 million (M) of the FY10 appropriation will be available to support both intramural and extramural applied research and advanced technology development. This announcement is intended only for extramural investigators. A previous announcement was released for intramural investigators. An intramural investigator is defined as

a Department of Defense (DoD) employee working within a DoD laboratory or medical treatment facility (MTF) or a DoD activity embedded within a civilian medical center. An extramural investigator is defined as all those not included in the definition of intramural investigator. It is permissible, however, for an intramural investigator to be named as a collaborator in a proposal submitted by an extramural investigator. ***In such cases, the extramural investigator must include a letter from the intramural collaborator's Commander or Commanding Officer that authorizes the involvement of the intramural collaborator.*** The Government reserves the right to increase or decrease the approximately \$97M available to support applied research and advanced technology development projects.

All applications for DMRDP funding must specifically and clearly address one of the projects (i.e., area of research) and tasks (i.e., specific research needs) identified below. The Government reserves the right to reassign Projects/Tasks identified in applications if submitted under an incorrect Task area.

Applications for research on Projects and Tasks (Projects/Tasks), other than those listed below should NOT be submitted in response to this Program Announcement/Funding Opportunity. ***If the proposed research project is not relevant to the advertised FY10 DMRDP Projects/Tasks, the Government reserves the right to administratively withdraw the application.***

FY10 DMRDP Projects:

- Diagnosis and Treatment of Brain Injury
- Polytrauma and Blast Injury
- Operational Health and Performance
- Rehabilitation
- Psychological Health and Well-Being for Military Personnel and Families

FY10 DMRDP Projects and Corresponding Tasks:

Diagnosis and Treatment of Brain Injury

- *Mechanisms of Traumatic Brain Injury (TBI).* Applied research leading to the identification and characterization of mechanisms of TBI.
- *Diagnosis and Treatment.* Development of far-forward deployable technologies to diagnose and treat TBI. Research in this topic area should include, but is not limited to, noninvasive diagnostic techniques to detect cellular or functional damage, pharmacologic or other agents (e.g., “neutraceuticals”) for neuroprotection or treatment, and techniques to reduce structural and functional neurologic damage after TBI.
- *Clinical Management.* Applied research leading to improved clinical management practices for early intervention in TBI including but not limited to identification and evaluation of the best practices for therapeutic management of TBI.

Polytrauma and Blast Injury

- *Hemorrhage Control.* Applied research leading to the development and fielding of U.S. Food and Drug Administration (FDA)-approved therapeutics and logistically supportable interventions to control internal hemorrhage and prevent or treat coagulopathy associated with severe trauma.
- *Maintain Tissue Viability.* Applied research leading to advanced technologies and logistically supportable interventions to maintain tissue viability including but not limited to blood and blood component substitutes/expanders.
- *Diagnosis and Life Support.* Applied research leading to advanced medical technologies to aid first responder diagnosis and life support including but not limited to identifying appropriate treatment end points and developing algorithms for decision-assist tools and to predict the need for lifesaving interventions.
- *Maxillofacial Injury.* Applied research leading to improved materials and strategies for repair of maxillofacial injuries including but not limited to image-guided surgery, rapid prototyping technologies and associated materials for bone and soft tissue reconstruction, and solutions for dental reconstruction.
- *Evacuation Applications.* Applied research leading to advanced, automated, and portable medical systems for forward critical care and ground and aeromedical patient transport including but not limited to closed-loop control of delivery of life support interventions (i.e., ventilation, oxygen, and fluids) and advanced litter technologies to reduce impact of G-forces and vibration on casualties.
- *Evacuation Practices.* Applied research leading to improved clinical practices for aeromedical transport of patients with TBI and other severe injuries including but not limited to improved strategies and systems for patient care during transport.
- *Forward Surgical Applications.* Applied research leading to advanced and portable medical applications for forward surgical care including but not limited to damage control surgery, acute head injury stabilization, and other surgical stabilization.
- *Blast Injury Models and Performance Standards for Protection Systems.* Applied research leading to a physiologically integrated model of existing blast injury models and/or test devices/systems and methods/standards for employing the integrated injury prediction model.
- *Scar Contracture.* Applied research directed toward minimizing deleterious effects of contracture on function and mobility.
- *Diagnosis, Treatment, Mitigation, Restoration, and Rehabilitation of Ocular/Visual System Injury.* Applied research to develop treatments for traumatic injuries and war-related injuries to ocular structures and the visual system, including blast and burn injuries; lid, adnexal, ocular, and orbital injuries; treatments to slow/stop loss of vision following injury; and ocular drug delivery.
- *Rapid Screening of Fresh Whole Blood.* Applied research leading to the development and fielding of an FDA-approved, rapid detection, multiplex nucleic acid-based, handheld system to screen whole blood pre-transfusions for blood-borne pathogens with

a high degree of sensitivity for use far forward in a wartime environment with primary focus on hepatitis B and C, followed by HIV-1 and HIV-2, and then other blood-borne pathogens.

- *Wound Infection Prevention and Management.* Applied research directed toward identification and characterization of biomarkers associated with immune response and/or predictive of infection/wound closure or early detection of antimicrobial resistance; identification of nosocomial pathogens and mitigation of contamination in the military medical environment (e.g., ozone, vaporized hydrogen peroxide, phage, chitosan, and chlorine dioxide); and development of an in vivo polytrauma/blast wound infection model.
- *Antimicrobial Countermeasures.* Applied research directed toward mitigation of virulence factors and/or metabolic pathways associated with wound infection pathogens (e.g., *Acinetobacter*, *Pseudomonas aeruginosa*, MRSA (methicillin-resistant *Staphylococcus aureus*), ESBL (extended spectrum beta lactamase)-producing *Klebsiella pneumoniae*), including characterization and mitigation of biofilm formation. Preference will be for discoveries with applicability to polymicrobial infections leading to FDA-approved products to combat wound infections. Novel treatment approaches (e.g., chelators, antibody, phage, antimicrobial peptides, quorum-sensing inhibitors, lysine, and host immunoenhancement including antibody) are encouraged. Treatment efforts should be focused on topical approaches. Proposals incorporating drug screening, including high-throughput screening and in silico modeling, are discouraged.

Operational Health and Performance

- *Fundamental Mechanisms of Training and Operational Injury.* Applied research leading to a predictive model for musculoskeletal injury and comprehensive assessment of in-theater (Operation Iraqi Freedom and Operation Enduring Freedom) load carriage of warriors.
- *Physiological Interactions of Nutrition and Dietary Supplements.* Applied research leading to improved standards for over-the-counter dietary supplement use in relation to prescription medication and/or medical events (i.e., clotting factors and concussion).
- *Fundamental Mechanisms of Performance Sustainment in Extreme Environments (Heat, Cold, and Altitude).* Applied research leading to predictive models for altitude illness and potential pharmaceutical interventions for prevention and/or early treatment for extreme environment-related illness and injury.
- *Post-Deployment Health Risks.* Applied research leading to improved inclusion/exclusion criteria for longitudinal prospective military cohort studies (e.g., target and follow severely wounded over time, broaden study to identify interventions to develop in response to gathered epidemiological data, include additional topics such as accidents, criminal activities of veterans, other negative outcomes, and protective factors).

Rehabilitation

- *Neuromusculoskeletal Injuries.* Applied research directed toward strategies for rehabilitation in patients with complicating factors (e.g., TBI, PTSD, and other

comorbidities), functional outcome assessments focusing on return-to-duty and/or community reintegration, rehabilitative strategies for neuromusculoskeletal injury (including limb salvage patients), novel and evidence-based strategies to support rehabilitative approaches following regenerative medicine therapies to restore tissue and function, amputee-specific technologies and rehabilitative strategies that address/assess residual limb health, exercise and fitness systems and strategies for rehabilitation and sustainment of fitness in amputees, and the prevention of heterotopic ossification.

- *Chronic Pain Management.* Applied research to support the development of best practices for assessing and managing acute pain episodes in the context of chronic pain, strategies for the management of acute pain to prevent the development of chronic pain, strategies to identify and treat pain generators (including the pathophysiology of pain and improved objective diagnostic tools for pain), improved strategies for management of chronic pain (including novel pain control methods, complementary and alternative medicine techniques, and epidemiology of incidents of chronic pain and functional outcomes), and addressing psychosocial aspects of managing pain (including patient empowerment, family and other support systems, resilience and risk factors, and sleep management). The interest is in management of pain associated with traumatic or war-related injuries.
- *Regenerative Medicine.* Applied research directed toward the use of regenerative medicine-based techniques to repair functional nerve deficits (other than central nervous system or spinal cord), repair/replace neuromuscular tissue units of the face and composite facial features (including eyelids, lips, and nares), and wound management and tissue preservation (not to include infection control).
- *Restoration and Rehabilitation of Sensory System Traumatic Injury (Vision, Hearing, and Balance).* Applied research to support the development of strategies for the diagnosis, treatment, and mitigation of dysfunction associated with TBI and war-related injuries, and the restoration of sensory systems (including regeneration and tissue repair following traumatic injury).

Psychological Health and Well-Being for Military Personnel and Families

- *Suicide Prevention.* Applied research leading to evidence-based, standardized evaluation criteria for suicidal patient intake and improved cognitive behavioral intervention as a treatment for suicidality.
- *Diagnosis and Treatment of PTSD.* Applied research leading to accelerated cognitive behavioral therapy for combat-related PTSD.
- *Diagnosis and Treatment of Deployment-Related Psychological Health Problems.* Applied research leading to enhanced methods to prevent health risk behaviors (e.g., accidents and tobacco use) and improved methods for the diagnosis and treatment of PTSD in the presence of other comorbid mental health problems (e.g., depression, anger, grief, and guilt).
- *Psychological Resilience.* Applied research leading to improved methods to enhance psychological resilience (e.g., environmental enrichment, yoga, and other complementary

alternative medicine methods, positive psychology interventions, and enhancement of traditional training).

- *Military Family and Community Health and Resilience.* Applied research leading to improved, evidence-based family and community resilience programs and methods to maintain strong relationships during deployment/extended separation.

All applications must be responsive to the health care needs of the Armed Forces.

Examples of the types of research that may be supported include, but are not limited to:

- Collection and analysis of data for developing and validating clinical guidance
- Developing new behavioral or rehabilitation interventions
- Testing new therapeutic modalities (e.g., agents, delivery systems, and chemical modification of lead compounds) using established or validated novel preclinical systems
- Exploratory studies of medical device technologies in well-defined laboratory and/or animal model(s) to identify and assess potential safety problems, adverse events, and side effects
- Comparative activity/efficacy testing of candidate pharmacologic agents to define a single lead agent from a limited library of candidates
- Designing and implementing pilot Good Manufacturing Practice production of therapeutics and/or delivery systems
- Developing pharmacologic agents through the elements of absorption, distribution, metabolism, excretion, and toxicity
- Preclinical development of pharmacologic agents to Investigational New Drug stage to include preclinical studies of agents under Good Laboratory Practice guidelines
- Preclinical development of prototype devices for diagnosis or treatment to Investigational Device Exemption stage
- Development and validation of assays and reagents required to measure biological responses and molecular end points
- Optimizing diagnostic or treatment devices and other medical countermeasures for field deployment

Awards may support human studies but may not be used to support clinical trials. Awards may not be used to support fundamental basic research. Proposals must include preliminary and/or published data relevant to the hypothesis/aims of the proposed research project. Other DMRDP Program Announcements/Funding Opportunities will be released in the future that will provide support for clinical trials and basic research.

Use of Military Populations: Describe the military population(s) to be used for the proposed study, if applicable. Coordination of access to various military populations is described below.

1. **Active Duty, National Guard, Reserve troops, and/or military patient populations (not CENTCOM Area of Responsibility):**

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- a. If the Principal Investigator (PI) **already has** an established Service member population, proof of access to the established Active Duty, National Guard, or Reserve troop population(s) must be documented by submission of a letter of support, signed by the lowest ranking person with approval authority for granting access to the target population (note attachment 2.g in Application Instructions/General Information).
 - b. If the PI **does not already have** an established Service member population, access to Active Duty, National Guard, or Reserve troops must be coordinated through the Office of the Congressionally Directed Medical Research Programs (CDMRP). ***PIs who do not have a previously established study population should not contact unit Commanders at this time or during preparation of the proposal submission. If selected for funding, the PI will receive support from the CDMRP for obtaining access to the appropriate population.***
2. **CENTCOM Area of Responsibility military populations:** Access to military populations in these areas is very limited and will be coordinated through the CDMRP as described above.

Research conducted using military populations in Iraq is conducted with oversight by the Multi-National Force-Iraq (MNF-I). PIs that are outside of this system and submit a research proposal designed to recruit patients within MNF-I must coordinate with the in-theater Joint Combat Casualty Care Research Teams charged with facilitating an in-theater review, and be approved by the MNF-I Command and the MNF-I designated Institutional Review Board (IRB). The same is true for research conducted in Afghanistan in the US Forces-Afghanistan (USFOR-A) Area of Responsibility. PIs who are outside of this system and submit a research proposal designed to recruit patients within USFOR-A must coordinate with the in-theatre Deployed Combat Casualty Research Team charged with facilitating an in-theatre review, and be approved by the USFOR-A Command and the USFOR-A designated IRB. If selected for funding, CDMRP will assist with guidance on how to obtain the required in-theater approvals.

Given the constraints of wartime operations, investigators without an ongoing collaboration with an appropriate military investigator should strongly consider alternatives to conducting in-theater research. Department of Defense (DOD)-supported human subjects research can only be conducted by institutions (including those in-theater) with approved Federal Assurances of Compliance from the Human Research Protection Office (HRPO). It is strongly suggested that proposals necessitating the use of this population involve civilian and non-deployed military populations as an alternative.

3. **Department of Veterans Affairs (VA) Medical Centers patient populations:** Access to patient populations from VA Medical Centers or use of information from VA data systems must be coordinated by the PI. PIs who submit a research proposal designed to recruit patients from a VA Medical Center or use information from VA data systems, and who do not have an appointment at one of the VA Medical Centers, must include a collaboration with a VA investigator. This collaborator must be willing to assume the role of PI for the VA component of the research. In such situations, PIs will be required to

submit a letter of collaboration (note attachment 2.g in Application Instructions/General Information) signed by the collaborating VA investigator.

Use of human subjects and human biological substances: All DOD-funded research involving human subjects and human biological substances must be reviewed and approved by the USAMRMC Office of Research Protections (ORP), HRPO, in addition to local IRBs. The HRPO is mandated to comply with specific laws and directives governing all research involving human subjects that is conducted or supported by the DOD. These laws and directives are rigorous and detailed, and will require information in addition to that supplied to the local review board. Allow a minimum of 6 months for regulatory review and approval processes for studies involving human subjects. Refer to the Application Instructions & General Information, Appendix 6, for detailed information.

C. Eligibility

PIs must be independent investigators at any academic level (or equivalent). Refer to Application Instructions and General Information (Appendix 1), for general eligibility information.

D. Funding

- The maximum period of performance for this award mechanism is **3** years.
- The maximum allowable funding per year is **\$750,000** in direct costs. In addition to the direct costs, indirect costs may be proposed in accordance with the institution's negotiated rate agreement.

Within the guidelines provided in the Application Instructions and General Information, funds can cover:

- Salary
- Research supplies
- Equipment
- Clinical research costs (Clinical trials will not be supported)
- Research-related subject costs
- Travel to scientific/technical meetings
- Travel between collaborating institutions
- Other direct costs as described in Application Instructions & General Information for the Detailed Budget and Justification.

Each PI must request travel funds to attend one program review per year during the award period of performance. For planning purposes, it may be assumed that program reviews will be held in the Washington, DC – Baltimore, Maryland, metropolitan area.

Funding in response to this Program Announcement/Funding Opportunity is contingent on the availability of federal funds. Dollar amounts in this Program Announcement/Funding Opportunity are approximate and subject to realignment. Finally, the Government expects to award a portion of the total amount through this extramural Program Announcement/Funding Opportunity; the remaining funds will be awarded through a companion intramural Program Announcement/Funding Opportunity. The number of extramural applications that will be funded will be determined based on the quality and number of intramural and extramural applications received.

Resultant awards will be funded in accordance with the availability of funds.

The DMRDP expects to allot \$97M of the FY10 appropriation to fund approximately 100 intramural and extramural Applied and Advanced Technology Development Research Award applications depending on the quality and number of applications received. This announcement is intended only for extramural applications. A previous announcement was released for intramural applications. Funding of applications received in response to this Program Announcement/Funding Opportunity is contingent upon the availability of Federal funds for this program.

E. Award Administration

Changes in PI and institution are discouraged. Such requests will be evaluated on a case-by-case basis and at the discretion of the US Army Medical Research and Materiel Command (USAMRMC) Contracting Office. Refer to the Application Instructions and General Information, Appendix 5, for general award administration information.

II. TIMELINE FOR SUBMISSION AND REVIEW

Submission is a two-step process consisting of (1) pre-application submission and (2) an application submission. *Pre-application submission is a required first step.*

Pre-Application Submission Deadline:	September 25, 2009, 5:00 p.m. Eastern time
Invitation to Submit an Application	November 9, 2009
Application Submission Deadline:	December 18, 2009, 11:59 p.m. Eastern time
Scientific peer review:	February 2010
Programmatic Review:	April 2010

Awards will be made approximately 4 to 6 months after receiving the funding notification letter.

III. SUBMISSION PROCESS

The proposal process for the DMRDP Applied Research and Advanced Technology Development Awards is being administered by the USAMRMC CDMRP. Submission is a two-

step process consisting of (1) a pre-application submission through the US Army Medical Research Acquisition Activity (USAMRAA) website at <http://www.usamraa.army.mil/dmr dp.cfm> and (2) an application submission through [Grants.gov](http://www.grants.gov/) (<http://www.grants.gov/>). Applications will be invited based on pre-application screening.

PIs and organizations identified in the application submitted through Grants.gov should be the same as those identified in the pre-application. If there is a change in PI or organization after submission of the pre-application, the PI must contact the help desk at help@cdmrp.org or 301-682-5507.

A. Step 1 – Pre-application Components, Submission and Screening

Pre-application submission is the required first step. The pre-application consists of the components discussed below. All pre-application components must be submitted electronically through the USAMRAA website at <http://www.usamraa.army.mil/dmr dp.cfm> by **5:00 p.m. Eastern time on the pre-application deadline.** In addition to the award-specific information provided below, refer to the Application Instructions and General Information for detailed information.

- **Proposal Information:** Because the invitation to submit an application is based on the contents of the pre-application, investigators should not change the title, research objectives, or the FY10 DMRDP Project/Task in the pre-application submission after the pre-application is submitted.
- **Proposal Contacts:** Refer to the Application Instructions and General Information for details.
- **Collaborators and COI:** To avoid COI during the screening and review processes, list the names of all scientific participants in the proposed research project including collaborators, consultants, and subawardees.
- **Pre-proposal Form:** The pre-proposal data will be reported on the Pre-proposal Form. This data collection form is a PDF file that can be edited and saved using Adobe Acrobat Reader. The form consists of Sections 1-8. Details on each section are provided below:
 - Section 1 – Proposal Information
Enter the name of the PI (i.e., the individual responsible for the overall scientific and technical direction), the preproposal title, and the log number assigned by the eReceipt system.
 - Section 2 – Specific Hypothesis/Aims (Problem to be studied; limited to 2,300 characters)
Clearly state the specific objectives of the work proposed, including the hypothesis to be evaluated and an explanation of the military relevance of the work (i.e., how the work addresses the selected Project and Task identified in the Program Announcement/Funding Opportunity).
 - Section 3 – Scientific Rationale (limited to 2,300 characters)

Describe the scientific rationale for the research project, including a brief description of previous studies or preliminary data that support the feasibility of the proposed work.

○ Section 4 – Approach/Methods (limited to 2,300 characters)

Briefly describe the experimental design, methods, and materials that are planned to accomplish the proposed research. For human studies, this should include a description of the size and characteristics of the subject population that will be employed.

○ Section 5 – Outcomes/Technology Readiness Levels

The Department of Defense (DOD) uses Technology Readiness Levels (TRLs) to indicate how mature a technology is with respect to the ultimate goal of delivering a usable capability to the military community. Select from the list of alternatives provided the item(s) that best describes the ultimate deliverable(s) that will be provided by this project upon successful completion. If none of the alternatives apply, check the “Other” box and provide a short description of the expected outcome. You may check as many boxes as apply. For reference, a full description of the criteria for TRLs for biomedical products may be found in Appendix H of the *DOD Technology Readiness Assessment Deskbook*, which can be downloaded at the following link: http://www.dod.mil/ddre/doc/May2005_TRA_2005_DoD.pdf

○ Section 6 – Duration of Project to Be Studied

Enter the total duration of the proposed work in years and months (e.g., 2 years and 4 months).

○ Section 7 – Personnel and Budget Information

- Participating Personnel and Effort – List the PI and all associate investigators (if any), their titles, organizations (institution or company name), role in the project (i.e., PI or associate investigator), and planned annualized percent of effort over the duration of the award.
- Estimated Budget by Fiscal Year – Enter the total planned budget for each year of work that is proposed, to include pay and benefits for individuals contributing toward the project, equipment purchases, and any other costs such as supplies and materials, institutional overhead costs, purchased services, and travel.

○ Section 8 – Animal and Human Use

Check the appropriate boxes to indicate whether the proposed work involves animal and/or human studies. The U.S. Army Medical Research and Materiel Command (USAMRMC) Office of Research Protections (ORP) must review all research involving animals, human anatomical substances, and human subjects as described later in this announcement.

- **Pre-Application Supporting Documentation:**

Quad Chart: This data collection form is a PDF file that can be edited and saved using Adobe Acrobat Reader. Details on each section are provided below:

- Problem and Military Relevance – Provide a bulleted summary of the problem addressed and its relation to the Project and Task described in the Program Announcement/Funding Opportunity, based on Section 4 of the preproposal.
- Proposed Solution – Provide a bulleted summary of the objectives of the work based on Section 2 of the preproposal.
- Picture – Insert a picture or other graphic that is representative of the work to be performed; this may for example show some aspect of the research to be performed, the expected technology outcome of the work, or the military problem that is being addressed.
- Timeline and Cost – Identify at a high level the major planned activities or phases of the work and their duration on the chart provided, and provide the estimated budget by year.

Pre-Application Screening: Pre-applications will be screened by one of four Expanded Joint Technology Coordinating Groups (EJTCGs) that span the various areas of DMRDP interest, composed of research program managers, scientists, clinicians, and representatives of the military user community. The pre-application screening criteria are as follows:

- **Specific Hypothesis/Aims:** Whether the hypothesis/aims address a military-relevant health problem responsive to one of the Projects and Tasks outlined in the Program Announcement/Funding Opportunity and the potential contribution that the study could make, if successful.
- **Scientific Rationale:** Whether the scientific rationale logically supports the Project and its feasibility.
- **Approach/Methods:** Whether the experimental design, methods, subject populations, data collection procedures, and analytical methods are appropriate for the specific hypothesis/aims of the study.
- **Estimated Budget:** Whether the estimated budget is consistent with the funding limits for awards and appears consistent with the scope of work to be performed.

B. Step 2 – Application Components and Submission

Application submissions will not be accepted unless the PI has been invited to submit an application. Do not submit an application unless an invitation has been received.

Applications must be submitted electronically by the Authorized Organizational Representative (AOR) through Grants.gov (www.grants.gov).

The PIs and organizations identified in the application submitted through Grants.gov should be the same as those identified in the pre-application. However, if there is a change in PI or organization after the submission of the pre-application, the PI must contact the help desk at help@cdmrp.org or 301-682-5507.

Because the invitation to submit an application is based on the contents of the pre-application, PIs should not change the title, research objectives, or project/task in the application.

Each application submission must include the completed application package of forms and attachments identified in www.grants.gov for the US Army Medical Research Acquisition Activity (USAMRAA) Program Announcement/Funding Opportunity. In addition to the specific instructions below, please refer to the Application Instructions and General Information for detailed requirements of each component.

The package includes:

1. SF-424 (R&R) Application for Federal Assistance Form

2. Attachments Form

• Attachment 1: Project Narrative (15-page limit)

Describe the proposed project in detail using the following outline. ***Applications must include preliminary and/or published data relevant to the proposed DMRDP FY10 Project/Task.***

- **Background and Literature Review:** Provide an overview of the subject, issue, and/or problem addressed, and present the rationale for the proposed research. State concisely the specific objectives, aims, and research strategy of the study. Do not request funding as part of a larger study. This section should describe the theory, phenomena, and conceptual framework under consideration. It should include a thorough written description and evaluation of the work done on the subject matter, and argument to support the position under review. Include appropriate scientific citations to support strengths and limitations of the study under investigation, as applicable.
- **Research Design and Method:** Describe the experimental design, methods, and analyses including appropriate controls and statistical power needed in sufficient detail for analysis. If human subjects or human biological samples will be used:
 - Include a detailed plan for the recruitment of participants or the acquisition of samples.
 - Describe the subject population and list the major inclusion and exclusion criteria of the study.
 - Identify the type of consent to be used (i.e., informed, waived, or surrogate).
 - Describe plans (if any) for military or veteran populations to be used for the proposed research project.
 - For human studies (if applicable), describe how ethical considerations, privacy, and assessment of risks and benefits of participation in the study will be addressed.

- **Technical Risks:** Identify and describe potential problem areas in the proposed approach and alternative methods and approaches that will be employed to mitigate any risks that are identified.
- **Attachment 2: Supporting Documentation**
 - References Cited
 - Acronyms and Symbol Definitions
 - Facilities & Other Resources
 - Description of Existing Equipment
 - Publications and/or Patent Abstracts (five-document limit)
 - Letters of Institutional Support (three-page limit per letter)
 - If the PI is a practicing clinician, the institution must clearly demonstrate a commitment to the clinician's research.
 - Letters of Collaboration (if applicable; two-page limit)
 - Provide a signed letter from each collaborating individual or institution that will demonstrate that the PI has the resources necessary for the proposed work.
 - If the collaborator is a DoD intramural investigator, as defined in section 1.B. Award Description, a letter from the Commander or Commanding Officer of the intramural collaborator that authorizes the intramural collaborator to participate in the research is required.
 - Intellectual and Material Property Plan (if applicable)
- **Attachment 3: Technical Abstract (one-page limit)**
- **Attachment 4: Public Abstract: (one-page limit)**
- **Attachment 5: Statement of Work (SOW) (three-page limit)**
- **Attachment 6: Detailed Budget and Justification**
- **Attachment 7: Impact on Military Population Statement (one-page limit)**
 - Explain how the proposed research study is aligned with the military research task(s) appropriate for the project being addressed.
 - Demonstrate how the proposed study is responsive to injuries service members are currently receiving on the battlefield and/or the health care needs and quality of life of military personnel, families, and/or communities. State explicitly how the proposed study will have an impact on the prevention, detection, diagnosis, or treatment of the specified disease/condition, if successful. Explain the potential clinical and operational applications, benefits, and risks.
 - Discuss how the new product, pharmacologic agent (drug or biologic), behavioral intervention, device, clinical guidance, and/or emerging approach and technology is suitable for operation in a field or other militarily relevant clinical environment.

- **Attachment 8: Transition Plan (one-page limit)**

Provide information on the methods and strategies proposed to move the product, pharmacologic agent, behavioral or rehabilitation intervention, device, clinical guidance, and/or emerging approach and technology to the next phase of development and/or military field deployment after the successful completion of the DMRDP award. The plan should include details of potential funding sources, collaborations, other resources that will be used to provide this continuity of development, and a potential timeline for field deployment.

- **Attachment 9: Request for Information on Study Population (if applicable; four-page limit).** Refer to Application Instructions and General Information for detailed information.

- **Attachment 10: Federal Agency Financial Plan (if applicable).** Refer to Application Instructions and General Information for detailed information.

- **Attachments 11-15: Subaward Detailed Budget and Justification (if applicable)**

3. Research & Related Senior/Key Person Profile (Expanded Form)

- PI Biographical Sketch (four-page limit)
- PI Current/Pending Support
- Key Personnel Biographical Sketches (four-page limit each)
- Key Personnel Current/Pending Support

4. Project/Performance Site Location(s) Form

IV. INFORMATION FOR APPLICATION REVIEW

A. Application Review and Selection Overview

All pre-proposals will be reviewed for programmatic relevance by one of four EJTCGs that span the various areas of DMRDP interest. This review will be used to determine which investigators will be invited to submit applications. Invited applications will be evaluated for both scientific excellence and programmatic relevance using a two-tiered review process. The first review (conducted by independent contract scientists) consists of a scientific peer review of applications against established criteria for determining scientific merit. The second review (conducted by the EJTCGs) is a programmatic review that compares submissions to each other and recommends applications for funding based on military need, scientific merit, and overall goals of the research program.

The scientific peer, and programmatic review processes are conducted confidentially to maintain the integrity of the merit-based selection process. Each tier review requires panelists to sign a non-disclosure statement attesting that application and evaluation information will not be disclosed outside the panel. Violations of the non-disclosure statement can result in the dissolving of a panel(s) and other corrective actions. Institutional personnel and PIs are prohibited from contacting persons involved in the application review process to gain protected

evaluation information or to influence the evaluation process. Likewise, persons involved in the programmatic review process are prohibited from communicating the program priorities, other than what is listed in this Program Announcement/Funding Opportunity, to PIs and/or being involved in the application development (including the pre-application process, concept design, budget, and supporting documentation). Violations of these prohibitions will result in the administrative withdrawal of the institution's application. Violations by panelists or PIs that compromise the confidentiality of the scientific peer, and programmatic review processes may also result in suspension or debarment of their employing institutions from Federal awards. Furthermore, it is a crime for Federal officials to disclose confidential information of one party to another third party (Title 18 United States Code 1905).

The Government reserves the right to review all applications based on one or more of the required attachments or supporting documentation (e.g., Impact on Military Population Statement, Transition Plan, etc.).

B. Review Criteria

Peer Review Criteria: All applications will be evaluated according to the following criteria. Of these, Research Strategy and Feasibility is the most important, Impact and Personnel are of lesser but equal importance, and Anticipated Contribution of the Project is the least important.

1. Research Strategy and Feasibility

- How the scientific rationale supports the project and its feasibility, as demonstrated by a critical review and analysis of the literature and/or by logical reasoning.
- How well the aims, hypotheses, experimental design, methods, data collection procedures, and analyses are developed.
- How well the PI acknowledges potential problems and addresses alternative approaches.
- How appropriate the cited references are for the proposed work and whether the cited references are of high scientific quality, peer reviewed, current, and complete.
- How the statistical plan, including sample size projections and power analysis, is adequate for the study and all proposed correlative studies.
- How the data analysis plan is consistent with the study objectives.
- If applicable, how the clinical study is constructed and is appropriate for the study objectives, to include the appropriateness of the study population.
- How the plan for addressing unanticipated delays (e.g., slow accrual) is likely to lead to success in completing the proposed study within the performance period.
- For clinical studies, how the application plans for regulatory and other clinical study issues within its time lines.

2. Impact

How the hypothesis/aims address a military-relevant health problem responsive to one of the projects of interest and tasks outlined in the Program Announcement/Funding Opportunity.

3. Personnel

- How the qualifications, capabilities, and experience of the proposed PI and other key personnel demonstrate that the proposed staff have the knowledge and skills to achieve the proposed objectives.
- How the research team's background and expertise are appropriate to accomplish the proposed work.
- How the levels of effort are appropriate for successful conduct of the proposed work.

4. Anticipated Contribution of the Project

- How the proposed study, intervention, drug, or device/product contributes to the Task.
- How the results of the proposed study will affect the magnitude and scope of potential applications related to the Task.

The following will not be individually scored, but may impact the overall evaluation of the application:

1. Environment

- How the scientific environment is appropriate for the proposed research.
- How the research requirements are supported by the availability of and accessibility to facilities and resources.
- How the quality and extent of institutional support are appropriate for the proposed research.

2. Budget

How the budget is appropriate for the proposed research and within the limitations of the award mechanism.

3. Application Presentation

How the writing and components of the application influenced the review.

Programmatic Review: Scientifically sound applications that best fulfill the following criteria and most effectively address the Projects and Tasks listed in this funding opportunity will be identified by an EJTCG, and the group's recommendations for funding will be forwarded to the Director of the DMRDP for approval. Criteria 1 and 2 are of equal importance, followed by criteria 3 and 4 in descending order of importance.

Criteria used by the EJTCG members to make funding recommendations include:

1. Responsiveness to Research Projects and Tasks

- How well the proposed study meets the DMRDP's identified Tasks within the Project addressed, if successful.
- How well the proposed study accelerates core research efforts.
- Whether the proposed research is a duplication of effort funded by DOD or other agencies.
- A transition plan showing how the product will progress to the military market upon successful completion.

2. Impact on Military Population

- How much the proposed project contributes to accelerating the fulfillment of military requirements, if successful.
- How the plan to access and study military populations, if applicable, is appropriate and feasible.

3. Ratings and Evaluations of the Scientific Peer Reviewers

Scientific merit of the proposed project will be considered in the context of the military relevance and programmatic review, and compared to all eligible applications under consideration.

4. Portfolio Balance Across the DOD

How well the proposed study contributes to ensuring an overall balance of research and development efforts across the entire DOD portfolio.

V. ADMINISTRATIVE ACTIONS

After receipt of the applications from Grants.gov, they will be administratively reviewed for inclusion of appropriate components in accordance with this Program Announcement/ Funding Opportunity. If components are missing or not appropriate, the following administrative actions may occur:

A. Rejection

The following **WILL** result in administrative rejection of the pre-application:

- Any sections of the 8-part Pre-proposal form are missing.
- Any of the following parts of the quad chart missing:
 - Problem, Hypothesis and Military Relevance

- Proposed Solution
- Timeline and Cost

The following **WILL** result in administrative rejection of the entire application:

- Project Narrative exceeds page limit.
- Project Narrative is missing.
- Budget is missing.
- Page size is larger than 8.5 inches x 11.0 inches (approximately 21.59 cm x 27.94 cm).
- Submission of an application for which an invitation was not received.

The following **MAY** result in administrative rejection of the application:

- The proposed research project is or contains a clinical trial.
- The application does not conform to this Program Announcement/Funding Opportunity description to an extent that precludes appropriate scientific peer and programmatic review.
- Direct costs as shown on the detailed budget form exceed the maximum allowed by the award mechanism.
- Inclusion of URLs, with the exception of links to published references.

B. Modifications

- Pages exceeding the specified limits will be removed for all documents other than the Pre-proposal Form
- Documents not requested will be removed.
- Following the application deadline, you may be contacted via email with a request to provide certain missing supporting documents (excluding those listed directly above in Section A, Rejection). Missing documents must be provided by 5:00 p.m. Eastern time on the second full business day following the date the email was sent. Otherwise, the application will be reviewed without the missing documents.
- If the Commander's/Commanding Officer's letter (for intramural collaborator) is not submitted in the timeframe mentioned immediately above, the application will not be forwarded for review.

C. Withhold

Applications that appear to involve research misconduct will be administratively withheld from further consideration pending institutional investigation. The institution will be requested to perform an investigation and provide those findings to the USAMRAA Contracting/Grants Officer for a determination of the final disposition of the application.

VI. CONTACT INFORMATION

A. Program Announcement/Funding Opportunity, application format, or required documentation: Submit questions as early as possible. Response times will vary depending upon the volume of inquiries. Every effort will be made to answer questions within 5 working days.

Phone: 301-619-7079
Fax: 301-619-7792
Email: cdmrp.pa@amedd.army.mil

B. Pre-application Questions: Issues related to pre-application should be directed to the help desk, which is available Monday through Friday from 8:00 a.m. to 5:00 p.m. Eastern time.

Phone: 301-682-5507
Website: <https://cdmrp.org>
Email: help@cdmrp.org

C. Grants.gov contacts: Questions related to submitting applications through the [Grants.gov](http://www.grants.gov) (<http://www.grants.gov>) portal should be directed to Grants.gov help desk. Deadline for application submission is 11:59 p.m. Eastern time on the deadline date. Therefore, there is an approximate 3-hour period during which the Grants.gov help desk will NOT be available. Please plan ahead accordingly, as the help desk is not able to answer questions about Grants.gov submissions.

Phone: 800-518-4726, Monday to Friday, 7:00 a.m. to 9:00 p.m. Eastern time
Email: support@grants.gov

Grants.gov will notify PIs of changes made to this Program Announcement/Funding Opportunity and/or application package ONLY if the PI subscribes to the mailing list by clicking on the “send me change notification emails” link on the Opportunity Synopsis page for this Program Announcement/Funding Opportunity. If the PI does not subscribe and the application package is updated or changed, the original version of the application package may not be accepted.