



NAEVR

National Alliance For
Eye And Vision Research

Serving as Friends of the National Eye Institute

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**NAEVR Request to Maintain “Eye and Vision Research” Eligibility within the
Congressionally Directed Medical Research Program’s (CDMRP) Peer Reviewed Medical
Research Program (PRMRP) in FY2009 DOD Appropriations**

Request Summary

NAEVR requests that “Eye and Vision Research,” which has been listed in FY2006 through FY2008 as eligible for funding within the DOD CDMRP/PRMRP program, maintain its eligibility in the Fiscal Year (FY) 2009 Department of Defense (DOD) Appropriations.

Background

In current battlefield conditions, ground soldiers face a variety of assaults that could potentially damage their eyes and impair visual function short- and long-term. These include:

- Traumatic eye injury from explosive devices/projectiles (for example, 16 percent of wartime injuries affect the eye, and those with optic nerve trauma are the most severe) and visual disorders associated with Traumatic Brain Injury (TBI, with visual symptoms reported in 80 percent of all TBI cases);
- Eye injury from chemical, biohazard and laser exposure; and
- Extreme environmental conditions that can affect eye injury healing or cause dry eye and its potential for corneal abrasion and infection.

Whether a soldier is engaged directly in combat conditions or in activities which support the military, vision is the most critical of the five senses for optimal performance. Vision is also the sense most vulnerable to injury, both acute and chronic. The treatment of acute eye injury can determine the extent of resulting vision impairment or chronic eye disease and the associated need for vision rehabilitation. As a result, the ability to effectively treat acute eye damage can have long-term implications for an individual’s vision health, productivity, and quality of life for the remainder of their military service and into their civilian lives. This also has a potentially significant economic impact in terms of the long-term cost of veterans’ healthcare.

Battlefield conditions also require uncompromised visual acuity—whether a ground soldier, pilot, or seaman is viewing the battlefield directly or through the aid of visual enhancement devices. Visual acuity is also essential for peak performance of personnel that operate the computer-assisted tracking and guidance systems that support the battlefield, since these systems present data almost exclusively through a visual screen, scan, or readout. Research into visual function may elucidate physiological conditions that maximize visual acuity.

Since the active and retired military population is both large and diverse in terms of gender, race, and age, there is a disproportionate incidence of vision impairment and eye disease within its sub-populations (e.g., glaucoma, cataract, and diabetic retinopathy, which are more prevalent in the African American and Hispanic communities). Research may be able to better characterize these differences and find effective treatments for vision impairment and eye disease conditions associated with these sub-populations.

Defense-related “Eye and Vision Research” Potentially Funded through CDMRP/PRMRP

Eye Trauma, Healing and Infection, and Rehabilitation

This research relates to acute and chronic implications of corneal and retinal eye trauma, healing, infection/inflammation control and associated vision rehabilitation.

- Treatment of eye trauma caused by a physical, chemical or biological agent insult; associated healing; and infection/inflammation control (including infections associated with skin around the eye, the corneal surface, or within the ocular globe, and the impact of environmental conditions that promote infection)
- Treatment of eye injury caused by the offensive use of lasers; laser-use safety issues
- Ocular surface reconstruction and treatment of corneal damage by corneal transplantation or through corneal stem cell transplantation
- Retinal and optic nerve regeneration (either through identification of genes involved and associated human gene therapy or through other biomedical processes)
- Treatment and prevention of Chronic Dry Eye
- Optimal vision rehabilitation management after acute injury

Visual Function/Visual Acuity

This research relates to the metabolic and physiological processes that relate to visual clarity, contrast sensitivity and spatial orientation.

- Impact of metabolic modulation or stress on visual acuity and contrast sensitivity (e.g., effect of lowered blood glucose levels on central vision)
- Visual image processing (better understanding of the biological/electrochemical interface in the vision process to improve acuity/advance “artificial vision”)
- Sensory dysfunction associated with Traumatic Brain Injury (TBI), such as diplopia (double vision), convergence disorder, photophobia (light sensitivity), ocular-motor dysfunction, and inability to interpret print.
- Spatial orientation processing (relation of motor control and perception, especially relating to depth perception of objects in a visual field); enhancement of peripheral vision
- Next-generation refractive error correction and vision augmentation research (e.g., LASIK, visual implants/prostheses and associated corneal healing issues)

Vision Health Disparities

This research relates to characterization of visual disparities based upon gender, race, or age and determination of the underlying physiological basis to develop treatments and therapies.

- Epidemiologic studies of military populations to determine extent/physiological basis of vision health disparities (e.g. greater incidence of glaucoma, cataract and diabetic retinopathy in the African/American/Hispanic populations)
- Low vision research (result of traumatic eye injury or chronic eye disease, such as age-related macular degeneration or glaucoma)
- Age-related macular degeneration (AMD) research (leading cause of blindness in US/leading cause of blindness in Americans age 60+)