

NEI FUNDING HAS RESULTED IN SUCCESSFUL COMMERCIALIZATION OF PRODUCTS

NEI funding of investigator-initiated research grants and Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) grants has resulted in several commercialized products, further benefiting patients. Examples include:

Optical Coherence Tomography (OCT)

OCT is a non-invasive, high-speed, high-resolution imaging technology that displays a three dimensional, cross-sectional view of the layers of the retina. Additional research is poised to add Adaptive Optics (AO) to OCT to “supercharge” the detail in imaging retinal diseases such as AMD, diabetic retinopathy, and RP.

Over-the-Counter Nutritional Supplement to Reduce AMD Progression

NEI’s *Age-Related Eye Disease Study (AREDS)* showed that a formulation containing vitamins C and E, beta-carotene, and minerals zinc and copper reduced progression to advanced-stage AMD. New data from a follow-up study, *AREDS2*, suggest that replacing beta-carotene with lutein and zeaxanthin may produce a safer, more effective formulation.

Field Expansion Prism Glasses for Hemianopia

High power prisms incorporated into prescription eyeglasses increase the visual field by creating artificial peripheral vision in these patients who experience loss of peripheral vision on the same side of both eyes, a common side effect of stroke or Traumatic Brain Injury (TBI).

Sutureless Amniotic Membrane Graft

The graft is essentially a “biological bandage” that sits on the surface of the eye—the cornea—reducing scarring, prevention of blood vessel formation, and promoting healing while reducing pain.

Visual Aide Services Using Camera-Enabled Mobile Phones

This Smartphone application enables users to identify everyday objects, such as packaged goods, compact discs, and money with text-reader capabilities using Optical Character Recognition (OCR).

Virtual Phaco Trainer for Cataract Surgery

This simulator enables ophthalmology residents to practice the difficult steps of standard cataract surgery without risk to patients.

Robotic Device to Facilitate Corneal Transplantation

The developer is using this device to transplant an artificial cornea, which is currently under FDA regulatory review, and which may obviate the need for donor corneal tissue.

NEI RESEARCH RESPONDS TO VISION-RELATED QUALITY OF LIFE CHALLENGES

Chronic Dry Eye

Chronic dry eye is an often unrecognized, unattended part of the aging process, affecting upwards of 5 million Americans, with women two-to-three times more likely to have it than men. Dry eye is most common in post-menopausal women, likely due to hormonal changes associated with aging, among other factors. Research estimates indicate that 3.2 million women in the U.S. over the age of 50—or one in twelve—experience significant chronic dry eye. The most common cause of dry eye, meibomian gland dysfunction (MGD), can impact quality of life and is recognized as a global public health issue due to high prevalence across the world.

Kelly Nichols, O.D., Ph.D., M.P.H.
University of Houston
College of Optometry



“A striking statistic—two-thirds of the visually impaired in the world are women—continues to warrant further NIH/NEI funding to support research to understand this gender difference. My research interests are in the area of chronic dry eye and MGD, which is both an aging and a women’s health issue that affects both health and quality of life.”

Safe Senior Driving

Older drivers have twice the rate of motor vehicle crash involvement as compared to middle-aged adults. Functional impairments are a major underlying cause of this elevated crash risk, with vision impairment playing a significant role since it is very prevalent in the over-60 population. NEI-funded research is helping lead to better tests to determine who is at elevated risk—and what rehabilitation services and devices are most effective for reducing the risk.



Cynthia Owsley, Ph.D., M.S.P.H.
University of Alabama at Birmingham

“We found that cataract surgery reduces the rate of crash involvement by 50 percent compared to older adults with cataract who do not elect surgery. This is largely due to improvements in contrast sensitivity. Most recently, we found that serious peripheral vision loss in both eyes of older drivers with glaucoma, elevates their risk for collision involvement, underscoring the critical importance of minimizing and even arresting the progression of this disease.”

References for citations available on request
Visit www.eyerresearch.org to view:



**The Silver Book®:
Vision Loss
Volume II**
(Compendium of published data on aging eye disease, developed with the Alliance for Aging Research)



**The Value
of Defense-
Related Vision
Research**

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