



AMERICAN RECOVERY AND REINVESTMENT ACT (ARRA) AND VISION RESEARCH

- **NEI received \$175 million of the \$10.4 billion in NIH ARRA funding**
- **To-date, NEI has made 333 awards, the majority of which reflect investigator-initiated research that funds new science or accelerates ongoing research**
- **Vision researchers were awarded ten Challenge Grants**
- **NEI's awards address preemption, prediction, and prevention of eye disease through basic, translational, and epidemiologic research**

Examples of ARRA-Funded Vision Research

Biomarker for Neovascular Age-related Macular Degeneration (AMD):

Researchers will use a recently discovered biomarker for choroidal neovascularization (CNV)—the growth of abnormal blood vessels into the retina and responsible for 90 percent of vision loss associated with AMD—to develop an early detection method to minimize vision loss. Why important? *AMD is the leading cause of vision loss in the U.S., especially among the elderly.*

Cellular Approach to Treating Diabetic Retinopathy (DR):

Researchers propose to develop a clinical treatment for diabetic retinopathy—in which diabetes damages small blood vessels in the retina, causing them to leak—that uses stem cells from the patient's own blood that have been activated outside of the body and then returned to repair damaged vessels in the eye. Why important? *DR is the leading cause of vision loss in younger Americans and has a disproportionately higher incidence in African Americans, Latinos, and Native Americans.*

Small Heat Shock Proteins as Therapeutic Agents in the Eye:

Researchers propose to develop new drugs to prevent or reverse blinding eye diseases, such as cataract (clouding of the lens), that are associated with the aggregation of proteins. Research will focus on the use of small "heat shock" proteins that facilitate the slow release and prolonged delivery of targeted macromolecules to degenerating cells of the eye. Why important? *Delivering effective, long-lasting therapies in a minimally invasive fashion to the eye is a major challenge.*

Identification of Genes and Proteins that Control Myopia Development:

Researchers propose to identify targets that will facilitate development of interventions to slow or prevent myopia (nearsightedness) development in children. Identifying an appropriate myopia prevention target can reduce the risk of blindness and reduce annual life-long eye care costs. Why important? *More than 25 percent of the U.S. population has myopia, costing \$14 billion annually, from adolescence to adulthood.*

Comparative Effectiveness of Medical Interventions for Primary Open Angle Glaucoma:

Researchers will evaluate existing data on the effectiveness of various treatment options for primary open angle glaucoma—many emerging from past NEI research. Why important? *Glaucoma is the second leading cause of preventable blindness in the U.S., disproportionately affecting African Americans and Latinos.*

Comparative Effectiveness of Novel Intervention for Retinopathy of Prematurity (ROP):

In animal studies, researchers will simulate Retinopathy of Prematurity—a blinding eye disease that affects premature infants—and then study novel treatments that involve modulating the metabolism of the retina's rod photoreceptors. Why important? *ROP affects 15,000 children a year, about 400-600 of whom progress to blindness despite treatments that have emerged from past NEI-funded research.*