Identifying AMD…

If you have turned the corner past middle age, perhaps this has happened to you. You are at the movies. You leave the well-lit lobby and enter the theater during a dark preview and, for a minute or two, your surroundings are plunged into darkness. Gradually, your eyes adjust and you can find your way to a seat.

Your eyes’ ability to adjust to darkness after being exposed to bright light is called dark adaptation. Research to Prevent Blindness (RPB)-supported researchers at the University of Alabama at Birmingham believe that adults whose eyes are slow to adjust have a greater risk of developing age-related macular degeneration (AMD), the leading cause of blindness in the developed world.

The researchers recently developed a tool to measure a patient’s dark adaptation response time, which is designed to help track the onset or progression of the disease, as well as quickly evaluate new or emerging medications for AMD treatment.

And Treating It

RPB-supported researchers at Massachusetts Eye and Ear Institute (MEEI) and Harvard Medical School (HMS) and scientists at University of Crete have conducted a phase I/II clinical trial investigating the efficacy of statins (cholesterol-lowering medications) for the treatment of patients with the dry form of AMD.

Although effective treatments are available for the wet form of AMD, they are currently lacking for the more prevalent dry form.

The researchers found evidence that treatment with high-dose atorvastatin is associated with regression of lipid deposits and improvement in visual acuity in high-risk AMD patients.

“This is a very accessible, FDA-approved drug that we have tremendous experience with,” said Demetrios Vavvas, MD, PhD, a clinician-scientist at MEEI and Co-Director of the Ocular Regenerative Medicine Institute at HMS.

“Millions of patients take the drug for high cholesterol and heart disease, and based on our early results, we believe it offers the potential to halt progression of this disease, but possibly even to restore function in some patients with dry AMD.”

Learn more about AMD at www.rpbusa.org.
Revolutionizing Cataract Surgery with Stem Cells

In a breakthrough that could have broader implications for human tissue and organ regeneration, RPB-supported scientists at University of California, San Diego report that, by leaving local stem cells intact during surgery to remove the lens in infants who develop congenital cataracts, the body can regrow a functional lens—eliminating the need for potentially problematic synthetic lenses or the potential for rejection of lab-created stem cells.

The researchers are now looking to expand their work to treating age-related cataracts, using this minimally invasive approach. Such a change in cataract surgery technique would be especially timely, since the world’s aging population has been predicted to double the need for cataract surgeries over the next 20 years.

Preventing Corneal Transplant Rejection

A team that included RPB-supported researchers at Tufts University School of Medicine in Massachusetts has successfully prevented corneal inflammation, a condition that contributes to corneal tissue transplantation rejection, by inhibiting the overgrowth of lymphatic vessels. Earlier this year, the researchers published a study that focuses on the role of a protein, galectin-8, which they discovered promotes the growth of new lymphatic vessels (triggering an overzealous immune response) and thus increases the risk of corneal transplant rejections. The researchers then successfully identified approaches to inhibit galectin-8 and reduce the harmful inflammation.

The findings, published in *Nature Communications*, may have wider impact because the same overgrowth of lymphatic vessels, called lymphangiogenesis, occurs in organ transplant rejection, cancer metastasis, lymphatic obstruction, complications of diabetes and hypertension.