

News...



Inside:

New Treatments
for Corneal
Conditions

Gene Therapy
for Glaucoma

To Prevent Macular Degeneration, Got Milk?

Vitamin D may protect against early age-related macular degeneration (AMD), according to a recent report. This could be a wake-up call for aging Americans. While an AMD-risk-reducing dose of D has yet to be established, other studies have reported inadequate vitamin D intake as a public health concern in the U.S.

The researchers found that participants in the study group (all over 40) who used milk daily had a 25 percent reduced AMD risk compared with those who used milk less than weekly. For people who did not use milk daily but used vitamin D supplements, there was a 30 percent reduced risk, compared with no supplementation.

Exposure to sunlight, which helps the body synthesize vitamin D, also appeared to be associated with lower risk of early AMD, but this information requires further study because it conflicts with concerns over whether or not exposing the eyes to too much sunlight can promote the disease.

An Index for Eye Health

The glycemic index, or GI, ranks carbohydrate-containing foods according to how quickly they raise blood glucose levels: the higher the GI ranking, the greater the impact. Evidence has been steadily accumulating that one key to long-term health is eating a low GI diet. According to a researcher in an RPB-supported department of ophthalmology, the same key applies to eye health. His report indicates that there is considerably higher risk for age-related macular degeneration (AMD) and cataract among people who consume higher glycemic index diets. His most recent finding further suggests that lowering the consumption of high glycemic index carbohydrates can slow the progression of AMD.

The impact a food will have on blood sugar depends on many other factors, including fiber and fat content. A food's actual GI ranking may be surprising. Mashed potatoes are higher than ice cream. Corn chips are higher than a chocolate bar. Consult a nutritionist or other reliable resources for accurate GI information.

*Current research
on all diseases
of the eye, from
Research to
Prevent Blindness
www.rpbusa.org
1-800-621-0026*

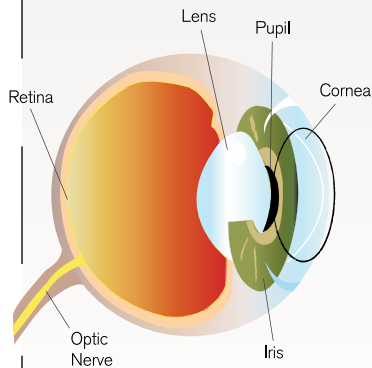


New Options for the Treatment of Corneal Conditions

FY Eye:

Scientists have started testing a biodegradable implant for time release delivery of medication to **treat intraocular lymphoma and uveitis.**

The artificial cornea (Boston Keratoprosthesis) is held between two plates, much like a nut, bolt and washer.



Artificial Cornea

In a small study involving children whose corneas were opaque due to disease damage or birth defects, an artificial cornea restored at least partial sight... and, in some cases, 20/30 visual acuity.

Over the years, research has led to developments that have improved the success of corneal transplantation, but there is still a group of people for whom traditional cornea transplants usually fail. That's because natural corneas from donor eyes can be problematic, triggering rejection by the immune system or corneal scarring from infections. Children who require new corneas can be especially difficult to treat due to the vibrancy of a child's immune system, which

increases the risk of rejection.

Some young patients may require several subsequent corneal surgeries,

each one initiating a potentially stronger rejection response. Now, for this age group, there's a promising new option.

The relatively new approach was used in children who had no other medical option. The artificial cornea appears to be effective in infants and children from six weeks to 13 years old—an important age window because a child's brain deprived of visual signals too long may permanently cease to process the information.

An earlier study reported similar success for adults. A group of 25 patients who received the plastic device had no infections in the first year after surgery, and no patient required re-operation.

Bone Marrow Stem Cells

According to RPB-supported researchers, adult bone marrow stem cells may be able to cure certain genetic diseases of the cornea. The cells were injected into corneas with abnormalities that mimicked genetic eye mutations. The marrow cells transformed into cells that produce a natural protein required by the developing cornea. One week after the injection, these abnormal corneas began to change shape and show signs of healing. If a planned clinical trial succeeds, this procedure may help prevent blindness for those suffering from inherited corneal diseases.

New Tool for Dry Eye Diagnosis

Dry eye can be a progressive condition. Early diagnosis is crucial, affording doctors more treatment options as well as enhancing efforts to limit the severity of the disease. A diagnosis of dry eye also signals the possible presence of other associated diseases—such as lupus or rheumatoid arthritis—rendering early diagnosis even more critical. Researchers now report that an eye-drop stain, used to detect damaged cells on the eye's surface, can assist in diagnosing dry eye syndrome earlier than other methods. Implementing this technique may help dry eye patients before corneal damage occurs.

FY Eye:

Researchers have shown, for the first time, that zeaxanthin (found in green leafy vegetables) significantly **inhibits diabetes-induced retinal damage.**

Nano Therapy May Be In Sight

Tiny, nano particles composed of an inorganic compound traditionally used to polish glass and jewelry may be used someday to prevent loss of cell function in eye diseases. The engineered particles (called nanoceria) scavenge harmful oxidative by-products of normal cell metabolism, which can accumulate and react dangerously with nearby molecules, resulting in the death of photoreceptor cells. While these nanoceria will not eliminate the cause of diseases, they show promise of inhibiting the body's progressive, self-destructive response, according to scientists. The tiny particles are so small that they can pass through the tough, outer tissue of the eye (called the sclera), which may also make them useful as a means of delivering medications within the eye without injection. Other degenerative diseases, such as Parkinson's, Alzheimer's, Huntington's, cancer and diabetes, may also be treatable with these nanoceria.

Rosier Picture for Those With Blepharospasm

A new study suggests that people with benign essential blepharospasm (BEB) prefer glasses tinted with a specific rose color (FL-41) to the standard gray tinted glasses often recommended for these patients. BEB causes involuntary, excessive squeezing or closure of the eyelids, makes reading and driving

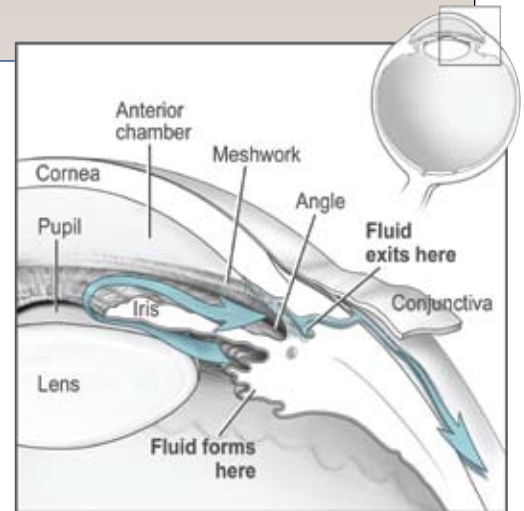
Gene Therapy for Glaucoma May Treat Two Risk Factors

Scientists are investigating the use of a process called RNA interference as a way of reducing elevated pressure in the eye that can cause glaucoma. By injecting molecules called short interfering RNAs directly into tissue known as the trabecular meshwork, researchers have been able to silence the action of disease-relevant genes.

RNA interference also seems to be effective in regulating genes associated with another important risk factor for glaucoma: treatment with steroids. The use of corticosteroids to treat other conditions is known to cause an increased resistance to aqueous humor outflow and elevated IOP.

These findings show, for the first time, that RNA interference could potentially serve as an important therapeutic alternative in the management of glaucoma risk factors.

difficult, and creates extreme sensitivity to bright light for the 50,000 people in the U.S. with this condition. Four out five people with BEB report that bright light triggers their symptoms or makes them worse.



The eye produces a nutrient-rich fluid called aqueous humor that also helps the eye maintain its proper shape. Elevated intraocular pressure (IOP) can occur when the flow of fluid is impaired as it exits from the eye through filtering tissue called the trabecular meshwork.

Eye Opening Cholesterol Discovery

Various studies have signaled the potential use of statins to treat or prevent cataracts, glaucoma or AMD. Clearly, more research is required before recommendations can be made. But a recent, groundbreaking report once again points to a possibly beneficial use of the fat-lowering drugs to promote eye health.

The new report explains, for the first time, how high cholesterol levels

suppress the activity of an anti-inflammatory factor, ultimately harming the linings of blood vessels.

The study also indicates that statins can enhance this factor's proper functioning. According to an eye researcher involved in this report, a novel class of drugs may be developed to work with statins to maintain the health of blood vessels that feed the eye.

Investing In Vision

Did You Know... An IRA owner over 70 1/2 years of age may make a distribution directly to Research to Prevent Blindness. If the distribution meets certain requirements, it may be excluded from the owner's income up to a limit of \$100,000. This rule is available only for distributions made before the end of 2007.

Information contained in this publication was reported by scientists in departments of ophthalmology supported by grants from Research to Prevent Blindness (RPB), the world's leading voluntary organization in support of research into the causes, treatment and cure of all blinding diseases.

Since 1960, RPB has committed hundreds of millions of dollars to eye research and has been a catalyst in advancing visual science: funding the construction of new eye laboratory space across the U.S. and providing grants to generations of scientists. As a result, RPB can be identified with virtually every advance in eye care for more than four decades.

The best investment in preserving vision or restoring sight for millions of Americans is a gift to RPB.

Donations up to a total of one million dollars will be doubled through a legacy established by RPB's founder.

- **As a public 501 (c)(3) foundation, contributions to Research to Prevent Blindness (RPB) are deductible for income tax purposes.**
- **The names and addresses of contributors to RPB and prospective donors are never shared with any third party.**

Free Publications from RPB

To obtain free information on a multitude of eye diseases, or Visual Acuity Cards to test yourself for vision loss, call us or use our online form.



Research to Prevent Blindness
645 Madison Avenue • New York, NY 10022-1010
212-752-4333 or 1-800-621-0026 • FAX: 212-688-6231
Web site: www.rpbusa.org • e-mail: inforequest@rpbusa.org