

Dry Eye

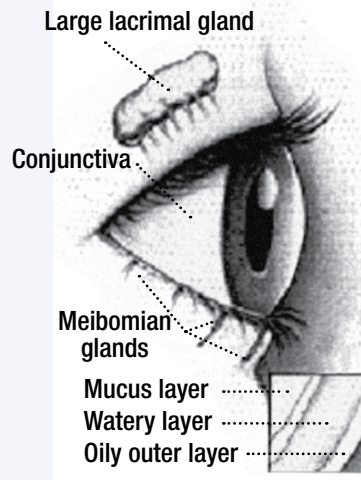
Dry eye is a chronic medical condition that develops when the eye's tear film no longer lubricates and protects the eye's outer surface. The condition can be the result of diminished tear production or increased tear evaporation.

According to researchers, increased salt concentration in the tears leads to problems with the eye surface and produces most dry eye symptoms. Patients may be able to find relief through the use of eye drops designed to restore proper tear film salt concentration or eye moisturizing drops and sprays. In more severe cases, when tear production is impaired, an inflammatory reaction may set in, further damaging cells on the surface of the eye and further suppressing tear production. Some of these patients may be able to improve tear gland function by using anti-inflammatory medicine.

Dry eye can be caused by a variety of circumstances: contact lens use; smoking; exposure to hot, dry or windy climates; autoimmune diseases such as rheumatoid arthritis; thyroid conditions; menopause; increasing age; decreased blinking; the use of certain medications; and a dietary deficiency of omega-3 essential fatty acids. One of the biggest risk factors is Sjögren's syndrome, an autoimmune disease in which the white blood cells attack the body's own moisture-producing glands.

Dry eye symptoms include: sandy-gritty irritation or burning eyes; blurred vision that clears with blinking; and discomfort from reading, TV watching or computer use.

Treatments range from altering the physical environment, to artificial tears, to dietary changes, to a procedure called punctal occlusion that retains tears on the surface of the eye, to drug therapy.



The tear film is complex. The first layer, produced by the conjunctiva, makes the corneal surface more adherent for the next layer. The middle layer is watery, and is produced by the lacrimal (tear) gland, which lies within the orbit on the outer portion of the upper eye. The third layer, secreted by the meibomian glands in the eyelid, prevents evaporation.

Important Vision Saving News

Scientists funded by Research to Prevent Blindness (RPB) are studying the relationship between the tear film, hormones, inflammation and much more.

- Eye drops containing steroids can supplement other therapy in the short term, but long-term use can lead to cataracts, glaucoma and infection.
- If artificial tears are used more than four times a day, a formula with a disappearing preservative or no preservative is preferred.
- For some people, taking omega-3 fatty acid supplements can decrease inflammation and improve comfort.

Recent Strides by Researchers

- Advanced the understanding of the role of hormones (called androgens) in dry eye, which reveals the reasons women are disproportionately affected
- Found that an autoimmune response is behind many cases of dry eye
- Found new evidence to explain the relationship between dry eye and inflammation

Hope Through Research

Research to Prevent Blindness (RPB) mobilizes financial resources in support of eye research, making available essential laboratory space, sustaining scientific personnel and providing advanced technological equipment in its mission to preserve vision and restore sight.

New dry eye treatment in the works

For a group of dry eye sufferers, whose tear-producing glands are damaged by injury or disease, treatment options may be limited. RPB is supporting scientists who are creating a replacement tear secretory system for these patients.

Looking to the body for dry eye relief

For some patients, a dry environment can trigger an immune response that causes inflammation and leads to dry eye. Researchers are investigating enhancing the body's natural system for minimizing inflammation.

The surface of the eye is constantly exposed to airborne bacteria, yet generally remains free of infection. Scientists have discovered the presence of a compound, produced in the tear gland, that contributes to this protection. They hope to harness this effect to alleviate dry eye syndrome.

Dry eye after LASIK

Investigators have shown that development of dry eye following LASIK surgery in patients with no history of dry eye was correlated to the degree of myopia and the depth of laser treatment.

Women and dry eye

Dry eye is twice as prevalent in women as in men, partially due to hormonal changes that occur at various points in their lives. Studies show that women who consume omega-3 fatty acids on a regular basis, particularly from tuna fish, may reduce risk of dry eye.



A Scientist's Challenge

RPB supports the work of leading dry eye scientists who are discovering the secrets of how corneal cells react to too little tear production, the subsequent inflammatory process, and how to prevent damage to the cornea by halting the inflammation. "We've learned a lot about signals within corneal cells," says one researcher. "Our goal is to develop targeted therapies to inhibit the pathways." For now, he recommends that people with dry eye see their eye doctor who can formulate an appropriate treatment plan. One tactic to conserve tears, he says, is to place computer screens in a lower position. Your eyes won't need to be so wide open and, therefore, will stay more moist.

Keep in Mind

Dry eye can damage the cornea and affect vision.

- If you think you might be experiencing dry eye, consult an eye care specialist.
- Avoid risk factors for dry eye, such as cigarette smoke, anti-histamines, diuretics, antidepressants, oral steroids and dry, hot or windy weather.
- Take frequent breaks from activities that reduce blinking rates, like reading, TV watching and computer use.
- Drink plenty of water.
- Eat foods rich in omega-3 fatty acids (tuna, salmon, trout), which help the body reduce inflammation.

Invest in Your Vision

You can join RPB in supporting critical research in the fight against vision loss by sending your tax deductible donation to the address shown below or online at www.rpbusa.org. You may also call RPB at (800) 621-0026. A matching fund, created by RPB's founder, doubles contributions totaling up to one million dollars in any calendar year. *RPB is a public 501(c)(3) foundation.*

