

## What is dry eye?

In a healthy eye, tears are responsible for the perfectly smooth ocular surface which allows clear vision. Tears also clean and lubricate the eye. Every time we blink, a fresh layer of tears, called the tear film, spreads over the eye.

The tear film is important for keeping the eye moist and comfortable. Sometimes, the eye may stop producing enough tears or tears evaporate too quickly. This common and often chronic condition is referred to as dry eye syndrome.

## It affects your quality of life!

People with dry eye syndrome may experience irritated, gritty, scratchy, or burning eyes, excess watering, and blurred vision. The level of discomfort is increased if you wear contact lenses or live in a dry climate. Paying attention to dry eye symptoms is important. If left untreated it may become so severe that it interferes with work and normal life activities.

## Causes

**Life style** – staring at computer screens, televisions, or electronic readers for long periods of time, exposure to air conditioning, wind, smoke, and dry climates

**Age** – dry eye syndrome often gets worse as we age

**Gender** – women are more likely to develop dry eyes

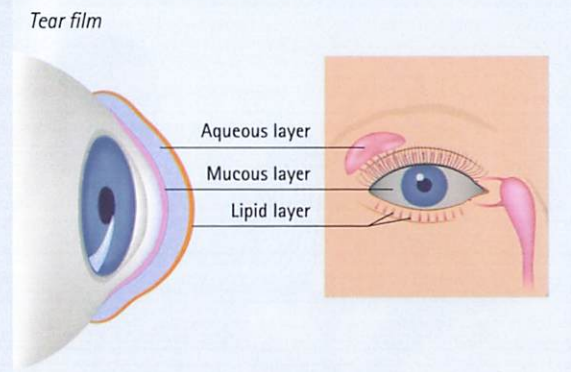
**Other factors** – long term use of contact lenses, refractive eye surgery, some medications, medical conditions, such as, rheumatoid arthritis, diabetes, thyroid problems and inflammation of the eyelids



## The tear film

The tear film is structured with 3 components that work together: a complex mucus component, a watery portion (Aqueous) and a complex oil outer layer (Lipid).

The oil component (Lipid) is important for reducing evaporation of tears and also provides structure to the tear film. Lipid is produced by the meibomian glands and is injected unto the tears with each blink. Meibomian gland dysfunction (MGD) can create a deficiency in the lipid component of the tears, which leads to evaporative dry eye.



The watery component produced by the lacrimal glands (aqueous) is also important. A lack of aqueous production can result in another type of dry eye called aqueous deficient dry eye. Aqueous deficient dry eye can be associated with disorders such as rheumatoid arthritis and lupus.

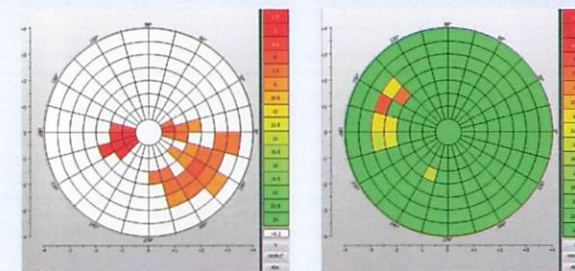
## The Keratograph® 5M examination

Your eye doctor is using an advanced technology called the OCULUS Keratograph® 5M to examine your eyes. The Keratograph® 5M has a high-resolution color camera and is equipped with intelligent software to analyze the collected data and document the findings. It can also compare the results and show the success of the dry eye treatment.

## Quality and quantity of the tear film

To measure the quality and stability of the tear film, the OCULUS Keratograph® 5M measures the tear film break-up time non-invasively. This test takes less than 30 seconds and does not require touching the eye.

To evaluate the quantity of the tear film, the Keratograph® 5M takes a picture of the lower eyelid to measure the tear meniscus height.



*Tear film quality before and after dry eye treatment*



*Tear meniscus height*



*Tear meniscus height detail*

## Lipid layer

The Keratograph® 5M can document a movie of the oily layer of the tear film. A healthy and thick lipid layer is colorful and protects the tears from fast evaporation. If there is not enough lipid, the tear film becomes unstable, the moisture dissipates quickly and both vision and comfort can be compromised.

## Meibography

Located in both upper and lower lids, the meibomian glands produce complex oils that stabilize the tear film and prevent tear evaporation. If the meibomian glands do not function properly dry eye usually occurs. Your doctor can utilize the advanced features of the Keratograph® 5M to directly assess the health of your meibomian glands.



Healthy meibomian glands

Meibomian gland dysfunction

## Dry eye treatments

There has been a veritable explosion in understanding the causes of dry eye. A variety of options are now available to help people who suffer from dry eyes. Current approaches include advanced artificial tear eye drop formulations, prescription eye drops that increase tear production and reduce inflammation, and new approaches to effectively treat meibomian gland dysfunction, which is now understood to play a primary role in most dry eye cases.

Dry eye treatment can now be targeted to address the underlying cause of the problem. Some patients suffer from a lack of tear production, others from excessive evaporation of their tears. Most suffer from a combination of both problems. After a comprehensive examination using the advanced diagnostic tools provided by the Keratograph® 5M, your doctor can more accurately assess the precise cause and severity of your dry eye. Using this detailed information, they can recommend the best course of treatment to address your specific problem.

## Wellness exam and general screening with the Keratograph® 5M

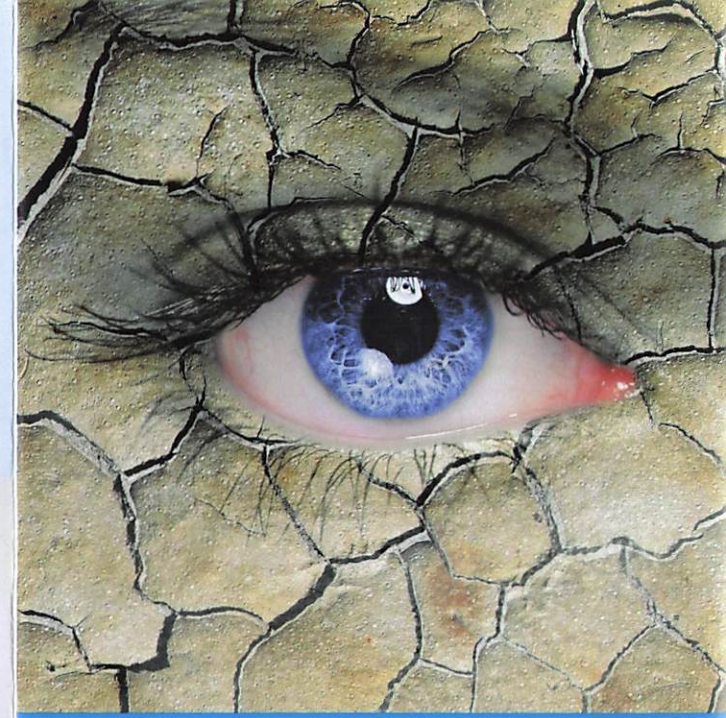
Early detection is important for preserving your eyesight. Many eye disorders that lead to discomfort and reduced vision are easily treatable if diagnosed early. Regular eye wellness exams are recommended by eye care professionals. The dry eye screening with the OCULUS Keratograph® 5M is quick and easy. Ask the staff for more information.



Ask your doctor about the Keratograph® 5M and other advanced technologies in this practice!



*Note: The Keratograph® 5M helps with the diagnosis/conditions but the final decision must be made by you and your physician.*



Dry Eye Examination  
with the OCULUS  
Keratograph® 5M



 OCULUS®