

## 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 creates tears that 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

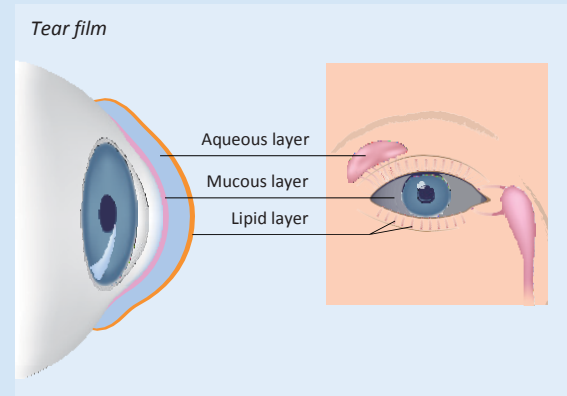
**Other factors** – long term use of contact lenses, refractive eye surgery, some medications, medical conditions, such as, rheumatoid arthritis, diabetes, thyroid problems and inflammation of the eyelids



## The tear film structure

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 into 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.

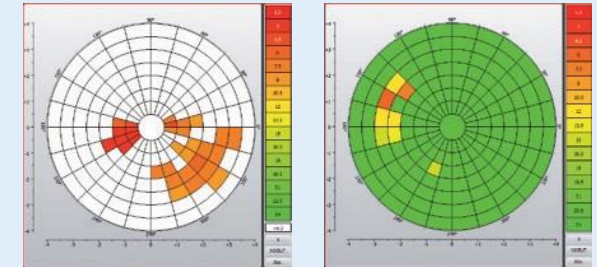
## The Keratograph 5M examination

We use an advanced technology called the OCULUS Keratograph 5M to examine up to 13 separate components your tear film and eyelid function. The Keratograph 5M has a high-resolution color imaging system 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 part of the 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 an image of the lower eyelid to measure the tear meniscus height.



*Tear film break up before and after dry eye treatment*



*Tear meniscus height*



*Tear meniscus height detail*

## Lipid layer

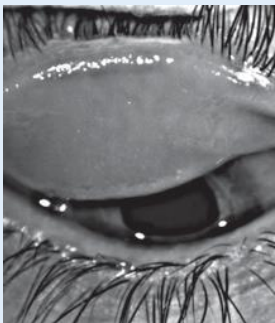
The Keratograph 5M captures a video of the oily layer of the tear film. A healthy and thick lipid layer is colorful and protects the tears from fast evaporation. If there is not enough lipid, the tear film becomes unstable, the moisture dissipates quickly and both vision and comfort can be compromised.

## 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. Our doctors 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 of 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. Many patients 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.

## Dry Eye Evaluation Fees

When you return for a comprehensive Dry Eye Evaluation, we will bill your health insurance for your office visit. When external photography is necessary, we will also submit that fee to your health insurance.

The standard Keratograph 5M evaluation is \$59 and is not billed to insurance.



Janelle Brown, OD  
Terri Rieger, OD

Sasha Radford, OD  
Bryan Stoller, OD

Pontiac 815.842.4304  
Fairbury 815.692.2415

## Dry Eye Evaluation with the OCULUS Keratograph 5M

