

The Great Coverup: Cosmetics and Contact Lenses

By

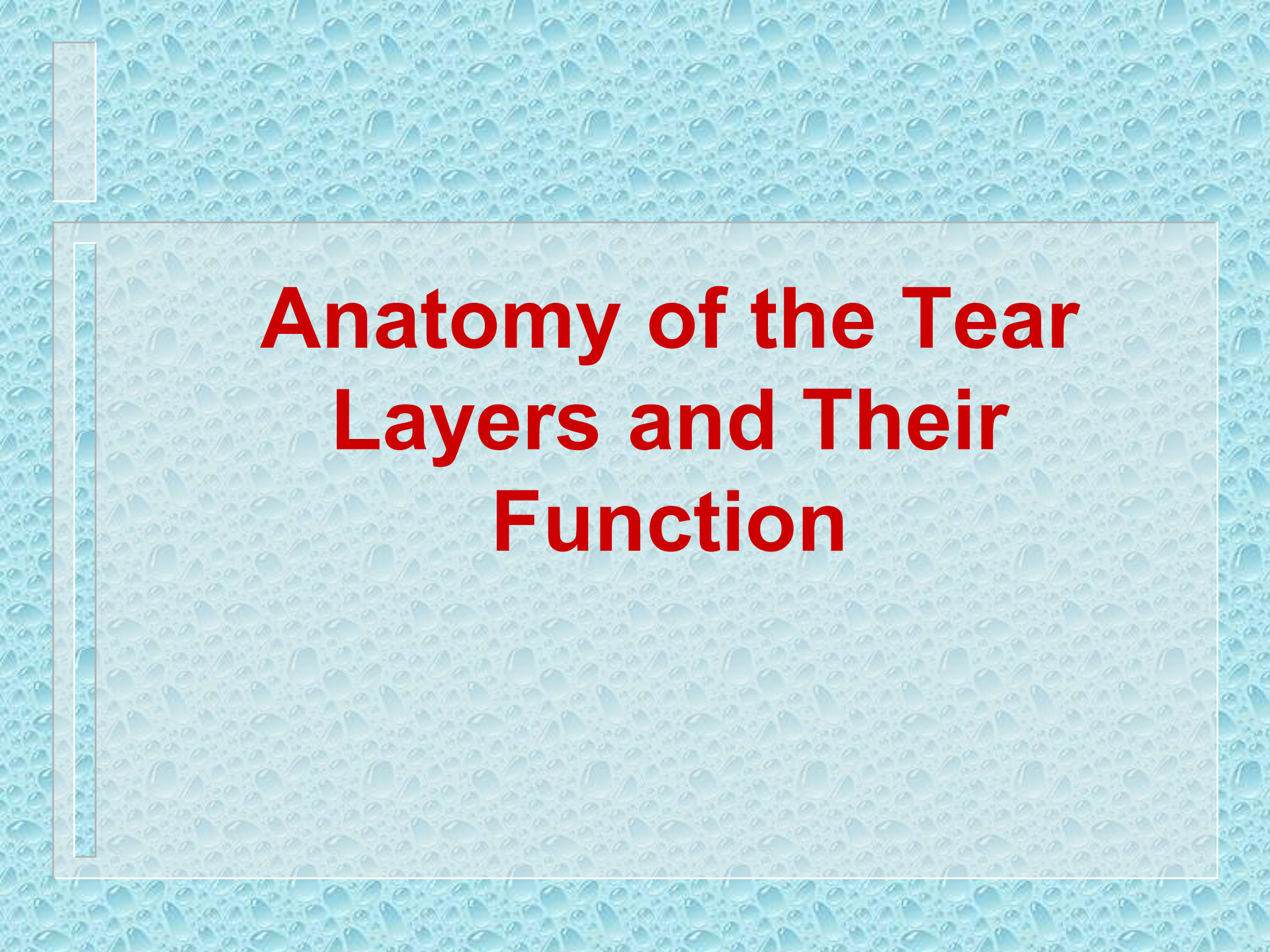
***Diane F. Drake, LDO, ABOM,
NCLEM, FNAO***

Introduction

- Tear layers
- Importance of tear film
- Types of cosmetics
- Prefit examination
- Cosmetic usage
- Patient instructions
- Conclusion - Communication

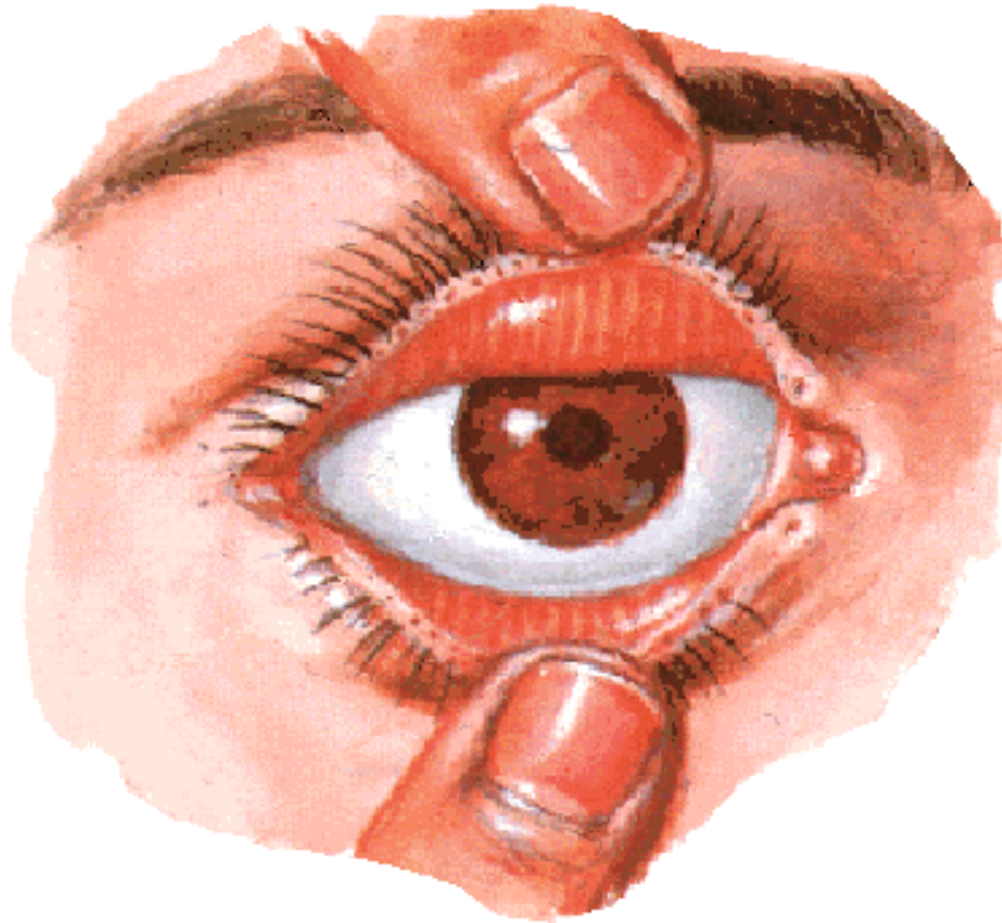






Anatomy of the Tear Layers and Their Function

Eyelids

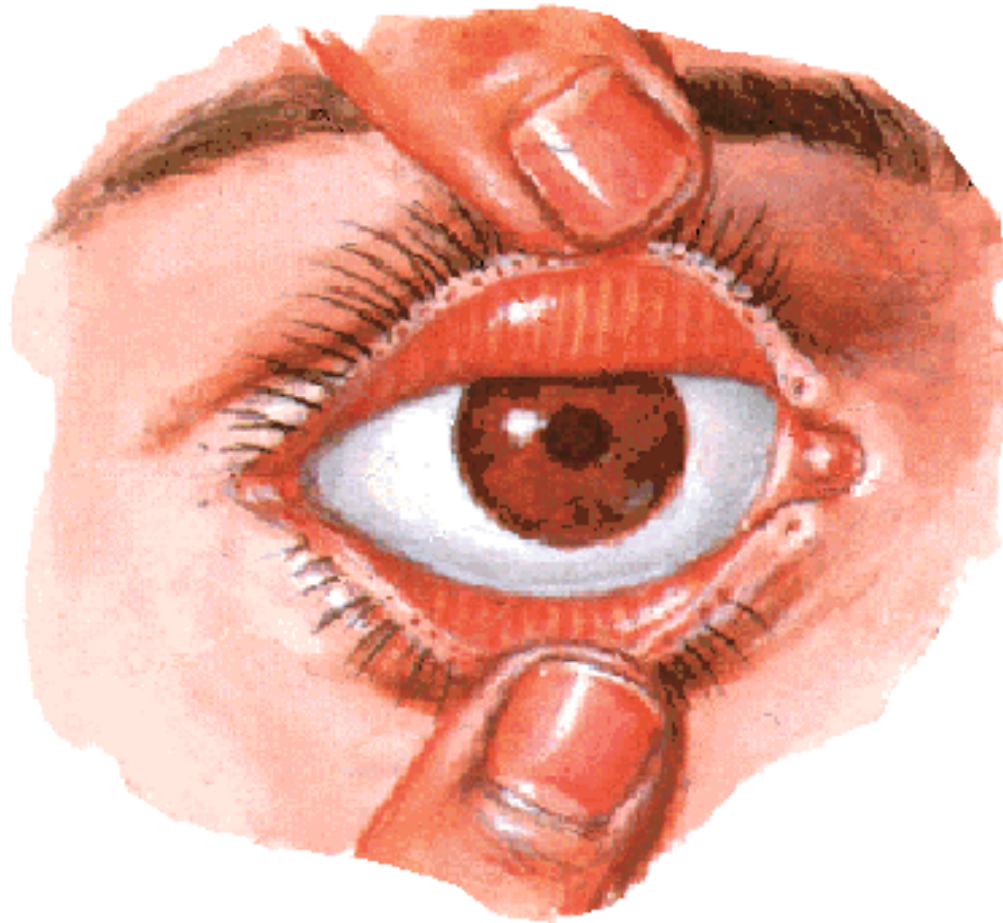


Cosmetics and Eyelid





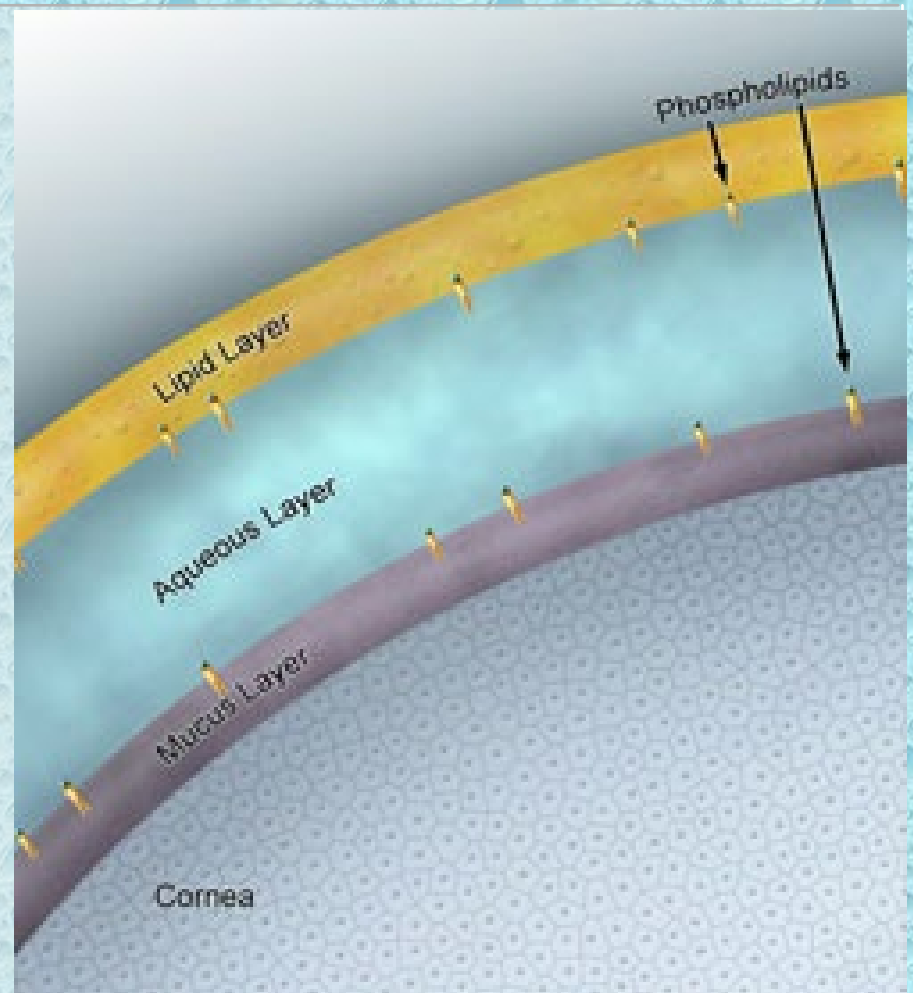
Eyelids



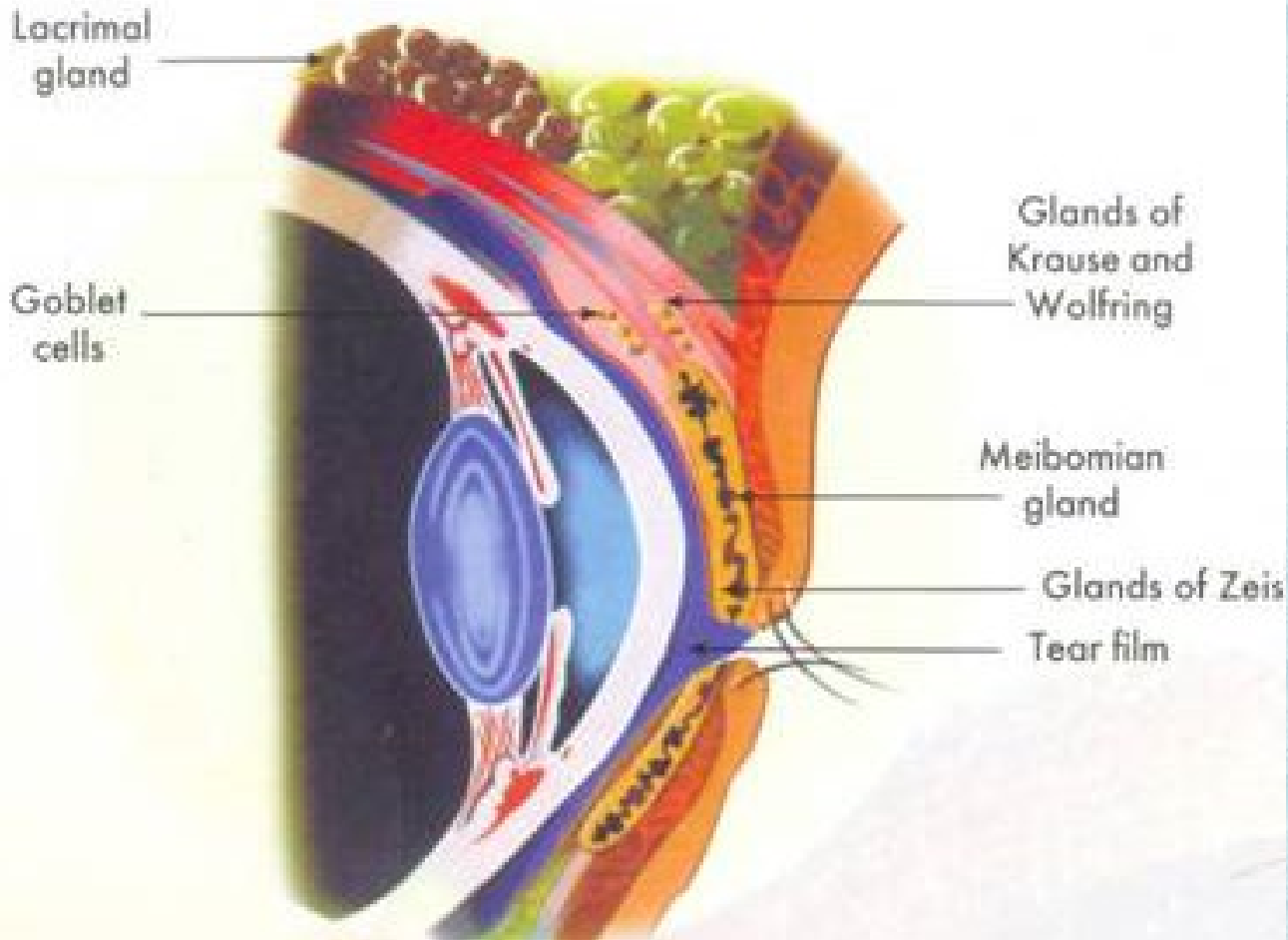
Tear Film

□ Three Layers

- Lipid
- Aqueous
- Mucin



Lacrimal Apparatus

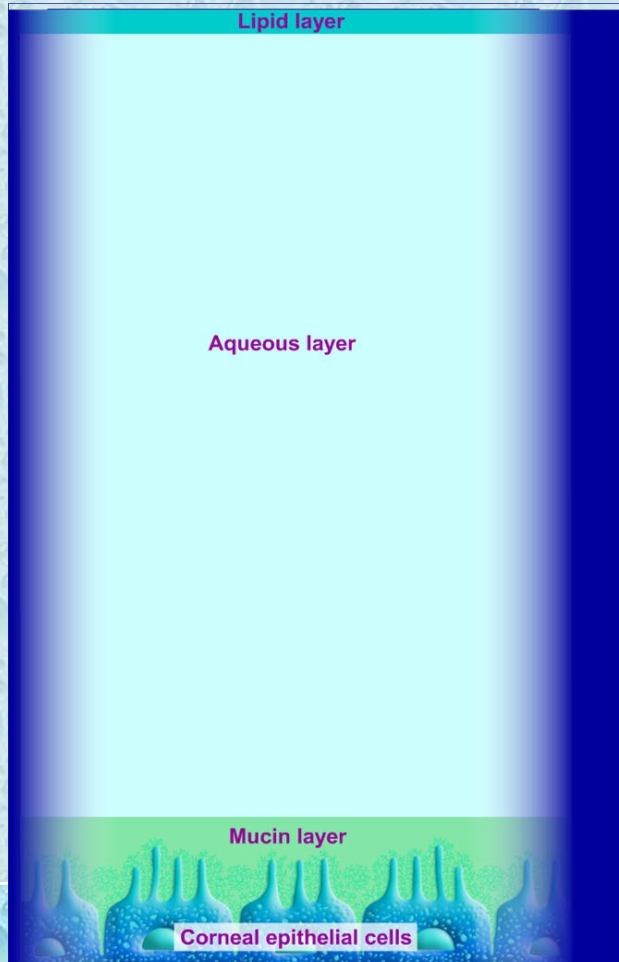


Tear Film

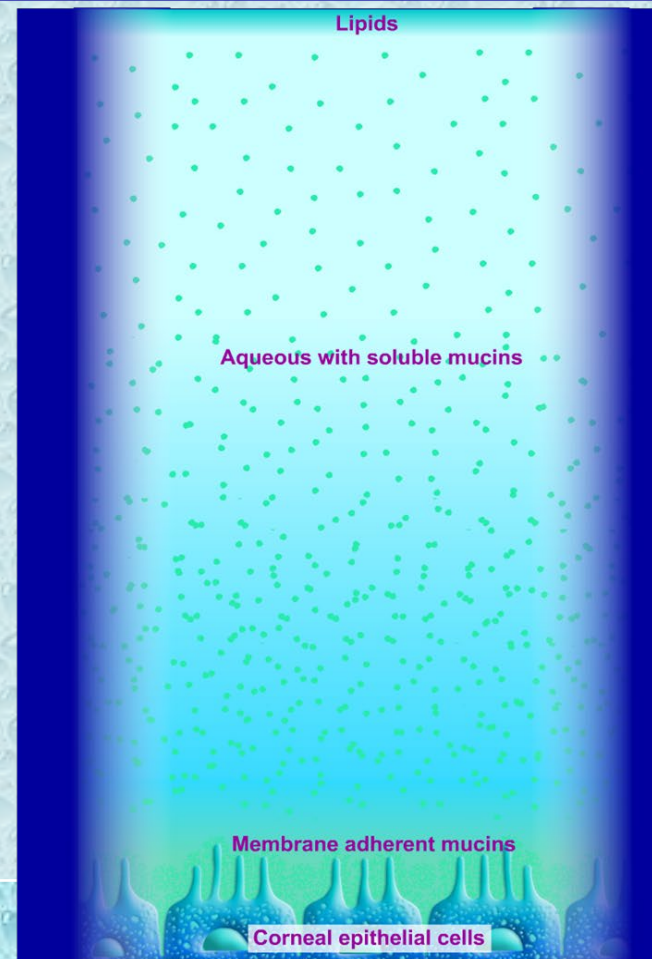
- The tear film covers the cornea and conjunctiva
- Tears are removed from the anterior segment via the puncta and evaporation

Tear Film Structure

Traditional Tear Film Model
(3 Distinct Layers)



Updated Tear Film Model
(Aqueous phases with differing concentrations of mucins throughout)

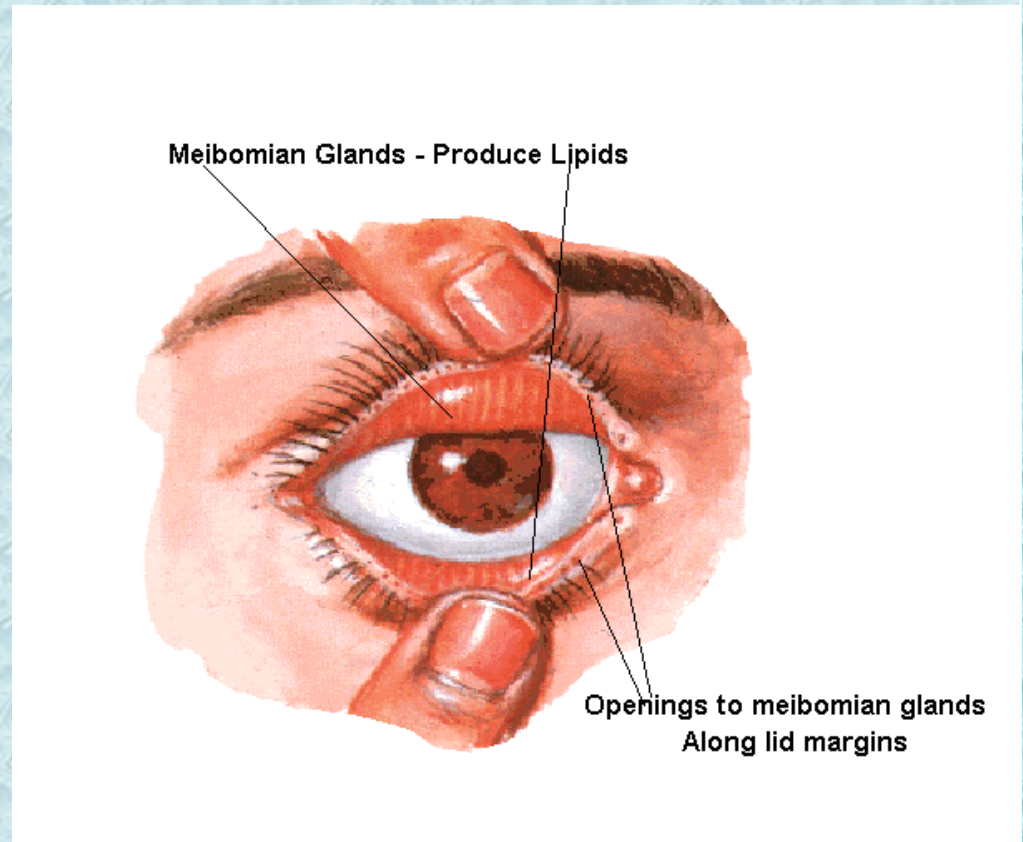


Lipid Layer is produced by glands in the eyelids

- Outer Layer - Oily

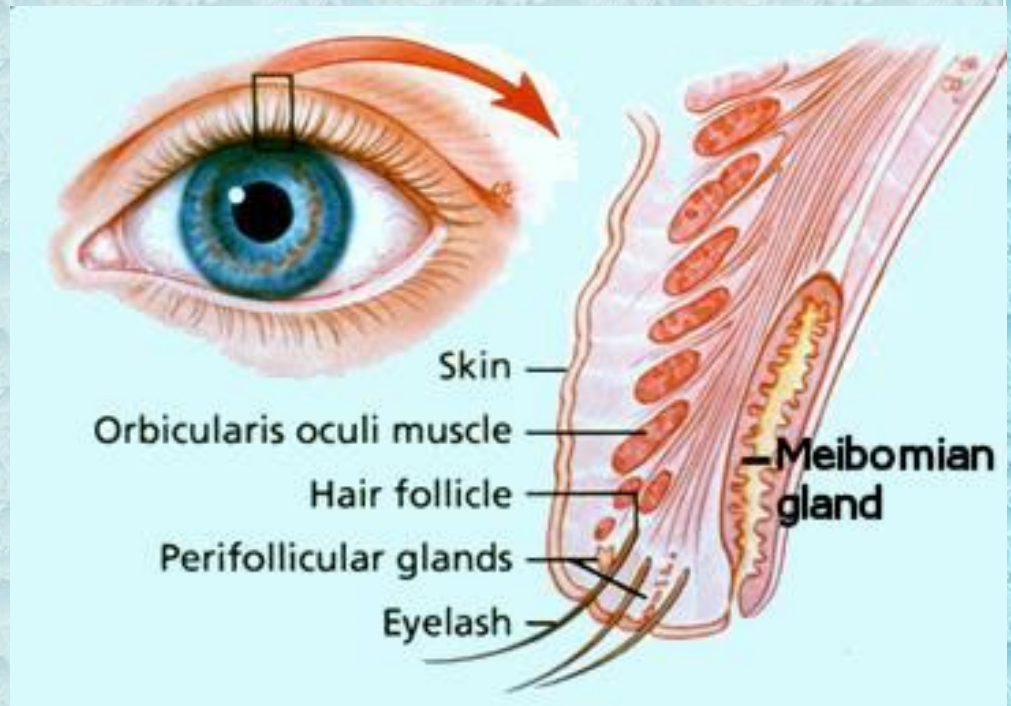
- Lipid

- Produced by meibomian glands
 - Prevents evaporation

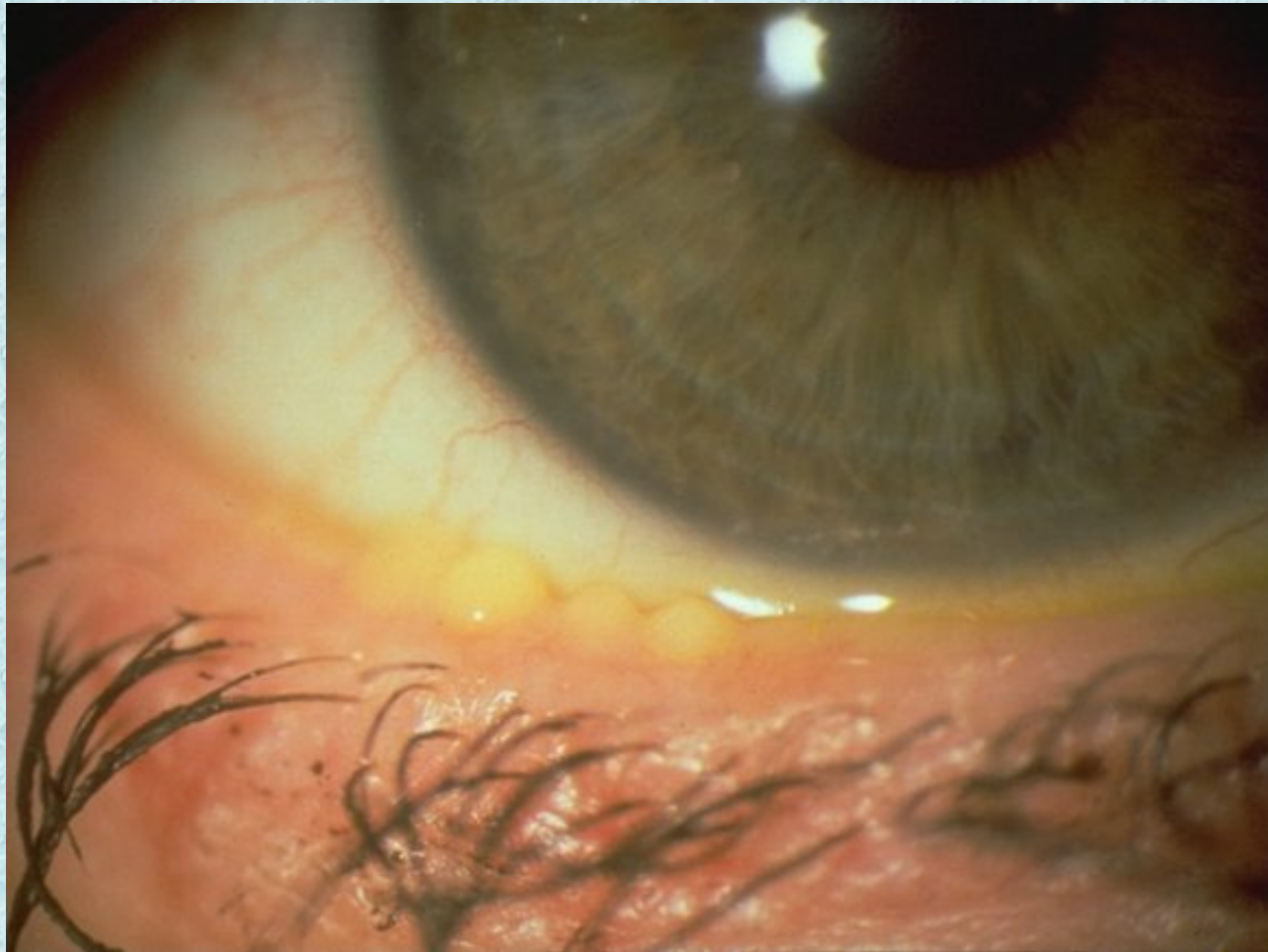


Outermost Layer – Lipid Layer

- ❑ Form barrier along lid margins
- ❑ Prevent evaporation
- ❑ Produced by
 - Meibomian glands
 - ❑ Located in upper and lower eyelids
 - ❑ Openings on the lid margins
 - Sebaceous glands of Zeis
 - ❑ Located along the lids next to the cilia



Clogged Meibomian Glands



Plugged Meibomian Glands



Meibomian gland blockage



Eyeliner clogs meibomian gland openings



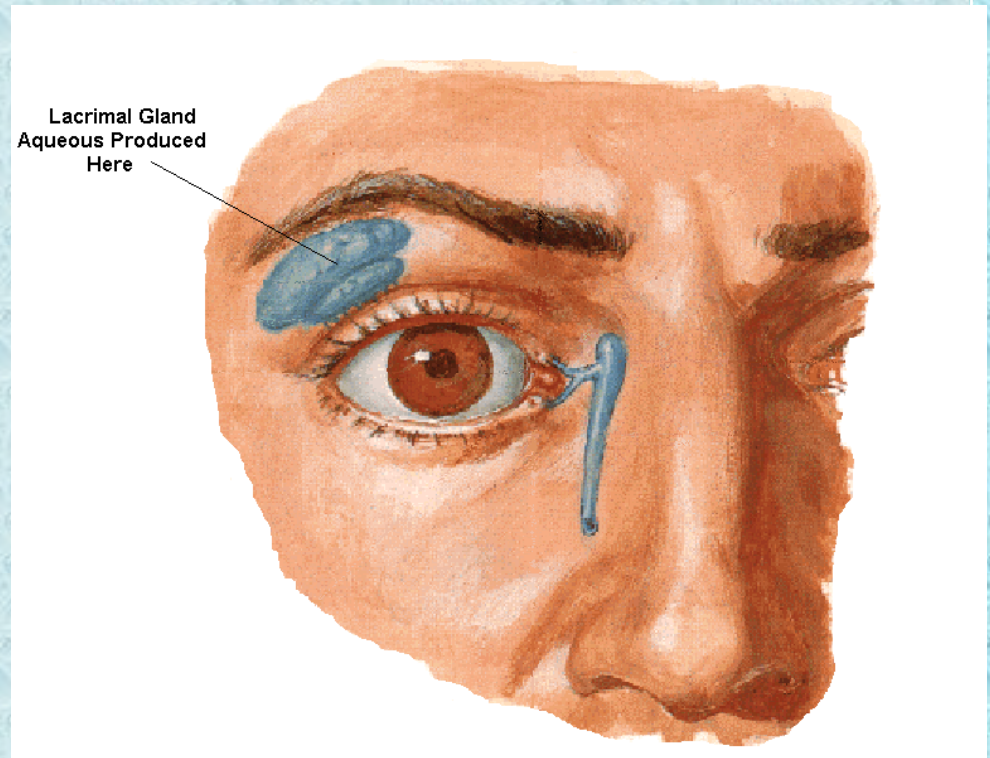
Pay me now or pay me later



Middle Layer - Aqueous

Aqueous

- Volume
 - Provides oxygen
 - Provides nutrients
- Produced by
 - Lacrimal glands
 - Glands of wolfring
 - Glands of krause
- Contains proteins and lysozymes which contain bactericidal property



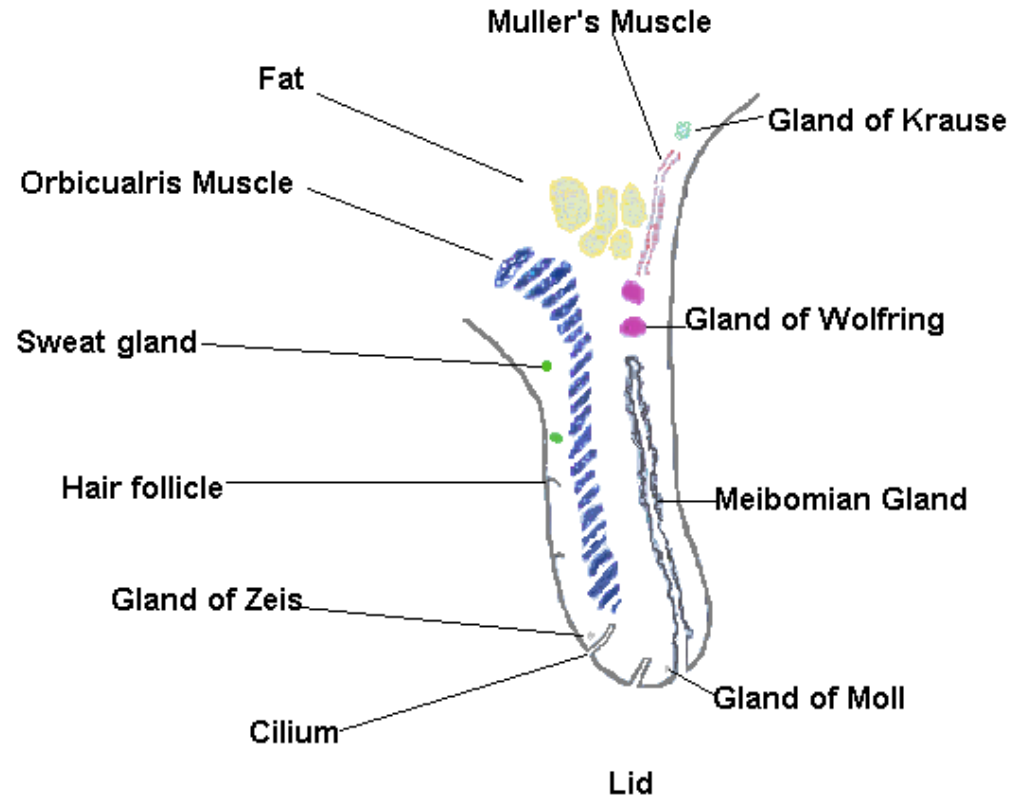
Lacrimal Apparatus - Tear Production

- Lacrimal glands
 - Provides reflex tear secretion
 - Irritation
 - Coughing
 - Sneezing
 - Taste or smell
 - Newborns have minimal output of reflex tears

Tear Production

Accessory Glands

- Accessory glands
 - Provides basic tear secretion
 - Steady state
 - Wolfring
 - Krause



Lacrimal Apparatus - Tear Production

- Normal tears contain various antibacterial and immune substances to clean and protect eyes
 - Lysozymes
 - Immunoglobulin
 - Depressed in patients with tear deficiency
 - Patients frequently suffer from blepharitis

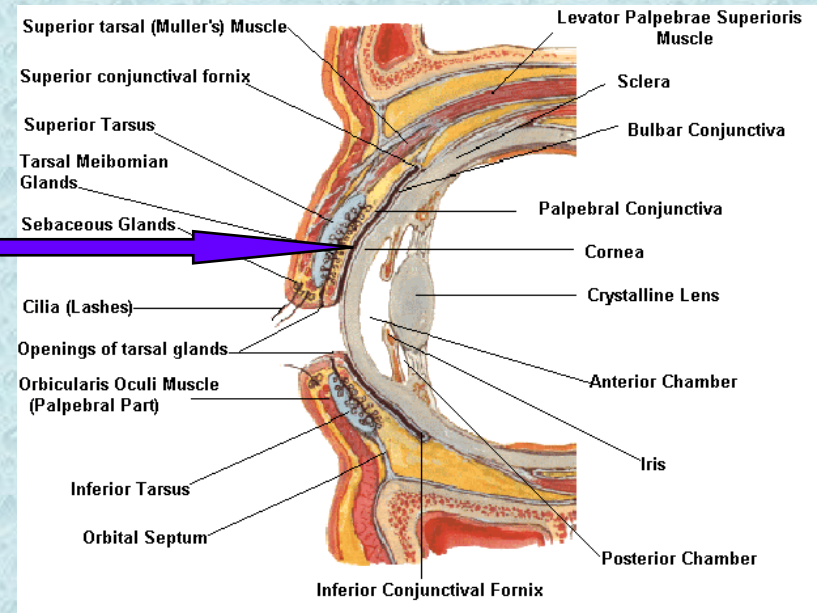
Innermost Layer

Mucin Layer

- Mucoïd or mucous layer
- Produced by goblet cells
 - Located in conjunctiva
- Provides
 - Lubrication
 - Acts as wetting agent
 - Decreases surface tension
 - Attaches tears to cornea

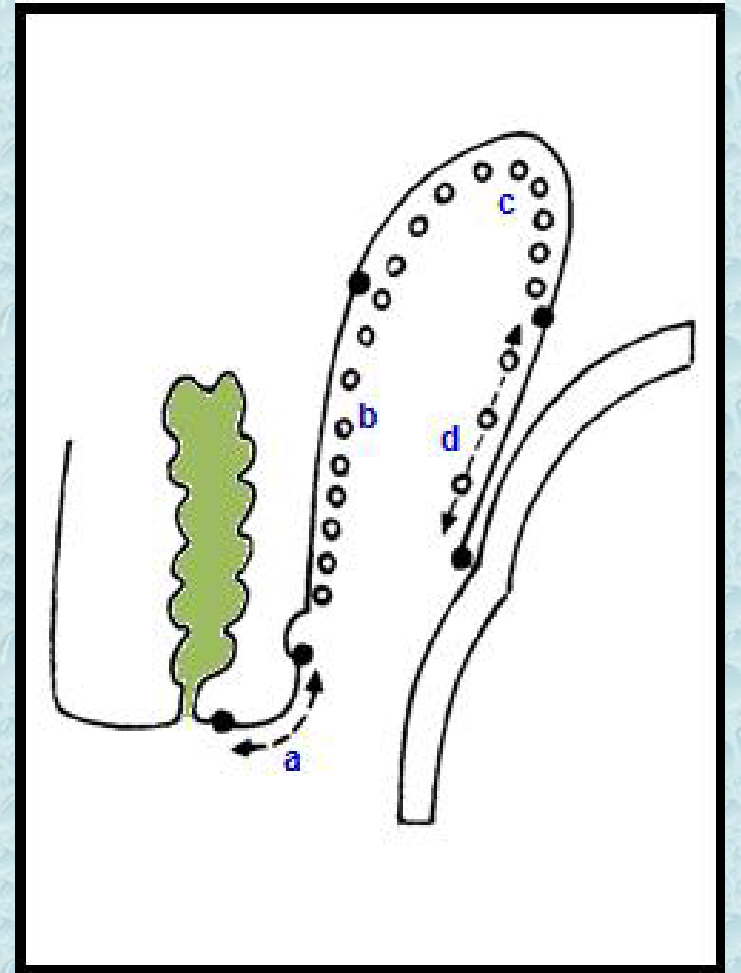
Mucin Layer Produced by Goblet Cells in Conjunctiva

- Conjunctiva lines globe and lids



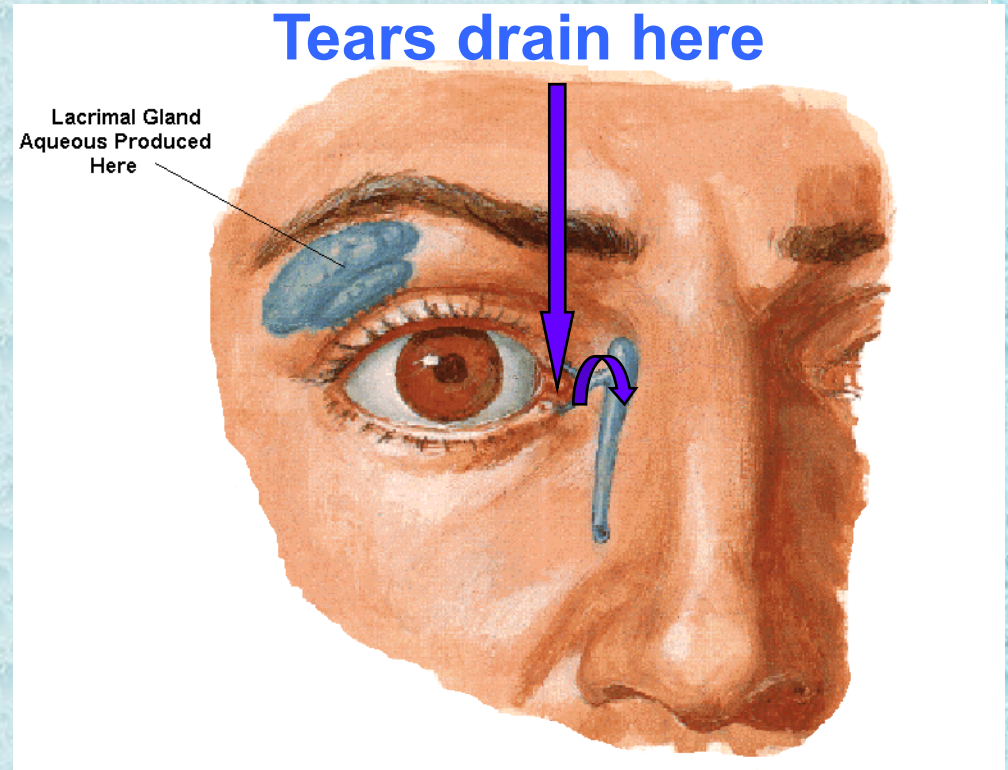
Location of Goblet Cells

- A. Marginal Conjunctiva
 - No goblet cells
- B. Tarsal Conjunctiva
 - Rich in goblet cells
- C. Fornical Conjunctiva
 - Rich in goblet cells
- D. Bulbar Conjunctiva
 - Few goblet cells



Lacrimal Apparatus

- Tear drainage
 - Through lacrimal punctua
 - Into canaliculi
 - Tear canals
 - Into nose via lacrimal duct



Kinetics of Tears

- Tears move upward and downward with each blink
 - Spreads tears over entire eye and conjunctiva
 - Moves from temporal to nasal

Importance of Tear Layer to Corneal Health

- ❑ Interruption of three layers could result in dry eye
- ❑ Could make difficult or impossible to wear contact lenses
- ❑ Could affect corneal health
 - Both contact lens wearers and non-contact lens wearers

Poor Lid Hygiene Can Affect Tear Film



The background of the slide is a light blue color with a pattern of numerous small, realistic water droplets. A white rectangular frame is centered on the page, with a thin white border. The text "Time for a Question" is written in a black, serif font and is centered within this frame.

Time for a Question

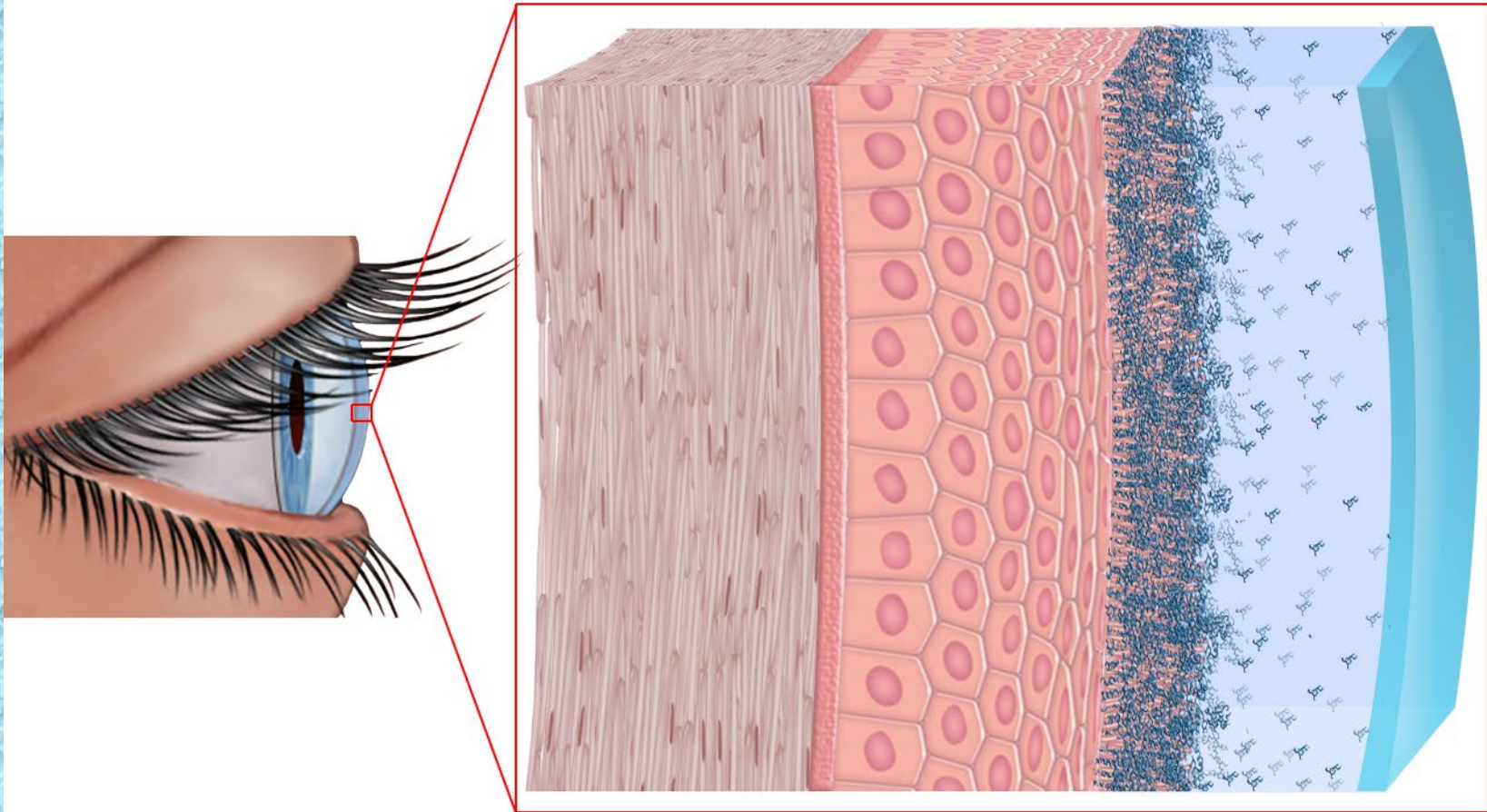
Which layer of the tear film is responsible for preventing evaporation?

- a) Mucin
- b) Aqueous
- c) Lipid
- d) All of the above

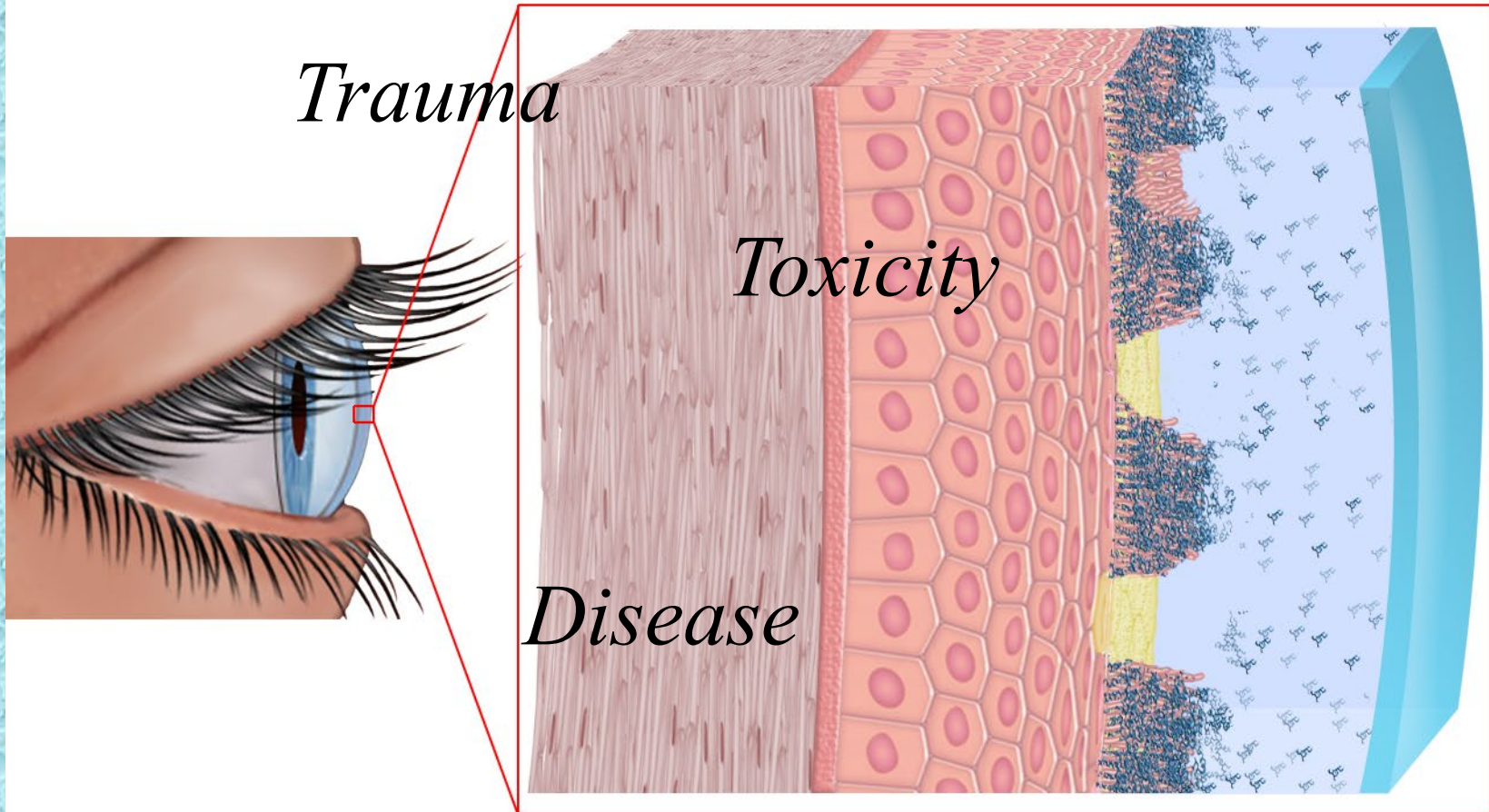
Which layer of the tear film is responsible for preventing evaporation?

- a) Mucin
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- c) **Lipid**
- d) All of the above

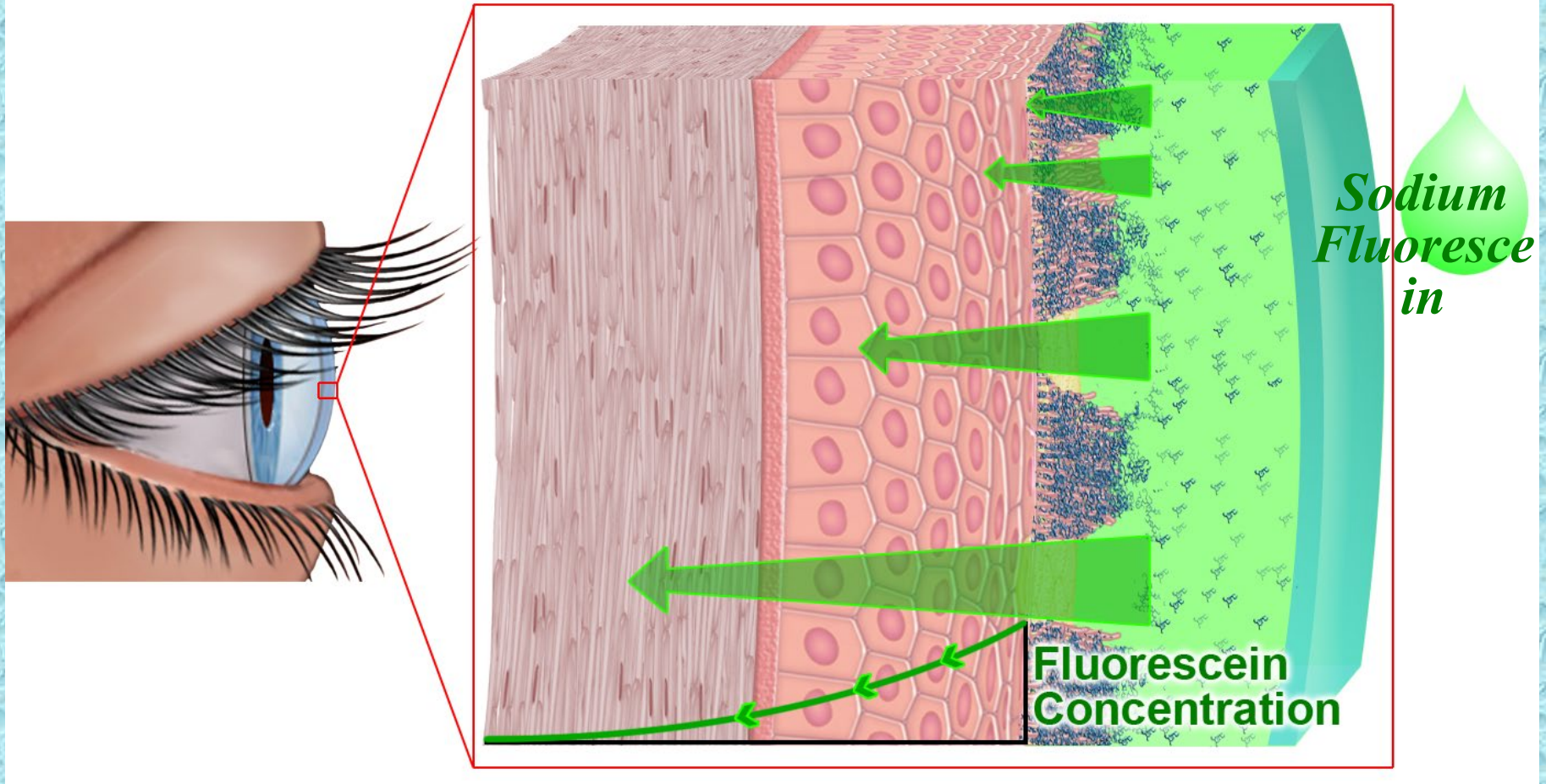
Healthy Cornea and Ocular Surface



Unstable Tear Film and Loss of Epithelial Cells



Sodium Fluorescein Concentration



Lacrimal Apparatus

- Kinetics of the tears
 - Forms thin film over both cornea and conjunctiva
 - Creates tear meniscus
 - Prism
 - Lake

Importance of Tear Layer to Corneal Health

- ❑ Interruption of three layers could result in dry eye
- ❑ Could make difficult or impossible to wear contact lenses
- ❑ Could affect corneal health
 - Both contact lens wearers and non-contact lens wearers

Causes of Dry Eyes

- Systemic
- Chemically induced - Medicines
- Environmental
- Exposure to cosmetics and other chemicals

Prefit

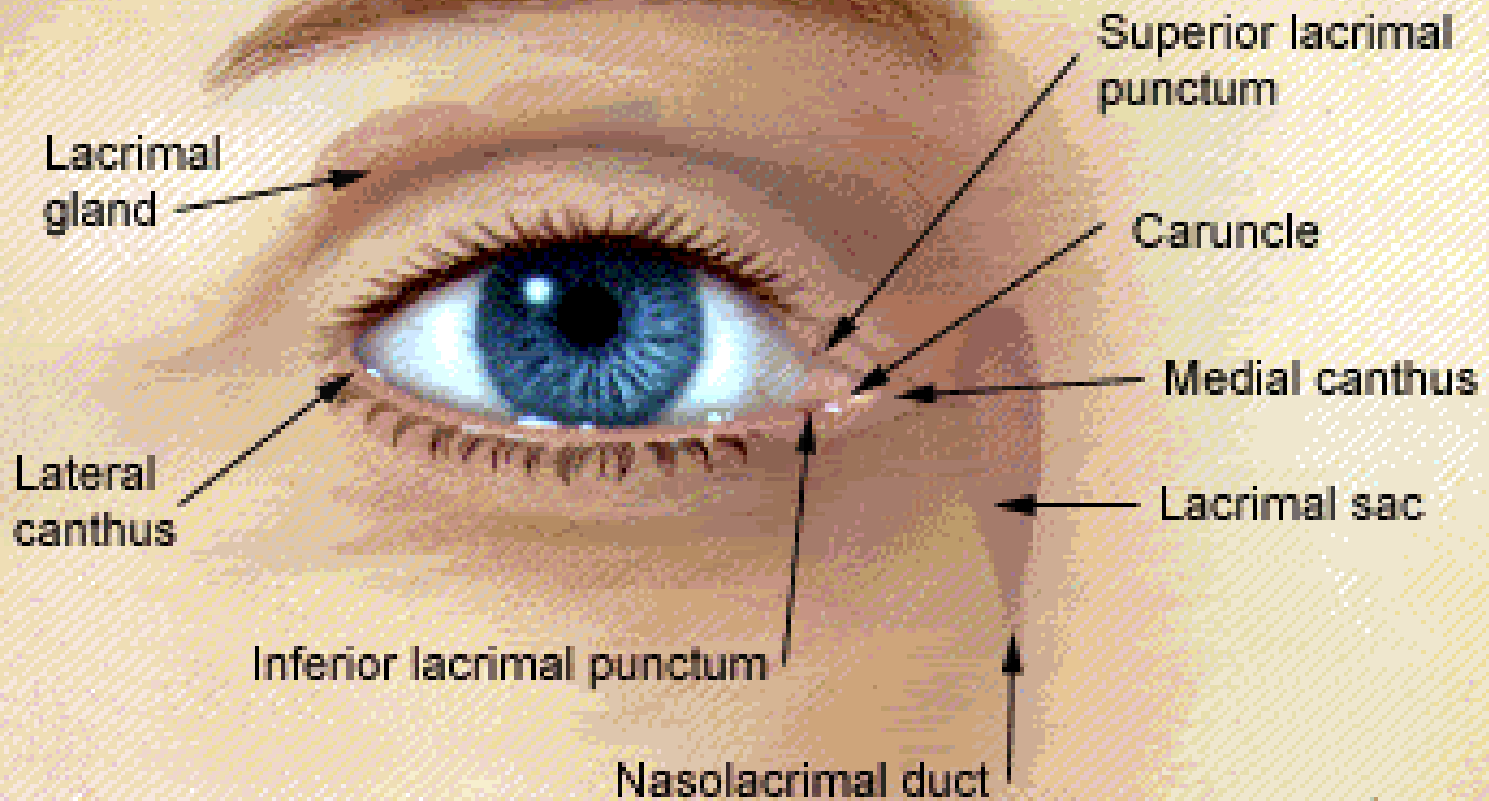
□ Patient evaluation

- Lids
- Orbit
- Lashes
- Cosmetics
- Others
- Tear BUT

Cosmetics and the Effects on Contact Lens Wear



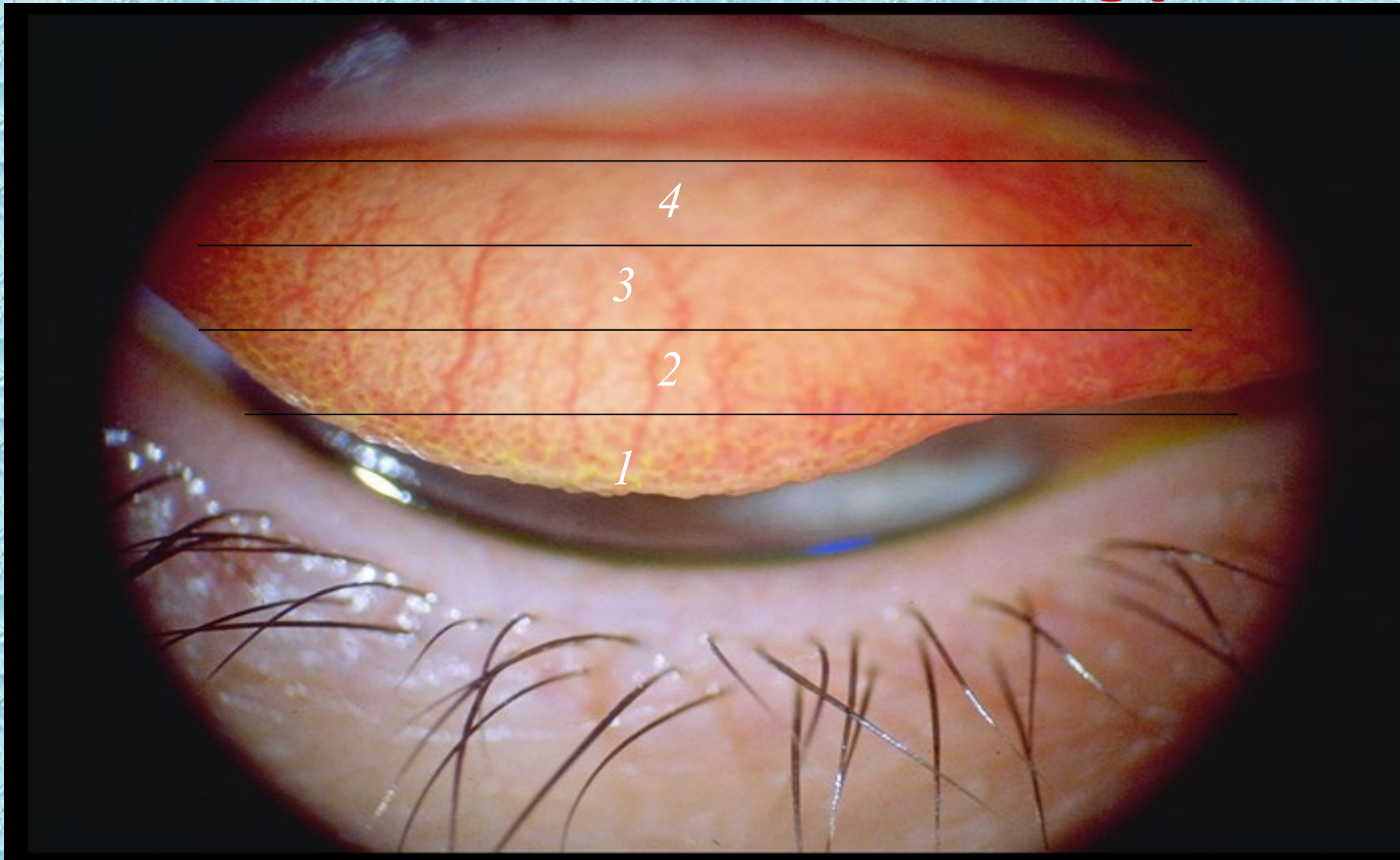
Observation



Invert Eyelids and Observe



Note Lid Pathology



Evaluation

- Note any abnormalities
 - Pupillary Membrane



Evaluation

- Note any abnormalities
 - Coloboma



Evaluation



Evaluation

- Note any abnormalities
- Observe cosmetic use
- Discuss cosmetic application now



Cosmetics

- Both cosmetics and contact lenses are emotional choices
- No need to sacrifice either
- Educate yourself first
- Educate your patient next

What are Cosmetics

- Obvious
- Colored cosmetics
- Facial cosmetics

Cosmetics and Eyelids



Cosmetics and Eyelids



Powder



What are Cosmetics

Cont'd

- Not obvious
- Perfumes, colognes, aftershaves
- Lotions, creams
- Hairspray
- Deodorant
- Soaps
- Facial tissues containing lotions
- Others

Types of Cosmetics

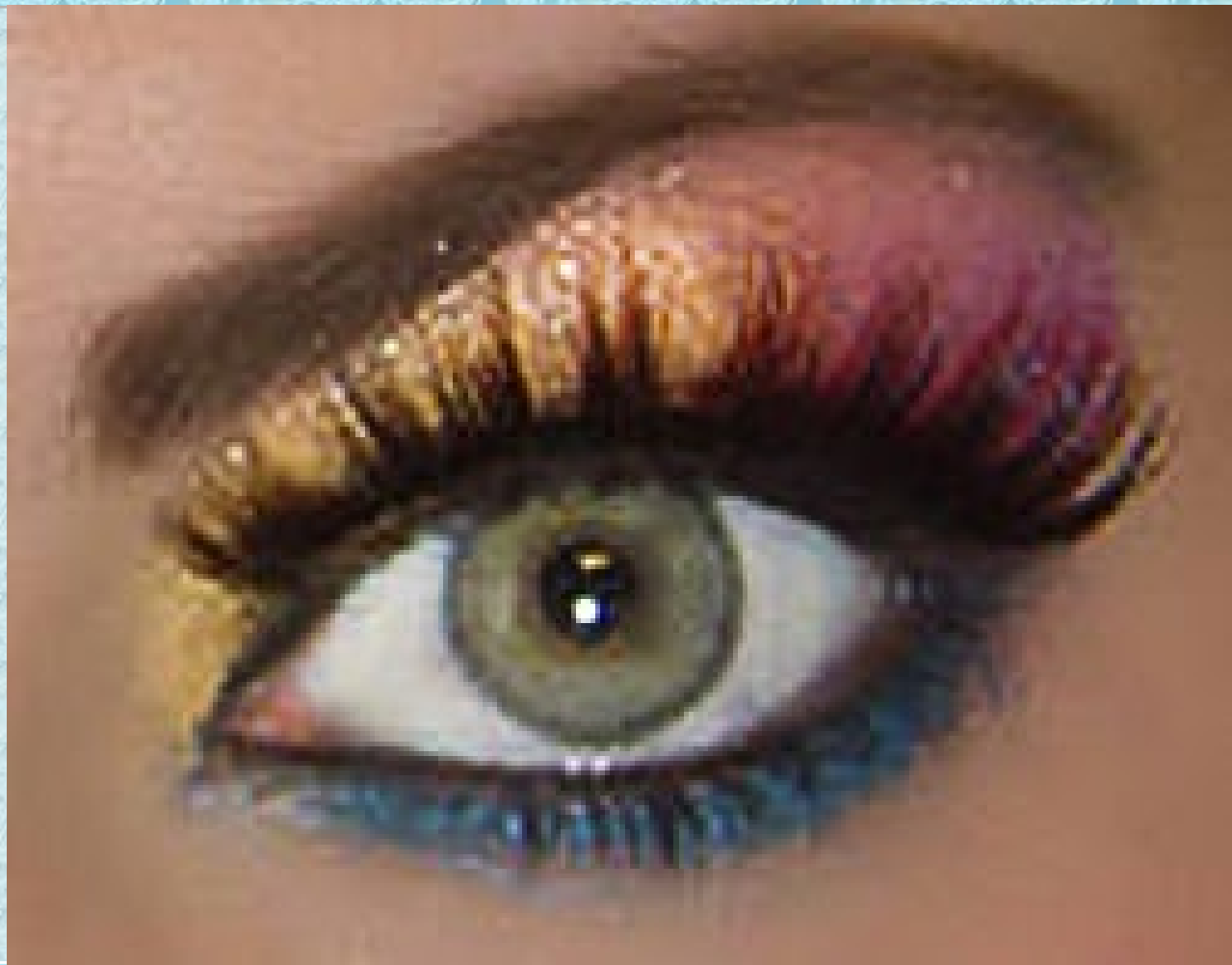
- Proper types of cosmetics
- Application of cosmetics
- Removal of cosmetics

Types of Cosmetics

Cont'd

- ❑ Improper cosmetics
- ❑ Frosts
- ❑ Glitter
- ❑ Liners
- ❑ Shadows









Meibomian Gland Function

- ❑ Improper types or use of cosmetics can clog openings
- ❑ Can get directly in the eye
- ❑ Can coat contact lenses

Goblet Cell Function

- ❑ Cosmetics may coat conjunctiva
- ❑ Causes goblet cell dysfunction
- ❑ Will not allow tears to adhere to cornea
- ❑ Causes dry spots on cornea

The background of the slide is a light blue color with a pattern of numerous small, realistic water droplets. A white rectangular frame is centered on the slide, with a thin white border. The text "Time for a Question" is centered within this frame.

Time for a Question

Where should eyeliner be applied?

- a) to the upper and lower lid margins
- b) to the lower lid margin only
- c) to the upper lid margin only
- d) to the outside of the lash area

Where should eyeliner be applied?

- a) to the upper and lower lid margins
- b) to the lower lid margin only
- c) to the upper lid margin only
- d) **to the outside of the lash area**

Patient Instruction

Insertion

- ❑ Wash hands, eyes and face
- ❑ Use oil free, deodorant free, fragrance free soap
- ❑ Rinse thoroughly
- ❑ Dry with clean, lint free towel

Insertion

Cont'd

- Insert lenses
- **Teach** the patient proper insertion techniques
- Apply cosmetics
- Discuss proper application of cosmetics

Patient Instruction







Removal

- Wash hands
- Remove lenses
- Remove cosmetics
- Use **oil free** remover

Patient Instruction



Contact lens Case

- Wash case with hot tap water and allow to air dry
 - Rinse with disinfecting solution
- Replace case regularly - every three months or more
- Replace case if contaminated

Patient Instructions

Cosmetics

- ❑ Never use makeup testers in stores or share eye makeup with others
- ❑ Dispose of eye cosmetics three months after purchased
- ❑ Always apply makeup outside the lash line to avoid contact with the eye

Patient Instructions

Cosmetics

- ❑ Never store cosmetics in extreme heat or cold conditions (such as a car), as this can break down preservatives, allowing bacteria to grow
- ❑ Never apply makeup while driving or riding in a moving vehicle

Patient Instructions

Cosmetics

- ❑ Never apply eye cosmetics if eyes are already red, swollen, or if you have recently undergone eye surgery until an eye doctor has given permission.
- ❑ Do not dye eyelashes or eyebrows. No color additives have been approved by the [FDA](#) for permanent dyeing or tinting of eyelashes or eyebrows.

Conclusion

- Proper use and removal of cosmetics necessary
- Brands should be appropriate
- Proper hygiene necessary

Conclusion

Cont'd

- ❑ Never share cosmetics
- ❑ Discuss aerosols and fumes
- ❑ Replace cosmetics regularly

Conclusion

Cont'd

- Visual health
- Eye health

Thank You

