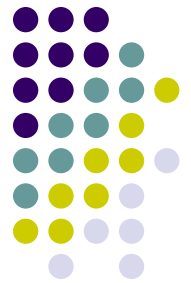
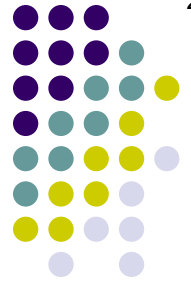


Filamentary Keratitis/Keratopathy



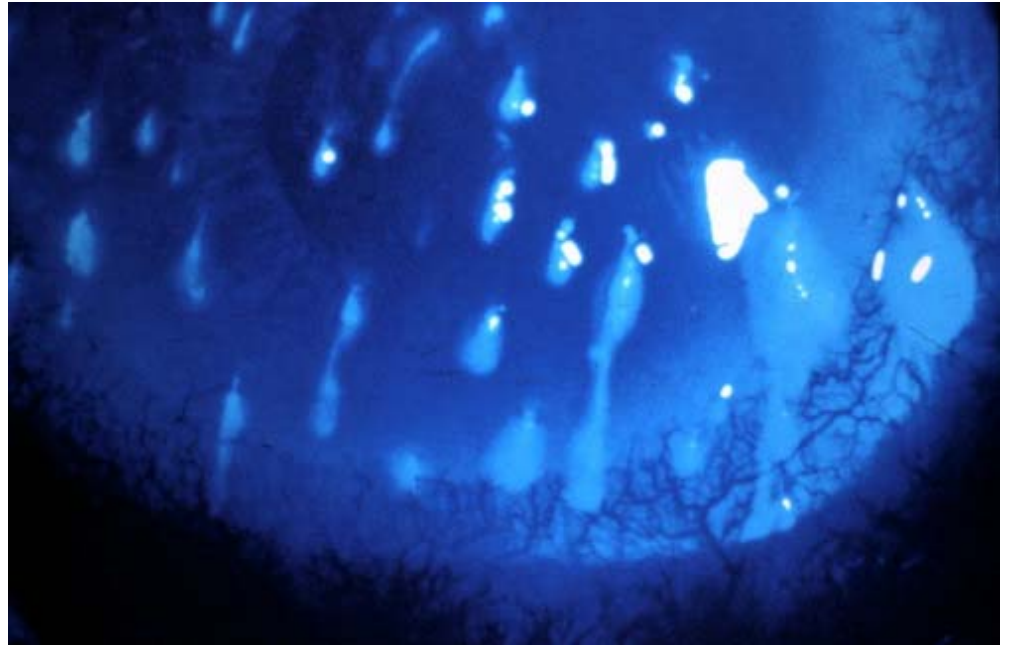
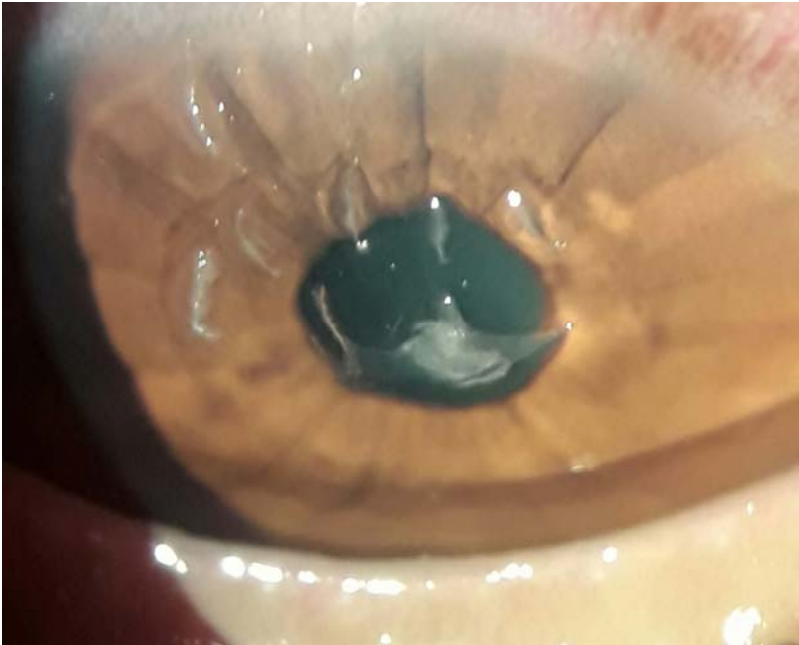
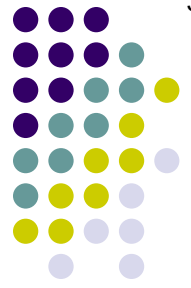
- *In this context, what are filaments?*

Filamentary Keratitis/Keratopathy



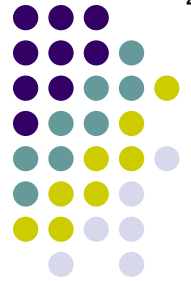
- *In this context, what are filaments?* Strands of devitalized epithelial cells and mucus attached to the corneal surface

Filamentary Keratitis/Keratopathy



Filaments

Filamentary Keratitis/Keratopathy

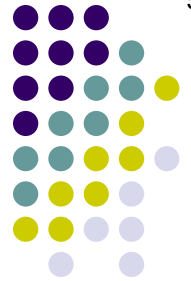


- *In this context, what are* filaments? Strands of devitalized epithelial cells and mucus **attached to the corneal surface**

There's 'attached,' and there's ***attached***. Here are two questions to determine just how attached to the cornea filaments really are...

First, do filaments remain attached through a blink?

Filamentary Keratitis/Keratopathy



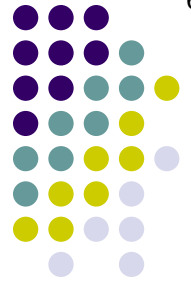
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Yes (except...more shortly)

Filamentary Keratitis/Keratopathy



- *In this context, what are* filaments? Strands of devitalized epithelial cells and mucus **attached to the corneal surface**

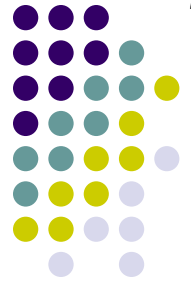
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Yes (except...more shortly)

OK, now the true test of corneal attachment: When a filament is removed, does it leave an epi defect?

Filamentary Keratitis/Keratopathy



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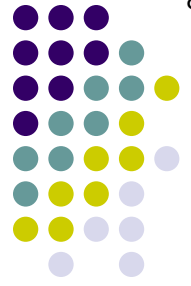
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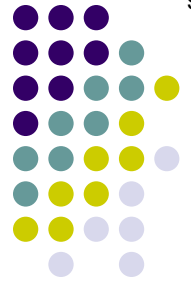
Yes

Filamentary Keratitis/Keratopathy



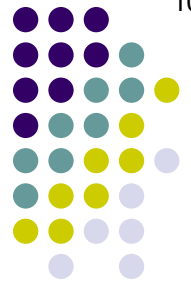
- *In this context, what are filaments?* Strands of devitalized epithelial cells and mucus attached to the corneal surface
- *What do pts with filaments complain of?*

Filamentary Keratitis/Keratopathy



- *In this context, what are filaments?* Strands of devitalized epithelial cells and mucus attached to the corneal surface
- *What do pts with filaments complain of?*
Foreign-body sensation

Filamentary Keratitis/Keratopathy



- *In this context, what are filaments?* Strands of devitalized epithelial cells and mucus attached to the corneal surface
- *What do pts with filaments complain of?*
Foreign-body sensation

Time to unpack the *except...more shortly* from a couple of slides ago. Occasionally, a blink will pull a filament off the cornea, leaving a small epi defect and leading to the FBS that is characteristic of the condition.

Questions to determine just

how attached to the cornea filaments really are...

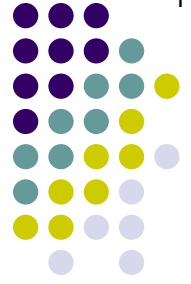
First, do filaments remain attached through a blink?

Yes **(except...more shortly)**

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Yes

Filamentary Keratitis/Keratopathy

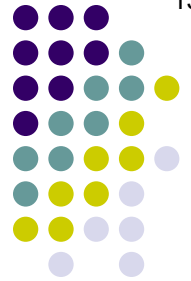


- *In this context, what are filaments?* Strands of devitalized epithelial cells and mucus attached to the corneal surface
- *What do pts with filaments complain of?*
Foreign-body sensation
- *What is the key to successfully managing filamentary keratitis?*

Filamentary Keratitis/Keratopathy



- *In this context, what are filaments?* Strands of devitalized epithelial cells and mucus attached to the corneal surface
- *What do pts with filaments complain of?*
Foreign-body sensation
- *What is the key to successfully managing filamentary keratitis?* Addressing the underlying condition that led to filament formation in the first place!



Filamentary Keratitis/Keratopathy

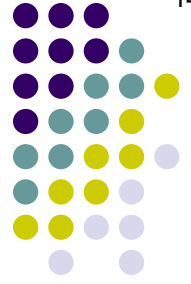
What might the 'underlying condition' be?

-
-
-
-
-
-
- (there are others)

nts? Strands of devitalized
to the corneal surface

plain of?

What is the key to successfully managing filamentary
keratitis? Addressing the **underlying condition** that led to
filament formation in the first place!



Filamentary Keratitis/Keratopathy

What might the 'underlying condition' be?

- DES
- REE
- SLK
- Medicomentosa
- Prolonged surface exposure
- Prolonged surface occlusion (partial or complete)
- (there are others)

*What is the key to successfully managing filamentary keratitis? Addressing the **underlying condition** that led to filament formation in the first place!*

Filamentary Keratitis/Keratopathy



What does DES stand for in this context?

What might

--DES

--REE

--SLK

--Medico

--Prolong

--Prolong

--(there a

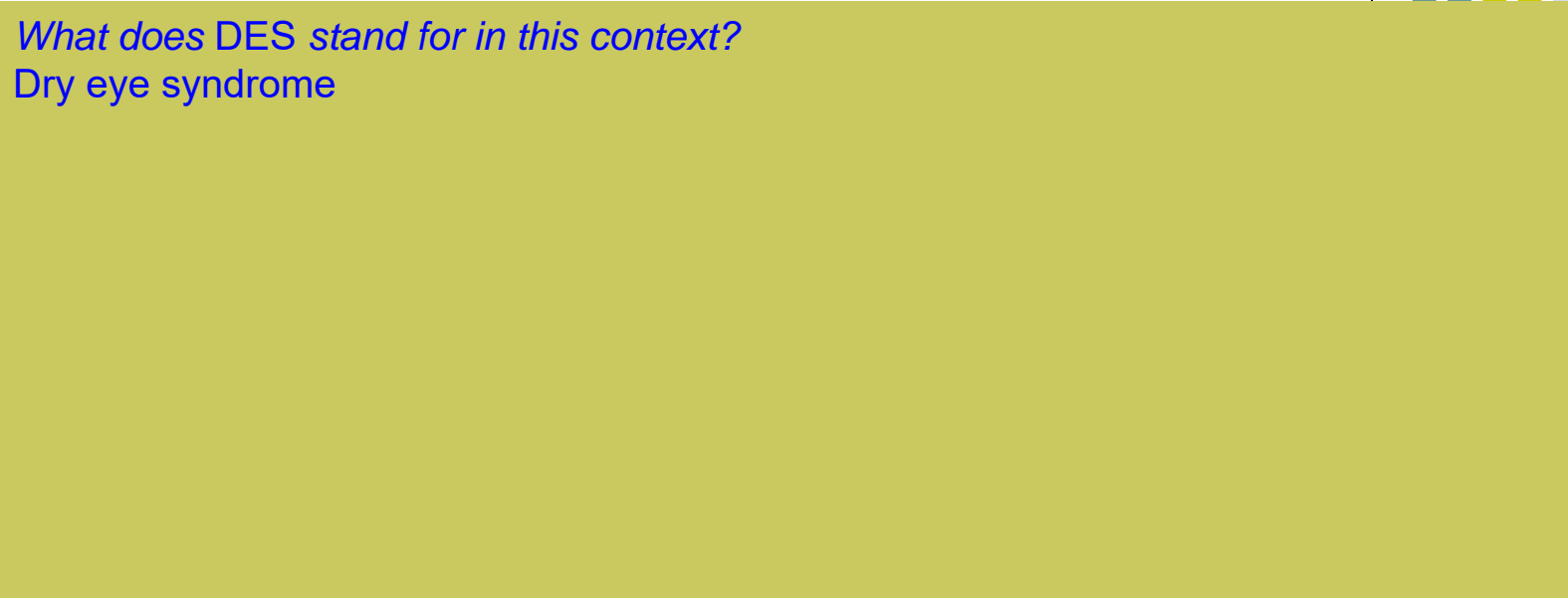
keratitis? Addressing the **underlying condition** that led to filament formation in the first place!



Filamentary Keratitis/Keratopathy

What does DES stand for in this context?
Dry eye syndrome

- What might...
- DES
- REE
- SLK
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- Prolong
- (there a



keratitis? Addressing the **underlying condition** that led to filament formation in the first place!

Filamentary Keratitis/Keratopathy



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How does DES put a pt at risk for developing filamentary keratitis?

*keratitis? Addressing the **underlying condition** that led to filament formation in the first place!*

Filamentary Keratitis/Keratopathy



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The reduced aqueous tear volume leads to an abnormally high mucin-to-aqueous ratio, which in turn makes the surface milieu much more favorable to filament formation

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Filamentary Keratitis/Keratopathy



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*keratitis? Addressing the **underlying condition** that led to filament formation in the first place!*



Filamentary Keratitis/Keratopathy

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Aqueous tear deficiency (ATD) and evaporative dry eye

*keratitis? Addressing the **underlying condition** that led to filament formation in the first place!*



Filamentary Keratitis/Keratopathy

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Of the two, which is more closely associated with filamentary dz?

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Filamentary Keratitis/Keratopathy

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ATD

*keratitis? Addressing the **underlying condition** that led to filament formation in the first place!*



Filamentary Keratitis/Keratopathy

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- What mi
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- REE
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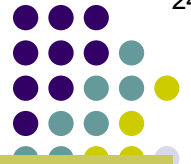
What are the two broad categories of dry eye syndrome?
Aqueous tear deficiency (ATD)

But ATD and evaporative dry eye are **both** characterized by reduced aqueous volume, and thus an increased mucin/aqueous ratio. Given this, why is filamentary keratitis more strongly associated with ATD?

ATD

keratitis?
filament fo

Filamentary Keratitis/Keratopathy



What does DES stand for in this context?

Dry eye syndrome

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How does DES put a pt at risk for developing filamentary keratitis?

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Aqueous

Of the two

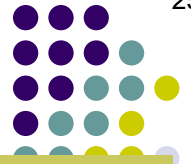
ATD

keratitis?

filament fo

But ATD and evaporative dry eye are **both** characterized by reduced aqueous volume, and thus an increased mucin/aqueous ratio. Given this, why is filamentary keratitis more strongly associated with ATD?

Because in addition to reduced aqueous volume, ATD is characterized by an **increase** in mucin production. Thus, the mucin/aqueous ratio in ATD is even higher than it is in evaporative dry eye.



Filamentary Keratitis/Keratopathy

What does DES stand for in this context?

Dry eye syndrome

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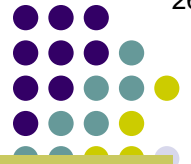
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Because in addition to reduced aqueous volume, ATD is characterized by an **increase in mucin production** which is even higher than it is in evaporative dry eye.

ATD

keratitis?
filament fo

Which ocular-surface cell produces mucin?



Filamentary Keratitis/Keratopathy

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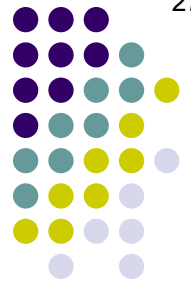
an **increase in mucin production** that is even higher than it is in evaporative dry eye.

ATD

keratitis?

filament fo

Which ocular-surface cell produces mucin?
Conjunctival goblet cells



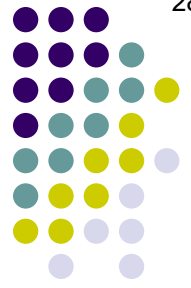
Filamentary Keratitis/Keratonathy

What does REE stand for in this context?

- What mig
- DES
- REE**
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- Prolonge
- (there ar

of devitalized surface

amentary
keratitis? Addressing the **underlying condition** that led to filament formation in the first place!



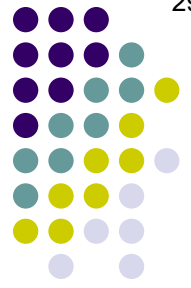
Filamentary Keratitis/Keratonathy

What does REE stand for in this context?
Recurrent epithelial erosions (aka 'recurrent corneal erosions')

- What might
- DES
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Filamentary Keratitis/Keratonathy

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What are recurrent epithelial erosions?

What might
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... filamentary
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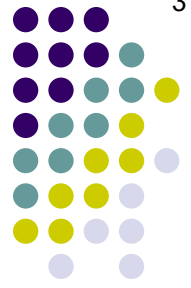
What are recurrent epithelial erosions?
 Epi defects that repeatedly occur in the same corneal location owing to chronically poor adhesion between the epithelium and the underlying basement membrane

What might...
 --DES
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What are recurrent epithelial erosions?
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The majority of REE cases can be traced to one of two causes. What are they?
 --
 --
 (Of course, a pt could have both)

What might
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Filamentary Keratitis/Keratonathy



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What are recurrent epithelial erosions?

Epi defects that repeatedly occur in the same corneal location owing to chronically poor adhesion between the epithelium and the underlying basement membrane

The majority of REE cases can be traced to one of two causes.

What are they?

--A history of trauma to the corneal epithelium

--An underlying corneal dystrophy

(Of course, a pt could have both)

What might

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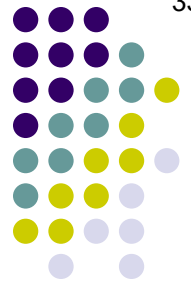
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of devitalized surface

amentary



Filamentary Keratitis/Keratonathy

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What are recurrent epithelial erosions?
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What sort of trauma, ie, what type of mechanism?

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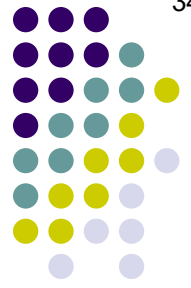
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Filamentary Keratitis/Keratonathy

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What are recurrent epithelial erosions?
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What sort of trauma, ie, what type of mechanism?
 A 'shearing' injury (eg, a scrape from a fingernail).
 Notably, lacerating injuries do **not** predispose to REE.

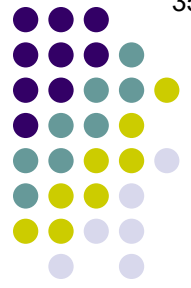
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Filamentary Keratitis/Keratonathy

What does REE stand for in this context?
Recurrent epithelial erosions (aka 'recurrent corneal erosions')

What are recurrent epithelial erosions?
Epi defects that repeatedly occur in the same corneal location owing to chronically poor adhesion between the epithelium and

Which corneal dystrophies are associated with REE?

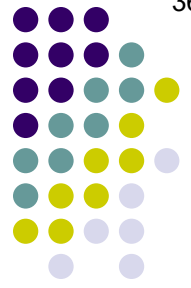
- What might
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- Prolonged
- (there are

- A history of trauma to the corneal epithelium
- An underlying **corneal dystrophy**
- (Of course, a pt could have both)

Addressing the **underlying condition** that led to filament formation in the first place!

of devitalized surface

amentary



Filamentary Keratitis/Keratonathy

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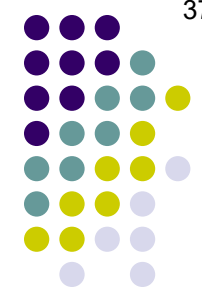
Which corneal dystrophies are associated with REE?
The classic cause is probably [redacted] four words, and their acronym.
Other, less common causes include Meesmann epithelial corneal dystrophy, Reis-Bücklers, Thiel-Behnke, and lattice and granular stromal dystrophies.

--A history of trauma to the corneal epithelium
--An underlying **corneal dystrophy**
(Of course, a pt could have both)

keratitis? Addressing the **underlying condition** that led to filament formation in the first place!

of devitalized surface

amentary



Filamentary Keratitis/Keratonathy

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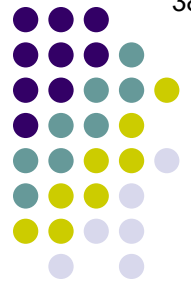
Which corneal dystrophies are associated with REE?
The classic cause is probably epithelial basement membrane dystrophy (EBMD).
Other, less common causes include Meesmann epithelial corneal dystrophy, Reis-Bücklers, Thiel-Behnke, and lattice and granular stromal dystrophies.

--A history of trauma to the corneal epithelium
--An underlying **corneal dystrophy**
(Of course, a pt could have both)

keratitis? Addressing the **underlying condition** that led to filament formation in the first place!

of devitalized surface

amentary



Filamentary

What are the '6 F's' of EBMD?

What does REE stand for?
Recurrent epithelial

- F
- F
- F
- F
- F

F

What are recurrent
Epi defects that result
owing to chronically

What might
--DES

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--Prolong

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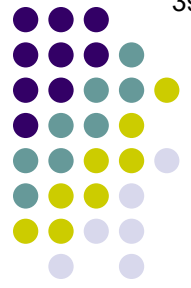
(Of course, a pt could have both)

keratitis? Addressing the **underlying condition** that led to filament formation in the first place!

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Filamentary

What does REE stand for?
Recurrent epithelial erosion

What are recurrent epithelial defects that result from chronic poor adhesion between the epithelium and stroma?

- DES
- REE
- SLK
- Medic
- Prolonged
- Prolonged
- (there are)

What are the '6 F's' of EBMD?

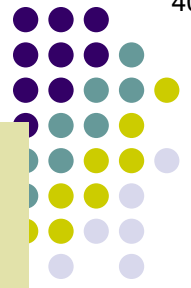
- Female preponderance
- Fifties and older (usually)
- Five to Fifteen percent of the population are afflicted
- Fifty percent of pts who suffer REE have it
- Fibrillar material accumulates under the basement membrane

Which corneal dystrophies are associated with REE?

The classic cause is probably **epithelial basement membrane dystrophy (EBMD)**. Other, less common causes include Meesmann epithelial corneal dystrophy, Reis-Bücklers, Thiel-Behnke, and lattice and granular stromal dystrophies.

- A history of trauma to the corneal epithelium
- An underlying **corneal dystrophy**
- (Of course, a pt could have both)

keratitis? Addressing the **underlying condition** that led to filament formation in the first place!



Filamentary Keratitis/Keratopathy

What does SLK stand for in this context?

- What mig
- DES
- REE
- SLK**
- Medicor
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Filamentary Keratitis/Keratopathy

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Superior limbic keratoconjunctivitis

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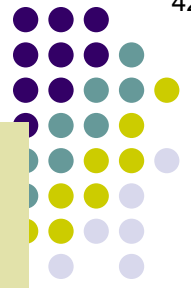
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A chronic/recurrent inflammatory condition of the superior limbal cornea and adjacent conj

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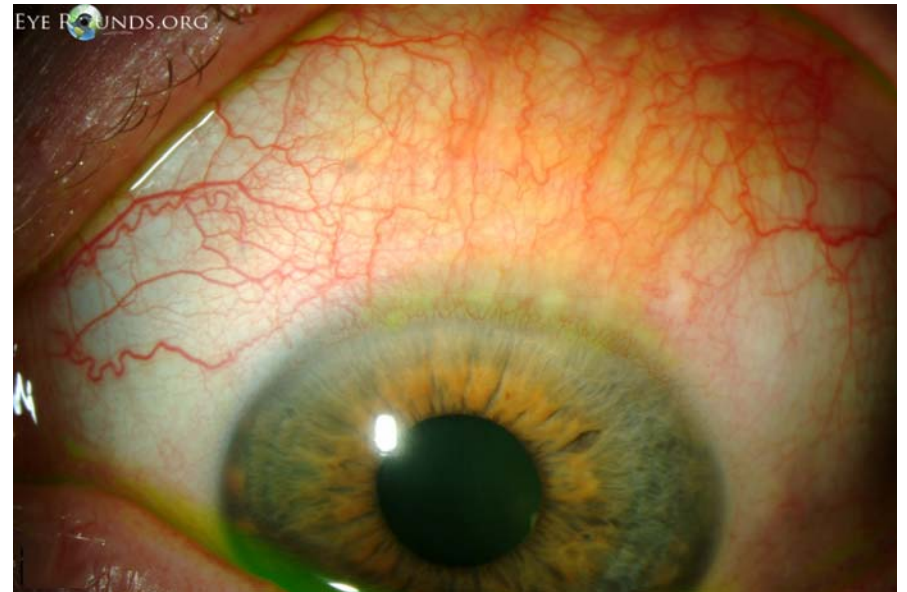
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Filamentary Keratitis/Keratopathy



SLK: Superior conj injection

Filamentary Keratitis/Keratopathy

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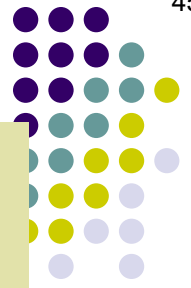
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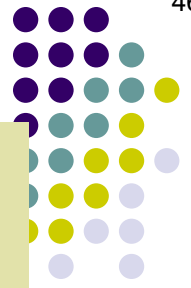
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What do SLK pts c/o?

DES-like complaints: Foreign-body sensation; burning

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Filamentary Keratitis/Keratopathy

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They are usually limited to the superior cornea

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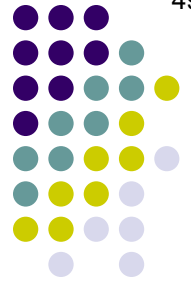
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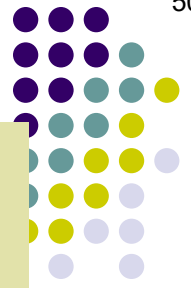
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Filamentary Keratitis/Keratopathy



SLK: Superior corneal filaments



Filamentary Keratitis/Keratopathy

What does SLK stand for in this context?
 Superior limbic keratoconjunctivitis

In a nutshell, what is SLK?
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What do SLK pts c/o?
 DES-like complaints: Foreign-body sensation; burning

In SLK, filaments tend to be distributed in a particular fashion. What is it?
 They are usually limited to the superior cornea

With what systemic condition is SLK associated?

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- REE
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Filamentary Keratitis/Keratopathy

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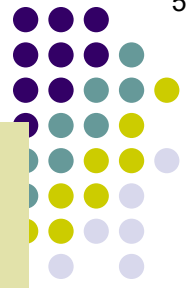
DES-like complaints: Foreign-body sensation; burning

In SLK, filaments tend to be distributed in a particular fashion. What is it?

They are usually limited to the superior cornea

With what systemic condition is SLK associated?

Thyroid disease



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Filamentary Keratitis/Keratopathy

What does SLK stand for in this context?

Superior limbic keratoconjunctivitis

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What do SLK pts c/o?

DES-like complaints: Foreign-body sensation; burning

In SLK, filaments tend to be distributed in a particular fashion. What is it?

They are **usually limited to the superior cornea**

Where on the cornea are filaments located in cases owing to ATD?

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thyroid disease



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Where on the cornea are filaments located in cases owing to ATD?

The interpalpebral fissure zone

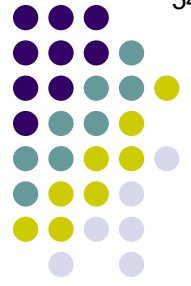
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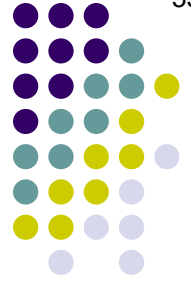
Filamentary Keratitis/Keratopathy

What might the 'underlying condition' be?

- DES
- REE
- SLK
- Medicomentosa**
- Prolonged surface exposure
- Prolonged surface contact
- (there are others)

What is the classic drug implicated in inducing filaments?

Addressing the **underlying condition** that led to filament formation in the first place!



Filamentary Keratitis/Keratopathy

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--SLK

--**Medicomentosa**

--Prolonged surface e

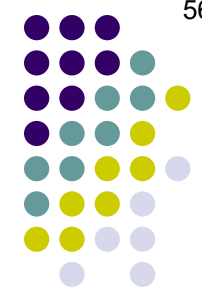
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Anticholinergics

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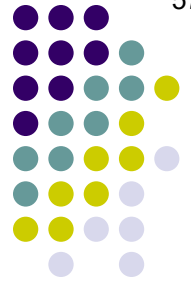
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Topical or systemic?

underlying condition

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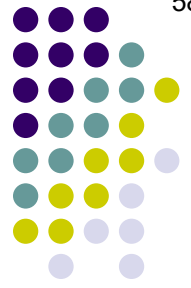
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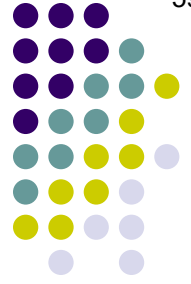
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Topical or systemic?
 Systemic

What is the proposed mechanism of action?

underlying condition

keratitis? Addressing the **underlying condition** that led to filament formation in the first place!



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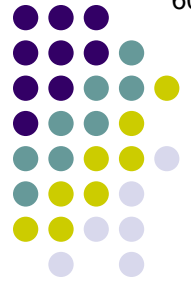
Topical or systemic?

Systemic

What is the proposed mechanism of action?

Suppression of aqueous (tear) production

keratitis? Addressing the **underlying condition** that led to filament formation in the first place!



Filamentary Keratitis/Keratopathy

What might the 'underlying condition' be?

--DES

--REE

--SLK

--Medicomentosa

--**Prolonged surface exposure**

What are some of the causes of 'prolonged surface exposure'?

--

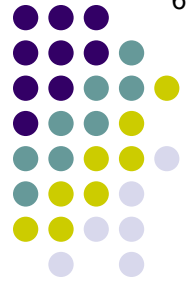
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keratitis? Addressing the **underlying condition** that led to filament formation in the first place!

nts? Strands of devitalized
to the corneal surface

plain of?

aging filamentary



Filamentary Keratitis/Keratopathy

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--SLK

--Medicomentosa

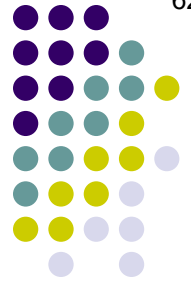
--**Prolonged surface exposure**

What are some of the causes of 'prolonged surface exposure'?

--CN7 palsy

--Conditions leading to a decreased blink rate (eg, Parkinsons)

Addressing the **underlying condition** that led to filament formation in the first place!



Filamentary Keratitis/Keratopathy

What might the 'underlying condition' be?

- DES
- REE
- SLK
- Medicomentosa
- Prolonged surface exposure
- Prolonged surface occlusion (partial or complete)**

What are some of the causes of 'prolonged surface occlusion'?

-
-

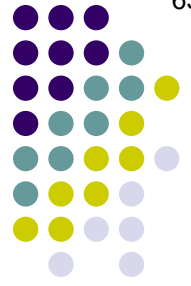
filament formation in the first place!

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Filamentary Keratitis/Keratopathy

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- DES
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- Prolonged surface exposure
- Prolonged surface occlusion (partial or complete)**

What are some of the causes of 'prolonged surface occlusion'?

- Ptosis
- Patching

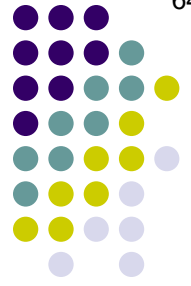
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Filamentary Keratitis/Keratopathy

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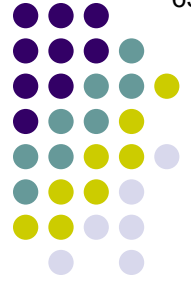
- DES
- REE
- SLK
- Medicomentosa
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- Prolonged surface occlusion (partial or complete)
- (there are others)

Note that, interestingly, these diametrically opposing situations—too *much* corneal exposure, or too *little*—lead to the same clinical outcome!

underlying condition

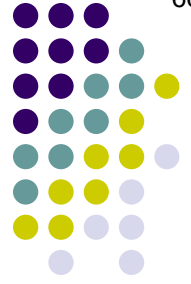
What is the key to successfully managing filamentary keratitis? Addressing the **underlying condition** that led to filament formation in the first place!

Filamentary Keratitis/Keratopathy



- *In this context, what are filaments?* Strands of devitalized epithelial cells and mucus attached to the corneal surface
- *What do pts with filaments complain of?*
Foreign-body sensation
- *What is the key to successfully managing filamentary keratitis?* Addressing the underlying condition that led to filament formation in the first place!
- What specific treatment steps can be taken to mitigate the filaments themselves?
 - ?
 - ?
 - ?
 - ?

Filamentary Keratitis/Keratopathy



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- *What is the key to successfully managing filamentary keratitis?* Addressing the underlying condition that led to filament formation in the first place!
- What specific treatment steps can be taken to mitigate the filaments themselves?
 - Removing them from the cornea with jewelers
 - Copious supplementation of the tear film
 - Hypertonic saline drops
 - N-acetylcysteine



Filamentary Keratitis/Keratopathy

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- What is the common trade name for ophthalmic N-acetylcysteine? Investigate
-
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-
- **N-acetylcysteine**

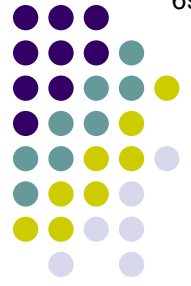


Filamentary Keratitis/Keratopathy

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filamentary keratitis. What is the common trade name for ophthalmic N-acetylcysteine?
Mucomyst

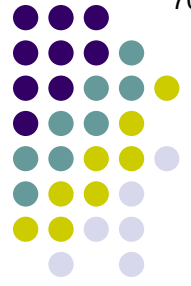
- What is the key to successfully managing filamentary keratitis?
Investigate the underlying condition that led to filamentary keratitis.
-
-
-
- **N-acetylcysteine**



Filamentary Keratitis/Keratopathy

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- *What is the common trade name for ophthalmic N-acetylcysteine?*
Mucomyst
- *What property does N-acetylcysteine have that makes it useful in treating filamentary keratitis?*
 -
 -
 -
 - **N-acetylcysteine**

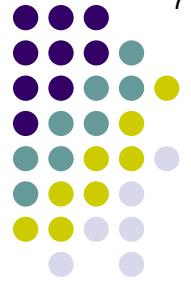
investigate



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 -
 -
 - **N-acetylcysteine**

investigate



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Mucomyst
- *What property does N-acetylcysteine have that makes it useful in treating filamentary keratitis?*
 - That of a **muco**lytic
 - *What does Mucomyst smell like?*
 -
- **N-acetylcysteine**

investigate



Filamentary Keratitis/Keratopathy

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Mucomyst
- *What property does N-acetylcysteine have that makes it useful in treating filamentary keratitis?*
 - That of a **muco**lytic
 - *What does Mucomyst smell like?*
 - Rotten eggs
- **N-acetylcysteine**

investigate