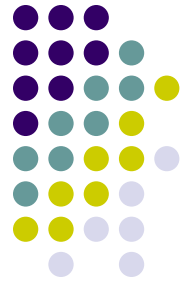


Pigment Epithelial Detachment (PED)

With regard to a pigment epithelial detachment: What 'pigmented epithelium' is being referred to?



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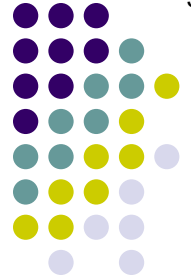
The retinal pigment epithelium (RPE)

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The retinal pigment epithelium (RPE)

What does it mean to say the RPE is 'detached'?



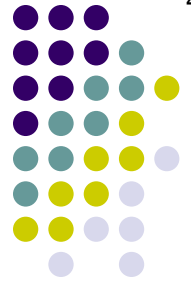
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Pigment Epithelial Detachment (PED)

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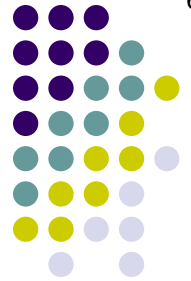
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What is the ‘underlying structure’ being referred to here?



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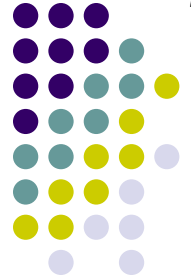
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Bruch's membrane

Pigment Epithelial Detachment (PED)



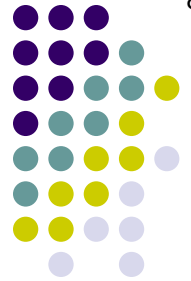
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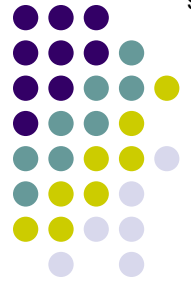
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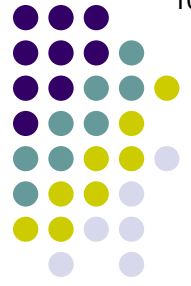
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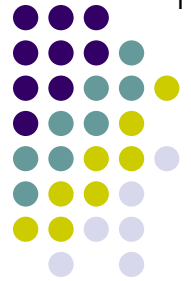
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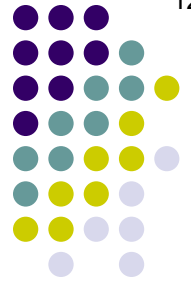
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So what causes PED?





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So what causes PED?

Good question. But first...

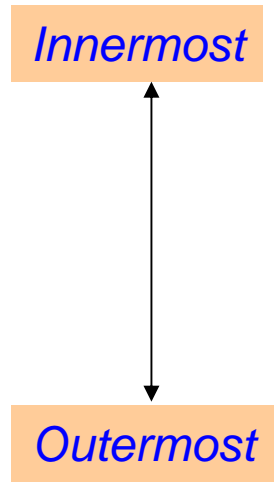
Pigment Epithelial Detachment (PED)



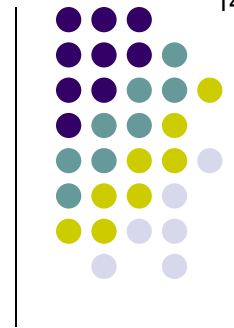
But first:

What are the five layers of Bruch's membrane?

- Bruch's membrane
- 1) (Start here)
 - 2)
 - 3)
 - 4)
 - 5)

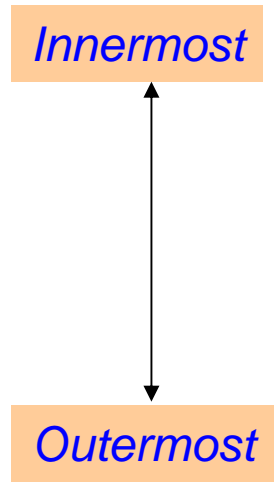
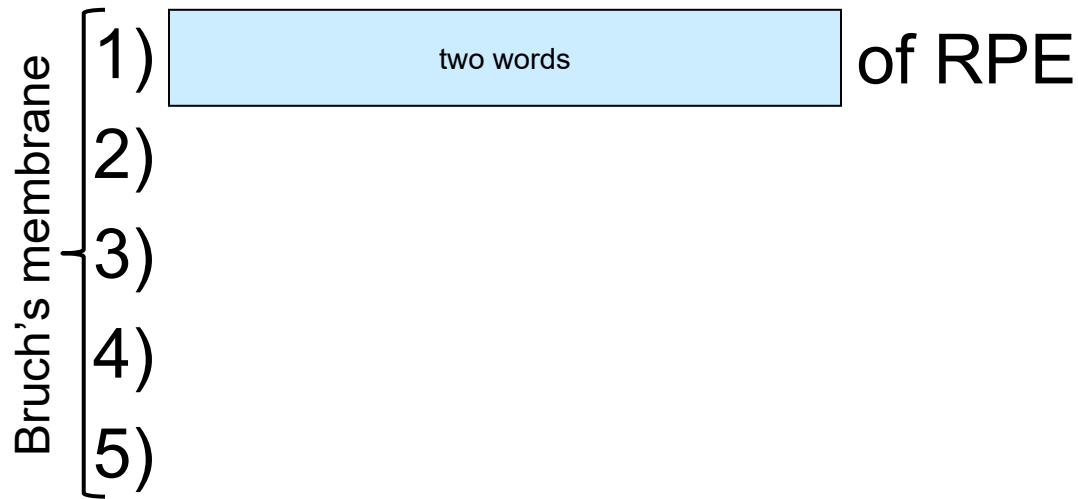


Pigment Epithelial Detachment (PED)



But first:

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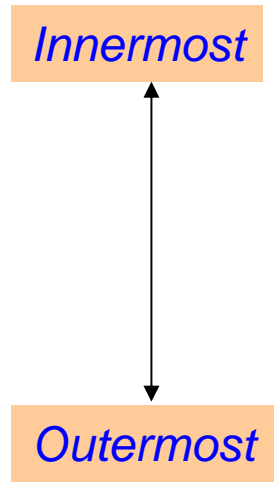
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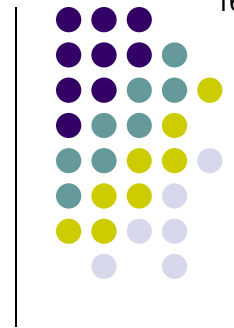
But first:

What are the five layers of Bruch's membrane?

- ★ (Note: This line represents the RPE basement membrane) ★
- Bruch's membrane
- 1) Basement membrane of RPE
 - 2)
 - 3)
 - 4)
 - 5)



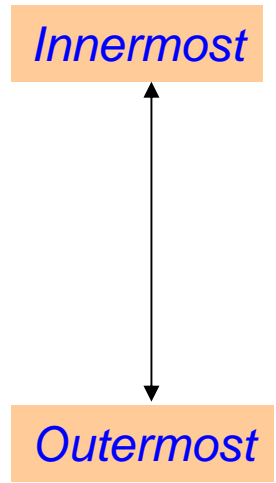
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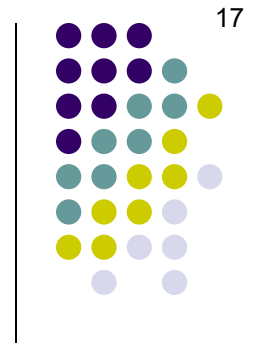
But first:

What are the five layers of Bruch's membrane?

- 1) Basement membrane of RPE
- 2) (next)
- 3)
- 4)
- 5)



Pigment Epithelial Detachment (PED)



But first:

What are the five layers of Bruch's membrane?

- Bruch's membrane
- 1) Basement membrane of RPE
 - 2) Inner one word layer
 - 3)
 - 4)
 - 5)

Innermost

Outermost



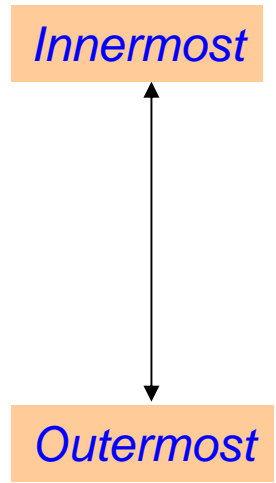
Pigment Epithelial Detachment (PED)



But first:

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- 1) Basement membrane of RPE
- 2) Inner collagenous layer
- 3) (etc)
- 4)
- 5)



Pigment Epithelial Detachment (PED)



But first:

What are the five layers of Bruch's membrane?

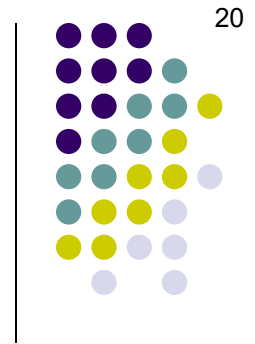
- 1) Basement membrane of RPE
- 2) Inner collagenous layer
- 3) diff one word layer
- 4)
- 5)

Innermost

Outermost



Pigment Epithelial Detachment (PED)



But first:

What are the five layers of Bruch's membrane?

- Bruch's membrane
- 1) Basement membrane of RPE
 - 2) Inner collagenous layer
 - 3) Elastic layer
 - 4)
 - 5)

Innermost

Outermost



Pigment Epithelial Detachment (PED)



But first:

What are the five layers of Bruch's membrane?

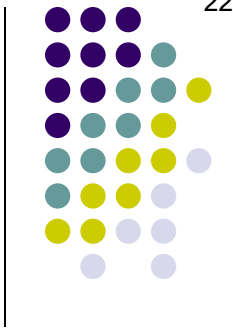
- Bruch's membrane
- 1) Basement membrane of RPE
 - 2) Inner collagenous layer
 - 3) Elastic layer
 - 4) Outer one familiar word layer
 - 5)

Innermost

Outermost



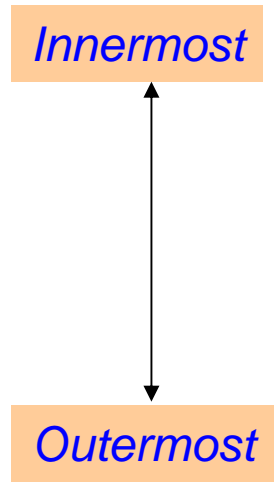
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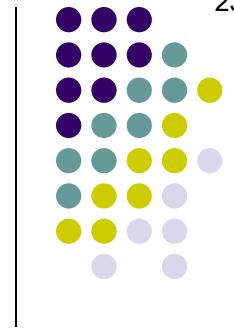
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- Bruch's membrane {
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 - 2) Inner collagenous layer
 - 3) Elastic layer
 - 4) Outer collagenous layer
 - 5)



Pigment Epithelial Detachment (PED)



But first:

What are the five layers of Bruch's membrane?

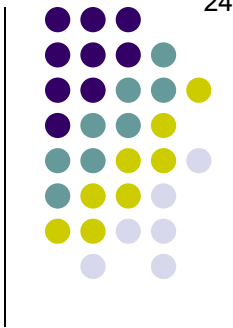
- Bruch's membrane
- 1) Basement membrane of RPE
 - 2) Inner collagenous layer
 - 3) Elastic layer
 - 4) Outer collagenous layer
 - 5) two familiar words of choriocapillaris

Innermost

Outermost



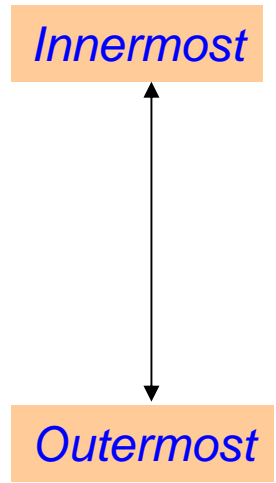
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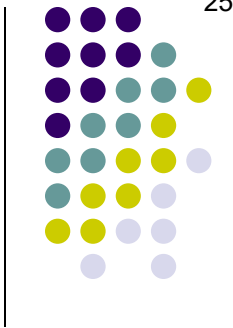
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- Bruch's membrane
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 - 2) Inner collagenous layer
 - 3) Elastic layer
 - 4) Outer collagenous layer
 - 5) Basement membrane of choriocapillaris
- ★ (Note: This line represents the c'capillaris basement membrane) ★



Pigment Epithelial Detachment (PED)



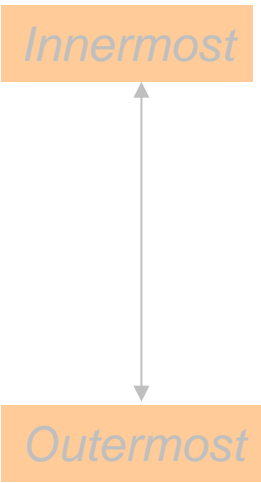
But first:

What are the five layers of Bruch's membrane?

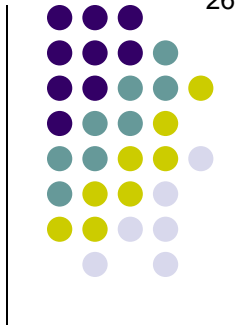
o) ?

← What (non-Bruch's) structure goes here?

- 1) Basement membrane of RPE
- 2) Inner collagenous layer
- 3) Elastic layer
- 4) Outer collagenous layer
- 5) Basement membrane of choriocapillaris



Pigment Epithelial Detachment (PED)



But first:

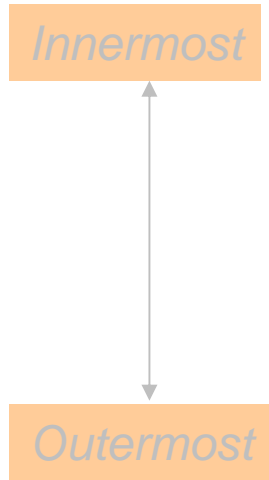
What are the five layers of Bruch's membrane?

0) RPE cells

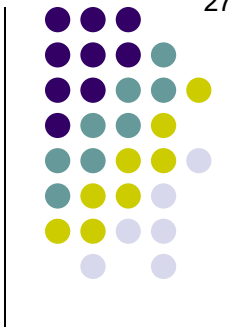
What (non-Bruch's) structure goes here? **The RPE cells themselves**

- 1) Basement membrane of RPE
- 2) Inner collagenous layer
- 3) Elastic layer
- 4) Outer collagenous layer
- 5) Basement membrane of choriocapillaris

Bruch's membrane

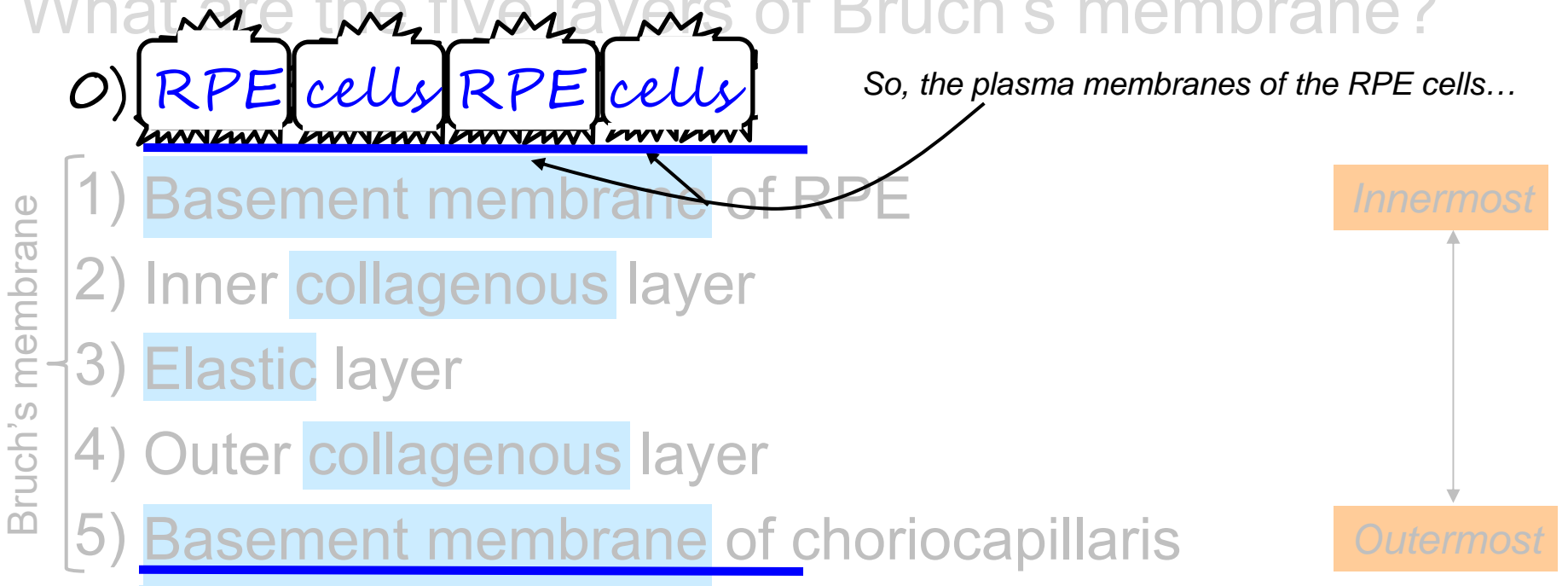


Pigment Epithelial Detachment (PED)

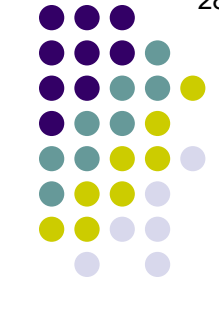


But first:

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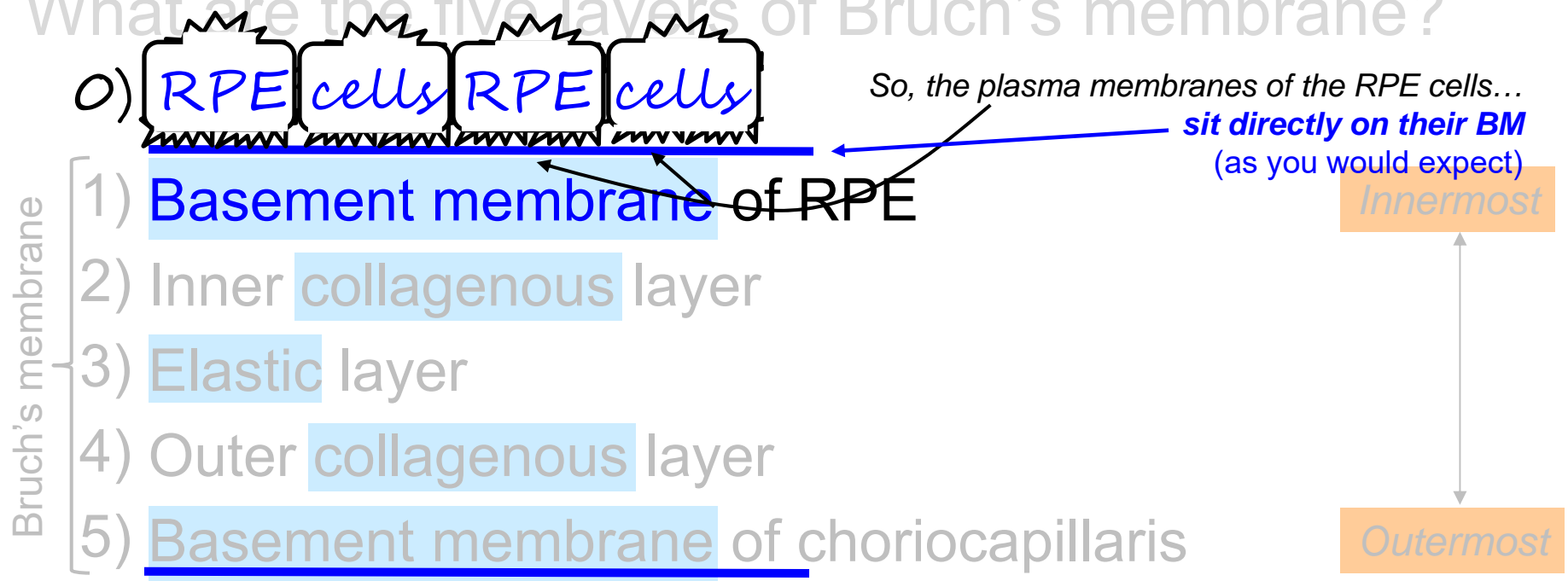


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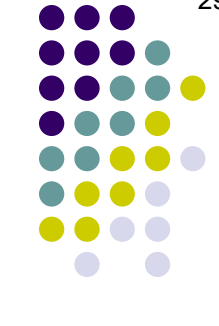


But first:

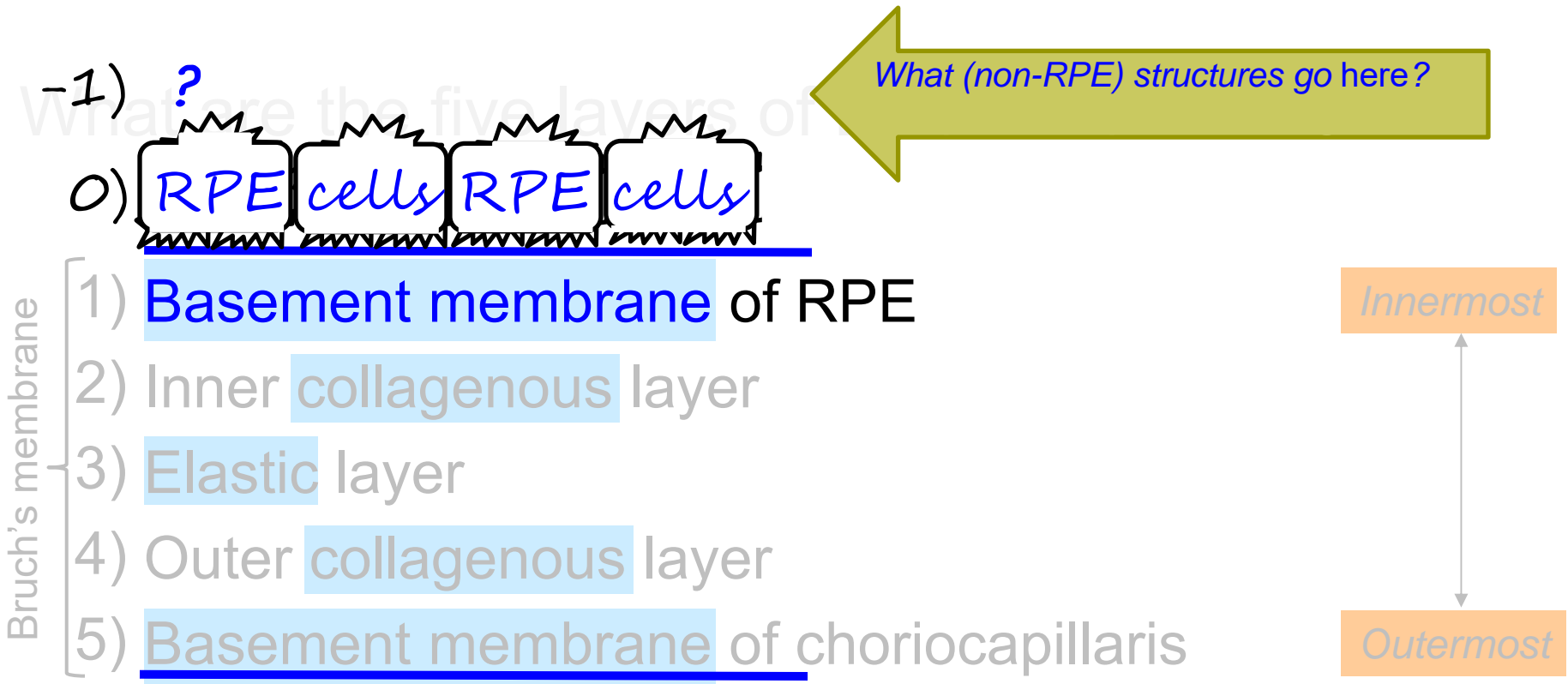
What are the five layers of Bruch's membrane?



Pigment Epithelial Detachment (PED)



But first:

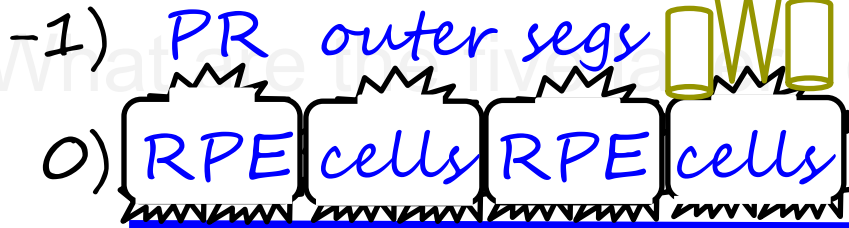


What are the five layers of

Pigment Epithelial Detachment (PED)

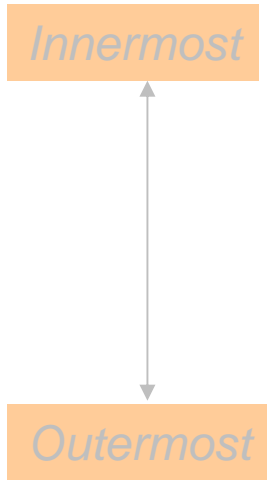


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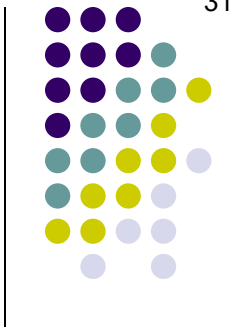


What (non-RPE) structures go here?
 The photoreceptor outer segments

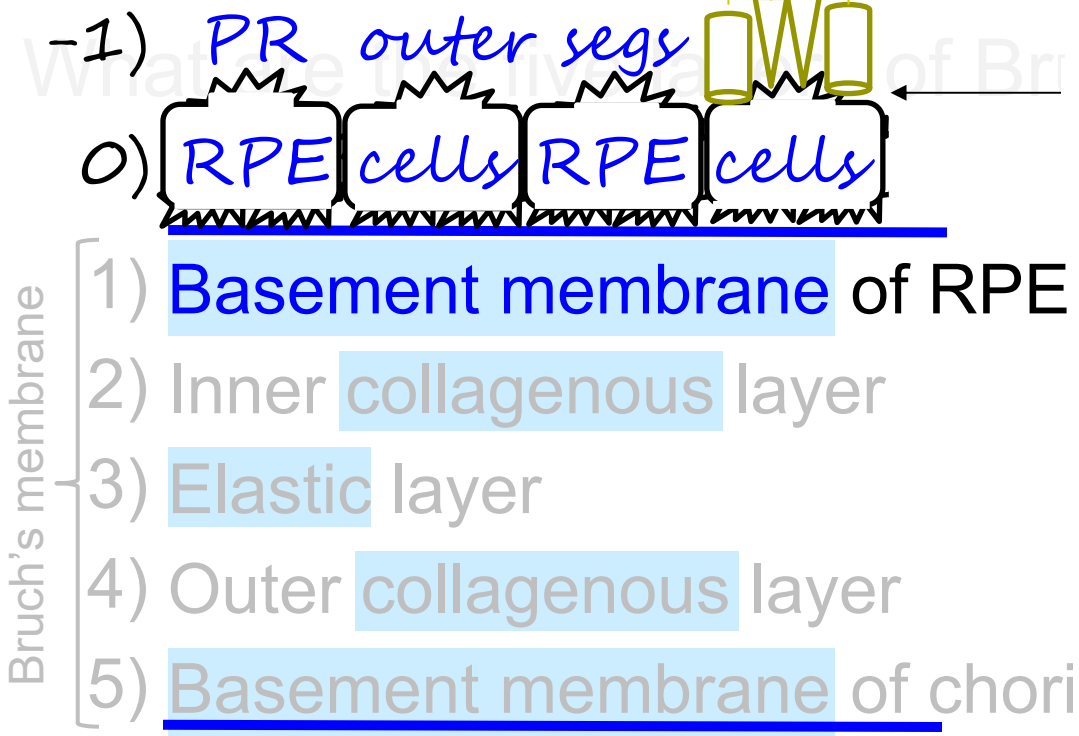
- Bruch's membrane
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 - 2) Inner collagenous layer
 - 3) Elastic layer
 - 4) Outer collagenous layer
 - 5) Basement membrane of choriocapillaris



Pigment Epithelial Detachment (PED)

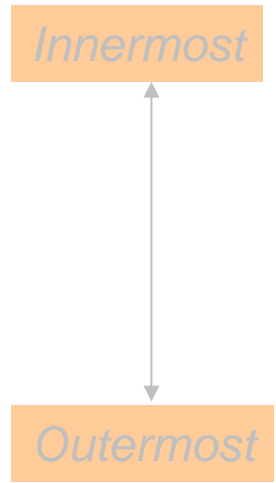


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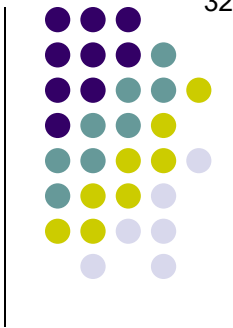


Note that both the RPE apical membranes...

Bruch's membrane



Pigment Epithelial Detachment (PED)



But first:

-1) PR outer segs

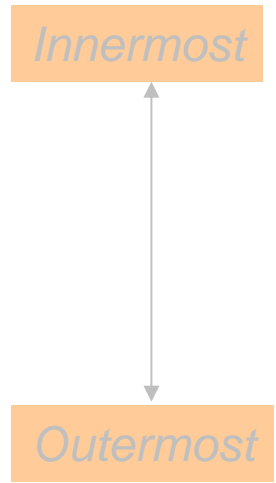


Note that both the RPE apical membranes...

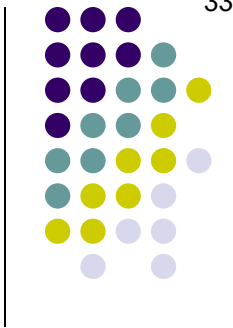
and their basal membranes...

Bruch's membrane

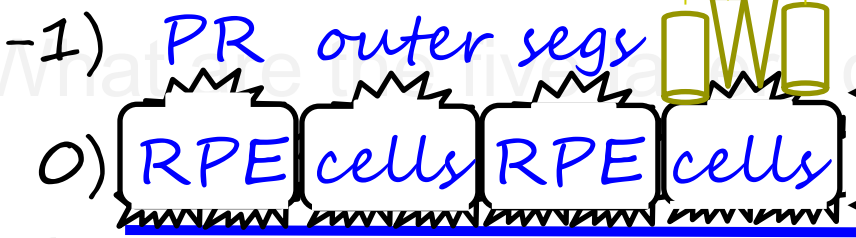
- 1) Basement membrane of RPE
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- 3) Elastic layer
- 4) Outer collagenous layer
- 5) Basement membrane of choriocapillaris



Pigment Epithelial Detachment (PED)

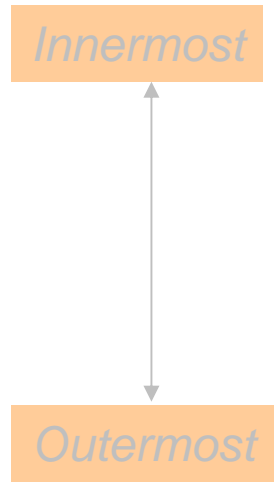


But first:

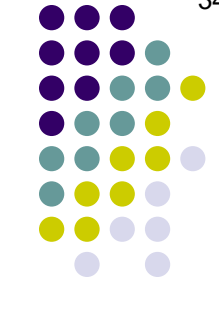


Note that both the RPE apical membranes...
are highly infolded.
 and their basal membranes...

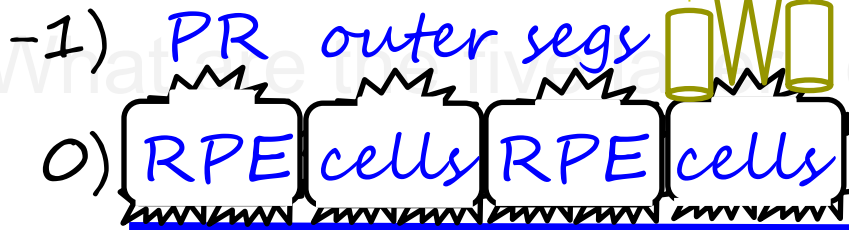
- Bruch's membrane
- 1) Basement membrane of RPE
 - 2) Inner collagenous layer
 - 3) Elastic layer
 - 4) Outer collagenous layer
 - 5) Basement membrane of choriocapillaris



Pigment Epithelial Detachment (PED)

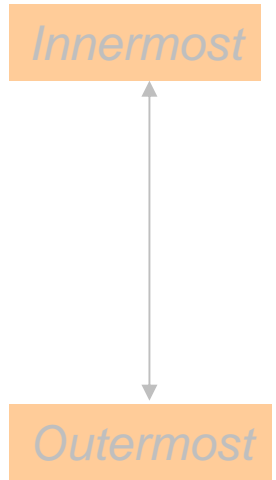


But first:

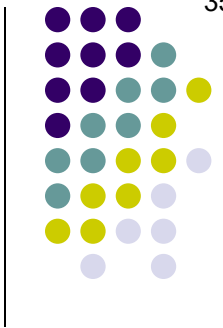


But note further that, while the PRs closely interdigitate with these infoldings...

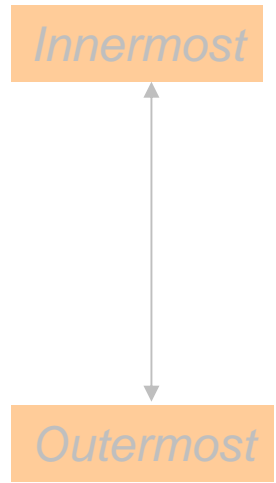
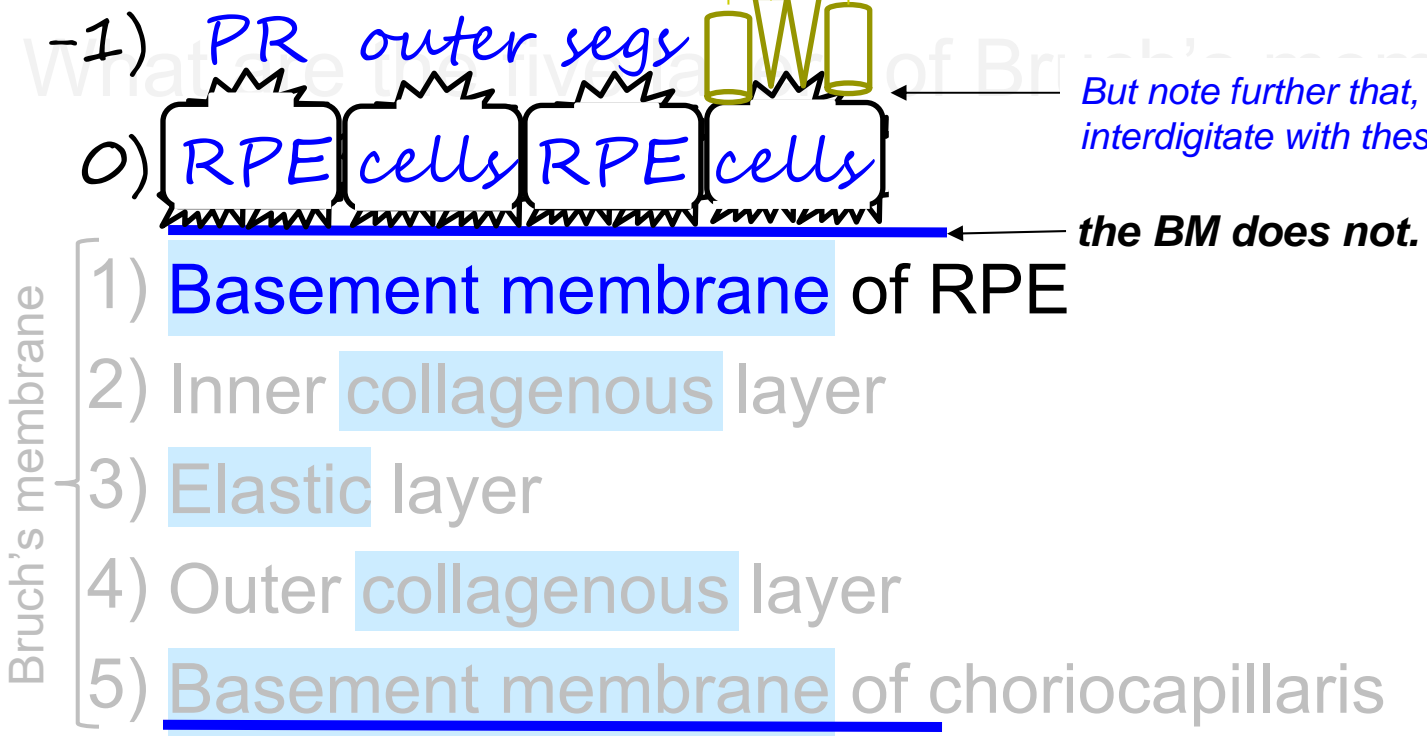
- Bruch's membrane
- 1) Basement membrane of RPE
 - 2) Inner collagenous layer
 - 3) Elastic layer
 - 4) Outer collagenous layer
 - 5) Basement membrane of choriocapillaris



Pigment Epithelial Detachment (PED)



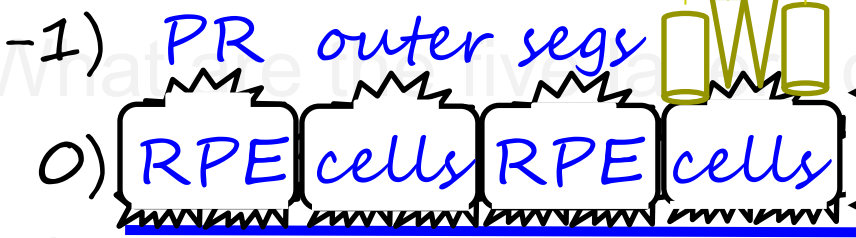
But first:





Pigment Epithelial Detachment (PED)

But first:



Note that both the RPE apical membranes...
 are highly infolded.
 and their *basal lamina* membranes...

- Bruch's membrane
- 1) Basement membrane of F
 - 2) Inner collagenous layer
 - 3) Elastic layer
 - 4) Outer collagenous layer
 - 5) Basement membrane of choriocapillaris

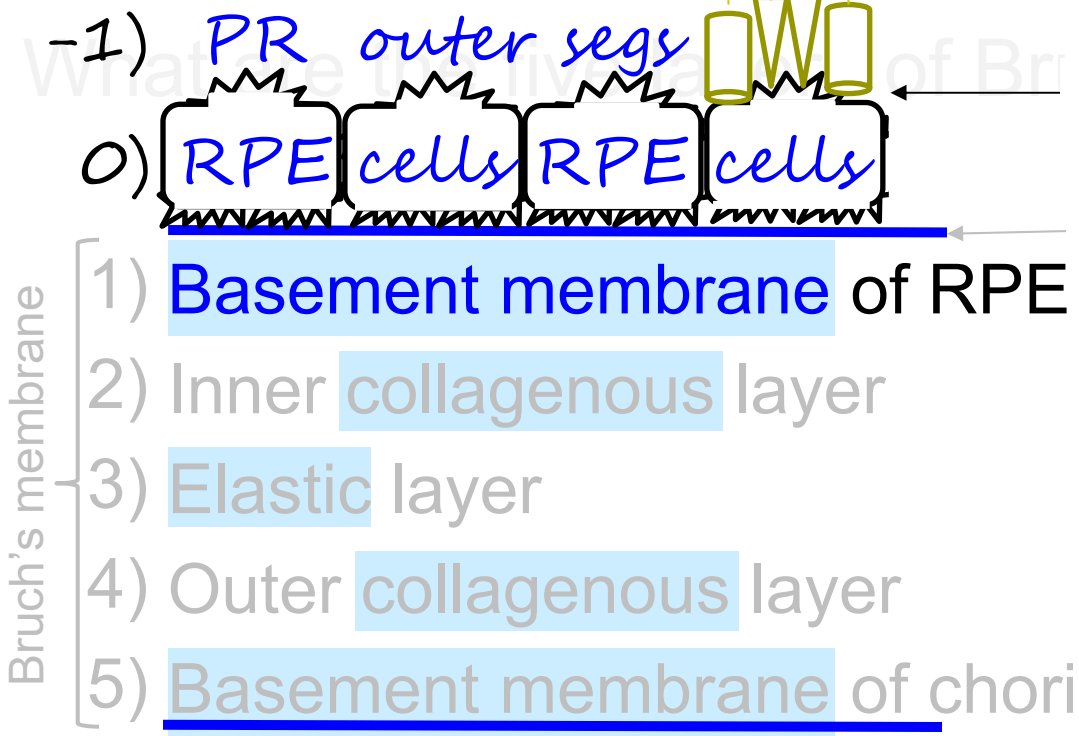
Also, foreshadowing alert: Note that another name for the basal membrane of a cell is 'basal lamina'

Outermost



Pigment Epithelial Detachment (PED)

But first:



But note further that, while the PRs closely interdigitate with these infoldings...

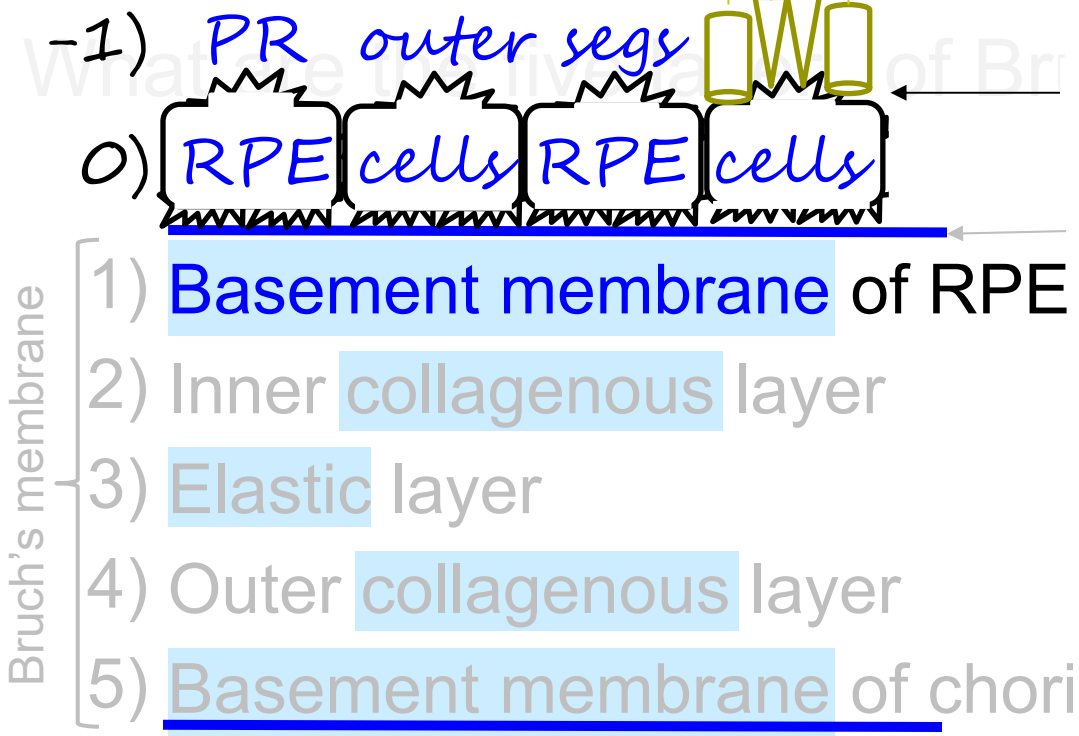
Why does it make sense that the PRs and RPE cells would be highly interdigitated?

Outermost



Pigment Epithelial Detachment (PED)

But first:



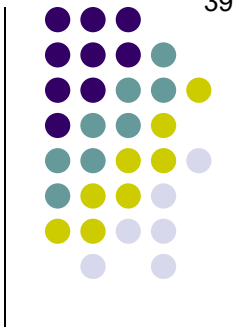
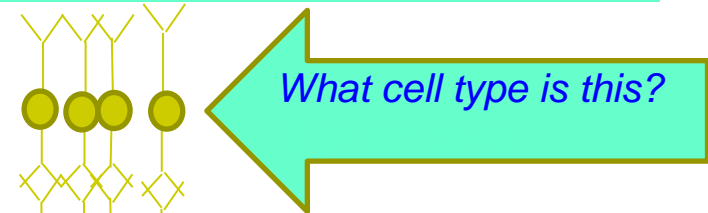
But note further that, while the PRs closely interdigitate with these infoldings...

Why does it make sense that the PRs and RPE cells would be highly interdigitated? Recall that a central function of the RPE is to provide metabolic support for the PRs. The interdigitations greatly increase the total surface area of PR-RPE contact, thereby facilitating these metabolic efforts.

Outermost

Pigment Epithelial Detachment (PED)

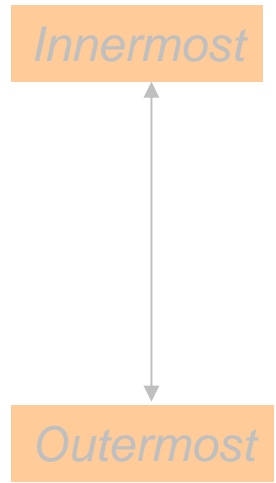
-2) ?
But first:



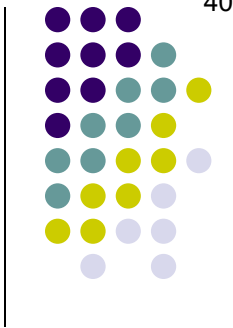
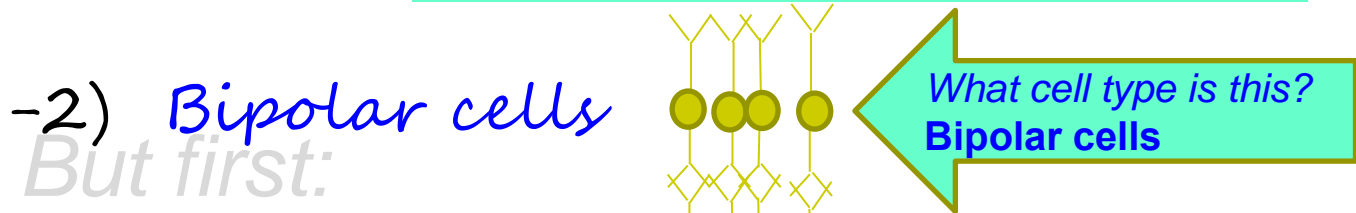
-1) PR outer segs
What are the primary layers of Bruch's membrane?



- Bruch's membrane
- 1) Basement membrane of RPE
 - 2) Inner collagenous layer
 - 3) Elastic layer
 - 4) Outer collagenous layer
 - 5) Basement membrane of choriocapillaris

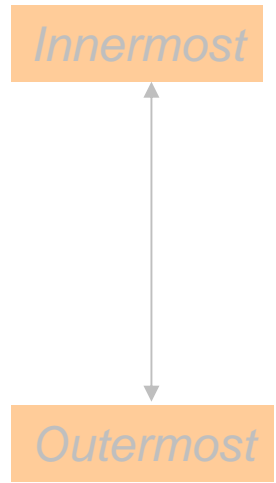


Pigment Epithelial Detachment (PED)

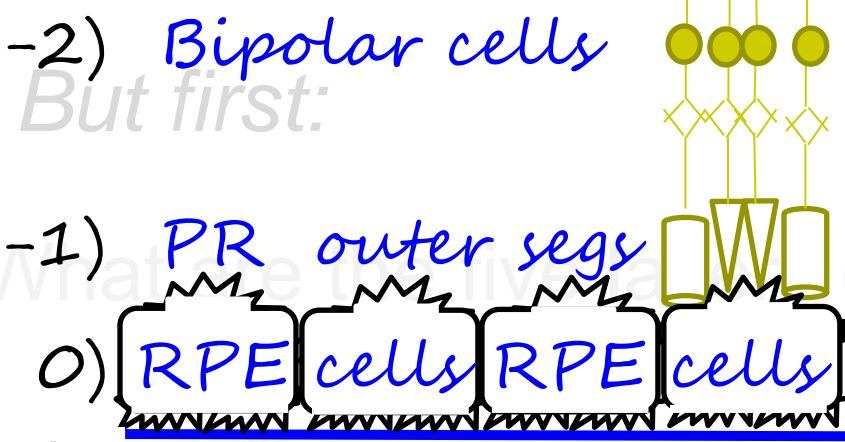
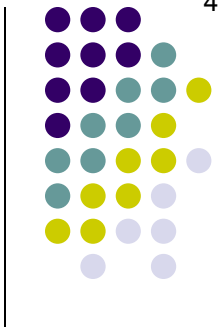


What are the primary layers of Bruch's membrane?

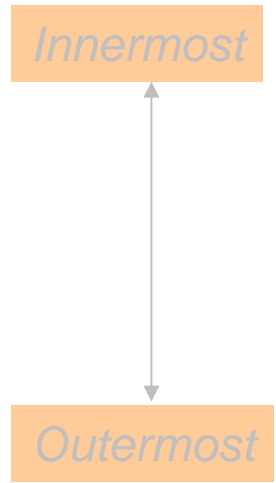
- Bruch's membrane
- 1) Basement membrane of RPE
 - 2) Inner collagenous layer
 - 3) Elastic layer
 - 4) Outer collagenous layer
 - 5) Basement membrane of choriocapillaris



Pigment Epithelial Detachment (PED)



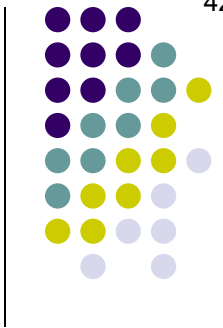
- Bruch's membrane
- 1) Basement membrane of RPE
 - 2) Inner collagenous layer
 - 3) Elastic layer
 - 4) Outer collagenous layer
 - 5) Basement membrane of choriocapillaris



Now that we have a grasp* of the relevant anatomy, let's turn to a topic intimately related to PED—drusen

*A partial grasp, as we shall see shortly

Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

-1) PR outer segs



1) Basement membrane of RPE

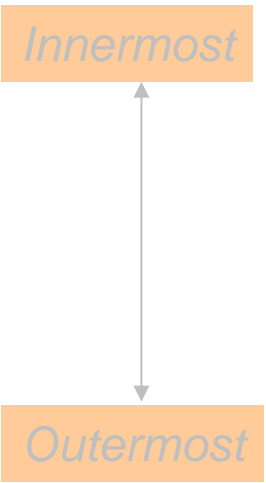
2) Inner collagenous layer

3) Elastic layer

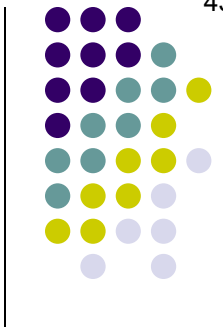
There are three main types of entities that are drusen-like (two actually are drusen). What are they?

Bruch's membrane

llaris



Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

-1) PR outer segs



- 1) Basement membrane of RPE
- 2) Inner collagenous layer
- 3) Elastic layer

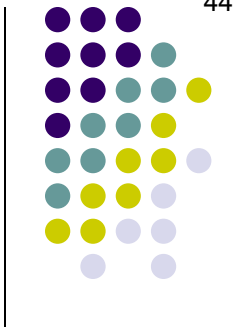
There are three main types of entities that are drusen-like (two actually are drusen). What are they?

- Basal laminar drusen
- Basal linear drusen
- Pseudodrusen



llaris

Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

-1) PR outer segs

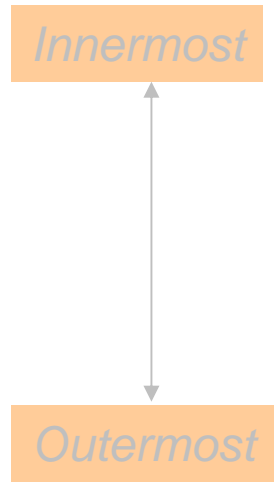


- 1) Basement membrane of RPE
- 2) Inner collagenous layer
- 3) Elastic layer

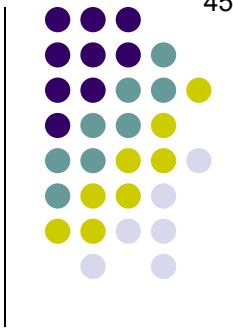
There are three main types of entities that are drusen-like (two actually are drusen). What are they?

- Basal laminar drusen aka...
- Basal linear drusen
- Pseudodrusen aka...

llaris



Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

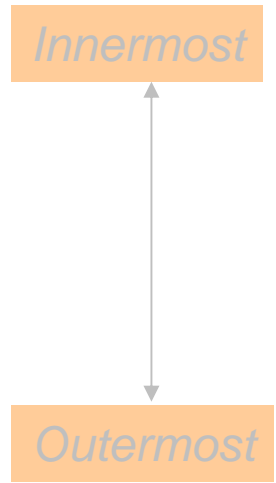
-1) PR outer segs



- 1) Basement membrane of RPE
- 2) Inner collagenous layer
- 3) Elastic layer

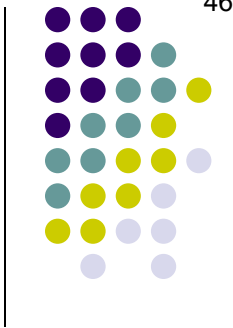
There are three main types of entities that are drusen-like (two actually are drusen). What are they?

- Basal laminar drusen aka...cuticular drusen
- Basal linear drusen
- Pseudodrusen aka...reticular (pseudo)drusen



llaris

Pigment Epithelial Detachment (PED)



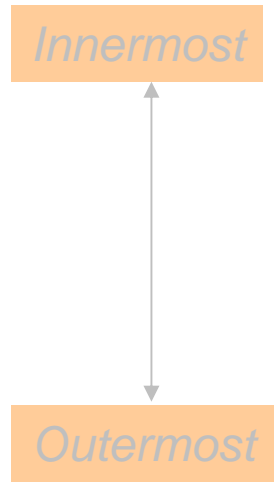
-2) Bipolar cells
But first:

-1) PR outer segs

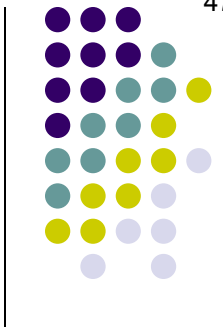


- 1) Basement membrane of RPE
- 2) Inner collagenous layer
- 3) Elastic layer
- 4) *There are three main types of entities that are drusen-like (two actually are drusen). V*
- 5) *Where are basal laminar drusen found?*

--Basal laminar drusen aka
 --Basal linear drusen
 --Pseudodrusen aka...reticular (pseudo)drusen



Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

-1) PR outer segs



basal laminar drusen

- 1) Basement membrane of RPE
- 2) Inner collagenous layer
- 3) Elastic layer

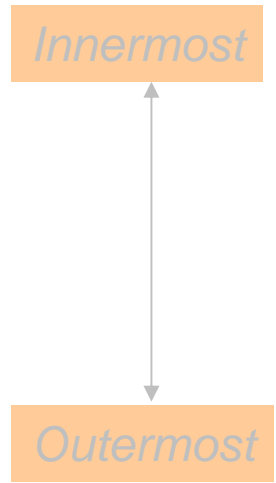
There are three main types of entities that are drusen-like (two actually are drusen). V

--Basal laminar drusen aka

Where are basal laminar drusen found? Between the BM of the RPE and the basal membrane--aka lamina, remember?--of the RPE cells

--Basal linear drusen

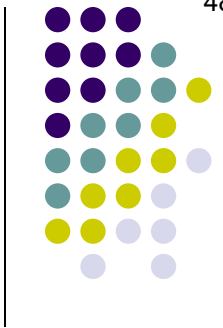
--Pseudodrusen aka...reticular (pseudo)drusen



Bruch's membrane

What are the primary components of Bruch's membrane?

Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

-1) PR outer segs



basal laminar drusen

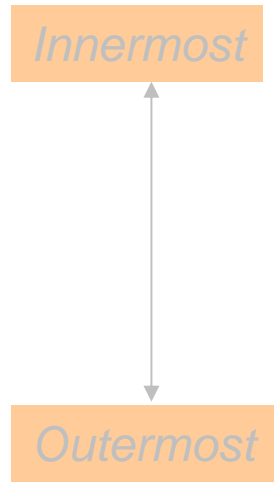
Bruch's membrane

- 1) Basement membrane of RPE
- 2) Inner collagenous layer
- 3) Elastic layer

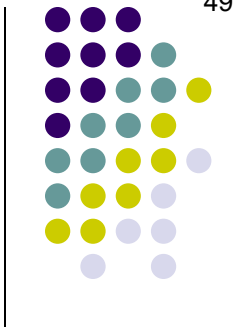
There are three main types of entities that are drusen-like (two actually are drusen). What are they?

- Basal laminar drusen aka...cuticular drusen
- Basal linear drusen
- Pseudodrusen aka...reticular (pseudo)drusen

Where are basal linear drusen found?



Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

-1) PR outer segs



basal laminar drusen

Bruch's membrane

1) Basement membrane of RPE

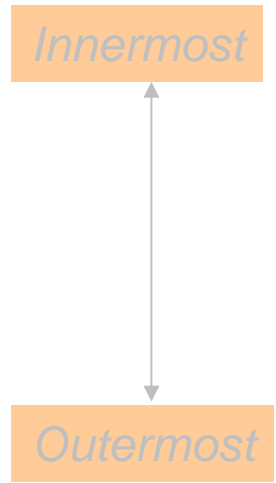
2) Inner collagenous layer

basal linear drusen

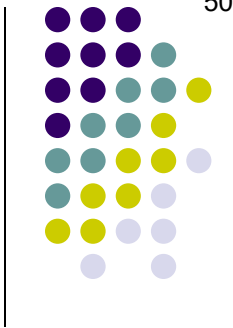
3) Elastic layer

There are three main types of entities that are drusen-like (two actually are drusen). What are they?
--Basal laminar drusen aka...cuticular drusen
--Basal linear drusen
--Pseudodrusen aka...reticular (pseudo)drusen

Where are basal linear drusen found?
Within the fibers of the inner collagenous layer



Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

-1) PR outer segs



basal laminar drusen

Bruch's membrane

1) Basement membrane of RPE

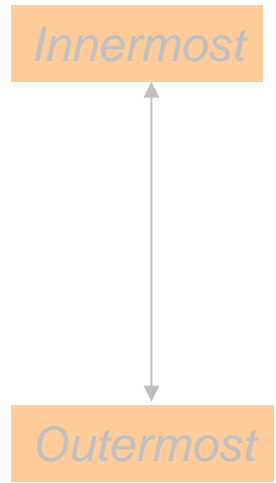
2) Inner collagenous layer

basal linear drusen

3) Elastic layer

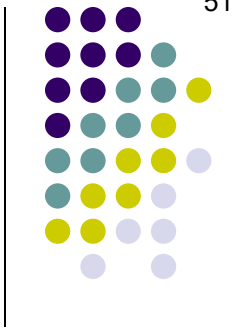
There are three main types of entities that are drusen-like (two actually are drusen). What are they?
--Basal laminar drusen aka...cuticular drusen
--Basal linear drusen
--Pseudodrusen aka...reticular (pseudodrusen)

Where are basal linear drusen found?
Within the fibers of the inner collagenous layer



Mnemonic: Inner and linear are almost the same word (esp. if you say them with a mouthful of hot coffee like I just did)

Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

-1) PR outer segs



basal laminar drusen

Bruch's membrane

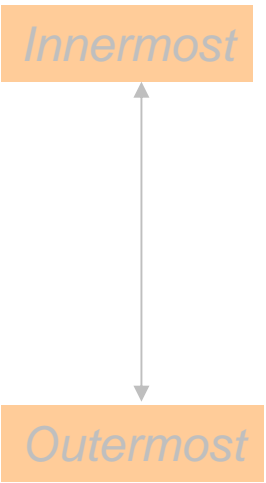
- 1) Basement membrane of RPE
- 2) Inner collagenous layer
- 3) Elastic layer

basal linear drusen

There are three main types of entities that are drusen-like (two actually are drusen). What are they?

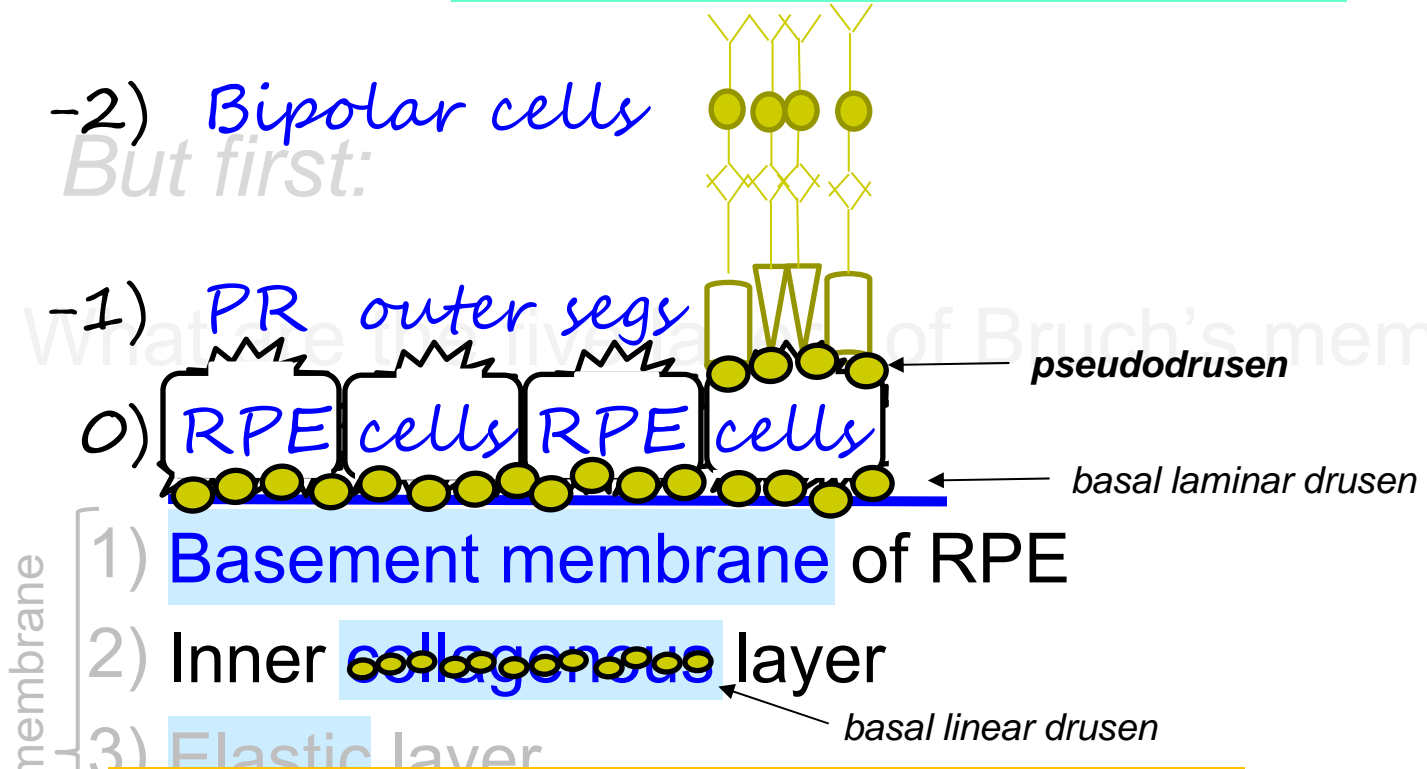
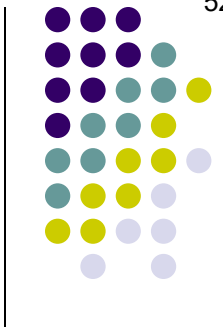
- Basal laminar drusen aka...cuticular drusen
- Basal linear drusen
- Pseudodrusen** aka...reticular (pseudo)drusen

llaris



Where are pseudodrusen found?

Pigment Epithelial Detachment (PED)

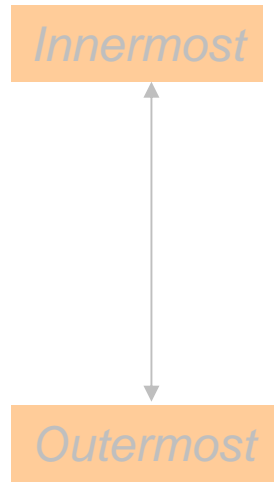


Bruch's membrane

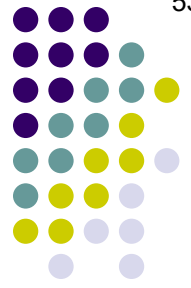
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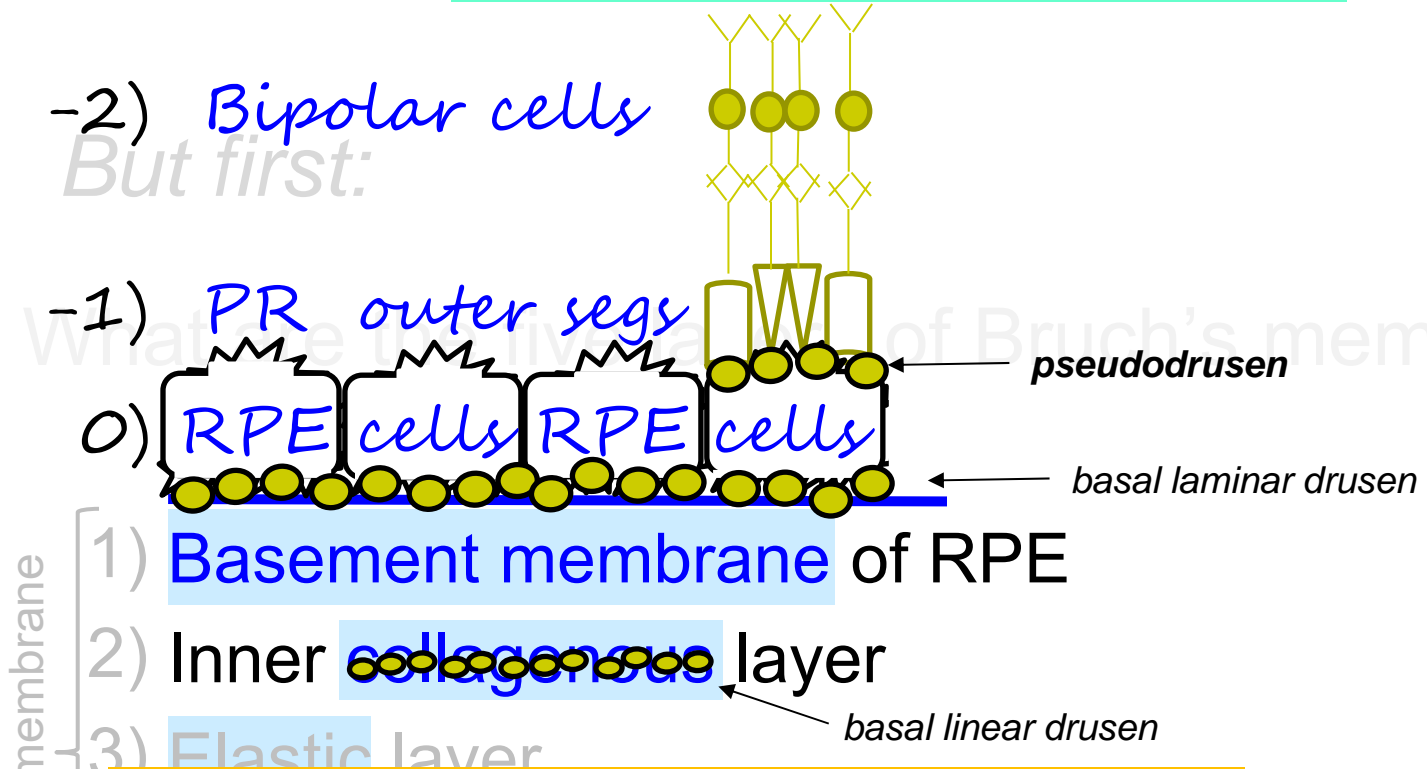
llaris



Where are pseudodrusen found?
 Between the apical surface of the RPE and the overlying PRs
 (ie, just under the neurosensory retina)



Pigment Epithelial Detachment (PED)



Innermost

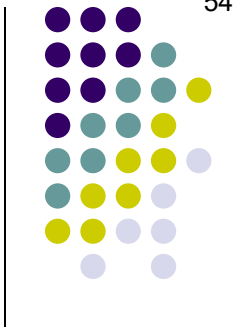
There are three main types of entities that are drusen-like (two actually are drusen). What are they?

- Basal laminar drusen aka...cuticular drusen
- Basal linear drusen
- Pseudodrusen aka...reticular (pseudo)drusen aka...

Pseudodrusen have another 'aka'--what is it?

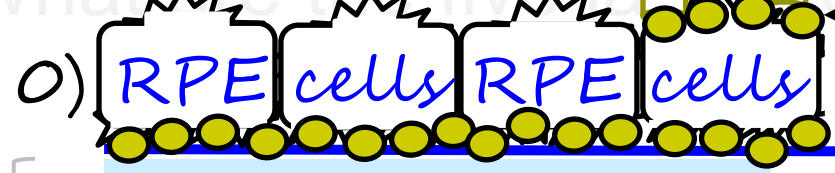
Where are pseudodrusen found?
 Between the apical surface of the RPE and the overlying PRs (ie, just beneath the neurosensory retina)

Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

-1) PR outer segs



pseudodrusen (subretinal drusenoid deposits)

basal laminar drusen

0) RPE cells
1) Basement membrane of RPE

2) Inner collagenous layer

basal linear drusen

3) Elastic layer

There are three main types of entities that are drusen-like (two actually are drusen). What are they?
--Basal laminar drusen aka...cuticular drusen
--Basal linear drusen
--Pseudodrusen aka...reticular (pseudo)drusen aka...subretinal drusenoid deposits

Pseudodrusen have another 'aka'--what is it?
Subretinal drusenoid deposits

Innermost

Bruch's membrane

Where are pseudodrusen found?
Between the apical surface of the RPE and the overlying PRs
(ie, just beneath the neurosensory retina)

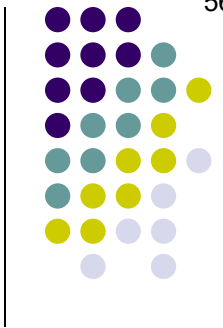


Pigment Epithelial Detachment (PED)



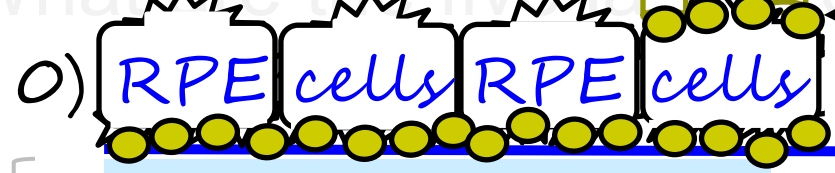
Reticular pseudodrusen in superotemporal macula

Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

-1) PR outer segs



pseudodrusen (subretinal drusenoid deposits)

basal laminar drusen

1) Basement membrane of RPE

2) Inner collagenous layer

basal linear drusen

3) Elastic layer

There are three main types of entities that are drusen-like (two actually are drusen). What are they?
--Basal laminar drusen aka...cuticular drusen
--Basal linear drusen
--Pseudodrusen aka...reticular (pseudo)drusen

Bruch's membrane

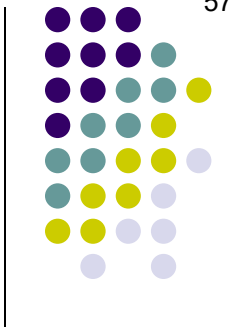
llaris

Innermost

Outermost

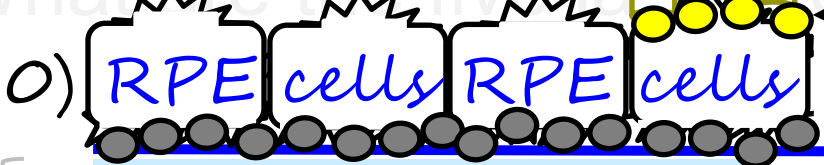
Do these drusen types differ in ways other than location?

Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

-1) PR outer segs



pseudodrusen (subretinal drusenoid deposits)

basal laminar drusen

0) Basement membrane of RPE

1) Inner collagenous layer

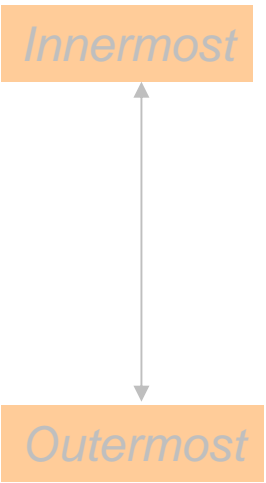
basal linear drusen

2) Elastic layer

There are three main types of entities that are drusen-like (two actually are drusen). What are they?
--Basal laminar drusen aka...cuticular drusen
--Basal linear drusen
--Pseudodrusen aka...reticular (pseudo)drusen

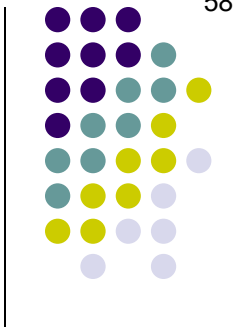
Bruch's membrane

llaris



Do these drusen types differ in ways other than location?
Yes, they differ in chemical composition and appearance as well

Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

-1) PR outer segs



pseudodrusen (subretinal drusenoid deposits)

0) RPE cells
1) Basement membrane of RPE

basal laminar drusen

2) Inner collagenous layer

basal linear drusen

3) Elastic layer

There are three main types of entities that are drusen-like (two actually are drusen). What are they?
--Basal laminar drusen aka...cuticular
--Basal linear drusen () drusen
--Pseudodrusen aka...reticular (pseudodrusen)

What one word describes the ophthalmoscopic appearance of basal linear drusen?

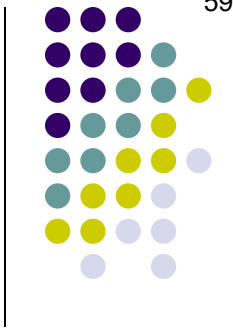
Innermost

Outermost

Bruch's membrane

Do these drusen types differ in ways other than location?
Yes, they differ in chemical composition and **appearance** as well

Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

-1) PR outer segs



pseudodrusen (subretinal drusenoid deposits)

basal laminar drusen

Bruch's membrane

1) Basement membrane of RPE

2) Inner collagenous layer

3) Elastic layer

basal linear drusen

There are three main types of entities that are drusen-like (two actually are drusen). What are they?
--Basal laminar drusen aka...cuticular
--Basal linear drusen (soft drusen)
--Pseudodrusen aka...reticular (pseudodrusen)

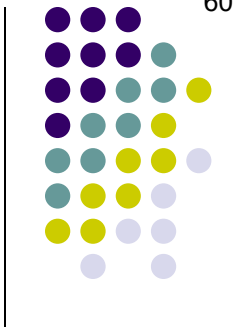
What one word describes the ophthalmoscopic appearance of basal linear drusen?
'Soft'

Innermost

Outermost

Do these drusen types differ in ways other than location?
Yes, they differ in chemical composition and **appearance** as well

Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

-1) PR outer segs



pseudodrusen (subretinal drusenoid deposits)

basal laminar drusen

0) RPE cells
1) Basement membrane of RPE

2) Inner collagenous layer

basal linear drusen

3) Elastic layer

- There are three main types of entities that are drusen-like (two actually are drusen). What are they?
- Basal laminar drusen (hard drusen)
 - Basal linear drusen (soft drusen)
 - Pseudodrusen aka...reticular (pseudo)drusen

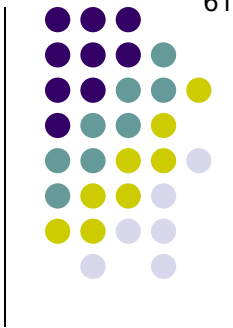
What one word describes the ophthalmoscopic appearance of basal laminar drusen?

Innermost

most

Do these drusen types differ in ways other than location?
Yes, they differ in chemical composition and **appearance** as well

Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

-1) PR outer segs



pseudodrusen (subretinal drusenoid deposits)

basal laminar drusen

0) RPE cells
1) Basement membrane of RPE

2) Inner collagenous layer

basal linear drusen

3) Elastic layer

There are three main types of entities that are drusen-like

(two actually are drusen). What are they?

--Basal laminar drusen (hard drusen)

--Basal linear drusen (soft drusen)

--Pseudodrusen aka...reticular (pseudo)drusen

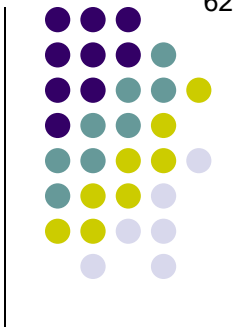
What one word describes the ophthalmoscopic appearance of basal laminar drusen?
'Hard'

Innermost

most

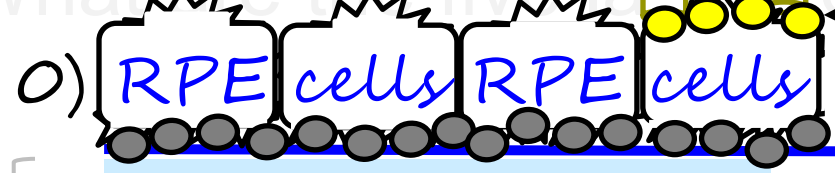
Do these drusen types differ in ways other than location?
Yes, they differ in chemical composition and **appearance** as well

Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

-1) PR outer segs



pseudodrusen (subretinal drusenoid deposits)

basal laminar drusen

0) RPE cells
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2) Inner collagenous layer

basal linear drusen

3) Elastic layer

There are three main types of entities that are drusen-like (two actually are drusen). What are they?

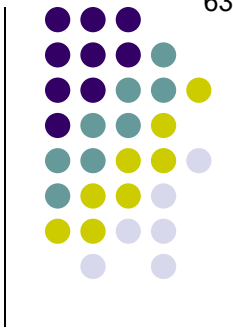
- Basal laminar drusen a (**hard** drusen)
- Basal linear drusen (**soft** drusen)
- Pseudodrusen aka...reticular (pseudo)drusen

What is meant by a soft vs hard appearance?

Innermost

Do these drusen types differ in ways other than location?
Yes, they differ in chemical composition and **appearance** as well

Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

-1) PR outer segs



pseudodrusen (subretinal drusenoid deposits)

0) RPE cells
1) Basement membrane of RPE

basal laminar drusen

2) Inner collagenous layer

basal linear drusen

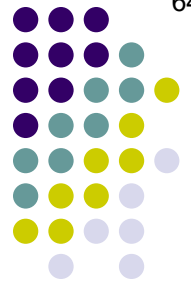
3) Elastic layer

There are three main types of entities that are drusen-like (two actually are drusen). What are they?
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--Basal linear drusen (**soft** drusen)
--Pseudodrusen aka...reticular (pseudo)drusen

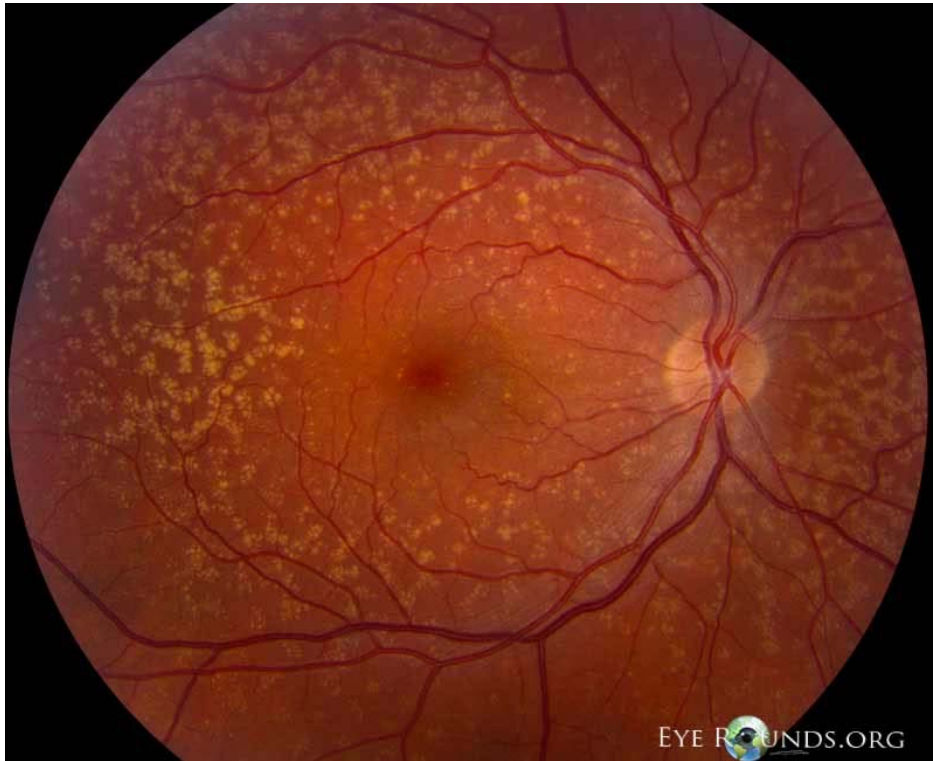
What is meant by a soft vs hard appearance?
It refers to how sharply the drusen are demarcated, ie, how well-defined their borders are

Innermost

Do these drusen types differ in ways other than location?
Yes, they differ in chemical composition and **appearance** as well



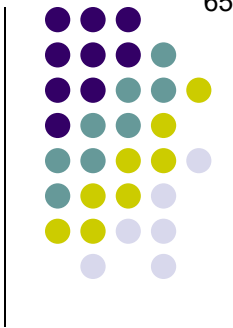
Pigment Epithelial Detachment (PED)



Basal laminar 'hard' drusen



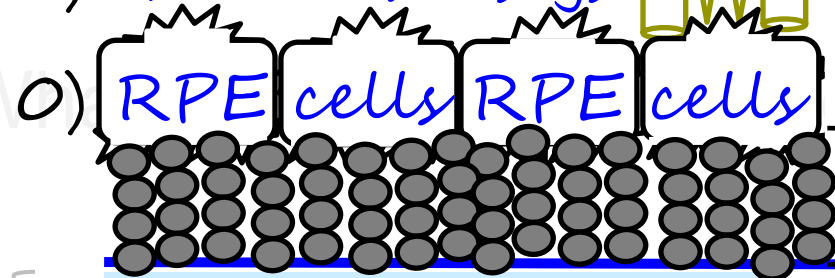
Basal linear 'soft' drusen



Pigment Epithelial Detachment (PED)

-2) Bipolar cells

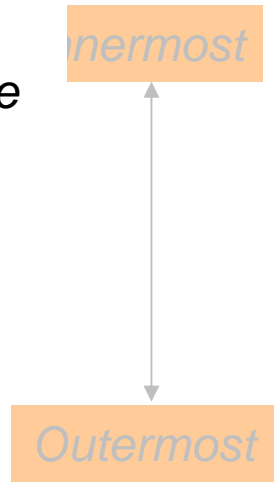
But first:
-1) PR outer segs

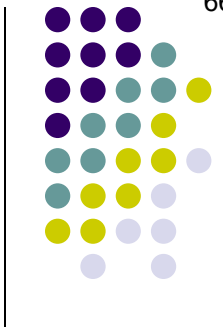


Drusen's membrane?

So now we can see how **basal laminar drusen**, if extensive enough (more on this later), can detach the RPE from Bruch's (ie, cause a 'drusenoid' PED)

- 0) RPE cells
- 1) Basement membrane of F
- 2) Inner collagenous layer
- 3) Elastic layer
- 4) Outer collagenous layer
- 5) Basement membrane of choriocapillaris





Pigment Epithelial Detachment (PED)



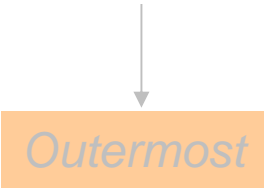
But first:

Basement membrane of RPE

Bruch's membrane

- 1) Inner collagenous layer
- 2) Inner collagenous layer
- 3) Elastic layer
- 4) Outer collagenous layer
- 5) Basement membrane of choriocapillaris

Likewise, we can see how, by splitting the inner collagenous layer, extensive **basal linear drusen** can detach the inner aspect of Bruch's from the outer, thereby **also** producing a drusenoid PED



Pigment Epithelial Detachment (PED)

-2) Bipolar cells

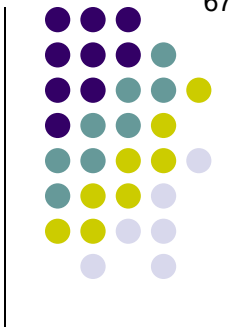
But first:

-1) PR outer segs

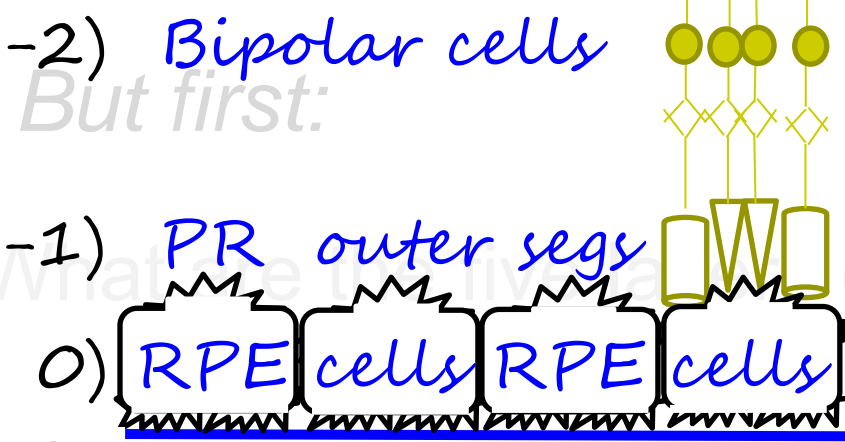
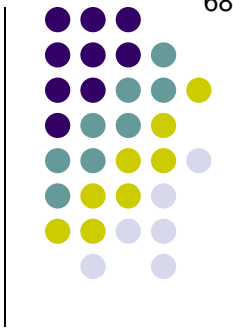
0) RPE cells

However, because **pseudodrusen** do **not** separate the RPE from Bruch's, they cannot cause a PED

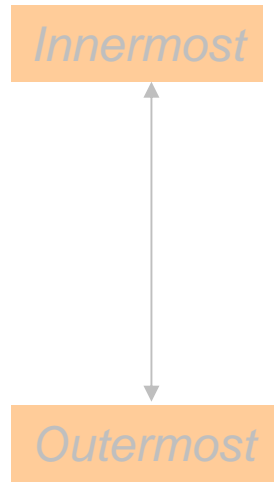
- 1) Basement membrane of RPE
- 2) Inner collagenous layer
- 3) Elastic layer
- 4) Outer collagenous layer
- 5) Basement membrane of choriocapillaris



Pigment Epithelial Detachment (PED)

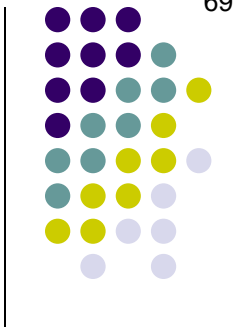


- Bruch's membrane
- 1) Basement membrane of RPE
 - 2) Inner collagenous layer
 - 3) Elastic layer
 - 4) Outer collagenous layer
 - 5) Basement membrane of choriocapillaris



Recall I said earlier that our grasp of the relevant anatomy was 'partial.' Let us now endeavor to render it complete. Next slide, Clyde.


Pigment Epithelial Detachment (PED)



-2) Bipolar cells
But first:

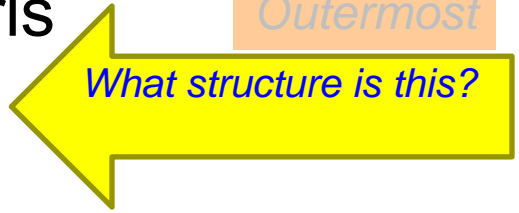
-1) PR outer segs



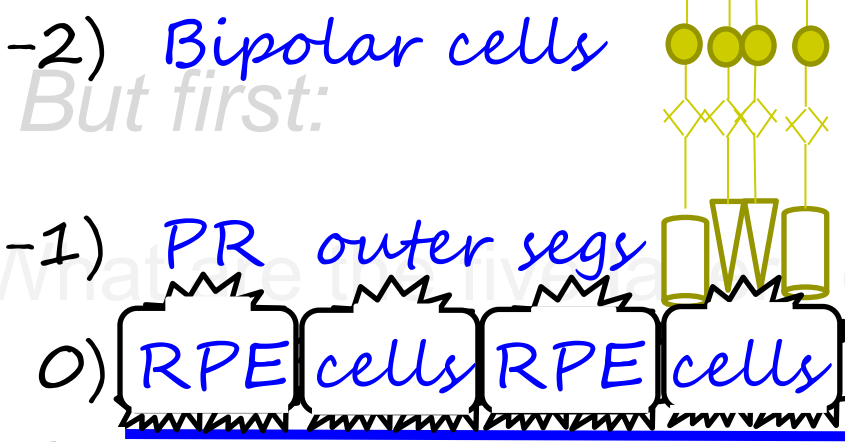
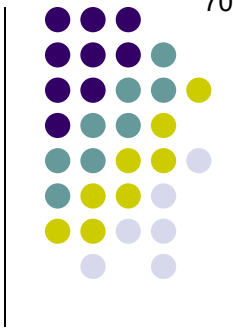
- Bruch's membrane
- 1) Basement membrane of RPE
 - 2) Inner collagenous layer
 - 3) Elastic layer
 - 4) Outer collagenous layer
 - 5) Basement membrane of choriocapillaris
 - 6)  ?

Innermost

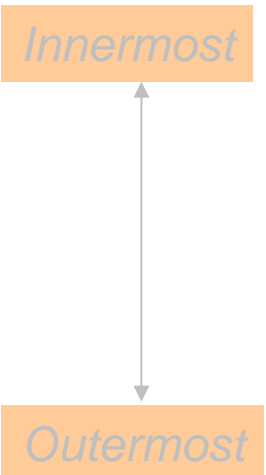
Outermost



Pigment Epithelial Detachment (PED)

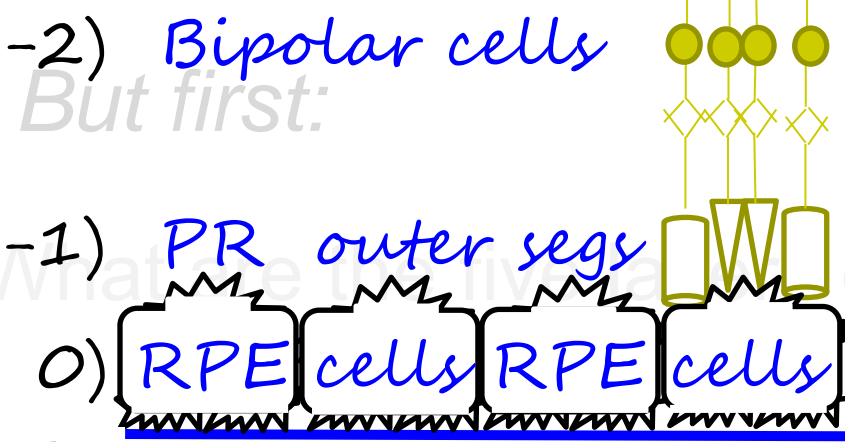
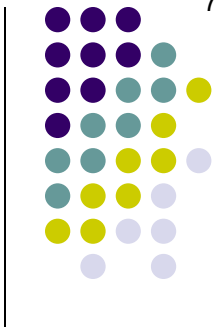


- Bruch's membrane
- 1) Basement membrane of RPE
 - 2) Inner collagenous layer
 - 3) Elastic layer
 - 4) Outer collagenous layer
 - 5) Basement membrane of choriocapillaris
 - 6) ~~Choriocapillaris~~ Choriocapillaris

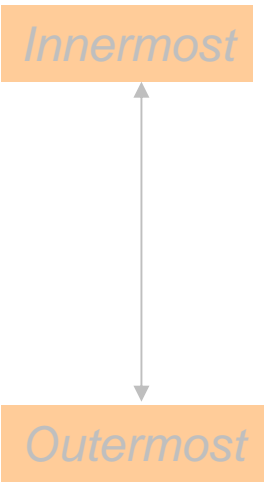


What structure is this?
The choriocapillaris

Pigment Epithelial Detachment (PED)

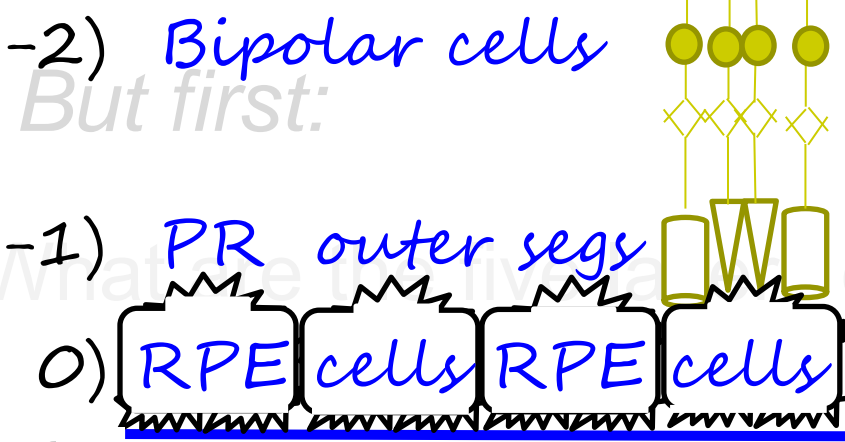
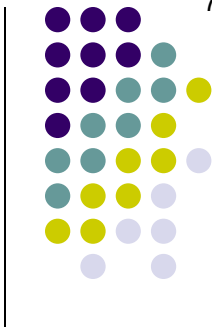


- Bruch's membrane
- 1) Basement membrane of RPE
 - 2) Inner collagenous layer
 - 3) Elastic layer
 - 4) Outer collagenous layer
 - 5) Basement membrane of choriocapillaris
 - 6) Choriocapillaris
 - 7) ?

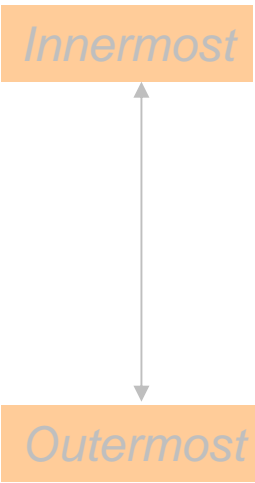


What structure is this?

Pigment Epithelial Detachment (PED)

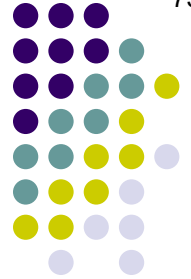


- Bruch's membrane
- 1) Basement membrane of RPE
 - 2) Inner collagenous layer
 - 3) Elastic layer
 - 4) Outer collagenous layer
 - 5) Basement membrane of choriocapillaris
 - 6) ~~Choriocapillaris~~ Choriocapillaris
 - 7) ~~Choroid~~ Choroid

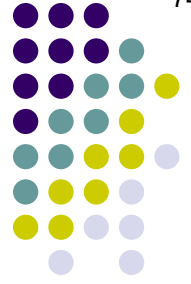
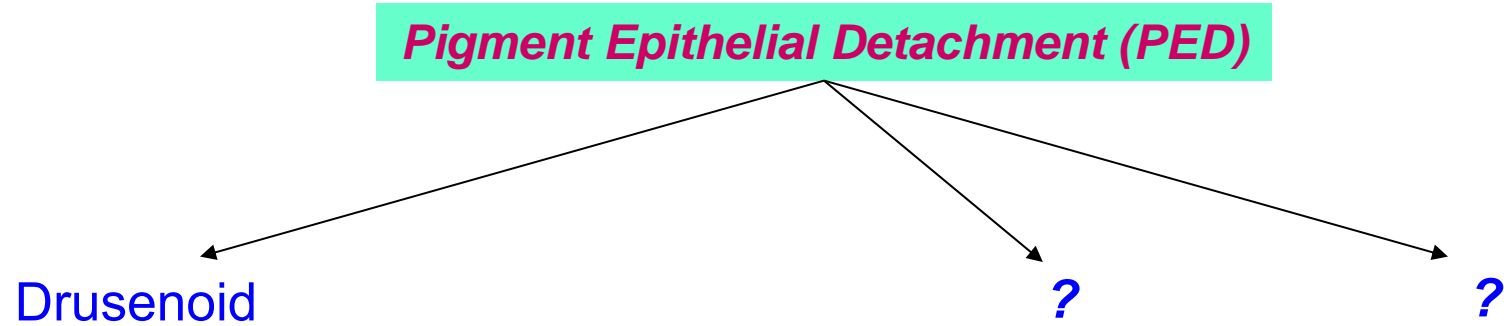


What structure is this?
The choroid

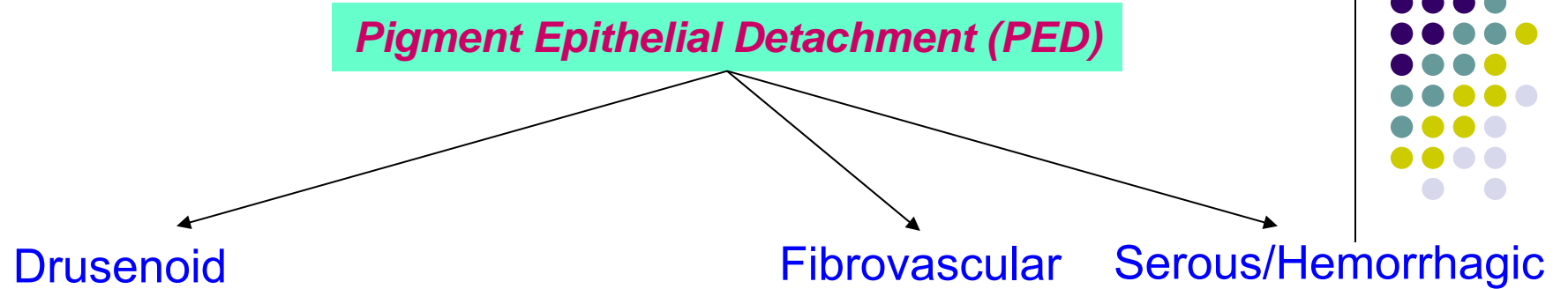
Pigment Epithelial Detachment (PED)



*At long last, we're ready to focus on the subject of this slide-set—**PED**.*



*At long last, we're ready to focus on the subject of this slide-set—**PED**.
We mentioned one type (drusenoid) previously. What are the other two types?*



*At long last, we're ready to focus on the subject of this slide-set—**PED**.*

We mentioned one type (drusenoid) previously. What are the other two types?

(Note: More than one type can be represented in the same PED)

Pigment Epithelial Detachment (PED)

Drusenoid

Fibrovascular

Serous/Hemorrhagic



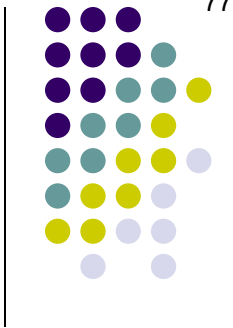
How large does a druse (or confluence of drusen) need to be to qualify as a drusenoid PED?

Pigment Epithelial Detachment (PED)

Drusenoid

Fibrovascular

Serous/Hemorrhagic



How large does a druse (or confluence of drusen) need to be to qualify as a drusenoid PED?
>350 μm

Pigment Epithelial Detachment (PED)

Drusenoid

Fibrovascular

Serous/Hemorrhagic

How large does a druse (or confluence of drusen) need to be to qualify as a drusenoid PED?
>350 μm

Drusenoid PEDs are a hallmark of what condition?



Pigment Epithelial Detachment (PED)

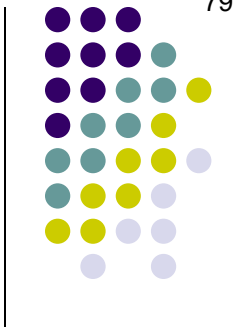
Drusenoid

Fibrovascular

Serous/Hemorrhagic

How large does a druse (or confluence of drusen) need to be to qualify as a drusenoid PED?
>350 μm

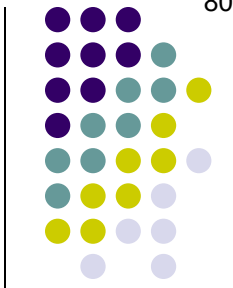
Drusenoid PEDs are a hallmark of what condition?
Dry ARMD



Pigment Epithelial Detachment (PED)

Drusenoid

Fibrovascular Serous/Hemorrhagic



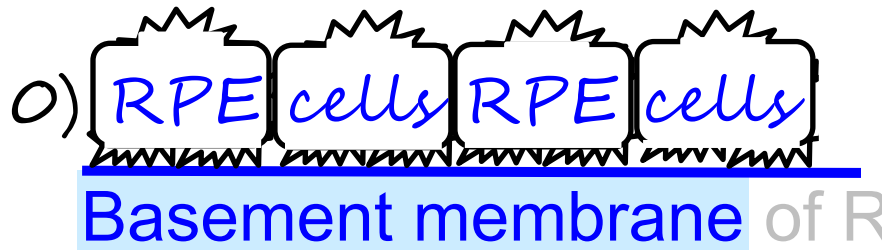
What is the impetus for the occurrence of fibrovascular and serous/hemorrhagic PED?



Pigment Epithelial Detachment (PED)

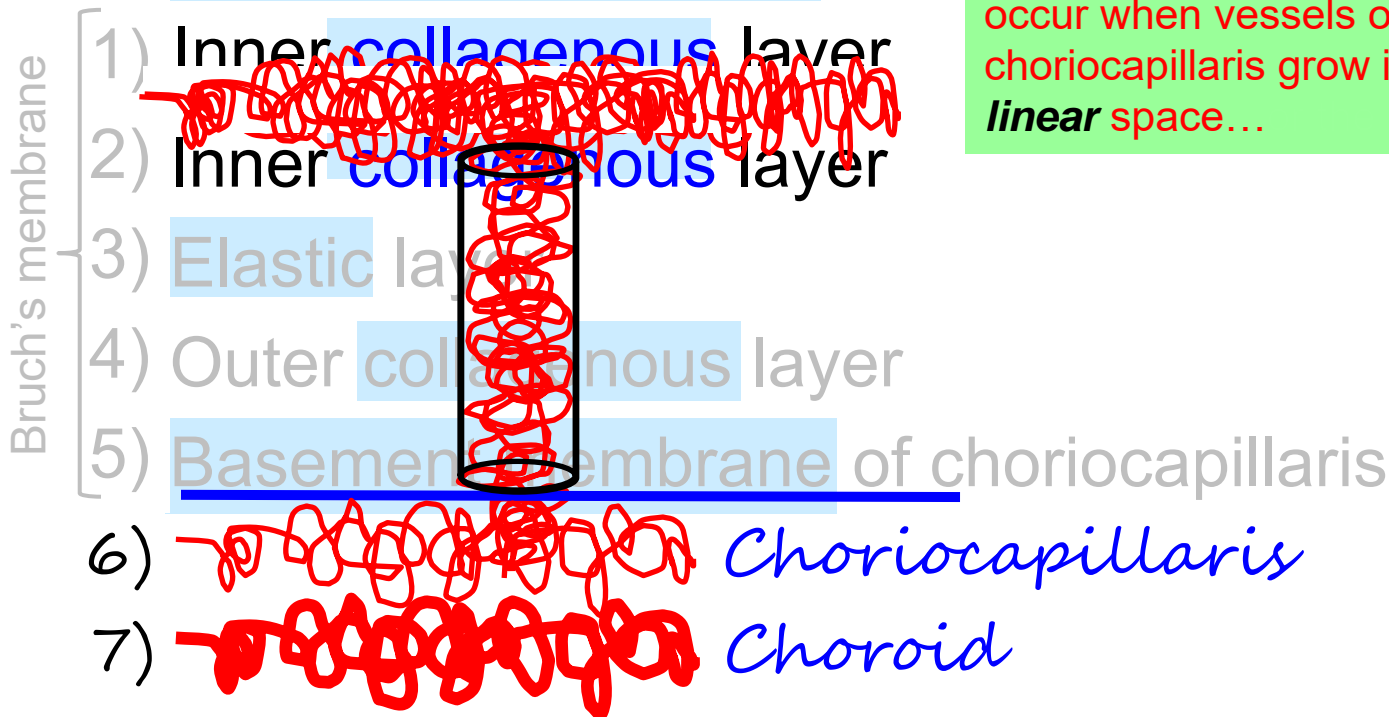
Drusenoid

Fibrovascular Serous/Hemorrhagic



What is the impetus for the occurrence of fibrovascular and serous/hemorrhagic PED?

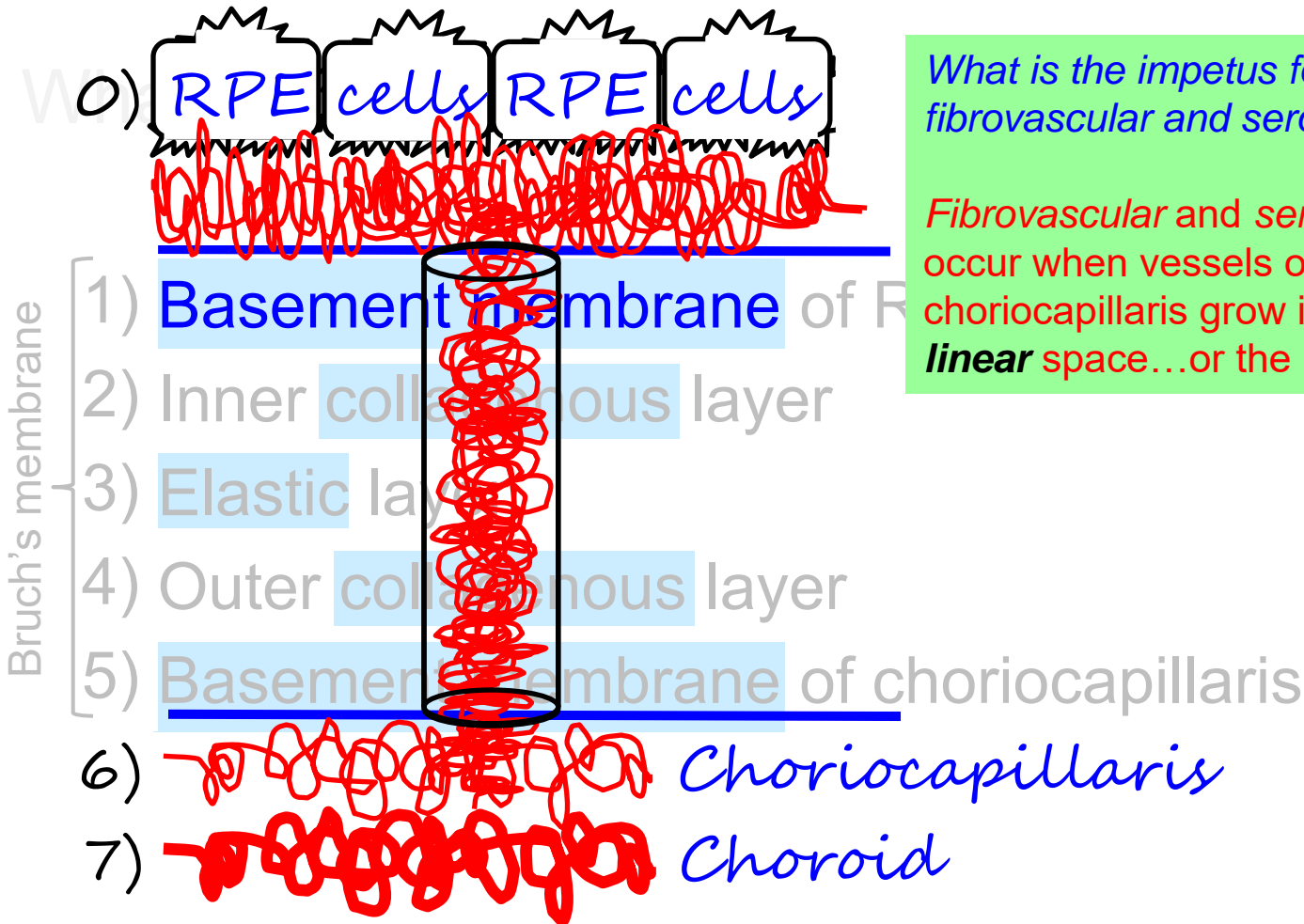
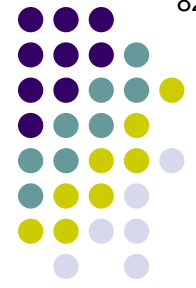
Fibrovascular and serous/hemorrhagic PED occur when vessels originating in the choriocapillaris grow into either the **basal linear** space...



Pigment Epithelial Detachment (PED)

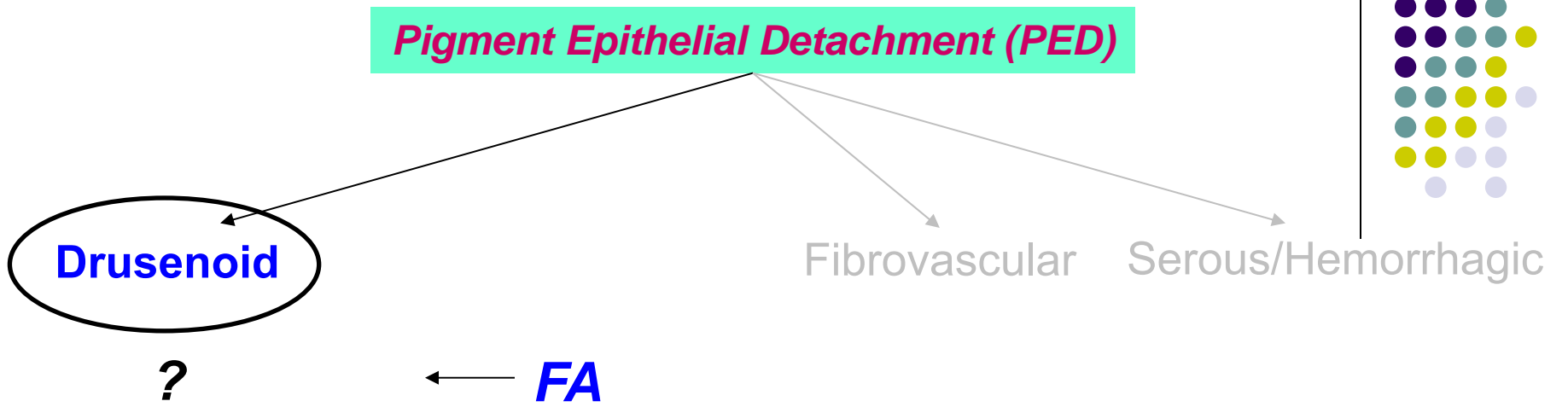
Drusenoid

Fibrovascular Serous/Hemorrhagic

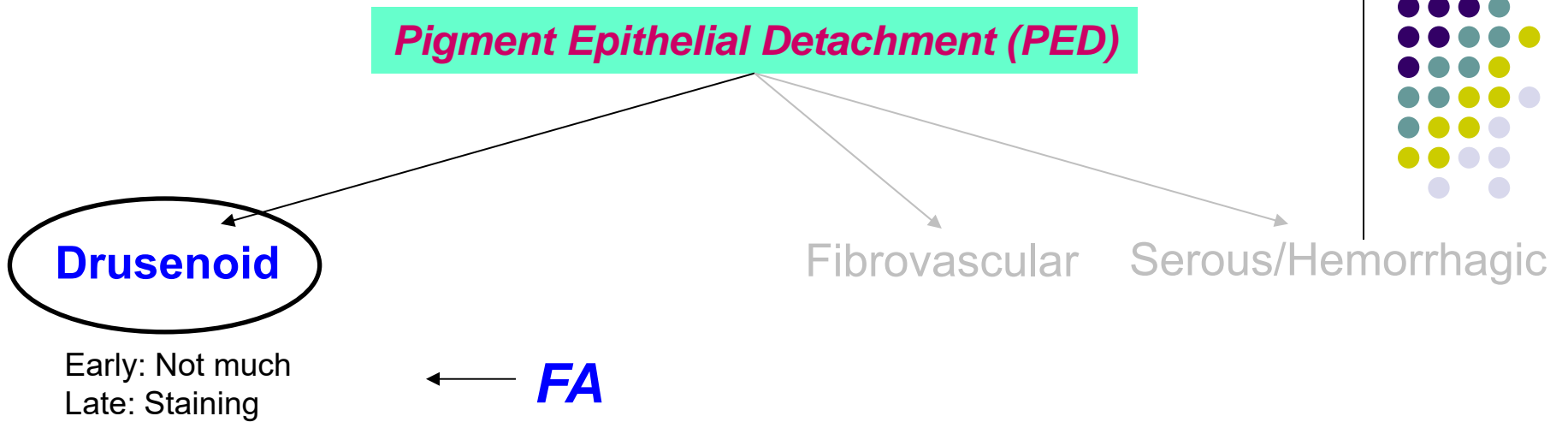


What is the impetus for the occurrence of fibrovascular and serous/hemorrhagic PED?

Fibrovascular and serous/hemorrhagic PED occur when vessels originating in the choriocapillaris grow into either the **basal linear** space...or the **basal laminar** space

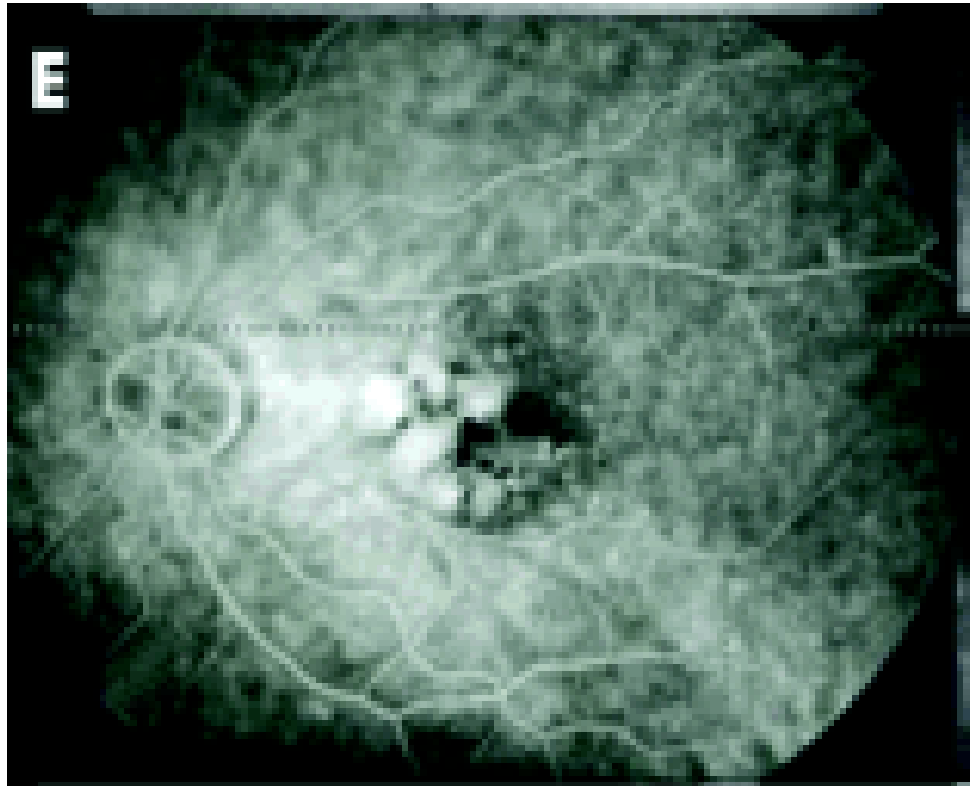


How do drusenoid PEDs behave on FA?



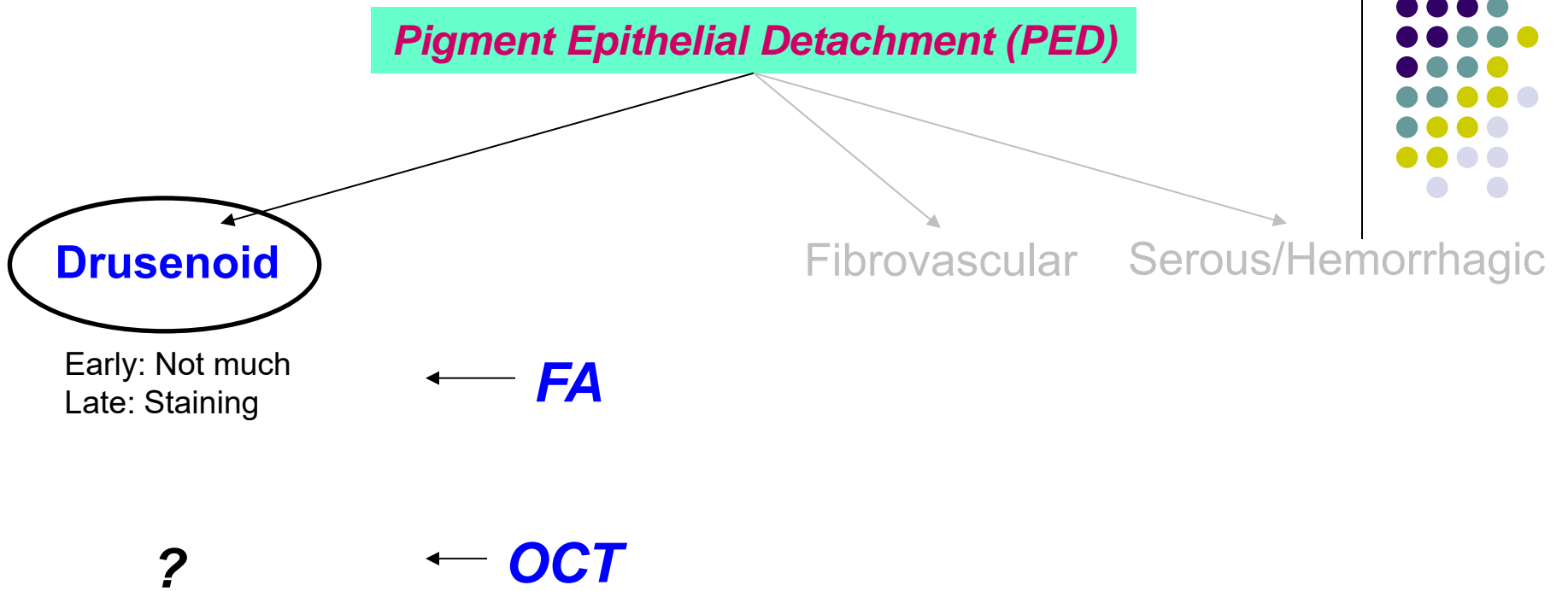
How do drusenoid PEDs behave on FA?
Because they are largely solid and avascular, they tend not to light up early, but rather to stain late in the study

Pigment Epithelial Detachment (PED)



Late phase FA (note the disc staining)

FA: Drusenoid PED



How do drusenoid PEDs appear on OCT?

Pigment Epithelial Detachment (PED)

Drusenoid

Early: Not much
Late: Staining

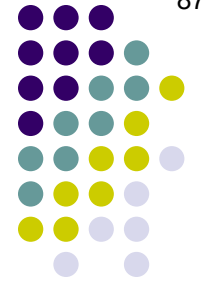
← **FA**

Sub-RPE space
uniformly hyperreflective

← **OCT**

Fibrovascular

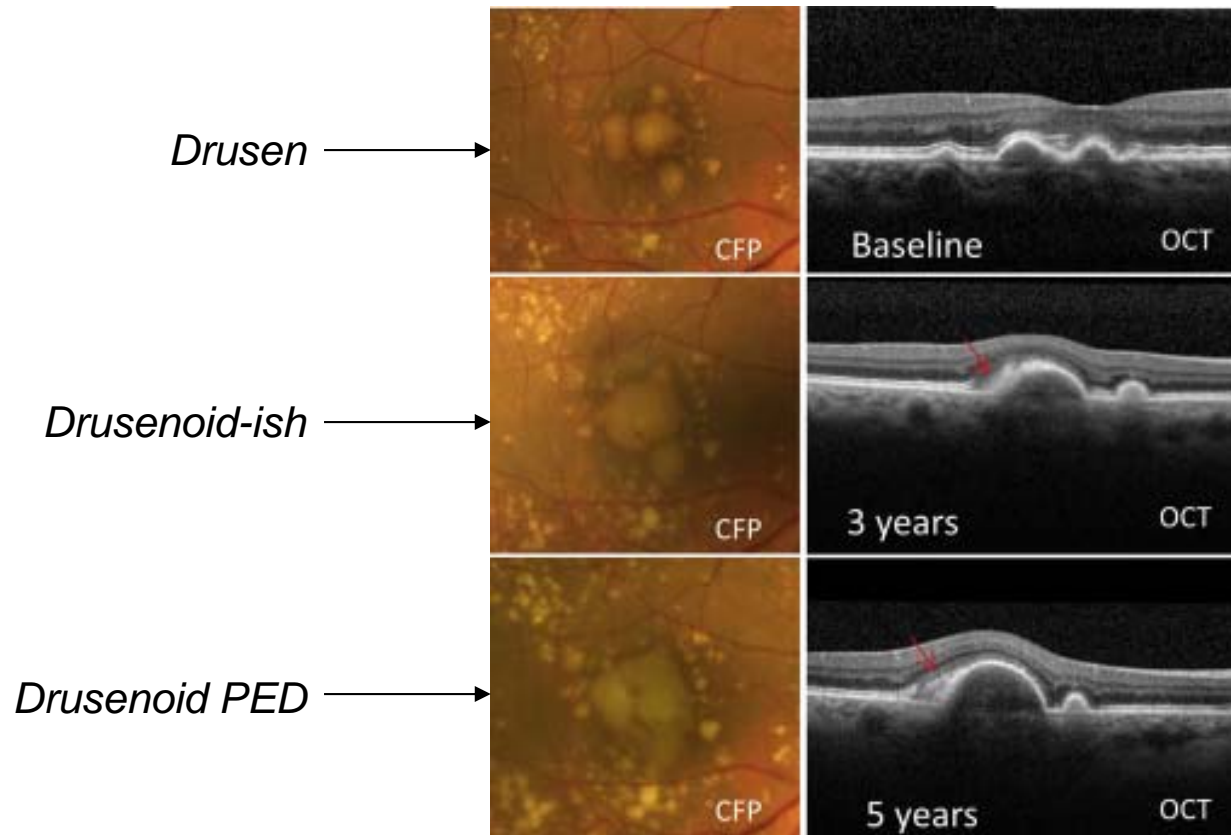
Serous/Hemorrhagic



How do drusenoid PEDs appear on OCT?
They have a uniformly hyperreflective appearance beneath a smooth, possibly undulating contour



Pigment Epithelial Detachment (PED)



Coalescence of large soft drusen over time to form a drusenoid PED with increasing accumulation of vitelliform material (red arrow) and overlying pigmentary changes, as seen on color fundus photograph (CFP) and OCT.

OCT: Drusenoid PED

Pigment Epithelial Detachment (PED)

Drusenoid

Fibrovascular

Serous/Hemorrhagic

Early: Not much
Late: Staining

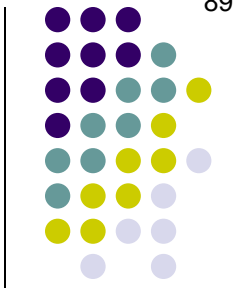
← **FA** →

?

How do fibrovascular PEDs behave on FA?

Sub-RPE space
uniformly hyperreflective

← **OCT**



Pigment Epithelial Detachment (PED)

Drusenoid

Fibrovascular

Serous/Hemorrhagic

Early: Not much
Late: Staining

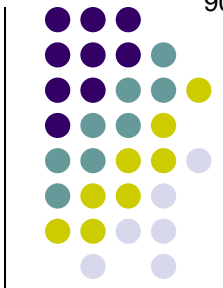
← **FA** →

Early: 'Lacy'
Late: Leakage

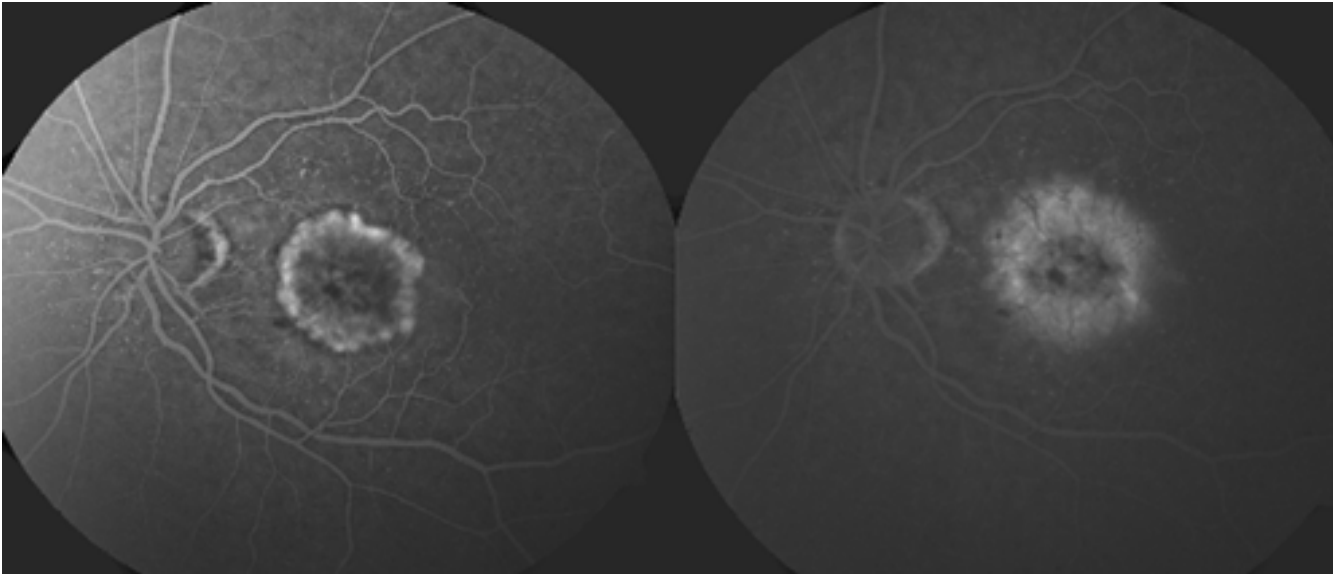
Sub-RPE space
uniformly hyperreflective

← **OCT**

How do fibrovascular PEDs behave on FA?
As the vascular elements arise from the choroid, they light up very early, classically in a 'lacy' or 'wagonwheel' pattern. Leaking will occur as the study proceeds.



Pigment Epithelial Detachment (PED)



Fluorescein angiographic images showing a well-demarcated lacy pattern with a central hypofluorescence in the early phase (left) with intense progressive leakage of fluorescein in the late phase of the angiogram (right)

FA: Fibrovascular PED

Pigment Epithelial Detachment (PED)

Drusenoid

Fibrovascular

Serous/Hemorrhagic

Early: Not much
Late: Staining

← **FA** →

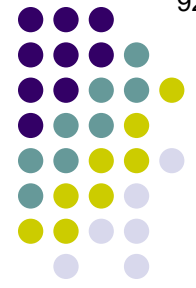
Early: 'Lacy'
Late: Leakage

Sub-RPE space
uniformly hyperreflective

← **OCT** →

?

How do fibrovascular PEDs appear on OCT?





Pigment Epithelial Detachment (PED)

Drusenoid

Fibrovascular

Serous/Hemorrhagic

Early: Not much
Late: Staining

← **FA** →

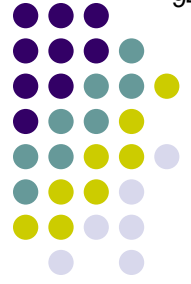
Early: 'Lacy'
Late: Leakage

Sub-RPE space
uniformly hyperreflective

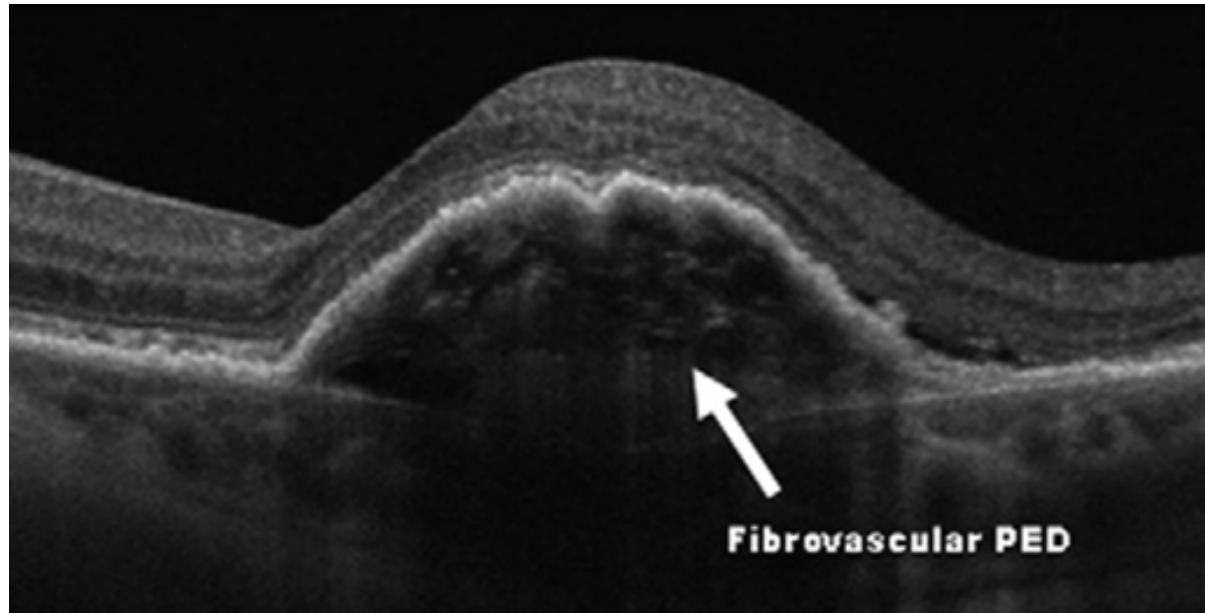
← **OCT** →

Solid with 'clefts'

How do fibrovascular PEDs appear on OCT?
They contain moderately reflective material with occasional hyporeflective clefts



Pigment Epithelial Detachment (PED)



Fibrovascular PEDs appear to be filled with solid layers of material of medium reflectivity, separated by hyporeflective clefts

OCT: Fibrovascular PED

Pigment Epithelial Detachment (PED)

Drusenoid

Fibrovascular

Serous/Hemorrhagic

Early: Not much
Late: Staining

← **FA** →

Early: 'Lacy'
Late: Leakage

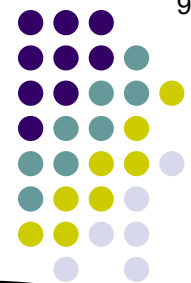
?

Sub-RPE space
uniformly hyperreflective

← **OCT** →

Solid with 'clefts'

How do serous/hemorrhagic PEDs behave on FA?



Pigment Epithelial Detachment (PED)

Drusenoid

Fibrovascular

Serous/Hemorrhagic

Early: Not much
Late: Staining

← **FA** →

Early: 'Lacy'
Late: Leakage

Early: Bright
Late: Pooling

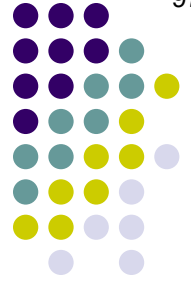
Sub-RPE space
uniformly hyperreflective

← **OCT** →

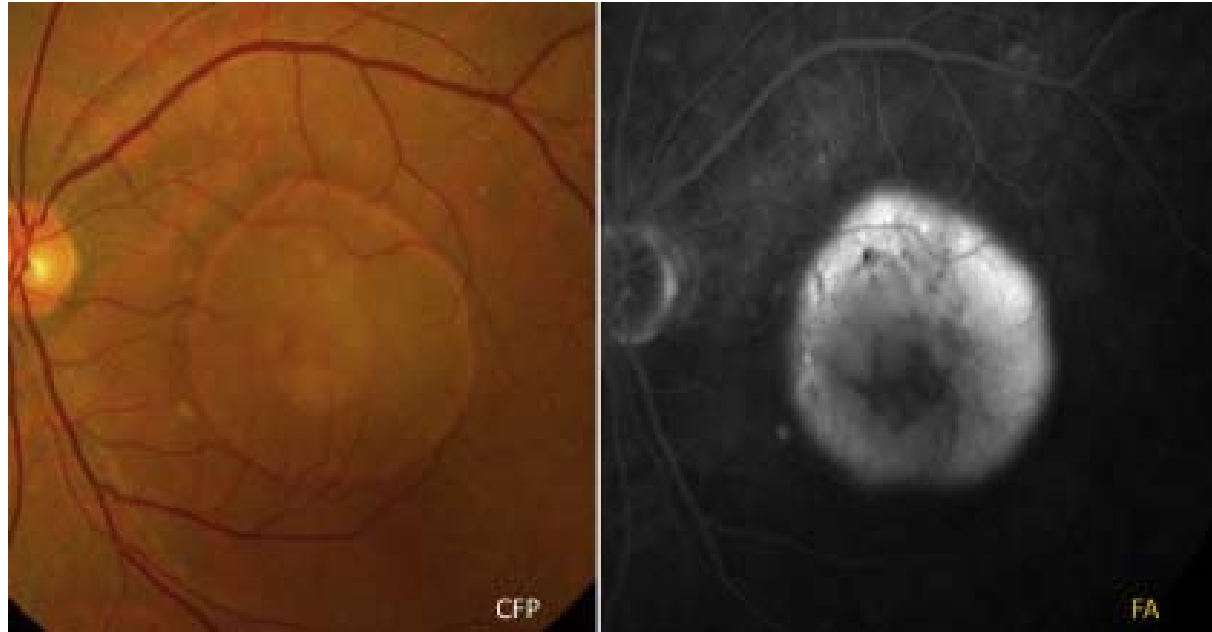
Solid with 'clefts'



How do serous/hemorrhagic PEDs behave on FA?
Because they consist of fluid, they light up early;
pooling leads to further brightening throughout



Pigment Epithelial Detachment (PED)



Serous PEDs are seen on OCT as areas of smooth, sharply demarcated, dome-shaped RPE elevation, typically overlying a homogeneously hyporeflective space

FA: Serous PED

Pigment Epithelial Detachment (PED)



Drusenoid

Fibrovascular

Serous/Hemorrhagic

Early: Not much
Late: Staining

← **FA** →

Early: 'Lacy'
Late: Leakage

Early: Bright
Late: Pooling

Sub-RPE space
uniformly hyperreflective

← **OCT** →

Solid with 'clefts'

?

How do serous/hemorrhagic PEDs appear on OCT?

Pigment Epithelial Detachment (PED)



Drusenoid

Fibrovascular

Serous/Hemorrhagic

Early: Not much
Late: Staining

← **FA** →

Early: 'Lacy'
Late: Leakage

Early: Bright
Late: Pooling

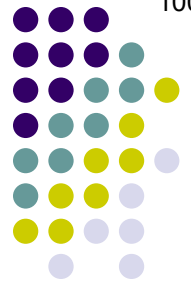
Sub-RPE space
uniformly hyperreflective

← **OCT** →

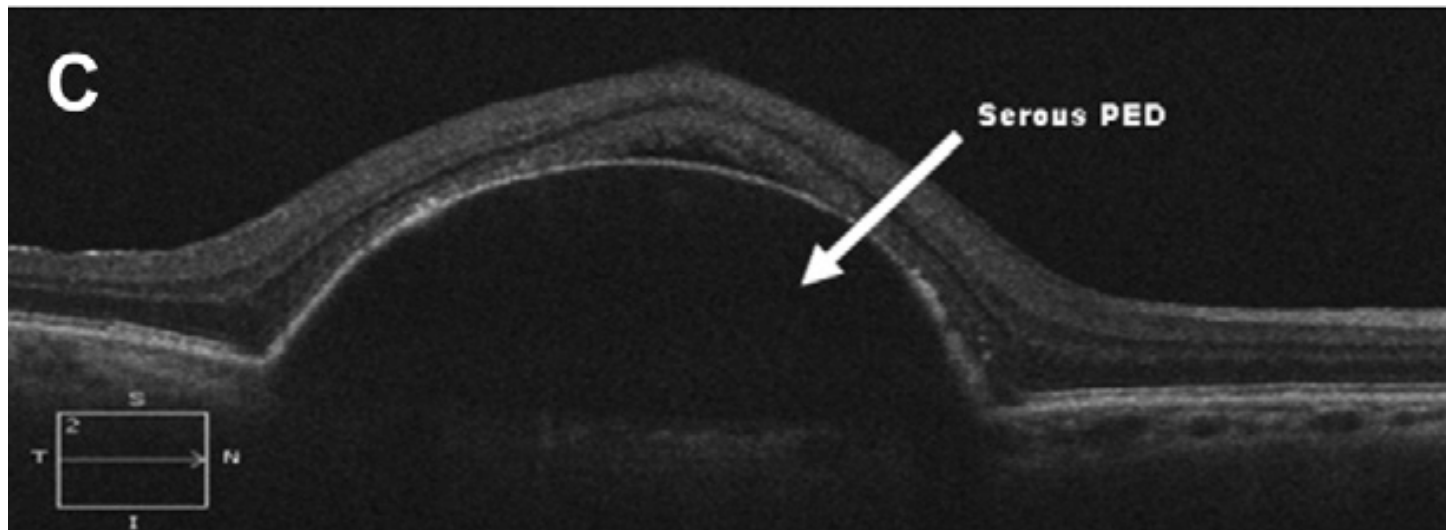
Solid with 'clefts'

Sub-RPE space 'empty'

*How do serous/hemorrhagic PEDs appear on OCT?
As abruptly elevated domes containing
uniformly hyporeflective contents*



Pigment Epithelial Detachment (PED)



Serous PEDs are seen on OCT as areas of smooth, sharply demarcated, dome-shaped RPE elevation, typically overlying a homogeneously hyporeflective space

OCT: Serous PED